LSI

MACRO INSTRUCTION EXERCISER

MD-11-DVKAA-A

EP-DVKAA-A-DL-A

OCT 1976

FICHE 1 OF 1

digital

Made in U.S.A.

[redacted]

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4890
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                                        .ABS
                                        ;; LSI-11 MACRO INSTRUCTION EXERCISER
                                        .NLIST  MC,MD,CND
                                        .LIST   ME
                                        .MCALL  .HEADER,..SAPTHDR,..SAPTBLS,..SACT11,STARS
                                .TITLE  DVKAAA
                                ;*COPYRIGHT (C) AUGUST 1975
                                ;*DIGITAL EQUIPMENT CORP.
                                ;*MAYNARD, MASS. 01754
                                ;*
                                ;*PROGRAM BY PERVEZ ZAKI
                                ;*
                                ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
                                ;*PACKAGE (MAINDEC-11-DZQAC-B),JULY 11,1975.
                                ;*
(1)             000001          $TN=1
(1)             160000          $SWR=160000     ;;HALT ON ERROR, LOOP ON TEST, INHIBIT ERROR TYPOUT
```

```
          000000                  .=0

                          ;***********************************************************
                          ;       TRAP CATCHERS OF .+2 AND HALT IN LOCATIONS 0 THRU 776 [IT IS NLISTED]
                          ;***********************************************************
                          .SBTTL  ACT11 HOOKS
                          ;HOOKS REQUIRED BY ACT11
          001000                  $SVPC=.                 ;SAVE PC
          000046                  .=46
  000046  016750                  $ENDAD                  ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$EOP
          000052                  .=52
  000052  000000                  .WORD   0               ;;2)SET LOC.52 TO ZERO
          001000                  .=$SVPC                 ;; RESTORE PC
          000400                  .=400
          000000                  RC      =%0
          000001                  R1      =%1
          000002                  R2      =%2
          000003                  R3      =%3
          000004                  R4      =%4
          000005                  R5      =%5
          000006                  R6      =%6
          000006                  SP      =%6
          000007                  PC      =%7
          000254                  CLNZ    =254
          000001                  ERRNM   =1
          000260                  NOP1    =260
          000263                  SEVC    =263
          000273                  SENVC   =273
          000000                  $TN     =0
          000004                  .TYPE   =IOT
```

```
5031                                    ;;*****************************************************************************
 (1)
 (1)                                    .SBTTL  APT MAILBOX-ETABLE
 (1)
 (1)
 (1)
 (1)                                            .EVEN
 (1)  000400                            $MAIL:                  ;;APT MAILBOX
 (1)  000430  000000                    $MSGTY: .WORD   AMSGTY  ;;MESSAGE TYPE CODE
 (1)  000402  000000                    $FATAL: .WORD   AFATAL  ;;FATAL ERROR NUMBER
 (1)  000404  000000                    $TESTN: .WORD   ATESTN  ;;TEST NUMBER
 (1)  000406  000000                    $PASS:  .WORD   APASS   ;;PASS COUNT
 (1)  000410  000000                    $DEVCT: .WORD   ADEVCT  ;;DEVICE COUNT
 (1)  000412  000000                    $UNIT:  .WORD   AUNIT   ;;I/O UNIT NUMBER
 (1)  000414  000000                    $MSGAD: .WORD   AMSGAD  ;;MESSAGE ADDRESS
 (1)  000416  000000                    $MSGLG: .WORD   AMSGLG  ;;MESSAGE LENGTH
 (1)  000420                            $ETABLE:                ;;APT ENVIRONMENT TABLE
 (1)  000420     000                    $ENV:   .BYTE   AENV    ;;ENVIRONMENT BYTE
 (1)  000421     000                    $ENVM:  .BYTE   AENVM   ;;ENVIRONMENT MODE BITS
 (1)  000422  000000                    $SWREG: .WORD   ASWREG  ;;APT SWITCH REGISTER
 (1)  000424  000000                    $USWR:  .WORD   AUSWR   ;;USER SWITCHES
 (1)  000426  000000                    $CPUOP: .WORD   ACPUOP  ;;CPU TYPE,OPTIONS
 (1)                                    ;*                      BITS 15-11=CPU TYPE
 (1)                                    ;*                              11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
 (1)                                    ;*                              11/70=06,PDQ=07,Q=10
 (1)                                    ;*                      BIT 10=REAL TIME CLOCK
 (1)                                    ;*                      BIT  9=FLOATING POINT PROCESSOR
 (1)                                    ;*                      BIT  8=MEMORY MANAGEMENT
 (1)  000430                            $ETEND:
 (1)                                            .MEXIT
5032                                    ;;*****************************************************************************
 (1)
 (1)                                    .SBTTL  APT PARAMETER BLOCK
 (1)                                    ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
 (2)                                    ;;*****************************************************************************
 (1)          000430                            .$X=.   ;;SAVE CURRENT LOCATION
 (1)          000024                            .=24    ;;SET POWER FAIL TO POINT TO START OF PROGRAM
 (1)  000024  000200                            200     ;;FOR APT START UP
 (1)          000044                            .=44    ;;POINT TO APT INDIRECT ADDRESS PNTR.
 (1)  000044  000430                            $APTHDR ;;POINT TO APT HEADER BLOCK
 (1)          000430                            .=.$X   ;;RESET LOCATION COUNTER
 (2)                                    ;;*****************************************************************************
 (1)                                    ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
 (1)                                    ;INTERFACE SPEC.
 (1)
 (1)  000430                            $APTHD:
 (1)  000430  000000                    $HIBTS: .WORD   0       ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
 (1)  000432  000400                    $MBADR: .WORD   $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
 (1)  000434  000001                    $TSTM:  .WORD   1       ;;RUN TIM OF LONGEST TEST
 (1)  000436  000001                    $PASTM: .WORD   1       ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
 (1)  000440  000000                    $UNITM: .WORD           ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
 (1)  000442  000014                            .WORD   $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)
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```
5034                000430                          .=$APTHD
5035  000430                                        ADR:
5036                000432                          .=ADR+2
5037  000432                                        ADR1:
5038                000434                          .=ADR1+2
5039  000434                                        ADR2:
5040                000436                          .=ADR2+2
5041  000436                                        DUMMY:
5042                000440                          .=DUMMY+2
5043  000440                                        TEMP:
5044                000442                          .=TEMP+2
5045  000442                                        TEMP1:
5046                000444                          .=TEMP1+2
5047  000444                                        TEMP2:
5048                000446                          .=TEMP2+2
5049  000446  177564                               TPS:    177564          ; OUTPUT TTY STATUS REGISTER
5050  000450  177566                               TPB:    177566          ; OUTPUT BUFFER
5051  000452  006402                       MARK2:  MARK    2
5052  000454  005015  042440  042116  ENDPAS: .ASCIZ  <15><12>" END PASS"
      000462  050040  051501  000123
5053                                            .EVEN
5054  000470  005015  047520  042527  POWER:  .ASCIZ  <15><12>/POWER/
      000476  000122
5055                                            .EVEN
5056  000500  000023                           .BLKW   19.
5057
5058                000020                          .=20
5059  000020  017020                           TYPE
5060  000022  000000                           0
5061
5062
5063
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5068
5069                                        ;STARTING OF THE PROGRAM
5070                                        ;----------------------
5071
5072
5073            000200                      .=200
5074   000200   012737   016770   000024    MOV     #PWRDN,@#24     ; SERVICE POWER DOWN ROUTINE ON ANY FUTURE POWER DOWN
5075   000206   012700   000420             MOV     #STABLE,R0
5076   000212   005040                2$:    CLR     -(R0)           ;START CLEANING THE STACK
5077   000214   020027   000400             CMP     R0,#$MAIL       ;FOR INITIALIZATION
5078   000220   101374                       BHI     2$
5079   000222   000167   000302             JMP     START
5080                               ;        -------------------------
5081
5082
5083            000530                      .=530
5084
5085   000530   012706   000530     START:  MOV     #START,SP       ; SET THE STACK POINTER
5086   000534   012705   000404             MOV     #$TESTN,R5      ; PLACE THE ADDRESS OF LOCATION $TESTN IN R5
5087   000540   005715                       TST     (R5)            ; CHECK THE SEQUENCE COUNTER
5088   000542   001401                       BEQ     NOBIT           ; IF THIS IS THE STARTING OF THE TEST THEN
5089                                                                ; GO TO NOBIT TEST
5090   000544   000000                       HALT                    ; OTHERWISE HALT AND WAIT FOR THE OPERATOR
5091                                                                ; TO START AT THE PROPER TEST NUMBER
5092
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5093                                    ;;*************************************************************************
 (2)                                    ;*TEST: 0       CHECK BRANCH INSTRUCTIONS WITH ZERO CONDITION CODES
 (3)                                    ;;*************************************************************************
5094
5095  000546                            NOBIT:
 (2)  000546  021527  000000                    CMP     (R5),#0
5096  000552  001017                            BNE     CC0             ; IF IN WRONG SEQUENCE GO TO HALT AT END OF THE TEST
5097  000554  005215                    1$:     INC     (R5)
5098  000556  000257                            CCC                     ; ZERO CONDITION CODES, NZVC=0000
5099  000560  103414                            BCS     CC0
5100  000562  102413                            BVS     CC0
5101  000564  001412                            BEQ     CC0
5102  000566  100411                            BMI     CC0
5103  000570  000260                            NOP1                    ; CHECK NOP1 INSTRUCTION I.E. OP-CODE 260
5104  000572  103407                            BCS     CC0
5105  000574  102406                            BVS     CC0
5106  000576  001405                            BEQ     CC0
5107  000600  100404                            BMI     CC0
5108  000602  002403                            BLT     CC0
5109  000604  003402                            BLE     CC0
5110  000606  101401                            BLOS    CC0
5111  000610  101004                            BHI     ENDCC0
5112  000612                            CC0:
 (2)  000612  012745  000001                    MOV     #1,-(R5)
 (2)  000616  005245                            INC     -(R5)
 (2)  000620  000000                            HALT                    ; ONE OF THE ABOVE BRANCHES FAILED OR WRONG SEQUENCE
5113  000622  102000                    ENDCC0: BVC     NBIT
5114
5115
5116                                    ;;*************************************************************************
 (2)                                    ;*TEST: 1       CHECK BRANCH INSRUCTIONS WITH N BIT SET
 (3)                                    ;;*************************************************************************
5117
5118  000624                            NBIT:
 (2)  000624  021527  000001                    CMP     (R5),#1
5119  000630  001012                            BNE     CC1             ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THETEST
5120  000632  005215                    1$:     INC     (R5)
5121  000634  000270                            SEN                     ; NBIT IS SET, NZVC=1000
5122  000636  100007                            BPL     CC1
5123  000640  001406                            BEQ     CC1
5124  000642  002005                            BGE     CC1
5125  000644  003004                            BGT     CC1
5126  000646  103403                            BCS     CC1
5127  000650  101402                            BLOS    CC1
5128  000652  103401                            BLO     CC1
5129  000654  003404                            BLE     ENDCC1
5130  000656                            CC1:
 (2)  000656  012745  000002                    MOV     #2,-(R5)
 (2)  000662  005245                            INC     -(R5)
 (2)  000664  000000                            HALT                    ; ONE OF THE ABOVE BRANCHES FAILED OR WRONG SEQUENCE
5131  000666  001000                    ENDCC1: BNE     VBIT
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                                ;;*******************************************************************************
                                ;*TEST: 2       CHECK BRANCH INSRUCTIONS WITH N&V BITS SET
                                ;;*******************************************************************************

000670                          VBIT:
000670  021527  000002                CMP     (R5),#2
000674  001014                        BNE     CC2             ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
000676  005215                1$:     INC     (R5)
000700  000270                        SEN
000702  000262                        SEV                     ; V AND N BIT SET, NZVC = 1010
000704  102010                        BVC     CC2
000706  001407                        BEQ     CC2
000710  100006                        BPL     CC2
000712  103405                        BCS     CC2
000714  002404                        BLT     CC2
000716  003403                        BLE     CC2
000720  101402                        BLOS    CC2
000722  103401                        BLO     CC2
000724  003004                        BGT     ENDCC2
000726                          CC2:
000726  012745  000003                MOV     #3,-(R5)
000732  005245                        INC     -(R5)
000734  000000                        HALT                    ; ONE OF THE ABOVE BRANCHES FAILED OR WRONG SEQUENCE
000736  002000                ENDCC2: BGE     CBIT
                                ;;*******************************************************************************
                                ;*TEST: 3       CHECK BRANCH INSRUCTIONS WITH N,V&C BITS SET
                                ;;*******************************************************************************

000740                          CBIT:
000740  021527  000003                CMP     (R5),#3
000744  001013                        BNE     CC3             ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
000746  005215                1$:     INC     (R5)
000750  000270                        SEN
000752  000262                        SEV
000754  000261                        SEC                     ; C, V, AND N BITS ARE SET, NZVC=1011
000756  001406                        BEQ     CC3
000760  100005                        BPL     CC3
000762  102004                        BVC     CC3
000764  002403                        BLT     CC3
000766  003402                        BLE     CC3
000770  101001                        BHI     CC3
000772  002004                        BGE     ZBIT
000774                          CC3:
000774  012745  000004                MOV     #4,-(R5)
001000  005245                        INC     -(R5)
001002  000000                        HALT                    ; ONE OF THE ABOVE BRANCHES FAILED
                                                                ; OR WRONG SEQUENCE
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5169                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 4       CHECK BRANCH INSRUCTIONS WITH N,Z,V&C BITS SET
 (3)                                    ;;*******************************************************************************
5170
5171  001004                            ZBIT:
 (2)  001004  021527  000004                    CMP     (R5),#4
5172  001010  001015                            BNE     CC4             ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
5173  001012  005215                            INC     (R5)
5174  001014  000270                            SEN
5175  001016  000262                            SEV
5176  001020  000261                            SEC
5177  001022  000264                            SEZ                     ; ALL BITS SET, NZVC=1111
5178  001024  001007                            BNE     CC4
5179  001026  100006                            BPL     CC4
5180  001030  102005                            BVC     CC4
5181  001032  103004                            BCC     CC4
5182  001034  002403                            BLT     CC4
5183  001036  003002                            BGT     CC4
5184  001040  101001                            BHI     CC4
5185  001042  001404                            BEQ     YESCC
5186  001044                            CC4:
 (2)  001044  012745  000005                    MOV     #5,-(R5)
 (2)  001050  005245                            INC     -(R5)
 (2)  001052  000000                            HALT                    ; ONE OF THE ABOVE BRANCHES FAILED
5187                                                                    ; OR WRONG SEQUENCE
5188
5189
5190                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 5       CHECK BRANCH INSRUCTIONS WITH ALL THE CONDITION CODES SET
 (3)                                    ;;*******************************************************************************
5191
5192  001054                            YESCC:
 (2)  001054  021527  000005                    CMP     (R5),#5
5193  001060  001014                            BNE     CC6             ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
5194  001062  005215                            INC     (R5)
5195  001064  000277                            SCC                     ; NZVC=1111
5196  001066  100011                            BPL     CC6
5197  001070  001010                            BNE     CC6
5198  001072  102007                            BVC     CC6
5199  001074  103006                            BCC     CC6
5200  001076  000240                            NOP                     ; CHECK NOP INSTRUCTION
5201  001100  100004                            BPL     CC6
5202  001102  001003                            BNE     CC6
5203  001104  102002                            BVC     CC6
5204  001106  103001                            BCC     CC6
5205  001110  101404                            BLOS    NOTCC
5206  001112                            CC6:
 (2)  001112  012745  000006                    MOV     #6,-(R5)
 (2)  001116  005245                            INC     -(R5)
 (2)  001120  000000                            HALT                    ; SCC OR A BRANCH FAILED, OR WRONG SEQUENCE
```

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5207                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 6       CLEAR THE CONDITION CODES
 (3)                                    ;;*******************************************************************************
5208
5209  001122                            NOTCC:
 (2)  001122  021527  000006                    CMP     (R5),#6
5210  001126  001013                            BNE     CC5             ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
5211  001130  005215                            INC     (R5)
5212  001132  000277                            SCC                     ; NZVC=1111
5213  001134  000241                            CLC                     ; NZVC=1110
5214  001136  103407                            BCS     CC5
5215  001140  000242                            CLV                     ; NZVC=1100
5216  001142  102405                            BVS     CC5
5217  001144  000244                            CLZ                     ; NZVC=1000
5218  001146  001403                            BEQ     CC5
5219  001150  000250                            CLN                     ; NZVC=0000
5220  001152  100401                            BMI     CC5
5221  001154  101004                            BHI     ENDCC5
5222  001156                            CC5:
 (2)  001156  012745  000007                    MOV     #7,-(R5)
 (2)  001162  005245                            INC     -(R5)
 (2)  001164  000000                            HALT                    ; ONE OF THE ABOVE CLEARS FAILED OR WRONG SEQUENCE
5223  001166  100000                    ENDCC5: BPL     BRANCH
5224
5225
5226
5227                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 7       CHECK FORWARD AND BACKWARD BRANCHES.
 (3)                                    ;;*******************************************************************************
5228
5229  001170                            BRANCH:
 (2)  001170  021527  000007                    CMP     (R5),#7
5230  001174  001404                            BEQ     1$              ; IF IN WRONG SEQUENCE GO TO HLT
5231  001176  012745  000010                    MOV     #10,-(R5)
 (2)  001202  005245                            INC     -(R5)
 (2)  001204  000000                            HALT
5232  001206  005215                    1$:     INC     (R5)
5233  001210  000416                            BR      4$              ; CHECK BRANCH FORWARD AND BACKWARD
5234  001212  012745  000011                    MOV     #11,-(R5)
 (2)  001216  005245                            INC     -(R5)
 (2)  001220  000000                            HALT                    ; FORWARD BRANCH FAILED
5235  001222  000404                    2$:     BR      3$
5236  001224  012745  000012                    MOV     #12,-(R5)
 (2)  001230  005245                            INC     -(R5)
 (2)  001232  000000                            HALT                    ; FORWARD BRANCH FAILED
5237  001234  000411                    3$:     BR      5$
5238  001236  012745  000013                    MOV     #13,-(R5)
 (2)  001242  005245                            INC     -(R5)
 (2)  001244  000000                            HALT                    ; FORWARD BRANCH FAILED
5239  001246  000765                    4$:     BR      2$
5240  001250  012745  000014                    MOV     #14,-(R5)
 (2)  001254  005245                            INC     -(R5)
 (2)  001256  000000                            HALT                    ; BACKWARD BRANCH FAILED
5241  001260  000400                    5$:     BR      JMP1
```

```
                                ;;*******************************************************************************
                                ;*TEST: 10      CHECK JMP INSTRUCTIONS FOR MODE 1
                                ;;*******************************************************************************

                                JMP1:
001262                                  CMP     (R5),#10
001262  021527  000010                  BNE     ENDJP1          ; IF IN WRONG SEQUENCE GO TO HALT AT THE END OF THE TEST
001266  001033                  1$:     INC     (R5)
001270  005215                  MOV     #2$,R0          ; TEST JUMP INSTRUCTION MODE 1
001272  012700  001312          SCC
001276  000277                  JMP     (R0)
001300  000110                  MOV     #15,-(R5
001302  012745  000015          INC     -(R5)
001306  005245                  HALT                    ; JUMP INSTRUCTION FAILED
001310  000000
001312                          2$:
001312  100003                  BPL     3$
001314  001002                  BNE     3$
001316  102001                  BVC     3$
001320  103404                  BCS     4$
001322                          3$:
001322  012745  000016          MOV     #16,-(R5)
001326  005245                  INC     -(R5)
001330  000000                  HALT                    ; WRONG CC
001332  020027  001312          4$:     CMP     R0,#2$
001336  001404                  BEQ     5$              ; CONTINUE IF R0 IS OK
001340  012745  000017          MOV     #17,-(R5)
001344  005245                  INC     -(R5)
001346  000000                  HALT
001350  012700  001366          5$:     MOV     #JMP2,R0        ; TEST JUMP INSTRUCTION MODE 1
001354  000110                  JMP     (R0)
001356                          ENDJP1:
001356  012745  000020          MOV     #20,-(R5)
001362  005245                  INC     -(R5)
001364  000000                  HALT                    ; JUMP INSTRUCTION FAILED OR WRONG SEQUENCE


                                ;;*******************************************************************************
                                ;*TEST: 11      CHECK JMP INSTRUCTIONS FOR MODES 2 AND 3
                                ;;*******************************************************************************

001366                          JMP2:
001366  021527  000011          CMP     (R5),#11
001372  001073                  BNE     ENDJP3          ; IF IN WRONG SEQUENCE GO TO HALT AT THE END OF TEST
001374  005215                  INC     (R5)
001376  012700  001416          MOV     #3$,R0          ; TEST JUMP INSTRUCTION MODE 2
001402  000277                  SCC
001404  000120                  JMP     (R0)+
001406  012745  000021          MOV     #21,-(R5)
001412  005245                  INC     -(R5)
001414  000000                  HALT                    ; JUMP INSTRUCTION FAILED
001416                          3$:
001416  100003                  BPL     4$
001420  001002                  BNE     4$
001422  102001                  BVC     4$
001424  103404                  BCS     5$
001426                          4$:
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   (3) 001426 012745 000022            MOV     #22,-(R5)
   (3) 001432 005245                   INC     -(R5)
   (3) 001434 000000                   HALT                        ; WRONG CC
5270   001436 020027 001420      5$:    CMP     R0,#3$+2            ; IS THERE AUTO INC.?
5271   001442 001404                    BEQ     6$
5272   001444 012745 000023              MOV     #23,-(R5)
   (2) 001450 005245                   INC     -(R5)
   (2) 001452 000000                   HALT                        ; MODE 2 FAILED FOR JMP INSTRUCTION
5275   001454 012700 001472      6$:    MOV     #JMP3,R0            ; TEST JUMP INSTRUCTION MODE 2
5276   001460 000120                    JMP     (R0)+
5277   001462 012745 000024              MOV     #24,-(R5)
   (2) 001466 005245                   INC     -(R5)
   (2) 001470 000000                   HALT                        ; JUMP INSTRUCTION FAILED
5280
5281   001472 012767 001526 176740 JMP3:  MOV     #3$,TEMP            ; TEST JUMP INSTRUCTION MODE 3
5282   001500 012767 001546 176734       MOV     #4$,TEMP+2          ;
5283   001506 012700 000440              MOV     #TEMP,R0
5284   001512 000277                     SCC
5285   001514 000130                     JMP     @(R0)+              ;
5286   001516 012745 000025              MOV     #25,-(R5)
   (2) 001522 005245                   INC     -(R5)
   (2) 001524 000000                   HALT                        ; JUMP INSTRUCTION FAILED
5287   001526 027067 000000 000012 3$:    CMP     @(R0),4$            ; IS THERE AUTO INC.?
5288   001534 001404                     BEQ     4$
5289   001536 012745 000026              MOV     #26,-(R5)
   (2) 001542 005245                   INC     -(R5)
   (2) 001544 000000                   HALT                        ; JMP INSTRUCTION FAILED IN MODE 2
5292   001546 012767 001572 176664 4$:    MOV     #JMP4,TEMP          ; TEST JUMP INSTRUCTION MODE 3
5293   001554 012700 000440              MOV     #TEMP,R0
5294   001560 000130                     JMP     @(R0)+
5295   001562                      ENDJP3:
   (2) 001562 012745 000027              MOV     #27,-(R5)
   (2) 001566 005245                   INC     -(R5)
   (2) 001570 000000                   HALT                        ; JUMP ERROR OR WRONG SEQUENCE
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                                          ;;*****************************************************************
                                          ;*TEST: 12      TEST JUMP INSTRUCTION FOR MODE 4, 5
                                          ;;*****************************************************************

001572                                    JMP4:
001572  021527  000012                            CMP     (R5),#12
001576  001075                                    BNE     ENDJP5          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
001600  005215                                    INC     (R5)
001602  012700  001624                            MOV     #3$,R0          ; TEST JUMP INSTRUCTION MODE 4
001606  000277                                    SCC
001610  000140                                    JMP     -(R0)
001612  012745  000030                            MOV     #30,-(R5)
001616  005245                                    INC     -(R5)
001620  000000                                    HALT                    ; JUMP INSTRUCTION FAILED
001622  000404                                    BR      4$              ; JUMP SHOULD LAND HERE
001624                                    3$:
001624  012745  000031                            MOV     #31,-(R5)
001630  005245                                    INC     -(R5)
001632  000000                                    HALT                    ; NO AUTO DECREMENT FROM JMP4
001634  022700  001622                    4$:     CMP     #3$-2,R0        ; CHECK R0
001640  001404                                    BEQ     5$
001642  012745  000032                            MOV     #32,-(R5)
001646  005245                                    INC     -(R5)
001650  000000                                    HALT
001652  012700  001672                    5$:     MOV     #JMP5+2,R0      ; TEST JUMP INSTRUCTION MODE 4
001656  000140                                    JMP     -(R0)
001660  012745  000033                            MOV     #33,-(R5)
001664  005245                                    INC     -(R5)
001666  000000                                    HALT                    ; JUMP INSTRUCTION FAILED

001670  012767  001722  176544            JMP5:   MOV     #3$,TEMP1       ; TEST JUMP INSTRUCTION MODE 5
001676  012700  000442                            MOV     #TEMP1,R0
001702  012767  001732  176530                    MOV     #4$,TEMP1-2     ;
001710  000150                                    JMP     @-(R0)
001712  012745  000034                            MOV     #34,-(R5)
001716  005245                                    INC     -(R5)
001720  000000                                    HALT                    ; JUMP INSTRUCTION FAILED
001722                                    3$:
001722  012745  000035                            MOV     #35,-(R5)
001726  005245                                    INC     -(R5)
001730  000000                                    HALT                    ; ERROR, NO AUTO DECREMENT
001732  022700  000440                    4$:     CMP     #TEMP1-2,R0     ; CHECK R0
001736  001404                                    BEQ     5$
001740  012745  000036                            MOV     #36,-(R5)
001744  005245                                    INC     -(R5)
001746  000000                                    HALT                    ; JUMP ONSTRUCTION FAILED IN MODE 5
001750  012767  001722  176464            5$:     MOV     #3$,TEMP1       ; TEST JUMP INSTRUCTION MODE 5
001756  012700  000442                            MOV     #TEMP1,R0
001762  012767  002002  176450                    MOV     #JMP6,TEMP1-2   ;
001770  000150                                    JMP     @-(R0)
001772                                    ENDJP5:
001772  012745  000037                            MOV     #37,-(R5)
001776  005245                                    INC     -(R5)
002000  000000                                    HALT                    ; JUMP ERROR OR WRONG SEQUENCE

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

```
                                ;*TEST: 13      TEST JMP INSTRUCTION FOR MODE 6 AND 7
                                ;;*****************************************************************************
                                JMP6:
002002  021527  000013                  CMP     (R5),#13
002006  001071                          BNE     ENDJP7          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
002010  005215                          INC     (R5)
002012  012703  002040                  MOV     #1$+6,R3
002016  000163  177772                  JMP     -6(R3)
002022  012745  000040                  MOV     #40,-(R5)
002026  005245                          INC     -(R5)
002030  000000                          HALT                    ; JUMP INSTRUCTION FAILED
002032  020327  002040          1$:     CMP     R3,#1$+6        ; CHECK R3
002036  001404                          BEQ     2$
002040  012745  000041                  MOV     #41,-(R5)
002044  005245                          INC     -(R5)
002046  000000                          HALT                    ; WRONG VALUE IN REGISTER AFTER JUMP MODE 6
                                                                ; OR JUMP INSTRUCTION FAILED IN MODE 6
002050  000167  000010          2$:     JMP     3$-.-4(PC)      ; TEST JUMP INSTRUCTION MODE 6
002054  012745  000042                  MOV     #42,-(R5)
002060  005245                          INC     -(R5)
002062  000000                          HALT                    ; JUMP INSTRUCTION FAILED
002064  012703  002104          3$:     MOV     #JMP7,R3        ; JUMP SHOULD LAND HERE
002070  000163  000000                  JMP     0(R3)
002074  012745  000043                  MOV     #43,-(R5)
002100  005245                          INC     -(R5)
002102  000000                          HALT                    ; JUMP INSTRUCTION FAILED

002104  012703  000440          JMP7:   MOV     #TEMP,R3
002110  012713  002130                  MOV     #1$,(R3)
002114  000173  000000                  JMP     @(R3)
002120  012745  000044                  MOV     #44,-(R5)
002124  005245                          INC     -(R5)
002126  000000                          HALT                    ; JUMP INSTRUCTION FAILED
002130  012713  002154          1$:     MOV     #3$,(R3)        ; TEST JUMP INSTRUCTION MODE 7
002134  012700  000434                  MOV     #TEMP-4,R0
002140  000170  000004                  JMP     @4(R0)
002144  012745  000045                  MOV     #45,-(R5)
002150  005245                          INC     -(R5)
002152  000000                          HALT                    ; JUMP INSTRUCTION FAILED
002154  012767  002202  176256  3$:     MOV     #JSRTST,TEMP    ; CONTINUE
002162  012700  000440                  MOV     #TEMP,R0
002166  000170  000000                  JMP     @0(R0)
002172                          ENDJP7:
002172  012745  000046                  MOV     #46,-(R5)
002176  005245                          INC     -(R5)
002200  000000                          HALT                    ; JUMP ERROR OR SEQUENCE ERROR
```

```
                                ;;*******************************************************************************
                                ;*TEST: 14      CHECK JSR AND MARK INSTRUCTIONS
                                ;;*******************************************************************************

                                JSRTST:
                                        CMP     (R5),#14
                                        BNE     ENDJSR          ; IF IN WRONG SEQUENCE GO TO HALT AT THE END OF THE TEST
                                        INC     (R5)
                                        MOV     #START,SP       ; SET UP STACK POINTER.
                                        SCC
                                        JSR     PC,3$
                                1$:
                                        MOV     #47,-(R5)
                                        INC     -(R5)
                                        HALT                    ; JSR INSTRUCTION FAILED
                                2$:     CMP     #START,SP       ; HAS SP BEEN RESTORED?
                                        BEQ     JSRM
                                        MOV     #50,-(R5)
                                        INC     -(R5)
                                        HALT                    ; SP WAS NOT RESTORED BY RTS INSTRUCTION
                                3$:
                                        BPL     4$
                                        BNE     4$
                                        BVC     4$
                                        BCS     5$
                                4$:
                                        MOV     #51,-(R5)
                                        INC     -(R5)
                                        HALT                    ; WRONG CC
                                5$:     CMP     #START-2,SP     ; WAS THE SP EFFECTED?
                                        BEQ     6$
                                        MOV     #52,-(R5)
                                        INC     -(R5)
                                        HALT                    ; WRONG SP AFTER EXECUTION OF JSR INSTRUCTION
                                6$:     CMP     #1$,(SP)        ; IS THE RETURN ADDRESS =1$
                                        BEQ     7$
                                        MOV     #53,-(R5)
                                        INC     -(R5)
                                        HALT                    ; SP DID NOT HAVE CORRECT RETURN ADDRESS
                                                                ; AFTER EXECUTION OF JSR INSTRUCTION
                                7$:     MOV     #2$,(SP)        ; SET 2$ AS THE RETURN ADDRESS
                                        RTS     PC
                                        MOV     #54,-(R5)
                                        INC     -(R5)
                                        HALT                    ; RTS INSTRUCTION FAILED
                                JSRM:   MOV     R5,-(SP)        ; MOV R5 TO STACK
                                        MOV     DUMMY,-(SP)
                                        MOV     DUMMY,-(SP)
                                        MOV     MARK2,-(SP)     ; STORE MARK 2 ON THE STACK.
                                        MOV     R5,R3           ; SAVE R5 IN R3
                                        JSR     R4,10$
                                1$:
                                        MOV     #55,-(R5)
                                        INC     -(R5)
                                        HALT                    ; JSR INSTRUCTION FAILED
                                2$:
```

```
    (1)  002400  100003                        BPL     3$
    (1)  002402  001002                        BNE     3$
    (1)  002404  102001                        BVC     3$
    (1)  002406  103404                        BCS     4$
    (2)  002410                          3$:
    (3)  002410  012743  000056                MOV     #56.,-(R3)
    (3)  002414  005243                        INC     -(R3)
    (3)  002416  000000                        HALT                    ; WRONG CC
 5384    002420  022705  000404          4$:   CMP     #$TESTN,R5
 5385    002424  001404                        BEQ     5$
 5386    002426  012743  000057                MOV     #57.,-(R3)
    (3)  002432  005243                        INC     -(R3)
    (3)  002434  000000                        HALT                    ; MARK INSRUCTION FAILED
 5387    002436  022706  000530          5$:   CMP     #START,SP
 5388    002442  001404                        BEQ     6$
 5389    002444  012745  000060                MOV     #60.,-(R5)
    (2)  002450  005245                        INC     -(R5)
    (2)  002452  000000                        HALT                    ; MARK INSTRUCTION FAILED
 5390    002454  012701  002562          6$:   MOV     #12$,R1           ; PLACE THE ADDRESS OF 12$ IN R1
 5391    002460  004011                        JSR     R0,(R1)           ; GO TO TAG 12$
 5392    002462                          7$:
    (2)  002462  012745  000061                MOV     #61.,-(R5)
    (2)  002466  005245                        INC     -(R5)
    (2)  002470  000000                        HALT                    ; JSR INSTRUCTION FAILED
 5393    002472  012745  000062                MOV     #62.,-(R5)
    (2)  002476  005245                        INC     -(R5)
    (2)  002500  000000                        HALT                    ; RTS BROUGHT THE PROGRAM BACK IN WRONG
 5394                                           ; PLACE
 5395    002502  022706  000530          8$:   CMP     #START,SP
 5396    002506  001443                        BEQ     REGS
 5397    002510  012745  000063                MOV     #63.,-(R5)
    (2)  002514  005245                        INC     -(R5)
    (2)  002516  000000                        HALT                    ; STACK POINTER WAS NOT RESET
 5398
 5399    002520  020427  002370          10$:  CMP     R4,#1$            ; IS THE RETURN ADDRESS =1$ ?
 5400    002524  001404                        BEQ     11$
 5401    002526  012745  000064                MOV     #64.,-(R5)
    (2)  002532  005245                        INC     -(R5)
    (2)  002534  000000                        HALT                    ; WRONG RETURN ADDRESS IN UNKAGE REGISTER R4
 5402    002536  010605                  11$:  MOV     SP,R5
 5403    002540  005725                        TST     (R5)+             ; SET UP ADDRESS IN R5 AT MARK 2 INSTRUCTION
 5404    002542  012716  002400                MOV     #2$,(SP)          ; SET RETURN ADDRESS =2$
 5405    002546  000277                        SCC
 5406    002550  000205                        RTS     R5                ; RETURN USING R5 AND IN-TURN USING MARK INSTRUCTION
 5407    002552  012745  000065                MOV     #65.,-(R5)
    (2)  002556  005245                        INC     -(R5)
    (2)  002560  000000                        HALT                    ; RTS INSTRUCTION FAILED
 5408
 5409    002562  020027  002462          12$:  CMP     R0,#7$            ; DOES R0 CONTAIN THE RETURN ADDRESS?
 5410
 5411    002566  001404                        BEQ     13$
 5412    002570  012745  000066                MOV     #66.,-(R5)
    (2)  002574  005245                        INC     -(R5)
    (2)  002576  000000                        HALT                    ; WRONG RETURN ADDRESS IN LINKAGE REGISTER R0
 5413    002600  012700  002502          13$:  MOV     #8$,R0            ; SET RETURN ADDRESS AT 8$
 5414    002604  000200                        RTS     R0
```

```
                                ENDJSR:
002606                                  MOV     #67,-(R5)
(2) 002606  012745  000067              INC     -(R5)
(2) 002612  005245                      HALT                    ; RTS INSTRUCTION FAILED OR SEQUENCE ERROR
(2) 002614  000000
                                ;;**********************************************************************
                                ;*TEST: 15       CHECK REGISTER SELECTION
                                ;;**********************************************************************
                                REGS:
002616                                  CMP     (R5),#15
(2) 002616  021527  000015              BNE     EREGS           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
5420 002622  001034                     INC     (R5)
5421 002624  005215                     MOV     R6,TEMP         ; SAVE THE STACK POINTER
5422 002626  010667  175606             MOV     #1,R0           ; LOAD THE REGISTERS
5423 002632  012700  000001             MOV     #4,R1           ;
5424 002636  012701  000004             MOV     #20,R2          ;
5425 002642  012702  000020             MOV     #100,R3         ;
5426 002646  012703  000100             MOV     #400,R4         ;
5427 002652  012704  000400             CLR     R6              ;
5428 002656  005006                     ADD     R0,R6           ; ADD UP THE REGISTERS
5429 002660  060006                     ADD     R1,R6           ;
5430 002662  060106                     ADD     R2,R6           ;
5431 002664  060206                     ADD     R3,R6           ;
5432 002666  060306                     ADD     R4,R6           ;
5433 002670  060406                     ADD     R5,R6           ;
5434 002672  060506                     CMP     #$TESTN+525,R6  ; CHECK IT
5435 002674  022706  001131             BNE     1$              ; FAILED
5436 002700  001003                     MOV     TEMP,R6         ; RESTORE STACK POINTER
5437 002702  016706  175532             BR      TSTB0           ; CONTINUE
5438 002706  000406                     MOV     TEMP,R6         ; RESTORE STACK POINTER
5439 002710  016706  175524     1$:     EREGS:
5440 002714                             MOV     #70,-(R5)
(2) 002714  012745  00007C              INC     -(R5)
(2) 002720  005245                      HALT                    ; REGISTER SELECTION FAILURE OR SEQUENCE ERROR
(2) 002722  000000
```

```
                                ;       CHECK BYTE INSTRUCTIONS, DESTINATION MODE 0 ONLY
                                ;       ------------------------------------------------

                                ;;*****************************************************************************
                                ;*TEST: 16      NEW INSTRUCTIONS USED IN THIS SECTION ARE TSTB, CLRB, MOVB
                                ;;*****************************************************************************

002724                          TSTB0:
002724  021527  000016                  CMP     (R5),#16
002730  001404                          BEQ     2$                      ; IF IN WRONG SEQUENCE GO TO HLT BELOW
002732  012745  000071                  MOV     #71,-(R5)
002736  005245                          INC     -(R5)
002740  000000                          HALT                            ; PROGRAM IS IN WRONG SEQUENCE
002742  005215                  2$:     INC     (R5)
002744  000277                          SCC
002746  105000                          CLRB    R0                      ; CLEAR THE REGISTER
002750  004737  017164                  JSR     PC,@#$CC4               ; CHECK FOR CC = 4
002754  105700                          TSTB    R0                      ; CHECK IT
002756  004737  017164                  JSR     PC,@#$CC4               ; CHECK FOR CC = 4
002762  112701  000377                  MOVB    #377,R1                 ; LOAD THE REGISTER
002766  004737  017252                  JSR     PC,@#$CC10              ; CHECK FOR CC = 10
002772  105701                          TSTB    R1                      ; CHECK IT
002774  004737  017252                  JSR     PC,@#$CC10              ; CHECK FOR CC = 10


                                ;;*****************************************************************************
                                ;*TEST: 17      NEW INSTRUCTIONS USED IN THIS SECTION ARE CMPB, BISB
                                ;;*****************************************************************************

003000                          CMPB0:
003000  021527  000017                  CMP     (R5),#17
003004  001027                          BNE     ECMPB0                  ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
003006  005215                  1$:     INC     (R5)
003010  000277                          SCC
003012  152702  000377                  BISB    #377,R2                 ; LOAD REGISTER
003016  004737  017272                  JSR     PC,@#$CC11              ; CHECK FOR CC = 11
003022  122702  000377                  CMPB    #377,R2                 ; CHECK COMPARE
003026  001404                          BEQ     2$                      ; CONTINUE IF OK
003030  012745  000072                  MOV     #72,-(R5)
003034  005245                          INC     -(R5)
003036  000000                          HALT                            ; BISB OR CMPB INSTRUCTION FAILED
003040  112700  000077          2$:     MOVB    #77,R0
003044  120002                          CMPB    R0,R2                   ; CHECK IT AGAIN
003046  100004                          BPL     3$                      ; CONTINUE IF OK
003050  012745  000073                  MOV     #73,-(R5)
003054  005245                          INC     -(R5)
003056  000000                          HALT                            ; CMPB INSTRUCTION FAILED [WRONG CC]
003060  120200                  3$:     CMPB    R2,R0                   ; ONCE MORE
003062  100404                          BMI     BICB0                   ; CONTINUE IF OK
003064                          ECMPB0:
003064  012745  000074                  MOV     #74,-(R5)
003070  005245                          INC     -(R5)
003072  000000                          HALT                            ; WRONG CC OR WRONG SEQUENCE
```

```
5485                                    ;;*************************************************************************
 (2)                                    ;*TEST: 20      NEW INSTRUCTIONS USED IN THIS SECTION ARE BICB, BITB
 (3)                                    ;;*************************************************************************
5486
5487  003074                            BICB0:
 (2)  003074  021527  000020                    CMP     (R5),#20
5488  003100  001404                           BEQ     2$                      ; IF IN WRONG SEQUENCE GO TO HLT BELOW
5489  003102  012745  000075                   MOV     #75,-(R5)
 (2)  003106  005245                           INC     -(R5)
 (2)  003110  000000                           HALT                            ; PROGRAM IS IN WRONG SEQUENCE
5490  003112  005215                    2$:    INC     (R5)
5491  003114  112703  000377                   MOVB    #377,R3                 ; LOAD REGISTER
5492  003120  112700  000252                   MOVB    #252,R0                 ; PLACE #252 IN R0
5493  003124  000277                           SCC
5494  003126  140003                           BICB    R0,R3                   ; CLEAR EVERY OTHER BIT
5495  003130  004737  017102                   JSR     PC,@#$CC1               ; CHECK FOR CC = 1
5496  003134  130003                           BITB    R0,R3                   ; CHECK IT
5497  003136  001404                           BEQ     4$                      ; CONTINUE IF OK
5498  003140  012745  000076                   MOV     #76,-(R5)
 (2)  003144  005245                           INC     -(R5)
 (2)  003146  000000                           HALT                            ; BICB OR BITB INSTRUCTION FAILED
5499  003150  132703  000125            4$:    BITB    #125,R3                 ; CHECK IT
5500  003154  004737  017102                   JSR     PC,@#$CC1               ; CHECK FOR CC = 1
5501  003160  150003                           BISB    R0,R3                   ; SET THE BITS THAT WERE CLEARED
5502  003162  100404                           BMI     6$
5503  003164  012745  000077                   MOV     #77,-(R5)
 (2)  003170  005245                           INC     -(R5)
 (2)  003172  000000                           HALT                            ; BISB INSTRUCTION FAILED
5504  003174  142703  000177            6$:    BICB    #177,R3                 ; CLEAR ALL THE BITS EXCEPT FOR SIGN
5505  003200  004737  017272                   JSR     PC,@#$CC11              ; CHECK FOR CC = 11
5506  003204  132703  000377                   BITB    #377,R3                 ; CHECK IT
5507  003210  004737  017272                   JSR     PC,@#$CC11              ; CHECK FOR CC = 11
5508
5509
5510
5511                                    ;;*************************************************************************
 (2)                                    ;*TEST: 21      NEW INSTRUCTIONS USED IN THIS SECTION ARE INCB, DECB
 (3)                                    ;;*************************************************************************
5512
5513  003214                            INCB0:
 (2)  003214  021527  000021                    CMP     (R5),#21
5514  003220  001404                           BEQ     1$                      ; IF IN WRONG SEQUENCE GO TO HLT
5515  003222  012745  000100                   MOV     #100,-(R5)
 (2)  003226  005245                           INC     -(R5)
 (2)  003230  000000                           HALT                            ; PROGRAM IS IN WRONG SEQUENCE
5516  003232  005215                    1$:    INC     (R5)
5517  003234  112704  000177                   MOVB    #177,R4                 ; R4 = 177
5518  003240  000261                           SEC
5519  003242  105204                           INCB    R4                      ; ADD ONES INTO REG. 4
5520  003244  004737  017334                   JSR     PC,@#$CC13              ; CHECK FOR CC = 13
5521  003250  112704  000376                   MOVB    #376,R4
5522  003254  105204                           INCB    R4
5523  003256  004737  017272                   JSR     PC,@#$CC11              ; CHECK FOR CC = 11
5524  003262  105204                           INCB    R4
5525  003264  004737  017206                   JSR     PC,@#$CC5               ; CHECK FOR CC = 5
5526  003270  105204                           INCB    R4
```

K02


```
 5527  003272  004737  017102                    JSR     PC,@#$CC1       ; CHECK FOR CC = 1
 5528  003276  122704  000001                    CMPB    #1,R4           ; CHECK IT
 5529  003302  001404                            BEQ     2$              ; CONTINUE IF OK
 5530  003304  012745  000101                    MOV     #101,-(R5)
   (2) 003310  005245                            INC     -(R5)
   (2) 003312  000000                            HALT                    ; INCB INSTRUCTION FAILED
 5531  003314  000261                 2$:        SEC
 5532  003316  105304                            DECB    R4              ; SUBTRACT ONES FROM REG. 4
 5533  003320  004737  017206                    JSR     PC,@#$CC5       ; CHECK FOR CC = 5
 5534  003324  105304                            DECB    R4
 5535  003326  004737  017272                    JSR     PC,@#$CC11      ; CHECK FOR CC = 11
 5536  003332  012704  000200                    MOV     #200,R4
 5537  003336  105304                            DECB    R4
 5538  003340  004737  017142                    JSR     PC,@#$CC3       ; CHECK FOR CC = 3
 5539  003344  105304                            DECB    R4
 5540  003346  004737  017102                    JSR     PC,@#$CC1       ; CHECK FOR CC = 1
```

```
                                ;;*******************************************************************************
                                ;*TEST: 22      NEW INSTRUCTION IN THIS SECTION IS COMB
                                ;;*******************************************************************************

003352                          COMBO:
003352  021527  000022                  CMP     (R5),#22
003356  001404                          BEQ     1$              ; IF IN WRONG SEQUENCE GO TO HLT
003360  012745  000102                  MOV     #102,-(R5)
003364  005245                          INC     -(R5)
003366  000000                          HALT                    ; PROGRAM IS IN WRONG SEQUENCE
003370  005215                  1$:     INC     (R5)
003372  112703  000252                  MOVB    #252,R3         ; LOAD EVERY OTHER BIT
003376  000277                          SCC
003400  105103                          COMB    R3              ; 1'S COMPLEMENT
003402  004737  017102                  JSR     PC,@#$CC1       ; CHECK FOR CC = 1
003406  122703  000125                  CMPB    #125,R3         ; CHECK IT
003412  001404                          BEQ     2$              ; CONTINUE IF OK
003414  012745  000103                  MOV     #103,-(R5)
003420  005245                          INC     -(R5)
003422  000000                          HALT                    ; COMB INSTRUCTION FAILED
003424  000277                  2$:     SCC
003426  105103                          COMB    R3              ; COMPLEMENT BACK
003430  004737  017272                  JSR     PC,@#$CC11      ; CHECK FOR CC = 11
003434  122703  000252                  CMPB    #252,R3         ; CHECK IT
003440  001404                          BEQ     3$              ; CONTINUE IF OK
003442  012745  000104                  MOV     #104,-(R5)
003446  005245                          INC     -(R5)
003450  000000                          HALT                    ; COMB INSTRUCTION FAILED
003452  012703  000377          3$:     MOV     #377,R3
003456  000277                          SCC
003460  105103                          COMB    R3
003462  004737  017206                  JSR     PC,@#$CC5       ; CHECK FOR CC = 5


                                ;;*******************************************************************************
                                ;*TEST: 23      NEW INSTRUCTION IN THIS SECTION IS NEGB
                                ;;*******************************************************************************

003466                          NEGBO:
003466  021527  000023                  CMP     (R5),#23
003472  001025                          BNE     ENEGBO          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
003474  005215                  1$:     INC     (R5)
003476  112700  000001                  MOVB    #1,R0           ; LOAD THE REGISTER
003502  105400                          NEGB    R0              ; 2'S COMPLEMENT
003504  004737  017272                  JSR     PC,@#$CC11      ; CHECK FOR CC = 11
003510  122700  000377                  CMPB    #377,R0         ; CHECK IT
003514  001404                          BEQ     2$              ; CONTINUE IF OK
003516  012745  000105                  MOV     #105,-(R5)
003522  005245                          INC     -(R5)
003524  000000                          HALT                    ; NEGB INSTRUCTION FAILED
003526  012700  000200          2$:     MOV     #200,R0
003532  105400                          NEGB    R0              ; 2'S COMPLEMENT
003534  004737  017334                  JSR     PC,@#$CC13      ; CHECK FOR CC = 13
003540  122700  000200                  CMPB    #200,R0         ; CHECK IT
003544  001404                          BEQ     R0LB0           ; CONTINUE IF OK
```

M02


```
 5583  003546                          ENEGB0:
  .2)  003546  012745  000106                MOV     #106,-(R5)
  (2)  003552  005245                        INC     -(R5)
  .2)  003554  000000                        HALT                    ; WRONG RESULT IN R0 OR WRONG SEQUENCE
```

```
 5584                                   ;;*******************************************************************************
  (2)                                   ;*TEST: 24      NEW INSTRUCTION IN THIS SECTION IS ROLB
  (3)                                   ;;*******************************************************************************
 5585
 5586  003556                          ROLB0:
  (2)  003556  021527  000024                   CMP     (R5),#24
 5587  003562  001026                          BNE     EROLB0          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
 5588  003564  005215                          INC     (R5)
 5589  003566  112701  000040                  MOVB    #40,R1          ; LOAD REGISTER
 5590  003572  000257                          CCC                     ; CLEAR FLAGS
 5591  003574  106101                          ROLB    R1              ; SHIFT
 5592  003576  106101                          ROLB    R1              ;
 5593  003600  004737  017314                  JSR     PC,@#$CC12      ; CHECK FOR CC = 12
 5594  003604  122701  000200                  CMPB    #200,R1         ; CHECK IT
 5595  003610  001404                          BEQ     1$              ; CONTINUE IF OK
 5596  003612  012745  000107                  MOV     #107,-(R5,
  (2)  003616  005245                          INC     -(R5)
  (2)  003620  000000                          HALT                    ; ROLB INSTRUCTION FAILED
 5597  003622  106101                  1$:     ROLB    R1              ; SHIFT
 5598  003624  004737  017230                  JSR     PC,@#$CC7       ; CHECK FOR CC = 7
 5599  003630  106101                          ROLB    R1              ; SHIFT
 5600  003632  122701  000001                  CMPB    #1,R1           ; CHECK IT
 5601  003636  001404                          BEQ     RORB0           ; CONTINUE IF OK
 5602  003640                          EROLB0:
  (2)  003640  012745  000110                   MOV     #110,-(R5)
  (2)  003644  005245                          INC     -(R5)
  (2)  003646  000000                          HALT                    ; WRONG RESULT IN R1 OR WRONG SEQUENCE
 5603
 5604
 5605                                   ;;*******************************************************************************
  (2)                                   ;*TEST: 25      NEW INSTRUCTION IN THIS SECTION IS RORB
  (3)                                   ;;*******************************************************************************
 5606
 5607  003650                          RORB0:
  (2)  003650  021527  000025                   CMP     (R5),#25
 5608  003654  001026                          BNE     ERORB0          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
 5609  003656  005215                          INC     (R5)
 5610  003660  112702  000004                  MOVB    #4,R2           ; LOAD REGISTER
 5611  003664  000257                          CCC                     ; CLEAR FLAGS
 5612  003666  106002                          RORB    R2              ; SHIFT
 5613  003670  106002                          RORB    R2              ;
 5614  003672  122702  000001                  CMPB    #1,R2           ; CHECK IT
 5615  003676  001404                          BEQ     1$              ; CONTINUE IF OK
 5616  003700  012745  000111                  MOV     #111,-(R5)
  (2)  003704  005245                          INC     -(R5)
  (2)  003706  000000                          HALT                    ; RORB INSTRUCTION FAILED
 5617  003710  106002                  1$:     RORB    R2              ; SHIFT
 5618  003712  004737  017230                  JSR     PC,@#$CC7       ; CHECK FOR CC = 7
 5619  003716  106002                          RORB    R2              ; SHIFT
 5620  003720  004737  017314                  JSR     PC,@#$CC12      ; CHECK FOR CC = 12
 5621  003724  122702  000200                  CMPB    #200,R2         ; CHECK IT
 5622  003730  001404                          BEQ     ASLB0           ; CONTINUE IF OK
 5623  003732                          ERORB0:
  (2)  003732  012745  000112                   MOV     #112,-(R5)
  (2)  003736  005245                          INC     -(R5)
  (2)  003740  000000                          HALT
```

```
5624                                    ;;*****************************************************************************
 (2)                                    ;*TEST: 26      NEW INSTRUCTION IN THIS SECTION IS ASLB
 (3)                                    ;;*****************************************************************************
5625
5626  003742                            AS_B0:
      003742  021527  000026                    CMP     (R5),#26
5627  003746  001434                            BEQ     2$              ; IF IN WRONG SEQUENCE GO TO HLT BELOW
5628  003750  012745  000113                    MOV     #113,-(R5)
      003754  005245                            INC     -(R5)
      003756  000000                            HALT                    ; PROGRAM IS IN WRONG SEQUENCE
5629  003760  005215                    2$:     INC     (R5)
      003762  112703  000040                    MOVB    #40,R3          ; LOAD REGISTER
      003766  000257                            CCC                     ; CLEAR FLAGS
      003770  106303                            ASLB    R3              ; SHIFT
5633  003772  106303                            ASLB    R3              ;
5634  003774  004737  017314                    JSR     PC,@#$CC12      ; CHECK FOR CC = 12
5635  004000  122703  000200                    CMPB    #200,R3         ; CHECK IT
5636  004004  001404                            BEQ     4$              ; CONTINUE IF OK
5637  004006  012745  000114                    MOV     #114,-(R5)
 (2)  004012  005245                            INC     -(R5)
 (2)  004014  000000                            HALT                    ; ASLB INSTRUCTION FAILED
5638  004016  106303                    4$:     ASLB    R3              ; SHIFT
5639  004020  004737  017230                    JSR     PC,@#$CC7       ; CHECK FOR CC = 7
5640  004024  106303                            ASLB    R3              ; SHIFT
5641  004026  004737  017164                    JSR     PC,@#$CC4       ; CHECK FOR CC = 4
5642
5643                                    ;;*****************************************************************************
 (2)                                    ;*TEST: 27      NEW INSTRUCTION IN THIS SECTION IS ASRB
 (3)                                    ;;*****************************************************************************
5644
5645  004032                            ASRB0:
 (2)  004032  021527  000027                    CMP     (R5),#27
5646  004036  001034                            BNE     EASRB0          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
5647  004040  005215                    1$:     INC     (R5)
5648  004042  112704  000004                    MOVB    #4,R4           ; LOAD REGISTER
5649  004046  000257                            CCC                     ; CLEAR FLAGS
5650  004050  106204                            ASRB    R4              ; SHIFT
5651  004052  106204                            ASRB    R4              ;
5652  004054  122704  000001                    CMPB    #1,R4           ; CHECK IT
5653  004060  001404                            BEQ     2$              ; CONTINUE IF OK
5654  004062  012745  000115                    MOV     #115,-(R5)
 (2)  004066  005245                            INC     -(R5)
 (2)  004070  000000                            HALT                    ; ASRB INSTRUCTION FAILED
5655  004072  106204                    2$:     ASRB    R4              ; SHIFT
5656  004074  004737  017230                    JSR     PC,@#$CC7       ; CHECK FOR CC = 7
5657  004100  106204                            ASRB    R4              ; SHIFT
5658  004102  004737  017164                    JSR     PC,@#$CC4       ; CHECK FOR CC = 4
5659  004106  112703  000202                    MOVB    #202,R3         ; LOAD REGISTER
5660  004112  106203                            ASRB    R3              ; SHIFT
5661  004114  106203                            ASRB    R3              ;
5662  004116  004737  017272                    JSR     PC,@#$CC11      ; CHECK FOR CC = 11
5663  004122  122703  000340                    CMPB    #340,R3         ; CHECK IT
5664  004126  001404                            BEQ     ADCB0           ; CONTINUE IF OK
5665  004130                            EASRB0:
 (2)  004130  012745  000116                    MOV     #116,-(R5)
 (2)  004134  005245                            INC     -(R5)
```

C03

(2) 004136 000000 HALT

```
5666                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 30      NEW INSTRUCTION IN THIS SECTION IS ADCB
 (3)                                    ;;*******************************************************************************
5667
5668  004140                            ADCB0:
 (2)  004140  021527  000030                    CMP     (R5),#30
5669  004144  001404                            BEQ     2$                      ; IF IN WRONG SEQUENCE GO TO HLT BELOW
5670  004146  012745  000117                    MOV     #117,-(R5)
 (2)  004152  005245                            INC     -(R5)
 (2)  004154  000000                            HALT                            ; PROGRAM IS IN WRONG SEQUENCE
5671  004156  005215                    2$:     INC     (R5)
5672  004160  105000                            CLRB    R0                      ; CLEAR THE REGISTER
5673  004162  000257                            CCC                             ; CLEAR FLAGS
5674  004164  105500                            ADCB    R0                      ; ADD C BIT = 0
5675  004166  004737  017164                    JSR     PC,@#$CC4               ; CHECK FOR CC = 4
5676  004172  000261                            SEC                             ; C=1
5677  004174  105500                            ADCB    R0                      ; ADD C BIT=1
5678  004176  000261                            SEC                             ; C=1
5679  004200  105500                            ADCB    R0                      ; AGAIN
5680  004202  004737  017062                    JSR     PC,@#$CC0               ; CHECK FOR CC = 0
5681  004206  122700  000002                    CMPB    #2,R0                   ; CHECK IT
5682  004212  001404                            BEQ     4$                      ; CONTINUE IF OK
5683  004214  012745  000120                    MOV     #120,-(R5)
 (2)  004220  005245                            INC     -(R5)
 (2)  004222  000000                            HALT                            ; ADCB INSTRUCTION FAILED
5684  004224  112700  000177            4$:     MOVB    #177,R0                 ; LOAD LARGEST POSITVE NUMBER
5685  004230  000261                            SEC                             ; C=1
5686  004232  105500                            ADCB    R0                      ; ADD C BIT=1
5687  004234  004737  017314                    JSR     PC,@#$CC12              ; CHECK FOR CC = 12
5688  004240  122700  000200                    CMPB    #200,R0                 ; CHECK IT
5689  004244  001404                            BEQ     6$                      ; CONTINUE IF OK
5690  004246  012745  000121                    MOV     #121,-(R5)
 (2)  004252  005245                            INC     -(R5)
 (2)  004254  000000                            HALT                            ; ADCB INSTRUCTION FAILED
5691  004256  112700  000377            6$:     MOVB    #377,R0                 ; LOAD -1
5692  004262  000261                            SEC                             ; C=1
5693  004264  105500                            ADCB    R0                      ; ADD C BIT=1
5694  004266  004737  017206                    JSR     PC,@#$CC5               ; CHECK FOR CC = 5
5695
5696
5697
5698                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 31      NEW INSTRUCTION IN THIS SECTION IS SBCB
 (3)                                    ;;*******************************************************************************
5699
5700  004272                            SBCB0:
 (2)  004272  021527  000031                    CMP     (R5),#31
5701  004276  001404                            BEQ     1$                      ; IF IN WRONG SEQUENCE GO TO HLT BELOW
5702  004300  012745  000122                    MOV     #122,-(R5)
 (2)  004304  005245                            INC     -(R5)
 (2)  004306  000000                            HALT                            ; PROGRAM IS IN WRONG SEQUENCE
5703  004310  005215                    1$:     INC     (R5)                    ; TEST IS IN WRONG SEQUENCE
5704  004312  112701  000003                    MOVB    #3,R1                   ; LOAD REGISTER
5705  004316  000257                            CCC                             ; CLEAR FLAGS
5706  004320  105601                            SBCB    R1                      ; SUBTRACT C BIT=0
5707  004322  004737  017062                    JSR     PC,@#$CC0               ; CHECK FOR CC = 0
```

```
 5708  004326  122701  000003                  CMPB    #3,R1           ; CHECK IT
 5709  004332  001404                          BEQ     2$              ; CONTINUE IF OK
 5710  004334  012745  000123                  MOV     #123,-(R5)
  (2)  004340  005245                          INC     -(R5)
  (2)  004342  000000                          HALT                    ; SBCB INSTRUCTION FAILED
 5711  004344  000261              2$:         SEC                     ; C=1
 5712  004346  105601                          SBCB    R1              ; SUBTRACT C BIT=1
 5713  004350  000261                          SEC                     ; C=1
 5714  004352  105601                          SBCB    R1              ;
 5715  004354  004737  017062                  JSR     PC,@#$CCC       ; CHECK FOR CC = 0
 5716  004360  122701  000001                  CMPB    #1,R1           ; CHECK IT
 5717  004364  001404                          BEQ     3$              ; CONTINUE IF OK
 5718  004366  012745  000124                  MOV     #124,-(R5)
  (2)  004372  005245                          INC     -(R5)
  (2)  004374  000000                          HALT                    ; SBCB INSTRUCTION FAILED
 5719  004376  000261              3$:         SEC                     ; C=1
 5720  004400  105601                          SBCB    R1              ; SUBTRACT C BIT=1
 5721  004402  004737  017164                  JSR     PC,@#$CC4       ; CHECK FOR CC = 4
 5722  004406  000261                          SEC                     ; C=1
 5723  004410  105601                          SBCB    R1              ; SUBTRACT C BIT = 1
 5724  004412  004737  017272                  JSR     PC,@#$CC11      ; CHECK FOR CC = 11
 5725  004416  122701  000377                  CMPB    #377,R1         ; CHECK IT
 5726  004422  001404                          BEQ     4$              ; CONTINUE IF OK
 5727  004424  012745  000125                  MOV     #125,-(R5)
  (2)  004430  005245                          INC     -(R5)
  (2)  004432  000000                          HALT                    ; SBCB INSTRUCTION FAILED
 5728  004434  112701  000200          4$:     MOVB    #200,R1         ; LOAD R1
 5729  004440  000261                          SEC                     ; C=1
 5730  004442  105601                          SBCB    R1              ; SUBTRACT C BIT = 1
 5731  004444  004737  017122                  JSR     PC,@#$CC2       ; CHECK FOR CC = 2
```

```
                                        ;               CHECK WORD INSTRUCTIONS, DESTINATION MODE 0 ONLY
                                        ;               ----------------------------------------------


                                        ;;*************************************************************************
                                        ;*TEST: 32      NEW INSTRUCTIONS USED IN THIS SECTION ARE TST, CLR, MOV
                                        ;;*************************************************************************

004446                                  TST0:
004450  021527  000032                          CMP     (R5),#32
004454  001404                          1$      BEQ     1$                      ; IF IN WRONG SEQUENCE GO TO HLT
004456  012745  000126                          MOV     #126,-(R5)
004462  005245                                  INC     -(R5)
004464  000000                                  HALT                            ; TEST IS IN WRONG SEQUENCE
004466  005215                          1$:     INC     (R5)
004470  000277                                  SCC
004472  005000                                  CLR     R0                      ; CLEAR THE REGISTER
004474  004737  017164                          JSR     PC,@#$CC4               ; CHECK FOR CC = 4
004500  005700                                  TST     R0                      ; CHECK IT
004502  004737  017164                          JSR     PC,@#$CC4               ; CHECK FOR CC = 4
004506  012704  177777                          MOV     #177777,R4              ; LOAD THE REGISTER
004512  010401                                  MOV     R4,R1
004514  004737  017252                          JSR     PC,@#$CC10              ; CHECK FOR CC = 10
004520  005701                                  TST     R1                      ; CHECK IT
004522  004737  017252                          JSR     PC,@#$CC10              ; CHECK FOR CC = 10
004526  020401                                  CMP     R4,R1                   ; CHECK R1 TO CONTAIN PROPER DATA
004530  001404                                  BEQ     2$
004532  012745  000127                          MOV     #127,-(R5)
004536  005245                                  INC     -(R5)
004540  000000                                  HALT
004542  000263                          2$:     SEVC                            ; SET V & C BITS
004544  010000                                  MOV     R0,R0
004546  004767  012434                          JSR     PC,$CC5


                                        ;;*************************************************************************
                                        ;*TEST: 33      NEW INSTRUCTIONS USED IN THIS SECTION ARE CMP, BIS
                                        ;;*************************************************************************

004552                                  CMP0:
004552  021527  000033                          CMP     (R5),#33
004556  001026                                  BNE     ECMP0                   ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
004560  005215                          1$:     INC     (R5)
004562  012700  177777                          MOV     #177777,R0              ; LOAD REGISTER
004566  050002                                  BIS     R0,R2                   ; CHECK THE BIS INSTRUCTION
004570  004737  017252                          JSR     PC,@#$CC10              ; CHECK FOR CC = 10
004574  020002                                  CMP     R0,R2                   ; CHECK COMPARE
004576  001404                                  BEQ     2$                      ; CONTINUE IF OK
004600  012745  000130                          MOV     #130,-(R5)
004604  005245                                  INC     -(R5)
004606  000000                                  HALT                            ; BIS OR CMP INSTRUCTION FAILED
```

G03


```
 5780  004610  022702  000077          2$:     CMP     #77,R2          ; CHECK IT AGAIN
 5781  004614  100004                          BPL     3$              ; CONTINUE IF OK
 5782  004616  012745  000131                  MOV     #131,-(R5)
   (2) 004622  005245                          INC     -(R5)
   (2) 004624  000000                          HALT                    ; CMP INSTRUCTION FAILED [WRONG CC]
 5783  004626  020227  000077          3$:     CMP     R2,#77          ; ONCE MORE
 5784  004632  100404                          BMI     BICO            ; CONTINUE IF OK
 5785  004634                          ECMPO:
   (2) 004634  012745  000132                  MOV     #132,-(R5)
   (2) 004640  005245                          INC     -(R5)
   (2) 004642  000000                          HALT                    ; WRONG CC OR WRONG SEQUENCE
```

```
                                ;;*******************************************************************************
                                ;*TEST: 34      NEW INSTRUCTIONS USED IN THIS SECTION ARE BIC, BIT
                                ;;*******************************************************************************

005644                          BICO:
(2) 004644  021527  000034              CMP     (R5),#34
005650  001053                          BNE     EBICO           ; IF IN WRONG SEQUENCE GO TO HLT ABOVE
005652  005215                          INC     (R5)
005654  012703  177777                  MOV     #177777,R3      ; LOAD REGISTER
005660  012700  000440                  MOV     #TEMP,R0        ; PLACE THE ADDRESS OF LOCATION TEMP IN PC
005664  012710  125252                  MOV     #125252,(R0)    ; SET (R0)
005670  000277                          SCC
005672  041003                          BIC     (R0),R3         ; CLEAR EVERY OTHER BIT
005674  004737  017102                  JSR     PC,@#$CC1       ; CHECK FOR CC = 1
005700  031003                          BIT     (R0),R3         ; CHECK IT
005702  001404                          BEQ     1$              ; CONTINUE IF OK
005704  012745  000133                  MOV     #133,-(R5)
(2) 005710  005245                      INC     -(R5)
(2) 005712  000000                      HALT                    ; BIC OR BIT INSTRUCTION FAILED
005714  032703  052525          1$:     BIT     #52525,R3       ; CHECK IT
005720  004737  017102                  JSR     PC,@#$CC1       ; CHECK FOR CC = 1
005724  052703  125252                  BIS     #125252,R3      ; SET THE BITS THAT WERE CLEARED
005730  100404                          BMI     2$              ; CONTINUE IF OK
005732  012745  000134                  MOV     #134,-(R5)
(2) 005736  005245                      INC     -(R5)
(2) 005740  000000                      HALT                    ; BIT OR BIS INSTRUCTION FAILED
005742  042703  077777          2$:     BIC     #77777,R3       ; CLEAR ALL THE BITS EXCEPT FOR SIGN
005746  004737  017272                  JSR     PC,@#$CC11      ; CHECK FOR CC = 11
005752  012700  177777                  MOV     #177777,R0
005756  030003                          BIT     R0,R3           ; CHECK IT
005760  004737  017272                  JSR     PC,@#$CC11      ; CHECK FOR CC = 11
005764  000263                          SEVC                    ; SET V & C BITS
005766  040000                          BIC     R0,R0
005770  004737  017206                  JSR     PC,@#$CC5       ; CHECK CC = 5
005774  005700                          TST     R0              ; CHECK R0 TO CONTAIN 0
005776  001404                          BEQ     INCO
006000                          EBICO:
(2) 006000  012745  000135              MOV     #135,-(R5)
(2) 006004  005245                      INC     -(R5)
(2) 006006  000000                      HALT                    ; BIC FAILED OR SEQUENCE ERROR


                                ;;*******************************************************************************
                                ;*TEST: 35      NEW INSTRUCTIONS USED IN THIS SECTION ARE INC, DEC
                                ;;*******************************************************************************

006010                          INCO:
(2) 006010  021527  000035              CMP     (R5),#35
006014  001404                          BEQ     2$              ; IF IN WRONG SEQUENCE GO TO HLT BELOW
006016  012745  000136                  MOV     #136,-(R5)
(2) 006022  005245                      INC     -(R5)
(2) 006024  000000                      HALT                    ; PROGRAM IS IN WRONG SEQUENCE
006026  005215          2$:     INC     (R5)
006030  012704  077777                  MOV     #77777,R4       ; R4=77777
006034  000261                          SEC
```

```
 5827  005036  005204                        INC     R4              ; ADD ONES INTO REG. 4
 5828  005040  004737  017334                JSR     PC,@#$CC13      ; CHECK FOR CC = 13
 5829  005044  012704  177776                MOV     #177776,R4
 5830  005050  005204                        INC     R4
 5831  005052  004737  017272                JSR     PC,@#$CC11      ; CHECK FOR CC = 11
 5832  005056  005204                        INC     R4
 5833  005060  004737  017206                JSR     PC,@#$CC5       ; CHECK FOR CC = 5
 5834  005064  005204                        INC     R4
 5835  005066  004737  017102                JSR     PC,@#$CC1       ; CHECK FOR CC = 1
 5836  005072  022704  000001                CMP     #1,R4           ; CHECK IT
 5837  005076  001404                        BEQ     4$              ; FAILED
 5838  005100  012745  000137                MOV     #137,-(R5)
 (2)   005104  005245                        INC     -(R5)
 (2)   005106  000000                        HALT                    ; INC INSTRUCTION FAILED
 5839  005110  000261            4$:         SEC
 5840  005112  005304                        DEC     R4              ; SUBTRACT ONES FROM REG. 4
 5841  005114  004737  017206                JSR     PC,@#$CC5       ; CHECK FOR CC = 5
 5842  005120  005304                        DEC     R4
 5843  005122  004737  017272                JSR     PC,@#$CC11      ; CHECK FOR CC = 11
 5844  005126  012704  100000                MOV     #100000,R4
 5845  005132  005304                        DEC     R4              ;
 5846  005134  004737  017142                JSR     PC,@#$CC3       ; CHECK FOR CC = 3
 5847  005140  005304                        DEC     R4              ;
 5848  005142  004737  017102                JSR     PC,@#$CC1       ; CHECK FOR CC = 1
```

```
                                ;;*******************************************************************************
                                ;*TEST: 36      NEW INSTRUCTION IN THIS SECTION IS COM
                                ;;*******************************************************************************

005146                          COMO:
005146  021527  000036                  CMP     (R5),#36
005152  001404                          BEQ     1$              ; IF IN WRONG SEQUENCE GO TO HLT BELOW
005154  012745  000140                  MOV     #140,-(R5)
005160  005245                          INC     -(R5)
005162  000000                          HALT                    ; TEST IS IN WRONG SEQUENCE
005164  005215                  1$:     INC     (R5)
005166  012703  125252                  MOV     #125252,R3      ; LOAD EVERY OTHER BIT
005172  000277                          SCC
005174  005103                          COM     R3              ; 1'S COMPLEMENT
005176  004737  017102                  JSR     PC,@#$CC1       ; CHECK FOR CC = 1
005202  022703  052525                  CMP     #52525,R3       ; CHECK IT
005206  001404                          BEQ     2$              ; CONTINUE IF OK
005210  012745  000141                  MOV     #141,-(R5)
005214  005245                          INC     -(R5)
005216  000000                          HALT                    ; COM INSTRUCTION FAILED
005220  000277                  2$:     SCC
005222  005103                          COM     R3              ; COMPLEMENT BACK
005224  004737  017272                  JSR     PC,@#$CC11      ; CHECK FOR CC = 11
005230  022703  125252                  CMP     #125252,R3      ; CHECK IT
005234  001404                          BEQ     3$              ; CONTINUE IF OK
005236  012745  000142                  MOV     #142,-(R5)
005242  005245                          INC     -(R5)
005244  000000                          HALT                    ; COM INSTRUCTION FAILED
005246  012703  177777          3$:     MOV     #177777,R3
005252  000277                          SCC
005254  005103                          COM     R3
005256  004737  017206                  JSR     PC,@#$CC5       ; CHECK FOR CC = 5


                                ;;*******************************************************************************
                                ;*TEST: 37      NEW INSTRUCTION IN THIS SECTION IS NEG
                                ;;*******************************************************************************

005262                          NEGO:
005262  021527  000037                  CMP     (R5),#37
005266  001025                          BNE     ENEGO           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
005270  005215                  1$:     INC     (R5)
005272  012700  000001                  MOV     #1,R0           ; LOAD THE REGISTER
005276  005400                          NEG     R0              ; 2'S COMPLEMENT
005300  004737  017272                  JSR     PC,@#$CC11      ; CHECK FOR CC = 11
005304  022700  177777                  CMP     #177777,R0      ; CHECK IT
005310  001404                          BEQ     2$              ; CONTINUE IF OK
005312  012745  000143                  MOV     #143,-(R5)
005316  005245                          INC     -(R5)
005320  000000                          HALT                    ; NEG INSTRUCTION FAILED
005322  012700  100000          2$:     MOV     #100000,R0
005326  005400                          NEG     R0              ; 2'S COMPLEMENT
005330  004737  017334                  JSR     PC,@#$CC13      ; CHECK FOR CC = 13
005334  022700  100000                  CMP     #100000,R0      ; CHECK IT
005340  001404                          BEQ     ROLO            ; CONTINUE IF Ok
```

```
 5891  005342                          ENEGO:
  (2)  005342  012745  000144                MOV     #144,-(R5)
  (2)  005346  005245                        INC     -(R5)
  (2)  005350  000000                        HALT                    ; WRONG RESULT IN R0 OR WRONG SEQUENCE
```

```
                                ;;*******************************************************************************
                                ;*TEST: 40      NEW INSTRUCTION IN THIS SECTION IS ROL
                                ;;*******************************************************************************

005352                          ROLO:
005352  021527  000040                  CMP     (R5),#40
005356  001026                          BNE     EROLO           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
005360  005215                          INC     (R5)
005362  012701  020000                  MOV     #20000,R1       ; LOAD REGISTER
005366  000257                          CCC                     ; CLEAR FLAGS
005370  006101                          ROL     R1              ; SHIFT
005372  006101                          ROL     R1              ;
005374  004737  017314                  JSR     PC,@#$CC12      ; CHECK FOR CC = 12
005400  022701  100000                  CMP     #100000,R1      ; CHECK IT
005404  001404                          BEQ     1$              ; CONTINUE IF OK
005406  012745  000145                  MOV     #145,-(R5)
005412  005245                          INC     -(R5)
005414  000000                          HALT                    ; ROL INSTRUCTION FAILED
005416  006101                  1$:     ROL     R1              ; SHIFT
005420  004737  017230                  JSR     PC,@#$CC7       ; CHECK FOR CC = 7
005424  006101                          ROL     R1              ; SHIFT
005426  022701  000001                  CMP     #1,R1           ; CHECK IT
005432  001404                          BEQ     RORO            ; CONTINUE IF OK
005434                          EROLO:
005434  012745  000146                  MOV     #146,-(R5)
005440  005245                          INC     -(R5)
005442  000000                          HALT                    ; WRONG RESULT IN R1 OR WRONG SEQUENCE

                                ;;*******************************************************************************
                                ;*TEST: 41      NEW INSTRUCTION IN THIS SECTION IS ROR
                                ;;*******************************************************************************

005444                          RORO:
005444  021527  000041                  CMP     (R5),#41
005450  001026                          BNE     ERORO           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
005452  005215                          INC     (R5)
005454  012702  000004                  MOV     #4,R2           ; LOAD REGISTER
005460  000257                          CCC                     ; CLEAR FLAGS
005462  006002                          ROR     R2              ; SHIFT
005464  006002                          ROR     R2              ;
005466  022702  000001                  CMP     #1,R2           ; CHECK IT
005472  001404                          BEQ     1$              ; CONTINUE IF OK
005474  012745  000147                  MOV     #147,-(R5)
005500  005245                          INC     -(R5)
005502  000000                          HALT                    ; ROR INSTRUCTION FAILED
005504  006002                  1$:     ROR     R2              ; SHIFT
005506  004737  017230                  JSR     PC,@#$CC7       ; CHECK FOR CC = 7
005512  006002                          ROR     R2              ; SHIFT
005514  004737  017314                  JSR     PC,@#$CC12      ; CHECK FOR CC = 12
005520  022702  100000                  CMP     #100000,R2      ; CHECK IT
005524  001404                          BEQ     ASLO            ; CONTINUE IF OK
005526                          ERORO:
005526  012745  000150                  MOV     #150,-(R5)
005532  005245                          INC     -(R5)
```

M03


```
   (2) 005534 000000                    HALT                ; WRONG RESULT IN R2 OR WRONG SEQUENCE
```

```
5933                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 42      NEW INSTRUCTION IN THIS SECTION IS ASL
 (3)                                    ;;*******************************************************************************
5934
5935  005536                            ASL0:
 (2)  005536  021527  000042                    CMP     (R5),#42
5936  005542  001404                            BEQ     2$              ; IF IN WRONG SEQUENCE GO TO HLT BELOW
5937  005544  012745  000151                    MOV     #151,-(R5)
 (2)  005550  005245                            INC     -(R5)
 (2)  005552  000000                            HALT                    ; PROGRAM IS IN WRONG SEQUENCE
5938  005554  005215                    2$:     INC     (R5)
5939  005556  012703  020000                    MOV     #20000,R3       ; LOAD REGISTER
5940  005562  000257                            CCC                     ; CLEAR FLAGS
5941  005564  006303                            ASL     R3              ; SHIFT
5942  005566  006303                            ASL     R3              ;
5943  005570  004737  017314                    JSR     PC,@#$CC12      ; CHECK FOR CC = 12
5944  005574  022703  100000                    CMP     #100000,R3      ; CHECK IT
5945  005600  001404                            BEQ     4$              ; CONTINUE IF OK
5946  005602  012745  000152                    MOV     #152,-(R5)
 (2)  005606  005245                            INC     -(R5)
 (2)  005610  000000                            HALT                    ; ASL INSTRUCTION FAILED
5947  005612  006303                    4$:     ASL     R3              ; SHIFT
5948  005614  004737  017230                    JSR     PC,@#$CC7       ; CHECK FOR CC = 7
5949  005620  006303                            ASL     R3              ; SHIFT
5950  005622  004737  017164                    JSR     PC,@#$CC4       ; CHECK FOR CC = 4
5951
5952                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 43      NEW INSTRUCTION IN THIS SECTION IS ASR
 (3)                                    ;;*******************************************************************************
5953
5954  005626                            ASR0:
 (2)  005626  021527  000043                    CMP     (R5),#43
5955  005632  001034                            BNE     EASR0           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
5956  005634  005215                    1$:     INC     (R5)
5957  005636  012704  000004                    MOV     #4,R4           ; LOAD REGISTER
5958  005642  000257                            CCC                     ; CLEAR FLAGS
5959  005644  006204                            ASR     R4              ; SHIFT
5960  005646  006204                            ASR     R4              ;
5961  005650  022704  000001                    CMP     #1,R4           ; CHECK IT
5962  005654  001404                            BEQ     2$              ; CONTINUE IF OK
5963  005656  012745  000153                    MOV     #153,-(R5)
 2,   005662  005245                            INC     -(R5)
 (2)  005664  000000                            HALT                    ; ASR INSTRUCTION FAILED
5964  005666  006204                    2$:     ASR     R4              ; SHIFT
5965  005670  004737  017230                    JSR     PC,@#$CC7       ; CHECK FOR CC = 7
5966  005674  006204                            ASR     R4              ; SHIFT
5967  005676  004737  017164                    JSR     PC,@#$CC4       ; CHECK FOR CC = 4
5968  005702  012703  100002                    MOV     #100002,R3      ; LOAD REGISTER
5969  005706  006203                            ASR     R3              ; SHIFT
5970  005710  006203                            ASR     R3              ;
5971  005712  004737  017272                    JSR     PC,@#$CC11      ; CHECK FOR CC = 11
5972  005716  022703  160000                    CMP     #160000,R3      ; CHECK IT
5973  005722  001404                            BEQ     ADC0            ; CONTINUE IF OK
5974  005724                            EASR0:
 (2)  005724  012745  000154                    MOV     #154,-(R5)
 (2)  005730  005245                            INC     -(R5)
```

```
(2) 005732 000000                    HALT          ; WRONG RESULT IN R3 OR WRONG SEQUENCE
```

```
                                        ;;*****************************************************************
                                        ;*TEST: 44       NEW INSTRUCTION IN THIS SECTION IS ADC
                                        ;;*****************************************************************

005734                                  ADCO:
005734  021527  000044                          CMP     (R5),#44
005740  001404                                  BEQ     2$              ; IF IN WRONG SEQUENCE GO TO HLT BELOW
005742  012745  000155                          MOV     #155,-(R5)
005746  005245                                  INC     -(R5)
005750  000000                                  HALT                    ; PROGRAM IS IN WRONG SEQUENCE
005752  005215                          2$:     INC     (R5)
005754  005000                                  CLR     R0              ; CLEAR THE REGISTER
005756  000257                                  CCC                     ; CLEAR FLAGS
005760  005500                                  ADC     R0              ; ADD C BIT = 0
005762  004737  017164                          JSR     PC,@#$CC4       ; CHECK FOR CC = 4
005766  000261                                  SEC                     ; C=1
005770  005500                                  ADC     R0              ; ADD C BIT=1
005772  000261                                  SEC                     ; C=1
005774  005500                                  ADC     R0              ; AGAIN
005776  004737  017062                          JSR     PC,@#$CC0       ; CHECK FOR CC = 0
006002  022700  000002                          CMP     #2,R0           ; CHECK IT
006006  001404                                  BEQ     4$              ; CONTINUE IF OK
006010  012745  000156                          MOV     #156,-(R5)
006014  005245                                  INC     -(R5)
006016  000000                                  HALT                    ; ADC INSTRUCTION FAILED
006020  012700  077777                  4$:     MOV     #77777,R0       ; LOAD LARGEST POSITIVE NUMBER
006024  000261                                  SEC                     ; C=1
006026  005500                                  ADC     R0              ; ADD C BIT=1
006030  004737  017314                          JSR     PC,@#$CC12      ; CHECK FOR CC = 12
006034  022700  100000                          CMP     #100000,R0      ; CHECK IT
006040  001404                                  BEQ     6$              ; FAILED
006042  012745  000157                          MOV     #157,-(R5)
006046  005245                                  INC     -(R5)
006050  000000                                  HALT                    ; ADC INSTRUCTION FAILED
006052  012700  177777                  6$:     MOV     #-1,R0          ; LOAD -1
006056  000261                                  SEC                     ; C=1
006060  005500                                  ADC     R0              ; ADD C BIT=1
006062  004737  017206                          JSR     PC,@#$CC5       ; CHECK FOR CC = 5




                                        ;;*****************************************************************
                                        ;*TEST: 45       NEW INSTRUCTION IN THIS SECTION IS SBC
                                        ;;*****************************************************************

006066                                  SBCO:
006066  021527  000045                          CMP     (R5),#45
006072  001404                                  BEQ     1$              ; IF IN WRONG SEQUENCE GO TO HLT
006074  012745  000160                          MOV     #160,-(R5)
006100  005245                                  INC     -(R5)
006102  000000                                  HALT                    ; TEST IS IN WRONG SEQUENCE
006104  005215                          1$:     INC     (R5)
006106  012701  000003                          MOV     #3,R1           ; LOAD REGISTER
006112  000257                                  CCC                     ; CLEAR FLAGS
006114  005601                                  SBC     R1              ; SUBTRACT C BIT=0
006116  004737  017062                          JSR     PC,@#$CC0       ; CHECK FOR CC = 0
```

```
 6017  006122  022701  000003                    CMP     #3,R1           ; CHECK IT
 6018  006126  001404                            BEQ     2$              ; CONTINUE IF OK
 6019  006130  012745  000161                    MOV     #161,-(R5)
 (2)   006134  005245                            INC     -(R5)
 (2)   006136  000000                            HALT                    ; SBC INSTRUCTION FAILED
 6020  006140  000261                2$:         SEC                     ; C=1
 6021  006142  005601                            SBC     R1              ; SUBTRACT C BIT=1
 6022  006144  000261                            SEC                     ; C=1
 6023  006146  005601                            SBC     R1
 6024  006150  004737  017062                    JSR     PC,@#$CC0       ; CHECK FOR CC = 0
 6025  006154  022701  000001                    CMP     #1,R1           ; CHECK IT
 6026  006160  001404                            BEQ     3$              ; CONTINUE IF OK
 6027  006162  012745  000162                    MOV     #162,-(R5)
 (2)   006166  005245                            INC     -(R5)
 (2)   006170  000000                            HALT                    ; SBC INSTRUCTION FAILED
 6028  006172  000261                3$:         SEC                     ; C=1
 6029  006174  005601                            SBC     R1              ; SUBTRACT C BIT=1
 6030  006176  004737  017164                    JSR     PC,@#$CC4       ; CHECK FOR CC = 4
 6031  006202  000261                            SEC                     ; C=1
 6032  006204  005601                            SBC     R1              ; SUBTRACT C BIT = 1
 6033  006206  004737  017272                    JSR     PC,@#$CC11      ; CHECK FOR CC = 11
 6034  006212  022701  177777                    CMP     #-1,R1          ; CHECK IT
 6035  006216  001404                            BEQ     4$              ; CONTINUE IF F OK
 6036  006220  012745  000163                    MOV     #163,-(R5)
 (2)   006224  005245                            INC     -(R5)
 (2)   006226  000000                            HALT                    ; SBC INSTRUCTION FAILED
 6037  006230  012701  100000                4$: MOV     #100000,R1      ; LOAD R1
 6038  006234  000261                            SEC                     ; C=1
 6039  006236  005601                            SBC     R1              ; SUBTRACT C BIT = 1
 6040  006240  004737  017122                    JSR     PC,@#$CC2       ; CHECK FOR CC = 2
```

```
6041                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 46      NEW INSTRUCTION IN THIS SECTION IS SXT
 (3)                                    ;;*******************************************************************************
6042
6043  006244                            SXT0:
 (2)  006244  021527  000046                    CMP     (R5),#46
6044  006250  001024                            BNE     ESXT0           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
6045  006252  005215                    1$:     INC     (R5)
6046  006254  005002                            CLR     R2              ; CLEAR REGISTER
6047  006256  000277                            SCC
6048  006260  000254                            CLNZ
6049  006262  006702                            SXT     R2              ; SIGN EXTEND
6050  006264  004737  017206                    JSR     PC,@#$CC5       ; CHECK FOR CC = 5
6051  006270  005702                            TST     R2              ; REG. 2 SHOULD STILL BE 0
6052  006272  001404                            BEQ     2$              ; CONTINUE IF OK
6053  006274  012745  000164                    MOV     #164,-(R5)
 (2)  006300  005245                            INC     -(R5)
 (2)  006302  000000                            HALT                    ; SXT INSTRUCTION FAILED
6054  006304  000273                    2$:     SENVC                   ; SET N, V & C BITS
6055  006306  006702                            SXT     R2              ; SIGN EXTEND
6056  006310  004737  017272                    JSR     PC,@#$CC11      ; CHECK FOR CC = 11
6057  006314  022702  177777                    CMP     #-1,R2          ; REG. 2 SHOULD NOW HAVE -1
6058  006320  001404                            BEQ     SWAB0           ; CONTINUE IF OK
6059  006322                            ESXT0:
 (2)  006322  012745  000165                    MOV     #165,-(R5)
 (2)  006326  005245                            INC     -(R5)
 (2)  006330  000000                            HALT                    ; WRONG RESULT IN R2 OR WRONG SEQUENCE
6060
6061
6062
6063                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 47      NEW INSTRUCTION IN THIS SECTION IS SWAB
 (3)                                    ;;*******************************************************************************
6064
6065  006332                            SWAB0:
 (2)  006332  021527  000047                    CMP     (R5),#47
6066  006336  001031                            BNE     ESWAB0          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
6067  006340  005215                            INC     (R5)
6068  006342  012703  125125                    MOV     #125125,R3      ; LOAD BIT PATTERN INTO REGISTER
6069  006346  000277                            SCC
6070  006350  000250                            CLN
6071  006352  000303                            SWAB    R3              ; SWAP BYTES OF REGISTER
6072  006354  004737  017252                    JSR     PC,@#$CC10      ; CHECK FOR CC = 10
6073  006360  022703  052652                    CMP     #52652,R3       ; CHECK IT
6074  006364  001404                            BEQ     1$              ; CONTINUE IF OK
6075  006366  012745  000166                    MOV     #166,-(R5)
 (2)  006372  005245                            INC     -(R5)
 (2)  006374  000000                            HALT                    ; SWAB INSTRUCTION FAILED
6076  006376  012703  000377            1$:     MOV     #377,R3
6077  006402  000277                            SCC
6078  006404  000244                            CLZ
6079  006406  000303                            SWAB    R3
6080  006410  004737  017164                    JSR     PC,@#$CC4       ; CHECK FOR CC = 4
6081  006414  022703  177400                    CMP     #177400,R3
6082  006420  001404                            BEQ     XOR0
6083  006422                            ESWAB0:
```

F04


```
(2)  006422  012745  000167      MOV     #167,-(R5)
(2)  006426  005245              INC     -(R5)
(2)  006430  000000              HALT                    ; WRONG RESULT IN R3 OR WRONG SEQUENCE
```

```
                                   ;;*************************************************************************
                                   ;*TEST: 50      NEW INSTRUCTION IN THIS SECTION IS XOR
                                   ;;*************************************************************************

006432                             XOR0:
006432  021527  000050                     CMP     (R5),#50
006436  001034                             BNE     EXOR0           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
006440  005215                             INC     (R5)
006442  012704  177777                     MOV     #-1,R4          ; LOAD REGISTERS
006446  012703  177777                     MOV     #-1,R3          ;
006452  000277                             SCC
006454  074403                             XOR     R4,R3           ; SHOULD PRODUCE 0'S IN REG. 3
006456  004737  017206                     JSR     PC,@#$CC5       ; CHECK FOR CC = 5
006462  012703  077777                     MOV     #77777,R3
006466  010400                             MOV     R4,R0           ; PLACE A -1 IN R0
006470  000263                             SEVC                    ; SET V & C BITS
006472  000244                             CLZ
006474  074003                             XOR     R0,R3
006476  004737  017272                     JSR     PC,@#$CC11      ; CHECK FOR CC = 11
006502  012702  125252                     MOV     #125252,R2      ; LOAD REGISTERS
006506  012704  052525                     MOV     #52525,R4       ;
006512  000277                             SCC
006514  074204                             XOR     R2,R4           ; SHOULD PRODUCE ALL 1'S IN REG. 4
006516  004737  017272                     JSR     PC,@#$CC11      ; CHECK FOR CC = 11
006522  022704  177777                     CMP     #-1,R4          ; CHECK IT
006526  001404                             BEQ     ADD0            ; CONTINUE IF OK
006530                             EXOR0:
006530  012745  000170                     MOV     #170,-(R5)
006534  005245                             INC     -(R5)
006536  000000                             HALT                    ; WRONG RESULT IN R4 OR WRONG SEQUENCE



                                   ;;*************************************************************************
                                   ;*TEST: 51      NEW INSTRUCTION IN THIS SECTION IS ADD
                                   ;;*************************************************************************

006540                             ADD0:
006540  021527  000051                     CMP     (R5),#51
006544  001055                             BNE     EADD0           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
006546  005215                             INC     (R5)
006550  012701  021421                     MOV     #21421,R1       ; LOAD REGISTERS
006554  060101                             ADD     R1,R1           ; ADD
006556  004737  017062                     JSR     PC,@#$CC0       ; CHECK FOR CC = 0
006562  022701  043042                     CMP     #43042,R1       ; CHECK IT
006566  001404                             BEQ     1$              ; CONTINUE IF OK
006570  012745  000171                     MOV     #171,-(R5)
006574  005245                             INC     -(R5)
006576  000000                             HALT                    ; ADD INSTRUCTION FAILED
006600  012700  156357             1$:     MOV     #-21421,R0      ; LOAD REGISTERS
006604  060000                             ADD     R0,R0           ; ADD
006606  004737  017272                     JSR     PC,@#$CC11      ; CHECK FOR CC = 11
006612  022700  134736                     CMP     #-43042,R0      ; CHECK IT
006616  001404                             BEQ     2$              ; CONTINUE IF OK
006620  012745  000172                     MOV     #172,-(R5)
006624  005245                             INC     -(R5)
```

```
      (2)  006626  000000                        HALT                    ; ADD INSTRUCTION FAILED
 6128     006630  012702  100000        2$:     MOV     #100000,R2      ; LOAD REGISTERS
 6129     006634  060202                        ADD     R2,R2           ; ADD SHOULD RESULT AS 0'S
 6130     006636  004737  017230                JSR     PC,@#$CC7       ;CHECK FOR CC = 7
 6131     006642  012704  021421                MOV     #21421,R4       ; LOAD REGISTERS
 6132     006646  012701  156357                MOV     #-21421,R1      ;
 6133     006652  060401                        ADD     R4,R1           ; ADD SHOULD RESULT AS 0'S
 6134     006654  001404                        BEQ     3$              ; CONTINUE IF OK
 6135     006656  012745  000173                MOV     #173,-(R5)
      (2)  006662  005245                        INC     -(R5)
      (2)  006664  000000                        HALT                    ; ADD INSTRUCTION FAILED
 6136     006666  005404                3$:     NEG     R4              ; SWITCH SOURCE AND DESTINATION
 6137     006670  012701  021421                MOV     #21421,R1       ;
 6138     006674  060104                        ADD     R1,R4           ; SHOULD RESULT AS 0'S
 6139     006676  001404                        BEQ     SUB0            ; CONTINUE IF OK
 6140     006700                        EADD0:
      (2)  006700  012745  000174                MOV     #174,- R5)
      (2)  006704  005245                        INC     -(R5)
      (2)  006706  000000                        HALT                    ; WRONG RESULT IN R1 OR WRONG SEQUENCE
```

```
6141                                    ;;*************************************************************************
 (2)                                    ;*TEST: 52      NEW INSTRUCTION IN THIS SECTION IS SUB
 (3)                                    ;;*************************************************************************
6142
6143  006710                            SUBO:
 (2)  006710  021527  000052                    CMP     (R5),#52
6144  006714  001404                            BEQ     2$              ; IF IN WRONG SEQUENCE GO TO HLT BELOW
6145  006716  012745  000175                    MOV     #175,-(R5)
 (2)  006722  005245                            INC     -(R5)
 (2)  006724  000000                            HALT                    ; PROGRAM IS IN WRONG SEQUENCE
6146  006726  005215                    2$:     INC     (R5)
6147  006730  012702  021421                    MOV     #21421,R2       ; LOAD REGISTERS
6148  006734  012703  156357                    MOV     #-21421,R3      ;
6149  006740  160203                            SUB     R2,R3           ; RESULT SHOULD=-43042
6150  006742  004737  017252                    JSR     PC,@#$CC10      ; CHECK FOR CC = 10
6151  006746  022703  134736                    CMP     #-43042,R3      ; CHECK IT
6152  006752  001404                            BEQ     4$              ; CONTINUE IF OK
6153  006754  012745  000176                    MOV     #176,-(R5)
 (2)  006760  005245                            INC     -(R5)
 (2)  006762  000000                            HALT                    ; SUB INSTRUCTION FAILED
6154  006764  012703  021421            4$:     MOV     #21421,R3       ; LOAD REGISTER
6155  006770  010204                            MOV     R2,R4           ; NOW R4 = #21421
6156  006772  160403                            SUB     R4,R3           ; RESULT SHOULD=0
6157  006774  001404                            BEQ     6$
6158  006776  012745  000177                    MOV     #177,-(R5)
 (2)  007002  005245                            INC     -(R5)
 (2)  007004  000000                            HALT                    ; SUB NSTRUCTION FAILED
6159  007006  012703  177777            6$:     MOV     #-1,R3          ; LOAD REGISTERS
6160  007012  012702  077777                    MOV     #77777,R2       ; LOAD REGISTERS
6161  007016  160302                            SUB     R3,R2           ; RESULT SHOULD BE 100000 AND OVERFLOW
6162  007020  004737  017334                    JSR     PC,@#$CC13      ; CHECK FOR CC = 13
6163  007024  022702  100000                    CMP     #100000,R2      ; CHECK IT
6164  007030  001404                            BEQ     8$              ; CONTINUE IF OK
6165  007032  012745  000200                    MOV     #200,-(R5)
 (2)  007036  005245                            INC     -(R5)
 (2)  007040  000000                            HALT                    ; SUB INSTRUCTION FAILED
6166  007042  012704  177777            8$:     MOV     #-1,R4
6167  007046  160304                            SUB     R3,R4
6168  007050  004737  017164                    JSR     PC,@#$CC4       ; CHECK FOR CC = 4
6169
6170
6171                                    ;;*************************************************************************
 (2)                                    ;*TEST: 53      NEW INSTRUCTIONS IN THARE SECTION IS MTPS & MFPS
 (3)                                    ;;*************************************************************************
6172
6173  007054                            PSW:
 (2)  007054  021527  000053                    CMP     (R5),#53
6174  007060  001032                            BNE     EPSW            ; IF IN WRONG SEQUENCE THEN GO TO HLT AT THE END OF THE
6175  007062  005215                    1$:     INC     (R5)
6176  007064  012701  177777                    MOV     #177777,R1
6177  007070  005000                            CLR     R0
6181  007072                                    MTPS    R0              ; SET PSW TO 0
 (1)  007072  106400                            .WORD   106400!..C
6182  007074  004737  017062                    JSR     PC,@#$CC0       ; CHECK FOR CC = 0
6183  007100                                    MFPS    R1              ; MOVE PSW TO R1
 (1)  007100  106701                            .WORD   106700!..C
```

```
 6187  007102  001404                        BEQ     2$                ; CONTINUE IF BIT 8 OF PSW WAS EXTENDED IN R1
 6188  007104  012745  000201                MOV     #201,-(R5)
  (2)  007110  005245                        INC     -(R5)
  (2)  007112  000000                        HALT                      ; MTPS OR MFPS INSTRUCTION FAILED
 6189  007114  004737  017164        2$:     JSR     PC,@#$CC4         ; CHECK FOR CC = 4
 6190  007120  012700  000377                MOV     #377,R0
 6194  007124                              MTPS    R0                ; SET PSW TO 357 SINCE MTPS DOES NOT SET T BIT
  (1)  007124  106400                        .WORD   106400!..C
 6195  007126  004737  017354                JSR     PC,@#$CC17        ; CHECK FOR CC = 17
 6196  007132                              MFPS    R1                ; MOVE PSW TO R1
  (1)  007132  106701                        .WORD   106700!..C
 6200  007134  004737  017272                JSR     PC,@#$CC11        ; CHECK FOR CC = 11 IC BIT SHOULD NOT BE EFFECTED BY MFP
 6201  007140  022701  177757                CMP     #177757,R1        ; CHECK TO SEE IF BIT 8 OF PSW WAS EXTENDED *HRJ R1
 6202  007144  001404                        BEQ     MODE0
 6203  007146                        EPSW:
   2)  007146  012745  000202                MOV     #202,-(R5)
  (2)  007152  005245                        INC     -(R5)
   2)  007154  000000                        HALT                      ; MTPS OR MFPS INSTRUCTION FAILED OR WRONG SEQUENCE
```

```
                                        ;               LSI-11 INSTRUCTIONS NOT MODE 0
                                        ;               ------------------------


                                        ;;*************************************************************************
                                        ;*TEST: 54       CHECK MODES 0 & 1 USING THE MOVB AND MOV INSTRUCTIONS
                                        ;;*************************************************************************

007156                                  MODE0:
(2) 007156  021527  000054                      CMP     (R5),#54
006216 007162  001063                           BNE     EMODE0          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
006217 007164  005215                           INC     (R5)
006220 007166  112700  000252                   MOVB    #252,R0         ; LOAD REGISTERS
006221 007172  110001                           MOVB    R0,R1           ;
006222 007174  110102                           MOVB    R1,R2           ;
006223 007176  122702  000252                   CMPB    #252,R2         ; CHECK IT
006224 007202  001404                           BEQ     1$              ; OK, CONTINUE
006225 007204  012745  000203                   MOV     #203,-(R5)
(2) 007210  005245                              INC     -(R5)
(2) 007212  000000                              HALT                    ; MOV INSTRUCTION FAILED IN MODE 0
006226 007214  012700  125252           1$:     MOV     #125252,R0      ; LOAD REGISTERS
006227 007220  010001                           MOV     R0,R1           ;
006230 007222  010102                           MOV     R1,R2           ;
006231 007224  022702  125252                   CMP     #125252,R2      ; CHECK IT
006232 007230  001404                           BEQ     MODE1           ; OK, CONTINUE
006233 007232  012745  000204                   MOV     #204,-(R5)
(2) 007236  005245                              INC     -(R5)
(2) 007240  000000                              HALT                    ; MOV INSTRUCTION FAILED IN MODE 0
006234

006235 007242  012700  000440           MODE1:  MOV     #TEMP,R0        ; LOAD ADDRESSES INTO REGS.
006236 007246  012701  000442                   MOV     #TEMP1,R1       ;
006237 007252  012702  000444                   MOV     #TEMP2,R2       ;
006240 007256  005067  171162                   CLR     TEMP2           ; START CLEAN
006241 007262  112710  000125                   MOVB    #125,(R0)       ; LOAD THE LOCATIONS
006242 007266  111011                           MOVB    (R0),(R1)       ; TEMP ---> TEMP1
006243 007270  111112                           MOVB    (R1),(R2)       ; TEMP1 ---> TEMP2
006244 007272  122767  000125  171144           CMPB    #125,TEMP2      ; CHECK IT
006245 007300  001404                           BEQ     1$              ; OK, CONTINUE
006246 007302  012745  000205                   MOV     #205,-(R5)
(2) 007306  005245                              INC     -(R5)
(2) 007310  000000                              HALT                    ; MOV INSTRUCTION FAILED IN MODE 1
006247 007312  012710  052525           1$:     MOV     #52525,(R0)     ; LOAD THE LOCATIONS
006250 007316  011011                           MOV     (R0),(R1)       ; TEMP ---> TEMP1
006251 007320  011112                           MOV     (R1),(R2)       ; TEMP1 ---> TEMP2
006252 007322  022767  052525  171114           CMP     #52525,TEMP2    ; CHECK IT
006253 007330  001404                           BEQ     MODE2           ; OK, CONTINUE
006254 007332                           EMODE0:
(2) 007332  012745  000206                      MOV     #206,-(R5)
(2) 007336  005245                              INC     -(R5)
(2) 007340  000000                              HALT                    ; MOV INSTRUCTION FAILED IN MODE 1
                                                                        ; OR WRONG SEQUENCE
006255

006256

006257

006260

006261

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

```
                                        ;*TEST: 55      CHECK MODE 2 USING THE MOVB AND MOV INSTRUCTIONS
                                        ;;*************************************************************************
                                        MODE2:
                        CMP     (R5),#55
                        BNE     EMODE2          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
                        INC     (R5)
                        MOV     #TEMP,R0        ; LOAD ADDRESSES
                        MOV     #TEMP1,R1       ;
                        MOV     #TEMP2,R2
                        CLRB    (R2)+           ; START CLEAN
                        MOVB    #252,(R0)       ; LOAD THE LOCATIONS
                        MOVB    (R0)+,(R1)+     ; TEMP ---> TEMP1
                        INCB    R1              ; MAKE IT EVEN
                        MOVB    (R1),TEMP       ; MORE 0'S INTO TEMP
                        INCB    R0              ; MAKE IT EVEN
                        MOVB    (R0)+,(R1)+     ; TEMP1 ---> TEMP2
                        CMPB    -(R2),#252      ; CHECK IT
                        BNE     1$              ; FAILED
                        TSTB    TEMP            ; CHECK IT
                        BEQ     2$              ; OK, CONTINUE
                                1$:
                        MOV     #207,-(R5)
                        INC     -(R5)
                        HALT                    ; INSTRUCTIONS FAILED IN MODE 2
                                2$:     TST     -(R1)
                        CLR     (R2)+           ; START CLEAN
                        MOV     #125252,-(R0)   ; LOAD LOCATIONS
                        MOV     (R0)+,(R0)+     ; TEMP ---> TEMP1
                        MOV     (R0),TEMP       ; 0 ---> TEMP
                        MOV     (R1)+,(R1)+     ; 125252 ---> TEMP2
                        CMP     -(R2),#125252   ; CHECK IT
                        BNE     EMODE2          ; FAILED
                        TST     TEMP            ; CHECK IT
                        BEQ     MODE3           ; OK, CONTINUE
                                EMODE2:
                        MOV     #210,-(R5)
                        INC     -(R5)
                        HALT                    ; INSTRUCTIONS FAILED IN MODE 2
                                                ; OR WRONG SEQUENCE
```

```
                                        ;;*******************************************************************************
                                        ;*TEST: 56      CHECK MODE 3 USING THE MOVB AND MOV INSTRUCTIONS
                                        ;;*******************************************************************************

007500                                  MODE3:
007500  021527  000056                          CMP     (R5),#56
007504  001066                                  BNE     EMODE3          ; IF IN WRONG SEQUENCE GO TO HLT ABOVE
007506  005215                                  INC     (R5)
007510  012767  000440  170712                  MOV     #TEMP,ADR       ; LOAD ADDRESSES
007516  012767  000442  170706                  MOV     #TEMP1,ADR1     ;
007524  012767  000444  170702                  MOV     #TEMP2,ADR2     ;
007532  012700  000430                          MOV     #ADR,R0         ; LOAD ADDRESSES OF ADDRESSES
007536  012701  000432                          MOV     #ADR1,R1        ;
007542  105067  170676                          CLRB    TEMP2           ; START CLEAN
007546  112767  000125  170664                  MOVB    #125,TEMP       ;
007554  113031                                  MOVB    @(R0)+,@(R1)+   ; TEMP ---> TEMP1
007556  113167  170656                          MOVB    @(R1)+,TEMP     ; TEMP2 ---> TEMP
007562  113030                                  MOVB    @(R0)+,@(R0)+   ; TEMP1 ---> TEMP2
007564  122767  000125  170652                  CMPB    #125,TEMP2      ; CHECK IT
007572  001003                                  BNE     1$              ; FAILED
007574  105767  170640                          TSTB    TEMP            ; CHECK IT
007600  001404                                  BEQ     2$              ; OK, CONTINUE
007602                                  1$:
007602  012745  000211                          MOV     #211,-(R5)
007606  005245                                  INC     -(R5)
007610  000000                                  HALT                    ; INSTRUCTIONS FAILED IN MODE 3
007612  005067  170626                  2$:     CLR     TEMP2           ; START CLEAN
007616  012767  052525  170614                  MOV     #52525,TEMP     ; LOAD LOCATIONS
007624  012700  000430                          MOV     #ADR,R0         ; LOAD ADDRESSES OF ADDRESSES
007630  012701  000432                          MOV     #ADR1,R1        ;
007634  013030                                  MOV     @(R0)+,@(R0)+   ; TEMP ---> TEMP1
007636  013067  170576                          MOV     @(R0)+,TEMP     ; TEMP2 ---> TEMP
007642  013131                                  MOV     @(R1)+,@(R1)+   ; TEMP1 ---> TEMP2
007644  022767  052525  170572                  CMP     #52525,TEMP2    ; CHECK IT
007652  001003                                  BNE     EMODE3          ; FAILED
007654  005767  170560                          TST     TEMP            ; CHECK IT
007660  001404                                  BEQ     MODE4           ; OK, CONTINUE
007662                                  EMODE3:
007662  012745  000212                          MOV     #212,-(R5)
007666  005245                                  INC     -(R5)
007670  000000                                  HALT                    ; INSTRUCTIONS FAILED IN MODE 3


                                        ;;*******************************************************************************
                                        ;*TEST: 57      CHECK MODE 4 USING THE MOVB AND MOV INSTRUCTIONS
                                        ;;*******************************************************************************

007672                                  MODE4:
007672  021527  000057                          CMP     (R5),#57
007676  001120                                  BNE     EMODE4          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
007700  005215                                  INC     (R5)
007702  105067  170532                          CLRB    TEMP            ; START CLEAN
007706  012700  000440                          MOV     #TEMP,R0        ; LOAD ADDRESSES
007712  012701  000442                          MOV     #TEMP1,R1       ;
007716  012702  000444                          MOV     #TEMP2,R2       ;
```

```
 6328  007722  005202                        INC     R2              ; ADJUST THE POINTER
 6329  007724  021267  170515                CMP     (R2),TEMP2+1
 6330  007730  001404                        BEQ     1$
 6331  007732  012745  000213                MOV     #213,-(R5)
  (2)  007736  005245                        INC     -(R5)
  (2)  007740  000000                        HALT                    ; INSTRUCTIONS FAILED IN MODE 4
 6332  007742  112742  000252        1$:     MOVB    #252,-(R2)      ; LOAD TEMP2
 6333  007746  005201                        INC     R1              ; ADJUST THE POINTERS
 6334  007750  005202                        INC     R2              ;
 6335  007752  114241                        MOVB    -(R2),-(R1)     ; TEMP2 ---> TEMP1
 6336  007754  005200                        INC     R0              ; ADJUST THE POINTERS
 6337  007756  005202                        INC     R2              ;
 6338  007760  114042                        MOVB    -(R0),-(R2)     ; TEMP ---> TEMP2
 6339  007762  105200                        INCB    R0              ; ADJUST THE POINTERS
 6340  007764  021067  170451                CMP     (R0),TEMP+1
 6341  007770  001404                        BEQ     2$
 6342  007772  012745  000214                MOV     #214,-(R5)
  (2)  007776  005245                        INC     -(R5)
  (2)  010000  000000                        HALT                    ; INSTRUCTIONS FAILED IN MODE 4
 6343  010002  105201                2$:     INCB    R1              ;
 6344  010004  114140                        MOVB    -R1),-(R0)      ; TEMP1 ---> TEMP
 6345  010006  122767  000252  170424        CMPB    #252,TEMP       ; CHECK IT
 6346  010014  001003                        BNE     3$              ; FAILED
 6347  010016  105767  170422                TSTB    TEMP2           ; CHECK IT
 6348  010022  001404                        BEQ     4$              ; OK, CONTINUE
 6349  010024                        3$:
  (2)  010024  012745  000215                MOV     #215,-(R5)
  (2)  010030  005245                        INC     -(R5)
  (2)  010032  000000                        HALT                    ; INSTRUCTIONS FAILED IN MODE 4
 6350  010034  005067  170400        4$:     CLR     TEMP            ; START CLEAN
 6351  010040  012700  000440                MOV     #TEMP,R0        ; LOAD ADDRESSES
 6352  010044  012701  000442                MOV     #TEMP1,R1       ;
 6353  010050  012702  000444                MOV     #TEMP2,R2       ;
 6354  010054  005722                        TST     (R2)+           ; ADJUST THE POINTER
 6355  010056  021267  170364                CMP     (R2),TEMP2+2
 6356  010062  001404                        BEQ     5$
 6357  010064  012745  000216                MOV     #216,-(R5)
  (2)  010070  005245                        INC     -(R5)
  (2)  010072  000000                        HALT                    ; INSTRUCTIONS FAILED IN MODE 4
 6358  010074  012742  125252        5$:     MOV     #125252,-(R2)   ; LOAD TEMP2
 6359  010100  005721                        TST     (R1)+           ; ADJUST THE POINTERS
 6360  010102  005722                        TST     (R2)+           ;
 6361  010104  014241                        MOV     -(R2),-(R1)     ; TEMP2 ---> TEMP1
 6362  010106  005720                        TST     (R0)+           ; ADJUST POINTERS
 6363  010110  005722                        TST     (R2)+           ;
 6364  010112  014042                        MOV     -(R0),-(R2)     ; TEMP ---> TEMP2
 6365  010114  005720                        TST     (R0)+           ; ADJUST THE POINTERS
 6366  010116  005721                        TST     (R1)+           ;
 6367  010120  014140                        MOV     -(R1),-(R0)     ; TEMP1 ---> TEMP
 6368  010122  022767  125252  170310        CMP     #125252,TEMP    ; CHECK IT
 6369  010130  001003                        BNE     EMODE4          ; FAILED
 6370  010132  005767  170306                TST     TEMP2           ; CHECK IT
 6371  010136  001404                        BEQ     MODE5           ; OK, CONTINUE
 6372  010140                        EMODE4:
  (2)  010140  012745  000217                MOV     #217,-(R5)
  (2)  010144  005245                        INC     -(R5)
```

```
 6372  010146  000000          HALT                    ; INSTRUCTIONS FAILED IN MODE 4
 6373                                                  ; OR WRONG SEQUENCE
```

```
                                        ;;*******************************************************************
                                        ;*TEST: 60      CHECK MODE 5 USING THE MOVB AND MOV INSTRUCTIONS
                                        ;;*******************************************************************

010150                                  MODES:
010150  021527  000060                          CMP     (R5),#60
010154  001105                                  BNE     EMODES          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
010156  005215                                  INC     (R5)
010160  105067  170254                          CLRB    TEMP            ; START CLEAN
010164  012767  000440  170236                  MOV     #TEMP,ADR       ; LOAD ADDRESSES
010172  012767  000442  170232                  MOV     #TEMP1,ADR1     ;
010200  012767  000444  170226                  MOV     #TEMP2,ADR2     ;
010206  012700  000430                          MOV     #ADR,R0         ; LOAD ADDRESSES OF ADDRESSES
010212  012701  000432                          MOV     #ADR1,R1        ;
010216  012702  000434                          MOV     #ADR2,R2        ;
010222  005722                                  TST     (R2)+           ; ADJUST THE POINTER
010224  112752  000125                          MOVB    #125,@-(R2)     ; LOAD TEMP2
010230  022122                                  CMP     (R1)+,(R2)+     ; ADJUST THE POINTERS
010232  115251                                  MOVB    @-(R2),@-(R1)   ; TEMP2 ---> TEMP1
010234  022022                                  CMP     (R0)+,(R2)+     ; ADJUST THE POINTERS
010236  115052                                  MOVB    @-(R0),@-(R2)   ; TEMP ---> TEMP2
010240  022022                                  CMP     (R0)+,(R2)+     ; ADJUST THE POINTERS
010242  125052                                  CMPB    @-(R0),@-(R2)   ;CHECK IT
010244  001404                                  BEQ     1$
010246  012745  000220                          MOV     #220,-(R5)
010252  005245                                  INC     -(R5)
010254  000000                                  HALT
010256  022120                          1$:     CMP     (R1)+,(R0)+     ; ADJUST THE POINTERS
010260  115150                                  MOVB    @-(R1),@-(R0)   ; TEMP1 ---> TEMP
010262  122767  000125  170150                  CMPB    #125,TEMP       ; CHECK IT
010270  001003                                  BNE     2$              ; FAILED
010272  105767  170146                          TSTB    TEMP2           ; CHECK IT
010276  001404                                  BEQ     3$              ; OK, CONTINUE
010300                                  2$:
010300  012745  000221                          MOV     #221,-(R5)
010304  005245                                  INC     -(R5)
010306  000000                                  HALT                    ; INSTRUCTIONS FAILED IN MODE 5
010310  005067  170124                  3$:     CLR     TEMP            ; START CLEAN
010314  012700  000430                          MOV     #ADR,R0         ; LOAD ADDRESSES OF ADDRESSES
010320  012701  000432                          MOV     #ADR1,R1        ;
010324  012702  000434                          MOV     #ADR2,R2        ;
010330  005722                                  TST     (R2)+           ; ADJUST THE POINTER
010332  012752  052525                          MOV     #52525,@-(R2)   ; LOAD TEMP2
010336  022122                                  CMP     (R1)+,(R2)+     ; ADJUST THE POINTERS
010340  015251                                  MOV     @-(R2),@-(R1)   ; TEMP2 ---> TEMP1
010342  022022                                  CMP     (R0)+,(R2)+     ; ADJUST THE POINTERS
010344  015052                                  MOV     @-(R0),@-(R2)   ; TEMP ---> TEMP2
010346  022021                                  CMP     (R0)+,(R1)+     ; ADJUST THE POINTERS
010350  015150                                  MOV     @-(R1),@-(R0)   ; TEMP1 ---> TEMP
010352  022767  052525  170060                  CMP     #52525,TEMP     ; CHECK IT
010360  001003                                  BNE     EMODES          ; FAILED
010362  005767  170056                          TST     TEMP2           ; CHECK IT
010366  001404                                  BEQ     MODE6           ; OK, CONTINUE
010370                                  EMODES:
010370  012745  000222                          MOV     #222,-(R5)
010374  005245                                  INC     -(R5)
```

```
010376  000000                                  HALT                            ; INSTRUCTIONS FAILED IN MODE 5
                                                                                ; OR WRONG SEQUENCE



                                        ;;*****************************************************************************
                                        ;*TEST: 61       CHECK MODE 6 USING THE MOVB AND MOV INSTRUCTIONS
                                        ;;*****************************************************************************

010400                                  MODE6:
010400  021527  000061                          CMP     (R5),#61
010404  001055                                  BNE     EMODE6          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
010406  005215                                  INC     (R5)
010410  005067  170030                          CLR     TEMP2           ; START CLEAN
010414  012700  000440                          MOV     #TEMP,R0        ; LOAD ADDRESSES
010420  012701  000442                          MOV     #TEMP1,R1       ;
010424  012702  000444                          MOV     #TEMP2,R2       ;
010430  112760  000252  000000                  MOVB    #252,0(R0)      ; LOAD TEMP (LOW BYTE)
010436  112760  000252  000001                  MOVB    #252,1(R0)      ; LOAD TEMP (HIGH BYTE)
010444  022767  125252  167766                  CMP     #125252,TEMP    ; CHECK IT
010452  001012                                  BNE     1$              ; FAILED
010454  116062  000001  000000                  MOVB    1(R0),0(R2)     ; TEMP(H) ---> TEMP2(L)
010462  116160  000002  000005                  MOVB    2(R1),5(R0)     ; TEMP2(L) ---> TEMP2(H)
010470  022767  125252  167746                  CMP     #125252,TEMP2   ; CHECK IT
010476  001404                                  BEQ     2$              ; OK, CONTINUE
010500                                  1$:
010500  012745  000223                          MOV     #223,-(R5)
010504  005245                                  INC     -(R5)
010506  000000                                  HALT                    ; INSTRUCTIONS FAILED IN MODE 6
010510  005067  167726                  2$:     CLR     TEMP1           ; START CLEAN
010514  012760  052525  000000                  MOV     #52525,0(R0)    ; LOAD TEMP
010522  016260  177774  000002                  MOV     -4(R2),2(R0)    ; TEMP ---> TEMP1
010530  022767  052525  167704                  CMP     #52525,TEMP1    ; CHECK IT
010536  001404                                  BEQ     MODE7           ; OK, CONTINUE
010540                                  EMODE6:
010540  012745  000224                          MOV     #224,-(R5)
010544  005245                                  INC     -(R5)
010546  000000                                  HALT                    ; INSTRUCTIONS FAILED IN MODE 6
                                                                        ; OR WRONG SEQUENCE
```

```
                                ;;*******************************************************************************
                                ;*TEST: 62      CHECK MODE 7 USING THE MOVB AND MOV INSTRUCTIONS
                                ;;*******************************************************************************

010550                          MODE7:
010550  021527  000062                  CMP     (R5),#62
010554  001052                          BNE     EMODE7          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
010556  005215                          INC     (R5)
010560  005067  167656                  CLR     TEMP1           ; START CLEAN
010564  012767  000440  167636          MOV     #TEMP,ADR       ; LOAD ADDRESSES
010572  012767  000442  167632          MOV     #TEMP1,ADR1     ;
010600  012767  000444  167626          MOV     #TEMP2,ADR2     ;
010606  012700  000430                  MOV     #ADR,R0         ; LOAD ADDRESSES OF ADDRESSES
010612  012701  000432                  MOV     #ADR1,R1        ;
010616  012702  000434                  MOV     #ADR2,R2        ;
010622  112770  000252  000000          MOVB    #252,@0(R0      ; LOAD TEMP
010630  117270  177774  000002          MOVB    @-4(R2),@2(R0   ; TEMP ---> TEMP1
010636  122767  000252  167576          CMPB    #252,TEMP1      ; CHECK IT
010644  001404                          BEQ     1$              ; OK, CONTINUE
010646  012745  000225                  MOV     #225,-(R5)
010652  005245                          INC     -(R5)
010654  000000                          HALT                    ; MODE 7 IS FAILING
010656  012770  125252  000000  1$:     MOV     #125252,@0(R0)  ; LOAD TEMP
010664  017270  177774  000002          MOV     @-4(R2),@2(R0)  ; TEMP ---> TEMP1
010672  022767  125252  167542          CMP     #125252,TEMP1   ; CHECK IT
010700  001404                          BEQ     TS*B1           ; OK, CONTINUE
010702                          EMODE7:
010702  012745  000226                  MOV     #226,-(R5)
010706  005245                          INC     -(R5)
010710  000000                          HALT                    ; INSTRUCTIONS FAILED IN MODE 7
                                                                ; OR WRONG SEQUENCE
```

```
                                        ;       CHECK BYTE INSTRUCTIONS, NOT DESTINATION MODE 0
                                        ;       -----------------------------------------------
                                        ;;*************************************************************************
                                        ;*TEST: 63      NEW INSTRUCTIONS USED IN THIS SECTION ARE TSTB, CLRB, MOVB
                                        ;;*************************************************************************
010712                                  TSTB1:
010712  021527  000063                          CMP     (R5),#63
010716  001042                                  BNE     ETSTB1          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF TEST
010720  005215                          2$:     INC     (R5)
010722  012700  000440                          MOV     #TEMP,R0        ; LOAD ADDRESSES
010726  012701  000442                          MOV     #TEMP1,R1       ;
010732  000277                                  SCC
010734  105010                                  CLRB    (R0)            ; CLEAR THE LOCATION
010736  004737  017164                          JSR     PC,@#$CC4       ; CHECK FOR CC = 4
010742  105710                                  TSTB    (R0)            ; CHECK IT
010744  004737  017164                          JSR     PC,@#$CC4       ; CHECK FOR CC = 4
010750  112711  000377                          MOVB    #377,(R1)       ; LOAD THE LOCATION
010754  004737  017252                          JSR     PC,@#$CC10      ; CHECK FOR CC = 10
010760  105711                                  TSTB    (R1)            ; CHECK IT
010762  004737  017252                          JSR     PC,@#$CC10      ; CHECK FOR CC = 10
010766  010002                                  MOV     R0,R2           ; R2 IS NOW POINTING TO LOCATION TEMP
010770  112762  000200  000000                  MOVB    #200,0(R2)      ; PLACE #200 IN LOCATION TEMP
010776  112241                                  MOVB    (R2)+,-(R1)     ; MOVE #200 TO LOCATION TEMP+1
011000  026127  177777  100200                  CMP     -1(R1),#100200  ; CHECK THE DATA IN LOCATION TEMP
011006  001404                                  BEQ     4$
011010  012745  000227                          MOV     #227,-(R5)
011014  005245                                  INC     -(R5)
011016  000000                                  HALT                    ; MOVB INSTRUCTION FAILED
011020  020102                          4$:     CMP     R1,R2           ; CHECK THE REGISTERS FOR PROPER VALUE
011022  001404                                  BEQ     CMPB1
011024                                  ETSTB1:
011024  012745  000230                          MOV     #230,-(R5)
011030  005245                                  INC     -(R5)
011032  000000                                  HALT                    ; MOVB INSTRUCTION FAILED OR WRONG SEQUENCE
```

```
                                ;;*******************************************************************************
                                ;*TEST: 64      NEW INSTRUCTIONS USED IN THIS SECTION ARE CMPB, BISB
                                ;;*******************************************************************************

011034                          CMPB1:
011034  021527  000064                  CMP     (R5),#64
011040  001032                          BNE     ECMPB1          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
011042  005215                  1$:     INC     (R5)
011044  012701  000444                  MOV     #TEMP2,R1
011050  012702  000440                  MOV     #TEMP,R2        ; LOAD ADDRESS
011054  012711  000077                  MOV     #77,(R1)        ; PLACE 77 IN LOCATION TEMP2
011060  112704  000377                  MOVB    #377,R4         ; R4 SHOULD CONTAIN #177777
011064  150412                          BISB    R4,(R2)         ; LOAD LOCATION
011066  004737  017252                  JSR     PC,@#$CC10      ; CHECK FOR CC = 10
011072  120412                          CMPB    R4,(R2)         ; CHECK COMPARE
011074  001404                          BEQ     2$              ; CONTINUE IF OK
011076  012745  000231                  MOV     #231,-(R5)
011102  005245                          INC     -(R5)
011104  000000                          HALT                    ; BISB OR CMPB INSTRUCTION FAILED
011106  121112                  2$:     CMPB    (R1),(R2)       ; CHECK IT AGAIN
011110  100004                          BPL     3$              ; CONTINUE IF OK
011112  012745  000232                  MOV     #232,-(R5)
011116  005245                          INC     -(R5)
011120  000000                          HALT                    ; CMPB INSTRUCTION FAILED [WRONG CC]
011122  121211                  3$:     CMPB    (R2),(R1)       ; ONCE MORE
011124  100404                          BMI     BICB1           ; CONTINUE IF OK
011126                          ECMPB1:
011126  012745  000233                  MOV     #233,-(R5)
011132  005245                          INC     -(R5)
011134  000000                          HALT
                                ;;*******************************************************************************
                                ;*TEST: 65      NEW INSTRUCTIONS USED IN THIS SECTION ARE BICB, BITB
                                ;;*******************************************************************************
011136                          BICB1:
011136  021527  000065                  CMP     (R5),#65
011142  001404                          BEQ     2$              ; IF IN WRONG SEQUENCE GO TO HLT BELOW
011144  012745  000234                  MOV     #234,-(R5)
011150  005245                          INC     -(R5)
011152  000000                          HALT                    ; PROGRAM IS IN WRONG SEQUENCE
011154  005215                  2$:     INC     (R5)
011156  012703  000440                  MOV     #TEMP,R3        ; LOAD ADDRESS
011162  112713  000377                  MOVB    #377,(R3)       ; LOAD LOCATION
011166  012700  000442                  MOV     #TEMP1,R0       ;PLACE THE ADDRESS OF LOCATION TEMP1 IN R0
011172  010001                          MOV     R0,R1           ;AND R1
011174  112721  000252                  MOVB    #252,(R1)+      ; PLACE #252 IN TEMP1
011200  000277                          SCC
011202  146013  000000                  BICB    0(R0),(R3)      ; CLEAR EVERY OTHER BIT
011206  004737  017122                  JSR     PC,@#$CC1       ; CHECK FOR CC = 1
011212  136113  177777                  BITB    -1(R1),(R3)     ; CHECK IT
011216  001404                          BEQ     4$              ; CONTINUE IF Ok
011220  012745  000235                  MOV     #235,-(R5)
011224  005245                          INC     -(R5)
```

```
  (2)  011226  000000                      HALT                     ; BICB OR BITB INSTRUCTION FAILED
 6549  011230  132713  000125     4$:      BITB    #125,(R3)        ; CHECK IT
 6550  011234  004737  017102              JSR     PC,@#$CC1        ; CHECK FOR CC = 1
 6551  011240  154113                      BISB    -(R1),(R3)       ; SET THE BITS THAT WERE CLEARED
 6552  011242  100404                      BMI     6$               ; CONTINUE IF OK
 6553  011244  012745  000236              MOV     #236,-(R5)
  (2)  011250  005245                      INC     -(R5)
  (2)  011252  000000                      HALT                     ; BITB OR BISB INSTRUCTION FAILED
 6554  011254  012746  000177     6$:      MOV     #177,-(SP)       ; STORE #177 ON THE STACK
 6555  011260  142613                      BICB    (SP)+,(R3)       ; CLEAR ALL THE BITS EXCEPT SIGN BIT
 6556  011262  004737  017272              JSR     PC,@#$CC11       ; CHECK FOR CC = 11
 6557  011266  132713  000377              BITB    #377,(R3)        ; CHECK IT
 6558  011272  004737  017272              JSR     PC,@#$CC11       ; CHECK FOR CC = 11
 6559  011276  010300                      MOV     R3,R0            ; PLACE THE ADDRESS OF LOCATION TEMP IN R0
 6560  011300  012710  000442              MOV     #TEMP1,(R0)      ; PLACE THE ADDRESS OF LOCATION TEMP1 IN TEMP
 6561  011304  012730  000377              MOV     #377,@(R0)+      ; WRITE A 377 IN LOCATION TEMP1
 6562  011310  000263                      SEVC                     ; SET V & C BITS
 6563  011312  145070  000000              BICB    @-(R0),@(R0)     ; BIT CLEAR THE CONTENTS
 6564                                                               ; OF TEMP1 TO THE CONTENTS OF TEMP1
 6565  011316  004737  017206              JSR     PC,@#$CC5        ; CHECK FOR CC = 5
 6566  011322  022027  000442              CMP     (R0)+,#TEMP1     ; MAKE SURE THAT (R0) IS POINTING TO LOCATION TEMP1
 6567  011326  001404                      BEQ     8$
 6568  011330  012745  000237              MOV     #237,-(R5)
  (2)  011334  005245                      INC     -(R5)
  (2)  011336  000000                      HALT                     ; BICB OR CMP INSTRUCTION FAILED IN THE SPECIFIC MODE
 6569  011340  005750                 8$:  TST     @-(R0)           ; TEST LOCATION TEMP1
 6570  011342  001404                      BEQ     10$
 6571  011344  012745  000240              MOV     #240,-(R5)
  (2)  011350  005245                      INC     -(R5)
  (2)  011352  000000                      HALT                     ; BICB INSTRUCTION FAILED
 6572  011354  000257                10$:  CCC
 6573  011356  141010                      BICB    (R0),(R0)        ; CLEAR THE LOCATION TEMP
 6574  011360  004737  017164              JSR     PC,@#$CC4        ; CHECK FOR CC = 4
```

```
                                ;;*******************************************************************************
                                ;*TEST: 66      NEW INSTRUCTIONS USED IN THIS SECTION ARE INCB, DECB
                                ;;*******************************************************************************

011364                          INCB1:
011364  021527  000066                  CMP     (R5),#66
011370  001067                          BNE     EINCB1          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
011372  005215                  1$:     INC     (R5)
011374  012704  000440                  MOV     #TEMP,R4        ; LOAD ADDRESS
011400  112714  000177                  MOVB    #177,(R4)       ; TEMP LOCATION=177
011404  000261                          SEC
011406  105214                          INCB    (R4)            ; ADD ONES INTO LOCATION
011410  004737  017334                  JSR     PC,@#$CC13      ; CHECK FOR CC = 13
011414  012714  000376                  MOV     #376,(R4)
011420  012700  017272                  MOV     #$CC11,R0       ; MAKE R0 POINT TO CHECKING ROUTINE FOR CC = 11
011424  105224                          INCB    (R4)+           ;
011426  004720                          JSR     PC,(R0)+        ; CHECK FOR CC = 11
011430  105744                          TSTB    -(R4)           ; DECREMENT R4 BY 1
011432  005746                          TST     -(SP)           ; AND SP BY 2
011434  010426                          MOV     R4,(SP)+        ; PLACE THE ADDRESS OF TEMP ON THE STACK
011436  000241                          CLC                     ; CLEAR C BIT
011440  105256                          INCB    @-(SP)          ; INCREMENT THE CONTENTS OF LOCATION TEMP
011442  004737  017164                  JSR     PC,@#$CC4       ; CHECK FOR CC = 4
011446  123634                          CMPB    @(SP)+,@(R4)+   ; RESTORE STACK POINTER
011450  000261                          SEC                     ; SET C BIT
011452  105264  177777                  INCB    -1(R4)
011456  004737  017102                  JSR     PC,@#$CC1       ; CHECK FOR CC = 1
011462  124427  000001                  CMPB    -(R4),#1        ; CHECK IT
011466  001404                          BEQ     2$              ; CONTINUE IF OK
011470  012745  000241                  MOV     #241,-(R5)
011474  005245                          INC     -(R5)
011476  000000                          HALT                    ; INCB INSTRUCTION FAILED
011500  000261                  2$:     SEC
011502  105314                          DECB    (R4)            ; SUBTRACT ONES FROM LOCATION
011504  004737  017206                  JSR     PC,@#$CC5       ; CHECK FOR CC = 5
011510  105324                          DECB    (R4)+
011512  004740                          JSR     PC,-(R0)        ; CHECK FOR CC = 11
011514  112764  000200  177777          MOVB    #200,-1(R4)
011522  105344                          DECB    -(R4)           ;
011524  004760  177650                  JSR     PC,$CC3-$CC11(R0); CHECK FOR CC = 3
011530  105364  000000                  DECB    0(R4)           ;
011534  004737  017102                  JSR     PC,@#$CC1       ; CHECK FOR CC = 1
011540  126427  000000  000176          CMPB    0(R4),#176
011546  001404                          BEQ     COMB1
011550                          EINCB1:
011550  012745  000242                  MOV     #242,-(R5)
011554  005245                          INC     -(R5)
011556  000000                          HALT                    ; DECB INSTRUCTION FAILED OR SEQUENCE ERROR
```

```
                                ;;*******************************************************************************
                                ;*TEST: 67      NEW INSTRUCTION IN THIS SECTION IS COMB
                                ;;*******************************************************************************
011560                          COMB1:
011560  021527  000067                CMP     (R5),#67
011564  001404                        BEQ     1$                      ; IF IN WRONG SEQUENCE GO TO HLT
011566  012745  000243                MOV     #243,-(R5)
011572  005245                        INC     -(R5)
011574  000000                        HALT                            ; TEST IS IN WRONG SEQUENCE
011576  005215                1$:     INC     (R5)
011600  012703  000440                MOV     #TEMP,R3                ; LOAD ADDRESS
011604  012704  000442                MOV     #TEMP1,R4
011610  012714  000252                MOV     #252,(R4)
011614  112413                        MOVB    (R4)+,(R3)              ; LOAD EVERY OTHER BIT
011616  000277                        SCC
011620  105113                        COMB    (R3)                    ; 1'S COMPLEMENT
011622  004737  017102                JSR     PC,@#$CC1               ; CHECK FOR CC = 1
011626  122713  000125                CMPB    #125,(R3)               ; CHECK IT
011632  001404                        BEQ     2$                      ; CONTINUE IF OK
011634  012745  000244                MOV     #244,-(R5)
011640  005245                        INC     -(R5)
011642  000000                        HALT                            ; COMB INSTRUCTION FAILED
011644  000277                2$:     SCC
011646  105113                        COMB    (R3)                    ; COMPLEMENT BACK
011650  004737  017272                JSR     PC,@#$CC11              ; CHECK FOR CC = 11
011654  010400                        MOV     R4,R0
011656  126013  177777                CMPB    -1(R0),(R3)             ; CHECK IT
011662  001404                        BEQ     3$                      ; CONTINUE IF OK
011664  012745  000245                MOV     #245,-(R5)
011670  005245                        INC     -(R5)
011672  000000                        HALT                            ; COMB INSTRUCTION FAILED
011674  112724  000377        3$:     MOVB    #377,(R4)+
011700  114413                        MOVB    -(R4),(R3)              ; PLACE #377 IN (R3)
011702  000277                        SCC
011704  105113                        COMB    (R3,
011706  004737  017206                JSR     PC,@#$CC5               ; CHECK FOR CC = 5
```

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6652                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 70      NEW INSTRUCTION IN THIS SECTION IS NEGB
 (3)                                    ;;*******************************************************************************
6653
6654  011712                           NEGB1:
 (2)  011712  021527  000070                   CMP     (R5),#70
6655  011716  001027                           BNE     ENEGB1          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TES
6656  011720  005215                   1$:     INC     (R5)
6657  011722  012700  000440                   MOV     #TEMP,R0        ; LOAD ADDRESS
6658  011726  112710  000001                   MOVB    #1,(R0)         ; LOAD THE LOCATION
6659  011732  105410                           NEGB    (R0)            ; 2'S COMPLEMENT
6660  011734  004737  017272                   JSR     PC,@#$CC11      ; CHECK FOR CC = 11
6661  011740  122710  000377                   CMPB    #377,(R0)       ; CHECK IT
6662  011744  001404                           BEQ     2$              ; CONTINUE IF OK
6663  011746  012745  000246                   MOV     #246,-(R5)
 (2)  011752  005245                           INC     -(R5)
 (2)  011754  000000                           HALT                    ; NEGB INSTRUCTION FAILED
6664  011756  012710  000200           2$:     MOV     #200,(R0)
6665  011762  105410                           NEGB    (R0)            ; 2'S COMPLEMENT
6666  011764  004737  017334                   JSR     PC,@#$CC13      ; CHECK FOR CC = 13
6667  011770  122710  000200                   CMPB    #200,(R0)       ; CHECK IT
6668  011774  001404                           BEQ     ROLB1           ; CONTINUE IF OK
6669  011776                           ENEGB1:
 (2)  011776  012745  000247                   MOV     #247,-(R5)
 (2)  012002  005245                           INC     -(R5)
 (2)  012004  000000                           HALT                    ; WRONG RESULT AT TEMP OR WRONG SEQUENCE
6670
6671
6672
6673                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 71      NEW INSTRUCTION IN THIS SECTION IS ROLB
 (3)                                    ;;*******************************************************************************
6674
6675  012006                           ROLB1:
 (2)  012006  021527  000071                   CMP     (R5),#71
6676  012012  001030                           BNE     EROLB1          ; IF IN WRONG SEQUENCE GO TO HLT ABOVE
6677  012014  005215                           INC     (R5)
6678  012016  012701  000442                   MOV     #TEMP1,R1       ; LOAD ADDRESS
6679  012022  112711  000040                   MOVB    #40,(R1)        ; LOAD LOCATION
6680  012026  000257                           CCC                     ; CLEAR FLAGS
6681  012030  106111                           ROLB    (R1)            ; SHIFT
6682  012032  106111                           ROLB    (R1)            ;
6683  012034  004737  017314                   JSR     PC,@#$CC12      ; CHECK FOR CC = 12
6684  012040  122711  000200                   CMPB    #200,(R1)       ; CHECK IT
6685  012044  001404                           BEQ     1$              ; CONTINUE IF OK
6686  012046  012745  000250                   MOV     #250,-(R5)
 (2)  012052  005245                           INC     -(R5)
 (2)  012054  000000                           HALT                    ; ROLB INSTRUCTION FAILED
6687  012056  106111                   1$:     ROLB    (R1)            ; SHIFT
6688  012060  004737  017230                   JSR     PC,@#$CC7       ; CHECK FOR CC = 7
6689  012064  106111                           ROLB    (R1)            ; SHIFT
6690  012066  122711  000001                   CMPB    #1,(R1)         ; CHECK IT
6691  012072  001404                           BEQ     RORB1           ; CONTINUE IF OK
6692  012074                           EROLB1:
 (2)  012074  012745  000251                   MOV     #251,-(R5)
 (2)  012100  005245                           INC     -(R5)
```

```
.2)  012102  000000          HALT          ; WRONG RESULT AT TEMP1 OR WRONG SEQUENCE
```

```
6693                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 72      NEW INSTRUCTION IN THIS SECTION IS RORB
 (3)                                    ;;*******************************************************************************
6694
6695  012104                            RORB1:
 (2)  012104  021527  000072                    CMP     (R5),#72
6696  012110  001030                            BNE     ERORB1          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
6697  012112  005215                            INC     (R5)
6698  012114  012702  000442                    MOV     #TEMP1,R2       ; LOAD ADDRESS
6699  012120  112712  000004                    MOVB    #4,(R2)         ; LOAD LOCATION
6700  012124  000257                            CCC                     ; CLEAR FLAGS
6701  012126  106012                            RORB    (R2)            ; SHIFT
6702  012130  106012                            RORB    (R2)            ;
6703  012132  122712  000001                    CMPB    #1,(R2)         ; CHECK IT
6704  012136  001404                            BEQ     1$              ; CONTINUE IF OK
6705  012140  012745  000252                    MOV     #252,-(R5)
 (2)  012144  005245                            INC     -(R5)
 (2)  012146  000000                            HALT                    ; RORB INSTRUCTION FAILED
6706  012150  106012                    1$:     RORB    (R2)            ; SHIFT
6707  012152  004737  017230                    JSR     PC,@#$CC7       ; CHECK FOR CC = 7
6708  012156  106012                            RORB    (R2)            ; SHIFT
6709  012160  004737  017314                    JSR     PC,@#$CC12      ; CHECK FOR CC = 12
6710  012164  122712  000200                    CMPB    #200,(R2)       ; CHECK IT
6711  012170  001404                            BEQ     ASLB1           ; CONTINUE IF OK
6712  012172                            ERORB1:
 (2)  012172  012745  000253                    MOV     #253,-(R5)
 (2)  012176  005245                            INC     -(R5)
 (2)  012200  000000                            HALT                    ; WRONG RESULT AT TEMP1 OR WRONG SEQUENCE
6713
6714
6715
6716                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 73      NEW INSTRUCTION IN THIS SECTION IS ASLB
 (3)                                    ;;*******************************************************************************
6717
6718  012202                            ASLB1:
 (2)  012202  021527  000073                    CMP     (R5),#73
6719  012206  001404                            BEQ     2$              ; IF IN WRONG SEQUENCE GO TO HLT BELOW
6720  012210  012745  000254                    MOV     #254,-(R5)
 (2)  012214  005245                            INC     -(R5)
 (2)  012216  000000                            HALT                    ; PROGRAM IS IN WRONG SEQUENCE
6721  012220  005215                    2$:     INC     (R5)
6722  012222  012703  000442                    MOV     #TEMP1,R3       ; LOAD ADDRESS
6723  012226  112713  000040                    MOVB    #40,(R3)        ; LOAD LOCATION
6724  012232  000257                            CCC                     ; CLEAR FLAGS
6725  012234  106313                            ASLB    (R3)            ; SHIFT
6726  012236  106313                            ASLB    (R3)            ;
6727  012240  004737  017314                    JSR     PC,@#$CC12      ; CHECK FOR CC = 12
6728  012244  122713  000200                    CMPB    #200,(R3)       ; CHECK IT
6729  012250  001404                            BEQ     4$              ; CONTINUE IF OK
6730  012252  012745  000255                    MOV     #255,-(R5)
 (2)  012256  005245                            INC     -(R5)
 (2)  012260  000000                            HALT                    ; ASLB INSTRUCTION FAILED
6731  012262  106313                    4$:     ASLB    (R3)            ; SHIFT
6732  012264  004737  017230                    JSR     PC,@#$CC7       ; CHECK FOR CC = 7
6733  012270  106313                            ASLB    (R3)            ; SHIFT
```

NO5


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 6734  012272  004737  017164                JSR     PC,@#$CC4       ; CHECK FOR CC = 4
```

```
                                ;;*****************************************************************************
                                ;*TEST: 74      NEW INSTRUCTION IN THIS SECTION IS ASRB
                                ;;*****************************************************************************

                                ASRB1:
012324                                  CMP     (R5),#74
012326  021527  000074                  BNE     EASRB1          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
012330  001040                  1$:     INC     (R5)
012332  005215                          MOV     #TEMP1,R4       ; LOAD ADDRESSES
012334  012704  000442                  MOV     #TEMP2,R3       ;
012340  012703  000444                  MOVB    #4,(R4)         ; LOAD LOCATION
012344  112714  000004                  CCC                     ; CLEAR FLAGS
012350  000257                          ASRB    (R4)            ; SHIFT
012352  106214                          ASRB    (R4)            ;
012354  106214                          CMPB    #1, R4)         ; CHECK IT
012356  122714  000001                  BEQ     2$              ; CONTINUE IF OK
012362  001404                          MOV     #256,-(R5)
012364  012745  000256                  INC     -(R5)
012370  005245                          HALT                    ; ASRB INSTRUCTION FAILED
012372  000000                  2$:     ASRB    (R4)            ; SHIFT
012374  106214                          JSR     PC,@#$CC7       ; CHECK FOR CC = 7
012376  004737  017230                  ASRB    (R4)            ; SHIFT
012402  106214                          JSR     PC,@#$CC4       ; CHECK FOR CC = 4
012404  004737  017164                  MOVB    #202,(R3)       ; LOAD LOCATION
012410  112713  000202                  ASRB    (R3)            ; SHIFT
012414  106213                          ASRB    (R3)            ;
012416  106213                          JSR     PC,@#$CC11      ; CHECK FOR CC = 11
012420  004737  017272                  CMPB    #340,(R3)       ; CHECK IT
012424  122713  000340                  BEQ     ADCB1           ; CONTINUE IF OK
012430  001404                  EASRB1:
012432  012745  000257                  MOV     #257,-(R5)
012436  005245                          INC     -(R5)
012440  000000                          HALT                    ; WRONG RESULT AT TEMP2 OR WRONG SEQUENCE


                                ;;*****************************************************************************
                                ;*TEST: 75      NEW INSTRUCTION IN THIS SECTION IS ADCB
                                ;;*****************************************************************************

012442
012442  021527  000075          ADCB1:  CMP     (R5),#75
012446  001404                          BEQ     2$              ; IF IN WRONG SEQUENCE GO TO HLT BELOW
012450  012745  000260                  MOV     #260,-(R5)
012454  005245                          INC     -(R5)
012456  000000                          HALT                    ; PROGRAM IS IN WRONG SEQUENCE
012460  005215                  2$:     INC     (R5)
012462  012700  000444                  MOV     #TEMP2,R0       ; LOAD ADDRESS
012466  105010                          CLRB    (R0)            ; CLEAR THE LOCATION
012470  000257                          CCC                     ; CLEAR FLAGS
012472  105510                          ADCB    (R0)            ; ADD C BIT = 0
012474  004737  017164                  JSR     PC,@#$CC4       ; CHECK FOR CC = 4
012500  000261                          SEC                     ; C=1
012502  105510                          ADCB    (R0)            ; ADD C BIT=1
012504  000261                          SEC                     ; C=1
012506  105510                          ADCB    (R0)            ; AGAIN
```

C06


```
 6778  012462  004737  017062                JSR     PC,@#$CCO       ; CHECK FOR CC = 0
 6779  012466  122710  000002                CMPB    #2,(RO)         ; CHECK IT
 6780  012472  001404                        BEQ     4$              ; CONTINUE IF OK
 6781  012474  012745  000261                MOV     #261,-(R5)
   (2) 012500  005245                        INC     -(R5)
   (2) 012502  000000                        HALT                    ; ADCB INSTRUCTION FAILED
 6782  012504  112710  000177          4$:   MOVB    #177,(RO)       ; LOAD LARGEST POSITVE BYTE
 6783  012510  000261                        SEC                     ; C=1
 6784  012512  105510                        ADCB    (RO)            ; ADD C BIT=1
 6785  012514  004737  017314                JSR     PC,@#$CC12      ; CHECK FOR CC = 12
 6786  012520  122710  000200                CMPB    #200,(RO)       ; CHECK IT
 6787  012524  001404                        BEQ     6$              ; CONTINUE IF OK
 6788  012526  012745  000262                MOV     #262,-(R5)
   (2) 012532  005245                        INC     -(R5)
   (2) 012534  000000                        HALT                    ; ADCB INSTRUCTION FAILED
 6789  012536  112710  000377          6$:   MOVB    #377,(RO        ; LOAD -1
 6790  012542  000261                        SEC                     ; C=1
 6791  012544  105510                        ADCB    (RO)            ; ADD C BIT=1
 6792  012546  004737  017206                JSR     PC,@#$CC5       ; CHECK FOR CC = 5
```

```
                                ;;*****************************************************************************
                                ;*TEST: 76       NEW INSTRUCTION IN THIS SECTION IS SBCB
                                ;;*****************************************************************************
                                
012552                          SBCB1:
012552  021527  000076                  CMP     (R5),#76
012556  001404                          BEQ     1$                      ; IF IN WRONG SEQUENCE GO TO HLT
012560  012745  000263                  MOV     #263,-(R5)
012564  005245                          INC     -(R5)
012566  000000                          HALT                            ; TEST IS IN WRONG SEQUENCE
012570  005215                  1$:     INC     (R5)
012572  012701  000444                  MOV     #TEMP2,R1               ; LOAD ADDRESS
012576  112711  000003                  MOVB    #3,(R1)                 ; LOAD LOCATION
012602  000257                          CCC                             ; CLEAR FLAGS
012604  105611                          SBCB    (R1)                    ; SUBTRACT C BIT=0
012606  004737  017062                  JSR     PC,@#$CC0               ; CHECK FOR CC = 0
012612  122711  000003                  CMPB    #3,(R1)                 ; CHECK IT
012616  001404                          BEQ     2$                      ; CONTINUE IF OK
012620  012745  000264                  MOV     #264,-(R5)
012624  005245                          INC     -(R5)
012626  000000                          HALT                            ; SBCB INSTRUCTION FAILED
012630  000261                  2$:     SEC                             ; C=1
012632  105611                          SBCB    (R1)                    ; SUBTRACT C BIT=1
012634  000261                          SEC                             ; C=1
012636  105611                          SBCB    (R1)                    ;
012640  004737  017062                  JSR     PC,@#$CC0               ; CHECK FOR CC = 0
012644  122711  000001                  CMPB    #1,(R1)                 ; CHECK IT
012650  001404                          BEQ     3$                      ; CONTINUE IF OK
012652  012745  000265                  MOV     #265,-(R5)
012656  005245                          INC     -(R5)
012660  000000                          HALT                            ; SBCB INSTRUCTION FAILED
012662  000261                  3$:     SEC                             ; C=1
012664  105611                          SBCB    (R1)                    ; SUBTRACT C BIT=1
012666  004737  017164                  JSR     PC,@#$CC4               ; CHECK FOR CC = 4
012672  000261                          SEC                             ; C=1
012674  105611                          SBCB    (R1)                    ; SUBTRACT C BIT = 1
012676  004737  017272                  JSR     PC,@#$CC11              ; CHECK FOR CC = 11
012702  122711  000377                  CMPB    #377,(R1)               ; CHECK IT
012706  001404                          BEQ     4$                      ; CONTINUE IF OK
012710  012745  000266                  MOV     #266,-(R5)
012714  005245                          INC     -(R5)
012716  000000                          HALT                            ; SBCB INSTRUCTION FAILED
012720  112711  000200          4$:     MOVB    #200,(R1)               ; LOAD R1
012724  000261                          SEC                             ; C=1
012726  105611                          SBCB    (R1)                    ; SUBTRACT C BIT = 1
012730  004737  017122                  JSR     PC,@#$CC2               ; CHECK FOR CC = 2
```

```
                                        ;               CHECK WORD INSTRUCTIONS, NOT DESTINATION MODE 0
                                        ;               ----------------------------------------------




                                        ;;**********************************************************************
                                        ;*TEST: 77       NEW INSTRUCTIONS USED IN THIS SECTION ARE TST, CLR, MOV
                                        ;;**********************************************************************

012734                                  TST1:
012734  021527  000077                          CMP     (R5),#77
012740  001404                          1$      BEQ     1$                      ; IF IN WRONG SEQUENCE GO TO HLT
012742  012745  000267                          MOV     #267,-(R5)
012746  005245                          2$      INC     -(R5)
012750  000000                          3$      HALT                            ; TEST IS IN A WRONG SEQUENCE
012752  005215                          1$:     INC     (R5)
012754  012701  000440                          MOV     #TEMP,R1                ; LOAD ADDRESSES
012760  012700  000442                          MOV     #TEMP1,R0               ;
012764  000277                                  SCC
012766  005010                                  CLR     (R0)                    ; CLEAR THE LOCATION
012770  004737  017164                          JSR     PC,@#$CC4               ; CHECK FOR CC = 4
012774  005720                                  TST     (R0)+                   ; CHECK IT
012776  004737  017164                          JSR     PC,@#$CC4               ; CHECK FOR CC = 4
013002  010040                                  MOV     R0,-(R0)
013004  012730  177777                          MOV     #177777,@(R0)+
013010  017011  177776                          MOV     @-2(R0),(R1)            ; LOAD THE LOCATION
013014  004737  017252                          JSR     PC,@#$CC10              ; CHECK FOR CC = 10
013020  005711                                  TST     (R1)                    ; CHECK IT
013022  004737  017252                          JSR     PC,@#$CC10              ; CHECK FOR CC = 10
```

```
                                        ;;*******************************************************************************
                                        ;*TEST: 100     NEW INSTRUCTIONS USED IN THIS SECTION ARE CMP, BIS
                                        ;;*******************************************************************************

013026                                  CMP1:
013026  021527  000100                          CMP     (R5),#100
013032  001113                                  BNE     ECMP1           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE EST
013034  005215                          1$:     INC     (R5)
013036  012702  000442                          MOV     #TEMP1,R2       ; LOAD ADDRESS
013042  012700  000440                          MOV     #TEMP,R0        ; PLACE THE ADDRESS OF TEMP IN R0
013046  012720  177777                          MOV     #177777,(R0)+   ; PLACE #177777 IN LOCATION TEMP AND INC. R0 BY 2
013052  054012                                  BIS     -(R0),(R2)      ; LOAD LOCATION
013054  004737  017252                          JSR     PC,@#$CC10      ; CHECK FOR CC = 10
013060  022227  177777                          CMP     (R2)+,#177777   ; CHECK COMPARE
013064  001404                                  BEQ     2$              ; CONTINUE IF OK
013066  012745  000270                          MOV     #270,-(R5)
013072  005245                                  INC     -(R5)
013074  000000                                  HALT                    ; CMP OR BIS INSTRUCTION FAILED
013076  020227  000444                  2$:     CMP     R2,#TEMP1+2     ; CHECK R2 TO CONTAIN ADDRESS OF TEMP1+2
013102  001404                                  BEQ     3$
013104  012745  000271                          MOV     #271,-(R5)
013110  005245                                  INC     -(R5)
013112  000000                                  HALT                    ; NO AUTO INCREMENT
013114  022742  000077                  3$:     CMP     #77,-(R2)       ; CHECK IT AGAIN
013120  004737  017102                          JSR     PC,@#$CC1       ; CHECK FOR CC = 1
013124  022722  077777                          CMP     #77777,(R2)+
013130  004737  017334                          JSR     PC,@#$CC13      ; CHECK FOR CC = 13
013134  024227  077777                          CMP     -(R2),#77777    ; ONCE MORE
013140  004737  017252                          JSR     PC,@#$CC10      ; CHECK FOR CC = 10
013144  012767  052525  165272                  MOV     #52525,TEMP2    ; SET EVERY OTHER BIT IN TEMP2
013152  012767  000444  165262                  MOV     #TEMP2,TEMP1    ; PLACE THE ADDRESS OF TEMP2 IN LOCATION TEMP1
013160  012704  000430                          MOV     #ADR,R4
013164  012714  000432                          MOV     #ADR1,(R4)      ; PLACE THE ADDRESS OF ADR1 IN ADR POINTED BY R4
013170  012734  125252                          MOV     #125252,@(R4)+  ; PLACE THE #125252 IN LOCATION ADR1
013174  057432  177776                          BIS     @-2(R4),@(R2)+  ; SET EVERY OTHER BIT AT LOCATION TEMP2
                                                                        ; AND INCREMENT R2 BY 2
013200  010200                                  MOV     R2,R0           ; PLACE ADDRESS OF TEMP2 IN R0
013202  025027  177777                          CMP     @-(R0),#177777  ; TEMP2 SHOULD CONTAIN ALL 1'S
013206  001404                                  BEQ     4$
013210  012745  000272                          MOV     #272,-(R5)
013214  005245                                  INC     -(R5)
013216  000000                                  HALT                    ; CMP OR BIS INSTUCTIONS FAILED IN MODES OTHER THAN 0
013220  020227  000444                  4$:     CMP     R2,#TEMP1+2     ; R2 SHOULD CONTAIN THE ADDRESS FOR TEMP2
                                                                        ; I.E. TEMP1+2
013224  001404                                  BEQ     5$
013226  012745  000273                          MOV     #273,-(R5)
013232  005245                                  INC     -(R5)
013234  000000                                  HALT                    ; MODE 5 IS FAILING
013236  005040                          5$:     CLR     -(R0)           ; PLACE A 0 IN LOCATION TEMP
013240  010067  165200                          MOV     R0,TEMP2        ; PLACE ADDRESS OF TEMP IN LOCATION TEMP2
013244  022020                                  CMP     (R0)+,(R0)+     ; BUMP R0 BY 4
013246  055070  000002                          BIS     @-(R0),@2(R0)   ; PLACE THE CONTENTS OF LOCATION TEMP2 AT TEMP
013252  022767  000440  165160                  CMP     #TEMP,TEMP      ; LOCATION TEMP SHOULD CONTAIN ITS OWN ADDRESS
013260  001404                                  BEQ     BIC1
013262                                  ECMP1:
013262  012745  000274                  2       MOV     #274,-(R5)
```

G06


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013266 005245                  INC     -(R5)
013270 000000                  HALT                    ; CMP OR BIS INSTRUCTIONS FAILED OR WRONG
                                                       ; SEQUENCE COUNTER




                       ;;*************************************************************
                       ;*TEST: 101     NEW INSTRUCTIONS USED IN THIS SECTION ARE BIC, BIT
                       ;;*************************************************************

013272                 BIC1:
013272 021527 000101           CMP     (R5),#101
013276 001122                  BNE     EBIC1           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
013300 005215                  INC     (R5)
013302 012703 000440           MOV     #TEMP,R3        ; LOAD ADDRESS
013306 012713 177777           MOV     #177777,(R3)    ; LOAD LOCATION
013312 012704 000430           MOV     #ADR,R4         ; PLACE THE ADDRESS OF ADR IN R4
013316 012714 000432           MOV     #ADR1,(R4)      ; PLACE THE ADDRESS OF ADR1 IN ADR
013322 011334                  MOV     (R3),@(R4)+     ; LOAD LOCATION ADR1 WITH #177777
013324 012700 000442           MOV     #TEMP1,R0       ; PLACE THE ADDRESS OF TEMP1 IN R0
013330 012710 125252           MOV     #125252,(R0)    ; SET EVERY OTHER BIT AT LOCATION TEMP1
013334 000277                  SCC
013336 042013                  BIC     (R0)+,(R3)      ; CLEAR EVERY OTHER BIT
013340 004737 017102           JSR     PC,@#$CC1       ; CHECK FOR CC = 1
013344 034013                  BIT     -(R0),(R3)      ; CHECK IT
013346 001404                  BEQ     1$              ; CONTINUE IF OK
013350 012745 000275           MOV     #275,-(R5)
013354 005245                  INC     -(R5)
013356 000000                  HALT                    ; BIC OR BIT INSTRUCTION FAILED
013360 032713 052525   1$:     BIT     #52525,(R3)     ; CHECK IT
013364 004737 017102           JSR     PC,@#$CC1       ; CHECK FOR CC = 1
013370 056013 000000           BIS     0(R0),(R3)      ; SET THE BITS THAT WERE CLEARED
013374 100404                  BMI     2$              ; CONTINUE IF OK
013376 012745 000276           MOV     #276,-(R5)
013402 005245                  INC     -(R5)
013404 000000                  HALT                    ; BIT OR BIS INSTRUCTION FAILED
013406 012720 077777   2$:     MOV     #77777,(R0)+    ; SET ALL THE BITS AT LOCATION TEMP1 EXCEPT SIGN BIT
013412 010002                  MOV     R0,R2
013414 046213 177776           BIC     -2(R2),(R3)     ; TRY CLEARING THE OTHER BITS
013420 004737 017272           JSR     PC,@#$CC11      ; CHECK FOR CC = 11
013424 020027 000444           CMP     R0,#TEMP1+2     ; R0 SHOULD CONTAIN THE ADDRESS OF TEMP1+2
013430 001404                  BEQ     3$
013432 012745 000277           MOV     #277,-(R5)
013436 005245                  INC     -(R5)
013440 000000                  HALT
013442 010020          3$:     MOV     R0,(R0)+        ; PLACE THE ADDRES OF LOCATION TEMP2 IN TEMP2
013444 000263                  SEVC                    ; SET V & C BITS
013446 045000                  BIC     @-(R0),R0       ; CLEAR R0
013450 004737 017206           JSR     PC,@#$CC5       ; CHECK FOR CC = 5
013454 037413 177776           BIT     @-2(R4),(R3)    ; CHECK IT
013460 004737 017272           JSR     PC,@#$CC11      ; CHECK FOR CC = 11
013464 012746 125252           MOV     #125252,-(SP)   ; SET EVERY OTHER BIT ON THE STACK
013470 017423 177776           MOV     @-2(R4),(R3)+   ; SET ALL THE BITS AT LOCATION TEMP
013474 046643 000000           BIC     0(SP),-(R3)     ; CLEAR EVERY OTHER BIT AT LOCATION TEMP
013500 022327 052525           CMP     (R3)+,#52525    ; TEMP SHOULD CONTAIN # 52525
013504 001404                  BEQ     4$
```

```
 6952  013506  012745  000300                MOV     #300,-(R5)
 6953  013512  005245                        INC     -(R5)
 6954  013514  000000                        HALT                    ; BIC FAILED IN MODE 6
 6955  013516  012700  000446        4$:     MOV     #TEMP2+2,R0     ; PLACE THE ADDRESS OF TEMP2+2 IN R0
 6956  013522  010340                        MOV     R3,-(R0)        ; PLACE THE ADDRESS OF TEMP1 IN TEMP2
 6957  013524  014330                        MOV     -(R3),@(R0)+    ; MOVE # 52525 IN LOCATION TEMP1
 6958  013526  000263                        SEVC                    ; SET V & C BITS
 6959  013530  035026                        BIT     @-(R0),(SP)+    ; BIT TEST TEMP1 WITH STACK AND RESTORE STACK POINTER
 6960  013532  004737  017206                JSR     PC,@#$CC5       ; CHECK FOR CC = 5
 6961  013536  020627  000530                CMP     SP,#START       ; MAKE SURE THAT THE SP IS OK
 6962  013542  001404                        BEQ     INC1
 6963  013544                        EBIC1:
 6964  013544  012745  000301                MOV     #301,-(R5)
 6965  013550  005245                        INC     -(R5)
 6966  013552  000000                        HALT                    ; STACK POINTER FOULED UP OR SEQUENCE ERROR
```

```
6962                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 102     NEW INSTRUCTIONS USED IN THIS SECTION ARE INC, DEC
 (3)                                    ;;*******************************************************************************
6963
6964  013554                           INC1:
 (2)  013554  021527  000102                    CMP     (R5),#102
6965  013560  001404                           BEQ     2$                      ; IF IN WRONG SEQUENCE GO TO HLT BELOW
6966  013562  012745  000302                    MOV     #302,-(R5)
 (2)  013566  005245                           INC     -(R5)
 (2)  013570  000000                           HALT                            ; PROGRAM IS IN WRONG SEQUENCE
6967  013572  005215                    2$:    INC     (R5)
6968  013574  012704  000442                    MOV     #TEMP1,R4               ; LOAD ADDRESS
6969  013600  012714  077777                    MOV     #77777,(R4)             ; TEMP1 = 77777
6970  013604  000261                           SEC
6971  013606  005214                           INC     (R4)                    ; ADD ONES INTO LOCATION
6972  013610  004737  017334                    JSR     PC,@#$CC13              ; CHECK FOR CC = 13
6973  013614  012714  177776                    MOV     #177776,(R4)
6974  013620  012700  000440                    MOV     #TEMP,R0                ; R0 IS POINTING TO LOCATION TEMP
6975  013624  012710  017272                    MOV     #$CC11,(R0)             ; PLACE THE ADDRESS OF SUBROUTINE TO CHECK CC = 11
6976                                                                            ; IN LOCATION TEMP
6977  013630  005214                           INC     (R4)                    ;
6978  013632  004730                           JSR     PC,@(R0)+               ; CHECK FOR CC = 11
6979  013634  005214                           INC     (R4)                    ;
6980  013636  004737  017206                    JSR     PC,@#$CC5               ; CHECK FOR CC = 5
6981  013642  005214                           INC     (R4)
6982  013644  004737  017102                    JSR     PC,@#$CC1               ; CHECK FOR CC = 1
6983  013650  026427  000000  000001           CMP     0(R4),#1                ; CHECK IT
6984  013656  001404                           BEQ     4$                      ; CONTINUE IF OK
6985  013660  012745  000303                    MOV     #303,-(R5)
 (2)  013664  005245                           INC     -(R5)
 (2)  013666  000000                           HALT                            ; INC INSTRUCTION FAILED
6986  013670  000261                    4$:    SEC
6987  013672  005314                           DEC     (R4)                    ; SUBTRACT ONES FROM LOCATION
6988  013674  004737  017206                    JSR     PC,@#$CC5               ; CHECK FOR CC = 5
6989  013700  005314                           DEC     (R4)
6990  013702  004770  177776                    JSR     PC,@-2(R0)              ; CHECK FOR CC = 11
6991  013706  012714  100000                    MOV     #100000,(R4)
6992  013712  005314                           DEC     (R4)                    ;
6993  013714  004737  017142                    JSR     PC,@#$CC3               ; CHECK FOR CC = 3
6994  013720  005314                           DEC     (R4)                    ;
6995  013722  004737  017102                    JSR     PC,@#$CC1               ; CHECK FOR CC = 1
6996
6997
6998
6999                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 103     NEW INSTRUCTION IN THIS SECTION IS COM
 (3)                                    ;;*******************************************************************************
7000
7001  013726                           COM1:
 (2)  013726  021527  000103                    CMP     (R5),#103
7002  013732  001404                           BEQ     1$                      ; IF IN WRONG SEQUENCE GO TO HLT
7003  013734  012745  000304                    MOV     #304,-(R5)
 (2)  013740  005245                           INC     -(R5)
 (2)  013742  000000                           HALT                            ; TEST IS IN WRONG SEQUENCE
7004  013744  005215                    1$:    INC     (R5)
7005  013746  012703  000442                    MOV     #TEMP1,R3               ; LOAD ADDRESS
```

```
 7006  013752  012713  125252                MOV     #125252,(R3)    ; LOAD EVERY OTHER BIT
 7007  013756  000277                        SCC
 7008  013760  005163  000000                COM     0(R3)           ; 1'S COMPLEMENT
 7009  013764  004737  017102                JSR     PC,@#$CC1       ; CHECK FOR CC = 1
 7010  013770  022713  052525                CMP     #52525,(R3)     ; CHECK IT
 7011  013774  001404                        BEQ     2$              ; CONTINUE IF OK
 7012  013776  012745  000305                MOV     #305,-(R5)
   (2) 014002  005245                        INC     -(R5)
   (2) 014004  000000                        HALT                    ; COM INSTRUCTION FAILED
 7013  014006  000277            2$:         SCC
 7014  014010  005123                        COM     (R3)+           ; COMPLEMENT BACK
 7015  014012  004737  017272                JSR     PC,@#$CC11      ; CHECK FOR CC = 11
 7016  014016  022743  125252                CMP     #125252,-(R3)   ; CHECK IT
 7017  014022  001404                        BEQ     3$              ; CONTINUE IF OK
 7018  014024  012745  000306                MOV     #306,-(R5)
   (2) 014030  005245                        INC     -(R5)
   (2) 014032  000000                        HALT                    ; COM INSTRUCTION FAILED
 7019  014034  010300            3$:         MOV     R3,R0           ; R0 IS NOW POINTING TO LOCATION TEMP1
 7020  014036  012710  177777                MOV     #177777,(R0)
 7021  014042  000277                        SCC
 7022  014044  005110                        COM     (R0)
 7023  014046  004737  017206                JSR     PC,@#$CC5       ; CHECK FOR CC = 5
```

```
7024                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 104     NEW INSTRUCTION IN THIS SECTION IS NEG
 (3)                                    ;;*******************************************************************************
7025
7026  014052                            NEG1:
 (2)  014052  021527  000104                    CMP     (R5),#104
7027  014056  001033                            BNE     ENEG1           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
7028  014060  005215                    1$:     INC     (R5)
7029  014062  012704  000442                    MOV     #TEMP1,R4       ; LOAD ADDRESS
7030  014066  012724  000001                    MOV     #1,(R4)+                ; LOAD THE LOCATION
7031  014072  010402                            MOV     R4,R2
7032  014074  012762  100000  000000           MOV     #100000,0(R2)
7033  014102  005444                            NEG     -(R4)           ; 2'S COMPLEMENT
7034  014104  004737  017272                    JSR     PC,@#$CC11      ; CHECK FOR CC = 11
7035  014110  022724  177777                    CMP     #177777,(R4)+   ; CHECK IT
7036  014114  001404                            BEQ     2$              ; CONTINUE IF OK
7037  014116  012745  000307                    MOV     #307,-(R5)
 (2)  014122  005245                            INC     -(R5)
 (2)  014124  000000                            HALT                    ; NEG INSTRUCTION FAILED
7038  014126  016444  000000            2$:     MOV     0(R4),-(R4)     ; TEMP1 CONTAINS THE LARGEST NEGATIVE NUMBER
7039  014132  005414                            NEG     (R4)            ; 2'S COMPLEMENT
7040  014134  004737  017334                    JSR     PC,@#$CC13      ; CHECK FOR CC = 13
7041  014140  026214  000000                    CMP     0(R2),(R4)      ; CHECK IT
7042  014144  001404                            BEQ     ROL1            ; CONTINUE IF OK
7043  014146                            ENEG1:
  2)  014146  012745  000310                    MOV     #310,-(R5)
  2)  014152  005245                            INC     -(R5)
  2)  014154  000000                            HALT                    ; WRONG RESULT IN TEMP2 OR WRONG SEQUENCE
7044
7045
7046
7047                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 105     NEW INSTRUCTION IN THIS SECTION IS ROL
 (3)                                    ;;*******************************************************************************
7048
7049  014156                            ROL1:
 (2)  014156  021527  000105                    CMP     (R5),#105
7050  014162  001032                            BNE     EROL1           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
7051  014164  005215                            INC     (R5)
7052  014166  012701  000444                    MOV     #TEMP2,R1       ; LOAD ADDRESS
7053  014172  012711  020000                    MOV     #20000,(R1)     ; LOAD LOCATION
7054  014176  000257                            CCC                     ; CLEAR FLAGS
7055  014200  006121                            ROL     (R1)+           ; SHIFT
7056  014202  006141                            ROL     -(R1)           ;
7057  014204  004737  017314                    JSR     PC,@#$CC12      ; CHECK FOR CC = 12
7058  014210  022711  100000                    CMP     #100000,(R1)    ; CHECK IT
7059  014214  001404                            BEQ     1$              ; CONTINUE IF OK
7060  014216  012745  000311                    MOV     #311,-(R5)
 (2)  014222  005245                            INC     -(R5)
 (2)  014224  000000                            HALT                    ; ROL INSTRUCTION FAILED
7061  014226  006161  000000            1$:     ROL     0(R1)           ; SHIFT
7062  014232  004737  017230                    JSR     PC,@#$CC7       ; CHECK FOR CC = 7
7063  014236  010102                            MOV     R1,R2           ; R2 IS NOW POINTING TO LOCATION TEMP2
7064  014240  006112                            ROL     (R2)            ; SHIFT
7065  014242  022711  000001                    CMP     #1,(R1)         ; CHECK IT
7066  014246  001404                            BEQ     ROR1            ; CONTINUE IF Ok
```

```
 7067  014250                          EROL1:
  (2)  014250  012745  000312                MOV     #312,-(R5)
  (2)  014254  005245                        INC     -(R5)
  (2)  014256  000000                        HALT                    ; WRONG RESULT AT TEMP2 OR WRONG SEQUENCE
```

```
7068                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 106     NEW INSTRUCTION IN THIS SECTION IS ROR
 (3)                                    ;;*******************************************************************************
7069
7070  014260                            ROR1:
 (2)  014260  021527  000106                    CMP     (R5),#106
7071  014264  001030                            BNE     EROR1           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
7072  014266  005215                            INC     (R5)
7073  014270  012702  000444                    MOV     #TEMP2,R2       ; LOAD ADDRESS
7074  014274  012712  000004                    MOV     #4,(R2)         ; LOAD LOCATION
7075  014300  000257                            CCC                     ; CLEAR FLAGS
7076  014302  006012                            ROR     (R2)            ; SHIFT
7077  014304  006012                            ROR     (R2)            ;
7078  014306  022712  000001                    CMP     #1,(R2)         ; CHECK IT
7079  014312  001404                            BEQ     1$              ; CONTINUE IF OK
7080  014314  012745  000313                    MOV     #313,-(R5)
 (2)  014320  005245                            INC     -(R5)
 (2)  014322  000000                            HALT                    ; ROR INSTRUCTION FAILED
7081  014324  006012                    1$:     ROR     (R2)            ; SHIFT
7082  014326  004737  017230                    JSR     PC,@#$CC7       ; CHECK FOR CC = 7
7083  014332  006012                            ROR     (R2)            ; SHIFT
7084  014334  004737  017314                    JSR     PC,@#$CC12      ; CHECK FOR CC = 12
7085  014340  022712  100000                    CMP     #100000,(R2)    ; CHECK IT
7086  014344  001404                            BEQ     ASL1            ; CONTINUE IF OK
7087  014346                            EROR1:
 (2)  014346  012745  000314                    MOV     #314,-(R5)
 (2)  014352  005245                            INC     -(R5)
 (2)  014354  000000                            HALT                    ; WRONG RESULT AT TEMP2 OR WRONG SEQUENCE
7088
7089
7090
7091                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 107     NEW INSTRUCTION IN THIS SECTION IS ASL
 (3)                                    ;;*******************************************************************************
7092
7093  014356                            ASL1:
 (2)  014356  021527  000107                    CMP     (R5),#107
7094  014362  001404                            BEQ     2$              ; IF IN WRONG SEQUENCE GO TO HLT BELOW
7095  014364  012745  000315                    MOV     #315,-(R5)
 (2)  014370  005245                            INC     -(R5)
 (2)  014372  000000                            HALT                    ; PROGRAM IS IN WRONG SEQUENCE
7096  014374  005215                    2$:     INC     (R5)
7097  014376  012703  000444                    MOV     #TEMP2,R3       ; LOAD ADDRESS
7098  014402  012713  020000                    MOV     #20000,(R3)     ; LOAD LOCATION
7099  014406  000257                            CCC                     ; CLEAR FLAGS
7100  014410  006313                            ASL     (R3)            ; SHIFT
7101  014412  006313                            ASL     (R3)            ;
7102  014414  004737  017314                    JSR     PC,@#$CC12      ; CHECK FOR CC = 12
7103  014420  022713  100000                    CMP     #100000,(R3)    ; CHECK IT
7104  014424  001404                            BEQ     4$              ; CONTINUE IF OK
7105  014426  012745  000316                    MOV     #316,-(R5)
 (2)  014432  005245                            INC     -(R5)
 (2)  014434  000000                            HALT                    ; ASL INSTRUCTION FAILED
7106  014436  006313                    4$:     ASL     (R3)            ; SHIFT
7107  014440  004737  017230                    JSR     PC,@#$CC7       ; CHECK FOR CC = 7
7108  014444  006313                            ASL     (R3)            ; SHIFT
```

NO6


```
 7109  014446  004737  017164                JSR     PC,@#$CC4       ; CHECK FOR CC = 4
```

```
                                    ;;****************************************************************
                                    ;*TEST: 110     NEW INSTRUCTION IN THIS SECTION IS ASR
                                    ;;****************************************************************

        014452                      ASR1:
        014452  021527  000110              CMP     (R5),#110
        014456  001040                      BNE     EASR1           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
        014460  005215                  1$: INC     (R5)
        014462  012704  000444              MOV     #TEMP2,R4       ; LOAD ADDRESSES
        014466  012703  000440              MOV     #TEMP,R3        ;
        014472  012714  000004              MOV     #4,(R4)         ; LOAD LOCATION
        014476  000257                      CCC                     ; CLEAR FLAGS
        014500  006214                      ASR     (R4)            ; SHIFT
        014502  006214                      ASR     (R4)            ;
        014504  022714  000001              CMP     #1,(R4)         ; CHECK IT
        014510  001404                      BEQ     2$              ; CONTINUE IF OK
        014512  012745  000317              MOV     #317,-(R5)
        014516  005245                      INC     -(R5)
        014520  000000                      HALT                    ; ASR INSTRUCTION FAILED
        014522  006214                  2$: ASR     (R4)            ; SHIFT
        014524  004737  017230              JSR     PC,@#$CC7       ; CHECK FOR CC = 7
        014530  006214                      ASR     (R4)            ; SHIFT
        014532  004737  017164              JSR     PC,@#$CC4       ; CHECK FOR CC = 4
        014536  012713  100002              MOV     #100002,(R3)    ; LOAD LOCATION
        014542  006213                      ASR     (R3)            ; SHIFT
        014544  006213                      ASR     (R3)            ;
        014546  004737  017272              JSR     PC,@#$CC11      ; CHECK FOR CC = 11
        014552  022713  160000              CMP     #160000,(R3)    ; CHECK IT
        014556  001404                      BEQ     ADC1            ; CONTINUE IF OK
        014560                      EASR1:
        014560  012745  000320              MOV     #320,-(R5)
        014564  005245                      INC     -(R5)
        014566  000000                      HALT                    ; WRONG RESULT IN TEMP OR WRONG SEQUENCE



                                    ;;****************************************************************
                                    ;*TEST: 111     NEW INSTRUCTION IN THIS SECTION IS ADC
                                    ;;****************************************************************

        014570                      ADC1:
        014570  021527  000111              CMP     (R5),#111
        014574  001404                      BEQ     2$              ; IF IN WRONG SEQUENCE GO TO HLT BELOW
        014576  012745  000321              MOV     #321,-(R5)
        014602  005245                      INC     -(R5)
        014604  000000                      HALT                    ; PROGRAM IS IN WRONG SEQUENCE
        014606  005215                  2$: INC     (R5)
        014610  012700  000440              MOV     #TEMP,R0        ; LOAD ADDRESS
        014614  005010                      CLR     (R0)            ; CLEAR THE LOCATION
        014616  000257                      CCC                     ; CLEAR FLAGS
        014620  005510                      ADC     (R0)            ; ADD C BIT = 0
        014622  004737  017164              JSR     PC,@#$CC4       ; CHECK FOR CC = 4
        014626  000261                      SEC                     ; C=1
        014630  005510                      ADC     (R0)            ; ADD C BIT=1
        014632  000261                      SEC                     ; C=1
        014634  005510                      ADC     (R0)            ; AGAIN
```

C07


```
7153  014636  004737  017062                JSR     PC,@#$CC0       ; CHECK FOR CC = 0
7154  014642  022710  000002                CMP     #2,(R0)         ; CHECK IT
7155  014646  001404                        BEQ     4$              ; CONTINUE IF OK
7156  014650  012745  000322                MOV     #322,-(R5)
  (2) 014654  005245                        INC     -(R5)
  (2) 014656  000000                        HALT                    ; ADC INSTRUCTION FAILED
7157  014660  012710  077777          4$:   MOV     #77777,(R0)     ; LOAD LARGEST POSITVE NUMBER
7158  014664  000261                        SEC                     ; C=1
7159  014666  005510                        ADC     (R0)            ; ADD C BIT=1
7160  014670  004737  017314                JSR     PC,@#$CC12      ; CHECK FOR CC = 12
7161  014674  022710  100000                CMP     #100000,(R0)    ; CHECK IT
7162  014700  001404                        BEQ     6$              ; CONTINUE IF OK
7163  014702  012745  000323                MOV     #323,-(R5)
  (2) 014706  005245                        INC     -(R5)
  (2) 014710  000000                        HALT                    ; ADC INSTRUCTION AILED
7164  014712  012710  177777          6$:   MOV     #-1,(R0)        ; LOAD -1
7165  014716  000261                        SEC                     ; C=1
7166  014720  005510                        ADC     (R0)            ; ADD C BIT=1
7167  014722  004737  017236                JSR     PC,@#$CC5       ; CHECK FOR CC = 5
```

```
                                ;;*******************************************************************************
                                ;*TEST: 112     NEW INSTRUCTION IN THIS SECTION IS SBC
                                ;;*******************************************************************************
                                SBC1:
014726 021527 000112                    CMP     (R5),#112
014732 001404                           BEQ     1$              ; IF IN WRONG SEQUENCE GO TO HLT
014734 012745 000324                    MOV     #324,-(R5)
014740 005245                           INC     -(R5)
014742 000000                           HALT                    ; TEST IS IN WRONG SEQUENCE
014744 005215                   1$:     INC     (R5)
014746 012701 000440                    MOV     #TEMP,R1        ; LOAD ADDRESS
014752 012711 000003                    MOV     #3,(R1)         ; LOAD LOCATION
014756 000257                           CCC                     ; CLEAR FLAGS
014760 005611                           SBC     (R1)            ; SUBTRACT C BIT=0
014762 004737 017062                    JSR     PC,@#$CC0       ; CHECK FOR CC = 0
014766 022711 000003                    CMP     #3,(R1)         ; CHECK IT
014772 001404                           BEQ     2$              ; CONTINUE IF OK
014774 012745 000325                    MOV     #325,-(R5)
015000 005245                           INC     -(R5)
015002 000000                           HALT                    ; SBC INSTRUCTION FAILED
015004 000261                   2$:     SEC                     ; C=1
015006 005611                           SBC     (R1)            ; SUBTRACT C BIT=1
015010 000261                           SEC                     ; C=1
015012 005611                           SBC     (R1)            ;
015014 004737 017062                    JSR     PC,@#$CC0       ; CHECK FOR CC = 0
015020 022711 000001                    CMP     #1,(R1)         ; CHECK IT
015024 001404                           BEQ     3$
015026 012745 000326                    MOV     #326,-(R5)
015032 005245                           INC     -(R5)
015034 000000                           HALT                    ; SBC INSTRUCTION FAILED
015036 000261                   3$:     SEC                     ; C=1
015040 005611                           SBC     (R1)            ; SUBTRACT C BIT=1
015042 004737 017164                    JSR     PC,@#$CC4       ; CHECK FOR CC = 4
015046 000261                           SEC                     ; C=1
015050 005611                           SBC     (R1)            ; SUBTRACT C BIT = 1
015052 004737 017272                    JSR     PC,@#$CC11      ; CHECK FOR CC = 11
015056 022711 177777                    CMP     #-1,(R1)        ; CHECK IT
015062 001404                           BEQ     4$              ; CONTINUE IF OK
015064 012745 000327                    MOV     #327,-(R5)
015070 005245                           INC     -(R5)
015072 000000                           HALT                    ; SBC INSTRUCTION FAILED
015074 012711 100000            4$:     MOV     #100000,(R1)    ; LOAD R1
015100 000261                           SEC                     ; C=1
015102 005611                           SBC     (R1)            ; SUBTRACT C BIT = 1
015104 004737 017122                    JSR     PC,@#$CC2       ; CHECK FOR CC = 2
                                ;;*******************************************************************************
                                ;*TEST: 113     NEW INSTRUCTION IN THIS SECTION IS SXT
                                ;;*******************************************************************************
015110                          SXT1:
015110 021527 000113                    CMP     (R5),#113
015114 001026                           BNE     ESXT1           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
```

E07


```
 7210  015116  005215                  1$:     INC     (R5)
 7211  015120  012702  000442                  MOV     #TEMP1,R2       ; LOAD ADDRESS
 7212  015124  005012                          CLR     (R2)            ; CLEAR LOCATIONS
 7213  015126  000277                          SCC
 7214  015130  000254                          CLNZ
 7215  015132  006712                          SXT     (R2)            ; SIGN EXTEND
 7216  015134  004737  017206                  JSR     PC,@#$CC5       ; CHECK FOR CC = 5
 7217  015140  005712                          TST     (R2)            ; LOCATION SHOULD STILL BE 0
 7218  015142  001404                          BEQ     2$              ; CONTINUE IF OK
 7219  015144  012745  000330                  MOV     #330,-(R5)
       015150  005245                          INC     -(R5)
       015152  000000                          HALT                    ; SXT INSTRUCTION FAILED
       015154  000273                  2$:     SENVC                   ; SET N, V & C BITS
       015156  006712                          SXT     (R2)            ; SIGN EXTEND
       015160  004737  017272                  JSR     PC,@#$CC11      ; CHECK FOR CC = 11
       015164  022712  177777                  CMP     #-1,(R2)        ; LOCATION SHOULD NEW HAVE -1
       015170  001404                          BEQ     SWAB1           ; CONTINUE IF OK
       015172                          ESXT1:
       015172  012745  000331                  MOV     #331,-(R5)
       015176  005245                          INC     -(R5)
       015200  000000                          HALT                    ; WRONG RESULT IN TEMP1 OR WRONG SEQUENCE
```

```
                                ;;*******************************************************************************
                                ;*TEST: 114     NEW INSTRUCTIOON IN THIS SECTION IS SWAB
                                ;;*******************************************************************************

015202                          SWAB1:
015202  021527  000114                  CMP     (R5),#114
015206  001034                          BNE     ESWAB1          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
015210  005215                          INC     (R5)
015212  012703  000444                  MOV     #TEMP2,R3       ; LOAD ADDRESS
015216  012713  125125                  MOV     #125125,(R3)    ; LOAD BIT PATTERN INTO LOCATION
015222  000277                          SCC
015224  000250                          CLN
015226  000313                          SWAB    (R3)            ; SWAP BYTES OF LOCATIONS
015230  004737  017252                  JSR     PC,@#$CC10      ; CHECK FOR CC = 10
015234  022713  052652                  CMP     #52652,(R3)     ; CHECK IT
015240  001404                          BEQ     1$              ; CONTINUE IF OK
015242  012745  000332                  MOV     #332,-(R5)
015246  005245                          INC     -(R5)
015250  000000                          HALT                    ; SWAB INSTRUCTION FAILED
015252  012713  000377          1$:     MOV     #377,(R3)
015256  000277                          SCC
015260  000244                          CLZ
015262  000363  000000                  SWAB    0(R3)
015266  004737  017164                  JSR     PC,@#$CC4       ; CHECK FOR CC = 4
015272  022713  177400                  CMP     #177400,(R3)
015276  001404                          BEQ     XOR1
015300                          ESWAB1:
015300  012745  000333                  MOV     #333,-(R5)
015304  005245                          INC     -(R5)
015306  000000                          HALT                    ; WRONG RESULT IN: TEMP2 OR WRONG SEQUENCE


                                ;;*******************************************************************************
                                ;*TEST: 115     NEW INSTRUCTION IN THIS SECTION IS XOR
                                ;;*******************************************************************************

015310                          XOR1:
015310  021527  000115                  CMP     (R5),#115
015314  001041                          BNE     EXOR1           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
015316  005215                          INC     (R5)
015320  012704  177777                  MOV     #-1,R4          ; LOAD LOCATIONS
015324  012767  177777  163110          MOV     #-1,TEMP1       ;
015332  000277                          SCC
015334  074467  163102                  XOR     R4,TEMP1        ; SHOULD PRODUCE 0'S IN TEMP1
015340  004737  017206                  JSR     PC,@#$CC5       ; CHECK FOR CC = 5
015344  012767  077777  163070          MOV     #77777,TEMP1
015352  012700  000442                  MOV     #TEMP1,R0       ; PLACE THE ADDRESS OF TEMP1 IN R0
015356  000263                          SEVC                    ; SET V & C BITS
015360  000244                          CLZ
015362  074410                          XOR     R4,(R0)
015364  004737  017272                  JSR     PC,@#$CC11      ; CHECK FOR CC = 11
015370  012701  125252                  MOV     #125252,R1      ; LOAD LOCATIONS
015374  012720  052525                  MOV     #52525,(R0)+    ;
015400  000277                          SCC
015402  074140                          XOR     R1,-(R0)        ; SHOULD PRODUCE ALL 1'S IN TEMP1
```

```
 7271  015404  004737  017272                JSR     PC,@#$CC11      ; CHECK FOR CC = 11
 7272  015410  022737  177777  000442        CMP     #-1,@#TEMP1     ; CHECK IT
 7273  015416  001404                        BEQ     ADD1            ; CONTINUE IF OK
 7274  015420                        EXOR1:
  (2)  015420  012745  000334                MOV     #334,-(R5)
   2   015424  005245                        INC     -(R5)
   3   015426  000000                        HALT                    ; WRONG RESULT IN TEMP1 OR WRONG SEQUENCE
```

```
                                        ;;*******************************************************************************
                                        ;*TEST: 116     NEW INSTRUCTION IN THIS SECTION IS ADD
                                        ;;*******************************************************************************

015430                                  ADD1:
(2) 015430  021527  000116                      CMP     (R5),#116
015434  001133                                  BNE     EADD1           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
015436  005215                                  INC     (R5)
015440  012700  000444                          MOV     #TEMP2,R0       ; LOAD ADDRESSES
015444  012701  000440                          MOV     #TEMP,R1        ;
015450  012767  021421  162766                  MOV     #21421,TEMP2    ; LOAD LOCATIONS
015456  011011                                  MOV     (R0),(R1)       ;
015460  061011                                  ADD     (R0),(R1)       ; ADD
015462  004737  017062                          JSR     PC,@#$CC0       ; CHECK FOR CC = 0
015466  022767  043042  162744                  CMP     #43042,TEMP     ; CHECK IT
015474  001404                                  BEQ     1$              ; CONTINUE IF OK
015476  012745  000335                          MOV     #335,-(R5)
(2) 015502  005245                              INC     -(R5)
(2) 015504  000000                              HALT                    ; ADD INSTRUCTION FAILED
015506  005010                          1$:     CLR     (R0)            ; CLEAR LOCATION TEMP2
015510  060020                                  ADD     R0,(R0)+        ; PLACE THE ADDRESS OF TEMP2 IN LOCATION TEMP2
015512  024027  000444                          CMP     -(R0),#TEMP2    ; CHECK IT
015516  001404                                  BEQ     2$
015520  012745  000336                          MOV     #336,-(R5)
(2) 015524  005245                              INC     -(R5)
(2) 015526  000000                              HALT                    ; ADD INSTRUCTION FAILED IN MODE 2
015530  012767  156357  162706          2$:     MOV     #-21421,TEMP2   ; LOAD LOCATIONS
015536  012011                                  MOV     (R0)+,(R1)      ;
015540  064011                                  ADD     -(R0),(R1)      ; ADD
015542  004737  017272                          JSR     PC,@#$CC11      ; CHECK FOR CC = 11
015546  022767  134736  162664                  CMP     #-43042,TEMP    ; CHECK IT
015554  001404                                  BEQ     3$              ;CONTINUE IF OK
015556  012745  000337                          MOV     #337,-(R5)
(2) 015562  005245                              INC     -(R5)
(2) 015564  000000                              HALT                    ; ADD INSTRUCTION FAILED
015566  012767  100000  162650          3$:     MOV     #100000,TEMP2   ; LOAD LOCATIONS
015574  011061  000000                          MOV     (R0),0(R1)      ;
015600  066011  000000                          ADD     0(R0),(R1)      ; ADD SHOULD RESULT AS 0'S
015604  004737  017230                          JSR     PC,@#$CC7       ; CHECK FOR CC=7
015610  012767  021421  162624                  MOV     #21421,TEMP1    ; LOAD LOCATION TEMP1
015616  012760  000442  000000                  MOV     #TEMP1,0(R0)    ; PLACE THE ADDRESS OF LOCATION TEMP1 IN TEMP2
015624  012711  156357                          MOV     #-21421,(R1)    ; LOAD LOCATION TEMP
015630  010004                                  MOV     R0,R4           ; MAKE R4 POINT TO LOCATION TEMP2
015632  067411  000000                          ADD     @0(R4),(R1)     ; ADD SHOULD RESULT AS 0'S
015636  004737  017206                          JSR     PC,@#$CC5       ; CHECK FOR CC=5
015642  005430                                  NEG     @(R0)+          ; NEGATE THE CONTENTS OF TEMP1
015644  012746  021421                          MOV     #21421,-(SP)    ; PLACE # 21421 ON THE STACK
015650  065066  000000                          ADD     @-(R0),0(SP)    ; ADD, SHOULD=0'S
015654  004737  017206                          JSR     PC,@#$CC5       ; CHECK FOR CC=5
015660  005726                                  TST     (SP)+           ; CHECK THE STACK TO CONTAIN 0, ALSO
                                                                        ; RESTORE THE STACK POINTER
015662  001404                                  BEQ     4$
015664  012745  000340                          MOV     #340,-(R5)
(2) 015670  005245                              INC     -(R5)
(2) 015672  000000                              HALT                    ; ADD INSTRUCTION FAILED IN MODE 5
015674  012767  137777  162542          4$:     MOV     #137777,TEMP2
```

```
 7320  015702  062767  137777  162534          ADD     #137777,TEMP2
 7321  015710  004737  017142                  JSR     PC,@#$CC3       ; CHECK CC=3
 7322  015714  022767  077776  162522          CMP     #77776,TEMP2
 7323  015722  001404                          BEQ     SUB1
 7324  015724                          EADD1:
   (2) 015724  012745  000341                  MOV     #341,-(R5)
   (2) 015730  005245                          INC     -(R5)
   (2) 015732  000000                          HALT                    ; WRONG RESULT AT TEMP OR WRONG SEQUENCE
 7325
 7326
 7327
 7328                                  ;;*****************************************************************************
   (2)                                 ;*TEST: 117     NEW INSTRUCTION IN THIS SECTION IS SUB
   (3)                                 ;;*****************************************************************************
 7329
 7330  015734                          SJB1:
   (2) 015734  021527  000117                  CMP     (R5),#117
 7331  015740  001100                          BNE     ESUB1           ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
 7332  015742  005215                          INC     (R5)
 7333  015744  012702  000440                  MOV     #TEMP,R2        ; LOAD ADDRESSES
 7334  015750  012703  000442                  MOV     #TEMP1,R3       ;
 7335  015754  012767  021421  162456          MOV     #21421,TEMP     ; LOAD LOCATIONS
 7336  015762  012767  156357  162452          MOV     #-21421,TEMP1   ;
 7337  015770  161213                          SUB     (R2),(R3)       ; RESULT SHOULD=-43042
 7338  015772  004737  017252                  JSR     PC,@#$CC10      ; CHECK FOR CC = 10
 7339  015776  022767  134736  162436          CMP     #-43042,TEMP1   ; CHECK IT
 7340  016004  001404                          BEQ     1$              ;CONTINUE IF OK
 7341  016006  012745  000342                  MOV     #342,-(R5)
   (2) 016012  005245                          INC     -(R5)
   (2) 016014  000000                          HALT                    ; SUB INSTRUCTION FAILED
 7342  016016  012767  021421  162416  1$:     MOV     #21421,TEMP1    ; LOAD LOCATION
 7343  016024  161213                          SUB     (R2),(R3)       ; RESULT SHOULD=0
 7344  016026  001404                          BEQ     2$
 7345  016030  012745  000343                  MOV     #343,-(R5)
   (2) 016034  005245                          INC     -(R5)
   (2) 016036  000000                          HALT                    ; SUB INSTRUCTION FAILED
 7346  016040  012767  177777  162374  2$:     MOV     #-1,TEMP1       ; LOAD LOCATIONS
 7347  016046  012767  077777  162364          MOV     #77777,TEMP     ; LOAD LOCATIONS
 7348  016054  161312                          SUB     (R3),(R2)       ; RESULT SHOULD GIVE 100000 AND OVERFLOW
 7349  016056  004737  017334                  JSR     PC,@#$CC13      ; CHECK FOR CC = 13
 7350  016062  022767  100000  162350          CMP     #100000,TEMP    ; CHECK IT
 7351  016070  001404                          BEQ     3$              ; CONTINUE IF Ok
 7352  016072  012745  000344                  MOV     #344,-(R5)
   (2) 016076  005245                          INC     -(R5)
   (2) 016100  000000                          HALT                    ; SUB INSTRUCTION FAILED
 7353  016102  012712  177777          3$:     MOV     #-1,(R2)
 7354  016106  161312                          SUB     (R3),(R2)
 7355  016110  004737  017164                  JSR     PC,@#$CC4       ; CHECK FOR CC = 4
 7356  016114  012767  077777  162316          MOV     #77777,TEMP
 7357  016122  162767  077777  162310          SUB     #77777,TEMP
 7358  016130  004737  017164                  JSR     PC,@#$CC4       ; CHECK FOR CC=4
 7359  016134  005767  162300                  TST     TEMP
 7360  016140  001404                          BEQ     SOB             ; TEMP SHOULD BE =0
 7361  016142                          ESJB1:
   (2) 016142  012745  000345                  MOV     #345,-(R5)
   (2) 016146  005245                          INC     -(R5)
```

```
(2) 016150 000000                    HALT                ; SUB INSTRUCTION FAILED OR SEQUENCE ERROR
```

```
                                ;;*******************************************************************************
                                ;*TEST: 120     NEW INSTRUCTION IN THIS SECTION IS SOB
                                ;;*******************************************************************************

016152                  SOB:
016152  021527  000120            CMP     (R5),#120
016156  001042                    BNE     ESOB            ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
016160  005215                    INC     (R5)
016162  012700  000012            MOV     #10.,R0         ; LOAD REGISTERS
016166  005001                    CLR     R1              ;
016170  005201          1$:       INC     R1              ; KEEP COUNT
016172  020127  000012            CMP     R1,#10.
016176  003404                    BLE     2$
016200  012745  000346            MOV     #346,-(R5)
016204  005245                    INC     -(R5)
016206  000000                    HALT                    ; SOB INSTRUCTION FAILED
016210  000277          2$:       SCC
016212  077012                    SOB     R0,1$           ; SUB. 1 FROM REG. 0, GO BACK TO 1$
016214  004737  017354            JSR     PC,@#$CC17      ; CHECK FOR CC = 17
016220  005700                    TST     R0              ; REG. 0 = 0 ?
016222  001404                    BEQ     3$              ; NO, FAILED
016224  012745  000347            MOV     #347,-(R5)
016230  005245                    INC     -(R5)
016232  000000                    HALT                    ; SOB INSTRUCTION FAILED
016234  022701  000012    3$:     CMP     #10.,R1         ; DID IT GO THRU 10 TIMES ?
016240  001404                    BEQ     4$              ; CONTINUE IF OK
016242  012745  000350            MOV     #350,-(R5)
016246  005245                    INC     -(R5)
016250  000000                    HALT                    ; SOB INSTRUCTION FAILED
016252  012704  000010    4$:     MOV     #10,R4          ; PLACE #10 IN R4
016256  077401          5$:       SOB     R4,5$           ; STAY HERE UNTILL R4 = 0
016260  005704                    TST     R4
016262  001404                    BEQ     PSWNO           ; CONTINUE IF OK
016264                  ESOB:
016264  012745  000351            MOV     #351,-(R5)
016270  005245                    INC     -(R5)
016272  000000                    HALT                    ; SOB FAILED OR WRONG SEQUENCE


                                ;;*******************************************************************************
                                ;*TEST: 121     NEW INSTRUCTIONS IN THIS SECTION ARE MTPS & MFPS
                                ;;*******************************************************************************

016274                  PSWNO:
016274  021527  000121            CMP     (R5),#121
016300  001042                    BNE     EPSWNO          ; IF IN WRONG SEQUENCE GO TO HLT AT THE END OF THE TEST
016302  005215                    INC     (R5)
016304  012700  000440            MOV     #TEMP,R0        ; PUT THE ADDRESS OF TEMP IN R0
016310  012701  000442            MOV     #TEMP1,R1       ; PUT THE ADDRESS OF TEMP1 IN R1
016314  012711  177777            MOV     #177777,(R1)    ; TEMP1 = 177777
016320  005010                    CLR     (R0)            ; TEMP  = 0
016322                            MTPS    (R0)            ; PSW = 0
016322  106410                    .WORD   106400!..C
016324  004737  017062            JSR     PC,@#$CC0       ; CHECK FOR CC = 0
```

```
7405  016330                                    MFPS    (R1)            ; MOVE PSW TO TEMP1
 (1)  016330  106711                            .WORD   106700!..C
7409  016332  004737  017164                    JSR     PC,@#$CC4       ; CHECK FOR CC = 4
7410  016336  022711  177400                    CMP     #177400,(R1)    ; CHECK TEMP1 TO MAKE SURE THAT ONLY
7411                                                                      ; THE LOWER BYTE WAS AFFECTED BY MFPS
7412  016342  001404                            BEQ     1$
7413  016344  012745  000352                    MOV     #352,-(R5)
 (2)  016350  005245                            INC     -(R5)
 (2)  016352  000000                            HALT                    ; MTPS OR MFPS INSTRUCTION FAILED
7414  016354  005011                    1$:     CLR     (R1)
7418  016356                                    MTPS    #377            ; SET PSW = 357 SINCE T BIT CAN NOT BE SET BY MTPS
 (1)  016356  106427                            .WORD   106400!..C
7419  016362  004737  017354                    JSR     PC,@#$CC17      ; CHECK FOR CC = 17
7420  016366                                    MFPS    TEMP1           ; MOVE PSW TO TEMP1
 (1)  016366  106767                            .WORD   106700!..C
7424  016372  004737  017272                    JSR     PC,@#$CC11      ; CHECK FOR CC = 11 (C BIT SHOULD NOT BE EFFECTED BY MFP
7425  016376  022767  000357  162036            CMP     #357,TEMP1
7426  016404  001404                            BEQ     BTWRD
7427  016406                            EPSWND:
 (2)  016406  012745  000353                    MOV     #353,-(R5)
 (2)  016412  005245                            INC     -(R5)
 (2)  016414  000000                            HALT                    ; MFPS INSTRUCTION FAILED IN MODE 6
7428                                                                      ; OR SEQUENCE ERROR
```

```
7429                                    ;;*******************************************************************************
 (2)                                    ;*TEST: 122     BYTE INSTRUCTIONS REQUIRING WORD INST. TO CHECK
 (3)                                    ;;*******************************************************************************
7430
7431  016416                            BTWRD:
 (2)  016416  021527  000122                    CMP     (R5),#122
7432  016422  001124                            BNE     EBTWRD          ; IF IN WRONG SEQUNCE GO TO HALT AT THE END OF THE TEST
7433  016424  005215                            INC     (R5)
7434  016426  005000                            CLR     R0
7435  016430  000277                            SCC
7436  016432  112700  000200                    MOVB    #200,R0         ; SET THE HIGHEST BIT OF THE
7437                                                                    ; LOWER BYTE
7438  016436  004737  017272                    JSR     PC,@#$CC11      ; CHECK FOR CC=11
7439  016442  022700  177600                    CMP     #177600,R0      ; CHECK FOR SIGN EXTENSION IN R0
7440  016446  001404                            BEQ     1$
7441  016450  012745  000354                    MOV     #354,-(R5)
 (2)  016454  005245                            INC     -(R5)
 (2)  016456  000000                            HALT                    ; SIGN WAS NOT EXTENDED IN R0
7442  016460  000277                    1$:     SCC
7443  016462  012700  177777                    MOV     #177777,R0
7444  016466  112700  000000                    MOVB    #0,R0           ;CLEAR THE LOWER BYTE OF R0.
7445  016472  004737  017206                    JSR     PC,@#$CC5       ; CHECK FOR CC=5
7446  016476  005700                            TST     R0              ; CHECK R0 FOR SIGN EXTENTION
7447  016500  001404                            BEQ     2$
7448  016502  012745  000355                    MOV     #355,-(R5)
 (2)  016506  005245                            INC     -(R5)
 (2)  016510  000000                            HALT                    ; SIGN WAS NOT EXTENDED IN R0.
7449  016512  012704  000444            2$:     MOV     #TEMP2,R4       ; R4 IS POINTING TO TEMP2
7450  016516  012714  000377                    MOV     #377,(R4)       ; PLACE #377 IN LOCATION TEMP2
7451  016522  012706  000526                    MOV     #START-2,R6
7452  016526  116426  000000                    MOVB    0(R4),(R6)+     ; PUSH # 377 ON STACK
7453  016532  022706  000530                    CMP     #START,R6
7454  016536  001404                            BEQ     3$
7455  016540  012745  000356                    MOV     #356,-(R5)
 (2)  016544  005245                            INC     -(R5)
 (2)  016546  000000                            HALT                    ; R6 DID NOT GET INCREMENTED
7456                                                                    ; BY 2 BY A BYTE INSTRUCTION
7457  016550  124627  000377            3$:     CMPB    -(R6),#377      ; CHECK LOCATION START-2 TO
7458                                                                    ; CONTAIN PROPER DATA
7459  016554  001404                            BEQ     4$
7460  016556  012745  000357                    MOV     #357,-(R5)
 (2)  016562  005245                            INC     -(R5)
 (2)  016564  000000                            HALT                    ; BYTE INSTRUCTION IS FAILING WITH R6
7461  016566  022706  000526            4$:     CMP     #START-2,R6     ; CHECK THAT R6 WAS DECREMENTED
7462                                                                    ; BY 2 BY A BYTE INSTRUCTION
7463  016572  001404                            BEQ     5$
7464  016574  012745  000360                    MOV     #360,-(R5)
 (2)  016600  005245                            INC     -(R5)
 (2)  016602  000000                            HALT                    ; R6 WAS NOT DECREMENTED
7465  016604  016467  000000  161626    5$:     MOV     0(R4),TEMP      ; SET THE LOWER BYTE OF LOCATION TEMP
7466  016612  005726                            TST     (R6)+           ; RESTORE STACK POINTER
7467  016614  000277                            SCC
7468  016616  114667  161617                    MOVB    -(SP),TEMP+1    ; SET THE HIGHER BYTE OF LOCATION TEMP
7469  016622  004737  017272                    JSR     PC,@#$CC11      ; CHECK FOR CC=11
7470  016626  022767  177777  161604          CMP     #177777,TEMP    ; CHECK TEMP FOR THE CORRECT VALUE
7471  016634  001404                            BEQ     6$
```

```
 7472  016636  012745  000361                MOV     #361,-(R5)
 7473  016642  005245                        INC     -(R5)
 7474  016644  000000                        HALT                    ; TEMP FOULED UP
 7475  016646  005067  161566        6$:     CLR     TEMP
 7476  016652  000241                        CLC
 7477  016654  105167  161561                COMB    TEMP+1          ; WRITE 1'S IN THE HIGHER BYTE OF TEMP
 7500  016660  004737  017272                JSR     PC,@#$CC11      ; CHECK FOR CC=11
 7501  016664  022767  177400  161546        CMP     #177400,TEMP
 7502  016672  001404                        BEQ     NEXT
 7503  016674                        ESTWRD:
 7504  016674  012745  000362                MOV     #362,-(R5)
 7505  016700  005245                        INC     -(R5)
 7506  016702  000000                        HALT                    ; WRONG VALUE IN TEMP OR WRONG SEQUENCE
```

```
7484
7485
7486
7487                                                  ;                 END OF PASS
7488                                                  ;                 ***********
7489
7490
7491
7492  016704                                         NEXT:
      016704  021527  000123                                  CMP     (R5),#123
7493  016710  001404                                          BEQ     2$                      ; IF IN WRONG SEQUENCE GO TO HLT BELOW
7494  016712  012745  000363                                  MOV     #363,-(R5)
      016716  005245                                          INC     -(R5)
      016720  000000                                          HALT                            ; PROGRAM IS IN WRONG SEQUENCE
7495  016722  005267  161460                          2$:     INC     $PASS
7496  016726  126727  161454  000001                          CMPB    $PASS,#1                ; ALLOW THE TYPE OUT OF END OF
7497                                                                                          ; PASS EVERY 377 PASSES
7498  016734  001002                                          BNE     GET42
7499  016736  000004  000454                                  .TYPE   ,ENDPAS                 ; TYPE END OF PASS MESSAGE
7500  016742  013700  000042                          GET42:  MOV     @#42,R0
7501  016746  001404                                          BEQ     DOAGN
7502  016750  004710                                  SENDAD: JSR     PC,(R0)
7503  016752  000240                                          NOP
7504  016754  000240                                          NOP
7505  016756  000240                                          NOP
7506  016760  005067  161420                          DOAGN:  CLR     $TESTN                  ; PREPARE TO START FROM TEST 0
7507  016764  000167  161540                          RETURN: JMP     START                   ; START TEST OVER AT BEGINNING
7508                                                  ;       ------------------------
7509
7510                                                  ;;*********************************************************************
7511
7512                                                  .SBTTL  POWER FAIL ROUTINE
7513
7514
7515  016770  012737  017000  000024                  PWRDN:  MOV     #PWRUP,@#24             ; GO TO POWER UP ROUTINE AFTER THE POWER COMES BACK
7516  016776  000000                                          HALT
7517
7518  017000  012706  000530                          PWRUP:  MOV     #START,SP
7519  017004  012737  016770  000024                          MOV     #PWRDN,@#24
7520  017012  000004  000470                                  .TYPE   ,POWER
7521  017016  000760                                          BR      DOAGN
```

```
                                        .SBTTL  TYPE ROUTINE

017020  132737  000040  000421 TYPE:   BITB    #40,@#SENVM     ; HAS THE CONSOLE OUTPUTS BEEN SUPPRESSED?
017026  001012                         BNE     4$              ; IF SO THEN GO TO 4$
017030  017603  000000                 MOV     @(SP),R3        ; GET ADDRESS OF MESSAGE

017034  105713                 1$:     TSTB    (R3)            ; END OF MESSAGE ?
017036  001406                         BEQ     4$              ; YES, GO WRAP IT UP

017040  105777  161402         3$:     TSTB    @TPS            ; READY FOR NEXT CHARACTER ?
017044  100375                         BPL     3$              ; NO, WAIT
017046  112377  161376                 MOVB    (R3)+,@TPB      ; LOAD AND TYPE THE CHARACTER
017052  000770                         BR      1$              ; YES, GET THE NEXT CHARACTER

017054  062716  000002         4$:     ADD     #2, SP          ; ADJUST THE RETURN PC
017060  000006                         RTT                     ; RETURN
```

```
                017062  003402                  $CC0:   BLE     1$
                017064  100401                          BMI     1$
                017066  103004                          BCC     2$
                017070                          1$:
                017070  012745  000364                  MOV     #364,-(R5)
                017074  005245                          INC     -(R5)
                017076  000000                          HALT                    ;WRONG CC, IT SHOULD HAVE BEEN = 0
                017100  000207                  2$:     RTS     PC

                017102  003402                  $CC1:   BLE     1$
                017104  100401                          BMI     1$
                017106  103404                          BCS     2$
                017110                          1$:
                017110  012745  000365                  MOV     #365,-(R5)
                017114  005245                          INC     -(R5)
                017116  000000                          HALT                    ;WRONG CC, IT SHOULD HAVE BEEN = 1
                017120  000207                  2$:     RTS     PC

                017122  100402                  $CC2:   BMI     1$
                017124  101401                          BLOS    1$
                017126  102404                          BVS     2$
                017130                          1$:
                017130  012745  000366                  MOV     #366,-(R5)
                017134  005245                          INC     -(R5)
                017136  000000                          HALT                    ;WRONG CC, IT SHOULD HAVE BEEN = 2
                017140  000207                  2$:     RTS     PC

                017142  100403                  $CC3:   BMI     1$
                017144  001402                          BEQ     1$
                017146  102001                          BVC     1$
                017150  103404                          BCS     2$
                017152                          1$:
                017152  012745  000367                  MOV     #367,-(R5)
                017156  005245                          INC     -(R5)
                017160  000000                          HALT                    ;WRONG CC, IT SHOULD HAVE BEEN = 3
                017162  000207                  2$:     RTS     PC

                017164  100403                  $CC4:   BMI     1$
                017166  001002                          BNE     1$
                017170  102401                          BVS     1$
                017172  103004                          BCC     2$
                017174                          1$:
                017174  012745  000370                  MOV     #370,-(R5)
                017200  005245                          INC     -(R5)
                017202  000000                          HALT                    ;WRONG CC, IT SHOULD HAVE BEEN = 4
                017204  000207                  2$:     RTS     PC

                017206  100403                  $CC5:   BMI     1$
                017210  001002                          BNE     1$
                017212  102401                          BVS     1$
                017214  103404                          BCS     2$
                017216                          1$:
                017216  012745  000371                  MOV     #371,-(R5)
                017222  005245                          INC     -(R5)
                017224  000000                          HALT                    ;WRONG CC, IT SHOULD HAVE BEEN = 5
                017226  000207                  2$:     RTS     PC
```

```
7585
7586
7587  017230  100403          $CC7:   BMI     1$
7588  017232  001002                  BNE     1$
7589  017234  102001                  BVC     1$
7590  017236  103404                  BCS     2$
7591  017240                  1$:
  (2) 017240  012745  000372          MOV     #372,-(R5)
  (2) 017244  005245                  INC     -(R5)
  (2) 017246  000000                  HALT                    ;WRONG CC, IT SHOULD HAVE BEEN = 7
7592  017250  000207          2$:     RTS     PC
7593
7594  017252  100002          $CC10:  BPL     1$
7595  017254  101401                  BLOS    1$
7596  017256  102004                  BVC     2$
7597  017260                  1$:
  (2) 017260  012745  000373          MOV     #373,-(R5)
  (2) 017264  005245                  INC     -(R5)
  (2) 017266  000000                  HALT                    ;WRONG CC, IT SHOULD HAVE BEEN = 10
7598  017270  000207          2$:     RTS     PC
7599
7600  017272  100003          $CC11:  BPL     1$
7601  017274  001402                  BEQ     1$
7602  017276  102401                  BVS     1$
7603  017300  103404                  BCS     2$
7604  017302                  1$:
  (2) 017302  012745  000374          MOV     #374,-(R5)
  (2) 017306  005245                  INC     -(R5)
  (2) 017310  000000                  HALT                    ;WRONG CC, IT SHOULD HAVE BEEN = 11
7605  017312  000207          2$:     RTS     PC
7606
7607  017314  100002          $CC12:  BPL     1$
7608  017316  101401                  BLOS    1$
7609  017320  102404                  BVS     2$
7610  017322                  1$:
  (2) 017322  012745  000375          MOV     #375,-(R5)
  (2) 017326  005245                  INC     -(R5)
  (2) 017330  000000                  HALT                    ;WRONG CC, IT SHOULD HAVE BEEN = 12
7611  017332  000207          2$:     RTS     PC
7612
7613  017334  100002          $CC13:  BPL     1$
7614  017336  003401                  BLE     1$
7615  017340  103404                  BCS     2$
7616  017342                  1$:
  (2) 017342  012745  000376          MOV     #376,-(R5)
  (2) 017346  005245                  INC     -(R5)
  (2) 017350  000000                  HALT                    ;WRONG CC, IT SHOULD HAVE BEEN = 13
7617  017352  000207          2$:     RTS     PC
7618
7619  017354  100003          $CC17:  BPL     1$
7620  017356  001002                  BNE     1$
7621  017360  102001                  BVC     1$
7622  017362  103404                  BCS     2$
7623  017364                  1$:
  (2) 017364  012745  000377          MOV     #377,-(R5)
  (2) 017370  005245                  INC     -(R5)
```

F08


```
   (2)  017372  000000                          HALT                ;WRONG CC, IT SHOULD HAVE BEEN = 17
  7624  017374  000207                  2$:     RTS     PC
  7625
  7626          000001                  .END
```

```
ABASE = 000000           5031
ADDW1 = 000000           5031
ADDW2 = 000000           5031
ADPOOP= 000000           5031
ADC80   004140           5664    5668#
ADC81   012414           6758    6765#
ADC0    005734           5973    5977#
ADC1    014570           7133    7140#
ADDW0 = 000000           5031
ADDW1 = 000000           5031
ADDW10= 000000           5031
ADDW11= 000000           5031
ADDW12= 000000           5031
ADDW13= 000000           5031
ADDW14= 000000           5031
ADDW15= 000000           5031
ADDW2 = 000000           5031
ADDW3 = 000000           5031
ADDW4 = 000000           5031
ADDW5 = 000000           5031
ADDW6 = 000000           5031
ADDW7 = 000000           5031
ADDW8 = 000000           5031
ADDW9 = 000000           5031
ADD0    006540           6106    6113#
ADD1    015430           7273    7277#
ADEVCT= 000000           5031
ADEVM = 000000           5031
ADR     000430           5035#   5036    6289#   6292    6306    6380#   6383    6404    6454#   6457    6887    6918
ADR1    000432           5037#   5038    6290#   6293    6307    6381#   6384    6405    6455#   6458    6888    6919
ADR2    000434           5039#   5040    6291#   6382#   6385    6406    6456#   6459
AENV  = 000000           5031
AENVM = 000000           5031
AFATAL= 000000           5031
AMADR1= 000000           5031
AMADR2= 000000           5031
AMADR3= 000000           5031
AMADR4= 000000           5031
AMAMS1= 000000           5031
AMAMS2= 000000           5031
AMAMS3= 000000           5031
AMAMS4= 000000           5031
AMSGAD= 000000           5031
AMSGLG= 000000           5031
AMSGTY= 000000           5031
AMTYP1= 000000           5031
AMTYP2= 000000           5031
AMTYP3= 000000           5031
AMTYP4= 000000           5031
APASS = 000000           5031
APRIOR= 000000           5031
ASLB0   003742           5622    5626#
ASLB1   012202           6711    6718#
ASL0    005536           5931    5935#
ASL1    014356           7086    7093#
ASPBC   004032           5645#
```

H08


```
ASRB1   012276          6737#
ASRO    005626          5954#
ASR1    014452          7112#
AS.PEG= 000000          5031
A.ES.N= 000000          5031
AUNIT = 000000          5031
AUSER = 000000          5031
AVECT1= 000000          5031
AVECT2= 000000          5031
BICB0   003074          5483    5487#
BICB1   011136          6527    6534#
BICO    004644          5784    5788#
BIC1    013272          6905    6913#
BRANCH  001170          5223    5229#
BTWRD   016416          7426    7431#
CB.T    000740          5149    5154#
CC0     000612          5096    5099    5100    5101    5102    5104    5105    5106    5107    5108    5109    5110    5112#
CC1     000656          5119    5122    5123    5124    5125    5126    5127    5128    5130#
CC2     000726          5135    5139    5140    5141    5142    5143    5144    5145    5146    5148#
CC3     000774          5155    5160    5161    5162    5163    5164    5165    5167#
CC4     001044          5172    5178    5179    5180    5181    5182    5183    5184    5186#
CC5     001156          5210    5214    5216    5218    5220    5222#
CC6     001112          5193    5196    5197    5198    5199    5201    5202    5203    5204    5206#
CLNZ  = 000254          5023#   6048    7214
CMPB0   003000          5469#
CMPB1   011034          6504    6511#
CMPO    004552          5771#
CMP1    013026          6865#
COMB0   003352          5543#
COMB1   011560          6613    6626#
COMO    005146          5851#
COM1    013726          7001#
DOAGN   016760          7501    7506#   7521
DUMMY   000436          5041#   5042    5377    5378
EADDO   006700          6114    6140#
EADD1   015724          7278    7324#
EASRBO  004130          5646    5665#
EASRB1  012404          6738    6759#
EASRO   005724          5955    5974#
EASR1   014560          7113    7134#
EBICO   005000          5789    5815#
EBIC1   013544          6914    6961#
EBTWRO  016674          7432    7479#
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ECMPB1  011126          6512    6528#
ECMPO   004634          5772    5785#
ECMP1   013262          6866    6906#
EINCB1  011550          6578    6614#
EMODEO  007332          6216    6246#
EMODE2  007470          6254    6279    6282#
EMODE3  007662          6287    6312    6315#
EMODE4  010140          6322    6369    6372#
EMODE5  010370          6377    6416    6419#
EMODE6  010540          6426    6446#
EMODE7  010702          6451    6469#
ENDCCO  000622          5111    5113#
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ENDCC1  000666          5129    5131#
ENDCC2  000736          5147    5149#
ENDCC5  001166          5221    5223#
ENDJP1  001356          5246    5257#
ENDJP3  001562          5263    5289#
ENDJP5  001772          5293    5321#
ENDJP7  002172          5326    5352#
ENDJSR  002606          5356    5415#
ENDPAS  000454          5052#   7499
ENEG80  003546          5570    5583#
ENEG81  011776          6655    6669#
ENEGO   005342          5878    5891#
ENEGI   014146          7027    7043#
EPSW    007146          6174    6203#
EPSWNO  016406          7394    7427#
EPEGS   002714          5420    5440#
EROLB0  003640          5587    5602#
EROLB1  012074          6676    6692#
EROLO   005434          5895    5910#
EROLI   014250          7050    7067#
ERORB0  003732          5608    5623#
ERORB1  012172          6696    6712#
ERORO   005526          5917    5932#
ERORI   014346          7071    7087#
ERRNM = 000400          5024#   5112#   5130#   5148#   5167#   5186#   5206#   5222#   5231#   5234#   5236#   5238#   5240#
                        5250#   5251#   5254#   5257#   5268#   5269#   5272#   5275#   5282#   5285#   5289#   5298#   5300#
                        5303#   5306#   5312#   5313#   5316#   5321#   5330#   5333#   5336#   5339#   5344#   5348#   5352#
                        5361#   5364#   5365#   5368#   5371#   5375#   5382#   5383#   5386#   5389#   5392#   5393#   5397#
                        5401#   5407#   5412#   5415#   5440#   5453#   5477#   5481#   5484#   5489#   5498#   5503#   5515#
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                        5799#   5804#   5815#   5823#   5838#   5853#   5861#   5867#   5885#   5891#   5904#   5910#   5925#
                        5932#   5937#   5946#   5963#   5974#   5979#   5992#   5999#   6011#   6019#   6027#   6036#   6053#
                        6059#   6075#   6083#   6107#   6121#   6127#   6135#   6140#   6145#   6153#   6158#   6165#   6188#
                        6203#   6223#   6229#   6240#   6246#   6270#   6282#   6303#   6315#   6331#   6342#   6349#   6357#
                        6372#   6395#   6402#   6419#   6440#   6446#   6464#   6469#   6502#   6505#   6522#   6525#   6528#
                        6536#   6548#   6553#   6568#   6571#   6601#   6614#   6628#   6639#   6646#   6663#   6669#   6686#
                        6692#   6705#   6712#   6720#   6730#   6748#   6759#   6767#   6781#   6788#   6797#   6806#   6814#
                        6823#   6845#   6875#   6878#   6895#   6899#   6906#   6928#   6933#   6940#   6952#   6961#   6966#
                        6985#   7003#   7012#   7018#   7037#   7043#   7060#   7067#   7080#   7087#   7095#   7105#   7123#
                        7134#   7142#   7156#   7163#   7172#   7181#   7189#   7198#   7219#   7225#   7239#   7247#   7274#
                        7288#   7293#   7300#   7318#   7324#   7341#   7345#   7352#   7361#   7372#   7378#   7381#   7396#
                        7413#   7427#   7441#   7448#   7455#   7460#   7464#   7472#   7479#   7494#   7550#   7556#   7562#
                        7569#   7576#   7583#   7591#   7597#   7604#   7610#   7616#   7623#

ESOB    016264          7365    7386#
ESUB1   016142          7331    7361#
ESWAB0  006422          6066    6083#
ESWAB1  015300          7229    7247#
ESXTO   006322          6044    6059#
ESXT1   015172          7209    7225#
ETSTB1  011024          6484    6505#
EXORO   006530          6087    6107#
EXOR1   015420          7254    7274#
GET42   016742          7498    7500#
INCB0   003214          5513#
INCB1   011364          6577#
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INC0    005010          5814    5821#
INC1    013554          6960    6964#
JMP1    001262          5241    5244#
JMP2    001366          5255    5262#
JMP3    001472          5273    5277#
JMP4    001572          5286    5292#
JMP5    001670          5304    5308#
JMP6    002002          5319    5325#
JMP7    002104          5337    5341#
JSRM    002344          5363    5376#
JSRTST  002202          5349    5355#
MARK2   000452          5051#   5379
MODE0   007156          6202    6215#
MODE1   007242          6228    6231#
MODE2   007342          6245    6253#
MODE3   007500          6281    6286#
MODE4   007672          6314    6321#
MODE5   010150          6371    6376#
MODE6   010400          6418    6425#
MODE7   010550          6445    6450#
NBIT    000624          5113    5118#
NEG80   003466          5569#
NEG81   011712          6654#
NEG0    005262          5677#
NEG1    014052          7026#
NEXT    016704          7478    7492#
NOBIT   000546          5088    5095#
NOP1  = 000260          5025#   5103
NOTCC   001122          5205    5209#
PC    =%000007          5022#   5335    5360#   5374#   5457#   5459#   5461#   5463#   5474#   5495#   5500#   5505#   5507#
                        5520#   5523#   5525#   5527#   5533#   5535#   5538#   5540#   5550#   5556#   5563#   5574#   5580#
                        5593#   5598#   5618#   5620#   5634#   5639#   5641#   5656#   5658#   5662#   5675#   5680#   5687#
                        5694#   5707#   5715#   5721#   5724#   5731#   5752#   5754#   5757#   5759#   5765#   5776#   5796#
                        5801#   5806#   5809#   5812#   5828#   5831#   5833#   5835#   5841#   5843#   5846#   5848#   5858#
                        5864#   5871#   5882#   5888#   5901#   5906#   5927#   5929#   5943#   5948#   5950#   5965#   5967#
                        5971#   5984#   5989#   5996#   6003#   6016#   6024#   6030#   6033#   6040#   6050#   6056#   6072#
                        6080#   6093#   6099#   6104#   6118#   6124#   6130#   6150#   6162#   6168#   6182#   6189#   6195#
                        6200#   6490#   6492#   6494#   6496#   6519#   6545#   6550#   6556#   6558#   6565#   6574#   6584#
                        6588#   6594#   6598#   6604#   6606#   6609#   6611#   6636#   6642#   6651#   6660#   6666#   6683#
                        6688#   6707#   6709#   6727#   6732#   6734#   6750#   6752#   6756#   6773#   6778#   6785#   6792#
                        6803#   6811#   6817#   6820#   6827#   6851#   6853#   6857#   6859#   6872#   6880#   6882#   6884#
                        6925#   6930#   6937#   6944#   6946#   6958#   6972#   6978#   6980#   6982#   6988#   6990#   6993#
                        6995#   7009#   7015#   7023#   7034#   7040#   7057#   7062#   7082#   7084#   7102#   7107#   7109#
                        7125#   7127#   7131#   7148#   7153#   7160#   7167#   7178#   7186#   7192#   7195#   7202#   7216#
                        7222#   7236#   7244#   7260#   7266#   7271#   7285#   7297#   7304#   7310#   7314#   7321#   7338#
                        7349#   7355#   7358#   7375#   7404#   7409#   7419#   7424#   7438#   7445#   7469#   7476#   7502#
                        7551#   7557#   7563#   7570#   7577#   7584#   7592#   7598#   7605#   7611#   7617#   7624#
POWER   000470          5054#   7520
PSW     007054          6173#
PSWNO   016274          7385    7393#
PWRDN   016770          5074    7515#   7519
PWRUP   017000          7515    7518#
REGS    002616          5396    5419#
RETURN  016764          7507#
ROLB0   003556          5582    5586#
ROLB1   012006          6668    6675#
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K08

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                    5557    5560*   5562*   5630*   5632*   5633*   5635    5638*   5640*   5659*   5660*   5661*   5663
                    5791*   5795*   5797    5800    5802*   5805*   5808    5855*   5857*   5859    5863*   5865    5868*
                    5870*   5939*   5941*   5942*   5944    5947*   5949*   5968*   5969*   5970*   5972    6068*   6071*
                    6073    6076*   6079*   6081    6090*   6092*   6094*   6098*   6148*   6149*   6151    6154*   6156*
                    6159*   6161    6167    6538*   6539*   6544*   6546    6549    6551*   6555*   6557    6559    6630*
                    6633*   6635*   6637    6641*   6644    6648*   6650*   6722*   6723*   6725*   6726*   6728    6731*
                    6733*   6741*   6753*   6754*   6755*   6757    6916*   6917*   6920    6924*   6926    6929    6931*
                    6936*   6945    6948*   6949*   6950    6954    6955    7005*   7006*   7008*   7010    7014*   7016
                    7019    7097*   7098*   7100*   7101*   7103    7106*   7108*   7116*   7128*   7129*   7130*   7132
                    7231*   7232*   7235*   7237    7240*   7243*   7245    7334*   7337*   7343*   7348    7354    7530*
                    7532    7537
R4      =%000004    5018#   5381*   5399    5427*   5433    5517*   5519*   5521*   5522*   5524*   5526*   5528    5532*
                    5534*   5536*   5537*   5539*   5648*   5650*   5651*   5652    5655*   5657*   5755*   5756    5760
                    5825*   5827*   5829*   5830*   5832*   5834*   5836    5840*   5842*   5844*   5845*   5847*   5957*
                    5959*   5960*   5961    5964*   5966*   6089*   6092    6095    6101*   6103*   6105    6131*   6133
                    6136*   6138*   6155*   6156    6166*   6167*   6517*   6518    6520    6580*   6581*   6583*   6585*
                    6587*   6589    6591    6595    6597*   6599    6603*   6605*   6607*   6608*   6610*   6612    6631*
                    6632*   6633    6643    6647*   6648    6740*   6742*   6744*   6745*   6746    6749*   6751*   6887*
                    6888*   6889*   6890    6918*   6919*   6920*   6945    6948    6968*   6969*   6971*   6973*   6977*
                    6979*   6981*   6983    6987*   6989*   6991*   6992*   6994*   7029*   7030*   7031    7033*   7035
                    7038*   7039*   7041    7115*   7117*   7119*   7120*   7121    7124*   7126*   7256*   7259    7265
                    7308*   7309    7382*   7383*   7384    7449*   7450*   7452    7465
R5      =%000005    5019#   5086*   5087    5095    5097*   5112*   5118    5120*   5130*   5134    5136*   5148*   5154
                    5156*   5167*   5171    5173*   5186*   5192    5194*   5206*   5209    5211*   5222*   5229    5231*
                    5232*   5234*   5236*   5238*   5240*   5244    5246*   5250*   5251*   5254*   5257*   5262    5264*
                    5268*   5269*   5272*   5275*   5282*   5285*   5289*   5292    5294*   5298*   5300*   5303*   5306*
                    5312*   5313*   5316*   5321*   5325    5327*   5330*   5333*   5336*   5339*   5344*   5348*   5352*
                    5355    5357*   5361*   5364*   5365*   5368*   5371*   5375*   5376    5380    5382*   5384    5389*
                    5392*   5393*   5397*   5401*   5402*   5403    5406*   5407*   5412*   5415*   5419    5421*   5434
                    5440*   5451    5453*   5454*   5469    5471*   5477*   5481*   5484*   5487    5489*   5490*   5498*
                    5503*   5513    5515*   5516*   5530*   5543    5545*   5546*   5553*   5559*   5569    5571*   5577*
                    5583*   5586    5588*   5596*   5602*   5607    5609*   5616*   5623*   5626    5628*   5629*   5637*
                    5645    5647*   5654*   5665*   5668    5670*   5671*   5683*   5690*   5700    5702*   5703*   5710*
                    5718*   5727*   5746    5748*   5749*   5762*   5771    5773*   5779*   5782*   5785*   5788    5790*
                    5799*   5804*   5815*   5821    5823*   5824*   5838*   5851    5853*   5854*   5861*   5867*   5877
                    5879*   5885*   5891*   5894    5896*   5904*   5910*   5916    5918*   5925*   5932*   5935    5937*
                    5938*   5946*   5954    5956*   5963*   5974*   5977    5979*   5980*   5992*   5999*   6009    6011*
                    6012*   6019*   6027*   6036*   6043    6045*   6053*   6059*   6065    6067*   6075*   6083*   6086
                    6088*   6107*   6113    6115*   6121*   6127*   6135*   6140*   6143    6145*   6146*   6153*   6158*
                    6165*   6173    6175*   6188*   6203*   6215    6217*   6223*   6229*   6240*   6246*   6253    6255*
                    6270*   6282*   6286    6288*   6303*   6315*   6321    6323*   6331*   6342*   6349*   6357*   6372*
                    6376    6378*   6395*   6402*   6419*   6425    6427*   6440*   6446*   6450    6452*   6464*   6469*
                    6483    6485*   6502*   6505*   6511    6513*   6522*   6525*   6528*   6534    6536*   6537*   6548*
                    6553*   6568*   6571*   6577    6579*   6601*   6614*   6626    6628*   6629*   6639*   6646*   6654
                    6656*   6663*   6669*   6675    6677*   6686*   6692*   6695    6697*   6705*   6712*   6718    6720*
                    6721*   6730*   6737    6739*   6748*   6759*   6765    6767*   6768*   6771*   6788*   6795    6797*
                    6798*   6806*   6814*   6823*   6843    6845*   6846*   6865    6867*   6875*   6878*   6895*   6899*
                    6906*   6913    6915*   6928*   6933*   6940*   6952*   6961*   6964    6976*   6967*   6985*   7001
                    7003*   7004*   7012*   7018*   7026    7028*   7037*   7043*   7049    7051*   7060*   7067*   7070
                    7072*   7080*   7087*   7093    7095*   7096*   7105*   7112    7114*   7123*   7134*   7140    7142*
                    7143*   7156*   7163*   7170    7172*   7173*   7181*   7189*   7198*   7208    7210*   7219*   7225*
                    7228    7230*   7239*   7247*   7253    7255*   7274*   7277    7279*   7288*   7293*   7300*   7319*
                    7324*   7330    7332*   7341*   7345*   7352*   7361*   7364    7366*   7372*   7379*   7391*   7396*
                    7393    7395*   7413*   7427*   7431    7433*   7441*   7448*   7455*   7460*   7464*   7472*   7479*
                    7492    7494*   7550*   7556*   7562*   7569*   7576*   7583*   7591*   7597*   7604*   7610*   7616*
                    7623*
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R6      =%000006        5020#  5422   5428*  5429*  5430*  5431*  5432*  5433*  5434*  5435   5437*  5439*  7451*
                        7452*  7453   7457   7461   7466
SBCB0     004272        5700#
SBCB1     012552        6795#
SBC0      006066        6009#
SBC1      014726        7170#
SEMVC   = 000273        5027#  6054   7220
SEVC    = 000263        5026#  5763   5810   6096   6562   6942   6956   7263
SOB       016152        7360   7364#
SP      =%000006        5021#  5085*  5358*  5362   5366   5369   5373*  5376*  5377*  5378*  5379*  5387   5395
                        5402   5404*  6554*  6555   6590   6591*  6593*  6595   6947*  6949   6957   6959   7312*
                        7313*  7315   7468   7518*  7530   7540*
START     000530        5079   5085#  5358   5362   5366   5387   5395   6959   7451   7453   7461   7507   7518
SUB0      006710        6139   6143#
SUB1      015734        7323   7330#
SWAB0     006332        6058   6065#
SWAB1     015202        7224   7228#
SXT0      006244        6043#
SXT1      015110        7208#
TEMP      000440        5043#  5044   5277*  5278*  5279   5286*  5287   5341   5346   5349*  5350   5422*  5437
                        5439   5792   6231   6256   6263*  6268   6276*  6280   6289   6295*  6297*  6301   6305*
                        6309*  6313   6324*  6325   6340   6345   6350*  6351   6368   6379*  6380   6398   6403*
                        6415   6429   6434   6454   6486   6515   6538   6580   6630   6657   6847   6869   6904
                        6916   6974   7116   7144   7174   7281   7286   7298   7333   7335*  7347*  7350   7356*
                        7357*  7359   7396   7465*  7468*  7470   7473*  7475*  7477
TEMP1     000442        5045#  5046   5308*  5309   5310*  5314   5317*  5318   5319*  6232   6257   6290   6326
                        6352   6381   6430   6441*  6444   6453*  6455   6462   6467   6487   6540   6560   6566
                        6631   6678   6698   6722   6740   6848   6868   6876   6886*  6896   6921   6938   6968
                        7005   7029   7211   7257*  7259*  7261*  7262   7272   7305*  7306   7334   7336*  7339
                        7342*  7346*  7397   7420*  7425
TEMP2     000444        5047#  5048   6233   6234*  6238   6244   6258   6291   6294*  6299   6304*  6311   6327
                        6329   6347   6353   6355   6370   6382   6400   6417   6428*  6431   6438   6456   6514
                        6741   6769   6799   6885*  6886   6901*  6953   7052   7073   7097   7115   7231   7280
                        7282*  7291   7294*  7301*  7319*  7320*  7322   7449
TPB       000450        5050#  7537*
TPS       000446        5049#  7535
TSTB0     002724        5438   5451#
TSTB1     010712        6468   6483#
TST0      004450        5746#
TST1      012734        6843#
TYPE      017020        5059   7528#
VBIT      000670        5131   5134#
XOR0      006432        6082   6086#
XOR1      015310        7246   7253#
YESCC     001054        5185   5192#
ZBIT      001004        5166   5171#
$APTHD    000430        5032#  5034
$CC0      017062        5680   5707   5715   5989   6016   6024   6118   6182   6778   6803   6811   7153   7178
                        7186   7285   7404   7547#
$CC1      017102        5495   5500   5527   5540   5550   5796   5801   5835   5848   5858   6545   6550   6598
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ASR     5959  5960  5964  5966  5969  5970  7119  7120  7124  7126  7129  7130
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ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

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RUN-TIME RATIO: 1533/95=16.0
CORE USED:  30K  (59 PAGES)
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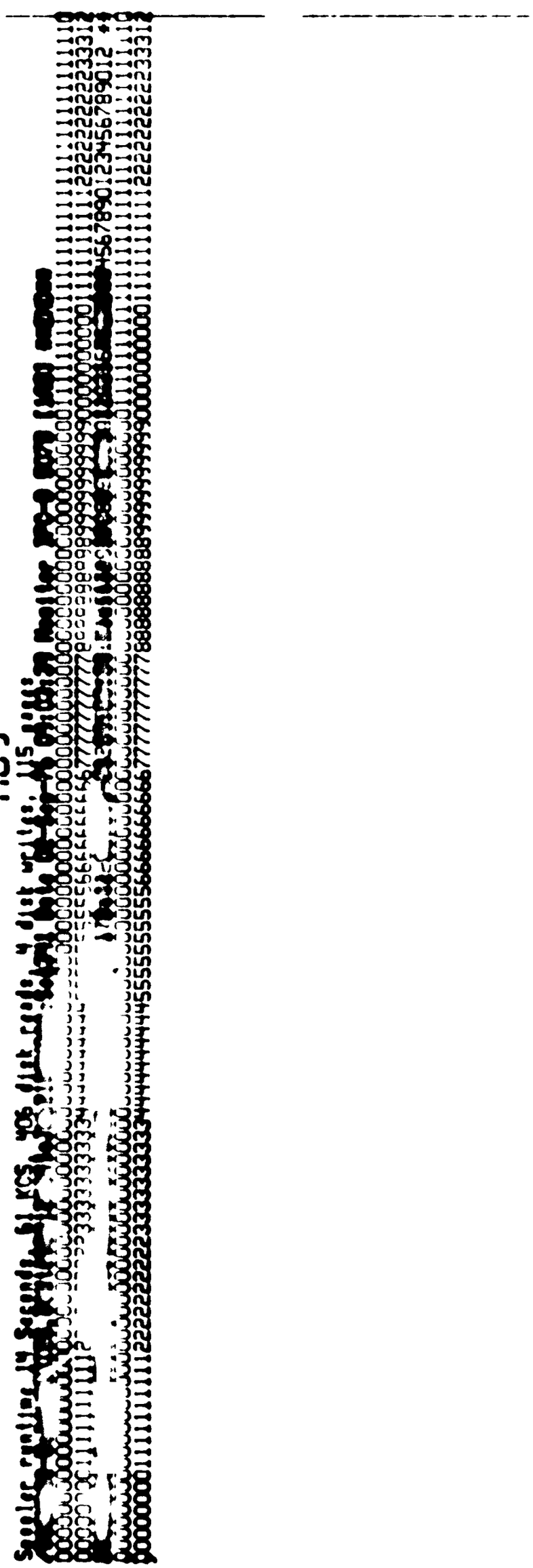
M09