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LISTING

096-001137-01

PROGRAM

NOVA 4 LOGIC TEST

TAPE

095-001137-01

ABSTRACT

THE NOVA 4 LOGIC TEST IS A MAINTENANCE PROGRAM DESIGNED TO TEST THE NOVA 4 CENTRAL PROCESSING UNIT. IT IS A GATE BY GATE TEST OF THE LOGIC USED TO IMPLEMEMT THE NOVA 4 INSTRUCTION SET. ALSO INCLUDED IS A MINIMUM LEVEL TEST OF THE CPU I/O INSTRUCTIONS, TELETYPE I/O, AND PROGRAM INTERRUPT.

```
 0001  PRCST    AOS ASSEMBLER REV 02.04         10:26:41 06/13/79
01
02
03
04
05
06
07              ;*****************************************************************
08              ;
09              ; NAME: N4LGCTST.TX                          PART NUMBER: 097-001137
10              ;
11              ;
12              ; DESCRIPTION: NOVA 4 LOGIC TEST
13              ;
14              ;
15              ; REVISION HISTORY:
16              ;
17              ;       REV.            DATE
18              ;
19              ;       00              12/22/78
20              ;       01              06/15/79
21              ;
22              ;
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25              ; LICENSED MATERIAL - PROPERTY OF DATA GENERAL CORPORATION.
26              ;*****************************************************************
```

```
!0002  PRCST
01
02
03
04
                        .TITL N4LGCTST
06
07              ;               NOVA 4 LOGIC TEST
08
09              ;1.     ABSTRACT
10              ;               THE NOVA 4 LOGIC TEST IS A MAINTENANCE PROGRAM
11              ;               DESIGNED TO TEST THE NOVA 4 CENTRAL PROCESSING
12              ;               UNIT.  IT IS A GATE BY GATE TEST OF THE LOGIC
13              ;               USED TO IMPLEMENT THE NOVA 4 INSTRUCTION SET.
14              ;               ALSO INCLUDED IS A MINIMUM LEVEL TEST OF THE
15              ;               CPU I/O INSTRUCTIONS,TELETYPE I/O, AND
16              ;               PROGRAM INTERRUPT.
17
18              ;2.     MACHINE REQUIREMENTS
19              ;2.1            NOVA 4 PROCESSOR
20              ;2.2            8K OF READ/WRITE MEMORY
21              ;2.3            BASIC I/O TELETYPE INTERFACE
22              ;
23              ;
24
25              ;4.     OPERATING PROCEDURE
26              ;4.1            VERIFY THAT THE NOVA 4 WILL PERFORM ALL
27              ;               CONSOLE FUNCTIONS. I.E. EXAMINE/EXAMINE NEXT
28              ;               DEPOSIT/DEPOSIT NEXT AC'S EXAMINE/DEPOSIT
29              ;4.2            LOAD THE PROGRAM VIA THE BINARY LOADER.
30              ;4.3            SET THE SWITCHES EQUAL TO 200
31              ;4.4            PRESS START
32              ;4.5            MACHINE SHOULD HALT M/A=201. PRESS CONTINUE
33              ;4.6            PROCESSOR SHOULD CONTINUE TO RUN WITHOUT HALTING
34              ;               TELETYPE SHOULD STUTTER FOR 60 CHARACTERS
35              ;               THE TYPEOUT "PASS" SHOULD OCCUR AND THE TEST
36              ;               SHOULD CONTINUE TO LOOP WITH THE TELETYPE RUNNING
37              ;               AT A SLOWER RATE.
38              ; 4.7          TO RESTART AFTER FIRST PASS, START AT LOC 170
39              ;
40              ;                       ****************************
41              ;                       *          WARNING         *
42              ;                       *                          *
43              ;                       * N4LGCTST DOES NOT SUPPORT *
44              ;                       *   THE DIAGNOSTIC SWITCH  *
45              ;                       *   PACKAGE. TYPING ON THE *
46              ;                       *     TELETYPE MAY CAUSE   *
47              ;                       *       PROGRAM ERRORS.    *
48              ;                       ****************************
```

```
!0003  PRCST
01
02
03
04
05
06              ;5.     ERROR DESCRIPTION
07              ;5.1            DETECTED ERRORS WILL CAUSE THE PROGRAM TO DO A
08              ;               PROCESSOR HALT.
09              ;5.2            RECORD THE STATE OF THE PROCESSOR AND REGISTERS
10              ;               AT THE TIME OF THE HALT.  CONSULT THE LISTING
11              ;               AT THE ADDRESS OF THE ERROR HALT FOR PROB-
12              ;               ABLE CAUSES OF THE FAILURE. CONSTRUCT A LOOP
13              ;               THAT WILL REPEAT THE FAILURE AND SCOPE AS REQUIRED.
14
15              ;6.     PROGRAM DESCRIPTION
16              ;               THIS PROGRAM IS A COLLECTION OF SMALL TESTS,
17              ;               EACH TEST IN SEQUENCE BASED ON PREVIOUS TESTS
18              ;               WORKING AND DESIGNED TO TEST AS SMALL AN ADDI-
19              ;               TIONAL PIECE OF THE LOGIC AS POSSIBLE.
20              ;
21              ;
22              ; 7.    CAT/KITTEN OPERATION
23              ;
24              ;               IF THE PROGRAM WAS LOADED FROM DTOS WITH CAT
25              ;               OR KITTEN THE PROGRAM WILL RUN IT IN
26              ;               THE BACKGROUND AFTER ONE PASS OF USING THE TTY
27              ;               INTERRUPTS. THE PROGRAM WILL RUN MUCH
28              ;               SLOWER ALLOWING THE CAT/KITTEN AMPLE TIME TO
29              ;               COMPLETE A PASS.
30                      .EOT
```

```
 0004  PRCST
01
02
03
04
05
06
07              ;*****************************************************************
08              ;
09              ; NAME: N4LGCTST.SR                          PART NUMBER: 094-001540
10              ;
11              ;
12              ; DESCRIPTION: NOVA 4 LOGIC TEST.
13              ;
14              ;
15              ; REVISION HISTORY:
16              ;
17              ;       REV.            DATE
18              ;
19              ;       00              12/22/78
20              ;       01              06/15/79
21              ;
22              ;
23              ; COPYRIGHT (C) DATA GENERAL CORPORATION, 1978, 1979
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26              ;*****************************************************************
```

```
10005  PRCST
01
02
03          061001          .DIAC MTSP = DOA 0,1
04          060001          .DIAC MTFP = 060001      ;NIO 0,1
05          061201          .DIAC MFSP = DOAC 0,1
06          060201          .DIAC MFFP = 060201      ;NIOC 0,1
07          061401          .DIAC PSH = DIB 0,1
08          061601          .DIAC POP = DIBC 0,1
09          062401          .DUSR SAVE = DIC 0,1
10          062601          .DUSR RTRN = DICC 0,1
11          100010          .DUSR TRAP = 100010      ;COM# 0,0
12          060400          .DIOA   DIA= 60400
13          062000          .DIOA   DOB= 62000
14
15
16
17          000046          TPLOC = 46
18          000047          TPADR = 47
19
20          000001          .NOCON  1
21          000000          ?G=0
22          000000          ?H=0
23          000000          ?M=0
24          000000          ?N=0
25          000000          ?P=0
26
27          000000          ?W=0
28          000000          ?X=0
29          000000          ?Y=0
```

```
10006  PRCST
01
02
03                          .MACRO  TAB
04                  **      HELP 0,1,2,3,4,5,6,7
05                  **      ?G=?G+1
06                  %
07
08
09                          .MACRO  HELP
10                  **      ?V=(?G&7000)/1000+1
11                  **      ?W=(?G&700)/100+1
12                  **      ?X=(?G&70)/10+1
13                  **      ?Y=(?G&7)+1
14                  **      .IFE    ?V-1
15                  **      .IFE    ?W-1
16                  **      .IFE    ?X-1
17                          PC=E^?Y ;** ERROR NUMBER ^?Y **
18                  **      .ENDC
19
20                  **      .IFN    ?X-1
21                          PC=E^?X^?Y      ;** ERROR NUMBER ^?X^?Y **
22                  **      .ENDC
23                  **      .ENDC
24                  **      .ENDC
25
26                  **      .IFN    ?W-1
27                  **      .IFE    ?V-1
28                          PC=E^?W^?X^?Y   ;** ERROR NUMBER ^?W^?X^?Y **
29                  **      .ENDC
30                  **      .ENDC
31
32                  **      .IFN    ?V-1
33                          PC=E^?V^?W^?X^?Y        ;** ERROR NUMBER^?V^?W^?X^?Y **
34                  **      .ENDC
35                  %
36                          .MACRO  ERROR
37                          HALT
38                  **      LABEL  0,1,2,3,4,5,6,7
39                  **      ?H=?H+1
40                  %
```

```
10007  PRCST
01                      .MACRO  LABEL
02              **      ?L=(?H&7000)/1000+1
03              **      ?M=(?H&700)/100+1
04              **      ?N=(?H&70)/10+1
05              **      ?P=(?H&7)+1
06
07              **      .IFE    ?L-1
08              **      .IFE    ?M-1
09              **      .IFE    ?N-1
10                      E^?P=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11              **      .ENDC
12
13              **      .IFN    ?N-1
14                      E^?N^?P=.-1     ;ERR # (8)- USED FOR ERROR DICTIONARY
15              **      .ENDC
16              **      .ENDC
17              **      .ENDC
18
19              **      .IFN    ?M-1
20              **      .IFE    ?L-1
21                      E^?M^?N^?P=.-1  ;ERR # (8)- USED FOR ERROR DICTIONARY
22              **      .ENDC
23              **      .ENDC
24              **      .IFN    ?L-1
25                      E^?L^?M^?N^?P=.-1       ;ERR # (8)- USED FOR ERROR DICTIUNARY
26              **      .ENDC
27              %
```

```
10008  PRCST
01
02
03
04              ;
05              ; MACRO DEFINITIONS USED IN BYTE INSTRUCTION TESTS
06              ;
07
08              .MACRO  LDBT1
09                      LDA ^1,=M1+M1           ;"LDB" SHOULD NOT CHANGE
10                      SUB ^1+1&3,^1+1&3               ;THE CONTENTS OF ANY AC
11                      SUB ^1+2&3,^1+2&3               ;EXCEPT AC ^1.
12                      SUB ^1+3&3,^1+3&3
13                      LDBT ^1,^1
14                      ADD# ^1+1&3,^1+2&3,SNR
15                      MOV# ^1+3&3,^1+3&3,SZR
16                      ERROR
17              %
18
19              .MACRO  LDBT2
20                      LDA ^1,=M1+M1+1         ;"LDB" SHOULD NOT CHANGE
21                      SUB ^1+1&3,^1+1&3               ;THE CONTENTS OF ANY AC
22                      SUB ^1+2&3,^1+2&3               ;EXCEPT AC ^1.
23                      SUB ^1+3&3,^1+3&3               ;CHECK MICRO INSTRUCTION
24                      LDBT ^1,^1                      ;LLBY.
25                      ADD# ^1+1&3,^1+2&3,SNR
26                      MOV# ^1+3&3,^1+3&3,SZR
27                      ERROR
28              %
29
30              .MACRO  LDBT3
31                      JSR .+2                 ;TEST LOADING A BYTE
32                      ^1                      ;FROM MEMORY BITS 8-15.
33                      MOVOL 3,^2              ;C(AC^2) POINTS TO THE WORD.
34                      LDBT ^2,^2+1&3          ;NEXT AC ACTS AS ACD FOR
35                      LDA ^2+2&3,=^1&377      ;THE LDB INSTRUCTION.
36                      SUB# ^2+1&3,^2+2&3,SZR
37                      ERROR
38              %
39
40              .MACRO  LDBT4
41                      JSR .+2                 ;TEST LOADING A BYTE
42                      ^1                      ;FROM MEMORY BITS 0-7.
43                      MOVZL 3,^2
44                      LDBT ^2,^2                      ;C(AC^2) = LDB RESULT.
45                      LDA ^2+1&3,=^1          ;NEXT AC = CORRECT
46                      MOVS ^2+1&3,^2+1&3      ;SWAP BYTE.
47                      STA ^2+2&3,27           ;SAVE WORKING REGISTER.
48                      LDA ^2+2&3,K377         ;LOAD MASK BIT.
49                      AND ^2+2&3,^2+1&3       ;SET LEFT BYTE TO 0.
50                      LDA ^2+2&3,27           ;RESTORE REGISTER.
51                      SUB# ^2,^2+1&3,SZR
52                      ERROR
53              %
54
55              .MACRO  STBT1
56                      JSR .+2                 ;TEST TO INSURE THAT THE
57                      -1                      ;STB INSTRUCTION WILL
58                      MOVZL 3,^1              ;NOT MODIFY ANY AC.
59                      SUB ^1+1&3,^1+1&3               ;C(AC^1) = POINTER AND
60                      SUB ^1+2&3,^1+2&3               ;QUANTITY STORED.
```

```
 0009  PRCST
01                      SUB ^1+3&3,^1+3&3
02                      STBT ^1,^1
03                      INC ^1,^1
04                      STBT ^1,^1
05                      ADD# ^1+1&3,^1+2&3,SNR
06                      MOV# ^1+3&3,^1+3&3,SZR
07                      ERROR
08              %
09
10              .MACRO  STBT2
11                      LDA 0,=^1               ;TEST THE STB INSTRUCTIONS
12                      STA 0,.+2               ;ABILITY TO STORE IN BITS
13                      JSR .+2                 ;8-15 OF MEMORY.
14                      0                       ;^1 = ORIGINAL CONTENTS OF MEMORY.
15                      MOVOL 3,^2              ;^3 = C(AC) TO BE STORED
16                      LDA ^2+1&3,=^3          ;^4 = CORRECT CONTENTS OF MEMORY.
17                      STBT ^2,^2+1&3
18                      LDA ^2+2&3,.-4          ;CHECK MICRO INSTRUCTIONS
19                      LDA ^2+3&3,=^4          ;RIGHTB AND JMGORD
20                      SUB# ^2+3&3,^2+2&3,SZR
21                      ERROR
22              %
23
24              .MACRO  STBT3
25                      LDA 0,=^1               ;TEST THE STB INSTRUCTIONS
26                      STA 0,.+2               ;ABILITY TO STORE IN BITS
27                      JSR .+2                 ;0-7 OF MEMORY.
28                      0                       ;^1 = ORIGINAL CONTENTS OF MEMORY.
29                      MOVZL 3,^2              ;^3 = C(AC) TO BE STORED
30                      LDA ^2+1&3,=^3          ;^4 = CORRECT CONTENTS OF MEMORY.
31                      STBT ^2,^2+1&3
32                      LDA ^2+2&3,.-4          ;CHECK MICRO INSTRUCTIONS
33                      LDA ^2+3&3,=^4          ;LEFTB AND JARVEY
34                      SUB# ^2+3&3,^2+2&3,SZR
35                      ERROR
36              %
37              .MACRO  LDBT                    ;LOAD BYTE.
38              **      .IFE    ^1              ;CASE ACC0.
39                      DIA     ^2,01
40              **      .ENDC
41              **      .IFE    ^1-1            ;CASE ACC1.
42                      DIAS    ^2,01
43              **      .ENDC
44              **      .IFE    ^1-2            ;CASE ACC2.
45                      DIAC    ^2,01
46              **      .ENDC
47              **      .IFE    ^1-3            ;CASE ACC3.
48                      DIAP    ^2,01
49              **      .ENDC
50              %
51
52              .MACRO  STBT                    ;STORE BYTE.
53              **      .IFE    ^1              ;CASE ACC0.
54                      DOB     ^2,01
55              **      .ENDC
56              **      .IFE    ^1-1            ;CASE ACC1.
57                      DOBS    ^2,01
58              **      .ENDC
59              **      .IFE    ^1-2            ;CASE ACC2.
60                      DOBC    ^2,01
```

```
 0010  PRCST
01              **      .ENDC
02              **      .IFE    ^1-3            ;CASE ACC3.
03                      DOBP    ^2,01
04              **      .ENDC
05              %
```

```
01
02              ;
03              ; MACRO DEFINITIONS USED FOR "MUL" AND "MULS"
04              ;
05              .MACRO  MUL1
06                      SUB0    ^1,^1           ;FOR AC^1 =0, AC^2 =0
07                      MOV     ^1,^2           ;AND AC^3 =177777;
08                      COM     ^1,^3           ;
09              %
10
11              .MACRO  MUL2
12                      SUB0    ^3,^3           ;FOR AC^1 =1, AC^2=177777
13                      COM     ^3,^2           ;AND AC^3 =0;
14                      MOVOL   ^3,^1           ;
15              %
16
17              .MACRO  MUL3
18                      SUB0    ^3,^3           ;FOR AC^1 =177777, AC^2 =1
19                      COM     ^3,^1           ;AND AC^3 =1;
20                      MOVOL   ^3,^2           ;
21                      MOV     ^2,^3           ;
22              %
23
24              .MACRO  MUL4
25                      SUB0    ^1,^1           ;FOR AC^1 =0, AC^2 =0
26                      MOV     ^1,^2           ;AND AC^3 =0
27                      MOV     ^1,^3           ;
28              %
29
30              .MACRO  MUL5
31                      SUB0    ^1,^1           ;
32                      MOV     ^1,^2           ;
33                      COM     ^1,^3           ;FOR AC^1 =0,AC^2 =0
34                                              ;AND AC^3 =177777;
35              %
36              .MACRO  MUL6
37                      SUBZL   ^2,^2           ;FOR AC^1 =125252, AC^2 =1
38                      LDA     ^3,.+2          ;AND AC^3 =52525;
39                      COM     ^3,^1,SKP       ;
40                      52525
41              %
42
43              .MACRO  MUL7
44                      SUB0    ^1,^1           ;FOR AC^1 =177777,
45                      COM     ^1,^1           ;AC^2 =125252 AND
46                      LDA     ^3,.+2          ;AC^3 =52525;
47                      COM     ^3,^2,SKP               ;
48                      52525
49              %
50
51              .MACRO  MUL8
52                      LDA     ^3,.+3          ;FOR AC^1 =52525,
53                      MOV     ^3,^1           ;AC^2 =52525 AND
54                      MOV     ^3,^2,SKP       ;AC^3 =52525;
55                      52525
56              %
```



```
01              ;
02              ; MACRO DEFINITIONS USED FOR "DIV" AND "DIVS"
03              ;
04              .MACRO  DIV1
05                      SUB0    ^3,^3           ;FOR AC^3 =0,AC^1 =177777
06                      MOV     ^3,^2           ;AND AC^2 =0;
07                      COM     ^3,^1           ;
08              %
09
10              .MACRO  DIV2
11                      SUB0    ^1,^1           ;FOR AC^3 =177777,AC^1 =0
12                      COM     ^1,^2           ;AND AC^2 =177777;
13                      MOV     ^2,^3           ;
14              %
15
16              .MACRO  DIV3
17                      SUB0    ^1,^1           ;FOR AC^3 =177777,AC^1 =0
18                      COM     ^1,^3           ;AND AC^2 =177776;
19                      MOVZL   ^3,^2           ;
20              %
21
22              .MACRO  DIV4
23                      SUB0    ^3,^3           ;FOR AC^3 =0,AC^1 =1
24                      COM     ^3,^2           ;AND AC^2 =177777;
25                      MOVOL   ^3,^1           ;
26              %
27              .MACRO  DIV5
28                      SUBZL   ^3,^3           ;FOR AC^3 =1,AC^1 =177776
29                      COM     ^3,^1           ;AND AC^2 =2;
30                      MOVZL   ^3,^2           ;
31              %
32
33              .MACRO  DIV6
34                      SUB0    ^3,^3           ;FOR AC^3 =0,AC^1 =177777
35                      COM     ^3,^1           ;AND AC^2 =125252;
36                      LDA     ^2,.+2          ;
37                      MOV     0,0,SKP         ;
38                      125252
39              %
40
41              .MACRO  DIV7
42                      ADCZR   ^3,^3           ;FOR AC^3=77777 AND AC^1=125252
43                      ADCZ    ^2,^2           ;AND AC^2=177777;
44                      LDA     ^1,.+2          ;
45                      MOV     0,0,SKP         ;
46                      125252                  ;
47              %
48
49              .MACRO  DIV8
50                      MUL3    ^1,^2,^3
51              %
52
53              .MACRO  DIV9
54                      LDA     0,.+4           ;FOR (AC0,AC1)=^1125253
55                      LDA     1,.+4           ;AND AC2=^252525;
56                      LDA     2,.+4           ;
57                      JMP     .+4             ;
58                      ^11252530
59                      ^252525
60              %
```

```
 0013  PRCST
01
02        000000          .TXTM   0
03        073301 .DUSR    MUL=73301
04        073101 .DUSR    DIV=73101
05        077201 .DUSR    MULS=77201
06        077001 .DUSR    DIVS=77001
07
08        000000          .LOC 0
09 00000 011514           DIRT
10 00001 100000           @0
11
12        000045          .LOC 45
13 00045 011416           EGGS
```

```
10014  PRCST
01
02        000100          .LOC    100
03
04 00100 177777 M1:       -1
05 00101 000001 K1: 1
06 00102 000002 K2: 2
07 00103 000003 K3: 3
08 00104 000004 K4: 4
09 00105 000005 K5: 5
10 00106 000006 K6: 6
11 00107 000007 K7: 7
12 00110 000010 K10: 10
13 00111 000020 K20: 20
14 00112 000040 K40: 40
15 00113 000100 K100: 100
16 00114 000200 K200: 200
17 00115 000405 K405: 405
18 00116 000400 K400: 400
19 00117 001000 K1000: 1000
20 00120 002000 K2000: 2000
21 00121 004000 K4000: 4000
22 00122 003300 K3.3K:  3300
23 00123 010000 K10K: 10000
24 00124 020000 K20K: 20000
25 00125 040000 K40K: 40000
26 00126 100000 K100K: 100000
27 00127 077777 K0777:  077777
28 00130 020400 KLDA.:  20400   ;= TO AN LDA 0,. OFF PAGE0
29 00131 000300 K300:   300
30 00132 100300 KD300: @300
31 00133 100011 KD11:   @11
32 00134 100017 KD17:   @17
33 00135 000210 K210:   210
34 00136 177770 KM8:    -8.
35 00137 100021 KD21:   @21
36 00140 100037 KD37:   @37
37 00141 125251 KCBE:   125251  ;EVEN # BITS
38 00142 052525 KCBO:   052525  ;ODD # BITS
39 00143 025252 K2525:  25252
40        000142 K5252 = KCBO
41 00144 000420 K420:   420
42 00145 001400 KJRET:  JMP 0,3 ;JSR RETURNS TYPE JMP
43 00146 000000 K0:     0
44 00147 000074 K60:    60.
45 00150 000074 TESTK:  060.
46 00151 000215 K215:   215
47 00152 000212 K212:   212
48 00153 000323 K323:   323
49 00154 000011 KTTO:   TTO
50 00155 000377 K377:   377
51 00156 000320 K320:   320
52 00157 002300 JMP3K:  JMP @300
53 00160 000001 PKR00:  1
54 00161 000001 PKR01:  1
55 00162 001377 K1377:  1377
56 00163 000000 TSTLC:  0
57 00164 000000 KATSW:  0       ;-1 IF USE CAT/KITTEN ON THIS PASS
58 00165 010372 NTEST:  KC
```

```
10015  PRCST
01
02        000170          .LOC 170
03 00170 062677 RESTR:    IORST
04 00171 102400           SUB 0,0
05 00172 040164           STA 0,KATSW
06 00173 101400           INC 0,0
07 00174 040160           STA 0,PKR00
08 00175 040161           STA 0,PKR01
09 00176 000200           JMP START
10        000200          .LOC 200
11 00200 063077 START:    HALT              ;TO TEST CPU HALT
12                        ;THIS TEST WILL VERIFY THAT A ALC
13                        ;INSTRUCTION WILL NOT SKIP/THEN SKIP UNCONDITIONALLY
14                        ;ERR HALT INDICATES EXTRANEOUS SKIP
15                        DTOSB:
16                        A1A:
17 00201 100000           COM 0,0           ;COM SHD NOT CAUSE SKIP IR13,14,15=000
18 00202 100001           COM 0,0,SKP       ;COM SKIP ALWAYS IR13,14,15=001
19                        ERROR
20 00203 063077           HALT
21
22        000203          E0=.-1  ;ERR # (8)- USED FOR ERROR DICTIONARY
23
24
25                        ;IF ABOVE FAILS SEE IR15 AND CALC  AT SETSKIP LOGIC
26
27                        ;IF ABOVE CAUSES A JMP 0, SEE IR12 AT SET TRAP AND GATE
```

```
10016  PRCST
01                        ;TEST CARRY (CRY FLOP) AND SKIP LOGIC
02
03 00204 000212           JMP A9A           ;LOCATIONS 207-211 ARE RESERVED
04        000212          .LOC 212
05 00212 102022 A9A:      ADCZ 0,0,SZC      ;NOT NEWCARRY.IR14.NOT IR15
06                        ERROR             ;ZERO INPUT TO CARRY FAILED
07 00213 063077           HALT
08
09        000213          E1=.-1  ;ERR # (8)- USED FOR ERROR DICTIONARY
10
11
12
13 00214 102023           ADCZ 0,0,SNC      ;SNC NOT SEE CALC.IR15
14 00215 102002           ADC 0,0,SZC       ;ALSO TEST ZERO HOLD OF CRY
15                        ERROR             ;IF CRY=1 SEE NOT IR12 OR
16 00216 063077           HALT
17
18        000216          E2=.-1  ;ERR # (8)- USED FOR ERROR DICTIONARY
19
20
21                        ;ABOVE FAILURE IF CRY=1 MIGHT BE IN "NOT SCI" NOT IR10
22 00217 102026 A9B:      ADCZ 0,0,SEZ      ;CARRY=0 NOT NEWCARRY.IR14.NOT IR15
23                        ERROR             ;INVOLVES SAME GATES AS SZC
24 00220 063077           HALT
25
26        000220          E3=.-1  ;ERR # (8)- USED FOR ERROR DICTIONARY
27
28
29
30 00221 102043           ADCO 0,0,SNC      ;TEST FOR TRUE CALC=IR15
31                        ERROR             ;1'S INPUT TO CRY CALC WAS NOT 1
32 00222 063077           HALT
33
34        000222          E4=.-1  ;ERR # (8)- USED FOR ERROR DICTIONARY
35
36
37
38 00223 102042           ADCO 0,0,SZC      ;TEST FOR CALC.IR15 FALSE
39 00224 102003           ADC 0,0,SNC       ;ALSO TEST ONES HOLD OF CRY
40                        ERROR             ;IF CRY=0 SEE NOT IR12
41 00225 063077           HALT
42
43        000225          E5=.-1  ;ERR # (8)- USED FOR ERROR DICTIONARY
44
45
46                        ;ABOVE FAILURE IF CRY=0 MIGHT BE IN "NOT SCI" IR11
47
48 00226 102046 A9C:      ADCO 0,0,SEZ      ;AGAIN TEST NOT NOT NEWCARRY.IR14.NOT IR15
49 00227 102003           ADC 0,0,SNC       ;SAME GATES AS LAST TEST (SZC)
50                        ERROR             ;EXCEPT FOR ZR.IR13
51 00230 063077           HALT
52
53        000230          E6=.-1  ;ERR # (8)- USED FOR ERROR DICTIONARY
54
55
56
57                        ;CARRY SHOULD=1 COMING INTO NEXT TEST CHECK
58                        ;OF TRANSITION TO 0 ON NOT NEWCARRY
59 00231 102022 A9D:      ADCZ 0,0,SZC      ;SKIP ON NOT NEWCARRY.IR14.NOT IR15
60                        ERROR             ;SEE CRY.IR11 THROUGH NOT SCI
```

```
 0017  PRCST
01 00232 063077          HALT
02
03       000232          E7=.-1  ;ERR # (8)- USED FOR ERROR DICTIONARY
04
05
06
07 00233 102040          ADCO 0,0          ;SET CRY=1
08 00234 102023          ADCZ 0,0,SNC      ;TRANSITION CRY TO 0
09 00235 102002          ADC 0,0,SZC       ;CHECK 0 REALLY GOT THERE
10                       ERROR             ;CRY=0 IS SNC FAILED
11 00236 063077          HALT
12
13
14       000236          E10=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
15
16               ;CRY=1 SEE CRY.IR11 IN "NOT SCI" GATES OR NOT NEWCARRY.LOAD CARRY
17
18               ;CARRY=0 COMING INTO-NEXT TEST CHECK NOT CRY.NOT IR10
19 00237 102023 A9E:     ADCZ 0,0,SNC      ;ALSO NOT (CRY.IR11)
20 00240 102002          ADC 0,0,SZC       ;CRY SHD HAVE STAYED 0
21                       ERROR             ;ALSO NOT NEWCARRY AND LOAD CARRY USED
22 00241 063077          HALT
23
24
25       000241          E11=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
26
```

```
10018  PRCST
01
02
03               ;TEST CARRY TO TRANSITION FROM 0 TO 1
04 00242 102020 A9F:     ADCZ 0,0,         ;SET CRY=1
05 00243 102042          ADCO 0,0,SZC      ;MAKE IT=1 AGAIN NOT CRY.IR10
06 00244 102003          ADC 0,0,SNC       ;DID 1 REALLY GET TO CRY
07                       ERROR             ;IF CRY=1 SZC FAILED
08 00245 063077          HALT
09
10
11       000245          E12=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
12
13               ;IF CRY=0 SEE CALC.NOT IR12
14
15               ;TEST COMPLIMENT OF CARRY IR11.IR10
16 00246 102020 A9G:     ADCZ 0,0          ;SET CRY=0
17 00247 102062          ADCC 0,0,SZC      ;TRANS CRY 0 TO 1 (SZC NOT)
18 00250 102003          ADC 0,0,SNC       ;CRY SHD=1
19                       ERROR             ;CRY=0 SEE CALC.LOAD CARRY
20 00251 063077          HALT
21
22
23       000251          E13=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
24
25               ;CARRY=0 SEE NOT SCI
26
27 00252 102040 A9H:     ADCO 0,0          ;SET CRY=1
28 00253 102063          ADCC 0,0,SNC      ;NOT NEWCARRY SHD BE TRUE (NOT SNC)
29 00254 102002          ADC 0,0,SZC       ;CARRY SHD REALLY=0
30                       ERROR             ;CRY=1 SEE NOT NEWCARRY AND LOAD CARRY
31 00255 063077          HALT
32
33
34       000255          E14=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
35
36
```

```
!0019  PRCST
01
02
03                      ;TEST FOR ADC TO SET AC0=MOSTLY 1'S AND SNR TO SKIP
04                      ;START BUILDING INSTRUCTIONS TO CREATE CONSTANTS
05                      ;VERY LITTLE LOGIC IS VERIFIED YET
06 00256 102005 A20:    ADC 0,0,SNR       ;ANY RESULT IN AC0 SHD CAUSE SKP
07                      ERROR             ;AC0 ANYTHING BUT 0 IS SNR FAILED
08 00257 063077         HALT
09
10
11       000257         E15=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
12
13                ;AC0 NOT=0 SEE IR15 IN SKIP CONTROL AND ZR AND GATES
14                ;AC0=0 ADC MAY=SUB SEE DP1/D ROM NOT IR7 INPUT
15
16                ;SZR SHOULD NOT SKIP WHEN AC0 NOT=0
17 00260 102004 A21:    ADC 0,0,SZR       ;TEST A2 INDICATES AC0 NOT=0
18 00261 102005         ADC 0,0,SNR       ;AS RESULT OF AN ADC
19                      ERROR             ;SZR SKIPPED IF AC0 NOT=0
20 00262 063077         HALT
21
22
23       000262         E16=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
24
25
26                ;ATTEMPT TO GENERATE AN ALL 0'S CONSTANT VIA ADC+COM
27                ;ALSO TESTS SZR TO SKIP IN GROSS CASE
28 00263 102000 A22:    ADC 0,0           ;ADC MAY NOT YET=-1
29 00264 100004         COM 0,0,SZR       ;OR COM MAY ALSO FAIL
30                ; RESULT DOES NOT=0
31                      ERROR             ;RESULT IN AC0 SHOULD HELP TO
32 00265 063077         HALT
33
34
35       000265         E17=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
36
37                ;ISOLATE PROBLEM TO A BIT OR CARRY GATE THROUGH THE ALU
38                ;AC0=0 IS SZR FAILED TO SKIP IR15=0 IN SKIP LOGIC
39                ;IF COM 0,0,=-1 THEN COM MAY=MOV OR ADC IR5+IR6
40
41                ;TEST ZERO CARRY SKIP FROM COM 0,0
42 00266 102020 A23:    ADCZ 0,0          ;0 TO CARRY=1 TO AC0
43 00267 100002         COM 0,0,SZC       ;CARRY SHD STILL=0
44                      ERROR
45 00270 063077         HALT
46
47
48       000270         E20=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
49
50
51                ;TEST SKIP EITHER ZERO WITH BOTH AC AND CARRY=0
52
53 00271 102020 A24:    ADCZ 0,0
54 00272 100006         COM 0,0,SEZ       ;BOTH RESULT AND CARRY=0
55                      ERROR             ;SEZ FAILED BOTH=0
56 00273 063077         HALT
57
58
59       000273         E21=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
60
```

```
 0020  PRCST
01                ;SEE IR13.ZR+IR14.NOT NEWCARRY.NOT IR15 ((NEG AND) SKIP CONTROL)
02
03                ;TEST SKIP EITHER ZERO WITH AC=0 AND CARRY=1
04
05 00274 000302         JMP A25
06       000302         .LOC 302
07 00302 102040 A25:    ADCO 0,0
08 00303 100006         COM 0,0,SEZ       ;RES=0 BUT CARRY=1
09                      ERROR             ;SEE ZR.IR13.NOT IR15
10 00304 063077         HALT
11
12
13       000304         E22=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
14
```

```
10021  PRCST
01
02                ;THE NEXT SERIES OF TESTS VERIFY
03                ;THAT REFERENCING ONE AC DOES NOT DISTURB THE OTHERS
04                      .MACRO ACITS    ;AC ISOLATION TEST^1
05                ;ACI^1:
06                      ADC ^2,^2
07                      COM ^2,^2       ;SET AC^2 TO 0
08                      MOV ^2,^4       ;SET AC^4 TO 0
09                      MOV ^2,^5       ;SET AC^5 TO 0
10                      ADC ^3,^3       ;SET AC^3 TO -1
11                      MOV ^2,^2,SZR   ;TEST AC^2 TO STILL=0
12                      ERROR           ;AC^3 DEST. DISTURBED AC^2
13                      MOV ^4,^4,SZR   ;TEST AC^4 TO=0
14                      ERROR           ;AC^3 DEST. DISTURBED AC^4
15                      MOV ^5,^5,SZR   ;TEST AC^5 TO = 0
16                      ERROR           ;AC^3 DEST. DISTURBED AC^5
17                %
18
19                      ACITS   00      0       1       2       3
20                ;ACI00:
21 00305 102000         ADC 0,0
22 00306 100000         COM 0,0 ;SET AC0 TO 0
23 00307 111000         MOV 0,2 ;SET AC2 TO 0
24 00310 115000         MOV 0,3 ;SET AC3 TO 0
25 00311 126000         ADC 1,1 ;SET AC1 TO -1
26 00312 101004         MOV 0,0,SZR     ;TEST AC0 TO STILL=0
27                      ERROR           ;AC1 DEST. DISTURBED AC0
28 00313 063077         HALT
29
30
31       000313         E23=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
32
33 00314 151004         MOV 2,2,SZR     ;TEST AC2 TO=0
34                      ERROR           ;AC1 DEST. DISTURBED AC2
35 00315 063077         HALT
36
37
38       000315         E24=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
39
40 00316 175004         MOV 3,3,SZR     ;TEST AC3 TO = 0
41                      ERROR           ;AC1 DEST. DISTURBED AC3
42 00317 063077         HALT
43
44
45       000317         E25=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
46
47                      ACITS   01      1       2       3       0
48                ;ACI01:
49 00320 126000         ADC 1,1
50 00321 124000         COM 1,1 ;SET AC1 TO 0
51 00322 135000         MOV 1,3 ;SET AC3 TO 0
52 00323 121000         MOV 1,0 ;SET AC0 TO 0
53 00324 152000         ADC 2,2 ;SET AC2 TO -1
54 00325 125004         MOV 1,1,SZR     ;TEST AC1 TO STILL=0
55                      ERROR           ;AC2 DEST. DISTURBED AC1
56 00326 063077         HALT
57
58
59       000326         E26=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
60
```

```
 0022  PRCST
01 00327 175004         MOV 3,3,SZR     ;TEST AC3 TO=0
02                      ERROR           ;AC2 DEST. DISTURBED AC3
03 00330 063077         HALT
04
05
06       000330         E27=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
07
08 00331 101004         MOV 0,0,SZR     ;TEST AC0 TO = 0
09                      ERROR           ;AC2 DEST. DISTURBED AC0
10 00332 063077         HALT
11
12
13       000332         E30=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
14
15                      ACITS   02      2       3       0       1
16                ;ACI02:
17 00333 152000         ADC 2,2
18 00334 150000         COM 2,2 ;SET AC2 TO 0
19 00335 141000         MOV 2,0 ;SET AC0 TO 0
20 00336 145000         MOV 2,1 ;SET AC1 TO 0
21 00337 176000         ADC 3,3 ;SET AC3 TO -1
22 00340 151004         MOV 2,2,SZR     ;TEST AC2 TO STILL=0
23                      ERROR           ;AC3 DEST. DISTURBED AC2
24 00341 063077         HALT
25
26
27       000341         E31=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
28
29 00342 101004         MOV 0,0,SZR     ;TEST AC0 TO=0
30                      ERROR           ;AC3 DEST. DISTURBED AC0
31 00343 063077         HALT
32
33
34       000343         E32=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
35
36 00344 125004         MOV 1,1,SZR     ;TEST AC1 TO = 0
37                      ERROR           ;AC3 DEST. DISTURBED AC1
38 00345 063077         HALT
39
40
41       000345         E33=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
42
43                      ACITS   03      3       0       1       2
44                ;ACI03:
45 00346 176000         ADC 3,3
46 00347 174000         COM 3,3 ;SET AC3 TO 0
47 00350 165000         MOV 3,1 ;SET AC1 TO 0
48 00351 171000         MOV 3,2 ;SET AC2 TO 0
49 00352 102000         ADC 0,0 ;SET AC0 TO -1
50 00353 175004         MOV 3,3,SZR     ;TEST AC3 TO STILL=0
51                      ERROR           ;AC0 DEST. DISTURBED AC3
52 00354 063077         HALT
53
54
55       000354         E34=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
56
57 00355 125004         MOV 1,1,SZR     ;TEST AC1 TO=0
58                      ERROR           ;AC0 DEST. DISTURBED AC1
59 00356 063077         HALT
60
```

```
 0023  PRCST
01
02        000356          E35=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
03
04 00357 151004           MOV 2,2,SZR     ;TEST AC2 TO = 0
05                        ERROR           ;AC0 DEST. DISTURBED AC2
06 00360 063077           HALT
07
08
09        000360          E36=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
10
```

```
10024  PRCST
01                  ;THE FOLLOWING TESTS INSURE 0'S ISOLATION
02                  ;OF AC TO AC
03
04                        .MACRO ACIT2    ;0'S ISOLATION TEST
05                  ;ACI^1:
06                        ADC ^2,^2       ;SET AC^2=-1
07                        COM ^2,^3       ;SET 0'S TO AC^3
08                        COM ^2,^2,SZR   ;AC^2 SHD STILL=-1
09                        ERROR           ;0'S TO AC^3 DISTURBED AC^2
10                  %
11                        ACIT2   12      0       1
12                  ;ACI12:
13 00361 102000           ADC 0,0 ;SET AC0=-1
14 00362 104000           COM 0,1 ;SET 0'S TO AC1
15 00363 100004           COM 0,0,SZR     ;AC0 SHD STILL=-1
16                        ERROR           ;0'S TO AC1 DISTURBED AC0
17 00364 063077           HALT
18
19
20        000364          E37=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
21
22                        ACIT2   13      0       2
23                  ;ACI13:
24 00365 102000           ADC 0,0 ;SET AC0=-1
25 00366 110000           COM 0,2 ;SET 0'S TO AC2
26 00367 100004           COM 0,0,SZR     ;AC0 SHD STILL=-1
27                        ERROR           ;0'S TO AC2 DISTURBED AC0
28 00370 063077           HALT
29
30
31        000370          E40=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
32
33                        ACIT2   14      0       3
34                  ;ACI14:
35 00371 102000           ADC 0,0 ;SET AC0=-1
36 00372 114000           COM 0,3 ;SET 0'S TO AC3
37 00373 100004           COM 0,0,SZR     ;AC0 SHD STILL=-1
38                        ERROR           ;0'S TO AC3 DISTURBED AC0
39 00374 063077           HALT
40
41
42        000374          E41=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
43
44 00375 000444           JMP XXYZ
45        000441          .LOC 441
46                  XXYZ:
47                        ACIT2   15      1       0
48                  ;ACI15:
49 00441 126000           ADC 1,1 ;SET AC1=-1
50 00442 120000           COM 1,0 ;SET 0'S TO AC0
51 00443 124004           COM 1,1,SZR     ;AC1 SHD STILL=-1
52                        ERROR           ;0'S TO AC0 DISTURBED AC1
53 00444 063077           HALT
54
55
56        000444          E42=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
57
58                        ACIT2   16      1       2
59                  ;ACI16:
60 00445 126000           ADC 1,1 ;SET AC1=-1
```

```
 0025  PRCST
01 00446 130000          COM 1,2 ;SET 0'S TO AC2
02 00447 124004          COM 1,1,SZR      ;AC1 SHD STILL=-1
03                       ERROR            ;0'S TO AC2 DISTURBED AC1
04 00450 063077          HALT
05
06
07       000450          E43=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
08
09                       ACIT2   17       1       3
10                ;ACI17:
11 00451 126000          ADC 1,1 ;SET AC1=-1
12 00452 134000          COM 1,3 ;SET 0'S TO AC3
13 00453 124004          COM 1,1,SZR      ;AC1 SHD STILL=-1
14                       ERROR            ;0'S TO AC3 DISTURBED AC1
15 00454 063077          HALT
16
17
18       000454          E44=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
19
20                       ACIT2   18       2       0
21                ;ACI18:
22 00455 152000          ADC 2,2 ;SET AC2=-1
23 00456 140000          COM 2,0 ;SET 0'S TO AC0
24 00457 150004          COM 2,2,SZR      ;AC2 SHD STILL=-1
25                       ERROR            ;0'S TO AC0 DISTURBED AC2
26 00460 063077          HALT
27
28
29       000460          E45=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
30
31                       ACIT2   19       2       1
32                ;ACI19:
33 00461 152000          ADC 2,2 ;SET AC2=-1
34 00462 144000          COM 2,1 ;SET 0'S TO AC1
35 00463 150004          COM 2,2,SZR      ;AC2 SHD STILL=-1
36                       ERROR            ;0'S TO AC1 DISTURBED AC2
37 00464 063077          HALT
38
39
40       000464          E46=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
41
42                       ACIT2   20       2       3
43                ;ACI20:
44 00465 152000          ADC 2,2 ;SET AC2=-1
45 00466 154000          COM 2,3 ;SET 0'S TO AC3
46 00467 150004          COM 2,2,SZR      ;AC2 SHD STILL=-1
47                       ERROR            ;0'S TO AC3 DISTURBED AC2
48 00470 063077          HALT
49
50
51       000470          E47=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
52
53                       ACIT2   21       3       0
54                ;ACI21:
55 00471 176000          ADC 3,3 ;SET AC3=-1
56 00472 160000          COM 3,0 ;SET 0'S TO AC0
57 00473 174004          COM 3,3,SZR      ;AC3 SHD STILL=-1
58                       ERROR            ;0'S TO AC0 DISTURBED AC3
59 00474 063077          HALT
60
```

```
 0026  PRCST
01
02       000474          E50=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
03
04                       ACIT2   22       3       1
05                ;AC122:
06 00475 176000          ADC 3,3 ;SET AC3=-1
07 00476 164000          COM 3,1 ;SET 0'S TO AC1
08 00477 174004          COM 3,3,SZR      ;AC3 SHD STILL=-1
09                       ERROR            ;0'S TO AC1 DISTURBED AC3
10 00500 063077          HALT
11
12
13       000500          E51=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
14
15                       ACIT2   23       3       2
16                ;ACI23:
17 00501 176000          ADC 3,3 ;SET AC3=-1
18 00502 170000          COM 3,2 ;SET 0'S TO AC2
19 00503 174004          COM 3,3,SZR      ;AC3 SHD STILL=-1
20                       ERROR            ;0'S TO AC2 DISTURBED AC3
21 00504 063077          HALT
22
23
24       000504          E52=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
25
26
27
28
```

```
10027  PRCST
01                ;AT THIS POINT IN THE TEST THE FOLLOWING
02                ;ITEMS HAVE BEEN VERIFIED
03                ;1. NONE OF THE ALC INSTRUCTIONS SKIP EXTRANEOUSLY
04                ;2. CRY CAN BE SET TO 1 OR 0 AND CRY SKIPS
05                      ;FUNCTION CORRECTLY
06                ;3. A CONSTANT OTHER THAN 0 CAN BE GENERATED
07                      ;BY AN ADC ANY AC TO ITSELF
08                ;4. A CONSTANT THAT AT LEAST APPEARS TO=0 CAN
09                      ;BE GENERATED BY AN ADC+COM ANY AC TO ITSELF
10                ;5. ANY AC MAY BE REFERENCED BY EITHER
11                      ;AN ADC OR COM WITHOUT DISTURBING THE OTHERS
12                ;6. SNR SKIPS ON -1 DOES NOT SKIP ON 0
13                ;7. SZR SKIPS ON 0 DOES NOT SKIP ON -1
14                ;8. NO TRANSFER (IR 12=1) INHIBITS CARRY CHANGE
15
16                ;TEST LEFT SHIFT OF A 1 INTO 0 CRY
17              ;TESTS BIT 9=1 ENABLES LEFT SHIFT SHIFT INPUTS
18 00505 102020 A40:    ADCZ 0,0
19 00506 101102         MOVL 0,0,SZC      ;MAKE LEFT SHIFT CRY IN=1
20 00507 101003         MOV 0,0,SNC       ;TEST FOR CRY REALLY=1
21                      ERROR             ;LEFT SHIFT IR9 FAILED
22 00510 063077         HALT
23
24
25        000510        E53=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
26
27                ;IF GATE IR8=1 AND CALC IS TRUE TEST WILL ALSO FAIL (SWAP)
28                ;TEST LEFT SHIFT OF A 0 INTO A 1 CRY
29
30 00511 102040 A41:    ADCO 0,0
31 00512 100103         COML 0,0,SNC      ;CRY INPUT (ZC)
32 00513 101002         MOV 0,0,SZC       ;DID 0 REALLY GET TO CRY
33                      ERROR             ;LEFT SHIFT (IR9) 0 INTO CRY
34 00514 063077         HALT
35
36
37        000514        E54=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
38
39
40
```

```
10028  PRCST
01
02                ;TEST FOR NO BITS TO PICK UP ON SHIFT LEFT
03
04 00515 102020 A42:    ADCZ 0,0          ;AC0=-1  CRY=0
05 00516 100105         COML 0,0,SNR      ;TEST RESULT LEVELS=0
06 00517 101004         MOV 0,0,SZR       ;AND ACTUAL RESULT=0
07                      ERROR             ;AC0 L SHOULD=0
08 00520 063077         HALT
09
10
11        000520        E55=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
12
13                ;TEST THE TRANSFER OF A CRY=1 INTO BIT 15 AC 0
14 00521 102040 A43:    ADCO 0,0
15 00522 100105         COML 0,0,SNR      ;CRY SHOULD=1 TO AC 15
16                      ERROR             ;IF AC0=0 SEE ALU 15
17 00523 063077         HALT
18
19
20        000523        E56=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
21
22                ;IF AC0=+1 SEE NOT SUM 15 INTO SKIP LOGIC
23                ;IN ABOVE TEST ALU LEVEL INPUT IS NOT SCI (FALSE)
24                ;NOT SUM 15 GOES LOW FOR LEFT SHIFT ALSO
25              ;
26                ;TEST BIT 15=1 STRAIGHT TRANSFER THROUGH
27
28 00524 102040 A44:    ADCO 0,0
29 00525 100104         COML 0,0,SZR      ;IN CASE LEVEL NOT SUM 15 FAILS
30 00526 101005         MOV 0,0,SNR       ;AC0=+1 RESULT IS NON ZERO
31                      ERROR
32 00527 063077         HALT
33
34
35        000527        E57=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
36
37                ;ABOVE FAILURE IS MOST PROBABLY "NOT ALU 15" FALSE WAS TRUE
38                ;OR "NOT SUM 15" FALSE INTO ZR AND'S IN SKP LOGIC
39
40                ;TEST RIGHT SHIFT LOGIC INTO CRY
41                ;TEST ONES SHIFT INTO A 0 CRY
42                ;TEST OF IR8=1 ENABLES RIGHT SHIFT INPUTS
43 00530 102223 A45:    ADCZR 0,0,SNC     ;TEST INPUT TO CRY=1
44                      ERROR
45 00531 063077         HALT
46
47
48        000531        E60=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
49
50                ;IF IR9 AND CALC GATE IS TRUE TEST WILL ALSO FAIL (SWAP)
51
52 00532 102222 A46:    ADCZR 0,0,SZC     ;INPUT TO CRY=1
53 00533 100003         COM 0,0,SNC       ;CRY RIGHT SHD STILL=1
54                      ERROR
55 00534 063077         HALT
56
57
58        000534        E61=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
59
60                ;TEST RIGHT 0 INPUT TO CRY=1
```

```
 0029  PRCST
01
02 00535 102040 A47:    ADCO 0,0
03 00536 100203         COMR 0,0,SNC
04 00537 100002         COM 0,0,SZC
05                      ERROR           ;CRY SHOULD=0
06 00540 063077         HALT
07
08
09       000540         E62=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
10
11               ;TEST OF NOT ALU0 INPUT TO NOT NEWCARRY AND IR8=1
```

```
 0030  PRCST
01               ;TEST FOR NO BITS TO PICK UP ON RIGHT SHIFT
02
03 00541 102020 A48:    ADCZ 0,0        ;(AC0)=-1 CRY=0
04 00542 100205         COMR 0,0,SNR    ;SHIFT 0'S RIGHT
05 00543 101004         MOV 0,0,SZR     ;RESULT SHOULD REMAIN=0
06                      ERROR           ;RIGHT SHIFT ALL 0'S FAILED
07 00544 063077         HALT
08
09
10       000544         E63=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
11
12               ;EXAMINE AC0 TO DETERMINE BITS PICKED SHIFT RIGHT
13
14               ;SHIFT CRY=1 RIGHT INTO BIT 0
15               ;ALSO TEST BIT 0=1 INTO NOT ZR
16 00545 102040 A49:    ADCO 0,0        ;CRY=1 AC0=-1
17 00546 100204         COMR 0,0,SZR    ;RIGHT SHIFT 0'S CRY=1 TO BIT 0
18 00547 101005         MOV 0,0,SNR     ;TEST RESULT TO REALLY HOLD
19                      ERROR           ;RIGHT SHIFT CRY=1 FAILED
20 00550 063077         HALT
21
22
23       000550         E64=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
24
25               ;ABOVE ERROR CAN BE NOT SCI INTO NOT SUM 0 (AC0 WILL=0)
26               ;OR NOT SUM 0 INTO ZR AND GATES  (AC0=100000)
27
28               ;TEST RIGHT SHIFT OF AC0=0'S INTO AC1
29               ;START BUILDING DOUBLE REGISTERS FOR TEST USAGE
30
31 00551 102000 A50:    ADC 0,0
32 00552 126020         ADCZ 1,1
33 00553 104200         COMR 0,1
34 00554 125004         MOV 1,1,SZR
35                      ERROR           ;RIGHT SHIFT ALL 0'S TO AC1
36 00555 063077         HALT
37
38
39       000555         E65=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
40
41
42               ;TRANSFER CRY=1 INTO AC1 BIT 0 SHIFT RIGHT
43 00556 102000 A51:    ADC 0,0         ;AC0=-1
44 00557 104040         COMO 0,1        ;AC1=0  CRY=1
45 00560 104200         COMR 0,1        ;RIGHT SHIFT NOT(0) TO AC1
46 00561 125005         MOV 1,1,SNR     ;RESULT SHD=NOT 0 BIT 0=1
47                      ERROR           ;AC1 SHD=100000
48 00562 063077         HALT
49
50
51       000562         E66=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
52
53               ;ABOVE TESTS WERE TO VERIFY TRANSFER OF AC0 TO AC OCCURS
54               ;RIGHT SHIFT OF CRY=1 TO BIT 0 WAS PREV. VERIFIED
```

```
10031  PRCST
01
02                ;DEFINE MACRO TO TEST SHIFTS OF
03                ;A SINGLE ONE BIT INTO THE NEXT POSITION
04                      .MACRO SHIFT
05                ;THIS IS A ^5 SHIFT TEST OF BIT ^2 TO BIT ^3
06                ;AC0 SHD=^4 COMING INTO THE TEST
07              ;AS^1:
08                      MOV^5 0,1,SZR   ;TEST NOT ALU^2 INTO SUM^3
09                      MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
10                      ERROR           ;RESULT IN AC1 SHD=^6
11                      MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
12                      ERROR           ;STRAIGHT TRANSFER BIT ^3 FAILED
13                ;BIT ^3 ^5 SHIFT FAILED IF AC1=0 IF=^6 BIT ^3 INTO ZR AND GATES
14              %
15                ;SETUP NEXT SERIES OF RIGHT SHIFT TESTS
16 00563 102040          ADCO 0,0
17 00564 100200          COMR 0,0
18 00565 101005          MOV 0,0,SNR
19                       ERROR          ;BIT 0 SETUP FAILED
20 00566 063077          HALT
21
22
23       000566          E67=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
24
25
26                       SHIFT R00,0,1,100000,R,040000
27                ;THIS IS A R SHIFT TEST OF BIT 0 TO BIT 1
28                ;AC0 SHD=100000 COMING INTO THE TEST
29              ;ASR00:
30 00567 105204          MOVR 0,1,SZR    ;TEST NOT ALU0 INTO SUM1
31 00570 125005          MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
32                       ERROR           ;RESULT IN AC1 SHD=040000
33 00571 063077          HALT
34
35
36       000571          E70=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
37
38 00572 121005          MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
39                       ERROR           ;STRAIGHT TRANSFER BIT 1 FAILED
40 00573 063077          HALT
41
42
43       000573          E71=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
44
45                ;BIT 1 R SHIFT FAILED IF AC1=0 IF=040000 BIT 1 INTO ZR AND GATES
46                      SHIFT R01,1,2,040000,R,020000
47                ;THIS IS A R SHIFT TEST OF BIT 1 TO BIT 2
48                ;AC0 SHD=040000 COMING INTO THE TEST
49              ;ASR01:
50 00574 105204          MOVR 0,1,SZR    ;TEST NOT ALU1 INTO SUM2
51 00575 125005          MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
52                       ERROR           ;RESULT IN AC1 SHD=020000
53 00576 063077          HALT
54
55
56       000576          E72=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
57
58 00577 121005          MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
59                       ERROR           ;STRAIGHT TRANSFER BIT 2 FAILED
60 00600 063077          HALT
```

```
 0032  PRCST
01
02
03       000600          E73=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
04
05                ;BIT 2 R SHIFT FAILED IF AC1=0 IF=020000 BIT 2 INTO ZR AND GATES
06                      SHIFT R02,2,3,020000,R,010000
07                ;THIS IS A R SHIFT TEST OF BIT 2 TO BIT 3
08                ;AC0 SHD=020000 COMING INTO THE TEST
09              ;ASR02:
10 00601 105204          MOVR 0,1,SZR    ;TEST NOT ALU2 INTO SUM3
11 00602 125005          MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
12                       ERROR           ;RESULT IN AC1 SHD=010000
13 00603 063077          HALT
14
15
16       000603          E74=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
17
18 00604 121005          MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
19                       ERROR           ;STRAIGHT TRANSFER BIT 3 FAILED
20 00605 063077          HALT
21
22
23       000605          E75=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
24
25                ;BIT 3 R SHIFT FAILED IF AC1=0 IF=010000 BIT 3 INTO ZR AND GATES
26                      SHIFT R03,3,4,010000,R,004000
27                ;THIS IS A R SHIFT TEST OF BIT 3 TO BIT 4
28                ;AC0 SHD=010000 COMING INTO THE TEST
29              ;ASR03:
30 00606 105204          MOVR 0,1,SZR    ;TEST NOT ALU3 INTO SUM4
31 00607 125005          MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
32                       ERROR           ;RESULT IN AC1 SHD=004000
33 00610 063077          HALT
34
35
36       000610          E76=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
37
38 00611 121005          MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
39                       ERROR           ;STRAIGHT TRANSFER BIT 4 FAILED
40 00612 063077          HALT
41
42
43       000612          E77=.-1 ;ERR # (8)- USED FOR ERROR DICTIONARY
44
45                ;BIT 4 R SHIFT FAILED IF AC1=0 IF=004000 BIT 4 INTO ZR AND GATES
46                      SHIFT R04,4,5,004000,R,002000
47                ;THIS IS A R SHIFT TEST OF BIT 4 TO BIT 5
48                ;AC0 SHD=004000 COMING INTO THE TEST
49              ;ASR04:
50 00613 105204          MOVR 0,1,SZR    ;TEST NOT ALU4 INTO SUM5
51 00614 125005          MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
52                       ERROR           ;RESULT IN AC1 SHD=002000
53 00615 063077          HALT
54
55
56       000615          E100=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
57 00616 121005          MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
58                       ERROR           ;STRAIGHT TRANSFER BIT 5 FAILED
59 00617 063077          HALT
60
```

```
 0033  PRCST
01
02        000617          E101=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
03                  ;BIT 5 R SHIFT FAILED IF AC1=0 IF=002000 BIT 5 INTO ZR AND GATES
04                        SHIFT R05,5,6,002000,R,001000
05                  ;THIS IS A R SHIFT TEST OF BIT 5 TO BIT 6
06                  ;AC0 SHD=002000 COMING INTO THE TEST
07                ;ASR05:
08 00620 105204           MOVR 0,1,SZR    ;TEST NOT ALU5 INTO SUM6
09 00621 125005           MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
10                        ERROR           ;RESULT IN AC1 SHD=001000
11 00622 063077           HALT
12
13
14        000622          E102=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
15 00623 121005           MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
16                        ERROR           ;STRAIGHT TRANSFER BIT 6 FAILED
17 00624 063077           HALT
18
19
20        000624          E103=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
21                  ;BIT 6 R SHIFT FAILED IF AC1=0 IF=001000 BIT 6 INTO ZR AND GATES
22                        SHIFT R06,6,7,001000,R,000400
23                  ;THIS IS A R SHIFT TEST OF BIT 6 TO BIT 7
24                  ;AC0 SHD=001000 COMING INTO THE TEST
25                ;ASR06:
26 00625 105204           MOVR 0,1,SZR    ;TEST NOT ALU6 INTO SUM7
27 00626 125005           MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
28                        ERROR           ;RESULT IN AC1 SHD=000400
29 00627 063077           HALT
30
31
32        000627          E104=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
33 00630 121005           MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
34                        ERROR           ;STRAIGHT TRANSFER BIT 7 FAILED
35 00631 063077           HALT
36
37
38        000631          E105=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
39                  ;BIT 7 R SHIFT FAILED IF AC1=0 IF=000400 BIT 7 INTO ZR AND GATES
40                        SHIFT R07,7,8,000400,R,000200
41                  ;THIS IS A R SHIFT TEST OF BIT 7 TO BIT 8
42                  ;AC0 SHD=000400 COMING INTO THE TEST
43                ;ASR07:
44 00632 105204           MOVR 0,1,SZR    ;TEST NOT ALU7 INTO SUM8
45 00633 125005           MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
46                        ERROR           ;RESULT IN AC1 SHD=000200
47 00634 063077           HALT
48
49
50        000634          E106=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
51 00635 121005           MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
52                        ERROR           ;STRAIGHT TRANSFER BIT 8 FAILED
53 00636 063077           HALT
54
55
56        000636          E107=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
57                  ;BIT 8 R SHIFT FAILED IF AC1=0 IF=000200 BIT 8 INTO ZR AND GATES
58                        SHIFT R08,8,9,000200,R,000100
59                  ;THIS IS A R SHIFT TEST OF BIT 8 TO BIT 9
60                  ;AC0 SHD=000200 COMING INTO THE TEST
```

```
 0034  PRCST
01                ;ASR08:
02 00637 105204           MOVR 0,1,SZR    ;TEST NOT ALU8 INTO SUM9
03 00640 125005           MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
04                        ERROR           ;RESULT IN AC1 SHD=000100
05 00641 063077           HALT
06
07
08        000641          E110=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
09 00642 121005           MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
10                        ERROR           ;STRAIGHT TRANSFER BIT 9 FAILED
11 00643 063077           HALT
12
13
14        000643          E111=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
15                  ;BIT 9 R SHIFT FAILED IF AC1=0 IF=000100 BIT 9 INTO ZR AND GATES
16                        SHIFT R09,9,10,000100,R,000040
17                  ;THIS IS A R SHIFT TEST OF BIT 9 TO BIT 10
18                  ;AC0 SHD=000100 COMING INTO THE TEST
19                ;ASR09:
20 00644 105204           MOVR 0,1,SZR    ;TEST NOT ALU9 INTO SUM10
21 00645 125005           MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
22                        ERROR           ;RESULT IN AC1 SHD=000040
23 00646 063077           HALT
24
25
26        000646          E112=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
27 00647 121005           MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
28                        ERROR           ;STRAIGHT TRANSFER BIT 10 FAILED
29 00650 063077           HALT
30
31
32        000650          E113=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
33                  ;BIT 10 R SHIFT FAILED IF AC1=0 IF=000040 BIT 10 INTO ZR AND GATES
34                        SHIFT R10,10,11,000040,R,000020
35                  ;THIS IS A R SHIFT TEST OF BIT 10 TO BIT 11
36                  ;AC0 SHD=000040 COMING INTO THE TEST
37                ;ASR10:
38 00651 105204           MOVR 0,1,SZR    ;TEST NOT ALU10 INTO SUM11
39 00652 125005           MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
40                        ERROR           ;RESULT IN AC1 SHD=000020
41 00653 063077           HALT
42
43
44        000653          E114=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45 00654 121005           MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
46                        ERROR           ;STRAIGHT TRANSFER BIT 11 FAILED
47 00655 063077           HALT
48
49
50        000655          E115=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
51                  ;BIT 11 R SHIFT FAILED IF AC1=0 IF=000020 BIT 11 INTO ZR AND GATES
52                        SHIFT R11,11,12,000020,R,000010
53                  ;THIS IS A R SHIFT TEST OF BIT 11 TO BIT 12
54                  ;AC0 SHD=000020 COMING INTO THE TEST
55                ;ASR11:
56 00656 105204           MOVR 0,1,SZR    ;TEST NOT ALU11 INTO SUM12
57 00657 125005           MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
58                        ERROR           ;RESULT IN AC1 SHD=000010
59 00660 063077           HALT
60
```

```
 0035  PRCST
01
02        000660          E116=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
03 00661 121005           MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
04                        ERROR           ;STRAIGHT TRANSFER BIT 12 FAILED
05 00662 063077           HALT
06
07
08        000662          E117=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
09                  ;BIT 12 R SHIFT FAILED IF AC1=0 IF=000010 BIT 12 INTO ZR AND GATES
10                        SHIFT R12,12,13,000010,R,000004
11                  ;THIS IS A R SHIFT TEST OF BIT 12 TO BIT 13
12                  ;AC0 SHD=000010 COMING INTO THE TEST
13                ;ASR12:
14 00663 105204           MOVR 0,1,SZR    ;TEST NOT ALU12 INTO SUM13
15 00664 125005           MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
16                        ERROR           ;RESULT IN AC1 SHD=000004
17 00665 063077           HALT
18
19
20        000665          E120=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
21 00666 121005           MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
22                        ERROR           ;STRAIGHT TRANSFER BIT 13 FAILED
23 00667 063077           HALT
24
25
26        000667          E121=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
27                  ;BIT 13 R SHIFT FAILED IF AC1=0 IF=000004 BIT 13 INTO ZR AND GATES
28                        SHIFT R13,13,14,000004,R,000002
29                  ;THIS IS A R SHIFT TEST OF BIT 13 TO BIT 14
30                  ;AC0 SHD=000004 COMING INTO THE TEST
31                ;ASR13:
32 00670 105204           MOVR 0,1,SZR    ;TEST NOT ALU13 INTO SUM14
33 00671 125005           MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
34                        ERROR           ;RESULT IN AC1 SHD=000002
35 00672 063077           HALT
36
37
38        000672          E122=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
39 00673 121005           MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
40                        ERROR           ;STRAIGHT TRANSFER BIT 14 FAILED
41 00674 063077           HALT
42
43
44        000674          E123=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45                  ;BIT 14 R SHIFT FAILED IF AC1=0 IF=000002 BIT 14 INTO ZR AND GATES
46                        SHIFT R14,14,15,000002,R,000001
47                  ;THIS IS A R SHIFT TEST OF BIT 14 TO BIT 15
48                  ;AC0 SHD=000002 COMING INTO THE TEST
49                ;ASR14:
50 00675 105204           MOVR 0,1,SZR    ;TEST NOT ALU14 INTO SUM15
51 00676 125005           MOV 1,1,SNR     ;STRAIGHT TRANSFER COULD ALSO FAIL
52                        ERROR           ;RESULT IN AC1 SHD=000001
53 00677 063077           HALT
54
55
56        000677          E124=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
57 00700 121005           MOV 1,0,SNR     ;MOVE RESULT BACK TO AC0 NXT TST
58                        ERROR           ;STRAIGHT TRANSFER BIT 15 FAILED
59 00701 063077           HALT
60
```

```
 0036  PRCST
01
02        000701          E125=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
03                  ;BIT 15 R SHIFT FAILED IF AC1=0 IF=000001 BIT 15 INTO ZR AND GATES
04
05 00702 105205 ASR15:    MOVR 0,1,SNR    ;TEST BIT 15=1 R TO CRY
06 00703 125004           MOV 1,1,SZR     ;AC1 SHD=0'S
07                        ERROR
08 00704 063077           HALT
09
10
11        000704          E126=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
12 00705 125003           MOV 1,1,SNC     ;AND CRY SHD=1
13                        ERROR
14 00706 063077           HALT
15
16
17        000706          E127=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
!0037  PRCST
01
02                ;LEFT SHIFT SINGLE BIT TESTS
03                ;SET UP A 1 IN BIT 15
04
05 00707 102040          ADCO 0,0
06 00710 100104          COML 0,0,SZR
07 00711 101005          MOV 0,0,SNR
08                       ERROR              ;AC0 SHD=1 SETUP FAILED
09 00712 063077          HALT
10
11
12       000712          E130=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
13
14                       SHIFT L00,15,14,000001,L,000002
15                ;THIS IS A L SHIFT TEST OF BIT 15 TO BIT 14
16                ;AC0 SHD=000001 COMING INTO THE TEST
17                ;ASL00:
18 00713 105104          MOVL 0,1,SZR       ;TEST NOT ALU15 INTO SUM14
19 00714 125005          MOV 1,1,SNR        ;STRAIGHT TRANSFER COULD ALSO FAIL
20                       ERROR              ;RESULT IN AC1 SHD=000002
21 00715 063077          HALT
22
23
24       000715          E131=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
25 00716 121005          MOV 1,0,SNR        ;MOVE RESULT BACK TO AC0 NXT TST
26                       ERROR              ;STRAIGHT TRANSFER BIT 14 FAILED
27 00717 063077          HALT
28
29
30       000717          E132=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
31                ;BIT 14 L SHIFT FAILED IF AC1=0 IF=000002 BIT 14 INTO ZR AND GATES
32                       SHIFT L01,14,13,000002,L,000004
33                ;THIS IS A L SHIFT TEST OF BIT 14 TO BIT 13
34                ;AC0 SHD=000002 COMING INTO THE TEST
35                ;ASL01:
36 00720 105104          MOVL 0,1,SZR       ;TEST NOT ALU14 INTO SUM13
37 00721 125005          MOV 1,1,SNR        ;STRAIGHT TRANSFER COULD ALSO FAIL
38                       ERROR              ;RESULT IN AC1 SHD=000004
39 00722 063077          HALT
40
41
42       000722          E133=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
43 00723 121005          MOV 1,0,SNR        ;MOVE RESULT BACK TO AC0 NXT TST
44                       ERROR              ;STRAIGHT TRANSFER BIT 13 FAILED
45 00724 063077          HALT
46
47
48       000724          E134=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
49                ;BIT 13 L SHIFT FAILED IF AC1=0 IF=000004 BIT 13 INTO ZR AND GATES
50                       SHIFT L02,13,12,000004,L,000010
51                ;THIS IS A L SHIFT TEST OF BIT 13 TO BIT 12
52                ;AC0 SHD=000004 COMING INTO THE TEST
53                ;ASL02:
54 00725 105104          MOVL 0,1,SZR       ;TEST NOT ALU13 INTO SUM12
55 00726 125005          MOV 1,1,SNR        ;STRAIGHT TRANSFER COULD ALSO FAIL
56                       ERROR              ;RESULT IN AC1 SHD=000010
57 00727 063077          HALT
58
59
60       000727          E135=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0038  PRCST
01 00730 121005          MOV 1,0,SNR        ;MOVE RESULT BACK TO AC0 NXT TST
02                       ERROR              ;STRAIGHT TRANSFER BIT 12 FAILED
03 00731 063077          HALT
04
05
06       000731          E136=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
07                ;BIT 12 L SHIFT FAILED IF AC1=0 IF=000010 BIT 12 INTO ZR AND GATES
08                       SHIFT L03,12,11,000010,L,000020
09                ;THIS IS A L SHIFT TEST OF BIT 12 TO BIT 11
10                ;AC0 SHD=000010 COMING INTO THE TEST
11                ;ASL03:
12 00732 105104          MOVL 0,1,SZR       ;TEST NOT ALU12 INTO SUM11
13 00733 125005          MOV 1,1,SNR        ;STRAIGHT TRANSFER COULD ALSO FAIL
14                       ERROR              ;RESULT IN AC1 SHD=000020
15 00734 063077          HALT
16
17
18       000734          E137=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
19 00735 121005          MOV 1,0,SNR        ;MOVE RESULT BACK TO AC0 NXT TST
20                       ERROR              ;STRAIGHT TRANSFER BIT 11 FAILED
21 00736 063077          HALT
22
23
24       000736          E140=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
25                ;BIT 11 L SHIFT FAILED IF AC1=0 IF=000020 BIT 11 INTO ZR AND GATES
26                       SHIFT L04,11,10,000020,L,000040
27                ;THIS IS A L SHIFT TEST OF BIT 11 TO BIT 10
28                ;AC0 SHD=000020 COMING INTO THE TEST
29                ;ASL04:
30 00737 105104          MOVL 0,1,SZR       ;TEST NOT ALU11 INTO SUM10
31 00740 125005          MOV 1,1,SNR        ;STRAIGHT TRANSFER COULD ALSO FAIL
32                       ERROR              ;RESULT IN AC1 SHD=000040
33 00741 063077          HALT
34
35
36       000741          E141=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
37 00742 121005          MOV 1,0,SNR        ;MOVE RESULT BACK TO AC0 NXT TST
38                       ERROR              ;STRAIGHT TRANSFER BIT 10 FAILED
39 00743 063077          HALT
40
41
42       000743          E142=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
43                ;BIT 10 L SHIFT FAILED IF AC1=0 IF=000040 BIT 10 INTO ZR AND GATES
44                       SHIFT L05,10,09,000040,L,000100
45                ;THIS IS A L SHIFT TEST OF BIT 10 TO BIT 09
46                ;AC0 SHD=000040 COMING INTO THE TEST
47                ;ASL05:
48 00744 105104          MOVL 0,1,SZR       ;TEST NOT ALU10 INTO SUM09
49 00745 125005          MOV 1,1,SNR        ;STRAIGHT TRANSFER COULD ALSO FAIL
50                       ERROR              ;RESULT IN AC1 SHD=000100
51 00746 063077          HALT
52
53
54       000746          E143=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
55 00747 121005          MOV 1,0,SNR        ;MOVE RESULT BACK TO AC0 NXT TST
56                       ERROR              ;STRAIGHT TRANSFER BIT 09 FAILED
57 00750 063077          HALT
58
59
60       000750          E144=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
0039  PRCST
01                ;BIT 09 L SHIFT FAILED IF AC1=0 IF=000100 BIT 09 INTO ZR AND GATES
02                      SHIFT L06,09,08,000100,L,000200
03                ;THIS IS A L SHIFT TEST OF BIT 09 TO BIT 08
04                ;AC0 SHD=000100 COMING INTO THE TEST
05              ;ASL06:
06 00751 105104         MOVL 0,1,SZR      ;TEST NOT ALU09 INTO SUM08
07 00752 125005         MOV 1,1,SNR       ;STRAIGHT TRANSFER COULD ALSO FAIL
08                      ERROR             ;RESULT IN AC1 SHD=000200
09 00753 063077         HALT
10
11
12       000753         E145=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
13 00754 121005         MOV 1,0,SNR       ;MOVE RESULT BACK TO AC0 NXT TST
14                      ERROR             ;STRAIGHT TRANSFER BIT 08 FAILED
15 00755 063077         HALT
16
17
18       000755         E146=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
19                ;BIT 08 L SHIFT FAILED IF AC1=0 IF=000200 BIT 08 INTO ZR AND GATES
20                      SHIFT L07,08,07,000200,L,000400
21                ;THIS IS A L SHIFT TEST OF BIT 08 TO BIT 07
22                ;AC0 SHD=000200 COMING INTO THE TEST
23              ;ASL07:
24 00756 105104         MOVL 0,1,SZR      ;TEST NOT ALU08 INTO SUM07
25 00757 125005         MOV 1,1,SNR       ;STRAIGHT TRANSFER COULD ALSO FAIL
26                      ERROR             ;RESULT IN AC1 SHD=000400
27 00760 063077         HALT
28
29
30       000760         E147=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
31 00761 121005         MOV 1,0,SNR       ;MOVE RESULT BACK TO AC0 NXT TST
32                      ERROR             ;STRAIGHT TRANSFER BIT 07 FAILED
33 00762 063077         HALT
34
35
36       000762         E150=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
37                ;BIT 07 L SHIFT FAILED IF AC1=0 IF=000400 BIT 07 INTO ZR AND GATES
38                      SHIFT L08,07,06,000400,L,001000
39                ;THIS IS A L SHIFT TEST OF BIT 07 TO BIT 06
40                ;AC0 SHD=000400 COMING INTO THE TEST
41              ;ASL08:
42 00763 105104         MOVL 0,1,SZR      ;TEST NOT ALU07 INTO SUM06
43 00764 125005         MOV 1,1,SNR       ;STRAIGHT TRANSFER COULD ALSO FAIL
44                      ERROR             ;RESULT IN AC1 SHD=001000
45 00765 063077         HALT
46
47
48       000765         E151=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
49 00766 121005         MOV 1,0,SNR       ;MOVE RESULT BACK TO AC0 NXT TST
50                      ERROR             ;STRAIGHT TRANSFER BIT 06 FAILED
51 00767 063077         HALT
52
53
54       000767         E152=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
55                ;BIT 06 L SHIFT FAILED IF AC1=0 IF=001000 BIT 06 INTO ZR AND GATES
56                      SHIFT L09,06,05,001000,L,002000
57                ;THIS IS A L SHIFT TEST OF BIT 06 TO BIT 05
58                ;AC0 SHD=001000 COMING INTO THE TEST
59              ;ASL09:
60 00770 105104         MOVL 0,1,SZR      ;TEST NOT ALU06 INTO SUM05
```

```
0040  PRCST
01 00771 125005         MOV 1,1,SNR       ;STRAIGHT TRANSFER COULD ALSO FAIL
02                      ERROR             ;RESULT IN AC1 SHD=002000
03 00772 063077         HALT
04
05
06       000772         E153=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
07 00773 121005         MOV 1,0,SNR       ;MOVE RESULT BACK TO AC0 NXT TST
08                      ERROR             ;STRAIGHT TRANSFER BIT 05 FAILED
09 00774 063077         HALT
10
11
12       000774         E154=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
13                ;BIT 05 L SHIFT FAILED IF AC1=0 IF=002000 BIT 05 INTO ZR AND GATES
14                      SHIFT L10,05,04,002000,L,004000
15                ;THIS IS A L SHIFT TEST OF BIT 05 TO BIT 04
16                ;AC0 SHD=002000 COMING INTO THE TEST
17              ;ASL10:
18 00775 105104         MOVL 0,1,SZR      ;TEST NOT ALU05 INTO SUM04
19 00776 125005         MOV 1,1,SNR       ;STRAIGHT TRANSFER COULD ALSO FAIL
20                      ERROR             ;RESULT IN AC1 SHD=004000
21 00777 063077         HALT
22
23
24       000777         E155=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
25 01000 121005         MOV 1,0,SNR       ;MOVE RESULT BACK TO AC0 NXT TST
26                      ERROR             ;STRAIGHT TRANSFER BIT 04 FAILED
27 01001 063077         HALT
28
29
30       001001         E156=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
31                ;BIT 04 L SHIFT FAILED IF AC1=0 IF=004000 BIT 04 INTO ZR AND GATES
32                      SHIFT L11,04,03,004000,L,010000
33                ;THIS IS A L SHIFT TEST OF BIT 04 TO BIT 03
34                ;AC0 SHD=004000 COMING INTO THE TEST
35              ;ASL11:
36 01002 105104         MOVL 0,1,SZR      ;TEST NOT ALU04 INTO SUM03
37 01003 125005         MOV 1,1,SNR       ;STRAIGHT TRANSFER COULD ALSO FAIL
38                      ERROR             ;RESULT IN AC1 SHD=010000
39 01004 063077         HALT
40
41
42       001004         E157=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
43 01005 121005         MOV 1,0,SNR       ;MOVE RESULT BACK TO AC0 NXT TST
44                      ERROR             ;STRAIGHT TRANSFER BIT 03 FAILED
45 01006 063077         HALT
46
47
48       001006         E160=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
49                ;BIT 03 L SHIFT FAILED IF AC1=0 IF=010000 BIT 03 INTO ZR AND GATES
50                      SHIFT L12,03,02,010000,L,020000
51                ;THIS IS A L SHIFT TEST OF BIT 03 TO BIT 02
52                ;AC0 SHD=010000 COMING INTO THE TEST
53              ;ASL12:
54 01007 105104         MOVL 0,1,SZR      ;TEST NOT ALU03 INTO SUM02
55 01010 125005         MOV 1,1,SNR       ;STRAIGHT TRANSFER COULD ALSO FAIL
56                      ERROR             ;RESULT IN AC1 SHD=020000
57 01011 063077         HALT
58
59
60       001011         E161=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0041  PRCST
01 01012 121005          MOV 1,0,SNR      ;MOVE RESULT BACK TO AC0 NXT TST
02                       ERROR            ;STRAIGHT TRANSFER BIT 02 FAILED
03 01013 063077          HALT
04
05
06       001013          E162=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
07                ;BIT 02 L SHIFT FAILED IF AC1=0 IF=020000 BIT 02 INTO ZR AND GATES
08                       SHIFT L13,02,01,020000,L,040000
09                ;THIS IS A L SHIFT TEST OF BIT 02 TO BIT 01
10                ;AC0 SHD=020000 COMING INTO THE TEST
11              ;ASL13:
12 01014 105104          MOVL 0,1,SZR     ;TEST NOT ALU02 INTO SUM01
13 01015 125005          MOV 1,1,SNR      ;STRAIGHT TRANSFER COULD ALSO FAIL
14                       ERROR            ;RESULT IN AC1 SHD=040000
15 01016 063077          HALT
16
17
18       001016          E163=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
19 01017 121005          MOV 1,0,SNR      ;MOVE RESULT BACK TO AC0 NXT TST
20                       ERROR            ;STRAIGHT TRANSFER BIT 01 FAILED
21 01020 063077          HALT
22
23
24       001020          E164=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
25                ;BIT 01 L SHIFT FAILED IF AC1=0 IF=040000 BIT 01 INTO ZR AND GATES
26                       SHIFT L14,01,00,040000,L,100000
27                ;THIS IS A L SHIFT TEST OF BIT 01 TO BIT 00
28                ;AC0 SHD=040000 COMING INTO THE TEST
29              ;ASL14:
30 01021 105104          MOVL 0,1,SZR     ;TEST NOT ALU01 INTO SUM00
31 01022 125005          MOV 1,1,SNR      ;STRAIGHT TRANSFER COULD ALSO FAIL
32                       ERROR            ;RESULT IN AC1 SHD=100000
33 01023 063077          HALT
34
35
36       001023          E165=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
37 01024 121005          MOV 1,0,SNR      ;MOVE RESULT BACK TO AC0 NXT TST
38                       ERROR            ;STRAIGHT TRANSFER BIT 00 FAILED
39 01025 063077          HALT
40
41
42       001025          E166=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
43                ;BIT 00 L SHIFT FAILED IF AC1=0 IF=100000 BIT 00 INTO ZR AND GATES
44
45 01026 105105 ASL15:   MOVL 0,1,SNR     ;AC0=100000
46 01027 125004          MOV 1,1,SZR      ;RESULT LEFT SHD=0'S
47                       ERROR            ;PICKED UP EXTRA BITS LEFT
48 01030 063077          HALT
49
50
51       001030          E167=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
52 01031 125003          MOV 1,1,SNC
53                       ERROR            ;LOST CARRY LAST LEFT SHIFT
54 01032 063077          HALT
55
56
57       001032          E170=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
!0042  PRCST
01                ;SHIFT A 0 BIT IN FIELD OF ONES
02                ;DEFINITION OF MACRO FOR TESTING SAME.
03                      .MACRO2 SHIFZ
04                ;THIS IS A ^5 SHIFT TEST OF NOT BIT ^2 TO NOT BIT ^3
05              ;AS^1:
06                      MOVO^5 0,1       ;AC0 SHD=^4 COMING INTO TEST
07                      COMZ^5 0,2,SNR   ;AC2 SHD=COM OF ^6
08                      ERROR
09                      COM 2,2          ;AC2 SHD NOW=AC1
10                      ADC 1,2          ;THE ADDITION OF COM SHD=-1
11                      COM 2,2,SZR      ;AND RESULT SHD=0 ALL SHIFTS OK
12                      ERROR            ;BIT ^2 ^5 TO BIT ^3 FAILED
13                ;AC0=^4 ORIGINAL TO ^6 IN AC1 AC2 WAS COM OF AC1
14                ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
15                ;WAS PREVIOUSLY VERIFIED SEE NOT ALU^2 INTO NOT SUM^3
16                      MOV 1,0          ;SET UP NEXT TEST
17              %
18                ;SET UP SERIES OF RIGHT SHIFT TESTS
19                ;BY SETTING AC0 TO 077777
20 01033 102000          ADC 0,0
21 01034 100240          COMOR 0,0        ;SEQUENCE MOST LIKELY TO
22 01035 100000          COM 0,0          ;SET AC0=077777
23 01036 110005          COM 0,2,SNR
24                       ERROR            ;SETUP FAILED CRY=0 TO BIT 0
25 01037 063077          HALT
26
27
28       001037          E171=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
29 01040 105000          MOV 0,1
30 01041 150000          COM 2,2          ;RETEST INSTRUCTION
31 01042 132000          ADC 1,2          ;CHECK SEQUENCE
32 01043 150004          COM 2,2,SZR      ;JUST TO MAKE SURE IT WORKS
33                       ERROR            ;COMPARE OF AC0=077777 FAILED
34 01044 063077          HALT
35
36
37       001044          E172=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10043  PRCST
01
02                              SHIFZ R16,0,1,077777,R,137777
03                      ;THIS IS A R SHIFT TEST OF NOT BIT 0 TO NOT BIT 1
04                    ;ASR16:
05 01045 105240                 MOVOR 0,1       ;AC0 SHD=077777 COMING INTO TEST
06 01046 110225                 COMZR 0,2,SNR   ;AC2 SHD=COM OF 137777
07                              ERROR
08 01047 063077                 HALT
09
10
11       001047                 E173=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
12 01050 150000                 COM 2,2         ;AC2 SHD NOW=AC1
13 01051 132000                 ADC 1,2         ;THE ADDITION OF COM SHD=-1
14 01052 150004                 COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
15                              ERROR           ;BIT 0 R TO BIT 1 FAILED
16 01053 063077                 HALT
17
18
19       001053                 E174=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
20                      ;AC0=077777 ORIGINAL TO 137777 IN AC1 AC2 WAS COM OF AC1
21                      ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
22                      ;WAS PREVIOUSLY VERIFIED SEE NOT ALU0 INTO NOT SUM1
23 01054 121000                 MOV 1,0         ;SET UP NEXT TEST
24                              SHIFZ R17,1,2,137777,R,157777
25                      ;THIS IS A R SHIFT TEST OF NOT BIT 1 TO NOT BIT 2
26                    ;ASR17:
27 01055 105240                 MOVOR 0,1       ;AC0 SHD=137777 COMING INTO TEST
28 01056 110225                 COMZR 0,2,SNR   ;AC2 SHD=COM OF 157777
29                              ERROR
30 01057 063077                 HALT
31
32
33       001057                 E175=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
34 01060 150000                 COM 2,2         ;AC2 SHD NOW=AC1
35 01061 132000                 ADC 1,2         ;THE ADDITION OF COM SHD=-1
36 01062 150004                 COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
37                              ERROR           ;BIT 1 R TO BIT 2 FAILED
38 01063 063077                 HALT
39
40
41       001063                 E176=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
42                      ;AC0=137777 ORIGINAL TO 157777 IN AC1 AC2 WAS COM OF AC1
43                      ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
44                      ;WAS PREVIOUSLY VERIFIED SEE NOT ALU1 INTO NOT SUM2
45 01064 121000                 MOV 1,0         ;SET UP NEXT TEST
46                              SHIFZ R18,2,3,157777,R,167777
47                      ;THIS IS A R SHIFT TEST OF NOT BIT 2 TO NOT BIT 3
48                    ;ASR18:
49 01065 105240                 MOVOR 0,1       ;AC0 SHD=157777 COMING INTO TEST
50 01066 110225                 COMZR 0,2,SNR   ;AC2 SHD=COM OF 167777
51                              ERROR
52 01067 063077                 HALT
53
54
55       001067                 E177=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
56 01070 150000                 COM 2,2         ;AC2 SHD NOW=AC1
57 01071 132000                 ADC 1,2         ;THE ADDITION OF COM SHD=-1
58 01072 150004                 COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
59                              ERROR           ;BIT 2 R TO BIT 3 FAILED
60 01073 063077                 HALT
```

```
 0044  PRCST
01
02
03       001073                 E200=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
04                      ;AC0=157777 ORIGINAL TO 167777 IN AC1 AC2 WAS COM OF AC1
05                      ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
06                      ;WAS PREVIOUSLY VERIFIED SEE NOT ALU2 INTO NOT SUM3
07 01074 121000                 MOV 1,0         ;SET UP NEXT TEST
08                              SHIFZ R19,3,4,167777,R,173777
09                      ;THIS IS A R SHIFT TEST OF NOT BIT 3 TO NOT BIT 4
10                    ;ASR19:
11 01075 105240                 MOVOR 0,1       ;AC0 SHD=167777 COMING INTO TEST
12 01076 110225                 COMZR 0,2,SNR   ;AC2 SHD=COM OF 173777
13                              ERROR
14 01077 063077                 HALT
15
16
17       001077                 E201=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
18 01100 150000                 COM 2,2         ;AC2 SHD NOW=AC1
19 01101 132000                 ADC 1,2         ;THE ADDITION OF COM SHD=-1
20 01102 150004                 COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
21                              ERROR           ;BIT 3 R TO BIT 4 FAILED
22 01103 063077                 HALT
23
24
25       001103                 E202=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
26                      ;AC0=167777 ORIGINAL TO 173777 IN AC1 AC2 WAS COM OF AC1
27                      ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
28                      ;WAS PREVIOUSLY VERIFIED SEE NOT ALU3 INTO NOT SUM4
29 01104 121000                 MOV 1,0         ;SET UP NEXT TEST
30                              SHIFZ R20,4,5,173777,R,175777
31                      ;THIS IS A R SHIFT TEST OF NOT BIT 4 TO NOT BIT 5
32                    ;ASR20:
33 01105 105240                 MOVOR 0,1       ;AC0 SHD=173777 COMING INTO TEST
34 01106 110225                 COMZR 0,2,SNR   ;AC2 SHD=COM OF 175777
35                              ERROR
36 01107 063077                 HALT
37
38
39       001107                 E203=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
40 01110 150000                 COM 2,2         ;AC2 SHD NOW=AC1
41 01111 132000                 ADC 1,2         ;THE ADDITION OF COM SHD=-1
42 01112 150004                 COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
43                              ERROR           ;BIT 4 R TO BIT 5 FAILED
44 01113 063077                 HALT
45
46
47       001113                 E204=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
48                      ;AC0=173777 ORIGINAL TO 175777 IN AC1 AC2 WAS COM OF AC1
49                      ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
50                      ;WAS PREVIOUSLY VERIFIED SEE NOT ALU4 INTO NOT SUM5
51 01114 121000                 MOV 1,0         ;SET UP NEXT TEST
52                              SHIFZ R21,5,6,175777,R,176777
53                      ;THIS IS A R SHIFT TEST OF NOT BIT 5 TO NOT BIT 6
54                    ;ASR21:
55 01115 105240                 MOVOR 0,1       ;AC0 SHD=175777 COMING INTO TEST
56 01116 110225                 COMZR 0,2,SNR   ;AC2 SHD=COM OF 176777
57                              ERROR
58 01117 063077                 HALT
59
60
```

```
 0045  PRCST
01        001117          E205=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
02 01120 150000           COM 2,2           ;AC2 SHD NOW=AC1
03 01121 132000           ADC 1,2           ;THE ADDITION OF COM SHD=-1
04 01122 150004           COM 2,2,SZR       ;AND RESULT SHD=0 ALL SHIFTS OK
05                        ERROR             ;BIT 5 R TO BIT 6 FAILED
06 01123 063077           HALT
07
08
09        001123          E206=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
10                  ;AC0=175777 ORIGINAL TO 176777 IN AC1 AC2 WAS COM OF AC1
11                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
12                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU5 INTO NOT SUM6
13 01124 121000           MOV 1,0           ;SET UP NEXT TEST
14                        SHIFZ R22,6,7,176777,R,177377
15                  ;THIS IS A R SHIFT TEST OF NOT BIT 6 TO NOT BIT 7
16                ;ASR22:
17 01125 105240           MOVOR 0,1         ;AC0 SHD=176777 COMING INTO TEST
18 01126 110225           COMZR 0,2,SNR     ;AC2 SHD=COM OF 177377
19                        ERROR
20 01127 063077           HALT
21
22
23        001127          E207=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
24 01130 150000           COM 2,2           ;AC2 SHD NOW=AC1
25 01131 132000           ADC 1,2           ;THE ADDITION OF COM SHD=-1
26 01132 150004           COM 2,2,SZR       ;AND RESULT SHD=0 ALL SHIFTS OK
27                        ERROR             ;BIT 6 R TO BIT 7 FAILED
28 01133 063077           HALT
29
30
31        001133          E210=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
32                  ;AC0=176777 ORIGINAL TO 177377 IN AC1 AC2 WAS COM OF AC1
33                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
34                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU6 INTO NOT SUM7
35 01134 121000           MOV 1,0           ;SET UP NEXT TEST
36                        SHIFZ R23,7,8,177377,R,177577
37                  ;THIS IS A R SHIFT TEST OF NOT BIT 7 TO NOT BIT 8
38                ;ASR23:
39 01135 105240           MOVOR 0,1         ;AC0 SHD=177377 COMING INTO TEST
40 01136 110225           COMZR 0,2,SNR     ;AC2 SHD=COM OF 177577
41                        ERROR
42 01137 063077           HALT
43
44
45        001137          E211=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
46 01140 150000           COM 2,2           ;AC2 SHD NOW=AC1
47 01141 132000           ADC 1,2           ;THE ADDITION OF COM SHD=-1
48 01142 150004           COM 2,2,SZR       ;AND RESULT SHD=0 ALL SHIFTS OK
49                        ERROR             ;BIT 7 R TO BIT 8 FAILED
50 01143 063077           HALT
51
52
53        001143          E212=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
54                  ;AC0=177377 ORIGINAL TO 177577 IN AC1 AC2 WAS COM OF AC1
55                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
56                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU7 INTO NOT SUM8
57 01144 121000           MOV 1,0           ;SET UP NEXT TEST
58                        SHIFZ R24,8,9,177577,R,177677
59                  ;THIS IS A R SHIFT TEST OF NOT BIT 8 TO NOT BIT 9
60                ;ASR24:
```

```
 0046  PRCST
01 01145 105240           MOVOR 0,1         ;AC0 SHD=177577 COMING INTO TEST
02 01146 110225           COMZR 0,2,SNR     ;AC2 SHD=COM OF 177677
03                        ERROR
04 01147 063077           HALT
05
06
07        001147          E213=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
08 01150 150000           COM 2,2           ;AC2 SHD NOW=AC1
09 01151 132000           ADC 1,2           ;THE ADDITION OF COM SHD=-1
10 01152 150004           COM 2,2,SZR       ;AND RESULT SHD=0 ALL SHIFTS OK
11                        ERROR             ;BIT 8 R TO BIT 9 FAILED
12 01153 063077           HALT
13
14
15        001153          E214=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
16                  ;AC0=177577 ORIGINAL TO 177677 IN AC1 AC2 WAS COM OF AC1
17                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
18                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU8 INTO NOT SUM9
19 01154 121000           MOV 1,0           ;SET UP NEXT TEST
20                        SHIFZ R25,9,10,177677,R,177737
21                  ;THIS IS A R SHIFT TEST OF NOT BIT 9 TO NOT BIT 10
22                ;ASR25:
23 01155 105240           MOVOR 0,1         ;AC0 SHD=177677 COMING INTO TEST
24 01156 110225           COMZR 0,2,SNR     ;AC2 SHD=COM OF 177737
25                        ERROR
26 01157 063077           HALT
27
28
29        001157          E215=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
30 01160 150000           COM 2,2           ;AC2 SHD NOW=AC1
31 01161 132000           ADC 1,2           ;THE ADDITION OF COM SHD=-1
32 01162 150004           COM 2,2,SZR       ;AND RESULT SHD=0 ALL SHIFTS OK
33                        ERROR             ;BIT 9 R TO BIT 10 FAILED
34 01163 063077           HALT
35
36
37        001163          E216=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
38                  ;AC0=177677 ORIGINAL TO 177737 IN AC1 AC2 WAS COM OF AC1
39                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
40                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU9 INTO NOT SUM10
41 01164 121000           MOV 1,0           ;SET UP NEXT TEST
42                        SHIFZ R26,10,11,177737,R,177757
43                  ;THIS IS A R SHIFT TEST OF NOT BIT 10 TO NOT BIT 11
44                ;ASR26:
45 01165 105240           MOVOR 0,1         ;AC0 SHD=177737 COMING INTO TEST
46 01166 110225           COMZR 0,2,SNR     ;AC2 SHD=COM OF 177757
47                        ERROR
48 01167 063077           HALT
49
50
51        001167          E217=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
52 01170 150000           COM 2,2           ;AC2 SHD NOW=AC1
53 01171 132000           ADC 1,2           ;THE ADDITION OF COM SHD=-1
54 01172 150004           COM 2,2,SZR       ;AND RESULT SHD=0 ALL SHIFTS OK
55                        ERROR             ;BIT 10 R TO BIT 11 FAILED
56 01173 063077           HALT
57
58
59        001173          E220=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
60                  ;AC0=177737 ORIGINAL TO 177757 IN AC1 AC2 WAS COM OF AC1
```

```
0047  PRCST
                        ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
                        ;WAS PREVIOUSLY VERIFIED SEE NOT ALU10 INTO NOT SUM11
01174 121000                    MOV 1,0         ;SET UP NEXT TEST
                                SHIFZ R27,11,12,177757,R,177767
                        ;THIS IS A R SHIFT TEST OF NOT BIT 11 TO NOT BIT 12
                      ;ASR27:
01175 105240                    MOVOR 0,1       ;AC0 SHD=177757 COMING INTO TEST
01176 110225                    COMZR 0,2,SNR   ;AC2 SHD=COM OF 177767
                                ERROR
01177 063077                    HALT


001177                  E221=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
01200 150000                    COM 2,2         ;AC2 SHD NOW=AC1
01201 132000                    ADC 1,2         ;THE ADDITION OF COM SHD=-1
01202 150004                    COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
                                ERROR           ;BIT 11 R TO BIT 12 FAILED
01203 063077                    HALT


001203                  E222=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
                        ;AC0=177757 ORIGINAL TO 177767 IN AC1 AC2 WAS COM OF AC1
                        ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
                        ;WAS PREVIOUSLY VERIFIED SEE NOT ALU11 INTO NOT SUM12
01204 121000                    MOV 1,0         ;SET UP NEXT TEST
                                SHIFZ R28,12,13,177767,R,177773
                        ;THIS IS A R SHIFT TEST OF NOT BIT 12 TO NOT BIT 13
                      ;ASR28:
01205 105240                    MOVOR 0,1       ;AC0 SHD=177767 COMING INTO TEST
01206 110225                    COMZR 0,2,SNR   ;AC2 SHD=COM OF 177773
                                ERROR
01207 063077                    HALT


001207                  E223=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
01210 150000                    COM 2,2         ;AC2 SHD NOW=AC1
01211 132000                    ADC 1,2         ;THE ADDITION OF COM SHD=-1
01212 150004                    COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
                                ERROR           ;BIT 12 R TO BIT 13 FAILED
01213 063077                    HALT


001213                  E224=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
                        ;AC0=177767 ORIGINAL TO 177773 IN AC1 AC2 WAS COM OF AC1
                        ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
                        ;WAS PREVIOUSLY VERIFIED SEE NOT ALU12 INTO NOT SUM13
01214 121000                    MOV 1,0         ;SET UP NEXT TEST
                                SHIFZ R29,13,14,177773,R,177775
                        ;THIS IS A R SHIFT TEST OF NOT BIT 13 TO NOT BIT 14
                      ;ASR29:
01215 105240                    MOVOR 0,1       ;AC0 SHD=177773 COMING INTO TEST
01216 110225                    COMZR 0,2,SNR   ;AC2 SHD=COM OF 177775
                                ERROR
01217 063077                    HALT


001217                  E225=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
01220 150000                    COM 2,2         ;AC2 SHD NOW=AC1
01221 132000                    ADC 1,2         ;THE ADDITION OF COM SHD=-1
01222 150004                    COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
```

```
0048  PRCST
                                ERROR           ;BIT 13 R TO BIT 14 FAILED
01223 063077                    HALT


001223                  E226=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
                        ;AC0=177773 ORIGINAL TO 177775 IN AC1 AC2 WAS COM OF AC1
                        ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
                        ;WAS PREVIOUSLY VERIFIED SEE NOT ALU13 INTO NOT SUM14
01224 121000                    MOV 1,0         ;SET UP NEXT TEST
                                SHIFZ R30,14,15,177775,R,177776
                        ;THIS IS A R SHIFT TEST OF NOT BIT 14 TO NOT BIT 15
                      ;ASR30:
01225 105240                    MOVOR 0,1       ;AC0 SHD=177775 COMING INTO TEST
01226 110225                    COMZR 0,2,SNR   ;AC2 SHD=COM OF 177776
                                ERROR
01227 063077                    HALT


001227                  E227=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
01230 150000                    COM 2,2         ;AC2 SHD NOW=AC1
01231 132000                    ADC 1,2         ;THE ADDITION OF COM SHD=-1
01232 150004                    COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
                                ERROR           ;BIT 14 R TO BIT 15 FAILED
01233 063077                    HALT


001233                  E230=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
                        ;AC0=177775 ORIGINAL TO 177776 IN AC1 AC2 WAS COM OF AC1
                        ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
                        ;WAS PREVIOUSLY VERIFIED SEE NOT ALU14 INTO NOT SUM15
01234 121000                    MOV 1,0         ;SET UP NEXT TEST

01235 105240 ASR31:             MOVOR 0,1       ;TEST 177776 TO -1
01236 130004                    COM 1,2,SZR     ;ALSO RETEST ABOVE SEQ
                                ERROR           ;AN R16 TO R30 MAY HAVE LOST
01237 063077                    HALT


001237                  E231=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
01240 101002                    MOV 0,0,SZC
                                ERROR           ;CRY SHD=0 FROM LAST MOVOR
01241 063077                    HALT


001241                  E232=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY

                        ;SETUP SERIES OF LEFT SHIFT TESTS SET AC0=177776
01242 102000                    ADC 0,0         ;AC0=-1
01243 100140                    COMOL 0,0       ;SHD NOW=+1
01244 100000                    COM 0,0
01245 104224                    COMZR 0,1,SZR
                                ERROR           ;LEFT SHIFT SETUP FAILED
01246 063077                    HALT


001246                  E233=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
01247 125003                    MOV 1,1,SNC
                                ERROR           ;LEFT SHIFT SETUP FAILED
01250 063077                    HALT
```

```
 0049  PRCST
01
02        001250          E234=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
;0050  PRCST
01                ;LEFT SHIFT SINGLE 0 BIT TESTS
02                        SHIFZ L16,15,14,177776,L,177775
03                  ;THIS IS A L SHIFT TEST OF NOT BIT 15 TO NOT BIT 14
04                ;ASL16:
05 01251 105140           MOVOL 0,1         ;AC0 SHD=177776 COMING INTO TEST
06 01252 110125           COMZL 0,2,SNR     ;AC2 SHD=COM OF 177775
07                        ERROR
08 01253 063077           HALT
09
10
11        001253          E235=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
12 01254 150000           COM 2,2           ;AC2 SHD NOW=AC1
13 01255 132000           ADC 1,2           ;THE ADDITION OF COM SHD=-1
14 01256 150004           COM 2,2,SZR       ;AND RESULT SHD=0 ALL SHIFTS OK
15                        ERROR             ;BIT 15 L TO BIT 14 FAILED
16 01257 063077           HALT
17
18
19        001257          E236=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
20                  ;AC0=177776 ORIGINAL TO 177775 IN AC1 AC2 WAS COM OF AC1
21                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
22                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU15 INTO NOT SUM14
23 01260 121000           MOV 1,0           ;SET UP NEXT TEST
24                        SHIFZ L17,14,13,177775,L,177773
25                  ;THIS IS A L SHIFT TEST OF NOT BIT 14 TO NOT BIT 13
26                ;ASL17:
27 01261 105140           MOVOL 0,1         ;AC0 SHD=177775 COMING INTO TEST
28 01262 110125           COMZL 0,2,SNR     ;AC2 SHD=COM OF 177773
29                        ERROR
30 01263 063077           HALT
31
32
33        001263          E237=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
34 01264 150000           COM 2,2           ;AC2 SHD NOW=AC1
35 01265 132000           ADC 1,2           ;THE ADDITION OF COM SHD=-1
36 01266 150004           COM 2,2,SZR       ;AND RESULT SHD=0 ALL SHIFTS OK
37                        ERROR             ;BIT 14 L TO BIT 13 FAILED
38 01267 063077           HALT
39
40
41        001267          E240=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
42                  ;AC0=177775 ORIGINAL TO 177773 IN AC1 AC2 WAS COM OF AC1
43                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
44                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU14 INTO NOT SUM13
45 01270 121000           MOV 1,0           ;SET UP NEXT TEST
46                        SHIFZ L18,13,12,177773,L,177767
47                  ;THIS IS A L SHIFT TEST OF NOT BIT 13 TO NOT BIT 12
48                ;ASL18:
49 01271 105140           MOVOL 0,1         ;AC0 SHD=177773 COMING INTO TEST
50 01272 110125           COMZL 0,2,SNR     ;AC2 SHD=COM OF 177767
51                        ERROR
52 01273 063077           HALT
53
54
55        001273          E241=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
56 01274 150000           COM 2,2           ;AC2 SHD NOW=AC1
57 01275 132000           ADC 1,2           ;THE ADDITION OF COM SHD=-1
58 01276 150004           COM 2,2,SZR       ;AND RESULT SHD=0 ALL SHIFTS OK
59                        ERROR             ;BIT 13 L TO BIT 12 FAILED
60 01277 063077           HALT
```

```
0051  PRCST
01
02
03        001277          E242=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
04                  ;AC0=177773 ORIGINAL TO 177767 IN AC1 AC2 WAS COM OF AC1
05                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
06                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU13 INTO NOT SUM12
07 01300 121000           MOV 1,0         ;SET UP NEXT TEST
08                        SHIFZ L19,12,11,177767,L,177757
09                  ;THIS IS A L SHIFT TEST OF NOT BIT 12 TO NOT BIT 11
10                ;ASL19:
11 01301 105140           MOVOL 0,1       ;AC0 SHD=177767 COMING INTO TEST
12 01302 110125           COMZL 0,2,SNR   ;AC2 SHD=COM OF 177757
13                        ERROR
14 01303 063077           HALT
15
16
17        001303          E243=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
18 01304 150000           COM 2,2         ;AC2 SHD NOW=AC1
19 01305 132000           ADC 1,2         ;THE ADDITION OF COM SHD=-1
20 01306 150004           COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
21                        ERROR           ;BIT 12 L TO BIT 11 FAILED
22 01307 063077           HALT
23
24
25        001307          E244=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
26                  ;AC0=177767 ORIGINAL TO 177757 IN AC1 AC2 WAS COM OF AC1
27                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
28                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU12 INTO NOT SUM11
29 01310 121000           MOV 1,0         ;SET UP NEXT TEST
30                        SHIFZ L20,11,10,177757,L,177737
31                  ;THIS IS A L SHIFT TEST OF NOT BIT 11 TO NOT BIT 10
32                ;ASL20:
33 01311 105140           MOVOL 0,1       ;AC0 SHD=177757 COMING INTO TEST
34 01312 110125           COMZL 0,2,SNR   ;AC2 SHD=COM OF 177737
35                        ERROR
36 01313 063077           HALT
37
38
39        001313          E245=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
40 01314 150000           COM 2,2         ;AC2 SHD NOW=AC1
41 01315 132000           ADC 1,2         ;THE ADDITION OF COM SHD=-1
42 01316 150004           COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
43                        ERROR           ;BIT 11 L TO BIT 10 FAILED
44 01317 063077           HALT
45
46
47        001317          E246=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
48                  ;AC0=177757 ORIGINAL TO 177737 IN AC1 AC2 WAS COM OF AC1
49                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
50                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU11 INTO NOT SUM10
51 01320 121000           MOV 1,0         ;SET UP NEXT TEST
52                        SHIFZ L21,10,09,177737,L,177677
53                  ;THIS IS A L SHIFT TEST OF NOT BIT 10 TO NOT BIT 09
54                ;ASL21:
55 01321 105140           MOVOL 0,1       ;AC0 SHD=177737 COMING INTO TEST
56 01322 110125           COMZL 0,2,SNR   ;AC2 SHD=COM OF 177677
57                        ERROR
58 01323 063077           HALT
59
60
```

```
0052  PRCST
01        001323          E247=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
02 01324 150000           COM 2,2         ;AC2 SHD NOW=AC1
03 01325 132000           ADC 1,2         ;THE ADDITION OF COM SHD=-1
04 01326 150004           COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
05                        ERROR           ;BIT 10 L TO BIT 09 FAILED
06 01327 063077           HALT
07
08
09        001327          E250=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
10                  ;AC0=177737 ORIGINAL TO 177677 IN AC1 AC2 WAS COM OF AC1
11                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
12                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU10 INTO NOT SUM09
13 01330 121000           MOV 1,0         ;SET UP NEXT TEST
14                        SHIFZ L22,09,08,077677,L,177577
15                  ;THIS IS A L SHIFT TEST OF NOT BIT 09 TO NOT BIT 08
16                ;ASL22:
17 01331 105140           MOVOL 0,1       ;AC0 SHD=077677 COMING INTO TEST
18 01332 110125           COMZL 0,2,SNR   ;AC2 SHD=COM OF 177577
19                        ERROR
20 01333 063077           HALT
21
22
23        001333          E251=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
24 01334 150000           COM 2,2         ;AC2 SHD NOW=AC1
25 01335 132000           ADC 1,2         ;THE ADDITION OF COM SHD=-1
26 01336 150004           COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
27                        ERROR           ;BIT 09 L TO BIT 08 FAILED
28 01337 063077           HALT
29
30
31        001337          E252=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
32                  ;AC0=077677 ORIGINAL TO 177577 IN AC1 AC2 WAS COM OF AC1
33                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
34                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU09 INTO NOT SUM08
35 01340 121000           MOV 1,0         ;SET UP NEXT TEST
36                        SHIFZ L23,08,07,177577,L,177377
37                  ;THIS IS A L SHIFT TEST OF NOT BIT 08 TO NOT BIT 07
38                ;ASL23:
39 01341 105140           MOVOL 0,1       ;AC0 SHD=177577 COMING INTO TEST
40 01342 110125           COMZL 0,2,SNR   ;AC2 SHD=COM OF 177377
41                        ERROR
42 01343 063077           HALT
43
44
45        001343          E253=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
46 01344 150000           COM 2,2         ;AC2 SHD NOW=AC1
47 01345 132000           ADC 1,2         ;THE ADDITION OF COM SHD=-1
48 01346 150004           COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
49                        ERROR           ;BIT 08 L TO BIT 07 FAILED
50 01347 063077           HALT
51
52
53        001347          E254=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
54                  ;AC0=177577 ORIGINAL TO 177377 IN AC1 AC2 WAS COM OF AC1
55                  ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
56                  ;WAS PREVIOUSLY VERIFIED SEE NOT ALU08 INTO NOT SUM07
57 01350 121000           MOV 1,0         ;SET UP NEXT TEST
58                        SHIFZ L24,07,06,177377,L,176777
59                  ;THIS IS A L SHIFT TEST OF NOT BIT 07 TO NOT BIT 06
60                ;ASL24:
```

```
 0053  PRCST
01 01351 105140          MOVOL 0,1        ;AC0 SHD=177377 COMING INTO TEST
02 01352 110125          COMZL 0,2,SNR    ;AC2 SHD=COM OF 176777
03                       ERROR
04 01353 063077          HALT
05
06
07       001353          E255=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
08 01354 150000          COM 2,2          ;AC2 SHD NOW=AC1
09 01355 132000          ADC 1,2          ;THE ADDITION OF COM SHD=-1
10 01356 150004          COM 2,2,SZR      ;AND RESULT SHD=0 ALL SHIFTS OK
11                       ERROR            ;BIT 07 L TO BIT 06 FAILED
12 01357 063077          HALT
13
14
15       001357          E256=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
16                ;AC0=177377 ORIGINAL TO 176777 IN AC1 AC2 WAS COM OF AC1
17                ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
18                ;WAS PREVIOUSLY VERIFIED SEE NOT ALU07 INTO NOT SUM06
19 01360 121000          MOV 1,0          ;SET UP NEXT TEST
20                       SHIFZ L25,06,05,176777,L,175777
21                ;THIS IS A L SHIFT TEST OF NOT BIT 06 TO NOT BIT 05
22              ;ASL25:
23 01361 105140          MOVOL 0,1        ;AC0 SHD=176777 COMING INTO TEST
24 01362 110125          COMZL 0,2,SNR    ;AC2 SHD=COM OF 175777
25                       ERROR
26 01363 063077          HALT
27
28
29       001363          E257=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
30 01364 150000          COM 2,2          ;AC2 SHD NOW=AC1
31 01365 132000          ADC 1,2          ;THE ADDITION OF COM SHD=-1
32 01366 150004          COM 2,2,SZR      ;AND RESULT SHD=0 ALL SHIFTS OK
33                       ERROR            ;BIT 06 L TO BIT 05 FAILED
34 01367 063077          HALT
35
36
37       001367          E260=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
38                ;AC0=176777 ORIGINAL TO 175777 IN AC1 AC2 WAS COM OF AC1
39                ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
40                ;WAS PREVIOUSLY VERIFIED SEE NOT ALU06 INTO NOT SUM05
41 01370 121000          MOV 1,0          ;SET UP NEXT TEST
42                       SHIFZ L26,05,04,175777,L,173777
43                ;THIS IS A L SHIFT TEST OF NOT BIT 05 TO NOT BIT 04
44              ;ASL26:
45 01371 105140          MOVOL 0,1        ;AC0 SHD=175777 COMING INTO TEST
46 01372 110125          COMZL 0,2,SNR    ;AC2 SHD=COM OF 173777
47                       ERROR
48 01373 063077          HALT
49
50
51       001373          E261=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
52 01374 150000          COM 2,2          ;AC2 SHD NOW=AC1
53 01375 132000          ADC 1,2          ;THE ADDITION OF COM SHD=-1
54 01376 150004          COM 2,2,SZR      ;AND RESULT SHD=0 ALL SHIFTS OK
55                       ERROR            ;BIT 05 L TO BIT 04 FAILED
56 01377 063077          HALT
57
58
59       001377          E262=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
60                ;AC0=175777 ORIGINAL TO 173777 IN AC1 AC2 WAS COM OF AC1
```

```
 0054  PRCST
01                ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
02                ;WAS PREVIOUSLY VERIFIED SEE NOT ALU05 INTO NOT SUM04
03 01400 121000          MOV 1,0          ;SET UP NEXT TEST
04                       SHIFZ L27,04,03,173777,L,167777
05                ;THIS IS A L SHIFT TEST OF NOT BIT 04 TO NOT BIT 03
06              ;ASL27:
07 01401 105140          MOVOL 0,1        ;AC0 SHD=173777 COMING INTO TEST
08 01402 110125          COMZL 0,2,SNR    ;AC2 SHD=COM OF 167777
09                       ERROR
10 01403 063077          HALT
11
12
13       001403          E263=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
14 01404 150000          COM 2,2          ;AC2 SHD NOW=AC1
15 01405 132000          ADC 1,2          ;THE ADDITION OF COM SHD=-1
16 01406 150004          COM 2,2,SZR      ;AND RESULT SHD=0 ALL SHIFTS OK
17                       ERROR            ;BIT 04 L TO BIT 03 FAILED
18 01407 063077          HALT
19
20
21       001407          E264=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
22                ;AC0=173777 ORIGINAL TO 167777 IN AC1 AC2 WAS COM OF AC1
23                ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
24                ;WAS PREVIOUSLY VERIFIED SEE NOT ALU04 INTO NOT SUM03
25 01410 121000          MOV 1,0          ;SET UP NEXT TEST
26                       SHIFZ L28,03,02,167777,L,157777
27                ;THIS IS A L SHIFT TEST OF NOT BIT 03 TO NOT BIT 02
28              ;ASL28:
29 01411 105140          MOVOL 0,1        ;AC0 SHD=167777 COMING INTO TEST
30 01412 110125          COMZL 0,2,SNR    ;AC2 SHD=COM OF 157777
31                       ERROR
32 01413 063077          HALT
33
34
35       001413          E265=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
36 01414 150000          COM 2,2          ;AC2 SHD NOW=AC1
37 01415 132000          ADC 1,2          ;THE ADDITION OF COM SHD=-1
38 01416 150004          COM 2,2,SZR      ;AND RESULT SHD=0 ALL SHIFTS OK
39                       ERROR            ;BIT 03 L TO BIT 02 FAILED
40 01417 063077          HALT
41
42
43       001417          E266=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
44                ;AC0=167777 ORIGINAL TO 157777 IN AC1 AC2 WAS COM OF AC1
45                ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
46                ;WAS PREVIOUSLY VERIFIED SEE NOT ALU03 INTO NOT SUM02
47 01420 121000          MOV 1,0          ;SET UP NEXT TEST
48                       SHIFZ L29,02,01,157777,L,137777
49                ;THIS IS A L SHIFT TEST OF NOT BIT 02 TO NOT BIT 01
50              ;ASL29:
51 01421 105140          MOVOL 0,1        ;AC0 SHD=157777 COMING INTO TEST
52 01422 110125          COMZL 0,2,SNR    ;AC2 SHD=COM OF 137777
53                       ERROR
54 01423 063077          HALT
55
56
57       001423          E267=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
58 01424 150000          COM 2,2          ;AC2 SHD NOW=AC1
59 01425 132000          ADC 1,2          ;THE ADDITION OF COM SHD=-1
60 01426 150004          COM 2,2,SZR      ;AND RESULT SHD=0 ALL SHIFTS OK
```

```
 0055  PRCST
01                      ERROR           ;BIT 02 L TO BIT 01 FAILED
02 01427 063077         HALT
03
04
05       001427         E270=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
06                ;AC0=157777 ORIGINAL TO 137777 IN AC1 AC2 WAS COM OF AC1
07                ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
08                ;WAS PREVIOUSLY VERIFIED SEE NOT ALU02 INTO NOT SUM01
09 01430 121000         MOV 1,0         ;SET UP NEXT TEST
10                      SHIFZ L30,01,00,137777,L,077777
11                ;THIS IS A L SHIFT TEST OF NOT BIT 01 TO NOT BIT 00
12              ;ASL30:
13 01431 105140         MOVOL 0,1       ;AC0 SHD=137777 COMING INTO TEST
14 01432 110125         COMZL 0,2,SNR   ;AC2 SHD=COM OF 077777
15                      ERROR
16 01433 063077         HALT
17
18
19       001433         E271=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
20 01434 150000         COM 2,2         ;AC2 SHD NOW=AC1
21 01435 132000         ADC 1,2         ;THE ADDITION OF COM SHD=-1
22 01436 150004         COM 2,2,SZR     ;AND RESULT SHD=0 ALL SHIFTS OK
23                      ERROR           ;BIT 01 L TO BIT 00 FAILED
24 01437 063077         HALT
25
26
27       001437         E272=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
28                ;AC0=137777 ORIGINAL TO 077777 IN AC1 AC2 WAS COM OF AC1
29                ;PROBABILITY OF SHIFT FAILURE TO AC2 IS LOW AS ONES SHIFT
30                ;WAS PREVIOUSLY VERIFIED SEE NOT ALU01 INTO NOT SUM00
31 01440 121000         MOV 1,0         ;SET UP NEXT TEST
32                ;IF AC0 DOES NOT=077777 HERE SOME L16 TO L30 FAILED
33 01441 105140 ASL31:  MOVOL 0,1       ;SHD RESULT IN AC1=-1
34 01442 130004         COM 1,2,SZR     ;TEST FOR AC2 RESULT=0
35                      ERROR           ;COULD HAVE FAILED L16 TO L30
36 01443 063077         HALT
37
38
39       001443         E273=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
40 01444 151002         MOV 2,2,SZC     ;CRY SHD=0 FROM BIT 0
41                      ERROR           ;BIT 0 TO CRY FAILED
42 01445 063077         HALT
43
44
45       001445         E274=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
46
47
48
```

```
10056  PRCST
01
02                ;SINGLE BIT ADD WITHOUT CARRY TESTS
03                ;DEFINE MACRO ENCOMPASSING SOURCE OR DEST=NON ZERO
04
05                      .MACRO ADDT1
06                ;TEST ADD INSTRUCTION NO CARRY WHEN ^1 IS NON ZERO
07                ;^2 IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
08                ;AC0=^3 COMING INTO THE TEST
09              ;ANC^7:
10                      MOV 0,^4        ;SET UP ^1 AC^4
11                      ADC ^5,^5
12                      COM ^5,^5       ;SET AC^5 ^2=0
13                      ADD 1,2         ;PERFORM ADD WITH NO CARRIES
14                      MOV 2,3         ;THE ^1 AC WAS NON ZERO
15                      ADC 0,3         ;AC3 SHD NOW=-1
16                      COM 3,3,SZR     ;WITH COM=0
17                      ERROR           ;ADD WITHOUT CARRY FAILED
18                      MOVZL 0,0       ;SET UP NEXT TEST
19                ;AC2 SHD=^3 AS A RESULT OF ABOVE TEST
20                %
21                ;TEST ADD OF ALL 0'S TO GENERATE NO CARRIES
22 01446 102000 ANC00:  ADC 0,0
23 01447 100000         COM 0,0         ;SETS AC0=0
24 01450 103004         ADD 0,0,SZR     ;RESULT OF ADD SHD STILL=0
25                      ERROR           ;ADD 0+0 GENERATED A CARRY
26 01451 063077         HALT
27
28
29       001451         E275=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
30 01452 101002         MOV 0,0,SZC     ;ABOVE ADD SHD LVE CRY=0
31                      ERROR           ;INTO CRY SEE CARRY OUT
32 01453 063077         HALT
33
34
35       001453         E276=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
36
37                ;SET UP AC0 TO=+1 FOR FIRST TEST
38 01454 102000         ADC 0,0
39 01455 100145         COMOL 0,0,SNR
40                      ERROR           ;SETUP FAILED
41 01456 063077         HALT
42
43
44       001456         E277=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10057  PRCST
01
02                      ADDT1 SRC,DEST,1,1,2,Z,01
03                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
04                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
05                  ;AC0=1 COMING INTO THE TEST
06                ;ANC01:
07 01457 105000           MOV 0,1 ;SET UP SRC AC1
08 01460 152000           ADC 2,2
09 01461 150000           COM 2,2 ;SET AC2 DEST=0
10 01462 133000           ADD 1,2          ;PERFORM ADD WITH NO CARRIES
11 01463 155000           MOV 2,3          ;THE SRC AC WAS NON ZERO
12 01464 116000           ADC 0,3          ;AC3 SHD NOW=-1
13 01465 174004           COM 3,3,SZR      ;WITH COM=0
14                        ERROR            ;ADD WITHOUT CARRY FAILED
15 01466 063077           HALT
16
17
18       001466           E300=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
19 01467 101120           MOVZL 0,0        ;SET UP NEXT TEST
20                  ;AC2 SHD=1 AS A RESULT OF ABOVE TEST
21                      ADDT1 SRC,DEST,2,1,2,Z,02
22                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
23                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
24                  ;AC0=2 COMING INTO THE TEST
25                ;ANC02:
26 01470 105000           MOV 0,1 ;SET UP SRC AC1
27 01471 152000           ADC 2,2
28 01472 150000           COM 2,2 ;SET AC2 DEST=0
29 01473 133000           ADD 1,2          ;PERFORM ADD WITH NO CARRIES
30 01474 155000           MOV 2,3          ;THE SRC AC WAS NON ZERO
31 01475 116000           ADC 0,3          ;AC3 SHD NOW=-1
32 01476 174004           COM 3,3,SZR      ;WITH COM=0
33                        ERROR            ;ADD WITHOUT CARRY FAILED
34 01477 063077           HALT
35
36
37       001477           E301=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
38 01500 101120           MOVZL 0,0        ;SET UP NEXT TEST
39                  ;AC2 SHD=2 AS A RESULT OF ABOVE TEST
40                      ADDT1 SRC,DEST,4,1,2,Z,03
41                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
42                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
43                  ;AC0=4 COMING INTO THE TEST
44                ;ANC03:
45 01501 105000           MOV 0,1 ;SET UP SRC AC1
46 01502 152000           ADC 2,2
47 01503 150000           COM 2,2 ;SET AC2 DEST=0
48 01504 133000           ADD 1,2          ;PERFORM ADD WITH NO CARRIES
49 01505 155000           MOV 2,3          ;THE SRC AC WAS NON ZERO
50 01506 116000           ADC 0,3          ;AC3 SHD NOW=-1
51 01507 174004           COM 3,3,SZR      ;WITH COM=0
52                        ERROR            ;ADD WITHOUT CARRY FAILED
53 01510 063077           HALT
54
55
56       001510           E302=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
57 01511 101120           MOVZL 0,0        ;SET UP NEXT TEST
58                  ;AC2 SHD=4 AS A RESULT OF ABOVE TEST
59                      ADDT1 SRC,DEST,10,1,2,Z,04
60                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
```

```
 0058  PRCST
01                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
02                  ;AC0=10 COMING INTO THE TEST
03                ;ANC04:
04 01512 105000           MOV 0,1 ;SET UP SRC AC1
05 01513 152000           ADC 2,2
06 01514 150000           COM 2,2 ;SET AC2 DEST=0
07 01515 133000           ADD 1,2          ;PERFORM ADD WITH NO CARRIES
08 01516 155000           MOV 2,3          ;THE SRC AC WAS NON ZERO
09 01517 116000           ADC 0,3          ;AC3 SHD NOW=-1
10 01520 174004           COM 3,3,SZR      ;WITH COM=0
11                        ERROR            ;ADD WITHOUT CARRY FAILED
12 01521 063077           HALT
13
14
15       001521           E303=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
16 01522 101120           MOVZL 0,0        ;SET UP NEXT TEST
17                  ;AC2 SHD=10 AS A RESULT OF ABOVE TEST
18                      ADDT1 SRC,DEST,20,1,2,Z,05
19                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
20                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
21                  ;AC0=20 COMING INTO THE TEST
22                ;ANC05:
23 01523 105000           MOV 0,1 ;SET UP SRC AC1
24 01524 152000           ADC 2,2
25 01525 150000           COM 2,2 ;SET AC2 DEST=0
26 01526 133000           ADD 1,2          ;PERFORM ADD WITH NO CARRIES
27 01527 155000           MOV 2,3          ;THE SRC AC WAS NON ZERO
28 01530 116000           ADC 0,3          ;AC3 SHD NOW=-1
29 01531 174004           COM 3,3,SZR      ;WITH COM=0
30                        ERROR            ;ADD WITHOUT CARRY FAILED
31 01532 063077           HALT
32
33
34       001532           E304=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
35 01533 101120           MOVZL 0,0        ;SET UP NEXT TEST
36                  ;AC2 SHD=20 AS A RESULT OF ABOVE TEST
37                      ADDT1 SRC,DEST,40,1,2,Z,06
38                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
39                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
40                  ;AC0=40 COMING INTO THE TEST
41                ;ANC06:
42 01534 105000           MOV 0,1 ;SET UP SRC AC1
43 01535 152000           ADC 2,2
44 01536 150000           COM 2,2 ;SET AC2 DEST=0
45 01537 133000           ADD 1,2          ;PERFORM ADD WITH NO CARRIES
46 01540 155000           MOV 2,3          ;THE SRC AC WAS NON ZERO
47 01541 116000           ADC 0,3          ;AC3 SHD NOW=-1
48 01542 174004           COM 3,3,SZR      ;WITH COM=0
49                        ERROR            ;ADD WITHOUT CARRY FAILED
50 01543 063077           HALT
51
52
53       001543           E305=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
54 01544 101120           MOVZL 0,0        ;SET UP NEXT TEST
55                  ;AC2 SHD=40 AS A RESULT OF ABOVE TEST
56                      ADDT1 SRC,DEST,100,1,2,Z,07
57                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
58                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
59                  ;AC0=100 COMING INTO THE TEST
60                ;ANC07:
```

```
 0059  PRCST
01 01545 105000          MOV 0,1 ;SET UP SRC AC1
02 01546 152000          ADC 2,2
03 01547 150000          COM 2,2 ;SET AC2 DEST=0
04 01550 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
05 01551 155000          MOV 2,3          ;THE SRC AC WAS NON ZERO
06 01552 116000          ADC 0,3          ;AC3 SHD NOW=-1
07 01553 174004          COM 3,3,SZR      ;WITH COM=0
08                       ERROR            ;ADD WITHOUT CARRY FAILED
09 01554 063077          HALT
10
11
12       001554          E306=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
13 01555 101120          MOVZL 0,0        ;SET UP NEXT TEST
14                  ;AC2 SHD=100 AS A RESULT OF ABOVE TEST
15                       ADDT1 SRC,DEST,200,1,2,Z,08
16                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
17                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
18                  ;AC0=200 COMING INTO THE TEST
19                 ;ANC08:
20 01556 105000          MOV 0,1 ;SET UP SRC AC1
21 01557 152000          ADC 2,2
22 01560 150000          COM 2,2 ;SET AC2 DEST=0
23 01561 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
24 01562 155000          MOV 2,3          ;THE SRC AC WAS NON ZERO
25 01563 116000          ADC 0,3          ;AC3 SHD NOW=-1
26 01564 174004          COM 3,3,SZR      ;WITH COM=0
27                       ERROR            ;ADD WITHOUT CARRY FAILED
28 01565 063077          HALT
29
30
31       001565          E307=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
32 01566 101120          MOVZL 0,0        ;SET UP NEXT TEST
33                  ;AC2 SHD=200 AS A RESULT OF ABOVE TEST
34                       ADDT1 SRC,DEST,400,1,2,Z,09
35                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
36                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
37                  ;AC0=400 COMING INTO THE TEST
38                 ;ANC09:
39 01567 105000          MOV 0,1 ;SET UP SRC AC1
40 01570 152000          ADC 2,2
41 01571 150000          COM 2,2 ;SET AC2 DEST=0
42 01572 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
43 01573 155000          MOV 2,3          ;THE SRC AC WAS NON ZERO
44 01574 116000          ADC 0,3          ;AC3 SHD NOW=-1
45 01575 174004          COM 3,3,SZR      ;WITH COM=0
46                       ERROR            ;ADD WITHOUT CARRY FAILED
47 01576 063077          HALT
48
49
50       001576          E310=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
51 01577 101120          MOVZL 0,0        ;SET UP NEXT TEST
52                  ;AC2 SHD=400 AS A RESULT OF ABOVE TEST
53                       ADDT1 SRC,DEST,1000,1,2,Z,10
54                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
55                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
56                  ;AC0=1000 COMING INTO THE TEST
57                 ;ANC10:
58 01600 105000          MOV 0,1 ;SET UP SRC AC1
59 01601 152000          ADC 2,2
60 01602 150000          COM 2,2 ;SET AC2 DEST=0
```

```
 0060  PRCST
01 01603 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
02 01604 155000          MOV 2,3          ;THE SRC AC WAS NON ZERO
03 01605 116000          ADC 0,3          ;AC3 SHD NOW=-1
04 01606 174004          COM 3,3,SZR      ;WITH COM=0
05                       ERROR            ;ADD WITHOUT CARRY FAILED
06 01607 063077          HALT
07
08
09       001607          E311=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
10 01610 101120          MOVZL 0,0        ;SET UP NEXT TEST
11                  ;AC2 SHD=1000 AS A RESULT OF ABOVE TEST
12                       ADDT1 SRC,DEST,2000,1,2,Z,11
13                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
14                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
15                  ;AC0=2000 COMING INTO THE TEST
16                 ;ANC11:
17 01611 105000          MOV 0,1 ;SET UP SRC AC1
18 01612 152000          ADC 2,2
19 01613 150000          COM 2,2 ;SET AC2 DEST=0
20 01614 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
21 01615 155000          MOV 2,3          ;THE SRC AC WAS NON ZERO
22 01616 116000          ADC 0,3          ;AC3 SHD NOW=-1
23 01617 174004          COM 3,3,SZR      ;WITH COM=0
24                       ERROR            ;ADD WITHOUT CARRY FAILED
25 01620 063077          HALT
26
27
28       001620          E312=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
29 01621 101120          MOVZL 0,0        ;SET UP NEXT TEST
30                  ;AC2 SHD=2000 AS A RESULT OF ABOVE TEST
31                       ADDT1 SRC,DEST,4000,1,2,Z,12
32                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
33                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
34                  ;AC0=4000 COMING INTO THE TEST
35                 ;ANC12:
36 01622 105000          MOV 0,1 ;SET UP SRC AC1
37 01623 152000          ADC 2,2
38 01624 150000          COM 2,2 ;SET AC2 DEST=0
39 01625 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
40 01626 155000          MOV 2,3          ;THE SRC AC WAS NON ZERO
41 01627 116000          ADC 0,3          ;AC3 SHD NOW=-1
42 01630 174004          COM 3,3,SZR      ;WITH COM=0
43                       ERROR            ;ADD WITHOUT CARRY FAILED
44 01631 063077          HALT
45
46
47       001631          E313=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
48 01632 101120          MOVZL 0,0        ;SET UP NEXT TEST
49                  ;AC2 SHD=4000 AS A RESULT OF ABOVE TEST
50                       ADDT1 SRC,DEST,10000,1,2,Z,13
51                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
52                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
53                  ;AC0=10000 COMING INTO THE TEST
54                 ;ANC13:
55 01633 105000          MOV 0,1 ;SET UP SRC AC1
56 01634 152000          ADC 2,2
57 01635 150000          COM 2,2 ;SET AC2 DEST=0
58 01636 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
59 01637 155000          MOV 2,3          ;THE SRC AC WAS NON ZERO
60 01640 116000          ADC 0,3          ;AC3 SHD NOW=-1
```

```
 0061  PRCST
01 01641 174004          COM 3,3,SZR      ;WITH COM=0
02                       ERROR            ;ADD WITHOUT CARRY FAILED
03 01642 063077          HALT
04
05
06       001642          E314=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
07 01643 101120          MOVZL 0,0        ;SET UP NEXT TEST
08                  ;AC2 SHD=10000 AS A RESULT OF ABOVE TEST
09                       ADDT1 SRC,DEST,20000,1,2,Z,14
10                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
11                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
12                  ;AC0=20000 COMING INTO THE TEST
13                 ;ANC14:
14 01644 105000          MOV 0,1 ;SET UP SRC AC1
15 01645 152000          ADC 2,2
16 01646 150000          COM 2,2 ;SET AC2 DEST=0
17 01647 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
18 01650 155000          MOV 2,3          ;THE SRC AC WAS NON ZERO
19 01651 116000          ADC 0,3          ;AC3 SHD NOW=-1
20 01652 174004          COM 3,3,SZR      ;WITH COM=0
21                       ERROR            ;ADD WITHOUT CARRY FAILED
22 01653 063077          HALT
23
24
25       001653          E315=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
26 01654 101120          MOVZL 0,0        ;SET UP NEXT TEST
27                  ;AC2 SHD=20000 AS A RESULT OF ABOVE TEST
28                       ADDT1 SRC,DEST,40000,1,2,Z,15
29                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
30                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
31                  ;AC0=40000 COMING INTO THE TEST
32                 ;ANC15:
33 01655 105000          MOV 0,1 ;SET UP SRC AC1
34 01656 152000          ADC 2,2
35 01657 150000          COM 2,2 ;SET AC2 DEST=0
36 01660 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
37 01661 155000          MOV 2,3          ;THE SRC AC WAS NON ZERO
38 01662 116000          ADC 0,3          ;AC3 SHD NOW=-1
39 01663 174004          COM 3,3,SZR      ;WITH COM=0
40                       ERROR            ;ADD WITHOUT CARRY FAILED
41 01664 063077          HALT
42
43
44       001664          E316=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
45 01665 101120          MOVZL 0,0        ;SET UP NEXT TEST
46                  ;AC2 SHD=40000 AS A RESULT OF ABOVE TEST
47                       ADDT1 SRC,DEST,100000,1,2,Z,16
48                  ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
49                  ;DEST IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
50                  ;AC0=100000 COMING INTO THE TEST
51                 ;ANC16:
52 01666 105000          MOV 0,1 ;SET UP SRC AC1
53 01667 152000          ADC 2,2
54 01670 150000          COM 2,2 ;SET AC2 DEST=0
55 01671 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
56 01672 155000          MOV 2,3          ;THE SRC AC WAS NON ZERO
57 01673 116000          ADC 0,3          ;AC3 SHD NOW=-1
58 01674 174004          COM 3,3,SZR      ;WITH COM=0
59                       ERROR            ;ADD WITHOUT CARRY FAILED
60 01675 063077          HALT
```

```
 0062  PRCST
01
02
03       001675          E317=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
04 01676 101120          MOVZL 0,0        ;SET UP NEXT TEST
05                  ;AC2 SHD=100000 AS A RESULT OF ABOVE TEST
06
07                  ;RESET UP AC0 FOR DEST NOT=0 ADD TEST
08 01677 102000          ADC 0,0
09 01700 100145          COMOL 0,0,SNR
10                       ERROR
11 01701 063077          HALT
12
13
14       001701          E320=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
15
16                       ADDT1 DEST,SRC,1,2,1,Z,17
17                  ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
18                  ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
19                  ;AC0=1 COMING INTO THE TEST
20                 ;ANC17:
21 01702 111000          MOV 0,2 ;SET UP DEST AC2
22 01703 126000          ADC 1,1
23 01704 124000          COM 1,1 ;SET AC1 SRC=0
24 01705 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
25 01706 155000          MOV 2,3          ;THE DEST AC WAS NON ZERO
26 01707 116000          ADC 0,3          ;AC3 SHD NOW=-1
27 01710 174004          COM 3,3,SZR      ;WITH COM=0
28                       ERROR            ;ADD WITHOUT CARRY FAILED
29 01711 063077          HALT
30
31
32       001711          E321=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
33 01712 101120          MOVZL 0,0        ;SET UP NEXT TEST
34                  ;AC2 SHD=1 AS A RESULT OF ABOVE TEST
35                       ADDT1 DEST,SRC,2,2,1,Z,18
36                  ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
37                  ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
38                  ;AC0=2 COMING INTO THE TEST
39                 ;ANC18:
40 01713 111000          MOV 0,2 ;SET UP DEST AC2
41 01714 126000          ADC 1,1
42 01715 124000          COM 1,1 ;SET AC1 SRC=0
43 01716 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
44 01717 155000          MOV 2,3          ;THE DEST AC WAS NON ZERO
45 01720 116000          ADC 0,3          ;AC3 SHD NOW=-1
46 01721 174004          COM 3,3,SZR      ;WITH COM=0
47                       ERROR            ;ADD WITHOUT CARRY FAILED
48 01722 063077          HALT
49
50
51       001722          E322=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
52 01723 101120          MOVZL 0,0        ;SET UP NEXT TEST
53                  ;AC2 SHD=2 AS A RESULT OF ABOVE TEST
54                       ADDT1 DEST,SRC,4,2,1,Z,19
55                  ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
56                  ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
57                  ;AC0=4 COMING INTO THE TEST
58                 ;ANC19:
59 01724 111000          MOV 0,2 ;SET UP DEST AC2
60 01725 126000          ADC 1,1
```

```
0063  PRCST
01 01726 124000          COM 1,1 ;SET AC1 SRC=0
02 01727 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
03 01730 155000          MOV 2,3          ;THE DEST AC WAS NON ZERO
04 01731 116000          ADC 0,3          ;AC3 SHD NOW=-1
05 01732 174004          COM 3,3,SZR      ;WITH COM=0
06                       ERROR            ;ADD WITHOUT CARRY FAILED
07 01733 063077          HALT
08
09
10       001733     .    E323=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
11 01734 101120          MOVZL 0,0        ;SET UP NEXT TEST
12                  ;AC2 SHD=4 AS A RESULT OF ABOVE TEST
13                       ADDT1 DEST,SRC,10,2,1,Z,20
14                  ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
15                  ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
16                  ;AC0=10 COMING INTO THE TEST
17                ;ANC20:
18 01735 111000          MOV 0,2 ;SET UP DEST AC2
19 01736 126000          ADC 1,1
20 01737 124000          COM 1,1 ;SET AC1 SRC=0
21 01740 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
22 01741 155000          MOV 2,3          ;THE DEST AC WAS NON ZERO
23 01742 116000          ADC 0,3          ;AC3 SHD NOW=-1
24 01743 174004          COM 3,3,SZR      ;WITH COM=0
25                       ERROR            ;ADD WITHOUT CARRY FAILED
26 01744 063077          HALT
27
28
29       001744          E324=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
30 01745 101120          MOVZL 0,0        ;SET UP NEXT TEST
31                  ;AC2 SHD=10 AS A RESULT OF ABOVE TEST
32                       ADDT1 DEST,SRC,20,2,1,Z,21
33                  ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
34                  ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
35                  ;AC0=20 COMING INTO THE TEST
36                ;ANC21:
37 01746 111000          MOV 0,2 ;SET UP DEST AC2
38 01747 126000          ADC 1,1
39 01750 124000          COM 1,1 ;SET AC1 SRC=0
40 01751 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
41 01752 155000          MOV 2,3          ;THE DEST AC WAS NON ZERO
42 01753 116000          ADC 0,3          ;AC3 SHD NOW=-1
43 01754 174004          COM 3,3,SZR      ;WITH COM=0
44                       ERROR            ;ADD WITHOUT CARRY FAILED
45 01755 063077          HALT
46
47
48       001755          E325=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
49 01756 101120          MOVZL 0,0        ;SET UP NEXT TEST
50                  ;AC2 SHD=20 AS A RESULT OF ABOVE TEST
51                       ADDT1 DEST,SRC,40,2,1,Z,22
52                  ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
53                  ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
54                  ;AC0=40 COMING INTO THE TEST
55                ;ANC22:
56 01757 111000          MOV 0,2 ;SET UP DEST AC2
57 01760 126000          ADC 1,1
58 01761 124000          COM 1,1 ;SET AC1 SRC=0
59 01762 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
60 01763 155000          MOV 2,3          ;THE DEST AC WAS NON ZERO
```

```
0064  PRCST
01 01764 116000          ADC 0,3          ;AC3 SHD NOW=-1
02 01765 174004          COM 3,3,SZR      ;WITH COM=0
03                       ERROR            ;ADD WITHOUT CARRY FAILED
04 01766 063077          HALT
05
06
07       001766          E326=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
08 01767 101120          MOVZL 0,0        ;SET UP NEXT TEST
09                  ;AC2 SHD=40 AS A RESULT OF ABOVE TEST
10                       ADDT1 DEST,SRC,100,2,1,Z,23
11                  ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
12                  ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
13                  ;AC0=100 COMING INTO THE TEST
14                ;ANC23:
15 01770 111000          MOV 0,2 ;SET UP DEST AC2
16 01771 126000          ADC 1,1
17 01772 124000          COM 1,1 ;SET AC1 SRC=0
18 01773 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
19 01774 155000          MOV 2,3          ;THE DEST AC WAS NON ZERO
20 01775 116000          ADC 0,3          ;AC3 SHD NOW=-1
21 01776 174004          COM 3,3,SZR      ;WITH COM=0
22                       ERROR            ;ADD WITHOUT CARRY FAILED
23 01777 063077          HALT
24
25
26       001777          E327=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
27 02000 101120          MOVZL 0,0        ;SET UP NEXT TEST
28                  ;AC2 SHD=100 AS A RESULT OF ABOVE TEST
29                       ADDT1 DEST,SRC,200,2,1,Z,24
30                  ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
31                  ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
32                  ;AC0=200 COMING INTO THE TEST
33                ;ANC24:
34 02001 111000          MOV 0,2 ;SET UP DEST AC2
35 02002 126000          ADC 1,1
36 02003 124000          COM 1,1 ;SET AC1 SRC=0
37 02004 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
38 02005 155000          MOV 2,3          ;THE DEST AC WAS NON ZERO
39 02006 116000          ADC 0,3          ;AC3 SHD NOW=-1
40 02007 174004          COM 3,3,SZR      ;WITH COM=0
41                       ERROR            ;ADD WITHOUT CARRY FAILED
42 02010 063077          HALT
43
44
45       002010          E330=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
46 02011 101120          MOVZL 0,0        ;SET UP NEXT TEST
47                  ;AC2 SHD=200 AS A RESULT OF ABOVE TEST
48                       ADDT1 DEST,SRC,400,2,1,Z,25
49                  ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
50                  ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
51                  ;AC0=400 COMING INTO THE TEST
52                ;ANC25:
53 02012 111000          MOV 0,2 ;SET UP DEST AC2
54 02013 126000          ADC 1,1
55 02014 124000          COM 1,1 ;SET AC1 SRC=0
56 02015 133000          ADD 1,2          ;PERFORM ADD WITH NO CARRIES
57 02016 155000          MOV 2,3          ;THE DEST AC WAS NON ZERO
58 02017 116000          ADC 0,3          ;AC3 SHD NOW=-1
59 02020 174004          COM 3,3,SZR      ;WITH COM=0
60                       ERROR            ;ADD WITHOUT CARRY FAILED
```

```
 0065  PRCST
01 02021 063077          HALT
02
03
04       002021          E331=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
05 02022 101120          MOVZL 0,0       ;SET UP NEXT TEST
06                ;AC2 SHD=400 AS A RESULT OF ABOVE TEST
07                       ADDT1 DEST,SRC,1000,2,1,Z,26
08                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
09                ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
10                ;AC0=1000 COMING INTO THE TEST
11              ;ANC26:
12 02023 111000          MOV 0,2 ;SET UP DEST AC2
13 02024 126000          ADC 1,1
14 02025 124000          COM 1,1 ;SET AC1 SRC=0
15 02026 133000          ADD 1,2         ;PERFORM ADD WITH NO CARRIES
16 02027 155000          MOV 2,3         ;THE DEST AC WAS NON ZERO
17 02030 116000          ADC 0,3         ;AC3 SHD NOW=-1
18 02031 174004          COM 3,3,SZR     ;WITH COM=0
19                       ERROR           ;ADD WITHOUT CARRY FAILED
20 02032 063077          HALT
21
22
23       002032          E332=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
24 02033 101120          MOVZL 0,0       ;SET UP NEXT TEST
25                ;AC2 SHD=1000 AS A RESULT OF ABOVE TEST
26                       ADDT1 DEST,SRC,2000,2,1,Z,27
27                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
28                ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
29                ;AC0=2000 COMING INTO THE TEST
30              ;ANC27:
31 02034 111000          MOV 0,2 ;SET UP DEST AC2
32 02035 126000          ADC 1,1
33 02036 124000          COM 1,1 ;SET AC1 SRC=0
34 02037 133000          ADD 1,2         ;PERFORM ADD WITH NO CARRIES
35 02040 155000          MOV 2,3         ;THE DEST AC WAS NON ZERO
36 02041 116000          ADC 0,3         ;AC3 SHD NOW=-1
37 02042 174004          COM 3,3,SZR     ;WITH COM=0
38                       ERROR           ;ADD WITHOUT CARRY FAILED
39 02043 063077          HALT
40
41
42       002043          E333=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
43 02044 101120          MOVZL 0,0       ;SET UP NEXT TEST
44                ;AC2 SHD=2000 AS A RESULT OF ABOVE TEST
45                       ADDT1 DEST,SRC,4000,2,1,Z,28
46                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
47                ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
48                ;AC0=4000 COMING INTO THE TEST
49              ;ANC28:
50 02045 111000          MOV 0,2 ;SET UP DEST AC2
51 02046 126000          ADC 1,1
52 02047 124000          COM 1,1 ;SET AC1 SRC=0
53 02050 133000          ADD 1,2         ;PERFORM ADD WITH NO CARRIES
54 02051 155000          MOV 2,3         ;THE DEST AC WAS NON ZERO
55 02052 116000          ADC 0,3         ;AC3 SHD NOW=-1
56 02053 174004          COM 3,3,SZR     ;WITH COM=0
57                       ERROR           ;ADD WITHOUT CARRY FAILED
58 02054 063077          HALT
59
60
```

```
 0066  PRCST
01       002054          E334=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
02 02055 101120          MOVZL 0,0       ;SET UP NEXT TEST
03                ;AC2 SHD=4000 AS A RESULT OF ABOVE TEST
04                       ADDT1 DEST,SRC,10000,2,1,Z,29
05                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
06                ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
07                ;AC0=10000 COMING INTO THE TEST
08              ;ANC29:
09 02056 111000          MOV 0,2 ;SET UP DEST AC2
10 02057 126000          ADC 1,1
11 02060 124000          COM 1,1 ;SET AC1 SRC=0
12 02061 133000          ADD 1,2         ;PERFORM ADD WITH NO CARRIES
13 02062 155000          MOV 2,3         ;THE DEST AC WAS NON ZERO
14 02063 116000          ADC 0,3         ;AC3 SHD NOW=-1
15 02064 174004          COM 3,3,SZR     ;WITH COM=0
16                       ERROR           ;ADD WITHOUT CARRY FAILED
17 02065 063077          HALT
18
19
20       002065          E335=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
21 02066 101120          MOVZL 0,0       ;SET UP NEXT TEST
22                ;AC2 SHD=10000 AS A RESULT OF ABOVE TEST
23                       ADDT1 DEST,SRC,20000,2,1,Z,30
24                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
25                ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
26                ;AC0=20000 COMING INTO THE TEST
27              ;ANC30:
28 02067 111000          MOV 0,2 ;SET UP DEST AC2
29 02070 126000          ADC 1,1
30 02071 124000          COM 1,1 ;SET AC1 SRC=0
31 02072 133000          ADD 1,2         ;PERFORM ADD WITH NO CARRIES
32 02073 155000          MOV 2,3         ;THE DEST AC WAS NON ZERO
33 02074 116000          ADC 0,3         ;AC3 SHD NOW=-1
34 02075 174004          COM 3,3,SZR     ;WITH COM=0
35                       ERROR           ;ADD WITHOUT CARRY FAILED
36 02076 063077          HALT
37
38
39       002076          E336=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
40 02077 101120          MOVZL 0,0       ;SET UP NEXT TEST
41                ;AC2 SHD=20000 AS A RESULT OF ABOVE TEST
42                       ADDT1 DEST,SRC,40000,2,1,Z,31
43                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
44                ;SRC IS EQUAL TO 0-RESULT SHD BE SAME AS MOVE
45                ;AC0=40000 COMING INTO THE TEST
46              ;ANC31:
47 02100 111000          MOV 0,2 ;SET UP DEST AC2
48 02101 126000          ADC 1,1
49 02102 124000          COM 1,1 ;SET AC1 SRC=0
50 02103 133000          ADD 1,2         ;PERFORM ADD WITH NO CARRIES
51 02104 155000          MOV 2,3         ;THE DEST AC WAS NON ZERO
52 02105 116000          ADC 0,3         ;AC3 SHD NOW=-1
53 02106 174004          COM 3,3,SZR     ;WITH COM=0
54                       ERROR           ;ADD WITHOUT CARRY FAILED
55 02107 063077          HALT
56
57
58       002107          E337=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
59 02110 101120          MOVZL 0,0       ;SET UP NEXT TEST
60                ;AC2 SHD=40000 AS A RESULT OF ABOVE TEST
```

```
 0067  PRCST
01                      ADDT1 DEST,SRC,100000,2,1,Z,32
02                   ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
03                   ;SRC IS EQUAL TO 0=RESULT SHD BE SAME AS MOVE
04                   ;AC0=100000 COMING INTO THE TEST
05                 ;ANC32:
06 02111 111000            MOV 0,2 ;SET UP DEST AC2
07 02112 126000            ADC 1,1
08 02113 124000            COM 1,1 ;SET AC1 SRC=0
09 02114 133000            ADD 1,2          ;PERFORM ADD WITH NO CARRIES
10 02115 155000            MOV 2,3          ;THE DEST AC WAS NON ZERO
11 02116 116000            ADC 0,3          ;AC3 SHD NOW=-1
12 02117 174004            COM 3,3,SZR      ;WITH COM=0
13                         ERROR            ;ADD WITHOUT CARRY FAILED
14 02120 063077            HALT
15
16
17       002120            E340=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
18 02121 101120            MOVZL 0,0        ;SET UP NEXT TEST
19                   ;AC2 SHD=100000 AS A RESULT OF ABOVE TEST
```

```
10068  PRCST
01
02                   ;SINGLE BIT CARRY TESTS DEFINE MACRO
03                   ;CONSTANTS ARE SET UP BY ALREADY TESTED SHIFT
04
05                         .MACRO ADDT0
06                   ;TEST SINGLE BIT CARRY ADD BIT ^2 TO ITSELF
07                   ;LOOK FOR RESULTANT CARRY INTO NEXT BIT ^3
08                   ;AND SUM BIT ^2 TO GO TO 0 RESULT SHD=^5
09                 ;AC^1:
10                         MOV 0,1          ;AC0=^4 COMING INTO TEST
11                         ADD 1,1          ;USE IT TO SET UP AC1+AC1
12                         MOVZL 0,2        ;AC2 SHD NOW=RESULT OF ADD
13                         ADC 1,2          ;AC2 SHD NOW=-1
14                         COM 2,2,SZR      ;NOT 0 IS BIT ^2 CARRY FAILED
15                         ERROR            ;BIT ^2+^2 FAILED ADD SEE ALU^3
16                                            ;AND ALU^2
17                         MOVZL 0,0        ;SET UP NEXT TEST
18                 %
19                   ;SET UP BIT 15 FOR ADD TESTS
20 02122 102000            ADC 0,0
21 02123 100145            COMOL 0,0,SNR
22                         ERROR            ;AC0 SHD=+1
23 02124 063077            HALT
24
25
26       002124            E341=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
27
28                         ADDT0 00,15,14,1,2
29                   ;TEST SINGLE BIT CARRY ADD BIT 15 TO ITSELF
30                   ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 14
31                   ;AND SUM BIT 15 TO GO TO 0 RESULT SHD=2
32                 ;AC00:
33 02125 105000            MOV 0,1          ;AC0=1 COMING INTO TEST
34 02126 127000            ADD 1,1          ;USE IT TO SET UP AC1+AC1
35 02127 111120            MOVZL 0,2        ;AC2 SHD NOW=RESULT OF ADD
36 02130 132000            ADC 1,2          ;AC2 SHD NOW=-1
37 02131 150004            COM 2,2,SZR      ;NOT 0 IS BIT 15 CARRY FAILED
38                         ERROR            ;BIT 15+15 FAILED ADD SEE ALU14
39 02132 063077            HALT
40
41
42       002132            E342=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
43                                            ;AND ALU15
44 02133 101120            MOVZL 0,0        ;SET UP NEXT TEST
45                         ADDT0 01,14,13,2,4
46                   ;TEST SINGLE BIT CARRY ADD BIT 14 TO ITSELF
47                   ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 13
48                   ;AND SUM BIT 14 TO GO TO 0 RESULT SHD=4
49                 ;AC01:
50 02134 105000            MOV 0,1          ;AC0=2 COMING INTO TEST
51 02135 127000            ADD 1,1          ;USE IT TO SET UP AC1+AC1
52 02136 111120            MOVZL 0,2        ;AC2 SHD NOW=RESULT OF ADD
53 02137 132000            ADC 1,2          ;AC2 SHD NOW=-1
54 02140 150004            COM 2,2,SZR      ;NOT 0 IS BIT 14 CARRY FAILED
55                         ERROR            ;BIT 14+14 FAILED ADD SEE ALU13
56 02141 063077            HALT
57
58
59       002141            E343=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
60                                            ;AND ALU14
```

```
 0069  PRCST
01 02142 101120          MOVZL 0,0        ;SET UP NEXT TEST
02                       ADDTO 02,13,12,4,10
03                ;TEST SINGLE BIT CARRY ADD BIT 13 TO ITSELF
04                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 12
05                ;AND SUM BIT 13 TO GO TO 0 RESULT SHD=10
06              ;AC02:
07 02143 105000          MOV 0,1          ;AC0=4 COMING INTO TEST
08 02144 127000          ADD 1,1          ;USE IT TO SET UP AC1+AC1
09 02145 111120          MOVZL 0,2        ;AC2 SHD NOW=RESULT OF ADD
10 02146 132000          ADC 1,2          ;AC2 SHD NOW=-1
11 02147 150004          COM 2,2,SZR      ;NOT 0 IS BIT 13 CARRY FAILED
12                       ERROR            ;BIT 13+13 FAILED ADD SEE ALU12
13 02150 063077          HALT
14
15
16       002150          E344=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
17                                          ;AND ALU13
18 02151 101120          MOVZL 0,0        ;SET UP NEXT TEST
19                       ADDTO 03,12,11,10,20
20                ;TEST SINGLE BIT CARRY ADD BIT 12 TO ITSELF
21                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 11
22                ;AND SUM BIT 12 TO GO TO 0 RESULT SHD=20
23              ;AC03:
24 02152 105000          MOV 0,1          ;AC0=10 COMING INTO TEST
25 02153 127000          ADD 1,1          ;USE IT TO SET UP AC1+AC1
26 02154 111120          MOVZL 0,2        ;AC2 SHD NOW=RESULT OF ADD
27 02155 132000          ADC 1,2          ;AC2 SHD NOW=-1
28 02156 150004          COM 2,2,SZR      ;NOT 0 IS BIT 12 CARRY FAILED
29                       ERROR            ;BIT 12+12 FAILED ADD SEE ALU11
30 02157 063077          HALT
31
32
33       002157          E345=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
34                                          ;AND ALU12
35 02160 101120          MOVZL 0,0        ;SET UP NEXT TEST
36                ;IF ABOVE TEST FAILS ALSO SEE CN2 IF AC1=0
37                       ADDTO 04,11,10,20,40
38                ;TEST SINGLE BIT CARRY ADD BIT 11 TO ITSELF
39                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 10
40                ;AND SUM BIT 11 TO GO TO 0 RESULT SHD=40
41              ;AC04:
42 02161 105000          MOV 0,1          ;AC0=20 COMING INTO TEST
43 02162 127000          ADD 1,1          ;USE IT TO SET UP AC1+AC1
44 02163 111120          MOVZL 0,2        ;AC2 SHD NOW=RESULT OF ADD
45 02164 132000          ADC 1,2          ;AC2 SHD NOW=-1
46 02165 150004          COM 2,2,SZR      ;NOT 0 IS BIT 11 CARRY FAILED
47                       ERROR            ;BIT 11+11 FAILED ADD SEE ALU10
48 02166 063077          HALT
49
50
51       002166          E346=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
52                                          ;AND ALU11
53 02167 101120          MOVZL 0,0        ;SET UP NEXT TEST
54                       ADDTO 05,10,9,40,100
55                ;TEST SINGLE BIT CARRY ADD BIT 10 TO ITSELF
56                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 9
57                ;AND SUM BIT 10 TO GO TO 0 RESULT SHD=100
58              ;AC05:
59 02170 105000          MOV 0,1          ;AC0=40 COMING INTO TEST
60 02171 127000          ADD 1,1          ;USE IT TO SET UP AC1+AC1
```

```
 0070  PRCST
01 02172 111120          MOVZL 0,2        ;AC2 SHD NOW=RESULT OF ADD
02 02173 132000          ADC 1,2          ;AC2 SHD NOW=-1
03 02174 150004          COM 2,2,SZR      ;NOT 0 IS BIT 10 CARRY FAILED
04                       ERROR            ;BIT 10+10 FAILED ADD SEE ALU9
05 02175 063077          HALT
06
07
08       002175          E347=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
09                                          ;AND ALU10
10 02176 101120          MOVZL 0,0        ;SET UP NEXT TEST
11                       ADDTO 06,9,8,100,200
12                ;TEST SINGLE BIT CARRY ADD BIT 9 TO ITSELF
13                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 8
14                ;AND SUM BIT 9 TO GO TO 0 RESULT SHD=200
15              ;AC06:
16 02177 105000          MOV 0,1          ;AC0=100 COMING INTO TEST
17 02200 127000          ADD 1,1          ;USE IT TO SET UP AC1+AC1
18 02201 111120          MOVZL 0,2        ;AC2 SHD NOW=RESULT OF ADD
19 02202 132000          ADC 1,2          ;AC2 SHD NOW=-1
20 02203 150004          COM 2,2,SZR      ;NOT 0 IS BIT 9 CARRY FAILED
21                       ERROR            ;BIT 9+9 FAILED ADD SEE ALU8
22 02204 063077          HALT
23
24
25       002204          E350=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
26                                          ;AND ALU9
27 02205 101120          MOVZL 0,0        ;SET UP NEXT TEST
28                       ADDTO 07,8,7,200,400
29                ;TEST SINGLE BIT CARRY ADD BIT 8 TO ITSELF
30                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 7
31                ;AND SUM BIT 8 TO GO TO 0 RESULT SHD=400
32              ;AC07:
33 02206 105000          MOV 0,1          ;AC0=200 COMING INTO TEST
34 02207 127000          ADD 1,1          ;USE IT TO SET UP AC1+AC1
35 02210 111120          MOVZL 0,2        ;AC2 SHD NOW=RESULT OF ADD
36 02211 132000          ADC 1,2          ;AC2 SHD NOW=-1
37 02212 150004          COM 2,2,SZR      ;NOT 0 IS BIT 8 CARRY FAILED
38                       ERROR            ;BIT 8+8 FAILED ADD SEE ALU7
39 02213 063077          HALT
40
41
42       002213          E351=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
43                                          ;AND ALU8
44 02214 101120          MOVZL 0,0        ;SET UP NEXT TEST
45                ;IF ABOVE TEST FAILS ALSO SEE CN1 IF AC1=0
46                       ADDTO 08,7,6,400,1000
47                ;TEST SINGLE BIT CARRY ADD BIT 7 TO ITSELF
48                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 6
49                ;AND SUM BIT 7 TO GO TO 0 RESULT SHD=1000
50              ;AC08:
51 02215 105000          MOV 0,1          ;AC0=400 COMING INTO TEST
52 02216 127000          ADD 1,1          ;USE IT TO SET UP AC1+AC1
53 02217 111120          MOVZL 0,2        ;AC2 SHD NOW=RESULT OF ADD
54 02220 132000          ADC 1,2          ;AC2 SHD NOW=-1
55 02221 150004          COM 2,2,SZR      ;NOT 0 IS BIT 7 CARRY FAILED
56                       ERROR            ;BIT 7+7 FAILED ADD SEE ALU6
57 02222 063077          HALT
58
59
60       002222          E352=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0071  PRCST
01                                      ;AND ALU7
02 02223 101120         MOVZL 0,0       ;SET UP NEXT TEST
03                      ADDTO 09,6,5,1000,2000
04                ;TEST SINGLE BIT CARRY ADD BIT 6 TO ITSELF
05                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 5
06                ;AND SUM BIT 6 TO GO TO 0 RESULT SHD=2000
07              ;AC09:
08 02224 105000         MOV 0,1         ;AC0=1000 COMING INTO TEST
09 02225 127000         ADD 1,1         ;USE IT TO SET UP AC1+AC1
10 02226 111120         MOVZL 0,2       ;AC2 SHD NOW=RESULT OF ADD
11 02227 132000         ADC 1,2         ;AC2 SHD NOW=-1
12 02230 150004         COM 2,2,SZR     ;NOT 0 IS BIT 6 CARRY FAILED
13                      ERROR           ;BIT 6+6 FAILED ADD SEE ALU5
14 02231 063077         HALT
15
16
17       002231         E353=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
18                                        ;AND ALU6
19 02232 101120         MOVZL 0,0       ;SET UP NEXT TEST
20                      ADDTO 10,5,4,2000,4000
21                ;TEST SINGLE BIT CARRY ADD BIT 5 TO ITSELF
22                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 4
23                ;AND SUM BIT 5 TO GO TO 0 RESULT SHD=4000
24              ;AC10:
25 02233 105000         MOV 0,1         ;AC0=2000 COMING INTO TEST
26 02234 127000         ADD 1,1         ;USE IT TO SET UP AC1+AC1
27 02235 111120         MOVZL 0,2       ;AC2 SHD NOW=RESULT OF ADD
28 02236 132000         ADC 1,2         ;AC2 SHD NOW=-1
29 02237 150004         COM 2,2,SZR     ;NOT 0 IS BIT 5 CARRY FAILED
30                      ERROR           ;BIT 5+5 FAILED ADD SEE ALU4
31 02240 063077         HALT
32
33
34       002240         E354=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
35                                        ;AND ALU5
36 02241 101120         MOVZL 0,0       ;SET UP NEXT TEST
37                      ADDTO 11,4,3,4000,10000
38                ;TEST SINGLE BIT CARRY ADD BIT 4 TO ITSELF
39                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 3
40                ;AND SUM BIT 4 TO GO TO 0 RESULT SHD=10000
41              ;AC11:
42 02242 105000         MOV 0,1         ;AC0=4000 COMING INTO TEST
43 02243 127000         ADD 1,1         ;USE IT TO SET UP AC1+AC1
44 02244 111120         MOVZL 0,2       ;AC2 SHD NOW=RESULT OF ADD
45 02245 132000         ADC 1,2         ;AC2 SHD NOW=-1
46 02246 150004         COM 2,2,SZR     ;NOT 0 IS BIT 4 CARRY FAILED
47                      ERROR           ;BIT 4+4 FAILED ADD SEE ALU3
48 02247 063077         HALT
49
50
51       002247         E355=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
52                                        ;AND ALU4
53 02250 101120         MOVZL 0,0       ;SET UP NEXT TEST
54                ;IF ABOVE TEST FAILS SEE ALSO CN0 IF AC1=0
55                      ADDTO 12,3,2,10000,20000
56                ;TEST SINGLE BIT CARRY ADD BIT 3 TO ITSELF
57                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 2
58                ;AND SUM BIT 3 TO GO TO 0 RESULT SHD=20000
59              ;AC12:
60 02251 105000         MOV 0,1         ;AC0=10000 COMING INTO TEST
```

```
 0072  PRCST
01 02252 127000         ADD 1,1         ;USE IT TO SET UP AC1+AC1
02 02253 111120         MOVZL 0,2       ;AC2 SHD NOW=RESULT OF ADD
03 02254 132000         ADC 1,2         ;AC2 SHD NOW=-1
04 02255 150004         COM 2,2,SZR     ;NOT 0 IS BIT 3 CARRY FAILED
05                      ERROR           ;BIT 3+3 FAILED ADD SEE ALU2
06 02256 063077         HALT
07
08
09       002256         E356=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
10                                        ;AND ALU3
11 02257 101120         MOVZL 0,0       ;SET UP NEXT TEST
12                      ADDTO 13,2,1,20000,40000
13                ;TEST SINGLE BIT CARRY ADD BIT 2 TO ITSELF
14                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 1
15                ;AND SUM BIT 2 TO GO TO 0 RESULT SHD=40000
16              ;AC13:
17 02260 105000         MOV 0,1         ;AC0=20000 COMING INTO TEST
18 02261 127000         ADD 1,1         ;USE IT TO SET UP AC1+AC1
19 02262 111120         MOVZL 0,2       ;AC2 SHD NOW=RESULT OF ADD
20 02263 132000         ADC 1,2         ;AC2 SHD NOW=-1
21 02264 150004         COM 2,2,SZR     ;NOT 0 IS BIT 2 CARRY FAILED
22                      ERROR           ;BIT 2+2 FAILED ADD SEE ALU1
23 02265 063077         HALT
24
25
26       002265         E357=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
27                                        ;AND ALU2
28 02266 101120         MOVZL 0,0       ;SET UP NEXT TEST
29                      ADDTO 14,1,0,40000,100000
30                ;TEST SINGLE BIT CARRY ADD BIT 1 TO ITSELF
31                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 0
32                ;AND SUM BIT 1 TO GO TO 0 RESULT SHD=100000
33              ;AC14:
34 02267 105000         MOV 0,1         ;AC0=40000 COMING INTO TEST
35 02270 127000         ADD 1,1         ;USE IT TO SET UP AC1+AC1
36 02271 111120         MOVZL 0,2       ;AC2 SHD NOW=RESULT OF ADD
37 02272 132000         ADC 1,2         ;AC2 SHD NOW=-1
38 02273 150004         COM 2,2,SZR     ;NOT 0 IS BIT 1 CARRY FAILED
39                      ERROR           ;BIT 1+1 FAILED ADD SEE ALU0
40 02274 063077         HALT
41
42
43       002274         E360=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
44                                        ;AND ALU1
45 02275 101120         MOVZL 0,0       ;SET UP NEXT TEST
46
47              ;TEST ADD BIT 0 TO BIT0 AC0=100000
48              ;SEE THAT CRYOUT GETS TO CRY
49 02276 105020 AC15:   MOVZ 0,1
50 02277 127004         ADD 1,1,SZR     ;ADD BIT 0 TO 0 FAILED
51                      ERROR
52 02300 063077         HALT
53
54
55       002300         E361=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
56 02301 125003         MOV 1,1,SNC     ;BIT 0+BIT 0 DID NOT CRY OUT
57                      ERROR
58 02302 063077         HALT
59
60
```

```
 0073  PRCST
01       002302          E362=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
!0074  PRCST
01
02                      ;TEST AND INSTRUCTION AND VARIATIONS
03                      ;FIRST TEST GROSS CASE AND -1 TO -1
04
05 02303 102000 AND00:  ADC 0,0             ;SET AC0=-1
06 02304 103405         AND 0,0,SNR         ;FIRST USE OF "AND"
07                      ERROR               ;RESULT SHD STILL BE NON 0
08 02305 063077         HALT
09
10
11       002305         E363=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
12                      ;IF RESULT=0 "AND" LOOKS LIKE "SUB" OR "INC"
13                      ;SEE NOT IR6 OR NOT IR5 AT ALU ROM
14 02306 104004         COM 0,1,SZR
15                      ERROR               ;RESULT OF PREV AND NOT=-1
16 02307 063077         HALT
17
18
19       002307         E364=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
20                      ;IF RESULT IN AC0=-2 "AND" LOOKS LIKE "ADD"
21                      ;SEE NOT IR7 AT ALU ROM
22
23                      ;TEST AND 0'S TO 0'S RESULT SHD REMAIN=0
24 02310 102000 AND01:  ADC 0,0
25 02311 100000         COM 0,0             ;AC0=0
26 02312 103404         AND 0,0,SZR         ;RESULT OF AND SHD=0
27                      ERROR
28 02313 063077         HALT
29
30
31       002313         E365=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
32 02314 101004         MOV 0,0,SZR         ;RECHECK RESULT
33                      ERROR
34 02315 063077         HALT
35
36
37       002315         E366=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
38                      ;SEE RESULT IN AC0 TO DETERMINE ALU BIT(S) IN ERR
39
40                      ;AND -1 TO 0 WITH 0 AS DESTINATION
41                      ;RESULT SHOULD AGAIN=0'S
42 02316 102000 AND02:  ADC 0,0
43 02317 104000         COM 0,1
44 02320 107404         AND 0,1,SZR         ;DEST REG AC1=0'S
45                      ERROR               ;RESULT OF ABOVE AND NOT=0
46 02321 063077         HALT
47
48
49       002321         E367=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
50 02322 125004         MOV 1,1,SZR         ;RECHECK RESULT
51                      ERROR
52 02323 063077         HALT
53
54
55       002323         E370=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
56                      ;EXAMINE AC1 TO DETERMINE ALU BIT(S) IN ERROR
57
58                      ;TEST AND OF 0 TO -1 WITH -1 ORIGINAL DESTINATION
59 02324 102000 AND03:  ADC 0,0
60 02325 104000         COM 0,1
```

```
 0075  PRCST
01 02326 123404          AND 1,0,SZR      ;DEST=-1  SRC=0  RES SHD=0
02                       ERROR
03 02327 063077          HALT
04
05
06       002327          E371=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
07 02330 101004          MOV  0,0,SZR     ;RECHECK RESULT
08                       ERROR
09 02331 063077          HALT
10
11
12       002331          E372=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
13                ;EXAMINE AC0 TO DETERMINE ALU BIT(S) IN ERROR
```

```
10076  PRCST
01
02                  ;DEFINE BIT TEST MACRO FOR AND INSTRUCTION
03                        .MACRO ANDTS
04                  ;THE NEXT SERIES IS AN AND TST OF BIT ^2
05                  ;AC0=^3 COMING INTO THE TEST
06                ;AND^1:
07                        MOV 0,1          ;AC0=^3
08                        AND 0,1,SNR      ;BIT ^2 SHD REMAIN=1
09                        ERROR
10                        MOV 1,2
11                        ADC 0,2
12                        COM 2,2,SZR      ;TEST FOR EXTRA BITS
13                        ERROR            ;MORE THAN 1 BIT IN AND OF ^3
14                  ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=^3
15
16
17                  ;NOW TEST AND OF COMPLIMENTS
18                  ;SOURCE WILL=^3 DEST WILL=COMPLIMENT
19                ;AN^1A:
20                        COM 0,1
21                        AND 0,1,SZR
22                        ERROR            ;AND OF ^3 AND ITS COM FAILED
23                  ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
24
25
26                  ;TEST AND OF COMPLIMENTS WITH DEST=^3 AND SRC=COM
27                ;AN^1B:
28                        MOV 0,1
29                        COM 1,2
30                        AND 2,1,SZR
31                        ERROR            ;AND OF ^3 AND ITS COM FAILED
32                  ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
33                        MOVZL 0,0        ;SET UP NEXT TEST
34                %
35
36
37                  ;SET UP AC0=1 FOR FIRST AND TEST
38
39 02332 102000          ADC 0,0
40 02333 100145          COMOL 0,0,SNR
41                       ERROR
42 02334 063077          HALT
43
44
45       002334          E373=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10077  PRCST
01
02                      ANDTS 04,15,1
03                  ;THE NEXT SERIES IS AN AND TST OF BIT 15
04                  ;AC0=1 COMING INTO THE TEST
05                ;AND04:
06 02335 105000         MOV 0,1             ;AC0=1
07 02336 107405         AND 0,1,SNR         ;BIT 15 SHD REMAIN=1
08                      ERROR
09 02337 063077         HALT
10
11
12       002337         E374=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
13 02340 131000         MOV 1,2
14 02341 112000         ADC 0,2
15 02342 150004         COM 2,2,SZR         ;TEST FOR EXTRA BITS
16                      ERROR               ;MORE THAN 1 BIT IN AND OF 1
17 02343 063077         HALT
18
19
20       002343         E375=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
21                  ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=1
22
23
24                  ;NOW TEST AND OF COMPLIMENTS
25                  ;SOURCE WILL=1 DEST WILL=COMPLIMENT
26                ;AN04A:
27 02344 104000         COM 0,1
28 02345 107404         AND 0,1,SZR
29                      ERROR               ;AND OF 1 AND ITS COM FAILED
30 02346 063077         HALT
31
32
33       002346         E376=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
34                  ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
35
36
37                  ;TEST AND OF COMPLIMENTS WITH DEST=1 AND SRC=COM
38                ;AN04B:
39 02347 105000         MOV 0,1
40 02350 130000         COM 1,2
41 02351 147404         AND 2,1,SZR
42                      ERROR               ;AND OF 1 AND ITS COM FAILED
43 02352 063077         HALT
44
45
46       002352         E377=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
47                  ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
48 02353 101120         MOVZL 0,0           ;SET UP NEXT TEST
49                      ANDTS 05,14,2
50                  ;THE NEXT SERIES IS AN AND TST OF BIT 14
51                  ;AC0=2 COMING INTO THE TEST
52                ;AND05:
53 02354 105000         MOV 0,1             ;AC0=2
54 02355 107405         AND 0,1,SNR         ;BIT 14 SHD REMAIN=1
55                      ERROR
56 02356 063077         HALT
57
58
59       002356         E400=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
60 02357 131000         MOV 1,2
```

```
 0078  PRCST
01 02360 112000         ADC 0,2
02 02361 150004         COM 2,2,SZR         ;TEST FOR EXTRA BITS
03                      ERROR               ;MORE THAN 1 BIT IN AND OF 2
04 02362 063077         HALT
05
06
07       002362         E401=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
08                  ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=2
09
10
11                  ;NOW TEST AND OF COMPLIMENTS
12                  ;SOURCE WILL=2 DEST WILL=COMPLIMENT
13                ;AN05A:
14 02363 104000         COM 0,1
15 02364 107404         AND 0,1,SZR
16                      ERROR               ;AND OF 2 AND ITS COM FAILED
17 02365 063077         HALT
18
19
20       002365         E402=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
21                  ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
22
23
24                  ;TEST AND OF COMPLIMENTS WITH DEST=2 AND SRC=COM
25                ;AN05B:
26 02366 105000         MOV 0,1
27 02367 130000         COM 1,2
28 02370 147404         AND 2,1,SZR
29                      ERROR               ;AND OF 2 AND ITS COM FAILED
30 02371 063077         HALT
31
32
33       002371         E403=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
34                  ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
35 02372 101120         MOVZL 0,0           ;SET UP NEXT TEST
36                      ANDTS 06,13,4
37                  ;THE NEXT SERIES IS AN AND TST OF BIT 13
38                  ;AC0=4 COMING INTO THE TEST
39                ;AND06:
40 02373 105000         MOV 0,1             ;AC0=4
41 02374 107405         AND 0,1,SNR         ;BIT 13 SHD REMAIN=1
42                      ERROR
43 02375 063077         HALT
44
45
46       002375         E404=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
47 02376 131000         MOV 1,2
48 02377 112000         ADC 0,2
49 02400 150004         COM 2,2,SZR         ;TEST FOR EXTRA BITS
50                      ERROR               ;MORE THAN 1 BIT IN AND OF 4
51 02401 063077         HALT
52
53
54       002401         E405=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
55                  ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=4
56
57
58                  ;NOW TEST AND OF COMPLIMENTS
59                  ;SOURCE WILL=4 DEST WILL=COMPLIMENT
60                ;AN06A:
```

```
 0079  PRCST
01 02402 104000          COM 0,1
02 02403 107404          AND 0,1,SZR
03                       ERROR              ;AND OF 4 AND ITS COM FAILED
04 02404 063077          HALT
05
06
07       002404          E406=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
08                 ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
09
10
11                 ;TEST AND OF COMPLIMENTS WITH DEST=4 AND SRC=COM
12                ;AN06B:
13 02405 105000          MOV 0,1
14 02406 130000          COM 1,2
15 02407 147404          AND 2,1,SZR
16                       ERROR              ;AND OF 4 AND ITS COM FAILED
17 02410 063077          HALT
18
19
20       002410          E407=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
21                 ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
22 02411 101120          MOVZL 0,0          ;SET UP NEXT TEST
23                       ANDTS 07,12,10
24                 ;THE NEXT SERIES IS AN AND TST OF BIT 12
25                 ;AC0=10 COMING INTO THE TEST
26                ;AND07:
27 02412 105000          MOV 0,1            ;AC0=10
28 02413 107405          AND 0,1,SNR        ;BIT 12 SHD REMAIN=1
29                       ERROR
30 02414 063077          HALT
31
32
33       002414          E410=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
34 02415 131000          MOV 1,2
35 02416 112000          ADC 0,2
36 02417 150004          COM 2,2,SZR        ;TEST FOR EXTRA BITS
37                       ERROR              ;MORE THAN 1 BIT IN AND OF 10
38 02420 063077          HALT
39
40
41       002420          E411=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
42                 ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=10
43
44
45                 ;NOW TEST AND OF COMPLIMENTS
46                 ;SOURCE WILL=10 DEST WILL=COMPLIMENT
47                ;AN07A:
48 02421 104000          COM 0,1
49 02422 107404          AND 0,1,SZR
50                       ERROR              ;AND OF 10 AND ITS COM FAILED
51 02423 063077          HALT
52
53
54       002423          E412=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
55                 ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
56
57
58                 ;TEST AND OF COMPLIMENTS WITH DEST=10 AND SRC=COM
59                ;AN07B:
60 02424 105000          MOV 0,1
```

```
 0080  PRCST
01 02425 130000          COM 1,2
02 02426 147404          AND 2,1,SZR
03                       ERROR              ;AND OF 10 AND ITS COM FAILED
04 02427 063077          HALT
05
06
07       002427          E413=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
08                 ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
09 02430 101120          MOVZL 0,0          ;SET UP NEXT TEST
10                       ANDTS 08,11,20
11                 ;THE NEXT SERIES IS AN AND TST OF BIT 11
12                 ;AC0=20 COMING INTO THE TEST
13                ;AND08:
14 02431 105000          MOV 0,1            ;AC0=20
15 02432 107405          AND 0,1,SNR        ;BIT 11 SHD REMAIN=1
16                       ERROR
17 02433 063077          HALT
18
19
20       002433          E414=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
21 02434 131000          MOV 1,2
22 02435 112000          ADC 0,2
23 02436 150004          COM 2,2,SZR        ;TEST FOR EXTRA BITS
24                       ERROR              ;MORE THAN 1 BIT IN AND OF 20
25 02437 063077          HALT
26
27
28       002437          E415=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
29                 ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=20
30
31
32                 ;NOW TEST AND OF COMPLIMENTS
33                 ;SOURCE WILL=20 DEST WILL=COMPLIMENT
34                ;AN08A:
35 02440 104000          COM 0,1
36 02441 107404          AND 0,1,SZR
37                       ERROR              ;AND OF 20 AND ITS COM FAILED
38 02442 063077          HALT
39
40
41       002442          E416=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
42                 ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
43
44
45                 ;TEST AND OF COMPLIMENTS WITH DEST=20 AND SRC=COM
46                ;AN08B:
47 02443 105000          MOV 0,1
48 02444 130000          COM 1,2
49 02445 147404          AND 2,1,SZR
50                       ERROR              ;AND OF 20 AND ITS COM FAILED
51 02446 063077          HALT
52
53
54       002446          E417=.-1           ;ERR # (8)- USED FOR ERROR DICTIONARY
55                 ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
56 02447 101120          MOVZL 0,0          ;SET UP NEXT TEST
57                       ANDTS 09,10,40
58                 ;THE NEXT SERIES IS AN AND TST OF BIT 10
59                 ;AC0=40 COMING INTO THE TEST
60                ;AND09:
```

```
 0081  PRCST
01 02450 105000          MOV 0,1          ;AC0=40
02 02451 107405          AND 0,1,SNR      ;BIT 10 SHD REMAIN=1
03                       ERROR
04 02452 063077          HALT
05
06
07       002452          E420=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
08 02453 131000          MOV 1,2
09 02454 112000          ADC 0,2
10 02455 150004          COM 2,2,SZR      ;TEST FOR EXTRA BITS
11                       ERROR            ;MORE THAN 1 BIT IN AND OF 40
12 02456 063077          HALT
13
14
15       002456          E421=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
16                ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=40
17
18
19                ;NOW TEST AND OF COMPLIMENTS
20                ;SOURCE WILL=40 DEST WILL=COMPLIMENT
21              ;AN09A:
22 02457 104000          COM 0,1
23 02460 107404          AND 0,1,SZR
24                       ERROR            ;AND OF 40 AND ITS COM FAILED
25 02461 063077          HALT
26
27
28       002461          E422=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
29                ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
30
31
32                ;TEST AND OF COMPLIMENTS WITH DEST=40 AND SRC=COM
33              ;AN09B:
34 02462 105000          MOV 0,1
35 02463 130000          COM 1,2
36 02464 147404          AND 2,1,SZR
37                       ERROR            ;AND OF 40 AND ITS COM FAILED
38 02465 063077          HALT
39
40
41       002465          E423=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
42                ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
43 02466 101120          MOVZL 0,0        ;SET UP NEXT TEST
44                       ANDTS 10,9,100
45                ;THE NEXT SERIES IS AN AND TST OF BIT 9
46                ;AC0=100 COMING INTO THE TEST
47              ;AND10:
48 02467 105000          MOV 0,1          ;AC0=100
49 02470 107405          AND 0,1,SNR      ;BIT 9 SHD REMAIN=1
50                       ERROR
51 02471 063077          HALT
52
53
54       002471          E424=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
55 02472 131000          MOV 1,2
56 02473 112000          ADC 0,2
57 02474 150004          COM 2,2,SZR      ;TEST FOR EXTRA BITS
58                       ERROR            ;MORE THAN 1 BIT IN AND OF 100
59 02475 063077          HALT
60
```

```
 0082  PRCST
01
02       002475          E425=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
03                ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=100
04
05
06                ;NOW TEST AND OF COMPLIMENTS
07                ;SOURCE WILL=100 DEST WILL=COMPLIMENT
08              ;AN10A:
09 02476 104000          COM 0,1
10 02477 107404          AND 0,1,SZR
11                       ERROR            ;AND OF 100 AND ITS COM FAILED
12 02500 063077          HALT
13
14
15       002500          E426=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
16                ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
17
18
19                ;TEST AND OF COMPLIMENTS WITH DEST=100 AND SRC=COM
20              ;AN10B:
21 02501 105000          MOV 0,1
22 02502 130000          COM 1,2
23 02503 147404          AND 2,1,SZR
24                       ERROR            ;AND OF 100 AND ITS COM FAILED
25 02504 063077          HALT
26
27
28       002504          E427=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
29                ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
30 02505 101120          MOVZL 0,0        ;SET UP NEXT TEST
31                       ANDTS 11,8,200
32                ;THE NEXT SERIES IS AN AND TST OF BIT 8
33                ;AC0=200 COMING INTO THE TEST
34              ;AND11:
35 02506 105000          MOV 0,1          ;AC0=200
36 02507 107405          AND 0,1,SNR      ;BIT 8 SHD REMAIN=1
37                       ERROR
38 02510 063077          HALT
39
40
41       002510          E430=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
42 02511 131000          MOV 1,2
43 02512 112000          ADC 0,2
44 02513 150004          COM 2,2,SZR      ;TEST FOR EXTRA BITS
45                       ERROR            ;MORE THAN 1 BIT IN AND OF 200
46 02514 063077          HALT
47
48
49       002514          E431=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
50                ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=200
51
52
53                ;NOW TEST AND OF COMPLIMENTS
54                ;SOURCE WILL=200 DEST WILL=COMPLIMENT
55              ;AN11A:
56 02515 104000          COM 0,1
57 02516 107404          AND 0,1,SZR
58                       ERROR            ;AND OF 200 AND ITS COM FAILED
59 02517 063077          HALT
60
```

```
0083  PRCST
01
02        002517          E432=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
03                  ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
04
05
06                  ;TEST AND OF COMPLIMENTS WITH DEST=200 AND SRC=COM
07                ;AN11B:
08 02520 105000           MOV 0,1
09 02521 130000           COM 1,2
10 02522 147404           AND 2,1,SZR
11                        ERROR           ;AND OF 200 AND ITS COM FAILED
12 02523 063077           HALT
13
14
15        002523          E433=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
16                  ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
17 02524 101120           MOVZL 0,0       ;SET UP NEXT TEST
18                        ANDTS 12,7,400
19                  ;THE NEXT SERIES IS AN AND TST OF BIT 7
20                  ;AC0=400 COMING INTO THE TEST
21                ;AND12:
22 02525 105000           MOV 0,1         ;AC0=400
23 02526 107405           AND 0,1,SNR     ;BIT 7 SHD REMAIN=1
24                        ERROR
25 02527 063077           HALT
26
27
28        002527          E434=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
29 02530 131000           MOV 1,2
30 02531 112000           ADC 0,2
31 02532 150004           COM 2,2,SZR     ;TEST FOR EXTRA BITS
32                        ERROR           ;MORE THAN 1 BIT IN AND OF 400
33 02533 063077           HALT
34
35
36        002533          E435=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
37                  ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=400
38
39
40                  ;NOW TEST AND OF COMPLIMENTS
41                  ;SOURCE WILL=400 DEST WILL=COMPLIMENT
42                ;AN12A:
43 02534 104000           COM 0,1
44 02535 107404           AND 0,1,SZR
45                        ERROR           ;AND OF 400 AND ITS COM FAILED
46 02536 063077           HALT
47
48
49        002536          E436=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
50                  ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
51
52
53                  ;TEST AND OF COMPLIMENTS WITH DEST=400 AND SRC=COM
54                ;AN12B:
55 02537 105000           MOV 0,1
56 02540 130000           COM 1,2
57 02541 147404           AND 2,1,SZR
58                        ERROR           ;AND OF 400 AND ITS COM FAILED
59 02542 063077           HALT
60
```

```
0084  PRCST
01
02        002542          E437=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
03                  ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
04 02543 101120           MOVZL 0,0       ;SET UP NEXT TEST
05                        ANDTS 13,6,1000
06                  ;THE NEXT SERIES IS AN AND TST OF BIT 6
07                  ;AC0=1000 COMING INTO THE TEST
08                ;AND13:
09 02544 105000           MOV 0,1         ;AC0=1000
10 02545 107405           AND 0,1,SNR     ;BIT 6 SHD REMAIN=1
11                        ERROR
12 02546 063077           HALT
13
14
15        002546          E440=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
16 02547 131000           MOV 1,2
17 02550 112000           ADC 0,2
18 02551 150004           COM 2,2,SZR     ;TEST FOR EXTRA BITS
19                        ERROR           ;MORE THAN 1 BIT IN AND OF 1000
20 02552 063077           HALT
21
22
23        002552          E441=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
24                  ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=1000
25
26
27                  ;NOW TEST AND OF COMPLIMENTS
28                  ;SOURCE WILL=1000 DEST WILL=COMPLIMENT
29                ;AN13A:
30 02553 104000           COM 0,1
31 02554 107404           AND 0,1,SZR
32                        ERROR           ;AND OF 1000 AND ITS COM FAILED
33 02555 063077           HALT
34
35
36        002555          E442=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
37                  ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
38
39
40                  ;TEST AND OF COMPLIMENTS WITH DEST=1000 AND SRC=COM
41                ;AN13B:
42 02556 105000           MOV 0,1
43 02557 130000           COM 1,2
44 02560 147404           AND 2,1,SZR
45                        ERROR           ;AND OF 1000 AND ITS COM FAILED
46 02561 063077           HALT
47
48
49        002561          E443=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
50                  ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
51 02562 101120           MOVZL 0,0       ;SET UP NEXT TEST
52                        ANDTS 14,5,2000
53                  ;THE NEXT SERIES IS AN AND TST OF BIT 5
54                  ;AC0=2000 COMING INTO THE TEST
55                ;AND14:
56 02563 105000           MOV 0,1         ;AC0=2000
57 02564 107405           AND 0,1,SNR     ;BIT 5 SHD REMAIN=1
58                        ERROR
59 02565 063077           HALT
60
```

```
 0085  PRCST
01
02       002565          E444=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
03 02566 131000          MOV 1,2
04 02567 112000          ADC 0,2
05 02570 150004          COM 2,2,SZR     ;TEST FOR EXTRA BITS
06                       ERROR           ;MORE THAN 1 BIT IN AND OF 2000
07 02571 063077          HALT
08
09
10       002571          E445=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11                ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=2000
12
13
14                ;NOW TEST AND OF COMPLIMENTS
15                ;SOURCE WILL=2000 DEST WILL=COMPLIMENT
16              ;AN14A:
17 02572 104000          COM 0,1
18 02573 107404          AND 0,1,SZR
19                       ERROR           ;AND OF 2000 AND ITS COM FAILED
20 02574 063077          HALT
21
22
23       002574          E446=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
24                ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
25
26
27                ;TEST AND OF COMPLIMENTS WITH DEST=2000 AND SRC=COM
28              ;AN14B:
29 02575 105000          MOV 0,1
30 02576 130000          COM 1,2
31 02577 147404          AND 2,1,SZR
32                       ERROR           ;AND OF 2000 AND ITS COM FAILED
33 02600 063077          HALT
34
35
36       002600          E447=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
37                ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
38 02601 101120          MOVZL 0,0       ;SET UP NEXT TEST
39                       ANDTS 15,4,4000
40                ;THE NEXT SERIES IS AN AND TST OF BIT 4
41                ;AC0=4000 COMING INTO THE TEST
42              ;AND15:
43 02602 105000          MOV 0,1         ;AC0=4000
44 02603 107405          AND 0,1,SNR     ;BIT 4 SHD REMAIN=1
45                       ERROR
46 02604 063077          HALT
47
48
49       002604          E450=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
50 02605 131000          MOV 1,2
51 02606 112000          ADC 0,2
52 02607 150004          COM 2,2,SZR     ;TEST FOR EXTRA BITS
53                       ERROR           ;MORE THAN 1 BIT IN AND OF 4000
54 02610 063077          HALT
55
56
57       002610          E451=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
58                ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=4000
59
60
```

```
 0086  PRCST
01                ;NOW TEST AND OF COMPLIMENTS
02                ;SOURCE WILL=4000 DEST WILL=COMPLIMENT
03              ;AN15A:
04 02611 104000          COM 0,1
05 02612 107404          AND 0,1,SZR
06                       ERROR           ;AND OF 4000 AND ITS COM FAILED
07 02613 063077          HALT
08
09
10       002613          E452=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11                ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
12
13
14                ;TEST AND OF COMPLIMENTS WITH DEST=4000 AND SRC=COM
15              ;AN15B:
16 02614 105000          MOV 0,1
17 02615 130000          COM 1,2
18 02616 147404          AND 2,1,SZR
19                       ERROR           ;AND OF 4000 AND ITS COM FAILED
20 02617 063077          HALT
21
22
23       002617          E453=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
24                ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
25 02620 101120          MOVZL 0,0       ;SET UP NEXT TEST
26                       ANDTS 16,3,10000
27                ;THE NEXT SERIES IS AN AND TST OF BIT 3
28                ;AC0=10000 COMING INTO THE TEST
29              ;AND16:
30 02621 105000          MOV 0,1         ;AC0=10000
31 02622 107405          AND 0,1,SNR     ;BIT 3 SHD REMAIN=1
32                       ERROR
33 02623 063077          HALT
34
35
36       002623          E454=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
37 02624 131000          MOV 1,2
38 02625 112000          ADC 0,2
39 02626 150004          COM 2,2,SZR     ;TEST FOR EXTRA BITS
40                       ERROR           ;MORE THAN 1 BIT IN AND OF 10000
41 02627 063077          HALT
42
43
44       002627          E455=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45                ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=10000
46
47
48                ;NOW TEST AND OF COMPLIMENTS
49                ;SOURCE WILL=10000 DEST WILL=COMPLIMENT
50              ;AN16A:
51 02630 104000          COM 0,1
52 02631 107404          AND 0,1,SZR
53                       ERROR           ;AND OF 10000 AND ITS COM FAILED
54 02632 063077          HALT
55
56
57       002632          E456=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
58                ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
59
60
```

```
0087  PRCST
01                ;TEST AND OF COMPLIMENTS WITH DEST=10000 AND SRC=COM
02              ;AN16B:
03 02633 105000         MOV 0,1
04 02634 130000         COM 1,2
05 02635 147404         AND 2,1,SZR
06                      ERROR           ;AND OF 10000 AND ITS COM FAILED
07 02636 063077         HALT
08
09
10       002636         E457=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11                ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
12 02637 101120         MOVZL 0,0       ;SET UP NEXT TEST
13                      ANDTS 17,2,20000
14                ;THE NEXT SERIES IS AN AND TST OF BIT 2
15                ;AC0=20000 COMING INTO THE TEST
16              ;AND17:
17 02640 105000         MOV 0,1         ;AC0=20000
18 02641 107405         AND 0,1,SNR     ;BIT 2 SHD REMAIN=1
19                      ERROR
20 02642 063077         HALT
21
22
23       002642         E460=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
24 02643 131000         MOV 1,2
25 02644 112000         ADC 0,2
26 02645 150004         COM 2,2,SZR     ;TEST FOR EXTRA BITS
27                      ERROR           ;MORE THAN 1 BIT IN AND OF 20000
28 02646 063077         HALT
29
30
31       002646         E461=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
32                ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=20000
33
34
35                ;NOW TEST AND OF COMPLIMENTS
36                ;SOURCE WILL=20000 DEST WILL=COMPLIMENT
37              ;AN17A:
38 02647 104000         COM 0,1
39 02650 107404         AND 0,1,SZR
40                      ERROR           ;AND OF 20000 AND ITS COM FAILED
41 02651 063077         HALT
42
43
44       002651         E462=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45                ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
46
47
48                ;TEST AND OF COMPLIMENTS WITH DEST=20000 AND SRC=COM
49              ;AN17B:
50 02652 105000         MOV 0,1
51 02653 130000         COM 1,2
52 02654 147404         AND 2,1,SZR
53                      ERROR           ;AND OF 20000 AND ITS COM FAILED
54 02655 063077         HALT
55
56
57       002655         E463=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
58                ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
59 02656 101120         MOVZL 0,0       ;SET UP NEXT TEST
60                      ANDTS 18,1,40000
```

```
0088  PRCST
01                ;THE NEXT SERIES IS AN AND TST OF BIT 1
02                ;AC0=40000 COMING INTO THE TEST
03              ;AND18:
04 02657 105000         MOV 0,1         ;AC0=40000
05 02660 107405         AND 0,1,SNR     ;BIT 1 SHD REMAIN=1
06                      ERROR
07 02661 063077         HALT
08
09
10       002661         E464=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11 02662 131000         MOV 1,2
12 02663 112000         ADC 0,2
13 02664 150004         COM 2,2,SZR     ;TEST FOR EXTRA BITS
14                      ERROR           ;MORE THAN 1 BIT IN AND OF 40000
15 02665 063077         HALT
16
17
18       002665         E465=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
19                ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=40000
20
21
22                ;NOW TEST AND OF COMPLIMENTS
23                ;SOURCE WILL=40000 DEST WILL=COMPLIMENT
24              ;AN18A:
25 02666 104000         COM 0,1
26 02667 107404         AND 0,1,SZR
27                      ERROR           ;AND OF 40000 AND ITS COM FAILED
28 02670 063077         HALT
29
30
31       002670         E466=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
32                ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
33
34
35                ;TEST AND OF COMPLIMENTS WITH DEST=40000 AND SRC=COM
36              ;AN18B:
37 02671 105000         MOV 0,1
38 02672 130000         COM 1,2
39 02673 147404         AND 2,1,SZR
40                      ERROR           ;AND OF 40000 AND ITS COM FAILED
41 02674 063077         HALT
42
43
44       002674         E467=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45                ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
46 02675 101120         MOVZL 0,0       ;SET UP NEXT TEST
47                      ANDTS 19,0,100000
48                ;THE NEXT SERIES IS AN AND TST OF BIT 0
49                ;AC0=100000 COMING INTO THE TEST
50              ;AND19:
51 02676 105000         MOV 0,1         ;AC0=100000
52 02677 107405         AND 0,1,SNR     ;BIT 0 SHD REMAIN=1
53                      ERROR
54 02700 063077         HALT
55
56
57       002700         E470=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
58 02701 131000         MOV 1,2
59 02702 112000         ADC 0,2
60 02703 150004         COM 2,2,SZR     ;TEST FOR EXTRA BITS
```

```
 0089  PRCST
01                      ERROR           ;MORE THAN 1 BIT IN AND OF 100000
02 02704 063077         HALT
03
04
05        002704        E471=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
06                ;EXAMINE AC1 TO DETERMINE BIT(S) IN ERROR IT SHD=100000
07
08
09                ;NOW TEST AND OF COMPLIMENTS
10                ;SOURCE WILL=100000 DEST WILL=COMPLIMENT
11              ;AN19A:
12 02705 104000         COM 0,1
13 02706 107404         AND 0,1,SZR
14                      ERROR           ;AND OF 100000 AND ITS COM FAILED
15 02707 063077         HALT
16
17
18        002707        E472=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
19                ;EXAMINE AC1 TO DETERMINE BIT(S) FAILED IT SHD=0
20
21
22                ;TEST AND OF COMPLIMENTS WITH DEST=100000 AND SRC=COM
23              ;AN19B:
24 02710 105000         MOV 0,1
25 02711 130000         COM 1,2
26 02712 147404         AND 2,1,SZR
27                      ERROR           ;AND OF 100000 AND ITS COM FAILED
28 02713 063077         HALT
29
30
31        002713        E473=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
32                ;EXAMINE AC1 TO DETERMINE BITS FAILED IT SHD=0
33 02714 101120         MOVZL 0,0       ;SET UP NEXT TEST
```

```
10090  PRCST
01
02                ;THE NEXT SERIES OF TESTS VERIFY THAT "AND"
03                ;DOES NOT EFFECT "CRY"
04
05 02715 102020 AND20:  ADCZ 0,0        ;CRY=0  AC0=-1
06 02716 103402         AND 0,0,SZC     ;CRY SHD STILL=0
07                      ERROR           ;AND SET CRY=1
08 02717 063077         HALT
09
10
11        002717        E474=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
12                ;SEE "NOT AND" AND WITH ALUCARRYOUT
13
14 02720 102040 AND21:  ADCO 0,0        ;AND=1 WITH CRY=1
15 02721 103403         AND 0,0,SNC     ;CRY SHD STILL=1
16                      ERROR           ;AND OF -1,-1 CLEARED CARRY
17 02722 063077         HALT
18
19
20        002722        E475=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
21
22                ;TEST AND WITH 00 TO NOT CHNG CRY 0 TO 1
23
24 02723 102000 AND22:  ADC 0,0
25 02724 100020         COMZ 0,0
26 02725 103402         AND 0,0,SZC
27                      ERROR
28 02726 063077         HALT
29
30
31        002726        E476=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
32                ;TEST AND WITH 00 TO NOT CHNG CRY 1 TO 0
33 02727 102000 AND23:  ADC 0,0
34 02730 100040         COMO 0,0
35 02731 103403         AND 0,0,SNC
36                      ERROR
37 02732 063077         HALT
38
39
40        002732        E477=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
41
42                ;REPEAT TESTS CHANGING STATE OF CRY DURING AND
43
44 02733 102040 AND24:  ADCO 0,0
45 02734 103422         ANDZ 0,0,SZC
46                      ERROR           ;SEE IR11 NOT IR10 IN NOT SCI
47 02735 063077         HALT
48
49
50        002735        E500=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
51                ;POSSIBLY TRANSITION TIMING AS AND DID NOT PREV CHNG CRY
52 02736 102020 AND25:  ADCZ 0,0
53 02737 103443         ANDO 0,0,SNC    ;SEE NOT OF ABOVE TEST IR10=11
54                      ERROR           ;CRY WENT TO 0 AND -1 TO -1
55 02740 063077         HALT
56
57
58        002740        E501=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
59
60 02741 102000 AND26:  ADC 0,0
```

```
 0091  PRCST
01 02742 100040          COMO 0,0
02 02743 103422          ANDZ 0,0,SZC     ;FURTHER TEST AND IN SCI LOGIC
03                       ERROR            ;CRY WENT TO 1 AND 0 TO 0
04 02744 063077          HALT
05
06
07       002744          E502=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
08
09 02745 102000 AND27:   ADC 0,0
10 02746 100020          COMZ 0,0
11 02747 103443          ANDO 0,0,SNC
12                       ERROR            ;CRY WENT 1 TO 0 AND OF 0 TO 0
13 02750 063077          HALT
14
15
16       002750          E503=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
17
18
```

```
10092  PRCST
01                ;VERIFY THE EXISTENCE OF INC INSTRUCTION
02                ;FIRST TIME FOR "INC" INSTRUCTION
03 02751 102000 INC00:   ADC 0,0
04 02752 100000          COM 0,0
05 02753 101405          INC 0,0,SNR      ;RESULT=0 POSSIBLY ALU CRY NOT
06                       ERROR            ;AC0 SHD=+1
07 02754 063077          HALT
08
09
10       002754          E504=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
11 02755 101005          MOV 0,0,SNR
12                       ERROR            ;MAKE SURE RESULT GOT BACK TO AC0
13 02756 063077          HALT
14
15
16       002756          E505=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
17 02757 105224          MOVZR 0,1,SZR    ;MAKE SURE ONLY +1 NO EXTRAS
18                       ERROR            ;EXAMINE AC0 FOR EXTRA BITS INC
19 02760 063077          HALT
20
21
22       002760          E506=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
23                ;AC0=0 POSSIBLY "NOT" IR6 INC LOOKS LIKE NEG
24                ;OR "NOT" IR7 INC LOOKS LIKE MOV SEE ALU ROM
25                ;OR IR5 INTO  ALC ROM INC LOOKS LIKE AND
26
27                ;TEST INC OF +1 TO +2 (2ND TIME FOR INC)
28 02761 102000 INC01:   ADC 0,0
29 02762 100140          COMOL 0,0        ;AC0=+1
30 02763 105120          MOVZL 0,1        ;AC1=+2
31 02764 101405          INC 0,0,SNR      ;1+1 SHD=2
32                       ERROR            ;BIT 15 CARRY TO BIT 14(?)
33 02765 063077          HALT
34
35
36       002765          E507=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
37 02766 106000          ADC 0,1          ;AC1 SHD NOW=-1 (IF INC WORKED)
38 02767 124004          COM 1,1,SZR      ;AND COM SHD BE 0
39                       ERROR            ;AC0 INC'D+1 INCORRECT
40 02770 063077          HALT
41
42
43       002770          E510=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
44                ;EXAMINE AC0 FOR ALU FAILURE IT SHD=+2
45                ;IF AC0 DOES=+2 EXAMINE AC1 FOR ADC+COM FAILURE
46
47                ;TEST TO INSURE ONLY SRC REG IS INVOLVED IN INC
48 02771 102000 INC02:   ADC 0,0
49 02772 100000          COM 0,0          ;AC0=0
50 02773 104140          COMOL 0,1        ;AC1=1
51 02774 125140          MOVOL 1,1        ;=3
52 02775 105405          INC 0,1,SNR      ;0+1 SHD=1
53                       ERROR            ;ALU CRY FAILED (?) ALRDY TESTED
54 02776 063077          HALT
55
56
57       002776          E511=.-1         ;ERR # (8)= USED FOR ERROR DICTIONARY
58 02777 131224          MOVZR 1,2,SZR    ;AC1 SHD ONLY=1
59                       ERROR            ;PROBABLY DESTINATION REG ALSO ADDED
60 03000 063077          HALT
```

```
 0093  PRCST
01
02
03        003000          E512=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
04                ;SEE NOT 2REN  ALC ROM INC ALSO CAUSES ADD OR AND
```

```
10094  PRCST
01
02                ;TEST INC TO CARRY THROUGH ALL 1 BITS
03                ;DEFINE MACRO FOR CARRY TESTS
04                      .MACRO INCTS
05                ;AC0=^4 COMING INTO TEST.+1=AC1=^5
06                ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
07                ;BIT^2 INTO BIT^3 WITH RESULT=AC1
08              ;INC^1:
09                      INC 0,2,SNR     ;AC0=^4+1 AND BE NON ZERO
10                      ERROR           ;INC RESULT SHD=^5
11                      MOV 2,3
12                      ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
13                      COM 3,3,SZR     ;THEN 0
14                      ERROR
15                      MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
16                      MOVZL 1,1       ;SET UP RESULT NEXT TEST
17              %
18
19                ;SET UP FIRST CARRY TEST
20 03001 102000         ADC 0,0
21 03002 100000         COM 0,0
22 03003 105140         MOVOL 0,1
23
24                      INCTS 03,ALUCRY,15,0,1
25                ;AC0=0 COMING INTO TEST.+1=AC1=1
26                ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
27                ;BITALUCRY INTO BIT15 WITH RESULT=AC1
28              ;INC03:
29 03004 111405         INC 0,2,SNR     ;AC0=0+1 AND BE NON ZERO
30                      ERROR           ;INC RESULT SHD=1
31 03005 063077         HALT
32
33
34        003005        E513=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
35 03006 155000         MOV 2,3
36 03007 136000         ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
37 03010 174004         COM 3,3,SZR     ;THEN 0
38                      ERROR
39 03011 063077         HALT
40
41
42        003011        E514=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
43 03012 101140         MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
44 03013 125120         MOVZL 1,1       ;SET UP RESULT NEXT TEST
45                      INCTS 04,15,14,1,2
46                ;AC0=1 COMING INTO TEST.+1=AC1=2
47                ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
48                ;BIT15 INTO BIT14 WITH RESULT=AC1
49              ;INC04:
50 03014 111405         INC 0,2,SNR     ;AC0=1+1 AND BE NON ZERO
51                      ERROR           ;INC RESULT SHD=2
52 03015 063077         HALT
53
54
55        003015        E515=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
56 03016 155000         MOV 2,3
57 03017 136000         ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
58 03020 174004         COM 3,3,SZR     ;THEN 0
59                      ERROR
60 03021 063077         HALT
```

```
0095  PRCST
01
02
03          003021          E516=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
04 03022 101140             MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
05 03023 125120             MOVZL 1,1       ;SET UP RESULT NEXT TEST
06                          INCTS 05,14,13,3,4
07                  ;AC0=3 COMING INTO TEST.+1=AC1=4
08                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
09                  ;BIT14 INTO BIT13 WITH RESULT=AC1
10                ;INC05:
11 03024 111405             INC 0,2,SNR     ;AC0=3+1 AND BE NON ZERO
12                          ERROR           ;INC RESULT SHD=4
13 03025 063077             HALT
14
15
16          003025          E517=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
17 03026 155000             MOV 2,3
18 03027 136000             ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
19 03030 174004             COM 3,3,SZR     ;THEN 0
20                          ERROR
21 03031 063077             HALT
22
23
24          003031          E520=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
25 03032 101140             MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
26 03033 125120             MOVZL 1,1       ;SET UP RESULT NEXT TEST
27                          INCTS 06,13,12,7,10
28                  ;AC0=7 COMING INTO TEST.+1=AC1=10
29                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
30                  ;BIT13 INTO BIT12 WITH RESULT=AC1
31                ;INC06:
32 03034 111405             INC 0,2,SNR     ;AC0=7+1 AND BE NON ZERO
33                          ERROR           ;INC RESULT SHD=10
34 03035 063077             HALT
35
36
37          003035          E521=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
38 03036 155000             MOV 2,3
39 03037 136000             ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
40 03040 174004             COM 3,3,SZR     ;THEN 0
41                          ERROR
42 03041 063077             HALT
43
44
45          003041          E522=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
46 03042 101140             MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
47 03043 125120             MOVZL 1,1       ;SET UP RESULT NEXT TEST
48                          INCTS 07,12,11,17,20
49                  ;AC0=17 COMING INTO TEST.+1=AC1=20
50                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
51                  ;BIT12 INTO BIT11 WITH RESULT=AC1
52                ;INC07:
53 03044 111405             INC 0,2,SNR     ;AC0=17+1 AND BE NON ZERO
54                          ERROR           ;INC RESULT SHD=20
55 03045 063077             HALT
56
57
58          003045          E523=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
59 03046 155000             MOV 2,3
60 03047 136000             ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
```

```
0096  PRCST
01 03050 174004             COM 3,3,SZR     ;THEN 0
02                          ERROR
03 03051 063077             HALT
04
05
06          003051          E524=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
07 03052 101140             MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
08 03053 125120             MOVZL 1,1       ;SET UP RESULT NEXT TEST
09                          INCTS 08,11,10,37,40
10                  ;AC0=37 COMING INTO TEST.+1=AC1=40
11                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
12                  ;BIT11 INTO BIT10 WITH RESULT=AC1
13                ;INC08:
14 03054 111405             INC 0,2,SNR     ;AC0=37+1 AND BE NON ZERO
15                          ERROR           ;INC RESULT SHD=40
16 03055 063077             HALT
17
18
19          003055          E525=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
20 03056 155000             MOV 2,3
21 03057 136000             ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
22 03060 174004             COM 3,3,SZR     ;THEN 0
23                          ERROR
24 03061 063077             HALT
25
26
27          003061          E526=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
28 03062 101140             MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
29 03063 125120             MOVZL 1,1       ;SET UP RESULT NEXT TEST
30                          INCTS 09,10,9,77,100
31                  ;AC0=77 COMING INTO TEST.+1=AC1=100
32                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
33                  ;BIT10 INTO BIT9 WITH RESULT=AC1
34                ;INC09:
35 03064 111405             INC 0,2,SNR     ;AC0=77+1 AND BE NON ZERO
36                          ERROR           ;INC RESULT SHD=100
37 03065 063077             HALT
38
39
40          003065          E527=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
41 03066 155000             MOV 2,3
42 03067 136000             ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
43 03070 174004             COM 3,3,SZR     ;THEN 0
44                          ERROR
45 03071 063077             HALT
46
47
48          003071          E530=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
49 03072 101140             MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
50 03073 125120             MOVZL 1,1       ;SET UP RESULT NEXT TEST
51                          INCTS 10,9,8,177,200
52                  ;AC0=177 COMING INTO TEST.+1=AC1=200
53                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
54                  ;BIT9 INTO BIT8 WITH RESULT=AC1
55                ;INC10:
56 03074 111405             INC 0,2,SNR     ;AC0=177+1 AND BE NON ZERO
57                          ERROR           ;INC RESULT SHD=200
58 03075 063077             HALT
59
60
```

```
 0097  PRCST
01        003075          E531=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
02 03076 155000           MOV 2,3
03 03077 136000           ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
04 03100 174004           COM 3,3,SZR     ;THEN 0
05                        ERROR
06 03101 063077           HALT
07
08
09        003101          E532=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
10 03102 101140           MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
11 03103 125120           MOVZL 1,1       ;SET UP RESULT NEXT TEST
12                        INCTS 11,8,7,377,400
13                  ;AC0=377 COMING INTO TEST.+1=AC1=400
14                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
15                  ;BIT8 INTO BIT7 WITH RESULT=AC1
16                ;INC11:
17 03104 111405           INC 0,2,SNR     ;AC0=377+1 AND BE NON ZERO
18                        ERROR           ;INC RESULT SHD=400
19 03105 063077           HALT
20
21
22        003105          E533=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
23 03106 155000           MOV 2,3
24 03107 136000           ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
25 03110 174004           COM 3,3,SZR     ;THEN 0
26                        ERROR
27 03111 063077           HALT
28
29
30        003111          E534=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
31 03112 101140           MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
32 03113 125120           MOVZL 1,1       ;SET UP RESULT NEXT TEST
33                        INCTS 12,7,6,777,1000
34                  ;AC0=777 COMING INTO TEST.+1=AC1=1000
35                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
36                  ;BIT7 INTO BIT6 WITH RESULT=AC1
37                ;INC12:
38 03114 111405           INC 0,2,SNR     ;AC0=777+1 AND BE NON ZERO
39                        ERROR           ;INC RESULT SHD=1000
40 03115 063077           HALT
41
42
43        003115          E535=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
44 03116 155000           MOV 2,3
45 03117 136000           ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
46 03120 174004           COM 3,3,SZR     ;THEN 0
47                        ERROR
48 03121 063077           HALT
49
50
51        003121          E536=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
52 03122 101140           MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
53 03123 125120           MOVZL 1,1       ;SET UP RESULT NEXT TEST
54                        INCTS 13,6,5,1777,2000
55                  ;AC0=1777 COMING INTO TEST.+1=AC1=2000
56                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
57                  ;BIT6 INTO BIT5 WITH RESULT=AC1
58                ;INC13:
59 03124 111405           INC 0,2,SNR     ;AC0=1777+1 AND BE NON ZERO
60                        ERROR           ;INC RESULT SHD=2000
```

```
 0098  PRCST
01 03125 063077           HALT
02
03
04        003125          E537=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
05 03126 155000           MOV 2,3
06 03127 136000           ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
07 03130 174004           COM 3,3,SZR     ;THEN 0
08                        ERROR
09 03131 063077           HALT
10
11
12        003131          E540=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
13 03132 101140           MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
14 03133 125120           MOVZL 1,1       ;SET UP RESULT NEXT TEST
15                        INCTS 14,5,4,3777,4000
16                  ;AC0=3777 COMING INTO TEST.+1=AC1=4000
17                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
18                  ;BIT5 INTO BIT4 WITH RESULT=AC1
19                ;INC14:
20 03134 111405           INC 0,2,SNR     ;AC0=3777+1 AND BE NON ZERO
21                        ERROR           ;INC RESULT SHD=4000
22 03135 063077           HALT
23
24
25        003135          E541=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
26 03136 155000           MOV 2,3
27 03137 136000           ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
28 03140 174004           COM 3,3,SZR     ;THEN 0
29                        ERROR
30 03141 063077           HALT
31
32
33        003141          E542=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
34 03142 101140           MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
35 03143 125120           MOVZL 1,1       ;SET UP RESULT NEXT TEST
36                        INCTS 15,4,3,7777,10000
37                  ;AC0=7777 COMING INTO TEST.+1=AC1=10000
38                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
39                  ;BIT4 INTO BIT3 WITH RESULT=AC1
40                ;INC15:
41 03144 111405           INC 0,2,SNR     ;AC0=7777+1 AND BE NON ZERO
42                        ERROR           ;INC RESULT SHD=10000
43 03145 063077           HALT
44
45
46        003145          E543=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
47 03146 155000           MOV 2,3
48 03147 136000           ADC 1,3         ;ADC SUM OF 1+3 SHD=-1
49 03150 174004           COM 3,3,SZR     ;THEN 0
50                        ERROR
51 03151 063077           HALT
52
53
54        003151          E544=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
55 03152 101140           MOVOL 0,0       ;SET UP CONSTANTS NEXT TEST
56 03153 125120           MOVZL 1,1       ;SET UP RESULT NEXT TEST
57                        INCTS 16,3,2,17777,20000
58                  ;AC0=17777 COMING INTO TEST.+1=AC1=20000
59                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
60                  ;BIT3 INTO BIT2 WITH RESULT=AC1
```

```
 0099  PRCST
01                ;INC16:
02 03154 111405           INC 0,2,SNR       ;AC0=17777+1 AND BE NON ZERO
03                        ERROR             ;INC RESULT SHD=20000
04 03155 063077           HALT
05
06
07       003155           E545=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
08 03156 155000           MOV 2,3
09 03157 136000           ADC 1,3           ;ADC SUM OF 1+3 SHD=-1
10 03160 174004           COM 3,3,SZR       ;THEN 0
11                        ERROR
12 03161 063077           HALT
13
14
15       003161           E546=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
16 03162 101140           MOVOL 0,0         ;SET UP CONSTANTS NEXT TEST
17 03163 125120           MOVZL 1,1         ;SET UP RESULT NEXT TEST
18                        INCTS 17,2,1,37777,40000
19                  ;AC0=37777 COMING INTO TEST.+1=AC1=40000
20                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
21                  ;BIT2 INTO BIT1 WITH RESULT=AC1
22                ;INC17:
23 03164 111405           INC 0,2,SNR       ;AC0=37777+1 AND BE NON ZERO
24                        ERROR             ;INC RESULT SHD=40000
25 03165 063077           HALT
26
27
28       003165           E547=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
29 03166 155000           MOV 2,3
30 03167 136000           ADC 1,3           ;ADC SUM OF 1+3 SHD=-1
31 03170 174004           COM 3,3,SZR       ;THEN 0
32                        ERROR
33 03171 063077           HALT
34
35
36       003171           E550=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
37 03172 101140           MOVOL 0,0         ;SET UP CONSTANTS NEXT TEST
38 03173 125120           MOVZL 1,1         ;SET UP RESULT NEXT TEST
39                        INCTS 18,1,0,77777,100000
40                  ;AC0=77777 COMING INTO TEST.+1=AC1=100000
41                  ;INC INSTRUCTION SHOULD CAUSE CARRY THROUGH
42                  ;BIT1 INTO BIT0 WITH RESULT=AC1
43                ;INC18:
44 03174 111405           INC 0,2,SNR       ;AC0=77777+1 AND BE NON ZERO
45                        ERROR             ;INC RESULT SHD=100000
46 03175 063077           HALT
47
48
49       003175           E551=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
50 03176 155000           MOV 2,3
51 03177 136000           ADC 1,3           ;ADC SUM OF 1+3 SHD=-1
52 03200 174004           COM 3,3,SZR       ;THEN 0
53                        ERROR
54 03201 063077           HALT
55
56
57       003201           E552=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
58 03202 101140           MOVOL 0,0         ;SET UP CONSTANTS NEXT TEST
59 03203 125120           MOVZL 1,1         ;SET UP RESULT NEXT TEST
```

```
10100  PRCST
01
02                ;TEST INC OF -1 AC TO=0 WITH CRY COMP 0 TO 1
03 03204 102040 INC20:  ADCO 0,0
04 03205 101424           INCZ 0,0,SZR
05                        ERROR             ;INC-1 DID NOT=0
06 03206 063077           HALT
07
08
09       003206           E553=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
10 03207 101003           MOV 0,0,SNC
11                        ERROR             ;CRY OUT DID NOT COM 0 TO 1
12 03210 063077           HALT
13
14
15       003210           E554=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
16                ;EXAMINE ACO FOR ALU FAILURE IF FIRST HALT
17
18
19                ;TEST INC OF-1 AC TO=0 AND CRY TO COMP 1 TO 0
20
21 03211 102020 INC21:  ADCZ 0,0
22 03212 101444           INCO 0,0,SZR
23                        ERROR             ;INC-1 DID NOT=0
24 03213 063077           HALT
25
26
27       003213           E555=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
28 03214 101002           MOV 0,0,SZC
29                        ERROR             ;CRY OUT DID NOT COM 1 TO 0
30 03215 063077           HALT
31
32
33       003215           E556=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
34                ;EXAMINE ACO FOR ALU FAILURE IF FIRST ERROR
```

```
01
02                ;FIRST USE OF NEG INSTRUCTION
03                ;NEG=-1 TO -1 TO VERIFY CORRECT INSTR REF
04
05 03216 102000 NEG00:  ADC 0,0
06 03217 100405         NEG 0,0,SNR
07                      ERROR           ;NEG MAY=COM+INC+SUB
08 03220 063077         HALT
09
10
11       003220         E557=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
12 03221 105224         MOVZR 0,1,SZR
13                      ERROR           ;NEG OF -1 SOMETHING OTHER THAN +1
14 03222 063077         HALT
15
16
17       003222         E560=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
18                ;EXAMINE AC0 FOR ALU ERROR
19
20                ;THE NEGATION OF +1 SHD=-1
21
22 03223 102000 NEG01:  ADC 0,0         ;SET=-1
23 03224 100140         COMOL 0,0       ;MAKES AC0=1
24 03225 100405         NEG 0,0,SNR     ;MAKES AC0=-1
25                      ERROR           ;(7)
26 03226 063077         HALT
27
28
29       003226         E561=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
30 03227 104004         COM 0,1,SZR     ;RESULT REALLY=-1
31                      ERROR           ;NEG OF +1 SOMETHING OTHER THAN -1
32 03230 063077         HALT
33
34
35       003230         E562=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
36                ;EXAMINE AC0 FOR ALU ERROR OR AC1 FOR COM
37
38                ;DEFINE MACRO FOR FURTHER TESTS OF NEG
39                      .MACRO NEGTS
40                ;AC0=^4 COMING INTO TEST IT SHD NEG TO=^5
41                ;NEG IS EQUIVALENT TO COM+INC
42                ;CARRY IS THROUGH BIT ^2 BUT SHOULD STORE AT BIT ^3
43                ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
44              ;NEG^1:
45                      NEG 0,2,SNR     ;^4+1 SHD=^5
46                      ERROR           ;CARRY WENT THROUGH BIT ^3
47                      MOV 2,3
48                      ADC 1,3         ;AC1=COM OF ^5 AC3 SHD=-1
49                      COM 3,3,SZR     ;RESULT COM -1 SHD=0
50                      ERROR           ;EXAM AC2 FOR ALU ERR SHD=^5
51                ;AC2=^5 IT SHOULD NEG AGAIN TO=AC0 OR ^4
52              ;NG^1A:
53                      NEG 2,3         ;AC2=^5 3 SHD=^4
54                      ADC 0,3         ;AC3 SHD NOW=-1
55                      COM 3,2,SZR     ;AND ITS COM=0
56                      ERROR           ;^5 DID NOT NEG TO ^4
57                ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF ^4
58                      MOVZL 0,0
59                      MOVZL 1,1       ;SET UP NEXT TEST
60              ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
```



```
01                %
```

```
01
02                      ;SET UP NEG TESTS
03                      ;START WITH AC0=1 AC1=0
04                      ;2ND TEST AC0=2 AC1=1
05
06 03231 126000                 ADC 1,1         ;SET UP AC1=-1
07 03232 120140                 COMOL 1,0       ;AC0=+1
08
09                              NEGTS 03,ALUCRY,15,1,177777
10                      ;AC0=1 COMING INTO TEST IT SHD NEG TO=177777
11                      ;NEG IS EQUIVALENT TO COM+INC
12                      ;CARRY IS THROUGH BIT ALUCRY BUT SHOULD STORE AT BIT 15
13                      ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
14                    ;NEG03:
15 03233 110405                 NEG 0,2,SNR     ;1+1 SHD=177777
16                              ERROR           ;CARRY WENT THROUGH BIT 15
17 03234 063077                 HALT
18
19
20       003234                 E563=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
21 03235 155000                 MOV 2,3
22 03236 136000                 ADC 1,3         ;AC1=COM OF 177777 AC3 SHD=-1
23 03237 174004                 COM 3,3,SZR     ;RESULT COM -1 SHD=0
24                              ERROR           ;EXAM AC2 FOR ALU ERR SHD=177777
25 03240 063077                 HALT
26
27
28       003240                 E564=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
29                      ;AC2=177777 IT SHOULD NEG AGAIN TO=AC0 OR 1
30                    ;NG03A:
31 03241 154400                 NEG 2,3         ;AC2=177777 3 SHD=1
32 03242 116000                 ADC 0,3         ;AC3 SHD NOW=-1
33 03243 170004                 COM 3,2,SZR     ;AND ITS COM=0
34                              ERROR           ;177777 DID NOT NEG TO 1
35 03244 063077                 HALT
36
37
38       003244                 E565=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
39                      ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 1
40 03245 101120                 MOVZL 0,0
41 03246 125120                 MOVZL 1,1       ;SET UP NEXT TEST
42                      ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
43                              NEGTS 04,15,14,2,177776
44                      ;AC0=2 COMING INTO TEST IT SHD NEG TO=177776
45                      ;NEG IS EQUIVALENT TO COM+INC
46                      ;CARRY IS THROUGH BIT 15 BUT SHOULD STORE AT BIT 14
47                      ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
48                    ;NEG04:
49 03247 110405                 NEG 0,2,SNR     ;2+1 SHD=177776
50                              ERROR           ;CARRY WENT THROUGH BIT 14
51 03250 063077                 HALT
52
53
54       003250                 E566=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
55 03251 155000                 MOV 2,3
56 03252 136000                 ADC 1,3         ;AC1=COM OF 177776 AC3 SHD=-1
57 03253 174004                 COM 3,3,SZR     ;RESULT COM -1 SHD=0
58                              ERROR           ;EXAM AC2 FOR ALU ERR SHD=177776
59 03254 063077                 HALT
60
```



```
01
02       003254                 E567=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
03                      ;AC2=177776 IT SHOULD NEG AGAIN TO=AC0 OR 2
04                    ;NG04A:
05 03255 154400                 NEG 2,3         ;AC2=177776 3 SHD=2
06 03256 116000                 ADC 0,3         ;AC3 SHD NOW=-1
07 03257 170004                 COM 3,2,SZR     ;AND ITS COM=0
08                              ERROR           ;177776 DID NOT NEG TO 2
09 03260 063077                 HALT
10
11
12       003260                 E570=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
13                      ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 2
14 03261 101120                 MOVZL 0,0
15 03262 125120                 MOVZL 1,1       ;SET UP NEXT TEST
16                    ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
17                              NEGTS 05,14,13,4,177774
18                      ;AC0=4 COMING INTO TEST IT SHD NEG TO=177774
19                      ;NEG IS EQUIVALENT TO COM+INC
20                      ;CARRY IS THROUGH BIT 14 BUT SHOULD STORE AT BIT 13
21                      ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
22                    ;NEG05:
23 03263 110405                 NEG 0,2,SNR     ;4+1 SHD=177774
24                              ERROR           ;CARRY WENT THROUGH BIT 13
25 03264 063077                 HALT
26
27
28       003264                 E571=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
29 03265 155000                 MOV 2,3
30 03266 136000                 ADC 1,3         ;AC1=COM OF 177774 AC3 SHD=-1
31 03267 174004                 COM 3,3,SZR     ;RESULT COM -1 SHD=0
32                              ERROR           ;EXAM AC2 FOR ALU ERR SHD=177774
33 03270 063077                 HALT
34
35
36       003270                 E572=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
37                      ;AC2=177774 IT SHOULD NEG AGAIN TO=AC0 OR 4
38                    ;NG05A:
39 03271 154400                 NEG 2,3         ;AC2=177774 3 SHD=4
40 03272 116000                 ADC 0,3         ;AC3 SHD NOW=-1
41 03273 170004                 COM 3,2,SZR     ;AND ITS COM=0
42                              ERROR           ;177774 DID NOT NEG TO 4
43 03274 063077                 HALT
44
45
46       003274                 E573=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
47                      ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 4
48 03275 101120                 MOVZL 0,0
49 03276 125120                 MOVZL 1,1       ;SET UP NEXT TEST
50                    ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
51                              NEGTS 06,13,12,10,177770
52                      ;AC0=10 COMING INTO TEST IT SHD NEG TO=177770
53                      ;NEG IS EQUIVALENT TO COM+INC
54                      ;CARRY IS THROUGH BIT 13 BUT SHOULD STORE AT BIT 12
55                      ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
56                    ;NEG06:
57 03277 110405                 NEG 0,2,SNR     ;10+1 SHD=177770
58                              ERROR           ;CARRY WENT THROUGH BIT 12
59 03300 063077                 HALT
60
```

```
0105  PRCST
01
02        003300          E574=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
03 03301 155000           MOV 2,3
04 03302 136000           ADC 1,3         ;AC1=COM OF 177770 AC3 SHD=-1
05 03303 174004           COM 3,3,SZR     ;RESULT COM -1 SHD=0
06                        ERROR           ;EXAM AC2 FOR ALU ERR SHD=177770
07 03304 063077           HALT
08
09
10        003304          E575=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11                  ;AC2=177770 IT SHOULD NEG AGAIN TO=AC0 OR 10
12                ;NG06A:
13 03305 154400           NEG 2,3         ;AC2=177770 3 SHD=10
14 03306 116000           ADC 0,3         ;AC3 SHD NOW=-1
15 03307 170004           COM 3,2,SZR     ;AND ITS COM=0
16                        ERROR           ;177770 DID NOT NEG TO 10
17 03310 063077           HALT
18
19
20        003310          E576=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
21                  ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 10
22 03311 101120           MOVZL 0,0
23 03312 125120           MOVZL 1,1       ;SET UP NEXT TEST
24                ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
25                        NEGTS 07,12,11,20,177760
26                  ;AC0=20 COMING INTO TEST IT SHD NEG TO=177760
27                  ;NEG IS EQUIVALENT TO COM+INC
28                  ;CARRY IS THROUGH BIT 12 BUT SHOULD STORE AT BIT 11
29                  ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
30                ;NEG07:
31 03313 110405           NEG 0,2,SNR     ;20+1 SHD=177760
32                        ERROR           ;CARRY WENT THROUGH BIT 11
33 03314 063077           HALT
34
35
36        003314          E577=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
37 03315 155000           MOV 2,3
38 03316 136000           ADC 1,3         ;AC1=COM OF 177760 AC3 SHD=-1
39 03317 174004           COM 3,3,SZR     ;RESULT COM -1 SHD=0
40                        ERROR           ;EXAM AC2 FOR ALU ERR SHD=177760
41 03320 063077           HALT
42
43
44        003320          E600=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45                  ;AC2=177760 IT SHOULD NEG AGAIN TO=AC0 OR 20
46                ;NG07A:
47 03321 154400           NEG 2,3         ;AC2=177760 3 SHD=20
48 03322 116000           ADC 0,3         ;AC3 SHD NOW=-1
49 03323 170004           COM 3,2,SZR     ;AND ITS COM=0
50                        ERROR           ;177760 DID NOT NEG TO 20
51 03324 063077           HALT
52
53
54        003324          E601=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
55                  ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 20
56 03325 101120           MOVZL 0,0
57 03326 125120           MOVZL 1,1       ;SET UP NEXT TEST
58                ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
59                        NEGTS 08,11,10,40,177740
60                  ;AC0=40 COMING INTO TEST IT SHD NEG TO=177740
```

```
0106  PRCST
01                  ;NEG IS EQUIVALENT TO COM+INC
02                  ;CARRY IS THROUGH BIT 11 BUT SHOULD STORE AT BIT 10
03                  ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
04                ;NEG08:
05 03327 110405           NEG 0,2,SNR     ;40+1 SHD=177740
06                        ERROR           ;CARRY WENT THROUGH BIT 10
07 03330 063077           HALT
08
09
10        003330          E602=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11 03331 155000           MOV 2,3
12 03332 136000           ADC 1,3         ;AC1=COM OF 177740 AC3 SHD=-1
13 03333 174004           COM 3,3,SZR     ;RESULT COM -1 SHD=0
14                        ERROR           ;EXAM AC2 FOR ALU ERR SHD=177740
15 03334 063077           HALT
16
17
18        003334          E603=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
19                  ;AC2=177740 IT SHOULD NEG AGAIN TO=AC0 OR 40
20                ;NG08A:
21 03335 154400           NEG 2,3         ;AC2=177740 3 SHD=40
22 03336 116000           ADC 0,3         ;AC3 SHD NOW=-1
23 03337 170004           COM 3,2,SZR     ;AND ITS COM=0
24                        ERROR           ;177740 DID NOT NEG TO 40
25 03340 063077           HALT
26
27
28        003340          E604=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
29                  ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 40
30 03341 101120           MOVZL 0,0
31 03342 125120           MOVZL 1,1       ;SET UP NEXT TEST
32                ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
33                        NEGTS 09,10,9,100,177700
34                  ;AC0=100 COMING INTO TEST IT SHD NEG TO=177700
35                  ;NEG IS EQUIVALENT TO COM+INC
36                  ;CARRY IS THROUGH BIT 10 BUT SHOULD STORE AT BIT 9
37                  ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
38                ;NEG09:
39 03343 110405           NEG 0,2,SNR     ;100+1 SHD=177700
40                        ERROR           ;CARRY WENT THROUGH BIT 9
41 03344 063077           HALT
42
43
44        003344          E605=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45 03345 155000           MOV 2,3
46 03346 136000           ADC 1,3         ;AC1=COM OF 177700 AC3 SHD=-1
47 03347 174004           COM 3,3,SZR     ;RESULT COM -1 SHD=0
48                        ERROR           ;EXAM AC2 FOR ALU ERR SHD=177700
49 03350 063077           HALT
50
51
52        003350          E606=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
53                  ;AC2=177700 IT SHOULD NEG AGAIN TO=AC0 OR 100
54                ;NG09A:
55 03351 154400           NEG 2,3         ;AC2=177700 3 SHD=100
56 03352 116000           ADC 0,3         ;AC3 SHD NOW=-1
57 03353 170004           COM 3,2,SZR     ;AND ITS COM=0
58                        ERROR           ;177700 DID NOT NEG TO 100
59 03354 063077           HALT
60
```

```
 0107  PRCST
01
02        003354          E607=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
03                ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 100
04 03355 101120           MOVZL 0,0
05 03356 125120           MOVZL 1,1       ;SET UP NEXT TEST
06                ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
07                        NEGTS 10,9,8,200,177600
08                  ;AC0=200 COMING INTO TEST IT SHD NEG TO=177600
09                  ;NEG IS EQUIVALENT TO COM+INC
10                  ;CARRY IS THROUGH BIT 9 BUT SHOULD STORE AT BIT 8
11                  ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
12                ;NEG10:
13 03357 110405           NEG 0,2,SNR     ;200+1 SHD=177600
14                        ERROR           ;CARRY WENT THROUGH BIT 8
15 03360 063077           HALT
16
17
18        003360          E610=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
19 03361 155000           MOV 2,3
20 03362 136000           ADC 1,3         ;AC1=COM OF 177600 AC3 SHD=-1
21 03363 174004           COM 3,3,SZR     ;RESULT COM -1 SHD=0
22                        ERROR           ;EXAM AC2 FOR ALU ERR SHD=177600
23 03364 063077           HALT
24
25
26        003364          E611=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
27                  ;AC2=177600 IT SHOULD NEG AGAIN TO=AC0 OR 200
28                ;NG10A:
29 03365 154400           NEG 2,3         ;AC2=177600 3 SHD=200
30 03366 116000           ADC 0,3         ;AC3 SHD NOW=-1
31 03367 170004           COM 3,2,SZR     ;AND ITS COM=0
32                        ERROR           ;177600 DID NOT NEG TO 200
33 03370 063077           HALT
34
35
36        003370          E612=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
37                ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 200
38 03371 101120           MOVZL 0,0
39 03372 125120           MOVZL 1,1       ;SET UP NEXT TEST
40                ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
41                        NEGTS 11,8,7,400,177400
42                  ;AC0=400 COMING INTO TEST IT SHD NEG TO=177400
43                  ;NEG IS EQUIVALENT TO COM+INC
44                  ;CARRY IS THROUGH BIT 8 BUT SHOULD STORE AT BIT 7
45                  ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
46                ;NEG11:
47 03373 110405           NEG 0,2,SNR     ;400+1 SHD=177400
48                        ERROR           ;CARRY WENT THROUGH BIT 7
49 03374 063077           HALT
50
51
52        003374          E613=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
53 03375 155000           MOV 2,3
54 03376 136000           ADC 1,3         ;AC1=COM OF 177400 AC3 SHD=-1
55 03377 174004           COM 3,3,SZR     ;RESULT COM -1 SHD=0
56                        ERROR           ;EXAM AC2 FOR ALU ERR SHD=177400
57 03400 063077           HALT
58
59
60        003400          E614=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0108  PRCST
01                  ;AC2=177400 IT SHOULD NEG AGAIN TO=AC0 OR 400
02                ;NG11A:
03 03401 154400           NEG 2,3         ;AC2=177400 3 SHD=400
04 03402 116000           ADC 0,3         ;AC3 SHD NOW=-1
05 03403 170004           COM 3,2,SZR     ;AND ITS COM=0
06                        ERROR           ;177400 DID NOT NEG TO 400
07 03404 063077           HALT
08
09
10        003404          E615=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11                ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 400
12 03405 101120           MOVZL 0,0
13 03406 125120           MOVZL 1,1       ;SET UP NEXT TEST
14                ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
15                        NEGTS 12,7,6,100,177000
16                  ;AC0=100 COMING INTO TEST IT SHD NEG TO=177000
17                  ;NEG IS EQUIVALENT TO COM+INC
18                  ;CARRY IS THROUGH BIT 7 BUT SHOULD STORE AT BIT 6
19                  ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
20                ;NEG12:
21 03407 110405           NEG 0,2,SNR     ;100+1 SHD=177000
22                        ERROR           ;CARRY WENT THROUGH BIT 6
23 03410 063077           HALT
24
25
26        003410          E616=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
27 03411 155000           MOV 2,3
28 03412 136000           ADC 1,3         ;AC1=COM OF 177000 AC3 SHD=-1
29 03413 174004           COM 3,3,SZR     ;RESULT COM -1 SHD=0
30                        ERROR           ;EXAM AC2 FOR ALU ERR SHD=177000
31 03414 063077           HALT
32
33
34        003414          E617=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
35                  ;AC2=177000 IT SHOULD NEG AGAIN TO=AC0 OR 100
36                ;NG12A:
37 03415 154400           NEG 2,3         ;AC2=177000 3 SHD=100
38 03416 116000           ADC 0,3         ;AC3 SHD NOW=-1
39 03417 170004           COM 3,2,SZR     ;AND ITS COM=0
40                        ERROR           ;177000 DID NOT NEG TO 100
41 03420 063077           HALT
42
43
44        003420          E620=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45                ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 100
46 03421 101120           MOVZL 0,0
47 03422 125120           MOVZL 1,1       ;SET UP NEXT TEST
48                ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
49                        NEGTS 13,6,5,2000,176000
50                  ;AC0=2000 COMING INTO TEST IT SHD NEG TO=176000
51                  ;NEG IS EQUIVALENT TO COM+INC
52                  ;CARRY IS THROUGH BIT 6 BUT SHOULD STORE AT BIT 5
53                  ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
54                ;NEG13:
55 03423 110405           NEG 0,2,SNR     ;2000+1 SHD=176000
56                        ERROR           ;CARRY WENT THROUGH BIT 5
57 03424 063077           HALT
58
59
60        003424          E621=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0109  PRCST
01 03425 155000          MOV 2,3
02 03426 136000          ADC 1,3          ;AC1=COM OF 176000 AC3 SHD=-1
03 03427 174004          COM 3,3,SZR      ;RESULT COM -1 SHD=0
04                       ERROR            ;EXAM AC2 FOR ALU ERR SHD=176000
05 03430 063077          HALT
06
07
08       003430          E622=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
09                ;AC2=176000 IT SHOULD NEG AGAIN TO=AC0 OR 2000
10              ;NG13A:
11 03431 154400          NEG 2,3          ;AC2=176000 3 SHD=2000
12 03432 116000          ADC 0,3          ;AC3 SHD NOW=-1
13 03433 170004          COM 3,2,SZR      ;AND ITS COM=0
14                       ERROR            ;176000 DID NOT NEG TO 2000
15 03434 063077          HALT
16
17
18       003434          E623=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
19                ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 2000
20 03435 101120          MOVZL 0,0
21 03436 125120          MOVZL 1,1        ;SET UP NEXT TEST
22              ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
23                       NEGTS 14,5,4,4000,174000
24                ;AC0=4000 COMING INTO TEST IT SHD NEG TO=174000
25                ;NEG IS EQUIVALENT TO COM+INC
26                ;CARRY IS THROUGH BIT 5 BUT SHOULD STORE AT BIT 4
27                ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
28              ;NEG14:
29 03437 110405          NEG 0,2,SNR      ;4000+1 SHD=174000
30                       ERROR            ;CARRY WENT THROUGH BIT 4
31 03440 063077          HALT
32
33
34       003440          E624=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
35 03441 155000          MOV 2,3
36 03442 136000          ADC 1,3          ;AC1=COM OF 174000 AC3 SHD=-1
37 03443 174004          COM 3,3,SZR      ;RESULT COM -1 SHD=0
38                       ERROR            ;EXAM AC2 FOR ALU ERR SHD=174000
39 03444 063077          HALT
40
41
42       003444          E625=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
43                ;AC2=174000 IT SHOULD NEG AGAIN TO=AC0 OR 4000
44              ;NG14A:
45 03445 154400          NEG 2,3          ;AC2=174000 3 SHD=4000
46 03446 116000          ADC 0,3          ;AC3 SHD NOW=-1
47 03447 170004          COM 3,2,SZR      ;AND ITS COM=0
48                       ERROR            ;174000 DID NOT NEG TO 4000
49 03450 063077          HALT
50
51
52       003450          E626=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
53                ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 4000
54 03451 101120          MOVZL 0,0
55 03452 125120          MOVZL 1,1        ;SET UP NEXT TEST
56              ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
57                       NEGTS 15,4,3,10000,170000
58                ;AC0=10000 COMING INTO TEST IT SHD NEG TO=170000
59                ;NEG IS EQUIVALENT TO COM+INC
60                ;CARRY IS THROUGH BIT 4 BUT SHOULD STORE AT BIT 3
```

```
 0110  PRCST
01                ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
02              ;NEG15:
03 03453 110405          NEG 0,2,SNR      ;10000+1 SHD=170000
04                       ERROR            ;CARRY WENT THROUGH BIT 3
05 03454 063077          HALT
06
07
08       003454          E627=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
09 03455 155000          MOV 2,3
10 03456 136000          ADC 1,3          ;AC1=COM OF 170000 AC3 SHD=-1
11 03457 174004          COM 3,3,SZR      ;RESULT COM -1 SHD=0
12                       ERROR            ;EXAM AC2 FOR ALU ERR SHD=170000
13 03460 063077          HALT
14
15
16       003460          E630=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
17                ;AC2=170000 IT SHOULD NEG AGAIN TO=AC0 OR 10000
18              ;NG15A:
19 03461 154400          NEG 2,3          ;AC2=170000 3 SHD=10000
20 03462 116000          ADC 0,3          ;AC3 SHD NOW=-1
21 03463 170004          COM 3,2,SZR      ;AND ITS COM=0
22                       ERROR            ;170000 DID NOT NEG TO 10000
23 03464 063077          HALT
24
25
26       003464          E631=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
27                ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 10000
28 03465 101120          MOVZL 0,0
29 03466 125120          MOVZL 1,1        ;SET UP NEXT TEST
30              ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
31                       NEGTS 16,3,1,20000,160000
32                ;AC0=20000 COMING INTO TEST IT SHD NEG TO=160000
33                ;NEG IS EQUIVALENT TO COM+INC
34                ;CARRY IS THROUGH BIT 3 BUT SHOULD STORE AT BIT 1
35                ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
36              ;NEG16:
37 03467 110405          NEG 0,2,SNR      ;20000+1 SHD=160000
38                       ERROR            ;CARRY WENT THROUGH BIT 1
39 03470 063077          HALT
40
41
42       003470          E632=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
43 03471 155000          MOV 2,3
44 03472 136000          ADC 1,3          ;AC1=COM OF 160000 AC3 SHD=-1
45 03473 174004          COM 3,3,SZR      ;RESULT COM -1 SHD=0
46                       ERROR            ;EXAM AC2 FOR ALU ERR SHD=160000
47 03474 063077          HALT
48
49
50       003474          E633=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
51                ;AC2=160000 IT SHOULD NEG AGAIN TO=AC0 OR 20000
52              ;NG16A:
53 03475 154400          NEG 2,3          ;AC2=160000 3 SHD=20000
54 03476 116000          ADC 0,3          ;AC3 SHD NOW=-1
55 03477 170004          COM 3,2,SZR      ;AND ITS COM=0
56                       ERROR            ;160000 DID NOT NEG TO 20000
57 03500 063077          HALT
58
59
60       003500          E634=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0111  PRCST
01                ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 20000
02 03501 101120           MOVZL 0,0
03 03502 125120           MOVZL 1,1           ;SET UP NEXT TEST
04                ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
05                        NEGTS 17,2,1,40000,140000
06                  ;AC0=40000 COMING INTO TEST IT SHD NEG TO=140000
07                  ;NEG IS EQUIVALENT TO COM+INC
08                  ;CARRY IS THROUGH BIT 2 BUT SHOULD STORE AT BIT 1
09                  ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
10                ;NEG17:
11 03503 110405           NEG 0,2,SNR         ;40000+1 SHD=140000
12                        ERROR               ;CARRY WENT THROUGH BIT 1
13 03504 063077           HALT
14
15
16        003504          E635=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
17 03505 155000           MOV 2,3
18 03506 136000           ADC 1,3             ;AC1=COM OF 140000 AC3 SHD=-1
19 03507 174004           COM 3,3,SZR         ;RESULT COM -1 SHD=0
20                        ERROR               ;EXAM AC2 FOR ALU ERR SHD=140000
21 03510 063077           HALT
22
23
24        003510          E636=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
25                  ;AC2=140000 IT SHOULD NEG AGAIN TO=AC0 OR 40000
26                ;NG17A:
27 03511 154400           NEG 2,3             ;AC2=140000 3 SHD=40000
28 03512 116000           ADC 0,3             ;AC3 SHD NOW=-1
29 03513 170004           COM 3,2,SZR         ;AND ITS COM=0
30                        ERROR               ;140000 DID NOT NEG TO 40000
31 03514 063077           HALT
32
33
34        003514          E637=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
35                  ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 40000
36 03515 101120           MOVZL 0,0
37 03516 125120           MOVZL 1,1           ;SET UP NEXT TEST
38                ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
39                        NEGTS 18,1,0,100000,100000
40                  ;AC0=100000 COMING INTO TEST IT SHD NEG TO=100000
41                  ;NEG IS EQUIVALENT TO COM+INC
42                  ;CARRY IS THROUGH BIT 1 BUT SHOULD STORE AT BIT 0
43                  ;AND HIGHER ORDER BITS SHOULD REMAIN 1'S
44                ;NEG18:
45 03517 110405           NEG 0,2,SNR         ;100000+1 SHD=100000
46                        ERROR               ;CARRY WENT THROUGH BIT 0
47 03520 063077           HALT
48
49
50        003520          E640=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
51 03521 155000           MOV 2,3
52 03522 136000           ADC 1,3             ;AC1=COM OF 100000 AC3 SHD=-1
53 03523 174004           COM 3,3,SZR         ;RESULT COM -1 SHD=0
54                        ERROR               ;EXAM AC2 FOR ALU ERR SHD=100000
55 03524 063077           HALT
56
57
58        003524          E641=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
59                  ;AC2=100000 IT SHOULD NEG AGAIN TO=AC0 OR 100000
60                ;NG18A:
```

```
 0112  PRCST
01 03525 154400           NEG 2,3             ;AC2=100000 3 SHD=100000
02 03526 116000           ADC 0,3             ;AC3 SHD NOW=-1
03 03527 170004           COM 3,2,SZR         ;AND ITS COM=0
04                        ERROR               ;100000 DID NOT NEG TO 100000
05 03530 063077           HALT
06
07
08        003530          E642=.-1            ;ERR # (8)- USED FOR ERROR DICTIONARY
09                  ;EXAMINE AC3 FOR ALU FAILURE SHD=-1 CREATED BY ADC OF 100000
10 03531 101120           MOVZL 0,0
11 03532 125120           MOVZL 1,1           ;SET UP NEXT TEST
12                ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE IR13 AT SETTRAP AND GATE
```

```
10113  PRCST
01                ;AC0=0 COMING INTO TEST IT SHD NEG TO =0
02                ;CARRY IS THROUGH BIT 0 AND SHOULD COM CRY
03 03533 110404 NEG19:  NEG 0,2,SZR       ;-0+1=0
04                      ERROR             ;SEE AC2 NOT=0
05 03534 063077         HALT
06
07
08       003534         E643=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
09 03535 155000         MOV 2,3
10 03536 136000         ADC 1,3
11 03537 174004         COM 3,3,SZR       ;SKP AC2 REALLY=0
12                      ERROR             ;SEE AC2 SHD =0
13 03540 063077         HALT
14
15
16       003540         E644=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
17                ;AC2 =0 IT SHD NEGATE TO =0 IN AC3
18 03541 154400 NG19A:  NEG 2,3
19 03542 116000         ADC 0,3
20 03543 170004         COM 3,2,SZR
21                      ERROR             ;0 DID NOT NEG TO 0
22 03544 063077         HALT
23
24
25       003544         E645=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
26                ;EXAMINE AC3 FOR ALU FAILURE SHD =-1 CREATED BY ADC OF 0
27
28                  ;NEGATING 0 SHOULD COMPLIMENT CRY 0 TO 1
29
30 03545 102000 NEG20:  ADC 0,0
31 03546 100040         COMO 0,0
32 03547 100423         NEGZ 0,0,SNC
33                      ERROR             ;NEG 0 DID NOT SET CRY
34 03550 063077         HALT
35
36
37       003550         E646=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
38
39                  ;NEGATING 0 SHOULD COM CRY 1 TO 0
40
41 03551 102000 NEG21:  ADC 0,0
42 03552 100020         COMZ 0,0
43 03553 100442         NEGO 0,0,SZC
44                      ERROR             ;NEG 0 DID NOT CLR CRY
45 03554 063077         HALT
46
47
48       003554         E647=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10114  PRCST
01
02                ;TEST FOR EXISTANCE OF SUB INSTRUCTION
03                ;FIRST TIME FOR SUB
04
05 03555 102000 SUB00:  ADC 0,0           ;AC0=-1
06 03556 102404         SUB 0,0,SZR       ;SUB -1 FROM -1
07                      ERROR             ;EXAMINE AC0 FOR ERR SHD=0
08 03557 063077         HALT
09
10
11       003557         E650=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
12                ;SUBTRACT +1 FROM +1 CHECK FOR 0 RESULT (2ND SUB)
13 03560 102000 SUB01:  ADC 0,0
14 03561 100405         NEG 0,0,SNR       ;SET AC0=+1
15                      ERROR             ;SET UP FAILED AC0 SHD=+1
16 03562 063077         HALT
17
18
19       003562         E651=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
20 03563 102404         SUB 0,0,SZR       ;+1-+1 SHD=0
21                      ERROR             ;SUB +1-+1 FAILED SEE AC0
22 03564 063077         HALT
23
24
25       003564         E652=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
26
27                ;DEFINE SUBTRACT "SUB" TEST MACRO
28
29                      .MACRO SUBTS
30                ;AC0=^2 COMING INTO THIS TEST ^2-^2 SHOULD=0 RESULT
31                ;0-^2 NEGATED-^2 SHD=0 INTO AC3
32              ;SUB^1:
33                      MOVO 0,1
34                      SUBZ 0,1,SZR
35                      ERROR             ;^2-^2 SEE AC1 SHD=0
36                      MOV 0,0,S0N       ;0 CRY SHD =1 FROM CRYOUT
37                      ERROR   ;AC0=^2(?) CRY SHD=1
38                      ADC 2,2
39                      COM 2,2 ;MAKE AC2=0 FOR TEST
40                ;0-^2 SHOULD=-^2 NEGATED TO AC3
41                      SUB 0,2           ;0-^2
42                      NEGZ 2,3          ;NEGATED SHD=^2
43                      SUBO 0,3,SZR      ;^2-^2 SHD=0 AGAIN
44                      ERROR
45                      MOV 0,0,SZC       ;CRY SHD COMP 1 TO 0
46                      ERROR             ;CRY OUT FAILED
47                      MOVZL 0,0         ;SET UP NEXT TEST
48              %
49
50                ;SET UP SUBTRACT TESTS
51 03565 102000         ADC 0,0
52 03566 100140         COMOL 0,0
```

```
10115  PRCST
01
02                      SUBTS 02,1
03                  ;AC0=1 COMING INTO THIS TEST 1-1 SHOULD=0 RESULT
04                  ;0-1 NEGATED-1 SHD=0 INTO AC3
05                ;SUB02:
06 03567 105040         MOVO 0,1
07 03570 106424         SUBZ 0,1,SZR
08                      ERROR           ;1-1 SEE AC1 SHD=0
09 03571 063077         HALT
10
11
12       003571         E653=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
13 03572 101007         MOV 0,0,SBN     ;0 CRY SHD =1 FROM CRYOUT
14                      ERROR   ;AC0=1(?) CRY SHD=1
15 03573 063077         HALT
16
17
18       003573         E654=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
19 03574 152000         ADC 2,2
20 03575 150000         COM 2,2 ;MAKE AC2=0 FOR TEST
21                  ;0-1 SHOULD=-1 NEGATED TO AC3
22 03576 112400         SUB 0,2         ;0-1
23 03577 154420         NEGZ 2,3        ;NEGATED SHD=1
24 03600 116444         SUBO 0,3,SZR    ;1-1 SHD=0 AGAIN
25                      ERROR
26 03601 063077         HALT
27
28
29       003601         E655=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
30 03602 101002         MOV 0,0,SZC     ;CRY SHD COMP 1 TO 0
31                      ERROR           ;CRY OUT FAILED
32 03603 063077         HALT
33
34
35       003603         E656=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
36 03604 101120         MOVZL 0,0       ;SET UP NEXT TEST
37                      SUBTS 03,2
38                  ;AC0=2 COMING INTO THIS TEST 2-2 SHOULD=0 RESULT
39                  ;0-2 NEGATED-2 SHD=0 INTO AC3
40                ;SUB03:
41 03605 105040         MOVO 0,1
42 03606 106424         SUBZ 0,1,SZR
43                      ERROR           ;2-2 SEE AC1 SHD=0
44 03607 063077         HALT
45
46
47       003607         E657=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
48 03610 101007         MOV 0,0,SBN     ;0 CRY SHD =1 FROM CRYOUT
49                      ERROR   ;AC0=2(?) CRY SHD=1
50 03611 063077         HALT
51
52
53       003611         E660=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
54 03612 152000         ADC 2,2
55 03613 150000         COM 2,2 ;MAKE AC2=0 FOR TEST
56                  ;0-2 SHOULD=-2 NEGATED TO AC3
57 03614 112400         SUB 0,2         ;0-2
58 03615 154420         NEGZ 2,3        ;NEGATED SHD=2
59 03616 116444         SUBO 0,3,SZR    ;2-2 SHD=0 AGAIN
60                      ERROR
```

```
 0116  PRCST
01 03617 063077         HALT
02
03
04       003617         E661=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
05 03620 101002         MOV 0,0,SZC     ;CRY SHD COMP 1 TO 0
06                      ERROR           ;CRY OUT FAILED
07 03621 063077         HALT
08
09
10       003621         E662=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11 03622 101120         MOVZL 0,0       ;SET UP NEXT TEST
12                      SUBTS 04,4
13                  ;AC0=4 COMING INTO THIS TEST 4-4 SHOULD=0 RESULT
14                  ;0-4 NEGATED-4 SHD=0 INTO AC3
15                ;SUB04:
16 03623 105040         MOVO 0,1
17 03624 106424         SUBZ 0,1,SZR
18                      ERROR           ;4-4 SEE AC1 SHD=0
19 03625 063077         HALT
20
21
22       003625         E663=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
23 03626 101007         MOV 0,0,SBN     ;0 CRY SHD =1 FROM CRYOUT
24                      ERROR   ;AC0=4(?) CRY SHD=1
25 03627 063077         HALT
26
27
28       003627         E664=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
29 03630 152000         ADC 2,2
30 03631 150000         COM 2,2 ;MAKE AC2=0 FOR TEST
31                  ;0-4 SHOULD=-4 NEGATED TO AC3
32 03632 112400         SUB 0,2         ;0-4
33 03633 154420         NEGZ 2,3        ;NEGATED SHD=4
34 03634 116444         SUBO 0,3,SZR    ;4-4 SHD=0 AGAIN
35                      ERROR
36 03635 063077         HALT
37
38
39       003635         E665=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
40 03636 101002         MOV 0,0,SZC     ;CRY SHD COMP 1 TO 0
41                      ERROR           ;CRY OUT FAILED
42 03637 063077         HALT
43
44
45       003637         E666=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
46 03640 101120         MOVZL 0,0       ;SET UP NEXT TEST
47                      SUBTS 05,10
48                  ;AC0=10 COMING INTO THIS TEST 10-10 SHOULD=0 RESULT
49                  ;0-10 NEGATED-10 SHD=0 INTO AC3
50                ;SUB05:
51 03641 105040         MOVO 0,1
52 03642 106424         SUBZ 0,1,SZR
53                      ERROR           ;10-10 SEE AC1 SHD=0
54 03643 063077         HALT
55
56
57       003643         E667=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
58 03644 101007         MOV 0,0,SBN     ;0 CRY SHD =1 FROM CRYOUT
59                      ERROR   ;AC0=10(?) CRY SHD=1
60 03645 063077         HALT
```

```
 0117  PRCST
01
02
03        003645          E670=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
04 03646 152000           ADC 2,2
05 03647 150000           COM 2,2 ;MAKE AC2=0 FOR TEST
06                  ;0-10 SHOULD=-10 NEGATED TO AC3
07 03650 112400           SUB 0,2           ;0-10
08 03651 154420           NEGZ 2,3          ;NEGATED SHD=10
09 03652 116444           SUBO 0,3,SZR      ;10-10 SHD=0 AGAIN
10                        ERROR
11 03653 063077           HALT
12
13
14        003653          E671=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
15 03654 101002           MOV 0,0,SZC       ;CRY SHD COMP 1 TO 0
16                        ERROR             ;CRY OUT FAILED
17 03655 063077           HALT
18
19
20        003655          E672=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
21 03656 101120           MOVZL 0,0         ;SET UP NEXT TEST
22                        SUBTS 06,20
23                  ;AC0=20 COMING INTO THIS TEST 20-20 SHOULD=0 RESULT
24                  ;0-20 NEGATED-20 SHD=0 INTO AC3
25                ;SUB06:
26 03657 105040           MOVO 0,1
27 03660 106424           SUBZ 0,1,SZR
28                        ERROR             ;20-20 SEE AC1 SHD=0
29 03661 063077           HALT
30
31
32        003661          E673=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
33 03662 101007           MOV 0,0,SBN       ;0 CRY SHD =1 FROM CRYOUT
34                        ERROR    ;AC0=20(?) CRY SHD=1
35 03663 063077           HALT
36
37
38        003663          E674=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
39 03664 152000           ADC 2,2
40 03665 150000           COM 2,2 ;MAKE AC2=0 FOR TEST
41                  ;0-20 SHOULD=-20 NEGATED TO AC3
42 03666 112400           SUB 0,2           ;0-20
43 03667 154420           NEGZ 2,3          ;NEGATED SHD=20
44 03670 116444           SUBO 0,3,SZR      ;20-20 SHD=0 AGAIN
45                        ERROR
46 03671 063077           HALT
47
48
49        003671          E675=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
50 03672 101002           MOV 0,0,SZC       ;CRY SHD COMP 1 TO 0
51                        ERROR             ;CRY OUT FAILED
52 03673 063077           HALT
53
54
55        003673          E676=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
56 03674 101120           MOVZL 0,0         ;SET UP NEXT TEST
57                        SUBTS 07,40
58                  ;AC0=40 COMING INTO THIS TEST 40-40 SHOULD=0 RESULT
59                  ;0-40 NEGATED-40 SHD=0 INTO AC3
60                ;SUB07:
```

```
 0118  PRCST
01 03675 105040           MOVO 0,1
02 03676 106424           SUBZ 0,1,SZR
03                        ERROR             ;40-40 SEE AC1 SHD=0
04 03677 063077           HALT
05
06
07        003677          E677=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
08 03700 101007           MOV 0,0,SBN       ;0 CRY SHD =1 FROM CRYOUT
09                        ERROR    ;AC0=40(?) CRY SHD=1
10 03701 063077           HALT
11
12
13        003701          E700=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
14 03702 152000           ADC 2,2
15 03703 150000           COM 2,2 ;MAKE AC2=0 FOR TEST
16                  ;0-40 SHOULD=-40 NEGATED TO AC3
17 03704 112400           SUB 0,2           ;0-40
18 03705 154420           NEGZ 2,3          ;NEGATED SHD=40
19 03706 116444           SUBO 0,3,SZR      ;40-40 SHD=0 AGAIN
20                        ERROR
21 03707 063077           HALT
22
23
24        003707          E701=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
25 03710 101002           MOV 0,0,SZC       ;CRY SHD COMP 1 TO 0
26                        ERROR             ;CRY OUT FAILED
27 03711 063077           HALT
28
29
30        003711          E702=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
31 03712 101120           MOVZL 0,0         ;SET UP NEXT TEST
32                        SUBTS 08,100
33                  ;AC0=100 COMING INTO THIS TEST 100-100 SHOULD=0 RESULT
34                  ;0-100 NEGATED-100 SHD=0 INTO AC3
35                ;SUB08:
36 03713 105040           MOVO 0,1
37 03714 106424           SUBZ 0,1,SZR
38                        ERROR             ;100-100 SEE AC1 SHD=0
39 03715 063077           HALT
40
41
42        003715          E703=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
43 03716 101007           MOV 0,0,SBN       ;0 CRY SHD =1 FROM CRYOUT
44                        ERROR    ;AC0=100(?) CRY SHD=1
45 03717 063077           HALT
46
47
48        003717          E704=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
49 03720 152000           ADC 2,2
50 03721 150000           COM 2,2 ;MAKE AC2=0 FOR TEST
51                  ;0-100 SHOULD=-100 NEGATED TO AC3
52 03722 112400           SUB 0,2           ;0-100
53 03723 154420           NEGZ 2,3          ;NEGATED SHD=100
54 03724 116444           SUBO 0,3,SZR      ;100-100 SHD=0 AGAIN
55                        ERROR
56 03725 063077           HALT
57
58
59        003725          E705=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
60 03726 101002           MOV 0,0,SZC       ;CRY SHD COMP 1 TO 0
```

```
 0119  PRCST
01                      ERROR           ;CRY OUT FAILED
02 03727 063077         HALT
03
04
05       003727         E706=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
06 03730 101120         MOVZL 0,0       ;SET UP NEXT TEST
07                      SUBTS 09,200
08                ;AC0=200 COMING INTO THIS TEST 200-200 SHOULD=0 RESULT
09                ;0-200 NEGATED=200 SHD=0 INTO AC3
10              ;SUB09:
11 03731 105040         MOVO 0,1
12 03732 106424         SUBZ 0,1,SZR
13                      ERROR           ;200-200 SEE AC1 SHD=0
14 03733 063077         HALT
15
16
17       003733         E707=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
18 03734 101007         MOV 0,0,SBN     ;0 CRY SHD =1 FROM CRYOUT
19                      ERROR   ;AC0=200(?) CRY SHD=1
20 03735 063077         HALT
21
22
23       003735         E710=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
24 03736 152000         ADC 2,2
25 03737 150000         COM 2,2 ;MAKE AC2=0 FOR TEST
26                ;0-200 SHOULD=-200 NEGATED TO AC3
27 03740 112400         SUB 0,2         ;0-200
28 03741 154420         NEGZ 2,3        ;NEGATED SHD=200
29 03742 116444         SUBO 0,3,SZR    ;200-200 SHD=0 AGAIN
30                      ERROR
31 03743 063077         HALT
32
33
34       003743         E711=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
35 03744 101002         MOV 0,0,SZC     ;CRY SHD COMP 1 TO 0
36                      ERROR           ;CRY OUT FAILED
37 03745 063077         HALT
38
39
40       003745         E712=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
41 03746 101120         MOVZL 0,0       ;SET UP NEXT TEST
42                      SUBTS 10,400
43                ;AC0=400 COMING INTO THIS TEST 400-400 SHOULD=0 RESULT
44                ;0-400 NEGATED=400 SHD=0 INTO AC3
45              ;SUB10:
46 03747 105040         MOVO 0,1
47 03750 106424         SUBZ 0,1,SZR
48                      ERROR           ;400-400 SEE AC1 SHD=0
49 03751 063077         HALT
50
51
52       003751         E713=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
53 03752 101007         MOV 0,0,SBN     ;0 CRY SHD =1 FROM CRYOUT
54                      ERROR   ;AC0=400(?) CRY SHD=1
55 03753 063077         HALT
56
57
58       003753         E714=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
59 03754 152000         ADC 2,2
60 03755 150000         COM 2,2 ;MAKE AC2=0 FOR TEST
```

```
 0120  PRCST
01                ;0-400 SHOULD=-400 NEGATED TO AC3
02 03756 112400         SUB 0,2         ;0-400
03 03757 154420         NEGZ 2,3        ;NEGATED SHD=400
04 03760 116444         SUBO 0,3,SZR    ;400-400 SHD=0 AGAIN
05                      ERROR
06 03761 063077         HALT
07
08
09       003761         E715=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
10 03762 101002         MOV 0,0,SZC     ;CRY SHD COMP 1 TO 0
11                      ERROR           ;CRY OUT FAILED
12 03763 063077         HALT
13
14
15       003763         E716=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
16 03764 101120         MOVZL 0,0       ;SET UP NEXT TEST
17                      SUBTS 11,1000
18                ;AC0=1000 COMING INTO THIS TEST 1000-1000 SHOULD=0 RESULT
19                ;0-1000 NEGATED-1000 SHD=0 INTO AC3
20              ;SUB11:
21 03765 105040         MOVO 0,1
22 03766 106424         SUBZ 0,1,SZR
23                      ERROR           ;1000-1000 SEE AC1 SHD=0
24 03767 063077         HALT
25
26
27       003767         E717=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
28 03770 101007         MOV 0,0,SBN     ;0 CRY SHD =1 FROM CRYOUT
29                      ERROR   ;AC0=1000(?) CRY SHD=1
30 03771 063077         HALT
31
32
33       003771         E720=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
34 03772 152000         ADC 2,2
35 03773 150000         COM 2,2 ;MAKE AC2=0 FOR TEST
36                ;0-1000 SHOULD=-1000 NEGATED TO AC3
37 03774 112400         SUB 0,2         ;0-1000
38 03775 154420         NEGZ 2,3        ;NEGATED SHD=1000
39 03776 116444         SUBO 0,3,SZR    ;1000-1000 SHD=0 AGAIN
40                      ERROR
41 03777 063077         HALT
42
43
44       003777         E721=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45 04000 101002         MOV 0,0,SZC     ;CRY SHD COMP 1 TO 0
46                      ERROR           ;CRY OUT FAILED
47 04001 063077         HALT
48
49
50       004001         E722=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
51 04002 101120         MOVZL 0,0       ;SET UP NEXT TEST
52                      SUBTS 12,2000
53                ;AC0=2000 COMING INTO THIS TEST 2000-2000 SHOULD=0 RESULT
54                ;0-2000 NEGATED-2000 SHD=0 INTO AC3
55              ;SUB12:
56 04003 105040         MOVO 0,1
57 04004 106424         SUBZ 0,1,SZR
58                      ERROR           ;2000-2000 SEE AC1 SHD=0
59 04005 063077         HALT
60
```

```
 0121  PRCST
01
02        004005          E723=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
03  04006 101007          MOV 0,0,SBN       ;0 CRY SHD =1 FROM CRYOUT
04                        ERROR    ;AC0=2000(?) CRY SHD=1
05  04007 063077          HALT
06
07
08        004007          E724=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
09  04010 152000          ADC 2,2
10  04011 150000          COM 2,2 ;MAKE AC2=0 FOR TEST
11                  ;0-2000 SHOULD=-2000 NEGATED TO AC3
12  04012 112400          SUB 0,2           ;0-2000
13  04013 154420          NEGZ 2,3          ;NEGATED SHD=2000
14  04014 116444          SUBO 0,3,SZR      ;2000-2000 SHD=0 AGAIN
15                        ERROR
16  04015 063077          HALT
17
18
19        004015          E725=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
20  04016 101002          MOV 0,0,SZC       ;CRY SHD COMP 1 TO 0
21                        ERROR             ;CRY OUT FAILED
22  04017 063077          HALT
23
24
25        004017          E726=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
26  04020 101120          MOVZL 0,0         ;SET UP NEXT TEST
27                        SUBTS 13,4000
28                  ;AC0=4000 COMING INTO THIS TEST 4000-4000 SHOULD=0 RESULT
29                  ;0-4000 NEGATED-4000 SHD=0 INTO AC3
30                ;SUB13:
31  04021 105040          MOVO 0,1
32  04022 106424          SUBZ 0,1,SZR
33                        ERROR             ;4000-4000 SEE AC1 SHD=0
34  04023 063077          HALT
35
36
37        004023          E727=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
38  04024 101007          MOV 0,0,SBN       ;0 CRY SHD =1 FROM CRYOUT
39                        ERROR    ;AC0=4000(?) CRY SHD=1
40  04025 063077          HALT
41
42
43        004025          E730=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
44  04026 152000          ADC 2,2
45  04027 150000          COM 2,2 ;MAKE AC2=0 FOR TEST
46                  ;0-4000 SHOULD=-4000 NEGATED TO AC3
47  04030 112400          SUB 0,2           ;0-4000
48  04031 154420          NEGZ 2,3          ;NEGATED SHD=4000
49  04032 116444          SUBO 0,3,SZR      ;4000-4000 SHD=0 AGAIN
50                        ERROR
51  04033 063077          HALT
52
53
54        004033          E731=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
55  04034 101002          MOV 0,0,SZC       ;CRY SHD COMP 1 TO 0
56                        ERROR             ;CRY OUT FAILED
57  04035 063077          HALT
58
59
60        004035          E732=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0122  PRCST
01  04036 101120          MOVZL 0,0         ;SET UP NEXT TEST
02                        SUBTS 14,10000
03                  ;AC0=10000 COMING INTO THIS TEST 10000-10000 SHOULD=0 RESULT
04                  ;0-10000 NEGATED-10000 SHD=0 INTO AC3
05                ;SUB14:
06  04037 105040          MOVO 0,1
07  04040 106424          SUBZ 0,1,SZR
08                        ERROR             ;10000-10000 SEE AC1 SHD=0
09  04041 063077          HALT
10
11
12        004041          E733=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
13  04042 101007          MOV 0,0,SBN       ;0 CRY SHD =1 FROM CRYOUT
14                        ERROR    ;AC0=10000(?) CRY SHD=1
15  04043 063077          HALT
16
17
18        004043          E734=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
19  04044 152000          ADC 2,2
20  04045 150000          COM 2,2 ;MAKE AC2=0 FOR TEST
21                  ;0-10000 SHOULD=-10000 NEGATED TO AC3
22  04046 112400          SUB 0,2           ;0-10000
23  04047 154420          NEGZ 2,3          ;NEGATED SHD=10000
24  04050 116444          SUBO 0,3,SZR      ;10000-10000 SHD=0 AGAIN
25                        ERROR
26  04051 063077          HALT
27
28
29        004051          E735=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
30  04052 101002          MOV 0,0,SZC       ;CRY SHD COMP 1 TO 0
31                        ERROR             ;CRY OUT FAILED
32  04053 063077          HALT
33
34
35        004053          E736=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
36  04054 101120          MOVZL 0,0         ;SET UP NEXT TEST
37                        SUBTS 15,20000
38                  ;AC0=20000 COMING INTO THIS TEST 20000-20000 SHOULD=0 RESULT
39                  ;0-20000 NEGATED-20000 SHD=0 INTO AC3
40                ;SUB15:
41  04055 105040          MOVO 0,1
42  04056 106424          SUBZ 0,1,SZR
43                        ERROR             ;20000-20000 SEE AC1 SHD=0
44  04057 063077          HALT
45
46
47        004057          E737=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
48  04060 101007          MOV 0,0,SBN       ;0 CRY SHD =1 FROM CRYOUT
49                        ERROR    ;AC0=20000(?) CRY SHD=1
50  04061 063077          HALT
51
52
53        004061          E740=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
54  04062 152000          ADC 2,2
55  04063 150000          COM 2,2 ;MAKE AC2=0 FOR TEST
56                  ;0-20000 SHOULD=-20000 NEGATED TO AC3
57  04064 112400          SUB 0,2           ;0-20000
58  04065 154420          NEGZ 2,3          ;NEGATED SHD=20000
59  04066 116444          SUBO 0,3,SZR      ;20000-20000 SHD=0 AGAIN
60                        ERROR
```

```
 0123  PRCST
01 04067 063077          HALT
02
03
04       004067          E741=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
05 04070 101002          MOV 0,0,SZC     ;CRY SHD COMP 1 TO 0
06                       ERROR           ;CRY OUT FAILED
07 04071 063077          HALT
08
09
10       004071          E742=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11 04072 101120          MOVZL 0,0       ;SET UP NEXT TEST
12                       SUBTS 16,40000
13                  ;AC0=40000 COMING INTO THIS TEST 40000-40000 SHOULD=0 RESULT
14                  ;0-40000 NEGATED-40000 SHD=0 INTO AC3
15                ;SUB16:
16 04073 105040          MOVO 0,1
17 04074 106424          SUBZ 0,1,SZR
18                       ERROR           ;40000-40000 SEE AC1 SHD=0
19 04075 063077          HALT
20
21
22       004075          E743=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
23 04076 101007          MOV 0,0,SBN     ;0 CRY SHD =1 FROM CRYOUT
24                       ERROR   ;AC0=40000(?) CRY SHD=1
25 04077 063077          HALT
26
27
28       004077          E744=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
29 04100 152000          ADC 2,2
30 04101 150000          COM 2,2 ;MAKE AC2=0 FOR TEST
31                  ;0-40000 SHOULD=-40000 NEGATED TO AC3
32 04102 112400          SUB 0,2         ;0-40000
33 04103 154420          NEGZ 2,3        ;NEGATED SHD=40000
34 04104 116444          SUBO 0,3,SZR    ;40000-40000 SHD=0 AGAIN
35                       ERROR
36 04105 063077          HALT
37
38
39       004105          E745=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
40 04106 101002          MOV 0,0,SZC     ;CRY SHD COMP 1 TO 0
41                       ERROR           ;CRY OUT FAILED
42 04107 063077          HALT
43
44
45       004107          E746=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
46 04110 101120          MOVZL 0,0       ;SET UP NEXT TEST
47                       SUBTS 17,100000
48                  ;AC0=100000 COMING INTO THIS TEST 100000-100000 SHOULD=0 RESULT
49                  ;0-100000 NEGATED-100000 SHD=0 INTO AC3
50                ;SUB17:
51 04111 105040          MOVO 0,1
52 04112 106424          SUBZ 0,1,SZR
53                       ERROR           ;100000-100000 SEE AC1 SHD=0
54 04113 063077          HALT
55
56
57       004113          E747=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
58 04114 101007          MOV 0,0,SBN     ;0 CRY SHD =1 FROM CRYOUT
59                       ERROR   ;AC0=100000(?) CRY SHD=1
60 04115 063077          HALT
```

```
 0124  PRCST
01
02
03       004115          E750=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
04 04116 152000          ADC 2,2
05 04117 150000          COM 2,2 ;MAKE AC2=0 FOR TEST
06                  ;0-100000 SHOULD=-100000 NEGATED TO AC3
07 04120 112400          SUB 0,2         ;0-100000
08 04121 154420          NEGZ 2,3        ;NEGATED SHD=100000
09 04122 116444          SUBO 0,3,SZR    ;100000-100000 SHD=0 AGAIN
10                       ERROR
11 04123 063077          HALT
12
13
14       004123          E751=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
15 04124 101002          MOV 0,0,SZC     ;CRY SHD COMP 1 TO 0
16                       ERROR           ;CRY OUT FAILED
17 04125 063077          HALT
18
19
20       004125          E752=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
21 04126 101120          MOVZL 0,0       ;SET UP NEXT TEST
22
23
```

```
10125  PRCST
01                ;LOAD ACCUMULATOR TESTS FIRST MRI FIRST LDA
02 04127 102400 LDA00:  SUB 0,0
03 04130 105040         MOVO 0,1
04 04131 020101         LDA 0,K1        ;K1=1
05 04132 101005         MOV 0,0,SNR     ;AC IS AT LEAST NON ZERO
06                      ERROR           ;DID NOT LOAD AC0 WITH+1
07 04133 063077         HALT
08
09
10       004133         E753=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11 04134 105224         MOVZR 0,1,SZR   ;CHECK AC0 TO REALLY=+1
12                      ERROR           ;SEE AC0 NOT=+1
13 04135 063077         HALT
14
15
16       004135         E754=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
17                ;FIRST USE OF MRI OR LDA INSTRUCTION
18                ;INCORRECT RESULT IN AC0 COULD BE DUE TO ANY OF
19                ;A VARIETY OF PROBLEMS INCLUDING EFA
20                ;IF IR0=1  LDA INSTRUCTION DECODES AS COMZ 1,0
21                ;AC0 WILL=-1 AND CARRY WILL=0
22                ;IF INSTRUCTION DECODES AS I/O IT='S NIO 40(AC0=0)
23              ;IF DP2 DOESN'T SET THEN AC0 WILL = 0
24                ;IF DATA IN AC0 IS OTHER THAN 0 OR -1 EFA
25
26                ;DEFINE MACRO TO VERIFY LDA DOES NOT DISTURB OTHER AC'S
27                      .MACRO LDAT1
28              ;LDA^1:
29                      ADC ^3,^3       ;SET AC^3=-1
30                      LDA ^2,K1       ;LOAD +1 TO AC^2
31                      COM ^3,^3,SZR   ;AC^3 SHD STILL=-1
32                      ERROR           ;LDA OF ^2 DIST AC^3
33              %
34
35                      LDAT1 01,0,1
36              ;LDA01:
37 04136 126000         ADC 1,1 ;SET AC1=-1
38 04137 020101         LDA 0,K1        ;LOAD +1 TO AC0
39 04140 124004         COM 1,1,SZR     ;AC1 SHD STILL=-1
40                      ERROR           ;LDA OF 0 DIST AC1
41 04141 063077         HALT
42
43
44       004141         E755=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45                      LDAT1 02,0,2
46              ;LDA02:
47 04142 152000         ADC 2,2 ;SET AC2=-1
48 04143 020101         LDA 0,K1        ;LOAD +1 TO AC0
49 04144 150004         COM 2,2,SZR     ;AC2 SHD STILL=-1
50                      ERROR           ;LDA OF 0 DIST AC2
51 04145 063077         HALT
52
53
54       004145         E756=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
55                      LDAT1 03,0,3
56              ;LDA03:
57 04146 176000         ADC 3,3 ;SET AC3=-1
58 04147 020101         LDA 0,K1        ;LOAD +1 TO AC0
59 04150 174004         COM 3,3,SZR     ;AC3 SHD STILL=-1
60                      ERROR           ;LDA OF 0 DIST AC3
```

```
 0126  PRCST
01 04151 063077         HALT
02
03
04       004151         E757=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
05                      LDAT1 04,1,0
06              ;LDA04:
07 04152 102000         ADC 0,0 ;SET AC0=-1
08 04153 024101         LDA 1,K1        ;LOAD +1 TO AC1
09 04154 100004         COM 0,0,SZR     ;AC0 SHD STILL=-1
10                      ERROR           ;LDA OF 1 DIST AC0
11 04155 063077         HALT
12
13
14       004155         E760=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
15                      LDAT1 05,1,2
16              ;LDA05:
17 04156 152000         ADC 2,2 ;SET AC2=-1
18 04157 024101         LDA 1,K1        ;LOAD +1 TO AC1
19 04160 150004         COM 2,2,SZR     ;AC2 SHD STILL=-1
20                      ERROR           ;LDA OF 1 DIST AC2
21 04161 063077         HALT
22
23
24       004161         E761=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
25                      LDAT1 06,1,3
26              ;LDA06:
27 04162 176000         ADC 3,3 ;SET AC3=-1
28 04163 024101         LDA 1,K1        ;LOAD +1 TO AC1
29 04164 174004         COM 3,3,SZR     ;AC3 SHD STILL=-1
30                      ERROR           ;LDA OF 1 DIST AC3
31 04165 063077         HALT
32
33
34       004165         E762=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
35                      LDAT1 07,2,0
36              ;LDA07:
37 04166 102000         ADC 0,0 ;SET AC0=-1
38 04167 030101         LDA 2,K1        ;LOAD +1 TO AC2
39 04170 100004         COM 0,0,SZR     ;AC0 SHD STILL=-1
40                      ERROR           ;LDA OF 2 DIST AC0
41 04171 063077         HALT
42
43
44       004171         E763=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45                      LDAT1 08,2,1
46              ;LDA08:
47 04172 126000         ADC 1,1 ;SET AC1=-1
48 04173 030101         LDA 2,K1        ;LOAD +1 TO AC2
49 04174 124004         COM 1,1,SZR     ;AC1 SHD STILL=-1
50                      ERROR           ;LDA OF 2 DIST AC1
51 04175 063077         HALT
52
53
54       004175         E764=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
55                      LDAT1 09,2,3
56              ;LDA09:
57 04176 176000         ADC 3,3 ;SET AC3=-1
58 04177 030101         LDA 2,K1        ;LOAD +1 TO AC2
59 04200 174004         COM 3,3,SZR     ;AC3 SHD STILL=-1
60                      ERROR           ;LDA OF 2 DIST AC3
```

```
 0127  PRCST
01 04201 063077          HALT
02
03
04        004201         E765=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
05                       LDAT1 10,3,0
06                ;LDA10:
07 04202 102000          ADC 0,0 ;SET AC0=-1
08 04203 034101          LDA 3,K1          ;LOAD +1 TO AC3
09 04204 100004          COM 0,0,SZR       ;AC0 SHD STILL=-1
10                       ERROR             ;LDA OF 3 DIST AC0
11 04205 063077          HALT
12
13
14        004205         E766=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
15                       LDAT1 11,3,1
16                ;LDA11:
17 04206 126000          ADC 1,1 ;SET AC1=-1
18 04207 034101          LDA 3,K1          ;LOAD +1 TO AC3
19 04210 124004          COM 1,1,SZR       ;AC1 SHD STILL=-1
20                       ERROR             ;LDA OF 3 DIST AC1
21 04211 063077          HALT
22
23
24        004211         E767=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
25                       LDAT1 12,3,2
26                ;LDA12:
27 04212 152000          ADC 2,2 ;SET AC2=-1
28 04213 034101          LDA 3,K1          ;LOAD +1 TO AC3
29 04214 150004          COM 2,2,SZR       ;AC2 SHD STILL=-1
30                       ERROR             ;LDA OF 3 DIST AC2
31 04215 063077          HALT
32
33
34        004215         E770=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0128  PRCST
01
02
03                ;DEFINE MACRO TO FURTHER TEST LDA INST
04
05                       .MACRO LDAT2
06                ;LDA^1:
07                       LDA 1,^2          ;GET ^3 TO AC1
08                       MOV 1,2
09                       SUB 0,2,SZR       ;AC0=^3 COMING INTO TEST
10                       ERROR
11                       MOVZL 0,0         ;POSITION FOR NEXT TEST
12                %
13
14 04216 102525          SUBZL 0,0,SNR     ;SET UP LDA TESTS
15                       ERROR             ;SET UP FAILED SEE AC0
16 04217 063077          HALT
17
18
19        004217         E771=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
20
21                       LDAT2 13,K1,1
22                ;LDA13:
23 04220 024101          LDA 1,K1          ;GET 1 TO AC1
24 04221 131000          MOV 1,2
25 04222 112404          SUB 0,2,SZR       ;AC0=1 COMING INTO TEST
26                       ERROR
27 04223 063077          HALT
28
29
30        004223         E772=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
31 04224 101120          MOVZL 0,0         ;POSITION FOR NEXT TEST
32                       LDAT2 14,K2,2
33                ;LDA14:
34 04225 024102          LDA 1,K2          ;GET 2 TO AC1
35 04226 131000          MOV 1,2
36 04227 112404          SUB 0,2,SZR       ;AC0=2 COMING INTO TEST
37                       ERROR
38 04230 063077          HALT
39
40
41        004230         E773=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
42 04231 101120          MOVZL 0,0         ;POSITION FOR NEXT TEST
43                       LDAT2 15,K4,4
44                ;LDA15:
45 04232 024104          LDA 1,K4          ;GET 4 TO AC1
46 04233 131000          MOV 1,2
47 04234 112404          SUB 0,2,SZR       ;AC0=4 COMING INTO TEST
48                       ERROR
49 04235 063077          HALT
50
51
52        004235         E774=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
53 04236 101120          MOVZL 0,0         ;POSITION FOR NEXT TEST
54                       LDAT2 16,K10,10
55                ;LDA16:
56 04237 024110          LDA 1,K10         ;GET 10 TO AC1
57 04240 131000          MOV 1,2
58 04241 112404          SUB 0,2,SZR       ;AC0=10 COMING INTO TEST
59                       ERROR
60 04242 063077          HALT
```

```
 0129  PRCST
01
02
03       004242          E775=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
04 04243 101120          MOVZL 0,0       ;POSITION FOR NEXT TEST
05                       LDAT2 17,K20,20
06                ;LDA17:
07 04244 024111          LDA 1,K20       ;GET 20 TO AC1
08 04245 131000          MOV 1,2
09 04246 112404          SUB 0,2,SZR     ;AC0=20 COMING INTO TEST
10                       ERROR
11 04247 063077          HALT
12
13
14       004247          E776=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
15 04250 101120          MOVZL 0,0       ;POSITION FOR NEXT TEST
16                       LDAT2 18,K40,40
17                ;LDA18:
18 04251 024112          LDA 1,K40       ;GET 40 TO AC1
19 04252 131000          MOV 1,2
20 04253 112404          SUB 0,2,SZR     ;AC0=40 COMING INTO TEST
21                       ERROR
22 04254 063077          HALT
23
24
25       004254          E777=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
26 04255 101120          MOVZL 0,0       ;POSITION FOR NEXT TEST
27                       LDAT2 19,K100,100
28                ;LDA19:
29 04256 024113          LDA 1,K100      ;GET 100 TO AC1
30 04257 131000          MOV 1,2
31 04260 112404          SUB 0,2,SZR     ;AC0=100 COMING INTO TEST
32                       ERROR
33 04261 063077          HALT
34
35
36       004261          E1000=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
37 04262 101120          MOVZL 0,0       ;POSITION FOR NEXT TEST
38                       LDAT2 20,K200,200
39                ;LDA20:
40 04263 024114          LDA 1,K200      ;GET 200 TO AC1
41 04264 131000          MOV 1,2
42 04265 112404          SUB 0,2,SZR     ;AC0=200 COMING INTO TEST
43                       ERROR
44 04266 063077          HALT
45
46
47       004266          E1001=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
48 04267 101120          MOVZL 0,0       ;POSITION FOR NEXT TEST
49                       LDAT2 21,K400,400
50                ;LDA21:
51 04270 024116          LDA 1,K400      ;GET 400 TO AC1
52 04271 131000          MOV 1,2
53 04272 112404          SUB 0,2,SZR     ;AC0=400 COMING INTO TEST
54                       ERROR
55 04273 063077          HALT
56
57
58       004273          E1002=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
59 04274 101120          MOVZL 0,0       ;POSITION FOR NEXT TEST
60                       LDAT2 22,K1000,1000
```

```
 0130  PRCST
01                ;LDA22:
02 04275 024117          LDA 1,K1000     ;GET 1000 TO AC1
03 04276 131000          MOV 1,2
04 04277 112404          SUB 0,2,SZR     ;AC0=1000 COMING INTO TEST
05                       ERROR
06 04300 063077          HALT
07
08
09       004300          E1003=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
10 04301 101120          MOVZL 0,0       ;POSITION FOR NEXT TEST
11                       LDAT2 23,K2000,2000
12                ;LDA23:
13 04302 024120          LDA 1,K2000     ;GET 2000 TO AC1
14 04303 131000          MOV 1,2
15 04304 112404          SUB 0,2,SZR     ;AC0=2000 COMING INTO TEST
16                       ERROR
17 04305 063077          HALT
18
19
20       004305          E1004=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
21 04306 101120          MOVZL 0,0       ;POSITION FOR NEXT TEST
22                       LDAT2 24,K4000,4000
23                ;LDA24:
24 04307 024121          LDA 1,K4000     ;GET 4000 TO AC1
25 04310 131000          MOV 1,2
26 04311 112404          SUB 0,2,SZR     ;AC0=4000 COMING INTO TEST
27                       ERROR
28 04312 063077          HALT
29
30
31       004312          E1005=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
32 04313 101120          MOVZL 0,0       ;POSITION FOR NEXT TEST
33                       LDAT2 25,K10K,10000
34                ;LDA25:
35 04314 024123          LDA 1,K10K      ;GET 10000 TO AC1
36 04315 131000          MOV 1,2
37 04316 112404          SUB 0,2,SZR     ;AC0=10000 COMING INTO TEST
38                       ERROR
39 04317 063077          HALT
40
41
42       004317          E1006=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
43 04320 101120          MOVZL 0,0       ;POSITION FOR NEXT TEST
44                       LDAT2 26,K20K,20000
45                ;LDA26:
46 04321 024124          LDA 1,K20K      ;GET 20000 TO AC1
47 04322 131000          MOV 1,2
48 04323 112404          SUB 0,2,SZR     ;AC0=20000 COMING INTO TEST
49                       ERROR
50 04324 063077          HALT
51
52
53       004324          E1007=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
54 04325 101120          MOVZL 0,0       ;POSITION FOR NEXT TEST
55                       LDAT2 27,K40K,40000
56                ;LDA27:
57 04326 024125          LDA 1,K40K      ;GET 40000 TO AC1
58 04327 131000          MOV 1,2
59 04330 112404          SUB 0,2,SZR     ;AC0=40000 COMING INTO TEST
60                       ERROR
```

```
 0131  PRCST
01 04331 063077          HALT
02
03
04        004331         E1010=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
05 04332 101120          MOVZL 0,0        ;POSITION FOR NEXT TEST
06                       LDAT2 28,K100K,100000
07                ;LDA28:
08 04333 024126          LDA 1,K100K      ;GET 100000 TO AC1
09 04334 131000          MOV 1,2
10 04335 112404          SUB 0,2,SZR      ;AC0=100000 COMING INTO TEST
11                       ERROR
12 04336 063077          HALT
13
14
15        004336         E1011=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
16 04337 101120          MOVZL 0,0        ;POSITION FOR NEXT TEST
```

```
!0132  PRCST
01
02
03                ;FIRST TEST OF BYTE SWAP "S"
04                ;IR0.IR8.IR9 INTO DP1/D ROM
05
06 04340 102745 SWP00:   SUBOS 0,0,SNR
07 04341 101324          MOVZS 0,0,SZR    ;FIRST USE OF "S" AC0=0
08                       ERROR            ;EXAMINE AC0 FOR "SWAP" ERR
09 04342 063077          HALT
10
11
12        004342         E1012=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
13 04343 102323 SWP01:   ADCZS 0,0,SNC    ;CRY SHD REMAIN=0
14 04344 101302          MOVS 0,0,SZC     ;SAME
15                       ERROR            ;SEE NEWCARRY SHIFTER
16 04345 063077          HALT
17
18
19        004345         E1013=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
20 04346 102722 SWP02:   SUBZS 0,0,SZC    ;CRY SHD REMAIN=1
21 04347 101303          MOVS 0,0,SNC     ;SAME
22                       ERROR            ;SEE NEWCARRY SHIFTER
23 04350 063077          HALT
24
25
26        004350         E1014=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
27 04351 102725 SWP03:   SUBZS 0,0,SNR    ;A 1 IN CRY SHD NOT AFFECT "S"
28 04352 101344          MOVOS 0,0,SZR    ;TRY SWAP 0'S WITH CRY=1
29                       ERROR            ;EXAMINE AC0 FOR CRY "S"
30 04353 063077          HALT
31
32
33        004353         E1015=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
34                ;ERROR DEPENDS ON A 1 IN BIT 0 OR 15 SEE ALU SHIFTER
35
36                ;DEFINE SWAP TEST MACRO
37                       .MACRO SWPTS
38                ;TEST SWAP BIT ^4 TO BIT ^5
39                ;AC0=^6 AC1=^7 EXPECTED RESULT IN AC2 IS ^7
40              ;SWP^1:
41                       LDA 0,^2         ;GET ^6
42                       LDA 1,^3         ;^7 EXPECTED RESULT
43                       MOVZS 0,2,SZR    ;"S" BIT ^4 TO BIT ^5
44                       MOV 2,3,SNR
45                       ERROR    ;POSS. "ZR" AND FAILURE "S"
46                       SUB 1,3,SZR
47                       ERROR            ;"S" BIT ^4 TO ^5 FAILED EX AC2
48              ;SW^1A:
49                       COMOS 0,2        ;REPEAT TEST WITH A0
50                       COM 2,3          ;EXPECTED RESULT HERE IS ^7
51                       SUB 1,3,SZR
52                       ERROR            ;"S" A0 IN BIT ^4 TO ^5 SEE AC2
53                ;SW^1A TESTS SWAP OF COM ^6
54              %
55
56
57
58                       SWPTS 04,K1,K400,15,7,1,400
59                ;TEST SWAP BIT 15 TO BIT 7
60                ;AC0=1 AC1=400 EXPECTED RESULT IN AC2 IS 400
```

```
 0133  PRCST
01                ;SWP04:
02 04354 020101           LDA 0,K1          ;GET 1
03 04355 024116           LDA 1,K400        ;400 EXPECTED RESULT
04 04356 111324           MOVZS 0,2,SZR     ;"S" BIT 15 TO BIT 7
05 04357 155005           MOV 2,3,SNR
06                        ERROR    ;POSS. "ZR" AND FAILURE "S"
07 04360 063077           HALT
08
09
10        004360          E1016=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
11 04361 136404           SUB 1,3,SZR
12                        ERROR             ;"S" BIT 15 TO 7 FAILED EX AC2
13 04362 063077           HALT
14
15
16        004362          E1017=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
17                ;SW04A:
18 04363 110340           COMOS 0,2         ;REPEAT TEST WITH A0
19 04364 154000           COM 2,3           ;EXPECTED RESULT HERE IS 400
20 04365 136404           SUB 1,3,SZR
21                        ERROR             ;"S" A0 IN BIT 15 TO 7 SEE AC2
22 04366 063077           HALT
23
24
25        004366          E1020=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
26                  ;SW04A TESTS SWAP OF COM 1
27                        SWPTS 05,K2,K1000,14,6,2,1000
28                  ;TEST SWAP BIT 14 TO BIT 6
29                  ;AC0=2 AC1=1000 EXPECTED RESULT IN AC2 IS 1000
30                ;SWP05:
31 04367 020102           LDA 0,K2          ;GET 2
32 04370 024117           LDA 1,K1000       ;1000 EXPECTED RESULT
33 04371 111324           MOVZS 0,2,SZR     ;"S" BIT 14 TO BIT 6
34 04372 155005           MOV 2,3,SNR
35                        ERROR    ;POSS. "ZR" AND FAILURE "S"
36 04373 063077           HALT
37
38
39        004373          E1021=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
40 04374 136404           SUB 1,3,SZR
41                        ERROR             ;"S" BIT 14 TO 6 FAILED EX AC2
42 04375 063077           HALT
43
44
45        004375          E1022=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
46                ;SW05A:
47 04376 110340           COMOS 0,2         ;REPEAT TEST WITH A0
48 04377 154000           COM 2,3           ;EXPECTED RESULT HERE IS 1000
49 04400 136404           SUB 1,3,SZR
50                        ERROR             ;"S" A0 IN BIT 14 TO 6 SEE AC2
51 04401 063077           HALT
52
53
54        004401          E1023=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
55                  ;SW05A TESTS SWAP OF COM 2
56                        SWPTS 06,K4,K2000,13,5,4,2000
57                  ;TEST SWAP BIT 13 TO BIT 5
58                  ;AC0=4 AC1=2000 EXPECTED RESULT IN AC2 IS 2000
59                ;SWP06:
60 04402 020104           LDA 0,K4          ;GET 4
```

```
 0134  PRCST
01 04403 024120           LDA 1,K2000       ;2000 EXPECTED RESULT
02 04404 111324           MOVZS 0,2,SZR     ;"S" BIT 13 TO BIT 5
03 04405 155005           MOV 2,3,SNR
04                        ERROR    ;POSS. "ZR" AND FAILURE "S"
05 04406 063077           HALT
06
07
08        004406          E1024=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
09 04407 136404           SUB 1,3,SZR
10                        ERROR             ;"S" BIT 13 TO 5 FAILED EX AC2
11 04410 063077           HALT
12
13
14        004410          E1025=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
15                ;SW06A:
16 04411 110340           COMOS 0,2         ;REPEAT TEST WITH A0
17 04412 154000           COM 2,3           ;EXPECTED RESULT HERE IS 2000
18 04413 136404           SUB 1,3,SZR
19                        ERROR             ;"S" A0 IN BIT 13 TO 5 SEE AC2
20 04414 063077           HALT
21
22
23        004414          E1026=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
24                  ;SW06A TESTS SWAP OF COM 4
25                        SWPTS 07,K10,K4000,12,4,10,4000
26                  ;TEST SWAP BIT 12 TO BIT 4
27                  ;AC0=10 AC1=4000 EXPECTED RESULT IN AC2 IS 4000
28                ;SWP07:
29 04415 020110           LDA 0,K10         ;GET 10
30 04416 024121           LDA 1,K4000       ;4000 EXPECTED RESULT
31 04417 111324           MOVZS 0,2,SZR     ;"S" BIT 12 TO BIT 4
32 04420 155005           MOV 2,3,SNR
33                        ERROR    ;POSS. "ZR" AND FAILURE "S"
34 04421 063077           HALT
35
36
37        004421          E1027=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
38 04422 136404           SUB 1,3,SZR
39                        ERROR             ;"S" BIT 12 TO 4 FAILED EX AC2
40 04423 063077           HALT
41
42
43        004423          E1030=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
44                ;SW07A:
45 04424 110340           COMOS 0,2         ;REPEAT TEST WITH A0
46 04425 154000           COM 2,3           ;EXPECTED RESULT HERE IS 4000
47 04426 136404           SUB 1,3,SZR
48                        ERROR             ;"S" A0 IN BIT 12 TO 4 SEE AC2
49 04427 063077           HALT
50
51
52        004427          E1031=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
53                  ;SW07A TESTS SWAP OF COM 10
54                        SWPTS 08,K20,K10K,11,3,20,10000
55                  ;TEST SWAP BIT 11 TO BIT 3
56                  ;AC0=20 AC1=10000 EXPECTED RESULT IN AC2 IS 10000
57                ;SWP08:
58 04430 020111           LDA 0,K20         ;GET 20
59 04431 024123           LDA 1,K10K        ;10000 EXPECTED RESULT
60 04432 111324           MOVZS 0,2,SZR     ;"S" BIT 11 TO BIT 3
```

```
 0135  PRCST
01 04433 155005          MOV 2,3,SNR
02                       ERROR   ;POSS. "ZR" AND FAILURE "S"
03 04434 063077          HALT
04
05
06       004434          E1032=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
07 04435 136404          SUB 1,3,SZR
08                       ERROR           ;"S" BIT 11 TO 3 FAILED EX AC2
09 04436 063077          HALT
10
11
12       004436          E1033=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
13                ;SW08A:
14 04437 110340          COMOS 0,2       ;REPEAT TEST WITH A0
15 04440 154000          COM 2,3         ;EXPECTED RESULT HERE IS 10000
16 04441 136404          SUB 1,3,SZR
17                       ERROR           ;"S" A0 IN BIT 11 TO 3 SEE AC2
18 04442 063077          HALT
19
20
21       004442          E1034=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
22                ;SW08A TESTS SWAP OF COM 20
23                       SWPTS 09,K40,K20K,10,2,40,20000
24                ;TEST SWAP BIT 10 TO BIT 2
25                ;AC0=40 AC1=20000 EXPECTED RESULT IN AC2 IS 20000
26                ;SWP09:
27 04443 020112          LDA 0,K40       ;GET 40
28 04444 024124          LDA 1,K20K      ;20000 EXPECTED RESULT
29 04445 111324          MOVZS 0,2,SZR   ;"S" BIT 10 TO BIT 2
30 04446 155005          MOV 2,3,SNR
31                       ERROR   ;POSS. "ZR" AND FAILURE "S"
32 04447 063077          HALT
33
34
35       004447          E1035=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
36 04450 136404          SUB 1,3,SZR
37                       ERROR           ;"S" BIT 10 TO 2 FAILED EX AC2
38 04451 063077          HALT
39
40
41       004451          E1036=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
42                ;SW09A:
43 04452 110340          COMOS 0,2       ;REPEAT TEST WITH A0
44 04453 154000          COM 2,3         ;EXPECTED RESULT HERE IS 20000
45 04454 136404          SUB 1,3,SZR
46                       ERROR           ;"S" A0 IN BIT 10 TO 2 SEE AC2
47 04455 063077          HALT
48
49
50       004455          E1037=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
51                ;SW09A TESTS SWAP OF COM 40
52                       SWPTS 10,K100,K40K,9,1,100,40000
53                ;TEST SWAP BIT 9 TO BIT 1
54                ;AC0=100 AC1=40000 EXPECTED RESULT IN AC2 IS 40000
55                ;SWP10:
56 04456 020113          LDA 0,K100      ;GET 100
57 04457 024125          LDA 1,K40K      ;40000 EXPECTED RESULT
58 04460 111324          MOVZS 0,2,SZR   ;"S" BIT 9 TO BIT 1
59 04461 155005          MOV 2,3,SNR
60                       ERROR   ;POSS. "ZR" AND FAILURE "S"
```

```
 0136  PRCST
01 04462 063077          HALT
02
03
04       004462          E1040=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
05 04463 136404          SUB 1,3,SZR
06                       ERROR           ;"S" BIT 9 TO 1 FAILED EX AC2
07 04464 063077          HALT
08
09
10       004464          E1041=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
11                ;SW10A:
12 04465 110340          COMOS 0,2       ;REPEAT TEST WITH A0
13 04466 154000          COM 2,3         ;EXPECTED RESULT HERE IS 40000
14 04467 136404          SUB 1,3,SZR
15                       ERROR           ;"S" A0 IN BIT 9 TO 1 SEE AC2
16 04470 063077          HALT
17
18
19       004470          E1042=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
20                ;SW10A TESTS SWAP OF COM 100
21                       SWPTS 11,K200,K100K,8,0,200,100000
22                ;TEST SWAP BIT 8 TO BIT 0
23                ;AC0=200 AC1=100000 EXPECTED RESULT IN AC2 IS 100000
24                ;SWP11:
25 04471 020114          LDA 0,K200      ;GET 200
26 04472 024126          LDA 1,K100K     ;100000 EXPECTED RESULT
27 04473 111324          MOVZS 0,2,SZR   ;"S" BIT 8 TO BIT 0
28 04474 155005          MOV 2,3,SNR
29                       ERROR   ;POSS. "ZR" AND FAILURE "S"
30 04475 063077          HALT
31
32
33       004475          E1043=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
34 04476 136404          SUB 1,3,SZR
35                       ERROR           ;"S" BIT 8 TO 0 FAILED EX AC2
36 04477 063077          HALT
37
38
39       004477          E1044=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
40                ;SW11A:
41 04500 110340          COMOS 0,2       ;REPEAT TEST WITH A0
42 04501 154000          COM 2,3         ;EXPECTED RESULT HERE IS 100000
43 04502 136404          SUB 1,3,SZR
44                       ERROR           ;"S" A0 IN BIT 8 TO 0 SEE AC2
45 04503 063077          HALT
46
47
48       004503          E1045=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
49                ;SW11A TESTS SWAP OF COM 200
50                       SWPTS 12,K400,K1,7,15,400,1
51                ;TEST SWAP BIT 7 TO BIT 15
52                ;AC0=400 AC1=1 EXPECTED RESULT IN AC2 IS 1
53                ;SWP12:
54 04504 020116          LDA 0,K400      ;GET 400
55 04505 024101          LDA 1,K1        ;1 EXPECTED RESULT
56 04506 111324          MOVZS 0,2,SZR   ;"S" BIT 7 TO BIT 15
57 04507 155005          MOV 2,3,SNR
58                       ERROR   ;POSS. "ZR" AND FAILURE "S"
59 04510 063077          HALT
60
```

```
 0137  PRCST
01
02        004510          E1046=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
03 04511 136404           SUB 1,3,SZR
04                        ERROR           ;"S" BIT 7 TO 15 FAILED EX AC2
05 04512 063077           HALT
06
07
08        004512          E1047=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
09                ;SW12A:
10 04513 110340           COMOS 0,2       ;REPEAT TEST WITH A0
11 04514 154000           COM 2,3         ;EXPECTED RESULT HERE IS 1
12 04515 136404           SUB 1,3,SZR
13                        ERROR           ;"S" A0 IN BIT 7 TO 15 SEE AC2
14 04516 063077           HALT
15
16
17        004516          E1050=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
18                  ;SW12A TESTS SWAP OF COM 400
19                        SWPTS 13,K1000,K2,6,14,1000,2
20                  ;TEST SWAP BIT 6 TO BIT 14
21                  ;AC0=1000 AC1=2 EXPECTED RESULT IN AC2 IS 2
22                ;SWP13:
23 04517 020117           LDA 0,K1000     ;GET 1000
24 04520 024102           LDA 1,K2        ;2 EXPECTED RESULT
25 04521 111324           MOVZS 0,2,SZR   ;"S" BIT 6 TO BIT 14
26 04522 155005           MOV 2,3,SNR
27                        ERROR   ;POSS. "ZR" AND FAILURE "S"
28 04523 063077           HALT
29
30
31        004523          E1051=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
32 04524 136404           SUB 1,3,SZR
33                        ERROR           ;"S" BIT 6 TO 14 FAILED EX AC2
34 04525 063077           HALT
35
36
37        004525          E1052=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
38                ;SW13A:
39 04526 110340           COMOS 0,2       ;REPEAT TEST WITH A0
40 04527 154000           COM 2,3         ;EXPECTED RESULT HERE IS 2
41 04530 136404           SUB 1,3,SZR
42                        ERROR           ;"S" A0 IN BIT 6 TO 14 SEE AC2
43 04531 063077           HALT
44
45
46        004531          E1053=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
47                  ;SW13A TESTS SWAP OF COM 1000
48                        SWPTS 14,K2000,K4,5,13,2000,4
49                  ;TEST SWAP BIT 5 TO BIT 13
50                  ;AC0=2000 AC1=4 EXPECTED RESULT IN AC2 IS 4
51                ;SWP14:
52 04532 020120           LDA 0,K2000     ;GET 2000
53 04533 024104           LDA 1,K4        ;4 EXPECTED RESULT
54 04534 111324           MOVZS 0,2,SZR   ;"S" BIT 5 TO BIT 13
55 04535 155005           MOV 2,3,SNR
56                        ERROR   ;POSS. "ZR" AND FAILURE "S"
57 04536 063077           HALT
58
59
60        004536          E1054=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0138  PRCST
01 04537 136404           SUB 1,3,SZR
02                        ERROR           ;"S" BIT 5 TO 13 FAILED EX AC2
03 04540 063077           HALT
04
05
06        004540          E1055=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
07                ;SW14A:
08 04541 110340           COMOS 0,2       ;REPEAT TEST WITH A0
09 04542 154000           COM 2,3         ;EXPECTED RESULT HERE IS 4
10 04543 136404           SUB 1,3,SZR
11                        ERROR           ;"S" A0 IN BIT 5 TO 13 SEE AC2
12 04544 063077           HALT
13
14
15        004544          E1056=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
16                  ;SW14A TESTS SWAP OF COM 2000
17                        SWPTS 15,K4000,K10,4,12,4000,10
18                  ;TEST SWAP BIT 4 TO BIT 12
19                  ;AC0=4000 AC1=10 EXPECTED RESULT IN AC2 IS 10
20                ;SWP15:
21 04545 020121           LDA 0,K4000     ;GET 4000
22 04546 024110           LDA 1,K10       ;10 EXPECTED RESULT
23 04547 111324           MOVZS 0,2,SZR   ;"S" BIT 4 TO BIT 12
24 04550 155005           MOV 2,3,SNR
25                        ERROR   ;POSS. "ZR" AND FAILURE "S"
26 04551 063077           HALT
27
28
29        004551          E1057=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
30 04552 136404           SUB 1,3,SZR
31                        ERROR           ;"S" BIT 4 TO 12 FAILED EX AC2
32 04553 063077           HALT
33
34
35        004553          E1060=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
36                ;SW15A:
37 04554 110340           COMOS 0,2       ;REPEAT TEST WITH A0
38 04555 154000           COM 2,3         ;EXPECTED RESULT HERE IS 10
39 04556 136404           SUB 1,3,SZR
40                        ERROR           ;"S" A0 IN BIT 4 TO 12 SEE AC2
41 04557 063077           HALT
42
43
44        004557          E1061=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
45                  ;SW15A TESTS SWAP OF COM 4000
46                        SWPTS 16,K10K,K20,3,11,10000,20
47                  ;TEST SWAP BIT 3 TO BIT 11
48                  ;AC0=10000 AC1=20 EXPECTED RESULT IN AC2 IS 20
49                ;SWP16:
50 04560 020123           LDA 0,K10K      ;GET 10000
51 04561 024111           LDA 1,K20       ;20 EXPECTED RESULT
52 04562 111324           MOVZS 0,2,SZR   ;"S" BIT 3 TO BIT 11
53 04563 155005           MOV 2,3,SNR
54                        ERROR   ;POSS. "ZR" AND FAILURE "S"
55 04564 063077           HALT
56
57
58        004564          E1062=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
59 04565 136404           SUB 1,3,SZR
60                        ERROR           ;"S" BIT 3 TO 11 FAILED EX AC2
```

```
 0139  PRCST
01 04566 063077          HALT
02
03
04        004566         E1063=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
05                  ;SW16A:
06 04567 110340          COMOS 0,2        ;REPEAT TEST WITH A0
07 04570 154000          COM 2,3          ;EXPECTED RESULT HERE IS 20
08 04571 136404          SUB 1,3,SZR
09                       ERROR            ;"S" A0 IN BIT 3 TO 11 SEE AC2
10 04572 063077          HALT
11
12
13        004572         E1064=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
14                  ;SW16A TESTS SWAP OF COM 10000
15                       SWPTS 17,K20K,K40,2,10,20000,40
16                  ;TEST SWAP BIT 2 TO BIT 10
17                  ;AC0=20000 AC1=40 EXPECTED RESULT IN AC2 IS 40
18                 ;SWP17:
19 04573 020124          LDA 0,K20K       ;GET 20000
20 04574 024112          LDA 1,K40        ;40 EXPECTED RESULT
21 04575 111324          MOVZS 0,2,SZR    ;"S" BIT 2 TO BIT 10
22 04576 155005          MOV 2,3,SNR
23                       ERROR    ;POSS. "ZR" AND FAILURE "S"
24 04577 063077          HALT
25
26
27        004577         E1065=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
28 04600 136404          SUB 1,3,SZR
29                       ERROR            ;"S" BIT 2 TO 10 FAILED EX AC2
30 04601 063077          HALT
31
32
33        004601         E1066=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
34                  ;SW17A:
35 04602 110340          COMOS 0,2        ;REPEAT TEST WITH A0
36 04603 154000          COM 2,3          ;EXPECTED RESULT HERE IS 40
37 04604 136404          SUB 1,3,SZR
38                       ERROR            ;"S" A0 IN BIT 2 TO 10 SEE AC2
39 04605 063077          HALT
40
41
42        004605         E1067=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
43                  ;SW17A TESTS SWAP OF COM 20000
44                       SWPTS 18,K40K,K100,1,9,40000,100
45                  ;TEST SWAP BIT 1 TO BIT 9
46                  ;AC0=40000 AC1=100 EXPECTED RESULT IN AC2 IS 100
47                 ;SWP18:
48 04606 020125          LDA 0,K40K       ;GET 40000
49 04607 024113          LDA 1,K100       ;100 EXPECTED RESULT
50 04610 111324          MOVZS 0,2,SZR    ;"S" BIT 1 TO BIT 9
51 04611 155005          MOV 2,3,SNR
52                       ERROR    ;POSS. "ZR" AND FAILURE "S"
53 04612 063077          HALT
54
55
56        004612         E1070=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
57 04613 136404          SUB 1,3,SZR
58                       ERROR            ;"S" BIT 1 TO 9 FAILED EX AC2
59 04614 063077          HALT
60
```

```
 0140  PRCST
01
02        004614         E1071=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
03                  ;SW18A:
04 04615 110340          COMOS 0,2        ;REPEAT TEST WITH A0
05 04616 154000          COM 2,3          ;EXPECTED RESULT HERE IS 100
06 04617 136404          SUB 1,3,SZR
07                       ERROR            ;"S" A0 IN BIT 1 TO 9 SEE AC2
08 04620 063077          HALT
09
10
11        004620         E1072=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
12                  ;SW18A TESTS SWAP OF COM 40000
13                       SWPTS 19,K100K,K200,0,8,100000,200
14                  ;TEST SWAP BIT 0 TO BIT 8
15                  ;AC0=100000 AC1=200 EXPECTED RESULT IN AC2 IS 200
16                 ;SWP19:
17 04621 020126          LDA 0,K100K      ;GET 100000
18 04622 024114          LDA 1,K200       ;200 EXPECTED RESULT
19 04623 111324          MOVZS 0,2,SZR    ;"S" BIT 0 TO BIT 8
20 04624 155005          MOV 2,3,SNR
21                       ERROR    ;POSS. "ZR" AND FAILURE "S"
22 04625 063077          HALT
23
24
25        004625         E1073=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
26 04626 136404          SUB 1,3,SZR
27                       ERROR            ;"S" BIT 0 TO 8 FAILED EX AC2
28 04627 063077          HALT
29
30
31        004627         E1074=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
32                  ;SW19A:
33 04630 110340          COMOS 0,2        ;REPEAT TEST WITH A0
34 04631 154000          COM 2,3          ;EXPECTED RESULT HERE IS 200
35 04632 136404          SUB 1,3,SZR
36                       ERROR            ;"S" A0 IN BIT 0 TO 8 SEE AC2
37 04633 063077          HALT
38
39
40        004633         E1075=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
41                  ;SW19A TESTS SWAP OF COM 100000
```

```
10141  PRCST
01
02
03                ;FIRST USE OF NO-LOAD (IR12=1)
04                ;DEFINE MACRO FOR NO LOAD TESTS (IR12=1)
05                      .MACRO NOLOD
06                NLD^1:  ADC ^2,^2       ;AC^2=-1
07                        COM# ^2,^2,SNR  ;ATTEMPT TO MAKE ZEROS
08                        COM ^2,^2,SZR   ;AC^2 SHD HAVE =-1
09                        ERROR           ;AC^2 ALTERED IR12=1
10                        ADC# ^2,^2,SZR ;NOLOAD 1'S
11                        MOV ^2,^2,SZR   ;AC^2 SHD STILL=0'S
12                        ERROR           ;IR12=1 DID NOT BLOCK 1'S
13                %
14                        NOLOD 1,0
15 04634 102000 NLD1:   ADC 0,0 ;AC0=-1
16 04635 100015         COM# 0,0,SNR    ;ATTEMPT TO MAKE ZEROS
17 04636 100004         COM 0,0,SZR     ;AC0 SHD HAVE =-1
18                      ERROR           ;AC0 ALTERED IR12=1
19 04637 063077         HALT
20
21
22       004637         E1076=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
23 04640 102014         ADC# 0,0,SZR ;NOLOAD 1'S
24 04641 101004         MOV 0,0,SZR     ;AC0 SHD STILL=0'S
25                      ERROR           ;IR12=1 DID NOT BLOCK 1'S
26 04642 063077         HALT
27
28
29       004642         E1077=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
30                      NOLOD 2,1
31 04643 126000 NLD2:   ADC 1,1 ;AC1=-1
32 04644 124015         COM# 1,1,SNR    ;ATTEMPT TO MAKE ZEROS
33 04645 124004         COM 1,1,SZR     ;AC1 SHD HAVE =-1
34                      ERROR           ;AC1 ALTERED IR12=1
35 04646 063077         HALT
36
37
38       004646         E1100=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
39 04647 126014         ADC# 1,1,SZR ;NOLOAD 1'S
40 04650 125004         MOV 1,1,SZR     ;AC1 SHD STILL=0'S
41                      ERROR           ;IR12=1 DID NOT BLOCK 1'S
42 04651 063077         HALT
43
44
45       004651         E1101=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
46                      NOLOD 3,2
47 04652 152000 NLD3:   ADC 2,2 ;AC2=-1
48 04653 150015         COM# 2,2,SNR    ;ATTEMPT TO MAKE ZEROS
49 04654 150004         COM 2,2,SZR     ;AC2 SHD HAVE =-1
50                      ERROR           ;AC2 ALTERED IR12=1
51 04655 063077         HALT
52
53
54       004655         E1102=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
55 04656 152014         ADC# 2,2,SZR ;NOLOAD 1'S
56 04657 151004         MOV 2,2,SZR     ;AC2 SHD STILL=0'S
57                      ERROR           ;IR12=1 DID NOT BLOCK 1'S
58 04660 063077         HALT
59
60
```

```
 0142  PRCST
01       004660         E1103=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
02                      NOLOD 4,3
03 04661 176000 NLD4:   ADC 3,3 ;AC3=-1
04 04662 174015         COM# 3,3,SNR    ;ATTEMPT TO MAKE ZEROS
05 04663 174004         COM 3,3,SZR     ;AC3 SHD HAVE =-1
06                      ERROR           ;AC3 ALTERED IR12=1
07 04664 063077         HALT
08
09
10       004664         E1104=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
11 04665 176014         ADC# 3,3,SZR ;NOLOAD 1'S
12 04666 175004         MOV 3,3,SZR     ;AC3 SHD STILL=0'S
13                      ERROR           ;IR12=1 DID NOT BLOCK 1'S
14 04667 063077         HALT
15
16
17       004667         E1105=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
!0143  PRCST
01
02
03                ;TEST CARRY NO LOAD IR12= 1 TO PREVENT CARRY LOAD
04
05 04670 102020 A9I:    ADCZ 0,0
06 04671 102052         ADCO# 0,0,SZC    ;NO LOAD CARRY IR12=1
07 04672 102002         ADC 0,0,SZC
08                      ERROR            ;CALC.IR12
09 04673 063077         HALT
10
11
12        004673        E1106=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
13                ;IF ABOVE NO LOAD CAUSES A JMP 0, SEE BIT 14 AT SETTRAP AND GATE
14
15
16 04674 102040 A9J:    ADCO 0,0
17 04675 102033         ADCZ# 0,0,SNC    ;CRY SHD STAY=1 IR12=1
18 04676 102003         ADC 0,0,SNC
19                      ERROR            ;NOT NEWCARRY.NOT LOADCARRY
20 04677 063077         HALT
21
22
23        004677        E1107=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
24                ;IF ABOVE NOLOAD CAUSES A JMP 0,SEE BIT 15 AT SETTRAP AND GATE
25
26
27                  ;FIRST USE OF STA INSTRUCTION
28                  ;ALSO, FIRST LDA WITH 10 AS EFFECTIVE ADDRESS
29
30 04700 102000 STA00:  ADC 0,0
31 04701 040010         STA 0,10                 ;FIRST USE OF STA
32 04702 024010         LDA 1,10                 ;FIRST LDA OF LOC "10"
33 04703 130004         COM 1,2,SZR      ;SKIP IF LDA GOT -1 BACK
34                      ERROR            ;LDA FROM LOC "0" IS IN AC1
35 04704 063077         HALT
36
37
38        004704        E1110=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
39                  ;NOW STORE 0'S IN LOC 10 RETRY LDA 0,10
40 04705 102400 STA01:  SUB 0,0
41 04706 040010         STA 0,10                 ;2ND STA IN LOC "10"
42 04707 024010         LDA 1,10                 ;2ND LDA OF LOC "10"
43 04710 125004         MOV 1,1,SZR      ;SKP IS LDA GOT 0'S BACK
44                      ERROR
45 04711 063077         HALT
46
47
48        004711        E1111=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
49                  ;IF EITHER OF ABOVE HALTS EXAMINE LOC CONTAINING STA
50                  ;IN CASE ADDRESSING MODE 1 ENABLED
51                  ;IF STA0,10+1=-1 OR STA0,10+1=0 SEE IR7 ALU ROM(DP1/D)
```

```
!0144  PRCST
01
02
03                ;CONTINUATION OF LDA TESTS
04                ;ADDRESSING MODE 01 (IR7=1 IR6=0)
05
06 04712 102000 LDA29:  ADC 0,0          ;SET AC0=-1
07 04713 020400         LDA 0,.          ;FIRST LDA WITH IR7=1
08 04714 024130         LDA 1,KLDA.      ;GET LDA 0,. FROM PAGE 0
09 04715 106404         SUB 0,1,SZR      ;RESULT LAST 2 LOADS SHD BE=
10                      ERROR            ;LDA 0 IR7=1 FAILED
11 04716 063077         HALT
12
13
14        004716        E1112=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
15                ;EXPECTED RESULT IN AC0 PROBABLY LOADED LOC "0" INSTEAD
16
17                ;NOW TEST FORWARD "LDA .+1" +1 OFFSET
18 04717 126000 LDA30:  ADC 1,1
19 04720 024401         LDA 1,.+1        ;GET NEXT MEM LOC
20 04721 020400         LDA 0,.+0        ;ALSO 0=LDA 0,.
21 04722 131000         MOV 1,2          ;SAVE LDA RESULTS
22 04723 112404         SUB 0,2,SZR      ;SKP BOTH LDA'S CORRECT
23                      ERROR            ;AC0 AND 1 SHD BOTH=LDA 0,.
24 04724 063077         HALT
25
26
27        004724        E1113=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
28                ;USE NEGATIVE OFFEST FOR THE FIRST TIME
29                ;NOW TEST MODE 01 NEGATIVE OFFSET OF=-1
30 04725 126000 LDA31:  ADC 1,1          ;SEE DISPXTND IF TEST FAILS
31 04726 020400         LDA 0,.          ;GET THIS INST TO AC0
32 04727 024777         LDA 1,.-1        ;FIRST USE - OFFSET TO AC1
33 04730 131000         MOV 1,2          ;SAVE LDA RESULTS
34 04731 112404         SUB 0,2,SZR      ;SKP BOTH LDA'S CORRECT
35                      ERROR            ;SEE NOT DISPEXTEND AT DP1/D ROM
36 04732 063077         HALT
37
38
39        004732        E1114=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
40                ;LDA ALL AC'S WITH LDA 0,. USING FORWARD OFFSETS
41 04733 034403 LDA32:  LDA 3,.+3
42 04734 030402         LDA 2,.+2
43 04735 024401         LDA 1,.+1
44 04736 020400         LDA 0,.
45 04737 106414         SUB# 0,1,SZR
46                      ERROR            ;LDA 1,.+1 FAILED
47 04740 063077         HALT
48
49
50        004740        E1115=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
51 04741 112414         SUB# 0,2,SZR
52                      ERROR            ;LDA 2,.+2 FAILED
53 04742 063077         HALT
54
55
56        004742        E1116=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
57 04743 116414         SUB# 0,3,SZR
58                      ERROR            ;LDA 3,.+3 FAILED
59 04744 063077         HALT
60
```

```
 0145  PRCST
01
02        004744          E1117=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
03
04                ;TEST LDA SEQUENCE OF - OFFSETS
05 04745 020400 LDA33:    LDA 0,.
06 04746 024777           LDA 1,.-1
07 04747 030776           LDA 2,.-2
08 04750 034775           LDA 3,.-3
09 04751 106414           SUB# 0,1,SZR
10                        ERROR           ;LDA .-1 FAILED
11 04752 063077           HALT
12
13
14        004752          E1120=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
15 04753 112414           SUB# 0,2,SZR
16                        ERROR           ;LDA .-2 FAILED
17 04754 063077           HALT
18
19
20        004754          E1121=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
21 04755 116414           SUB# 0,3,SZR
22                        ERROR           ;LDA .-3 FAILED
23 04756 063077           HALT
24
25
26        004756          E1122=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
27
28
```

```
10146  PRCST
01                ;TEST FOR EXISTENCE OF ISZ INSTR
02                ;FIRST USE OF ISZ INSTRUCTION
03 04757 102400 ISZ00:    SUB 0,0
04 04760 040010           STA 0,10
05 04761 152000           ADC 2,2         ;SET AC2=-1 ISZ COULD=LDA OR STA
06 04762 010010           ISZ 10          ;+1 LOC 10 SHD NOW=+1
07 04763 105001           MOV 0,1,SKP     ;ALU CRY MIGHT NOT=1
08                        ERROR           ;ISZ (0+1) SKIPPED
09 04764 063077           HALT
10
11
12        004764          E1123=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
13 04765 024010           LDA 1,10                ;SEE SETSKP,RMW,DP2,ZR  IN SKIP LOGIC
14 04766 121225           MOVZR 1,0,SNR   ;MAKE SURE ISZ RESULT
15 04767 101003           MOV 0,0,SNC     ;IS=TO+1
16                        ERROR           ;0+1 DID NOT=+1
17 04770 063077           HALT
18
19
20        004770          E1124=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
21 04771 154004           COM 2,3,SZR
22                        ERROR           ;ISZ CHANGED AC2
23 04772 063077           HALT
24
25
26        004772          E1125=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
27
28                ;TEST FOR EXISTENCE OF DSZ INSTRUCTION
29                ;-1 TO 0 IN LOC 10 SHD=-1
30                ;FIRST USE OF DSZ INST
31 04773 176400 DSZ00:    SUB 3,3
32 04774 040010           STA 0,10
33 04775 014010           DSZ 10          ;-1 TO 0 IN LOC 10
34 04776 105001           MOV 0,1,SKP
35                        ERROR           ;DSZ SKIPPED 0-1
36 04777 063077           HALT
37
38
39        004777          E1126=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
40 05000 024010           LDA 1,10                ;GET DSZ RESULTS SHD=-1
41 05001 120004           COM 1,0,SZR
42                        ERROR           ;DSZ RESULT NOT=-1
43 05002 063077           HALT
44
45
46        005002          E1127=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
47 05003 175004           MOV 3,3,SZR     ;AC3 SHD NOT BE DISTURBED
48                        ERROR           ;DSZ CHANGED AC3
49 05004 063077           HALT
50
51
52        005004          E1130=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
53
54                ;RETEST ISZ TO SKIP AND NOT CHNGE CRY
55                ;+1 TO -1 IN LOC 10
56 05005 102000 ISZ01:    ADC 0,0
57 05006 040010           STA 0,10        ;(10)=-1
58 05007 111120           MOVZL 0,2       ;(AC2=-2) CRY=1
59 05010 010010           ISZ 10          ;+1-1=SETSKIP,ZR
60                        ERROR           ;ISZ-1 DID NOT SKIP
```

```
 0147  PRCST
01 05011 063077          HALT
02
03
04       005011          E1131=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
05 05012 101003          MOV 0,0,SNC     ;TEST CALC
06                       ERROR           ;CARRY OUT CHANGED CRY
07 05013 063077          HALT
08
09
10       005013          E1132=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
11 05014 020010          LDA 0,10
12 05015 101004          MOV 0,0,SZR
13                       ERROR           ;(LOC 10) DID NOT=0 AFTER ISZ
14 05016 063077          HALT
15
16
17       005016          E1133=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
18 05017 140225          COMZR 2,0,SNR   ;MAKE SURE AC2 STILL=-2
19 05020 101003          MOV 0,0,SNC
20                       ERROR           ;ISZ CHANGED AC2
21 05021 063077          HALT
22
23
24       005021          E1134=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10148  PRCST
01
02
03                ;TEST DSZ  IN SKIP LOGIC
04 05022 102520 DSZ01:  SUBZL 0,0
05 05023 040010         STA 0,10        ;(LOC 10=+1)
06 05024 114000         COM 0,3         ;(AC3=-2)
07 05025 014010         DSZ 10          ;+1-1=ZR.RMW.DP2.NOT AUTO = SETSKIP
08                      ERROR           ;DSZ DID NOT SKIP
09 05026 063077         HALT
10
11
12       005026         E1135=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
13 05027 101002         MOV 0,0,SZC     ;TEST NOT CALC TO STOP ALUCARRYOUT
14                      ERROR           ;ALUCARRYOUT CHANGED CARRY
15 05030 063077         HALT
16
17
18       005030         E1136=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
19 05031 160225         COMZR 3,0,SNR
20 05032 101003         MOV 0,0,SNC     ;AC3 SHD STILL=-2
21                      ERROR           ;DSZ CHANGED AC3
22 05033 063077         HALT
23
24
25       005033         E1137=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
26
27                ;FIRST USE OF JMP INSTRUCTION JMP .+2
28                ;ADDRS OF JMP TESTS ARE STORED IN LOC 10
29 05034 020402 JMP00:  LDA 0,.+2
30 05035 115001         MOV 0,3,SKP
31 05036 005034         JMP00
32 05037 040010         STA 0,10                ;ADDRS OF JMP TST TO LOC 10
33 05040 000402         JMP .+2
34                      ERROR           ;JMP DID NOT JMP
35 05041 063077         HALT
36
37
38       005041         E1140=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
39 05042 116414         SUB# 0,3,SZR    ;AC0 AND AC3 SHD BE=
40                      ERROR           ;JMP CHANGED AC3 (JSR?)
41 05043 063077         HALT
42
43
44       005043         E1141=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
45                ;TEST JMP WITH A NEG OFFSET
46 05044 020402 JMP01:  LDA 0,.+2
47 05045 115001         MOV 0,3,SKP
48 05046 005044         JMP01
49 05047 040010         STA 0,10        ;LOC 10=ADDRS JMP TEST
50 05050 111001         MOV 0,2,SKP     ;GET TO JMP -
51 05051 000403         JMP .+3
52 05052 000777         JMP .-1
53                      ERROR
54 05053 063077         HALT
55
56
57       005053         E1142=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
58 05054 116414         SUB# 0,3,SZR
59                      ERROR           ;JMP CHNGED AC0 OR AC3
60 05055 063077         HALT
```

```
 0149  PRCST
01
02
03       005055          E1143=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
!0150  PRCST
01
02
03                ;FIRST USE OF JSR INSTRUCTION
04
05 05056 020402 JSR00:  LDA 0,.+2
06 05057 115001         MOV 0,3,SKP
07 05060 005056         JSR00           ;ADRS THIS TEST
08 05061 040010         STA 0,10                ;TO LOC 10
09 05062 004402         JSR .+2         ;FIRST USE JSR
10                      ERROR           ;JSR DID NOT CHNG PC
11 05063 063077         HALT
12
13
14       005063         E1144=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
15 05064 024105         LDA 1,K5
16 05065 123000         ADD 1,0         ;NOW AC0 AND AC3 SHD BE=
17 05066 116414         SUB# 0,3,SZR
18                      ERROR           ;JSR FAILED TO LOAD AC3
19 05067 063077         HALT
20
21
22       005067         E1145=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
23                ;TEST JSR WITH NEG OFFSET
24 05070 020402 JSR01:  LDA 0,.+2
25 05071 115001         MOV 0,3,SKP
26 05072 005070         JSR01           ;ADRS THIS TEST
27 05073 040010         STA 0,10                ;TO LOC 10
28 05074 111001         MOV 0,2,SKP
29 05075 000403         JMP .+3
30 05076 004777         JSR .-1         ;FIRST JSR - OFFSET
31                      ERROR           ;JSR DID NOT CHNG PC
32 05077 063077         HALT
33
34
35       005077         E1146=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
36 05100 024107         LDA 1,K7
37 05101 123000         ADD 1,0
38 05102 116414         SUB# 0,3,SZR
39                      ERROR
40 05103 063077         HALT
41
42
43       005103         E1147=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
44
45               ;NOW TEST LDA USING INDEX MODE 2
46                ;FIRST USE OF INDEXING OFFSET AND INDEX=0
47 05104 020110 LDA34:  LDA 0,K10
48 05105 040010         STA 0,10
49 05106 111000         MOV 0,2         ;  AC2=10
50 05107 100400         NEG 0,0         ;AC0=-10
51 05110 105000         MOV 0,1         ;AC1=-10
52 05111 040011         STA 0,11        ;(LOC 11)=-10
53 05112 155400         INC 2,3
54 05113 025000         LDA 1,0,2
55 05114 123014         ADD# 1,0,SZR    ;AC1=10 (AC0)=-10 IF LDA CORRECT
56                      ERROR           ;LDA 1,0,2 FAILED
57 05115 063077         HALT
58
59
60       005115         E1150=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0151  PRCST
01                ;MAY HAVE USED AC3 AS INDEX (AC1) WILL=(LOC 11)
02
```

```
10152  PRCST
01
02
03                ;NOW USE STA MODE 2 INDEXED
04                ;ALSO FIRST USE OF AN LDA PAGE 0 BIT 8=1
05
06 05116 030135 STA02:  LDA 2,K210       ;THIS LDA PREV TESTED
07 05117 051000          STA 2,0,2        ;STORE 210 IN LOC 210
08 05120 024210          LDA 1,210        ;DIRECT ACCESS 210
09 05121 132414          SUB# 1,2,SZR     ;NOT=LDA OR STA
10                       ERROR            ;COULD FAIL EFA DISPEXTEND
11 05122 063077          HALT
12
13
14       005122          E1151=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
15                ;IR8=1 SHD BE BLOCKED BY ALU ROM IR6.7=0 .EFA
16
17                ;TRY STA AGAIN WITH + OFFSET
18                ;CONTENTS OF LOC 210 STILL=210
19 05123 030135 STA03:  LDA 2,K210
20 05124 141400          INC 2,0
21 05125 041001          STA 0,1,2        ;211 TO LOC 211
22 05126 024211          LDA 1,211        ;GET 211 DIRECT
23 05127 122414          SUB# 1,0,SZR     ;
24                       ERROR            ;STA 0,1,2 FAILED
25 05130 063077          HALT
26
27
28       005130          E1152=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
29
30                ;TRY STA AGAIN WITH - OFFSET
31 05131 030135 STA04:  LDA 2,K210
32 05132 144000          COM 2,1
33 05133 045377          STA 1,-1,2       ;COM 210 TO LOC 207
34 05134 020207          LDA 0,207        ;GET IT BACK
35 05135 106414          SUB# 0,1,SZR     ;(LOC 207) SHD=COM 210
36                       ERROR            ;STA 1,-1,2 FAILED
37 05136 063077          HALT
38
39
40       005136          E1153=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
41                ;DISPEXTEND MAY HAVE FAILED EFA IR8=1 AND NOT INDEX 00
42                ;ALU ROM IR6=1 AND EFA
43
44                ;USE STA DIRECT TO 300
45                ;AND LDA INDEXED MODE 3 TO RETRIEVE
46
47 05137 034114 STA05:  LDA 3,K200       ;PREP AC2 AND AC3 FOR
48 05140 030113          LDA 2,K100       ;TESTING INDEX 3 GETS AC3
49 05141 054300          STA 3,300        ;DOUBTFUL THAT DISPXTND FAILS
50 05142 160000          COM 3,0
51 05143 040200          STA 0,200        ;PREP LOC 200 IN CASE INDEXS AC2
52 05144 025500          LDA 1,100,3      ;FIRST USE OF INDEX 3
53 05145 136414          SUB# 1,3,SZR     ;AC1 AND AC3 SHD=200
54                       ERROR            ;LDA DIDN'T GET (LOC 300)
55 05146 063077          HALT
56
57
58       005146          E1154=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
59                ;IF (AC1)=COM OF 200 INDEX 2 WAS USED INSTEAD
60
```

```
 0153  PRCST
01                ;TEST LDA INDEXED AC3 WITH - OFFSET
02
03 05147 034131 STA06:  LDA 3,K300
04 05150 030114         LDA 2,K200
05 05151 160400         NEG 3,0
06 05152 040277         STA 0,277       ;-300 TO LOC 277
07 05153 025777         LDA 1,-1,3      ;LOC 277 TO AC1
08 05154 122414         SUB# 1,0,SZR    ;AC1 SHD=AC0
09                      ERROR           ;LDA 1,-1,3 FAILED
10 05155 063077   .     HALT
11
12
13       005155         E1155=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0154  PRCST
01                ;START TESTING AUTO INDEX AND INDIRECTS
02                ;USING MODE 2 SAFEST WAY TO LOAD LOC 20
03                ;AND AVOID "AUTO"
04
05 05156 030111 STA07:  LDA 2,K20
06 05157 020116         LDA 0,K400
07 05160 114400         NEG 0,3
08 05161 041000         STA 0,0,2       ;FIRST REF MEM LOC 20
09 05162 055001         STA 3,1,2       ;LOC 21
10 05163 024020         LDA 1,20        ;FIRST DIRECT REF LOC 20
11 05164 122414         SUB# 1,0,SZR    ;AC1 0 AND LOC 20 SHD=400
12                      ERROR           ;REFERENCE LOC 20 FAILED
13 05165 063077         HALT
14
15
16       005165         E1156=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
17                ;AUTO ENABLED INTO SET AUTO COULD FAIL IR11=1
18                ;(20) AC1 AND AC0 SHOULD ALL=400
19
20                ;FIRST USE OF DEFER FOLLOWS
21                ;NOT AUTO INDEXED COULD HANG UP VIA NOT CPB0
22 05166 024135 STA08:  LDA 1,K210      ;PREPARE REGISTERS
23 05167 044010         STA 1,10        ;FOR TEST
24 05170 130400         NEG 1,2
25 05171 050210         STA 2,210       ;210=-210
26 05172 044207         STA 1,207       ;207 AND 211
27 05173 044211         STA 1,211       ;=+210
28 05174 022010         LDA 0,@10       ;FIRST TIME IR5=1
29 05175 112414         SUB# 0,2,SZR    ;AC2 AND AC0 SHD=-210
30                      ERROR           ;FIRST DEFER FAILED
31 05176 063077         HALT
32
33
34       005176         E1157=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
35 05177 020010         LDA 0,10
36 05200 106414         SUB# 0,1,SZR    ;LOC 10 SHD=210
37                      ERROR           ;AUTO INC OR DEC LOC 10
38 05201 063077         HALT
39
40
41       005201         E1160=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
42                ;SEE NOT IR11 INTO SET AUTO
43                ;AC0=211 AUTO SET PREMATURELY
```

```
10155  PRCST
01
02
03                      ;NOW TEST DEFER VIA AUTO LOC 20
04                      ;FIRST TIME FOR AUTO
05                      ;IF IT DOESN'T CLEAR GOOD LUCK +1 INST'S STARTS
06 05202 024131 STA09:  LDA 1,K300
07 05203 044020         STA 1,20        ;PREPARE REG'S
08 05204 120400         NEG 1,0         ;(20) 300 AND 277=300
09 05205 040301         STA 0,301       ;(301)=-300
10 05206 044300         STA 1,300
11 05207 044277         STA 1,277
12 05210 036020         LDA 3,@20       ;FIRST TIME AUTO
13 05211 116414         SUB# 0,3,SZR    ;(301) 0 AND AC3 SHD=-300
14                      ERROR           ;AUTO (@20) FAILED LDA
15 05212 063077         HALT
16
17
18       005212         E1161=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
19 05213 030020         LDA 2,20
20 05214 125400         INC 1,1
21 05215 146414         SUB# 2,1,SZR    ;(20) SHD +1 TO=301
22                      ERROR           ;@20 DID NOT +1
23 05216 063077         HALT
24
25
26       005216         E1162=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
27                      ;AUTO DEC COULD HAVE SET SEE "NOT ALU12" AND SET AUTO
28                      ;CONTENTS OF LOC 20 WILL=277
29                      ;OR IF DEFER CLRS PREMATURE AC3 WILL=301
30                      ;SEE "SET AUTO" INTO CLR DEFER TO BLOCK 0 TO DEFER
31
32                      ;NOW TEST AUTO DEC @30
33                      ;FIRST TIME FOR AUTO DEC
34 05217 024135 STA10:  LDA 1,K210      ;NEXT STA COULD HURT IR12=1
35 05220 044030         STA 1,30        ;NO SET AUTO SO AUTO DEC SHD=0
36 05221 134400         NEG 1,3         ;ALU 12 HAS=1 PREVIOUSLY THOUGH
37 05222 054207         STA 3,207       ;207=-210
38 05223 044210         STA 1,210       ;210,211=+210
39 05224 044211         STA 1,211
40 05225 022030         LDA 0,@30       ;FIRST AUTO DEC
41 05226 116414         SUB# 0,3,SZR    ;AC0 AND 3 SHD=-210
42                      ERROR           ;FIRST AUTO DEC FAILED
43 05227 063077         HALT
44
45
46       005227         E1163=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
47 05230 020030         LDA 0,30
48 05231 115400         INC 0,3
49 05232 136414         SUB# 1,3,SZR
50                      ERROR           ;(30) NOT=207 AUTO DEC
51 05233 063077         HALT
52
53
54       005233         E1164=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
55                      ;IF CONTENTS 30=211 SEE ALU12 INTO AUTO DEC
56                    ;AND NOT AUTODECEN.NOT AUTODEC INTO NOT DECA
```

```
10156  PRCST
01
02
03                      ;CASCADE DEFERS THROUGH 10 AND 11
04                      ;FIRST DEFER DEFERRED
05 05234 020133 STA11:  LDA 0,KD11
06 05235 040010         STA 0,10        ;(LOC 10)=@11
07 05236 024131         LDA 1,K300      ;(LOC 11)=300
08 05237 044011         STA 1,11
09 05240 134400         NEG 1,3
10 05241 054300         STA 3,300       ;(300)=-300
11 05242 044301         STA 1,301       ;(301)=300
12 05243 044277         STA 1,277       ;(277)=300
13 05244 032010         LDA 2,@10       ;SHD ALSO DEFER @11 TO LOC 300
14 05245 156414         SUB# 2,3,SZR    ;AC2,3 SHD BOTH=-300
15                      ERROR           ;DEFER DEFERRED FAILED
16 05246 063077         HALT
17
18
19       005246         E1165=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
20                      ;IF AC2=300 SEE NOT CPB0 INTO CLEAR DEFER
21                      ;CPB0=1 SHD INHIBIT CLR DEFER
22
23                      ;CASCADE DEFERS THROUGH 20 TO 37
24                      ;20 TO 27 START=@17+1 TO @20  (20) EVENT=@37
25                      ;30 TO 36=@21-1 TO @20
26                      ;37=300-1 TO 277
27
28 05247 030111 STA12:  LDA 2,K20       ;SET UP
29 05250 020134         LDA 0,KD17      ;AUTO REGISTERS
30 05251 176400         SUB 3,3         ;20 TO 37
31 05252 024136         LDA 1,KM8
32 05253 041000         STA 0,0,2       ;FIRST 20 TO 27=@17
33 05254 151400         INC 2,2         ;THEN 30 TO 37=@21
34 05255 125404         INC 1,1,SZR
35 05256 000775         JMP STA12+4
36 05257 174005         COM 3,3,SNR
37 05260 000403         JMP .+3
38 05261 020137         LDA 0,KD21
39 05262 000770         JMP STA12+3
40 05263 020000-        LDA 0,=276
41 05264 040027         STA 0,27        ;(27)= 276.
42 05265 020137         LDA 0,KD21
43 05266 040030         STA 0,30
44 05267 020131         LDA 0,K300
45 05270 040037         STA 0,37        ;(37)=300
46 05271 040276         STA 0,276
47 05272 040300         STA 0,300
48 05273 040301         STA 0,301
49 05274 040017         STA 0,17
50 05275 114400         NEG 0,3
51 05276 054277         STA 3,277
52 05277 022020         LDA 0,@20       ;EFA @20 THROUGH 27
53 05300 026020         LDA 1,@20       ;EFA @30 THROUGH 37
54 05301 116415         SUB# 0,3,SNR    ;AC0 AND 3 SHD=-300
55 05302 136414         SUB# 1,3,SZR    ;AC1 AND 3 SHD=-300
56                      ERROR           ;CASCADED DEFERS AUTO FAILED
57 05303 063077         HALT
58
59
60       005303         E1166=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0157  PRCST
01 05304 021360          LDA 0,-20,2     ;GET (20)AGAIN
02 05305 024140          LDA 1,KD37      ;GET @37
```

```
10158  PRCST
01
02
03
04
05                ;TEST JMP "@" TO BLOCK SETDP2 AND 2WRADR1
06
07 05306 020402 JMP02:  LDA 0,.+2
08 05307 115001          MOV 0,3,SKP
09 05310 005306          JMP02
10 05311 040010          STA 0,10                ;ADRS OF JMPTST TO LOC 10
11 05312 002403          JMP @JMP2L
12                       ERROR              ;JMP @ FAILED TO
13 05313 063077          HALT
14
15
16       005313          E1167=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
17                       ERROR              ;JMP AT ALL
18 05314 063077          HALT
19
20
21       005314          E1170=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
22 05315 105320 JMP2L:   @.+3
23                       ERROR              ;@ WAS IGNORED
24 05316 063077          HALT
25
26
27       005316          E1171=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
28                       ERROR              ;@.+3 MAY BE SKIP ALSO
29 05317 063077          HALT
30
31
32       005317          E1172=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
33 05320 005321          .+1
34 05321 116414          SUB# 0,3,SZR       ;AC0 OR 3 CHANGED ON A JMP@
35                       ERROR
36 05322 063077          HALT
37
38
39       005322          E1173=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
40
41
42                ;LDA INDEXED WITH BIT 0=1
43                ;SHOULD NOT DEFER
44
45 05323 030131 LDA36:   LDA 2,K300
46 05324 144400          NEG 2,1
47 05325 044301          STA 1,301
48 05326 044277          STA 1,277
49 05327 141400          INC 2,0
50 05330 040300          STA 0,300          ;@ WILL GET 301 IN ERROR
51 05331 153240          ADDOR 2,2          ;SET BIT 0=1
52 05332 035000          LDA 3,0,2          ;IR5=0 SHD NOT DEFER
53 05333 116414          SUB# 0,3,SZR
54                       ERROR              ;INDEX "CPB0" DEFERRED
55 05334 063077          HALT
56
57
58       005334          E1174=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10159  PRCST
01
02
03                ;LDA AUTO REG 20 SHOULD NOT DEFER
04                ;WHEN IR5=0 AND (20) BIT 0=1
05
06 05335 030111 LDA37:  LDA 2,K20
07 05336 034131         LDA 3,K300
08 05337 054300         STA 3,300
09 05340 054301         STA 3,301
10 05341 177240         ADDOR 3,3
11 05342 055000         STA 3,0,2
12 05343 153240         ADDOR 2,2
13 05344 021000         LDA 0,0,2
14 05345 116414         SUB# 0,3,SZR    ;AC0,3 SHD = 100300
15                      ERROR           ;BIT 0 CAUSED A DEFER
16 05346 063077         HALT
17
18
19       005346         E1175=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
20
21                ;JSR WITH BIT 0=1 IN INDEX REG
22                ;SHOULD NOT DEFER AND SHD NOT
23                ;ALLOW BIT 0 INTO AC3
24
25 05347 020403 JSR02:  LDA 0,.+3
26 05350 030110         LDA 2,K10
27 05351 153241         ADDOR 2,2,SKP
28 05352 005365         JS02K
29 05353 151400         INC 2,2         ;COM# 0,0,SKP
30 05354 050010         STA 2,10                ;TO LOC 10=@11
31 05355 024131         LDA 1,K300
32 05356 137240         ADDOR 1,3
33 05357 044011         STA 1,11                ;@300 (TO KEEP INVALID @)
34 05360 040300         STA 0,300       ;DEFER INCORRECT RETURN
35 05361 034145         LDA 3,KJRET     ;(JMP 0,3)
36 05362 054012         STA 3,12                ;TO GET US BACK
37 05363 005377         JSR -1,2        ;(AC2) BIT 0=1 IR5=0 (JSR 0)
38                ;ABOVE JSR SHD NOT DEFER JMP 0,3 IN LOC 12
39                ;SHD BRING US BACK TO JSR +1
40 05364 175112         MOVL# 3,3,SZC   ;AC3 BIT 0 SHD=0
41             JS02K:   ERROR           ;DEFERRED OR AC3 BIT 0=1
42 05365 063077         HALT
43
44
45       005365         E1176=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
46 05366 126000         ADC 1,1
47 05367 107000         ADD 0,1         ;AC1=JS02K-1
48 05370 136414         SUB# 1,3,SZR    ;AC3 SHD=JSR+1
49                      ERROR           ;WRONG ADDRS IN AC3
50 05371 063077         HALT
51
52
53       005371         E1177=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
54
55                ;TEST ISZ TO NOT ALTER AC'S
56 05372 102120 ISZ02:  ADCZL 0,0
57 05373 040010         STA 0,10                ;(10)=-1
58 05374 102400         SUB 0,0
59 05375 126400         SUB 1,1         ;AC'S ALL=0
60 05376 152400         SUB 2,2
```

```
 0160  PRCST
01 05377 176400         SUB 3,3
02 05400 010010         ISZ 10
03 05401 101004         MOV 0,0,SZR
04                      ERROR           ;AC0 NOT=0 OR ISZ SKPD
05 05402 063077         HALT
06
07
08       005402         E1200=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
09 05403 123000         ADD 1,0
10 05404 143000         ADD 2,0
11 05405 163014         ADD# 3,0,SZR
12                      ERROR           ;AC1-2-OR 3 ALTERED "ISZ"
13 05406 063077         HALT
14
15
16       005406         E1201=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
17 05407 020010         LDA 0,10
18 05410 100004         COM 0,0,SZR     ;(10) SHD = -1 (SEE RMW)
19                      ERROR           ;ISZ 10 DID NOT CHNG (10)
20 05411 063077         HALT
21
22
23       005411         E1202=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10161  PRCST
01
02                     ;TEST AGAIN 0'S TO NOT ALTER ONES
03 05412 102400 ISZ03:  SUB 0,0
04 05413 040010         STA 0,10
05 05414 100000         COM 0,0
06 05415 126000         ADC 1,1
07 05416 152000         ADC 2,2
08 05417 176040         ADCO 3,3
09 05420 010010         ISZ 10
10 05421 175404         INC 3,3,SZR
11                      ERROR
12 05422 063077         HALT
13
14
15       005422         E1203=.-1          ;ERR # (8)= USED FOR ERROR DICTIONARY
16 05423 136000         ADC 1,3
17 05424 156003         ADC 2,3,SNC
18 05425 116014         ADC# 0,3,SZR
19                      ERROR              ;AC1=2 OR 3
20 05426 063077         HALT
21
22
23       005426         E1204=.-1          ;ERR # (8)= USED FOR ERROR DICTIONARY
24
25                     ;TEST DSZ TO NOT ALTER AC'S
26 05427 102000 DSZ02:  ADC 0,0
27 05430 040010         STA 0,10
28 05431 100000         COM 0,0
29 05432 104400         NEG 0,1            ;ALL AC'S=0
30 05433 130400         NEG 1,2
31 05434 154400         NEG 2,3
32 05435 014010         DSZ 10             ;-1 TO -2
33 05436 150404         NEG 2,2,SZR
34                      ERROR              ;DSZ CHANGED AC2
35 05437 063077         HALT
36
37
38       005437         E1205=.-1          ;ERR # (8)= USED FOR ERROR DICTIONARY
39 05440 132400         SUB 1,2
40 05441 112400         SUB 0,2
41 05442 172414         SUB# 3,2,SZR
42                      ERROR              ;DSZ CHANGED AC0=1 OR 3
43 05443 063077         HALT
44
45
46       005443         E1206=.-1          ;ERR # (8)= USED FOR ERROR DICTIONARY
47
48                     ;AGAIN TEST DSZ TO NOT ALTER AC'S
49 05444 176520 DSZ03:  SUBZL 3,3          ;.+1
50 05445 054010         STA 3,10                   ;TO LOC 10
51 05446 164400         NEG 3,1
52 05447 170240         COMOR 3,2          ;AC'3=-1
53 05450 176000         ADC 3,3
54 05451 161240         MOVOR 3,0
55 05452 014010         DSZ 10
56                      ERROR              ;DSZ DID NOT SKP
57 05453 063077         HALT
58
59
60       005453         E1207=.-1          ;ERR # (8)= USED FOR ERROR DICTIONARY
```

```
 0162  PRCST
01 05454 166400         SUB 3,1
02 05455 146000         ADC 2,1
03 05456 106014         ADC# 0,1,SZR
04                      ERROR              ;AC0 1 2 OR 3 ALTERED BY DSZ
05 05457 063077         HALT
06
07
08       005457         E1210=.-1          ;ERR # (8)= USED FOR ERROR DICTIONARY
09 05460 020010         LDA 0,10
10 05461 101004         MOV 0,0,SZR        ;(10) CHANGED TO = 0?
11                      ERROR              ;DSZ DID NOT CHNG (0)
12 05462 063077         HALT
13
14
15       005462         E1211=.-1          ;ERR # (8)= USED FOR ERROR DICTIONARY
```

```
10163  PRCST
01
02
03                ;AUTO INCREMENT SHD NOT ALTER AC'S
04 05463 030107 STA13:  LDA 2,K7
05 05464 050023         STA 2,23
06 05465 126400         SUB 1,1
07 05466 044010         STA 1,10
08 05467 020141         LDA 0,KCBE      ;125252 (EVEN BITS)
09 05470 104000         COM 0,1
10 05471 111000         MOV 0,2
11 05472 154000         COM 2,3
12 05473 042023         STA 0,@23       ;125252 GOES TO LOC 0
13 05474 117000         ADD 0,3
14 05475 133000         ADD 1,2
15 05476 156414         SUB# 2,3,SZR
16                      ERROR           ;AUTO INC ALTERED AN AC
17 05477 063077         HALT
18
19
20       005477         E1212=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
21
22                ;AUTO DEC SHD NOT ALTER ANY AC
23 05500 034110 STA14:  LDA 3,K10       ;
24 05501 054037         STA 3,37        ;TO AN AUTO DEC
25 05502 030142         LDA 2,KCB0      ;052525
26 05503 140000         COM 2,0
27 05504 105000         MOV 0,1
28 05505 134000         COM 1,3
29 05506 052037         STA 2,@37       ;AUTO DEC TO LOC 7
30 05507 106414         SUB# 0,1,SZR
31                      ERROR           ;AC0 OR 1 ALTERED
32 05510 063077         HALT
33
34
35       005510         E1213=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
36 05511 156414         SUB# 2,3,SZR
37                      ERROR           ;AC2 OR 3 ALTERED
38 05512 063077         HALT
39
40
41       005512         E1214=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
42
43                ;AN LDA WITH IR12=1 SHD NOT "NO LOAD"
44                ;CALC=0
45
46 05513 102000 LDA38:  ADC 0,0
47 05514 040030         STA 0,30
48 05515 100000         COM 0,0
49 05516 020030         LDA 0,30        ;IR12=1 SHD STILL LOAD
50 05517 100014         COM# 0,0,SZR
51                      ERROR           ;IR12=1 STOPPED 2WEN
52 05520 063077         HALT
53
54
55       005520         E1215=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10164  PRCST
01                ;TEST ISZ AND DSZ TO NOT SKIP
02                ;DEFINE MACRO FOR TESTING
03                        .MACRO ISDST
04                ;TEST OF ISZ DSZ TO  NOT SKIP AROUND ^2
05              ;IDS^1:
06                        LDA 0,K^2       ;GET ^2
07                        STA 0,300
08                        ISZ 300 ;+1
09                        DSZ 300 ;-1
10                        DSZ 300 ;-1
11                        ISZ 300 ;+1
12                        LDA 1,300       ;SHD=^2 AGAIN
13                        SUB# 0,1,SZR
14                        ERROR           ;ISZ/DSZ SEQ FAILED ^2
15              %
16
17                        ISDST 00,2
18                ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 2
19              ;IDS00:
20 05521 020102           LDA 0,K2        ;GET 2
21 05522 040300           STA 0,300
22 05523 010300           ISZ 300 ;+1
23 05524 014300           DSZ 300 ;-1
24 05525 014300           DSZ 300 ;-1
25 05526 010300           ISZ 300 ;+1
26 05527 024300           LDA 1,300       ;SHD=2 AGAIN
27 05530 106414           SUB# 0,1,SZR
28                        ERROR           ;ISZ/DSZ SEQ FAILED 2
29 05531 063077           HALT
30
31
32       005531           E1216=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
33                        ISDST 01,4
34                ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 4
35              ;IDS01:
36 05532 020104           LDA 0,K4        ;GET 4
37 05533 040300           STA 0,300
38 05534 010300           ISZ 300 ;+1
39 05535 014300           DSZ 300 ;-1
40 05536 014300           DSZ 300 ;-1
41 05537 010300           ISZ 300 ;+1
42 05540 024300           LDA 1,300       ;SHD=4 AGAIN
43 05541 106414           SUB# 0,1,SZR
44                        ERROR           ;ISZ/DSZ SEQ FAILED 4
45 05542 063077           HALT
46
47
48       005542           E1217=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
49                        ISDST 02,10
50                ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 10
51              ;IDS02:
52 05543 020110           LDA 0,K10       ;GET 10
53 05544 040300           STA 0,300
54 05545 010300           ISZ 300 ;+1
55 05546 014300           DSZ 300 ;-1
56 05547 014300           DSZ 300 ;-1
57 05550 010300           ISZ 300 ;+1
58 05551 024300           LDA 1,300       ;SHD=10 AGAIN
59 05552 106414           SUB# 0,1,SZR
60                        ERROR           ;ISZ/DSZ SEQ FAILED 10
```

```
 0165  PRCST
01 05553 063077          HALT
02
03
04        005553         E1220=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
05                       ISDST 03,20
06                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 20
07               ;IDS03:
08 05554 020111          LDA 0,K20        ;GET 20
09 05555 040300          STA 0,300
10 05556 010300          ISZ 300 ;+1
11 05557 014300          DSZ 300 ;-1
12 05560 014300          DSZ 300 ;-1
13 05561 010300          ISZ 300 ;+1
14 05562 024300          LDA 1,300        ;SHD=20 AGAIN
15 05563 106414          SUB# 0,1,SZR
16                       ERROR            ;ISZ/DSZ SEQ FAILED 20
17 05564 063077          HALT
18
19
20        005564         E1221=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
21                       ISDST 04,40
22                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 40
23               ;IDS04:
24 05565 020112          LDA 0,K40        ;GET 40
25 05566 040300          STA 0,300
26 05567 010300          ISZ 300 ;+1
27 05570 014300          DSZ 300 ;-1
28 05571 014300          DSZ 300 ;-1
29 05572 010300          ISZ 300 ;+1
30 05573 024300          LDA 1,300        ;SHD=40 AGAIN
31 05574 106414          SUB# 0,1,SZR
32                       ERROR            ;ISZ/DSZ SEQ FAILED 40
33 05575 063077          HALT
34
35
36        005575         E1222=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
37                       ISDST 05,100
38                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 100
39               ;IDS05:
40 05576 020113          LDA 0,K100       ;GET 100
41 05577 040300          STA 0,300
42 05600 010300          ISZ 300 ;+1
43 05601 014300          DSZ 300 ;-1
44 05602 014300          DSZ 300 ;-1
45 05603 010300          ISZ 300 ;+1
46 05604 024300          LDA 1,300        ;SHD=100 AGAIN
47 05605 106414          SUB# 0,1,SZR
48                       ERROR            ;ISZ/DSZ SEQ FAILED 100
49 05606 063077          HALT
50
51
52        005606         E1223=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
53                       ISDST 06,200
54                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 200
55               ;IDS06:
56 05607 020114          LDA 0,K200       ;GET 200
57 05610 040300          STA 0,300
58 05611 010300          ISZ 300 ;+1
59 05612 014300          DSZ 300 ;-1
60 05613 014300          DSZ 300 ;-1
```

```
 0166  PRCST
01 05614 010300          ISZ 300 ;+1
02 05615 024300          LDA 1,300        ;SHD=200 AGAIN
03 05616 106414          SUB# 0,1,SZR
04                       ERROR            ;ISZ/DSZ SEQ FAILED 200
05 05617 063077          HALT
06
07
08        005617         E1224=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
09                       ISDST 07,400
10                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 400
11               ;IDS07:
12 05620 020116          LDA 0,K400       ;GET 400
13 05621 040300          STA 0,300
14 05622 010300          ISZ 300 ;+1
15 05623 014300          DSZ 300 ;-1
16 05624 014300          DSZ 300 ;-1
17 05625 010300          ISZ 300 ;+1
18 05626 024300          LDA 1,300        ;SHD=400 AGAIN
19 05627 106414          SUB# 0,1,SZR
20                       ERROR            ;ISZ/DSZ SEQ FAILED 400
21 05630 063077          HALT
22
23
24        005630         E1225=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
25                       ISDST 08,1000
26                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 1000
27               ;IDS08:
28 05631 020117          LDA 0,K1000      ;GET 1000
29 05632 040300          STA 0,300
30 05633 010300          ISZ 300 ;+1
31 05634 014300          DSZ 300 ;-1
32 05635 014300          DSZ 300 ;-1
33 05636 010300          ISZ 300 ;+1
34 05637 024300          LDA 1,300        ;SHD=1000 AGAIN
35 05640 106414          SUB# 0,1,SZR
36                       ERROR            ;ISZ/DSZ SEQ FAILED 1000
37 05641 063077          HALT
38
39
40        005641         E1226=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
41                       ISDST 09,2000
42                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 2000
43               ;IDS09:
44 05642 020120          LDA 0,K2000      ;GET 2000
45 05643 040300          STA 0,300
46 05644 010300          ISZ 300 ;+1
47 05645 014300          DSZ 300 ;-1
48 05646 014300          DSZ 300 ;-1
49 05647 010300          ISZ 300 ;+1
50 05650 024300          LDA 1,300        ;SHD=2000 AGAIN
51 05651 106414          SUB# 0,1,SZR
52                       ERROR            ;ISZ/DSZ SEQ FAILED 2000
53 05652 063077          HALT
54
55
56        005652         E1227=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
57                       ISDST 10,4000
58                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 4000
59               ;IDS10:
60 05653 020121          LDA 0,K4000      ;GET 4000
```

```
 0167  PRCST
01 05654 040300          STA 0,300
02 05655 010300          ISZ 300 ;+1
03 05656 014300          DSZ 300 ;-1
04 05657 014300          DSZ 300 ;-1
05 05660 010300          ISZ 300 ;+1
06 05661 024300          LDA 1,300        ;SHD=4000 AGAIN
07 05662 106414          SUB# 0,1,SZR
08                       ERROR            ;ISZ/DSZ SEQ FAILED 4000
09 05663 063077          HALT
10
11
12        005663         E1230=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
13                       ISDST 11,10K
14                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 10K
15                ;IDS11:
16 05664 020123          LDA 0,K10K       ;GET 10K
17 05665 040300          STA 0,300
18 05666 010300          ISZ 300 ;+1
19 05667 014300          DSZ 300 ;-1
20 05670 014300          DSZ 300 ;-1
21 05671 010300          ISZ 300 ;+1
22 05672 024300          LDA 1,300        ;SHD=10K AGAIN
23 05673 106414          SUB# 0,1,SZR
24                       ERROR            ;ISZ/DSZ SEQ FAILED 10K
25 05674 063077          HALT
26
27
28        005674         E1231=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
29                       ISDST 12,20K
30                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 20K
31                ;IDS12:
32 05675 020124          LDA 0,K20K       ;GET 20K
33 05676 040300          STA 0,300
34 05677 010300          ISZ 300 ;+1
35 05700 014300          DSZ 300 ;-1
36 05701 014300          DSZ 300 ;-1
37 05702 010300          ISZ 300 ;+1
38 05703 024300          LDA 1,300        ;SHD=20K AGAIN
39 05704 106414          SUB# 0,1,SZR
40                       ERROR            ;ISZ/DSZ SEQ FAILED 20K
41 05705 063077          HALT
42
43
44        005705         E1232=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45                       ISDST 13,40K
46                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 40K
47                ;IDS13:
48 05706 020125          LDA 0,K40K       ;GET 40K
49 05707 040300          STA 0,300
50 05710 010300          ISZ 300 ;+1
51 05711 014300          DSZ 300 ;-1
52 05712 014300          DSZ 300 ;-1
53 05713 010300          ISZ 300 ;+1
54 05714 024300          LDA 1,300        ;SHD=40K AGAIN
55 05715 106414          SUB# 0,1,SZR
56                       ERROR            ;ISZ/DSZ SEQ FAILED 40K
57 05716 063077          HALT
58
59
60        005716         E1233=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0168  PRCST
01                       ISDST 14,100K
02                 ;TEST OF ISZ DSZ TO  NOT SKIP AROUND 100K
03                ;IDS14:
04 05717 020126          LDA 0,K100K      ;GET 100K
05 05720 040300          STA 0,300
06 05721 010300          ISZ 300 ;+1
07 05722 014300          DSZ 300 ;-1
08 05723 014300          DSZ 300 ;-1
09 05724 010300          ISZ 300 ;+1
10 05725 024300          LDA 1,300        ;SHD=100K AGAIN
11 05726 106414          SUB# 0,1,SZR
12                       ERROR            ;ISZ/DSZ SEQ FAILED 100K
13 05727 063077          HALT
14
15
16        005727         E1234=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10169  PRCST
01
02
03
04                ;******TRAP INSTRUCTION TEST ********
05
06 05730 020406 TP.00:  LDA 0,.+6               ;PREPARE
07 05731 040047         STA 0,TPADR             ;RETURN ADDR
08 05732 100010         TRAP                    ;TRAP INSTRUCTION
09                      ERROR           ;ERROR....SHD HAVE TRAPPED
10 05733 063077         HALT
11
12
13       005733         E1235=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
14 05734 000403         JMP .+3
15 05735 005732         .-3             ;POINT TO TRAP INSTR.
16 05736 005737         .+1             ;POINT TO NEXT INSTRUCTION
17 05737 024046         LDA 1,TPLOC     ;GET PC AT TRAP TIME
18 05740 020775         LDA 0,.-3       ;GET TRAP INSTR. ADDR.
19 05741 122414         SUB# 1,0,SZR    ;SKP=TRAP STORED PC OK
20                      ERROR           ;ERROR- TRAP DIDN'T SAVE PC
21 05742 063077         HALT
22
23
24       005742         E1236=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
25
26
27                ;DEFINE MACRO FOR TESTING TRAP NOT TO DISTURB AC'S
28                      .MACRO TPACT
29                TP.^1:  LDA 0,.+6               ;RTN ADDR
30                        STA 0,TPADR             ;SETUP RETURN
31                        ADC ^2,^2       ;SET AC^2 TO -1
32                        TRAP            ;TRAP INSTR
33                        ERROR           ;TRAP DIDN'T JMP @5
34                        JMP .+2
35                        .+1             ;RETURN ADDR POINTER
36                        COM ^2,^2,SZR   ;SHD COM TO 0 IF STILL OK
37                        ERROR           ;TRAP DISTURBED AC^2
38
39                %
40                      TPACT 01,0
41 05743 020406 TP.01:  LDA 0,.+6               ;RTN ADDR
42 05744 040047         STA 0,TPADR             ;SETUP RETURN
43 05745 102000         ADC 0,0 ;SET AC0 TO -1
44 05746 100010         TRAP            ;TRAP INSTR
45                      ERROR           ;TRAP DIDN'T JMP @5
46 05747 063077         HALT
47
48
49       005747         E1237=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
50 05750 000402         JMP .+2
51 05751 005752         .+1             ;RETURN ADDR POINTER
52 05752 100004         COM 0,0,SZR     ;SHD COM TO 0 IF STILL OK
53                      ERROR           ;TRAP DISTURBED AC0
54 05753 063077         HALT
55
56
57       005753         E1240=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
58
59                      TPACT 02,1
60 05754 020406 TP.02:  LDA 0,.+6               ;RTN ADDR
```

```
 0170  PRCST
01 05755 040047         STA 0,TPADR             ;SETUP RETURN
02 05756 126000         ADC 1,1 ;SET AC1 TO -1
03 05757 100010         TRAP            ;TRAP INSTR
04                      ERROR           ;TRAP DIDN'T JMP @5
05 05760 063077         HALT
06
07
08       005760         E1241=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
09 05761 000402         JMP .+2
10 05762 005763         .+1             ;RETURN ADDR POINTER
11 05763 124004         COM 1,1,SZR     ;SHD COM TO 0 IF STILL OK
12                      ERROR           ;TRAP DISTURBED AC1
13 05764 063077         HALT
14
15
16       005764         E1242=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
17
18                      TPACT 03,2
19 05765 020406 TP.03:  LDA 0,.+6               ;RTN ADDR
20 05766 040047         STA 0,TPADR             ;SETUP RETURN
21 05767 152000         ADC 2,2 ;SET AC2 TO -1
22 05770 100010         TRAP            ;TRAP INSTR
23                      ERROR           ;TRAP DIDN'T JMP @5
24 05771 063077         HALT
25
26
27       005771         E1243=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
28 05772 000402         JMP .+2
29 05773 005774         .+1             ;RETURN ADDR POINTER
30 05774 150004         COM 2,2,SZR     ;SHD COM TO 0 IF STILL OK
31                      ERROR           ;TRAP DISTURBED AC2
32 05775 063077         HALT
33
34
35       005775         E1244=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
36
37                      TPACT 04,3
38 05776 020406 TP.04:  LDA 0,.+6               ;RTN ADDR
39 05777 040047         STA 0,TPADR             ;SETUP RETURN
40 06000 176000         ADC 3,3 ;SET AC3 TO -1
41 06001 100010         TRAP            ;TRAP INSTR
42                      ERROR           ;TRAP DIDN'T JMP @5
43 06002 063077         HALT
44
45
46       006002         E1245=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
47 06003 000402         JMP .+2
48 06004 006005         .+1             ;RETURN ADDR POINTER
49 06005 174004         COM 3,3,SZR     ;SHD COM TO 0 IF STILL OK
50                      ERROR           ;TRAP DISTURBED AC3
51 06006 063077         HALT
52
53
54       006006         E1246=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
55
56
57
58                ;TRY DEFERRING IN TRAP HANDLER ADDRESS
59
60 06007 020132 TP.05:  LDA 0,KD300     ;GET INDIRECT ADDR 300
```

```
 0171  PRCST
01 06010 040047          STA 0,TPADR     ;SETUP TRAP ADDRESS
02 06011 020407          LDA 0,TP.5R     ;GET RETURN ADDRESS
03 06012 040300          STA 0,300       ;PLACE IN LOC 300
04 06013 020116          LDA 0,K400
05 06014 040301          STA 0,301       ;PUT HALT IN LOC 301
06 06015 100010          TRAP            ;TRAP INSTR.
07                       ERROR           ;ERROR HALT..DEFER TEST DIDN'T WORK
08 06016 063077          HALT
09
10
11       006016          E1247=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
12 06017 000402          JMP .+2
13 06020 006021 TP.5R:   .+1             ;RETURN ADDRESS
14
15
16
17
```

```
10172  PRCST
01                ;********STACK TEST ********
02
03                ;FIRST USE OF STACK INSTRUCTIONS(DEV01)
04                ;TEST FOR EXISTANCE OF STACK
05 06021 102000 STK.0:  ADC 0,0          ;A MOVE FROM SP SHD
06 06022 061001         MTSP 0
07 06023 102400         SUB 0,0
08 06024 061201         MFSP 0           ;DISTURB THE DESTINATION REG
09 06025 101005         MOV 0,0,SNR      ;SHD = 77777 IF MFSP WORKED OK
10                      ERROR            ;STACK INSTR DIDN'T LOAD AC0
11 06026 063077         HALT
12
13
14       006026         E1250=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
15 06027 101112         MOVL# 0,0,SZC    ;CHECK FOR BIT 0 OFF
16                      ERROR            ;CHECK FIX8IT0
17 06030 063077         HALT
18
19
20       006030         E1251=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
21                ;IF ABOVE FAILS SEE DEV01 DECODE,STACK ROMS,NOT DCH.NOT IR9.DEV01,
22                ; AT STACK AND GATE.
23
24                ;TRY THE MOVE TO STACK POINTER/MOVE FROM STACK POINTER
25                ;AND ALSO STACK FRAME
26                ;
27                ;DEFINE MACRO FOR USE IN STACK MOVE TESTS
28
29                      .MACRO STTST
30                ST.^1:  LDA ^4,^3        ;PUT ^3 IN AC^4
31                      ADC ^6,^6        ;SET AC^6 TO -1
32                      MOV ^6,^7
33                      MOV ^6,^5        ;AC^5,AC^7 = -1
34                      MT^2 ^4          ;MOVE AC^4 TO ^2
35                      MF^2 ^5          ;READ ^2 INTO AC^5
36                      SUB#^4,^5,SZR    ;CHECK RETURNED VALUE
37                      ERROR            ;STACK ERROR,AC^5 SHD= AC^4
38                      COM# ^6,^6,SZR   ;CHECK DISTURB OF AC^6
39                      ERROR            ;MFSP ^5 DISTURBED AC^6
40                      COM# ^7,^7,SZR   ;CHECK AC^7
41                      ERROR            ;MF^2 ^5 DISTURBED AC^7
42
43                %
44
45
46
47                      STTST 00,SP,K0,0,1,2,3
48 06031 020146 ST.00:  LDA 0,K0         ;PUT K0 IN AC0
49 06032 152000         ADC 2,2 ;SET AC2 TO -1
50 06033 155000         MOV 2,3
51 06034 145000         MOV 2,1 ;AC1,AC3 = -1
52 06035 061001         MTSP 0           ;MOVE AC0 TO SP
53 06036 065201         MFSP 1           ;READ SP INTO AC1
54 06037 106414         SUB#0,1,SZR      ;CHECK RETURNED VALUE
55                      ERROR            ;STACK ERROR,AC1 SHD= AC0
56 06040 063077         HALT
57
58
59       006040         E1252=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
60 06041 150014         COM# 2,2,SZR     ;CHECK DISTURB OF AC2
```

```
01                              ERROR           ;MFSP 1 DISTURBED AC2
02 06042 063077                 HALT
03
04
05       006042         E1253=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
06 06043 174014                 COM# 3,3,SZR    ;CHECK AC3
07                              ERROR           ;MFSP 1 DISTURBED AC3
08 06044 063077                 HALT
09
10
11       006044         E1254=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
12
13                              STTST 01,SP,K2525,1,2,3,0
14 06045 024143 ST.01:  LDA 1,K2525     ;PUT K2525 IN AC1
15 06046 176000                 ADC 3,3 ;SET AC3 TO -1
16 06047 161000                 MOV 3,0
17 06050 171000                 MOV 3,2 ;AC2,AC0 = -1
18 06051 065001                 MTSP 1          ;MOVE AC1 TO SP
19 06052 071201                 MFSP 2          ;READ SP INTO AC2
20 06053 132414                 SUB#1,2,SZR     ;CHECK RETURNED VALUE
21                              ERROR           ;STACK ERROR,AC2 SHD= AC1
22 06054 063077                 HALT
23
24
25       006054         E1255=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
26 06055 174014                 COM# 3,3,SZR    ;CHECK DISTURB OF AC3
27                              ERROR           ;MFSP 2 DISTURBED AC3
28 06056 063077                 HALT
29
30
31       006056         E1256=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
32 06057 100014                 COM# 0,0,SZR    ;CHECK AC0
33                              ERROR           ;MFSP 2 DISTURBED AC0
34 06060 063077                 HALT
35
36
37       006060         E1257=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
38
39                              STTST 02,SP,K5252,2,3,0,1
40 06061 030142 ST.02:  LDA 2,K5252     ;PUT K5252 IN AC2
41 06062 102000                 ADC 0,0 ;SET AC0 TO -1
42 06063 105000                 MOV 0,1
43 06064 115000                 MOV 0,3 ;AC3,AC1 = -1
44 06065 071001                 MTSP 2          ;MOVE AC2 TO SP
45 06066 075201                 MFSP 3          ;READ SP INTO AC3
46 06067 156414                 SUB#2,3,SZR     ;CHECK RETURNED VALUE
47                              ERROR           ;STACK ERROR,AC3 SHD= AC2
48 06070 063077                 HALT
49
50
51       006070         E1260=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
52 06071 100014                 COM# 0,0,SZR    ;CHECK DISTURB OF AC0
53                              ERROR           ;MFSP 3 DISTURBED AC0
54 06072 063077                 HALT
55
56
57       006072         E1261=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
58 06073 124014                 COM# 1,1,SZR    ;CHECK AC1
59                              ERROR           ;MFSP 3 DISTURBED AC1
60 06074 063077                 HALT
```



```
01
02
03       006074         E1262=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
04
05                              STTST 03,SP,K0777,3,0,1,2
06 06075 034127 ST.03:  LDA 3,K0777     ;PUT K0777 IN AC3
07 06076 126000                 ADC 1,1 ;SET AC1 TO -1
08 06077 131000                 MOV 1,2
09 06100 121000                 MOV 1,0 ;AC0,AC2 = -1
10 06101 075001                 MTSP 3          ;MOVE AC3 TO SP
11 06102 061201                 MFSP 0          ;READ SP INTO AC0
12 06103 162414                 SUB#3,0,SZR     ;CHECK RETURNED VALUE
13                              ERROR           ;STACK ERROR,AC0 SHD= AC3
14 06104 063077                 HALT
15
16
17       006104         E1263=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
18 06105 124014                 COM# 1,1,SZR    ;CHECK DISTURB OF AC1
19                              ERROR           ;MFSP 0 DISTURBED AC1
20 06106 063077                 HALT
21
22
23       006106         E1264=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
24 06107 150014                 COM# 2,2,SZR    ;CHECK AC2
25                              ERROR           ;MFSP 0 DISTURBED AC2
26 06110 063077                 HALT
27
28
29       006110         E1265=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
30
31                              STTST 04,FP,K0,0,1,2,3
32 06111 020146 ST.04:  LDA 0,K0        ;PUT K0 IN AC0
33 06112 152000                 ADC 2,2 ;SET AC2 TO -1
34 06113 155000                 MOV 2,3
35 06114 145000                 MOV 2,1 ;AC1,AC3 = -1
36 06115 060001                 MTFP 0          ;MOVE AC0 TO FP
37 06116 064201                 MFFP 1          ;READ FP INTO AC1
38 06117 106414                 SUB#0,1,SZR     ;CHECK RETURNED VALUE
39                              ERROR           ;STACK ERROR,AC1 SHD= AC0
40 06120 063077                 HALT
41
42
43       006120         E1266=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
44 06121 150014                 COM# 2,2,SZR    ;CHECK DISTURB OF AC2
45                              ERROR           ;MFSP 1 DISTURBED AC2
46 06122 063077                 HALT
47
48
49       006122         E1267=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
50 06123 174014                 COM# 3,3,SZR    ;CHECK AC3
51                              ERROR           ;MFFP 1 DISTURBED AC3
52 06124 063077                 HALT
53
54
55       006124         E1270=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
56
57                              STTST 05,FP,K2525,1,2,3,0
58 06125 024143 ST.05:  LDA 1,K2525     ;PUT K2525 IN AC1
59 06126 176000                 ADC 3,3 ;SET AC3 TO -1
60 06127 161000                 MOV 3,0
```

```
 0175  PRCST
01 06130 171000          MOV 3,2 ;AC2,AC0 = -1
02 06131 064001          MTFP 1          ;MOVE AC1 TO FP
03 06132 070201          MFFP 2          ;READ FP INTO AC2
04 06133 132414          SUB#1,2,SZR     ;CHECK RETURNED VALUE
05                       ERROR           ;STACK ERROR,AC2 SHD= AC1
06 06134 063077          HALT
07
08
09       006134          E1271=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
10 06135 174014          COM# 3,3,SZR    ;CHECK DISTURB OF AC3
11                       ERROR           ;MFSP 2 DISTURBED AC3
12 06136 063077          HALT
13
14
15       006136          E1272=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
16 06137 100014          COM# 0,0,SZR    ;CHECK AC0
17                       ERROR           ;MFFP 2 DISTURBED AC0
18 06140 063077          HALT
19
20
21       006140          E1273=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
22
23                       STTST 06,FP,K5252,2,3,0,1
24 06141 030142 ST.06:   LDA 2,K5252     ;PUT K5252 IN AC2
25 06142 102000          ADC 0,0 ;SET AC0 TO -1
26 06143 105000          MOV 0,1
27 06144 115000          MOV 0,3 ;AC3,AC1 = -1
28 06145 070001          MTFP 2          ;MOVE AC2 TO FP
29 06146 074201          MFFP 3          ;READ FP INTO AC3
30 06147 156414          SUB#2,3,SZR     ;CHECK RETURNED VALUE
31                       ERROR           ;STACK ERROR,AC3 SHD= AC2
32 06150 063077          HALT
33
34
35       006150          E1274=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
36 06151 100014          COM# 0,0,SZR    ;CHECK DISTURB OF AC0
37                       ERROR           ;MFSP 3 DISTURBED AC0
38 06152 063077          HALT
39
40
41       006152          E1275=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
42 06153 124014          COM# 1,1,SZR    ;CHECK AC1
43                       ERROR           ;MFFP 3 DISTURBED AC1
44 06154 063077          HALT
45
46
47       006154          E1276=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
48
49                       STTST 07,FP,K0777,3,0,1,2
50 06155 034127 ST.07:   LDA 3,K0777     ;PUT K0777 IN AC3
51 06156 126000          ADC 1,1 ;SET AC1 TO -1
52 06157 131000          MOV 1,2
53 06160 121000          MOV 1,0 ;AC0,AC2 = -1
54 06161 074001          MTFP 3          ;MOVE AC3 TO FP
55 06162 060201          MFFP 0          ;READ FP INTO AC0
56 06163 162414          SUB#3,0,SZR     ;CHECK RETURNED VALUE
57                       ERROR           ;STACK ERROR,AC0 SHD= AC3
58 06164 063077          HALT
59
60
```

```
 0176  PRCST
01       006164          E1277=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
02 06165 124014          COM# 1,1,SZR    ;CHECK DISTURB OF AC1
03                       ERROR           ;MFSP 0 DISTURBED AC1
04 06166 063077          HALT
05
06
07       006166          E1300=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
08 06167 150014          COM# 2,2,SZR    ;CHECK AC2
09                       ERROR           ;MFFP 0 DISTURBED AC2
10 06170 063077          HALT
11
12
13       006170          E1301=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
14
15
```

```
10177  PRCST
01                ;CHECK INTERREACTION OF SP AND SF MOVE INSTRUCTIONS
02
03 06171 152400 ST.08:  SUB 2,2           ;SET AC2 TO 0
04 06172 070001         MTFP 2            ;PLACE 0'S IN FP
05 06173 152000         ADC 2,2
06 06174 071001         MTSP 2            ;PUT -1 IN SP
07 06175 074201         MFFP 3            ;GET FP
08 06176 175004         MOV 3,3,SZR       ;FP SHD = 0'S
09                      ERROR             ;AC3/FP NOT= 0'S
10 06177 063077         HALT
11
12
13       006177         E1302=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
14 06200 176400         SUB 3,3
15 06201 074001         MTFP 3            ;NOW TRY SP
16 06202 071201         MFSP 2            ;GET SP
17 06203 150134         COMZL# 2,2,SZR    ;SHD=-1 BEFORE NOW
18                      ERROR             ;WAS NOT =-1 SP/SF INTERFERRANCE
19 06204 063077         HALT
20
21
22       006204         E1303=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
23
```

```
10178  PRCST
01
02
03                ;SET STACK POINTER TO LOC 400
04                ; FOR THE REST OF THE TESTING
05
06 06205 030116         LDA 2,K400        ;GET ADDR OF 400
07 06206 071001         MTSP 2
08 06207 070001         MTFP 2            ;PUT ADDR OF 400 IN SP/SF
09 06210 102000         ADC 0,0           ;-1 FOR MASK
10 06211 062077         MSKO 0            ;MASK OFF TTO/TTI
11 06212 060177         INTEN             ;ENABLE INT FOR STACK OVERFLOW ERRORS
12
13
14                ;TEST FOR EXISTANCE OF POP INSTRUCTION
15 06213 102400 PP.00:  SUB 0,0           ;TRY LOADING A VARIABLE FROM
16 06214 042116         STA 0,@K400               ;MEMORY USING POP INSTR
17 06215 102000         ADC 0,0
18 06216 061601         POP 0             ;SHD GET 0
19 06217 100004         COM 0,0,SZR       ;SHD NOT SKP IF POP WORKED
20 06220 101001         MOV 0,0,SKP       ;SKP OVER ERROR
21                      ERROR             ;POP INSTR DIDN'T LOAD AC0
22 06221 063077         HALT
23
24
25       006221         E1304=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
26
27                ;TRY POP OF -1 FROM STACK INTO AC1
28 06222 102000 PP.01:  ADC 0,0
29 06223 042116         STA 0,@K400
30 06224 020116         LDA 0,K400
31 06225 061001         MTSP 0  ;PUT 400 IN SP
32 06226 126400         SUB 1,1 ;
33 06227 065601         POP 1             ;POP -1 INTO AC1
34 06230 124014         COM# 1,1,SZR      ;SHD COM TO 0
35                      ERROR             ;POP DIDN'T LOAD AC1 WITH -1
36 06231 063077         HALT
37
38
39       006231         E1305=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
40
41
42                ;PSH 0 ONTO STACK CONTAINING -1
43 06232 024414 PP.02:  LDA 1,.+12.
44 06233 044003         STA 1,3           ;IN CASE OF OVFLO
45 06234 102000         ADC 0,0
46 06235 030116         LDA 2,K400
47 06236 041001         STA 0,1,2         ;PUT -1 INTO LOC 401
48 06237 071001         MTSP 2            ;SET SP TO 400
49 06240 102400         SUB 0,0
50 06241 061401         PSH 0             ;PSH 0 ONTO STACK
51 06242 000405         JMP .+5           ;JMP OVER ERROR
52                      ERROR             ;PSH SKIPPED
53 06243 063077         HALT
54
55
56       006243         E1306=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
57 06244 000403         JMP .+3
58                      ERROR             ;PSH OVERFLOWED
59 06245 063077         HALT
60
```

```
 0179  PRCST
01
02        006245          E1307=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
03 06246  006245          .-1             ;POINT TO ERROR
04 06247  025001          LDA 1,1,2       ;GET PSHD DATA FROM LOC 401
05 06250  125004          MOV 1,1,SZR     ;DID PSH STORE ON STACK?
06                        ERROR           ;PSH DIDN'T WORK
07 06251  063077          HALT
08
09
10        006251          E1310=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10180  PRCST
01                ;DEFINE MACRO FOR PSH/POP TESTING
02
03                      .MACRO PSPT
04                PP.^1:  LDA ^2,^3       ;GET ^3
05                        LDA ^4,PP^1E    ;STACK OVFLO ERR ADDR
06                        STA ^4,3        ;PUT IN LOC 3
07                        PSH ^2          ;PUT AC^2 ON STACK
08                        POP ^4          ;LOAD AC^4 WITH FIRST OFF THE STACK
09                        SUB# ^2,^4,SZR  ;CHECK AC^2 AGAINST AC^4
10                        ERROR           ;ERROR..AC^2 NOT EQUAL TO AC^4
11                                        ;AFTER PSH/POP
12                        JMP .+3
13                PP^1E:  .+1
14                        ERROR           ;STACK OVERFLOW ERROR ERROR
15                %
16                        PSPT 03,0,K0,1
17 06252  020146 PP.03:   LDA 0,K0        ;GET K0
18 06253  024407          LDA 1,PP03E     ;STACK OVFLO ERR ADDR
19 06254  044003          STA 1,3 ;PUT IN LOC 3
20 06255  061401          PSH 0           ;PUT AC0 ON STACK
21 06256  065601          POP 1           ;LOAD AC1 WITH FIRST OFF THE STACK
22 06257  106414          SUB# 0,1,SZR    ;CHECK AC0 AGAINST AC1
23                        ERROR           ;ERROR..AC0 NOT EQUAL TO AC1
24 06260  063077          HALT
25
26
27        006260          E1311=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
28                                        ;AFTER PSH/POP
29 06261  000403          JMP .+3
30 06262  006263 PP03E:   .+1
31                        ERROR           ;STACK OVERFLOW ERROR ERROR
32 06263  063077          HALT
33
34
35        006263          E1312=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
36                        PSPT 04,1,K2,2
37 06264  024102 PP.04:   LDA 1,K2        ;GET K2
38 06265  030407          LDA 2,PP04E     ;STACK OVFLO ERR ADDR
39 06266  050003          STA 2,3 ;PUT IN LOC 3
40 06267  065401          PSH 1           ;PUT AC1 ON STACK
41 06270  071601          POP 2           ;LOAD AC2 WITH FIRST OFF THE STACK
42 06271  132414          SUB# 1,2,SZR    ;CHECK AC1 AGAINST AC2
43                        ERROR           ;ERROR..AC1 NOT EQUAL TO AC2
44 06272  063077          HALT
45
46
47        006272          E1313=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
48                                        ;AFTER PSH/POP
49 06273  000403          JMP .+3
50 06274  006275 PP04E:   .+1
51                        ERROR           ;STACK OVERFLOW ERROR ERROR
52 06275  063077          HALT
53
54
55        006275          E1314=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
56                        PSPT 05,2,K6,3
57 06276  030106 PP.05:   LDA 2,K6        ;GET K6
58 06277  034407          LDA 3,PP05E     ;STACK OVFLO ERR ADDR
59 06300  054003          STA 3,3 ;PUT IN LOC 3
60 06301  071401          PSH 2           ;PUT AC2 ON STACK
```

```
 0181  PRCST
01 06302 075601                POP 3              ;LOAD AC3 WITH FIRST OFF THE STACK
02 06303 156414                SUB# 2,3,SZR       ;CHECK AC2 AGAINST AC3
03                             ERROR              ;ERROR..AC2 NOT EQUAL TO AC3
04 06304 063077                HALT
05
06
07       006304                E1315=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
08                                                ;AFTER PSH/POP
09 06305 000403                JMP .+3
10 06306 006307 PP05E:         .+1
11                             ERROR              ;STACK OVERFLOW ERROR ERROR
12 06307 063077                HALT
13
14
15       006307                E1316=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
16                             PSPT 06,3,K40,0
17 06310 034112 PP.06:         LDA 3,K40          ;GET K40
18 06311 020407                LDA 0,PP06E        ;STACK OVFLO ERR ADDR
19 06312 040003                STA 0,3 ;PUT IN LOC 3
20 06313 075401                PSH 3              ;PUT AC3 ON STACK
21 06314 061601                POP 0              ;LOAD AC0 WITH FIRST OFF THE STACK
22 06315 162414                SUB# 3,0,SZR       ;CHECK AC3 AGAINST AC0
23                             ERROR              ;ERROR..AC3 NOT EQUAL TO AC0
24 06316 063077                HALT
25
26
27       006316                E1317=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
28                                                ;AFTER PSH/POP
29 06317 000403                JMP .+3
30 06320 006321 PP06E:         .+1
31                             ERROR              ;STACK OVERFLOW ERROR ERROR
32 06321 063077                HALT
33
34
35       006321                E1320=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
36
```

```
10182  PRCST
01
02
03                             ;TEST PSH OVER BOUNDARY CAUSES STACK OVERFLOW ERROR
04                             ;FIRST LEGAL OVERFLOW ERROR
05
06 06322 030155 PP.07:         LDA 2,K377         ;GET BOUNDARY -1
07 06323 071001                MTSP 2             ;PUT IN SP
08 06324 030405                LDA 2,STER2        ;GET GET RETURN ADDR
09 06325 050003                STA 2,3            ;PUT IN LOC 3
10 06326 071401                PSH 2              ;PSH AC2 ON STACK/FORCE OVERFLOW
11                             ERROR              ;NO OVERFLOW , CHECK ION
12 06327 063077                HALT
13
14
15       006327                E1321=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
16 06330 000402                JMP .+2
17 06331 006332 STER2:         .+1
18 06332 075601                POP 3              ;GET STACKED VALUE
19 06333 156414                SUB# 2,3,SZR       ;PSH SHD HAVE COMPLETED
20                             ERROR              ;PSH DIDN'T COMPLETE STORE OF AC3
21 06334 063077                HALT
22
23
24       006334                E1322=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
25 06335 063577                SKPBZ CPU          ;ION RESET?
26                             ERROR              ;OVFLO DIDN'T RESET ION
27 06336 063077                HALT
28
29
30       006336                E1323=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
31
32                             ;TEST TRAP WITH OVFLO SET .
33 06337 030155 TP.08:         LDA 2,K377
34 06340 071001                MTSP 2             ;SETUP SP FOR OVFLO
35 06341 060277                INTDS
36 06342 102400                SUB 0,0
37 06343 042116                STA 0,@K400        ;INIT LOC 400
38 06344 126000                ADC 1,1            ;VALUE FOR PSH IS -1
39 06345 044046                STA 1,TPLOC        ;ALSO STORE IT IN TRAP PC LOC
40 06346 065401                PSH 1              ;FORCE OVERFLOW
41 06347 020406                LDA 0,PP.8R        ;GET RETURN ADDRESS FROM TRAP
42 06350 040047                STA 0,TPADR        ;SETUP TRAP RETN
43 06351 100010                TRAP               ;***TRAP***
44                             ERROR              ;SHDN'T GET TO HERE
45 06352 063077                HALT
46
47
48       006352                E1324=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
49 06353 000403                JMP .+3
50 06354 006351                .-3                ;POINT TO TRAP
51 06355 006356 PP.8R:         .+1                ;RETRN ADDRESS
52 06356 020776                LDA 0,.-2          ;GET ADDRESS OF TRAP
53 06357 024046                LDA 1,TPLOC        ;GET SAVED PC
54 06360 106414                SUB# 0,1,SZR       ;PC SAVED OK?
55                             ERROR              ;PC SAVE ERROR--TRAP INSTR.
56 06361 063077                HALT
57
58
59       006361                E1325=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
60 06362 020406                LDA 0,.+6          ;GET RETRN ADDRESS
```

```
 0183  PRCST
01 06363 040003          STA 0,3 ;SETUP RETRN AFTER OVERFLO INTR.
02 06364 060177          INTEN           ;ALLOW INTR NOW
03 06365 101000          MOV 0,0
04                       ERROR           ;INTERRUPT FROM OVERFLO LOST?
05 06366 063077          HALT
06
07
08       006366          E1326=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
09 06367 000402          JMP .+2
10 06370 006371          .+1             ;POINT TO RETRN
11 06371 063577          SKPBZ CPU       ;ION RESET?
12                       ERROR           ;OVFLO DIDN'T RESET ION
13 06372 063077          HALT
14
15
16       006372          E1327=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
17 06373 060177          INTEN
18
19               ;TEST INC/DEC OF SP WITH PSH/POP INSTRUCTIONS
20 06374 020116 PP.09:   LDA 0,K400
21 06375 061001          MTSP 0
22 06376 111400          INC 0,2         ;AC2= 401
23 06377 065401          PSH 1           ;PSH INSTR SHD INC SP
24 06400 065201          MFSP 1          ;CHECK IT
25 06401 146414          SUB# 2,1,SZR    ;IS IT = 401?
26                       ERROR           ;PSH DIDN'T INC SP
27 06402 063077          HALT
28
29
30       006402          E1330=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
31 06403 065601          POP 1
32 06404 065201          MFSP 1          ;SHD BE 400 NOW
33 06405 106414          SUB# 0,1,SZR    ;IS SP = 400?
34                       ERROR           ;SP NOT DECREMENTED BY POP
35 06406 063077          HALT
36
37
38       006406          E1331=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
39
40
```

```
!0184  PRCST
01
02               ;SAVE / RETURN INSTRUCTION TESTS
03               ;FIRST TIME FOR SAVE INSTRUCTION
04
05 06407 102400 SV.00:   SUB 0,0         ;SET AC0 TO 0
06 06410 105400          INC 0,1         ;SET AC1 TO 1
07 06411 030116          LDA 2,K400      ;GET VALUE OF 400
08 06412 071001          MTSP 2          ;GET STACK POINTER
09 06413 070001          MTFP 2          ;SET FP TO 400
10 06414 131400          INC 1,2
11 06415 155400          INC 2,3         ;AC2=2, AC3=3
12 06416 101040          MOVO 0,0        ;SET CARRY TO 1
13 06417 062401          SAVE            ;SAVE AC'S
14 06420 175003          MOV 3,3,SNC     ;CHECK THAT CARRY STILL A 1
15                       ERROR           ;SAVE CHANGED THE CARRY BIT...
16 06421 063077          HALT
17
18
19       006421          E1332=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
20                                       ;OR SAVE INSTR. SKIPPED..
21                                       ;CHECK NOT RETURNCARRY AT STDP2/D ROM
22 06422 165000          MOV 3,1         ;PUT AC3 IN AC1
23 06423 075201          MFSP 3
24 06424 166414          SUB# 3,1,SZR    ;SP SHD = AC3
25                       ERROR           ;STACK POINTER NOT = AC3 AFTER SAVE
26 06425 063077          HALT
27
28
29       006425          E1333=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
30 06426 074201          MFFP 3          ;GET FRAME POINTER
31 06427 166414          SUB# 3,1,SZR    ;FP SHD=AC3
32                       ERROR           ;FP NOT=AC3
33 06430 063077          HALT
34
35
36       006430          E1334=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
37 06431 030115          LDA 2,K405      ;GET 405 INTO AC2
38 06432 146404          SUB 2,1,SZR     ;CHECK AC1 FOR PROPER VALUE OF SP
39                       ERROR           ;AC1 NOT = ORIG. SP + 5 ....ERROR HALT
40 06433 063077          HALT
41
42
43       006433          E1335=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
44 06434 021000          LDA 0,0,2       ;DIRECTLY GET SAVED AC3 & CRY
45 06435 101103          MOVL 0,0,SNC    ;IS CRY A 1
46                       ERROR           ;SAVE INSTR DIDN'T SAVE THE CRY
47 06436 063077          HALT
48
49
50       006436          E1336=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
51                                       ;CHECK NOT SAVECARRY, NOT WRITE AT STDP2/D RO"
52 06437 101220          MOVZR 0,0       ;REPOSITION CONTENTS
53 06440 024103          LDA 1,K3        ;AND DROP CARRY BIT
54 06441 106404          SUB 0,1,SZR     ;IS IT = 3?
55                       ERROR           ;SAVE DIDN'T STORE AC3 CORRECTLY
56 06442 063077          HALT
57
58
59       006442          E1337=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
60 06443 021377          LDA 0,-1,2      ;GET SAVED FP
```

```
 0185  PRCST
01 06444 024116          LDA 1,K400
02 06445 106414          SUB#0,1,SZR      ;FP=400 ?
03                       ERROR            ;SAVE DIDN'T STORE FP CORRECTLY
04 06446 063077          HALT
05
06
07       006446          E1340=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
08 06447 021374          LDA 0,-4,2       ;GET SAVED AC0
09 06450 101004          MOV 0,0,SZR      ;SHD BE = 0
10                       ERROR            ;AC0 NOT = 0
11 06451 063077          HALT
12
13
14       006451          E1341=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
15 06452 105400          INC 0,1
16 06453 021375          LDA 0,-3,2       ;GET SAVED AC1
17 06454 106414          SUB#0,1,SZR      ;AC1=1?
18                       ERROR            ;AC1 NOT SAVED CORRECTLY
19 06455 063077          HALT
20
21
22       006455          E1342=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
23 06456 021376          LDA 0,-2,2       ;GET SAVED AC2
24 06457 125400          INC 1,1
25 06460 106414          SUB#0,1,SZR
26                       ERROR            ;AC2 NOT = 2
27 06461 063077          HALT
28
29
30       006461          E1343=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
31
```

```
10186  PRCST
01 06462 034420 RT.01:   LDA 3,RTTTA      ;PUT RETURN ADDRESS IN AC3
02 06463 030116          LDA 2,K400       ;400
03 06464 071001          MTSP 2           ;INIT SP
04 06465 070001          MTFP 2           ;INIT FP
05 06466 101020          MOVZ 0,0         ;SET CARRY TO 0
06 06467 030101          LDA 2,K1         ;INIT AC2
07 06470 024110          LDA 1,K10        ;INIT AC1
08 06471 020113          LDA 0,K100       ;INIT AC0
09 06472 062401          SAVE             ;SAVE INSTRUCTION********
10 06473 102040          ADCO 0,0         ;SET CARRY TO 1,AC0 TO -1
11 06474 105000          MOV 0,1
12 06475 111000          MOV 0,2
13 06476 115000          MOV 0,3          ;SET ALL AC'S TO -1
14 06477 062601          RTRN             ;RETURN INSTUEH   N*********
15                       ERROR            ;ERROR HALT,SHDN'T GET HERE
16 06500 063077          HALT
17
18
19       006500          E1344=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
20                       ERROR            ;IF RTN INSTR. WORKED
21 06501 063077          HALT
22
23
24       006501          E1345=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
25 06502 006503 RTTTA:   .+1              ;RTN ADDR POINTER
26 06503 054163          STA 3,TSTLC      ;SAVE AC3
27 06504 175002          MOV 3,3,SZC      ;CHECK CARRY FOR 0
28                       ERROR            ;RETURN INSTR CHANGED CARRY OF 0
29 06505 063077          HALT
30
31
32       006505          E1346=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
33                                        ;CHECK NOT RETURNCARRY AT STDP2/D ROM
34 06506 034101          LDA 3,K1         ;K1=1
35 06507 156414          SUB# 2,3,SZR     ;AC2 =1?
36                       ERROR            ;AC2 NOT CORRECT AFTER RETURN
37 06510 063077          HALT
38
39
40       006510          E1347=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
41 06511 034110          LDA 3,K10
42 06512 136414          SUB# 1,3,SZR     ;AC1 = 10?
43                       ERROR            ;AC1 NOT = 10 AFTER RETURN
44 06513 063077          HALT
45
46
47       006513          E1350=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
48 06514 034113          LDA 3,K100
49 06515 116414          SUB# 0,3,SZR     ;AC0 = 100?
50                       ERROR            ;AC0 NOT=100 AFTER RETURN
51 06516 063077          HALT
52
53
54       006516          E1351=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
55 06517 024116          LDA 1,K400
56 06520 071201          MFSP 2           ;GET SP
57 06521 132404          SUB 1,2,SZR      ;CHECK SP FOR 400
58                       ERROR            ;SP NOT =400
59 06522 063077          HALT
60
```

```
 0187  PRCST
01
02        006522          E1352=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
03 06523 070201           MFFP 2
04 06524 132414           SUB# 1,2,SZR    ;FP = 400?
05                        ERROR           ;FP NOT = 400 AFTER RETURN
06 06525 063077           HALT
07
08
09        006525          E1353=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
10 06526 024163           LDA 1,TSTLC     ;GET SAVED AC3=FP
11 06527 132404           SUB 1,2,SZR     ;CHECK SAVED FP
12                        ERROR           ;SAVED FP NOT = CURRENT FP
13 06530 063077           HALT
14
15
16        006530          E1354=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0188  PRCST
01
02
03                ;STACK OVERFLOW TESTS - SAVE INSTRUCTION
04
05 06531 020405 STOV1:   LDA 0,.+5        ;GET RETURN ADDRESS
06 06532 040003          STA 0,3          ;PLACE IT IN LOC 3
07 06533 024116          LDA 1,K400       ;
08 06534 020102          LDA 0,K2         ;
09 06535 106405          SUB 0,1,SNR      ;FORM ADDR OF 376,ALWAS SKIP NEXT
10 06536 006545          STOV2
11 06537 131000          MOV 1,2          ;PUT AC1 IN AC2
12 06540 071001          MTSP 2           ;PUT ADDR OF 376 IN SP
13 06541 060177          INTEN            ;ENABLE INTERRUPTS
14 06542 062401          SAVE             ;FORCE OVER FLOW/INTERRUPT
15                       ERROR            ;IF INT. WORKS SHDN'T GET HERE
16 06543 063077          HALT
17
18
19        006543         E1355=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
20                       ERROR            ;IN CASE SAVE SKIPS
21 06544 063077          HALT
22
23
24        006544         E1356=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
25
26                ;TRY DISABLE INT./THEN ENABLE
27
28 06545 071001 STOV2:   MTSP 2           ;PUT 376 IN SP AGAIN
29 06546 020405          LDA 0,.+5        ;GET ILLEGAL RETURN ADDR
30 06547 040003          STA 0,3          ;PLACE IN LOC 3
31 06550 060277          INTDS            ;DISABLE INT.
32 06551 062401          SAVE             ;FORCE OVERFLOW/INT. DISABLED
33 06552 000403          JMP .+3          ;JMP OVER HALT
34 06553 006554          .+1              ;POINT TO RETURN ADDRESS
35                       ERROR            ;ILLEGAL RETURN ADDRESS..HALT
36 06554 063077          HALT
37
38
39        006554         E1357=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
40 06555 020406          LDA 0,.+6        ;GET GOOD RETURN ADDRESS
41 06556 040003          STA 0,3          ;PLACE RETURN ADRESS IN LOC 3
42 06557 060177          INTEN            ;ENABLE INTERRUPTS
43 06560 101000          MOV 0,0
44                       ERROR            ;SHDN'T GET HERE IF INT. OCCURRED
45 06561 063077          HALT
46
47
48        006561         E1360=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
49 06562 000402          JMP .+2
50 06563 006564          .+1              ;POINT TO RETURN ADDRESS
51 06564 063577          SKPBZ CPU        ;ION SET?
52                       ERROR            ;ION NOT RESET AFTER OVFLO
53 06565 063077          HALT
54
55
56        006565         E1361=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
57                ;RE-ENABLE TTY INTR.
58 06566 102400          SUB 0,0
59 06567 062077          MSKO 0
60 06570 060177          INTEN
```

```
 0189  PRCST
01
02                ;SETUP ILLEGAL STACK OVERFLOW ADDRESS FOR REST OF TEST
03 06571 020403           LDA 0,ILOVF
04 06572 040003           STA 0,3           ;SET LOC 3 TO ILLEGAL HALT
05 06573 000403           JMP .+3
06 06574 006575 ILOVF:    .+1
07                        ERROR             ;ILLEGAL OVERFLOW -STACK
08 06575 063077           HALT
09
10
11        006575          E1362=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
12
```

```
10190  PRCST
01
02
03                ;"LDB" - LOAD BYTE
04
05                ;THE 8-BIT BYTE ADDRESSED BY THE BYTE POINTER CONTAINED IN
06                ;ACS IS PLACED IN BITS 8-15 OF ACD. BITS 0-7 OF ACD ARE
07                ;SET TO 0. THE CONTENTS OF ACS REMAIN UNCHANGED
08
```

```
10191  PRCST
01
02 06576 020001-C101:   LDA 0,=M1+M1             ;BYTE POINTER TO A WORD
03                      LDBT 0,0                        ;OF ALL ONES SHOULD LOAD
04 06577 060401         DIA     0,01
05 06600 100015         COM# 0,0,SNR            ;ZEROS IN UPPER HALF.
06                      ERROR                   ;CHECK RBUF 20 (LOAD A REG)
07 06601 063077         HALT
08
09
10       006601         E1363=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
11                                              ;AT MICRO INSTRUCTION LUBY.
12                                              ;ALSO MAKE SURE THAT INPUT
13                                              ;ENAB E OF BIT DECODE ROM
14                                              ;(8-15) U117-1 IS HIGH AND
15                                              ;PINS 13 AND 14 BOTH ARE
16                                              ;HIGH OF U117-1
17
18 06602 024002-C102:   LDA 1,=M1+M1+1          ;C(AC1) = BYTE POINTER TO A
19 06603 102400         SUB 0,0                 ;WORD OF ALL ONES.  THE "LDB"
20                      LDBT 1,0                        ;SHOULD LOAD ZEROS IN
21 06604 060501         DIAS    0,01
22 06605 100015         COM# 0,0,SNR            ;UPPER HALF.  CHECK RBUF 20
23                      ERROR                   ;(LOAD A REG) AT MICRO INSTRUCTION
24 06606 063077         HALT
25
26
27       006606         E1364=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
28                                              ;LLBY.  ALSO CHECK RBUF 0-3.
29                                              ;ALSO MAKE SURE THAT INPUT
30                                              ;ENAB D OF BIT DECODE ROM
31                                              ;(0-7) U111-1 IS HIGH AND
32                                              ;PINS 13 AND 14 BOTH ARE
33                                              ;HIGH OF U111-1
34
35 06607 024001-C103:   LDA 1,=M1+M1            ;"LDB" FAILED.  C(AC0) WAS
36 06610 020003-        LDA 0,=123              ;NOT CHANGED BY THE "LDB"
37 06611 111000         MOV 0,2                 ;INSTRUCTION.  CHECK THE
38                      LDBT 1,0                        ;(BMEM) SWITCH AT MICRO
39 06612 060501         DIAS    0,01
40 06613 112415         SUB# 0,2,SNR            ;INSTRUCTION MKHOBS.
41                      ERROR
42 06614 063077         HALT
43
44
45       006614         E1365=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
46 06615 004402 C104:   JSR .+2                 ;THERE SHOULD NEVER BE A
47 06616 000010         10                      ;(1) IN THE SIGN BIT OF C(ACD)
48 06617 175140         MOVOL 3,3               ;AFTER A LDB INSTRUCTION.
49                      LDBT 3,0                        ;CHECK THE SHIFT FIELD
50 06620 060701         DIAP    0,01
51 06621 101112         MOVL# 0,0,SZC           ;OF MICRO INSTRUCTION LLBY.
52                      ERROR
53 06622 063077         HALT
54
55
56       006622         E1366=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
57 06623 004402 C105:   JSR .+2                 ;THERE SHOULD NEVER BE A
58 06624 000010         10                      ;(1) IN THE SIGN BIT OF C(ACD)
59 06625 175140         MOVOL 3,3               ;AFTER A LDB INSTRUCTION.
60 06626 175040         MOVO 3,3                ;CHECK THE SHIFT FIELD
```

```
 0192  PRCST
01                      LDBT 3,0                        ;OF MICRO INSTRUCTION LLBY.
02 06627 060701         DIAP    0,01
03 06630 101112         MOVL# 0,0,SZC           ;PERHAPS SHIFT WAS (FC)
04                      ERROR                   ;NOT (FA).
05 06631 063077         HALT
06
07
08       006631         E1367=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10193  PRCST
01
02 06632 004402 C113:   JSR .+2                 ;LDB FAILED.
03 06633 177777         -1                      ;C(AC2)= CORRECT
04 06634 175140         MOVOL 3,3               ;C(AC0)= LDB RESULT
05                      LDBT 3,0                        ;C(AC3)= BYTE POINTER.
06 06635 060701         DIAP    0,01
07 06636 030004-        LDA 2,=377
08 06637 142414         SUB# 2,0,SZR            ;CHECK MICRO INSTRUCTIONS
09                      ERROR                   ;BYTES,LDBB,MKHOBS AND LLBY
10 06640 063077         HALT
11
12
13       006640         E1370=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
14 06641 004402 C114:   JSR .+2                 ;LDB SHOULD LOAD TO
15 06642 000377         377                     ;C(AC0) THE LOWER (BITS 8-15)
16 06643 175140         MOVOL 3,3               ;BYTE OF LOCATION C114+1.
17                      LDBT 3,0                        ;SUGGEST THE UPPER BYTE WAS
18 06644 060701         DIAP    0,01
19 06645 101005         MOV 0,0,SNR             ;LOADED INSTEAD.  CHECK
20                      ERROR                   ;THE (LINK) STATE CHANGE
21 06646 063077         HALT
22
23
24       006646         E1371=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
25                                      ;AT MICRO INSTRUCTION MKHOBS.
26                                      ;LINK MUST BE EQ. TO 1
27
28              C115:   LDBT3 -1,0
29 06647 004402         JSR .+2                 ;TEST LOADING A BYTE
30 06650 177777         -1                      ;FROM MEMORY BITS 8-15.
31 06651 161140         MOVOL 3,0               ;C(AC0) POINTS TO THE WORD.
32                      LDBT 0,0+1&3            ;NEXT AC ACTS AS ACD FOR
33 06652 064401         DIA     0+1&3,01
34 06653 030004-        LDA 0+2&3,=-1&377       ;THE LDB INSTRUCTION.
35 06654 132414         SUB# 0+1&3,0+2&3,SZR
36                      ERROR
37 06655 063077         HALT
38
39
40       006655         E1372=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
41
42              C116:   LDBT3 377,0
43 06656 004402         JSR .+2                 ;TEST LOADING A BYTE
44 06657 000377         377                     ;FROM MEMORY BITS 8-15.
45 06660 161140         MOVOL 3,0               ;C(AC0) POINTS TO THE WORD.
46                      LDBT 0,0+1&3            ;NEXT AC ACTS AS ACD FOR
47 06661 064401         DIA     0+1&3,01
48 06662 030004-        LDA 0+2&3,=377&377      ;THE LDB INSTRUCTION.
49 06663 132414         SUB# 0+1&3,0+2&3,SZR
50                      ERROR
51 06664 063077         HALT
52
53
54       006664         E1373=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
55
56              C117:   LDBT3 177400,0
57 06665 004402         JSR .+2                 ;TEST LOADING A BYTE
58 06666 177400         177400                  ;FROM MEMORY BITS 8-15.
59 06667 161140         MOVOL 3,0               ;C(AC0) POINTS TO THE WORD.
60                      LDBT 0,0+1&3            ;NEXT AC ACTS AS ACD FOR
```

```
 0194  PRCST
01 06670 064401         DIA     0+1&3,01
02 06671 030005-        LDA 0+2&3,=177400&377   ;THE LDB INSTRUCTION.
03 06672 132414         SUB# 0+1&3,0+2&3,SZR
04                      ERROR
05 06673 063077         HALT
06
07
08       006673         E1374=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
09
10              C118:   LDBT3 -1,1
11 06674 004402         JSR .+2                 ;TEST LOADING A BYTE
12 06675 177777         -1                      ;FROM MEMORY BITS 8-15.
13 06676 165140         MOVOL 3,1               ;C(AC1) POINTS TO THE WORD.
14                      LDBT 1,1+1&3            ;NEXT AC ACTS AS ACD FOR
15 06677 070501         DIAS    1+1&3,01
16 06700 034004-        LDA 1+2&3,=-1&377       ;THE LDB INSTRUCTION.
17 06701 156414         SUB# 1+1&3,1+2&3,SZR
18                      ERROR
19 06702 063077         HALT
20
21
22       006702         E1375=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
23
24              C119:   LDBT3 377,1
25 06703 004402         JSR .+2                 ;TEST LOADING A BYTE
26 06704 000377         377                     ;FROM MEMORY BITS 8-15.
27 06705 165140         MOVOL 3,1               ;C(AC1) POINTS TO THE WORD.
28                      LDBT 1,1+1&3            ;NEXT AC ACTS AS ACD FOR
29 06706 070501         DIAS    1+1&3,01
30 06707 034004-        LDA 1+2&3,=377&377      ;THE LDB INSTRUCTION.
31 06710 156414         SUB# 1+1&3,1+2&3,SZR
32                      ERROR
33 06711 063077         HALT
34
35
36       006711         E1376=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
37
38              C120:   LDBT3 177400,1
39 06712 004402         JSR .+2                 ;TEST LOADING A BYTE
40 06713 177400         177400                  ;FROM MEMORY BITS 8-15.
41 06714 165140         MOVOL 3,1               ;C(AC1) POINTS TO THE WORD.
42                      LDBT 1,1+1&3            ;NEXT AC ACTS AS ACD FOR
43 06715 070501         DIAS    1+1&3,01
44 06716 034005-        LDA 1+2&3,=177400&377   ;THE LDB INSTRUCTION.
45 06717 156414         SUB# 1+1&3,1+2&3,SZR
46                      ERROR
47 06720 063077         HALT
48
49
50       006720         E1377=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
51
52              C121:   LDBT3 -1,2
53 06721 004402         JSR .+2                 ;TEST LOADING A BYTE
54 06722 177777         -1                      ;FROM MEMORY BITS 8-15.
55 06723 171140         MOVOL 3,2               ;C(AC2) POINTS TO THE WORD.
56                      LDBT 2,2+1&3            ;NEXT AC ACTS AS ACD FOR
57 06724 074601         DIAC    2+1&3,01
58 06725 020004-        LDA 2+2&3,=-1&377       ;THE LDB INSTRUCTION.
59 06726 162414         SUB# 2+1&3,2+2&3,SZR
60                      ERROR
```

```
 0195  PRCST
01 06727 063077          HALT
02
03
04        006727         E1400=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
05
06              C122:    LDBT3 377,2
07 06730 004402          JSR .+2                   ;TEST LOADING A BYTE
08 06731 000377          377                       ;FROM MEMORY BITS 8-15.
09 06732 171140          MOVOL 3,2                 ;C(AC2) POINTS TO THE WORD.
10                       LDBT 2,2+1&3              ;NEXT AC ACTS AS ACD FOR
11 06733 074601          DIAC    2+1&3,01
12 06734 020004-         LDA 2+2&3,=377&377        ;THE LDB INSTRUCTION.
13 06735 162414          SUB# 2+1&3,2+2&3,SZR
14                       ERROR
15 06736 063077          HALT
16
17
18        006736         E1401=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
19
20              C123:    LDBT3 177400,2
21 06737 004402          JSR .+2                   ;TEST LOADING A BYTE
22 06740 177400          177400                    ;FROM MEMORY BITS 8-15.
23 06741 171140          MOVOL 3,2                 ;C(AC2) POINTS TO THE WORD.
24                       LDBT 2,2+1&3              ;NEXT AC ACTS AS ACD FOR
25 06742 074601          DIAC    2+1&3,01
26 06743 020005-         LDA 2+2&3,=1774000&377    ;THE LDB INSTRUCTION.
27 06744 162414          SUB# 2+1&3,2+2&3,SZR
28                       ERROR
29 06745 063077          HALT
30
31
32        006745         E1402=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
33
34              C124:    LDBT3 -1,3
35 06746 004402          JSR .+2                   ;TEST LOADING A BYTE
36 06747 177777          -1                        ;FROM MEMORY BITS 8-15.
37 06750 175140          MOVOL 3,3                 ;C(AC3) POINTS TO THE WORD.
38                       LDBT 3,3+1&3              ;NEXT AC ACTS AS ACD FOR
39 06751 060701          DIAP    3+1&3,01
40 06752 024004-         LDA 3+2&3,=-1&377         ;THE LDB INSTRUCTION.
41 06753 106414          SUB# 3+1&3,3+2&3,SZR
42                       ERROR
43 06754 063077          HALT
44
45
46        006754         E1403=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
47
48              C125:    LDBT3 377,3
49 06755 004402          JSR .+2                   ;TEST LOADING A BYTE
50 06756 000377          377                       ;FROM MEMORY BITS 8-15.
51 06757 175140          MOVOL 3,3                 ;C(AC3) POINTS TO THE WORD.
52                       LDBT 3,3+1&3              ;NEXT AC ACTS AS ACD FOR
53 06760 060701          DIAP    3+1&3,01
54 06761 024004-         LDA 3+2&3,=377&377        ;THE LDB INSTRUCTION.
55 06762 106414          SUB# 3+1&3,3+2&3,SZR
56                       ERROR
57 06763 063077          HALT
58
59
60        006763         E1404=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0196  PRCST
01
02              C126:    LDBT3 177400,3
03 06764 004402          JSR .+2                   ;TEST LOADING A BYTE
04 06765 177400          177400                    ;FROM MEMORY BITS 8-15.
05 06766 175140          MOVOL 3,3                 ;C(AC3) POINTS TO THE WORD.
06                       LDBT 3,3+1&3              ;NEXT AC ACTS AS ACD FOR
07 06767 060701          DIAP    3+1&3,01
08 06770 024005-         LDA 3+2&3,=1774000&377    ;THE LDB INSTRUCTION.
09 06771 106414          SUB# 3+1&3,3+2&3,SZR
10                       ERROR
11 06772 063077          HALT
12
13
14        006772         E1405=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10197  PRCST
01
02                C131:   LDBT4 -1,0
03  06773 004402          JSR .+2                 ;TEST LOADING A BYTE
04  06774 177777          -1                      ;FROM MEMORY BITS 0-7.
05  06775 161120          MOVZL 3,0
06                        LDBT 0,0                        ;C(AC0) = LDB RESULT.
07  06776 060401          DIA     0,01
08  06777 024006-         LDA 0+1&3,=-1           ;NEXT AC = CORRECT
09  07000 125300          MOVS 0+1&3,0+1&3        ;SWAP BYTE.
10  07001 050027          STA 0+2&3,27            ;SAVE WORKING REGISTER.
11  07002 030155          LDA 0+2&3,K377          ;LOAD MASK BIT.
12  07003 147400          AND 0+2&3,0+1&3 ;SET LEFT BYTE TO 0.
13  07004 030027          LDA 0+2&3,27            ;RESTORE REGISTER.
14  07005 106414          SUB# 0,0+1&3,SZR
15                        ERROR
16  07006 063077          HALT
17
18
19        007006          E1406=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
20
21                C132:   LDBT4 377,0
22  07007 004402          JSR .+2                 ;TEST LOADING A BYTE
23  07010 000377          377                     ;FROM MEMORY BITS 0-7.
24  07011 161120          MOVZL 3,0
25                        LDBT 0,0                        ;C(AC0) = LDB RESULT.
26  07012 060401          DIA     0,01
27  07013 024004-         LDA 0+1&3,=377          ;NEXT AC = CORRECT
28  07014 125300          MOVS 0+1&3,0+1&3        ;SWAP BYTE.
29  07015 050027          STA 0+2&3,27            ;SAVE WORKING REGISTER.
30  07016 030155          LDA 0+2&3,K377          ;LOAD MASK BIT.
31  07017 147400          AND 0+2&3,0+1&3 ;SET LEFT BYTE TO 0.
32  07020 030027          LDA 0+2&3,27            ;RESTORE REGISTER.
33  07021 106414          SUB# 0,0+1&3,SZR
34                        ERROR
35  07022 063077          HALT
36
37
38        007022          E1407=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
39
40                C133:   LDBT4 177400,0
41  07023 004402          JSR .+2                 ;TEST LOADING A BYTE
42  07024 177400          177400                  ;FROM MEMORY BITS 0-7.
43  07025 161120          MOVZL 3,0
44                        LDBT 0,0                        ;C(AC0) = LDB RESULT.
45  07026 060401          DIA     0,01
46  07027 024007-         LDA 0+1&3,=177400               ;NEXT AC = CORRECT
47  07030 125300          MOVS 0+1&3,0+1&3        ;SWAP BYTE.
48  07031 050027          STA 0+2&3,27            ;SAVE WORKING REGISTER.
49  07032 030155          LDA 0+2&3,K377          ;LOAD MASK BIT.
50  07033 147400          AND 0+2&3,0+1&3 ;SET LEFT BYTE TO 0.
51  07034 030027          LDA 0+2&3,27            ;RESTORE REGISTER.
52  07035 106414          SUB# 0,0+1&3,SZR
53                        ERROR
54  07036 063077          HALT
55
56
57        007036          E1410=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
58
59                C134:   LDBT4 -1,1
60  07037 004402          JSR .+2                 ;TEST LOADING A BYTE
```

```
 0198  PRCST
01  07040 177777          -1                      ;FROM MEMORY BITS 0-7.
02  07041 165120          MOVZL 3,1
03                        LDBT 1,1                        ;C(AC1) = LDB RESULT.
04  07042 064501          DIAS    1,01
05  07043 030006-         LDA 1+1&3,=-1           ;NEXT AC = CORRECT
06  07044 151300          MOVS 1+1&3,1+1&3        ;SWAP BYTE.
07  07045 054027          STA 1+2&3,27            ;SAVE WORKING REGISTER.
08  07046 034155          LDA 1+2&3,K377          ;LOAD MASK BIT.
09  07047 173400          AND 1+2&3,1+1&3 ;SET LEFT BYTE TO 0.
10  07050 034027          LDA 1+2&3,27            ;RESTORE REGISTER.
11  07051 132414          SUB# 1,1+1&3,SZR
12                        ERROR
13  07052 063077          HALT
14
15
16        007052          E1411=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
17
18                C135:   LDBT4 377,1
19  07053 004402          JSR .+2                 ;TEST LOADING A BYTE
20  07054 000377          377                     ;FROM MEMORY BITS 0-7.
21  07055 165120          MOVZL 3,1
22                        LDBT 1,1                        ;C(AC1) = LDB RESULT.
23  07056 064501          DIAS    1,01
24  07057 030004-         LDA 1+1&3,=377          ;NEXT AC = CORRECT
25  07060 151300          MOVS 1+1&3,1+1&3        ;SWAP BYTE.
26  07061 054027          STA 1+2&3,27            ;SAVE WORKING REGISTER.
27  07062 034155          LDA 1+2&3,K377          ;LOAD MASK BIT.
28  07063 173400          AND 1+2&3,1+1&3 ;SET LEFT BYTE TO 0.
29  07064 034027          LDA 1+2&3,27            ;RESTORE REGISTER.
30  07065 132414          SUB# 1,1+1&3,SZR
31                        ERROR
32  07066 063077          HALT
33
34
35        007066          E1412=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
36
37                C136:   LDBT4 177400,1
38  07067 004402          JSR .+2                 ;TEST LOADING A BYTE
39  07070 177400          177400                  ;FROM MEMORY BITS 0-7.
40  07071 165120          MOVZL 3,1
41                        LDBT 1,1                        ;C(AC1) = LDB RESULT.
42  07072 064501          DIAS    1,01
43  07073 030007-         LDA 1+1&3,=177400               ;NEXT AC = CORRECT
44  07074 151300          MOVS 1+1&3,1+1&3        ;SWAP BYTE.
45  07075 054027          STA 1+2&3,27            ;SAVE WORKING REGISTER.
46  07076 034155          LDA 1+2&3,K377          ;LOAD MASK BIT.
47  07077 173400          AND 1+2&3,1+1&3 ;SET LEFT BYTE TO 0.
48  07100 034027          LDA 1+2&3,27            ;RESTORE REGISTER.
49  07101 132414          SUB# 1,1+1&3,SZR
50                        ERROR
51  07102 063077          HALT
52
53
54        007102          E1413=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
55
56                C137:   LDBT4 -1,2
57  07103 004402          JSR .+2                 ;TEST LOADING A BYTE
58  07104 177777          -1                      ;FROM MEMORY BITS 0-7.
59  07105 171120          MOVZL 3,2
60                        LDBT 2,2                        ;C(AC2) = LDB RESULT.
```

```
 0199  PRCST
01 07106 070601          DIAC    2,01
02 07107 034006-         LDA 2+1&3,=-1           ;NEXT AC = CORRECT
03 07110 175300          MOVS 2+1&3,2+1&3        ;SWAP BYTE.
04 07111 040027          STA 2+2&3,27            ;SAVE WORKING REGISTER.
05 07112 020155          LDA 2+2&3,K377          ;LOAD MASK BIT.
06 07113 117400          AND 2+2&3,2+1&3 ;SET LEFT BYTE TO 0.
07 07114 020027          LDA 2+2&3,27            ;RESTORE REGISTER.
08 07115 156414          SUB# 2,2+1&3,SZR
09                       ERROR
10 07116 063077          HALT
11
12
13       007116          E1414=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
14
15              C138:    LDBT4 377,2
16 07117 004402          JSR .+2                 ;TEST LOADING A BYTE
17 07120 000377          377                     ;FROM MEMORY BITS 0-7.
18 07121 171120          MOVZL 3,2
19                       LDBT 2,2                        ;C(AC2) = LDB RESULT.
20 07122 070601          DIAC    2,01
21 07123 034004-         LDA 2+1&3,=377          ;NEXT AC = CORRECT
22 07124 175300          MOVS 2+1&3,2+1&3        ;SWAP BYTE.
23 07125 040027          STA 2+2&3,27            ;SAVE WORKING REGISTER.
24 07126 020155          LDA 2+2&3,K377          ;LOAD MASK BIT.
25 07127 117400          AND 2+2&3,2+1&3 ;SET LEFT BYTE TO 0.
26 07130 020027          LDA 2+2&3,27            ;RESTORE REGISTER.
27 07131 156414          SUB# 2,2+1&3,SZR
28                       ERROR
29 07132 063077          HALT
30
31
32       007132          E1415=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
33
34              C139:    LDBT4 177400,2
35 07133 004402          JSR .+2                 ;TEST LOADING A BYTE
36 07134 177400          177400                  ;FROM MEMORY BITS 0-7.
37 07135 171120          MOVZL 3,2
38                       LDBT 2,2                        ;C(AC2) = LDB RESULT.
39 07136 070601          DIAC    2,01
40 07137 034007-         LDA 2+1&3,=177400               ;NEXT AC = CORRECT
41 07140 175300          MOVS 2+1&3,2+1&3        ;SWAP BYTE.
42 07141 040027          STA 2+2&3,27            ;SAVE WORKING REGISTER.
43 07142 020155          LDA 2+2&3,K377          ;LOAD MASK BIT.
44 07143 117400          AND 2+2&3,2+1&3 ;SET LEFT BYTE TO 0.
45 07144 020027          LDA 2+2&3,27            ;RESTORE REGISTER.
46 07145 156414          SUB# 2,2+1&3,SZR
47                       ERROR
48 07146 063077          HALT
49
50
51       007146          E1416=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
52
53              C140:    LDBT4 -1,3
54 07147 004402          JSR .+2                 ;TEST LOADING A BYTE
55 07150 177777          -1                      ;FROM MEMORY BITS 0-7.
56 07151 175120          MOVZL 3,3
57                       LDBT 3,3                        ;C(AC3) = LDB RESULT.
58 07152 074701          DIAP    3,01
59 07153 020006-         LDA 3+1&3,=-1           ;NEXT AC = CORRECT
60 07154 101300          MOVS 3+1&3,3+1&3        ;SWAP BYTE.
```

```
 0200  PRCST
01 07155 044027          STA 3+2&3,27            ;SAVE WORKING REGISTER.
02 07156 024155          LDA 3+2&3,K377          ;LOAD MASK BIT.
03 07157 123400          AND 3+2&3,3+1&3 ;SET LEFT BYTE TO 0.
04 07160 024027          LDA 3+2&3,27            ;RESTORE REGISTER.
05 07161 162414          SUB# 3,3+1&3,SZR
06                       ERROR
07 07162 063077          HALT
08
09
10       007162          E1417=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
11
12              C141:    LDBT4 377,3
13 07163 004402          JSR .+2                 ;TEST LOADING A BYTE
14 07164 000377          377                     ;FROM MEMORY BITS 0-7.
15 07165 175120          MOVZL 3,3
16                       LDBT 3,3                        ;C(AC3) = LDB RESULT.
17 07166 074701          DIAP    3,01
18 07167 020004-         LDA 3+1&3,=377          ;NEXT AC = CORRECT
19 07170 101300          MOVS 3+1&3,3+1&3        ;SWAP BYTE.
20 07171 044027          STA 3+2&3,27            ;SAVE WORKING REGISTER.
21 07172 024155          LDA 3+2&3,K377          ;LOAD MASK BIT.
22 07173 123400          AND 3+2&3,3+1&3 ;SET LEFT BYTE TO 0.
23 07174 024027          LDA 3+2&3,27            ;RESTORE REGISTER.
24 07175 162414          SUB# 3,3+1&3,SZR
25                       ERROR
26 07176 063077          HALT
27
28
29       007176          E1420=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
30
31              C142:    LDBT4 177400,3
32 07177 004402          JSR .+2                 ;TEST LOADING A BYTE
33 07200 177400          177400                  ;FROM MEMORY BITS 0-7.
34 07201 175120          MOVZL 3,3
35                       LDBT 3,3                        ;C(AC3) = LDB RESULT.
36 07202 074701          DIAP    3,01
37 07203 020007-         LDA 3+1&3,=177400               ;NEXT AC = CORRECT
38 07204 101300          MOVS 3+1&3,3+1&3        ;SWAP BYTE.
39 07205 044027          STA 3+2&3,27            ;SAVE WORKING REGISTER.
40 07206 024155          LDA 3+2&3,K377          ;LOAD MASK BIT.
41 07207 123400          AND 3+2&3,3+1&3 ;SET LEFT BYTE TO 0.
42 07210 024027          LDA 3+2&3,27            ;RESTORE REGISTER.
43 07211 162414          SUB# 3,3+1&3,SZR
44                       ERROR
45 07212 063077          HALT
46
47
48       007212          E1421=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
49
```

```
10201  PRCST
01
02                ;
03                ; CHECKING OUT "STB" INSTRUCTION
04                ;
05
06
07
08
09 07213 004402 C143:   JSR .+2                  ;STB CHANGED THE C(CARRY).
10 07214 000000         0                        ;CHECK RBUF 21-22 AT
11 07215 175120         MOVZL 3,3                ;MICRO INSTRUCTIONS STB.
12                      STBT 3,0                         ;LEFTB AND JARVEY
13 07216 062301         DOBP    0,01
14 07217 101002         MOV 0,0,SZC
15                      ERROR
16 07220 063077         HALT
17
18
19       007220         E1422=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
20
21 07221 004402 C144:   JSR .+2                  ;SEE PREVIOUS TEST.
22 07222 000000         0
23 07223 175120         MOVZL 3,3
24 07224 175040         MOVO 3,3
25                      STBT 3,0
26 07225 062301         DOBP    0,01
27 07226 101003         MOV 0,0,SNC
28                      ERROR
29 07227 063077         HALT
30
31
32       007227         E1423=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
33
34 07230 004402 C145:   JSR .+2                  ;STB CHANGED THE CONTENTS
35 07231 000000         0                        ;OF CARRY.  CHECK
36 07232 175140         MOVOL 3,3                ;RBUF 21-22 AT MICRO
37                      STBT 3,0                         ;INSTRUCTIONS RIGHTB AND JMGOKD
38 07233 062301         DOBP    0,01
39 07234 101002         MOV 0,0,SZC
40                      ERROR
41 07235 063077         HALT
42
43
44       007235         E1424=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45
46 07236 004402 C146:   JSR .+2                  ;SEE PREVIOUS TEST.
47 07237 000000         0
48 07240 175140         MOVOL 3,3
49 07241 175040         MOVO 3,3
50                      STBT 3,0
51 07242 062301         DOBP    0,01
52 07243 101003         MOV 0,0,SNC
53                      ERROR
54 07244 063077         HALT
55
56
57       007244         E1425=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10202  PRCST
01
02
03 07245 102000 C152:   ADC 0,0                  ;"STB" SHOULD STORE ZEROS,
04 07246 040402         STA 0,.+2                ;FROM AC0, INTO MEMORY
05 07247 004402         JSR .+2                  ;BITS 8-15.  HOWEVER, IT
06 07250 177777         -1                       ;ACTUALLY STORED THEM IN
07 07251 175140         MOVOL 3,3                ;MEMORY BITS 0-7.  CHECK
08 07252 102400         SUB 0,0                  ;THE TRUE/FALSE STATE
09                      STBT 3,0                         ;CHANGE AT MICRO INSTRUCTION
10 07253 062301         DOBP    0,01
11 07254 024774         LDA 1,.-4                ;STB.
12 07255 030004-        LDA 2,=377               ;CHECK LINK ETC.
13 07256 132415         SUB# 1,2,SNR             ;C(AC1)= WORD IN MEMORY.
14                      ERROR                    ;C(AC3)= BYTE POINTER.
15 07257 063077         HALT
16
17
18       007257         E1426=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
19
20 07260 102000 C153:   ADC 0,0                  ;"STB" SHOULD STORE ZEROS.
21 07261 040402         STA 0,.+2                ;FROM AC0, INTO MEMORY
22 07262 004402         JSR .+2                  ;BITS 0-7.  HOWEVER, IT
23 07263 177777         -1                       ;ACTUALLY STORED THEM IN
24 07264 175120         MOVZL 3,3                ;MEMORY BITS 8-15.  CHECK
25 07265 102400         SUB 0,0                  ;THE TRUE/FALSE STATE
26                      STBT 3,0                         ;CHANGE AT MICRO INSTRUCTION
27 07266 062301         DOBP    0,01
28 07267 024774         LDA 1,.-4                ;STB.  CHECK LINK ETC.
29 07270 030007-        LDA 2,=177400            ;C(AC1)= WORD FROM MEMORY
30 07271 146415         SUB# 2,1,SNR             ;C(AC3)= BYTE POINTER.
31                      ERROR
32 07272 063077         HALT
33
34
35       007272         E1427=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
36
37 07273 020010-C154:   LDA 0,=123456            ;"STB" SHOULD STORE ZEROS
38 07274 040402         STA 0,.+2                ;IN MEMORY BITS 0-7.
39 07275 004402         JSR .+2                  ;C(MEMORY) HOWEVER WAS
40 07276 000000         0                        ;NOT CHANGED.  CHECK
41 07277 175120         MOVZL 3,3                ;MICRO INSTRUCTIONS LEFTB
42 07300 152400         SUB 2,2                  ;AND JARVEY.
43                      STBT 3,2
44 07301 072301         DOBP    2,01
45 07302 024774         LDA 1,.-4                ;PERHAPS BYTE IS STORED
46 07303 122415         SUB# 1,0,SNR             ;IN ANOTHER LOCATION
47                      ERROR
48 07304 063077         HALT
49
50
51       007304         E1430=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10203  PRCST
01
02
03
04
05
06                ;  THIS MODULE IS TO TEST IF THE MUL&DIV OPTION EXISTS.
07                ;  THE TECHNIQUE USED TO IMPLEMENT THE TEST IS TO MULTIPLY
08                ;  OR DIVIDE AN ARBITRARY CONSTANT BY ITSELF AND CHECK THE
09                ;  RESULT.  IF THE RESULT EQUALS TO THE CONSTANT THE OPTION
10                ;  IS NOT INSTALLED IN THE MACHINE.
11                ;  IF THE MULTIPLICATION & DIVISION OPTION IS NOT INSTALLED
12                ;  IN THE MACHINE,  THE TESTS ON THE MUL, MULS, DIV, AND DIVS
13                ;  INSTRUCTIONS WILL BE SKIPPED.
14
15
16                ;
17                ;  SET UP CONSTANT TO ACCUMULATORS.
18                ;
19 07305 102404          SUB     0,0,SZR          ;CLEAR ACC0.
20 07306 000100 CONS:    100                      ;CONSTANT USED IN TEST.
21 07307 024777          LDA     1,CONS           ;ACC1= CONS.
22 07310 030776          LDA     2,CONS           ;ACC2= CONS.
23                ;
24                ;  TEST IF MUL INSTRUCTION EXISTS.
25                ;
26 07311 073301          MUL                      ;ACC1 <> CONS IF MUL EXISTS.
27 07312 132414          SUB#    1,2,SZR          ;SKIP TO NEXT TEST IF NO MUL.
28 07313 000412          JMP     C500             ;IF MUL EXISTS GO TEST IT.
29                ;
30                ;  TEST IF MULS INSTRUCTION EXISTS.
31                ;
32 07314 077201          MULS                     ;ACC1 <> CONS IF MULS EXISTS.
33 07315 132414          SUB#    1,2,SZR          ;SKIP TO NEXT TEST IF NO MULS.
34 07316 000407          JMP     C500             ;IF MULS EXISTS GO TEST IT.
35                ;
36                ;  TEST IF DIV INSTRUCTION EXISTS.
37                ;
38 07317 073101          DIV                      ;ACC1 <> CONS IF DIV EXISTS.
39 07320 132414          SUB#    1,2,SZR          ;SKIP TO NEXT TEST IF NO DIV.
40 07321 000404          JMP     C500             ;IF DIV EXISTS GO TEST IT.
41                ;
42                ;  TEST IF DIVS INSTRUCTION EXISTS.
43                ;
44 07322 077001          DIVS                     ;ACC1 <> CONS IF DIVS EXISTS.
45 07323 132415          SUB#    1,2,SNR          ;SKIP TO TEST IF DIVS EXISTS.
46                ;
47                ;  SKIP TEST ON MULTIPLICATION & DIVISION IF OPTION IS NOT
48                ;  INSTALLED.
49                ;
50 07324 002165          JMP     @NTEST
```

```
10204  PRCST
01
02                ;"MUL" - UNSIGNED MULTIPLY
03
04                ;THE 16 BIT UNSIGNED NUMBER IN AC1 IS MULTIPLIED BY THE
05                ;16-BIT UNSIGNED NUMBER IN AC2 TO YIELD A 32-BIT UNSIGNED
06                ;INTERMEDIATE RESULT. THE 16-BIT UNSIGNED NUMBER IN AC0
07                ;IS ADDED TO THIS INTERMEDIATE RESULT TO GIVE THE
08                ;FINAL RESULT. THE FINAL RESULT IS A 32 BIT UNSIGNED NUMBER
09                ;AND OCCUPIES AC0 AND AC1. THE AC2 REMAIN UNCHANGED.
10
```

```
!0205  PRCST
01
02
03                ;
04                ;CHECKING INSTRUCTION "MUL" - UNSIGNED MULTIPLY
05                ;
06
07
08
09
10                C500:   MUL1    1,2,0
11 07325 126440           SUBO    1,1             ;FOR AC1 =0, AC2 =0
12 07326 131000           MOV     1,2             ;AND AC0 =177777;
13 07327 120000           COM     1,0             ;
14 07330 073301           MUL                     ;AC0 IS 177777, CHECK MICRO INSTRUCTION
15 07331 100015           COM#    0,0,SNR         ;MINA, ALSO CHECK INPUT ALU15
16                        ERROR                   ;OF THE LINK MUX
17 07332 063077           HALT
18
19
20        007332          E1431=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
21
22                C501:   MUL1    1,2,0
23 07333 126440           SUBO    1,1             ;FOR AC1 =0, AC2 =0
24 07334 131000           MOV     1,2             ;AND AC0 =177777;
25 07335 120000           COM     1,0             ;
26 07336 073301           MUL                     ;AC0 IS 0 AND AC1 IS 0, CHECK MICRO
27 07337 125015           MOV#    1,1,SNR         ;INSTRUCTION MINB, ALSO CHECK INPUT
28                        ERROR                   ;LINK OF SHIFT MUX 2
29 07340 063077           HALT
30
31
32        007340          E1432=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
33
34                C502:   MUL2    1,2,0
35 07341 102440           SUBO    0,0             ;FOR AC1 =1, AC2=177777
36 07342 110000           COM     0,2             ;AND AC0 =0;
37 07343 105140           MOVOL   0,1             ;
38 07344 073301           MUL                     ;AC0 SHOULD BE 0
39 07345 101014           MOV#    0,0,SZR         ;CHECK MICRO INSTRUCTION MINC
40                        ERROR
41 07346 063077           HALT
42
43
44        007346          E1433=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
45
46                C503:   MUL2    1,2,0
47 07347 102440           SUBO    0,0             ;FOR AC1 =1, AC2=177777
48 07350 110000           COM     0,2             ;AND AC0 =0;
49 07351 105140           MOVOL   0,1             ;
50 07352 073301           MUL                     ;AC1 SHOULD BE 177777
51 07353 124014           COM#    1,1,SZR         ;CHECK MICRO INSTRUCTION MINC
52                        ERROR
53 07354 063077           HALT
54
55
56        007354          E1434=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
57
58                C504:   MUL2    1,2,0
59 07355 102440           SUBO    0,0             ;FOR AC1 =1, AC2=177777
60 07356 110000           COM     0,2             ;AND AC0 =0;
```

```
 0206  PRCST
01 07357 105140           MOVOL   0,1             ;
02 07360 073301           MUL                     ;AC0(15) MUST BE 0, CHECK THE
03 07361 101232           MOVZR#  0,0,SZC         ;OUTPUT CRY0 OF THE ALU
04                        ERROR
05 07362 063077           HALT
06
07
08        007362          E1435=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
09
10                C505:   MUL3    1,2,0
11 07363 102440           SUBO    0,0             ;FOR AC1 =177777, AC2 =1
12 07364 104000           COM     0,1             ;AND AC0 =1;
13 07365 111140           MOVOL   0,2             ;
14 07366 141000           MOV     2,0             ;
15 07367 073301           MUL                     ;AC1 BITS 0-14 MUST BE ZERO
16 07370 125224           MOVZR   1,1,SZR         ;CHECK MICRO INSTRUCTION MINC
17                        ERROR
18 07371 063077           HALT
19
20
21        007371          E1436=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
22
```

```
!0207  PRCST
01
02                C506:   MUL3    1,2,0
03  07372 102440          SUBO    0,0             ;FOR AC1 =177777, AC2 =1
04  07373 104000          COM     0,1             ;AND AC0 =1;
05  07374 111140          MOVOL   0,2             ;
06  07375 141000          MOV     2,0             ;
07  07376 073301          MUL                     ;AC1(15) MUST BE 0, CHECK
08  07377 125212          MOVR#   1,1,SZC         ;MICRO INSTRUCTION MULZ
09                        ERROR
10  07400 063077          HALT
11
12
13        007400          E1437=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
14
15                C507:   MUL3    2,1,0
16  07401 102440          SUBO    0,0             ;FOR AC2 =177777, AC1 =1
17  07402 110000          COM     0,2             ;AND AC0 =1;
18  07403 105140          MOVOL   0,1             ;
19  07404 121000          MOV     1,0             ;
20  07405 073301          MUL                     ;AC0(15) MUST BE 1, CHECK
21  07406 101233          MOVZR#  0,0,SNC         ;THE OUTPUT CRY0 OF
22                        ERROR                   ;THE ALU
23  07407 063077          HALT
24
25
26        007407          E1440=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
27
28                C508:   MUL2    2,1,0
29  07410 102440          SUBO    0,0             ;FOR AC2 =1, AC1=177777
30  07411 104000          COM     0,1             ;AND AC0 =0;
31  07412 111140          MOVOL   0,2             ;
32  07413 073301          MUL                     ;CONTENTS OF AC2 CHANGED
33  07414 151224          MOVZR   2,2,SZR         ;AC2 SHOULD BE 1,
34  07415 000402          JMP     .+2             ;AC0 SHOULD BE 0
35  07416 151013          MOV#    2,2,SNC         ;AC1 SHOULD BE 177777
36                        ERROR
37  07417 063077          HALT
38
39
40        007417          E1441=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
41
42  07420 020403 C509:    LDA     0,.+3           ;FOR (125252X52525)+125252
43  07421 105000          MOV     0,1
44  07422 130001          COM     1,2,SKP         ;AC0 SHOULD BE 34343 AND
45  07423 125252          125252                  ;AC1 SHOULD BE 143434
46  07424 073301          MUL
47  07425 034404          LDA     3,.+4           ;CHECK MICRO INSTRUCTION
48  07426 116414          SUB#    0,3,SZR         ;MINC
49  07427 000404          JMP     .+4             ;HERE IF AC0 NOT CORRECT
50  07430 174001          COM     3,3,SKP
51  07431 034343          34343
52  07432 136414          SUB#    1,3,SZR         ;AC1 IS NOT CORRECT, HALT
53                        ERROR
54  07433 063077          HALT
55
56
57        007433          E1442=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
58
59
```

```
!0208  PRCST
01
02              ;"MULS" - SIGNED MULTIPLY
03
04              ;THE 16 BIT 2'S COMPLEMENT NUMBER IN AC1 IS MULTIPLIED BY
05              ;16-BIT 2'S COMPLEMENT NUMBER IN AC2 TO YIELD A 32 BIT
06              ;SIGNED 2'S COMPLEMENT INTERMEDIATE RESULT. THE 16-BIT
07              ;SIGNED 2'S COMPLEMENT NUMBER IN AC0 IS ADDED TO THIS
08              ;INTERMEDIATE RESULT TO GIVE THE FINAL RESULT IN AC0 AND AC1.
09              ;THE FINAL RESULT IS A 32-BIT SIGNED 2'S COMPLEMENT
10              ;NUMBER. AC2 IS UNCHANGED.
11
```

```
10209  PRCST
01
02
03                      ;
04                      ;CHECKING INSTRUCTION "MULS" - SIGNED MULTIPLY
05                      ;
06
07
08
09
10                      C510:   MUL4    1,2,0
11 07434 126440                 SUBO    1,1             ;FOR AC1 =0, AC2 =0
12 07435 131000                 MOV     1,2             ;AND AC0 =0
13 07436 121000                 MOV     1,0             ;
14 07437 077201                 MULS                    ;AC0 BITS 1-15 NOT ZERO
15 07440 101124                 MOVZL   0,0,SZR         ;CHECK MICRO INSTRUCTION
16                              ERROR                   ;STEPA
17 07441 063077                 HALT
18
19
20       007441                 E1443=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
21
22                      C511:   MUL4    1,2,0
23 07442 126440                 SUBO    1,1             ;FOR AC1 =0, AC2 =0
24 07443 131000                 MOV     1,2             ;AND AC0 =0
25 07444 121000                 MOV     1,0             ;
26 07445 077201                 MULS                    ;SIGN BIT AC0(0) IS NOT 0
27 07446 101102                 MOVL    0,0,SZC         ;CHECK OUTPUT SCRY OF OR
28                              ERROR                   ;GATE U156-1
29 07447 063077                 HALT
30
31
32       007447                 E1444=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
33
34                      C512:   MUL4    1,2,0
35 07450 126440                 SUBO    1,1             ;FOR AC1 =0, AC2 =0
36 07451 131000                 MOV     1,2             ;AND AC0 =0
37 07452 121000                 MOV     1,0             ;
38 07453 077201                 MULS                    ;AC1 SHOULD BE 0,
39 07454 125004                 MOV     1,1,SZR         ;CHECK MICRO INSTRUCTION
40                              ERROR                   ;SHIFTB
41 07455 063077                 HALT
42
43
44       007455                 E1445=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
45
46                      C513:   MUL5    1,2,0
47 07456 126440                 SUBO    1,1             ;
48 07457 131000                 MOV     1,2             ;
49 07460 120000                 COM     1,0             ;FOR AC1 =0,AC2 =0
50                                                      ;AND AC0 =177777;
51 07461 077201                 MULS                    ;SIGN BIT AC0(0) MUST BE 1
52 07462 101103                 MOVL    0,0,SNC         ;CHECK OUTPUT SCRY OF OR
53                              ERROR                   ;GATE U156-1
54 07463 063077                 HALT
55
56
57       007463                 E1446=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
58
59                      C514:   MUL5    1,2,0
60 07464 126440                 SUBO    1,1             ;
```

```
 0210  PRCST
01 07465 131000                 MOV     1,2             ;
02 07466 120000                 COM     1,0             ;FOR AC1 =0,AC2 =0
03                                                      ;AND AC0 =177777;
04 07467 077201                 MULS                    ;AC0 SHOULD BE 177777
05 07470 100014                 COM#    0,0,SZR         ;CHECK MICRO INSTRUCTION
06                              ERROR                   ;STEPA
07 07471 063077                 HALT
08
09
10       007471                 E1447=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
11
```

```
10211  PRCST
01
02                C514A:  MULS    1,2,0
03 07472 126440           SUBO    1,1             ;
04 07473 131000           MOV     1,2             ;
05 07474 120000           COM     1,0             ;FOR AC1 =0,AC2 =0
06                                                ;AND AC0 =177777;
07 07475 077201           MULS                    ;AC1 IS 177776
08 07476 176520           SUBZL   3,3             ;CHECK MICRO INSTRUCTION
09 07477 136415           SUB#    1,3,SNR         ;MULZ
10                        ERROR
11 07500 063077           HALT
12
13
14        007500          E1450=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
15
16                C515:   MULS    1,2,0
17 07501 126440           SUBO    1,1             ;
18 07502 131000           MOV     1,2             ;
19 07503 120000           COM     1,0             ;FOR AC1 =0,AC2 =0
20                                                ;AND AC0 =177777;
21 07504 077201           MULS                    ;AC1 MUST BE 177777
22 07505 124014           COM#    1,1,SZR         ;CHECK MICRO INSTRUCTION
23                        ERROR                   ;SHIFTB
24 07506 063077           HALT
25
26
27        007506          E1451=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
28
29                C516:   MUL2    2,1,0
30 07507 102440           SUBO    0,0             ;FOR AC2 =1, AC1=177777
31 07510 104000           COM     0,1             ;AND AC0 =0;
32 07511 111140           MOVOL   0,2             ;
33 07512 077201           MULS                    ;BOTH AC0 AND AC1 SHOULD
34 07513 100014           COM#    0,0,SZR         ;BE 177777
35 07514 000402           JMP     .+2             ;CHECK MICRO INSTRUCTION
36 07515 124014           COM#    1,1,SZR         ;STEPC. THEN CHECK MICRO
37                        ERROR                   ;SHIFTD AND STEPD
38 07516 063077           HALT
39
40
41        007516          E1452=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
42
43                C517:   MUL2    1,2,0
44 07517 102440           SUBO    0,0             ;FOR AC1 =1, AC2=177777
45 07520 110000           COM     0,2             ;AND AC0 =0;
46 07521 105140           MOVOL   0,1             ;
47 07522 077201           MULS                    ;BOTH AC0 AND AC1
48 07523 100014           COM#    0,0,SZR         ;SHOULD BE 177777
49 07524 101011           MOV#    0,0,SKP         ;CHECK MICRO INSTRUCTION
50 07525 124014           COM#    1,1,SZR         ;STEPB
51                        ERROR
52 07526 063077           HALT
53
54
55        007526          E1453=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
56
57                C518:   MUL6    1,2,0
58 07527 152520           SUBZL   2,2             ;FOR AC1 =125252, AC2 =1
59 07530 020402           LDA     0,.+2           ;AND AC0 =52525;
60 07531 104001           COM     0,1,SKP ;
```

```
 0212  PRCST
01 07532 052525           52525
02 07533 077201           MULS                    ;AC0 AND AC1 BOTH MUST
03 07534 100014           COM#    0,0,SZR         ;BE 177777.
04 07535 101001           MOV     0,0,SKP         ;CHECK MICRO INSTRUCTIONS
05 07536 124014           COM#    1,1,SZR         ;STEPC AND STEPB
06                        ERROR
07 07537 063077           HALT
08
09
10        007537          E1454=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
11
```

```
10213  PRCST
01
02                    C519:   MUL6    2,1,0
03  07540 126520              SUBZL   1,1             ;FOR AC2 =125252, AC1 =1
04  07541 020402              LDA     0,.+2           ;AND AC0 =52525;
05  07542 110001              COM     0,2,SKP ;
06  07543 052525              52525
07  07544 077201              MULS                    ;BOTH AC0 AND AC1 MUST
08  07545 100014              COM#    0,0,SZR         ;BE 177777
09  07546 101001              MOV     0,0,SKP         ;CHECK MICRO INSTRUCTIONS
10  07547 124014              COM#    1,1,SZR         ;STEPC AND STEPB
11                            ERROR
12  07550 063077              HALT
13
14
15        007550              E1455=.-1       ;ERR # (8)= USED FOR ERROR DICTIONARY
16
17                    C520:   MUL6    0,1,2
18  07551 126520              SUBZL   1,1             ;FOR AC0 =125252, AC1 =1
19  07552 030402              LDA     2,.+2           ;AND AC2 =52525;
20  07553 140001              COM     2,0,SKP ;
21  07554 052525              52525
22  07555 077201              MULS                    ;BOTH AC0 AND AC1 MUST
23  07556 100014              COM#    0,0,SZR         ;BE 177777
24  07557 101001              MOV     0,0,SKP         ;CHECK MICRO INSTRUCTIONS
25  07560 124014              COM#    1,1,SZR         ;STEPC AND STEPB AND
26                            ERROR                   ;OUTPUT SCRY OF OR GATE
27  07561 063077              HALT
28
29
30        007561              E1456=.-1       ;ERR # (8)= USED FOR ERROR DICTIONARY
31                                            ;U156=1
32
33                    C521:   MUL7    1,2,0
34  07562 126440              SUB0    1,1             ;FOR AC1 =177777,
35  07563 124000              COM     1,1             ;AC2 =125252 AND
36  07564 020402              LDA     0,.+2           ;AC0 =52525;
37  07565 110001              COM     0,2,SKP         ;
38  07566 052525              52525
39  07567 077201              MULS                    ;SIGN BIT AC0(0) MUST BE
40  07570 101102              MOVL    0,0,SZC         ;0, CHECK OUTPUT SCRY
41                            ERROR                   ;OF OR GATE U156=1
42  07571 063077              HALT
43
44
45        007571              E1457=.-1       ;ERR # (8)= USED FOR ERROR DICTIONARY
46
47                    C522:   MUL7    1,2,0
48  07572 126440              SUB0    1,1             ;FOR AC1 =177777,
49  07573 124000              COM     1,1             ;AC2 =125252 AND
50  07574 020402              LDA     0,.+2           ;AC0 =52525;
51  07575 110001              COM     0,2,SKP         ;
52  07576 052525              52525
53  07577 077201              MULS                    ;AC0 MUST BE 0
54  07600 101004              MOV     0,0,SZR         ;CHECK MICRO INSTRUCTION
55                            ERROR                   ;STEPD
56  07601 063077              HALT
57
58
59        007601              E1460=.-1       ;ERR # (8)= USED FOR ERROR DICTIONARY
60
```

```
 0214  PRCST
01                    C523:   MUL7    2,1,0
02  07602 152440              SUB0    2,2             ;FOR AC2 =177777,
03  07603 150000              COM     2,2             ;AC1 =125252 AND
04  07604 020402              LDA     0,.+2           ;AC0 =52525;
05  07605 104001              COM     0,1,SKP         ;
06  07606 052525              52525
07  07607 077201              MULS                    ;AC1 MUST BE EQUAL
08  07610 124420              NEGZ    1,1             ;TO 125253
09  07611 034775              LDA     3,.-3           ;CHECK MICRO INSTRUCTIONS
10  07612 136414              SUB#    1,3,SZR         ;STEPB AND SHIFTB
11                            ERROR
12  07613 063077              HALT
13
14
15        007613              E1461=.-1       ;ERR # (8)= USED FOR ERROR DICTIONARY
16
```

```
10215  PRCST
01
02                C524:   MUL8    1,2,0
03 07614 020403           LDA     0,.+3           ;FOR AC1 =52525,
04 07615 105000           MOV     0,1             ;AC2 =52525 AND
05 07616 111001           MOV     0,2,SKP ;AC0 =52525;
06 07617 052525           52525
07 07620 077201           MULS                    ;THE SIGN OF RESULT MUST BE
08 07621 101102           MOVL    0,0,SZC         ;+VE, AC0(0) MUST BE 0
09                        ERROR                   ;CHECK OUTPUT SCRY OF U156-1
10 07622 063077           HALT
11
12
13        007622          E1462=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
14
15                C525:   MUL8    1,2,0
16 07623 020403           LDA     0,.+3           ;FOR AC1 =52525,
17 07624 105000           MOV     0,1             ;AC2 =52525 AND
18 07625 111001           MOV     0,2,SKP ;AC0 =52525;
19 07626 052525           52525
20 07627 077201           MULS                    ;AC0 MUST BE EQUAL TO
21 07630 034402           LDA     3,.+2           ;16161
22 07631 101001           MOV     0,0,SKP         ;CHECK MICRO INSTRUCTIONS
23 07632 016161           16161                   ;STEP8 AND STEPC
24 07633 116414           SUB#    0,3,SZR
25                        ERROR
26 07634 063077           HALT
27
28
29        007634          E1463=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
30
31                C526:   MUL8    1,2,0
32 07635 020403           LDA     0,.+3           ;FOR AC1 =52525,
33 07636 105000           MOV     0,1             ;AC2 =52525 AND
34 07637 111001           MOV     0,2,SKP ;AC0 =52525;
35 07640 052525           52525
36 07641 077201           MULS                    ;AC1 MUST BE EQUAL TO
37 07642 034402           LDA     3,.+2           ;161616
38 07643 101001           MOV     0,0,SKP         ;CHECK MICRO INSTRUCTIONS
39 07644 161616           161616                  ;SHIFT8 AND MULZ
40 07645 136414           SUB#    1,3,SZR
41                        ERROR
42 07646 063077           HALT
43
44
45        007646          E1464=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
46
47                C527:   MUL7    1,2,0
48 07647 126440           SUBO    1,1             ;FOR AC1 =177777,
49 07650 124000           COM     1,1             ;AC2 =125252 AND
50 07651 020402           LDA     0,.+2           ;AC0 =52525;
51 07652 110001           COM     0,2,SKP         ;
52 07653 052525           52525
53 07654 077201           MULS                    ;AC2 CONTENT CHANGED.
54 07655 034776           LDA     3,.-2           ;AC0 MUST BE 0
55 07656 157000           ADD     2,3             ;AC1 MUST BE 125253
56 07657 174014           COM#    3,3,SZR         ;AND AC2 MUST BE 125252
57                        ERROR
58 07660 063077           HALT
59
60
```

```
 0216  PRCST
01        007660          E1465=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
02
```

```
10217  PRCST
01
02                ;"DIV" - UNSIGNED DIVIDE
03
04                ;THE 32-BIT UNSIGNED NUMBER CONTAINED IN AC0 AND AC1
05                ;IS DIVIDED BY 16-BIT UNSIGNED NUMBER IN AC2. THE QUOTIENT
06                ;AND THE REMAINDER ARE 16-BIT UNSIGNED NUMBERS IN AC1
07                ;AND AC0 RESPECTIVELY. FOR NO-OVERFLOW
08                ;CARRY BIT IS SET TO 0. THE AC2 REMAINS UNCHANGED. FOR
09                ;OVERFLOW CONDITION, CARRY BIT IS SET. IF AC0 > AC2
10                ;OR AC0=AC2 , THEN OVERFLOW IS INDICATED BY SETTING CARRY.
11
```

```
10218  PRCST
01
02
03                ;
04                ;CHECKING UNSIGNED DIVIDE INSTRUCTION - "DIV"
05                ;
06
07
08
09
10                          C528:   DIV1    1,2,0
11  07661 102440                    SUB0    0,0             ;FOR AC0 =0,AC1 =177777
12  07662 111000                    MOV     0,2             ;AND AC2 =0;
13  07663 104000                    COM     0,1             ;
14  07664 073101                    DIV                     ;FOR AC0=AC2=0, OVERFLOW MUST
15  07665 101003                    MOV     0,0,SNC         ;OCCUR AND CARRY MUST BE SET, CHECK
16                                  ERROR                   ;OUTPUT 'SET CRY' OF CARRY MUX
17  07666 063077                    HALT
18
19
20          007666                  E1466=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
21
22                          C529:   DIV1    1,2,0
23  07667 102440                    SUB0    0,0             ;FOR AC0 =0,AC1 =177777
24  07670 111000                    MOV     0,2             ;AND AC2 =0;
25  07671 104000                    COM     0,1             ;
26  07672 073101                    DIV                     ;AC0 MUST NOT CHANGE, CHECK
27  07673 101004                    MOV     0,0,SZR         ;MICRO INSTRUCTIONS WBERIC
28                                  ERROR                   ;AND BH0
29  07674 063077                    HALT
30
31
32          007674                  E1467=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
33
34                          C530:   DIV1    1,2,0
35  07675 102440                    SUB0    0,0             ;FOR AC0 =0,AC1 =177777
36  07676 111000                    MOV     0,2             ;AND AC2 =0;
37  07677 104000                    COM     0,1             ;
38  07700 073101                    DIV                     ;AC1 MUST NOT CHANGE FOR
39  07701 124004                    COM     1,1,SZR         ;OVERFLOW CONDITION
40                                  ERROR
41  07702 063077                    HALT
42
43
44          007702                  E1470=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
45
46                          C531:   DIV2    1,2,0
47  07703 126440                    SUB0    1,1             ;FOR AC0 =177777,AC1 =0
48  07704 130000                    COM     1,2             ;AND AC2 =177777;
49  07705 141000                    MOV     2,0             ;
50  07706 073101                    DIV                     ;FOR AC0=AC2=177777, OVERFLOW
51  07707 125003                    MOV     1,1,SNC         ;MUST OCCUR, CARRY MUST BE SET
52                                  ERROR                   ;CHECK OUTPUT 'SET CRY' OF CARRY MUX
53  07710 063077                    HALT
54
55
56          007710                  E1471=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
57
58                          C532:   DIV2    1,2,0
59  07711 126440                    SUB0    1,1             ;FOR AC0 =177777,AC1 =0
60  07712 130000                    COM     1,2             ;AND AC2 =177777;
```

```
 0219  PRCST
01 07713 141000          MOV     2,0             ;
02 07714 073101          DIV                     ;AC0 MUST NOT CHANGE, CHECK
03 07715 100004          COM     0,0,SZR         ;MICRO INSTRUCTIONS WBERIC
04                       ERROR                   ;AND BH0
05 07716 063077          HALT
06
07
08       007716          E1472=.-1       ;ERR # (8)= USED FOR ERROR DICTIONARY
09
10               C533:   DIV2    1,2,0
11 07717 126440          SUB0    1,1             ;FOR AC0 =177777,AC1 =0
12 07720 130000          COM     1,2             ;AND AC2 =177777;
13 07721 141000          MOV     2,0             ;
14 07722 073101          DIV                     ;AC1 MUST NOT CHANGE FOR
15 07723 125004          MOV     1,1,SZR         ;OVERFLOW CONDITION
16                       ERROR
17 07724 063077          HALT
18
19
20       007724          E1473=.-1       ;ERR # (8)= USED FOR ERROR DICTIONARY
21
```

```
10220  PRCST
01
02               C534:   DIV3    1,2,0
03 07725 126440          SUB0    1,1             ;FOR AC0 =177777,AC1 =0
04 07726 120000          COM     1,0             ;AND AC2 =177776;
05 07727 111120          MOVZL   0,2             ;
06 07730 073101          DIV                     ;FOR AC0>AC2, OVERFLOW MUST OCCUR
07 07731 101003          MOV     0,0,SNC         ;CARRY MUST BE SET, CHECK OUTPUT
08                       ERROR                   ;'SET CRY' OF CARRY MUX
09 07732 063077          HALT
10
11
12       007732          E1474=.-1       ;ERR # (8)= USED FOR ERROR DICTIONARY
13
14               C535:   DIV3    1,2,0
15 07733 126440          SUB0    1,1             ;FOR AC0 =177777,AC1 =0
16 07734 120000          COM     1,0             ;AND AC2 =177776;
17 07735 111120          MOVZL   0,2             ;
18 07736 073101          DIV                     ;AC1 MUST NOT CHANGE FOR
19 07737 125004          MOV     1,1,SZR         ;OVERFLOW CONDITION
20                       ERROR
21 07740 063077          HALT
22
23
24       007740          E1475=.-1       ;ERR # (8)= USED FOR ERROR DICTIONARY
25
26               C536:   DIV3    1,2,0
27 07741 126440          SUB0    1,1             ;FOR AC0 =177777,AC1 =0
28 07742 120000          COM     1,0             ;AND AC2 =177776;
29 07743 111120          MOVZL   0,2             ;
30 07744 073101          DIV                     ;AC0 MUST NOT CHANGE FOR
31 07745 100004          COM     0,0,SZR         ;OVERFLOW, CHECK MICRO
32                       ERROR                   ;INSTUCTIONS WBERIC AND BH0
33 07746 063077          HALT
34
35
36       007746          E1476=.-1       ;ERR # (8)= USED FOR ERROR DICTIONARY
37
38               C537:   DIV4    1,2,0
39 07747 102440          SUB0    0,0             ;FOR AC0 =0,AC1 =1
40 07750 110000          COM     0,2             ;AND AC2 =177777;
41 07751 105140          MOVOL   0,1             ;
42 07752 073101          DIV                     ;PROPER DIVIDE, CARRY BIT
43 07753 101002          MOV     0,0,SZC         ;MUST BE RESET, CHECK
44                       ERROR                   ;OUTPUT 'SET CRY' OF CARRY MUX
45 07754 063077          HALT
46
47
48       007754          E1477=.-1       ;ERR # (8)= USED FOR ERROR DICTIONARY
49
50               C538:   DIV4    1,2,0
51 07755 102440          SUB0    0,0             ;FOR AC0 =0,AC1 =1
52 07756 110000          COM     0,2             ;AND AC2 =177777;
53 07757 105140          MOVOL   0,1             ;
54 07760 073101          DIV
55 07761 176500          SUBL    3,3             ;AC0 IS EQ.TO 2.
56 07762 175120          MOVZL   3,3             ;CHECK MICRO INSTRUCTION BH0
57 07763 116415          SUB#    0,3,SNR
58                       ERROR
59 07764 063077          HALT
60
```

```
 0221  PRCST
01
02        007764          E1500=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
03
04                C539:   DIV4    1,2,0
05  07765 102440          SUB0    0,0             ;FOR AC0 =0,AC1 =1
06  07766 110000          COM     0,2             ;AND AC2 =177777;
07  07767 105140          MOVOL   0,1             ;
08  07770 073101          DIV                     ;AC0 MUST BE EQUAL TO 1
09  07771 176500          SUBL    3,3             ;CHECK MICRO INSTRUCTION
10  07772 116414          SUB#    0,3,SZR         ;ZERO AND OUTPUT SET LINK
11                        ERROR                   ;OF LINK MUX U109-1
12  07773 063077          HALT
13
14
15        007773          E1501=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
16
```

```
10222  PRCST
01
02                C540:   DIV4    1,2,0
03  07774 102440          SUB0    0,0             ;FOR AC0 =0,AC1 =1
04  07775 110000          COM     0,2             ;AND AC2 =177777;
05  07776 105140          MOVOL   0,1             ;
06  07777 073101          DIV                     ;AC1 IS EQUAL TO 1,
07  10000 176500          SUBL    3,3             ;CHECK OUTPUTS QBIT SAVE
08  10001 136415          SUB#    1,3,SNR         ;AND ALUOSAVE OF DIV MUX
09                        ERROR
10  10002 063077          HALT
11
12
13        010002          E1502=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
14
15                C541:   DIV4    1,2,0
16  10003 102440          SUB0    0,0             ;FOR AC0 =0,AC1 =1
17  10004 110000          COM     0,2             ;AND AC2 =177777;
18  10005 105140          MOVOL   0,1             ;
19  10006 073101          DIV                     ;AC1 MUST BE 0,CHECK MICRO
20  10007 125004          MOV     1,1,SZR         ;INSTRUCTIONS GZINTA AND
21                        ERROR                   ;ARD
22  10010 063077          HALT
23
24
25        010010          E1503=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
26
27                C542:   DIV5    1,2,0
28  10011 102520          SUBZL   0,0             ;FOR AC0 =1,AC1 =177776
29  10012 104000          COM     0,1             ;AND AC2 =2;
30  10013 111120          MOVZL   0,2             ;
31  10014 073101          DIV                     ;FOR PROPER DIVIDE CARRY BIT
32  10015 101002          MOV     0,0,SZC         ;MUST BE CLEARED. CHECK
33                        ERROR                   ;OUTPUT 'SET CRY' OF CARRY MUX
34  10016 063077          HALT
35
36
37        010016          E1504=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
38
39                C543:   DIV5    1,2,0
40  10017 102520          SUBZL   0,0             ;FOR AC0 =1,AC1 =177776
41  10020 104000          COM     0,1             ;AND AC2 =2;
42  10021 111120          MOVZL   0,2             ;
43  10022 073101          DIV                     ;AC0 MUST BE 0, CHECK MICRO
44  10023 101004          MOV     0,0,SZR         ;INSTRUCTIONS 'ONE' AND WHEW
45                        ERROR
46  10024 063077          HALT
47
48
49        010024          E1505=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
50
51                C544:   DIV5    1,2,0
52  10025 102520          SUBZL   0,0             ;FOR AC0 =1,AC1 =177776
53  10026 104000          COM     0,1             ;AND AC2 =2;
54  10027 111120          MOVZL   0,2             ;
55  10030 073101          DIV                     ;AC1 MUST BE 177777, CHECK
56  10031 124004          COM     1,1,SZR         ;OUTPUTS QBIT SAVE AND
57                        ERROR                   ;ALUOSAVE OF DIV MUX; CHECK
58  10032 063077          HALT
59
60
```

```
 0223  PRCST
01        010032          E1506=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
02                                        ;MICRO INSTRUCTIONS GZINTA
03                                        ;AND ARD
04
05                C545:   DIV6    1,2,0
06  10033 102440          SUBO    0,0             ;FOR AC0 =0,AC1 =177777
07  10034 104000          COM     0,1             ;AND AC2 =125252;
08  10035 030402          LDA     2,.+2           ;
09  10036 101001          MOV     0,0,SKP         ;
10  10037 125252          125252
11  10040 073101          DIV                     ;FOR PROPER DIVIDE, CARRY BIT
12  10041 101002          MOV     0,0,SZC         ;MUST BE CLEARED. CHECK
13                        ERROR                   ;OUTPUT 'SET CRY' OF CARRY MUX
14  10042 063077          HALT
15
16
17        010042          E1507=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
18
```

```
;0224  PRCST
01
02                C546:   DIV6    1,2,0
03  10043 102440          SUBO    0,0             ;FOR AC0 =0,AC1 =177777
04  10044 104000          COM     0,1             ;AND AC2 =125252;
05  10045 030402          LDA     2,.+2           ;
06  10046 101001          MOV     0,0,SKP         ;
07  10047 125252          125252
08  10050 073101          DIV                     ;AC1 MUST BE 1, CHECK
09  10051 176500          SUBL    3,3             ;MICRO INSTRUCTION GZINTA
10  10052 136414          SUB#    1,3,SZR         ;AND OUTPUTS QBIT SAVE AND
11                        ERROR                   ;ALUOSAVE OF DIV MUX
12  10053 063077          HALT
13
14
15        010053          E1510=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
16
17                C547:   DIV6    1,2,0
18  10054 102440          SUBO    0,0             ;FOR AC0 =0,AC1 =177777
19  10055 104000          COM     0,1             ;AND AC2 =125252;
20  10056 030402          LDA     2,.+2           ;
21  10057 101001          MOV     0,0,SKP         ;
22  10060 125252          125252
23  10061 073101          DIV                     ;AC0 MUST BE EQUAL TO
24  10062 034776          LDA     3,.-2           ;52525. CHECK MICRO
25  10063 174000          COM     3,3             ;INSTRUCTIONS ONE AND ZERO
26  10064 116414          SUB#    0,3,SZR         ;THEN CHECK MICRO
27                        ERROR                   ;WHEW
28  10065 063077          HALT
29
30
31        010065          E1511=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
32
33                C548:   DIV7    1,2,0
34  10066 102220          ADCZR   0,0             ;FOR AC0=77777 AND AC1=125252
35  10067 152020          ADCZ    2,2             ;AND AC2=177777;
36  10070 024402          LDA     1,.+2           ;
37  10071 101001          MOV     0,0,SKP         ;
38  10072 125252          125252                  ;
39  10073 073101          DIV                     ;FOR PROPER DIVIDE,
40  10074 101002          MOV     0,0,SZC         ;CARRY MUST BE CLEARED, CHECK
41                        ERROR                   ;OUTPUT 'SET CRY' OF CARRY MUX
42  10075 063077          HALT
43
44
45        010075          E1512=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
46
47                C549:   DIV7    1,2,0
48  10076 102220          ADCZR   0,0             ;FOR AC0=77777 AND AC1=125252
49  10077 152020          ADCZ    2,2             ;AND AC2=177777;
50  10100 024402          LDA     1,.+2           ;
51  10101 101001          MOV     0,0,SKP         ;
52  10102 125252          125252                  ;
53  10103 073101          DIV                     ;AC1 MUST BE 100000, CHECK
54  10104 176600          SUBR    3,3             ;MICRO INSTRUCTION GZINTA
55  10105 136414          SUB#    1,3,SZR         ;AND OUTPUTS QBIT SAVE AND
56                        ERROR                   ;ALUOSAVE OF DIV MUX
57  10106 063077          HALT
58
59
60        010106          E1513=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
 0225  PRCST
01
02                C550:   DIV7    1,2,0
03  10107 102220          ADCZR   0,0             ;FOR AC0=77777 AND AC1=125252
04  10110 152020          ADCZ    2,2             ;AND AC2=177777;
05  10111 024402          LDA     1,.+2           ;
06  10112 101001          MOV     0,0,SKP         ;
07  10113 125252          125252                  ;
08  10114 073101          DIV                     ;AC0 MUST BE EQUAL TO
09  10115 034776          LDA     3,.-2           ;25252. CHECK MICRO
10  10116 175120          MOVZL   3,3             ;INSTRUCTIONS ONE AND
11  10117 175220          MOVZR   3,3             ;ZERO. THEN CHECK MICRO
12  10120 116414          SUB#    0,3,SZR         ;WHEW
13                        ERROR
14  10121 063077          HALT
15
16
17        010121          E1514=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
18
```

```
 0226  PRCST
01                ;"DIVS" - SIGNED DIVIDE
02
03                ;THE 32-BIT SIGNED 2'S COMPLEMENT NUMBER IN AC0 AND AC1 IS
04                ;DIVIDED BY 16-BIT SIGNED 2'S COMPLEMENT NUMBER IN AC2.
05                ;THE QUOTIENT AND THE REMAINDER ARE THE 16-BIT SIGNED
06                ;2'S COMPLEMENT NUMBERS IN AC1 AND AC0 RESPECTIVELY. THE
07                ;SIGNS OF THE QUOTIENT AND THE REMAINDER ARE DETERMINED
08                ;BY THE RULES OF THE ALGEBRA. THE CARRY BIT IS SET TO
09                ;0, IF THERE IS NO OVERFLOW. AC2 REMAINS UNCHANGED.
10                ;IF THE MAGNITUDE OF QUOTIENT CANNOT FIT IN AC1, THEN
11                ;OVERFLOW IS INDICATED BY SETTING CARRY.
12
```

```
10227  PRCST
01
02
03                ;
04                ;CHECKING SIGNED DIVIDE INSTRUCTION - "DIVS"
05                ;
06
07
08
09
10
11                C551:   DIV8    1,2,0
12                        MUL3    1,2,0
13 10122 102440           SUBO    0,0             ;FOR AC1 =177777, AC2 =1
14 10123 104000           COM     0,1             ;AND AC0 =1;
15 10124 111140           MOVOL   0,2             ;
16 10125 141000           MOV     2,0             ;
17 10126 077001           DIVS                    ;OVERFLOW MUST OCCUR FOR
18 10127 101003           MOV     0,0,SNC         ;AC0=AC2, CHECK OUTPUT
19                        ERROR                   ;'SET CRY' OF CARRY MUX
20 10130 063077           HALT
21
22
23        010130          E1515=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
24
25                C552:   DIV5    1,2,0
26 10131 102520           SUBZL   0,0             ;FOR AC0 =1,AC1 =177776
27 10132 104000           COM     0,1             ;AND AC2 =2;
28 10133 111120           MOVZL   0,2             ;
29 10134 077001           DIVS                    ;OVERFLOW MUST OCCUR, MAGNITUDE
30 10135 101003           MOV     0,0,SNC         ;OF AC1 TOO LARGE, CHECK OUTPUT
31                        ERROR                   ;'SET CRY' OF CARRY MUX
32 10136 063077           HALT
33
34
35        010136          E1516=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
36
37                C553:   DIV9    +,+
38 10137 020404           LDA     0,.+4           ;FOR (AC0,AC1)=+125253
39 10140 024404           LDA     1,.+4           ;AND AC2=+52525;
40 10141 030404           LDA     2,.+4           ;
41 10142 000404           JMP     .+4             ;
42 10143 000000           +125253D
43        125253
44 10145 052525           +52525
45 10146 077001           DIVS                    ;FOR PROPER DIVIDE, CARRY BIT
46 10147 101002           MOV     0,0,SZC         ;MUST BE RESET, CHECK OUTPUT
47                        ERROR                   ;'SET CRY' OF CARRY MUX
48 10150 063077           HALT
49
50
51        010150          E1517=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
52
53                C554:   DIV9    +,+
54 10151 020404           LDA     0,.+4           ;FOR (AC0,AC1)=+125253
55 10152 024404           LDA     1,.+4           ;AND AC2=+52525;
56 10153 030404           LDA     2,.+4           ;
57 10154 000404           JMP     .+4             ;
58 10155 000000           +125253D
59        125253
60 10157 052525           +52525
```

```
 0228  PRCST
01 10160 077001           DIVS                    ;AC0 MUST BE +1,
02 10161 176520           SUBZL   3,3             ;CHECK MICRO INSTRUCTION BM0.
03 10162 116414           SUB#    0,3,SZR         ;GW0(0) MUST BE 1, IF
04                        ERROR                   ;GOOD CHECK DIV INSTRUCTION
05 10163 063077           HALT
06
07
08        010163          E1520=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
09
10                C555:   DIV9    +,+
11 10164 020404           LDA     0,.+4           ;FOR (AC0,AC1)=+125253
12 10165 024404           LDA     1,.+4           ;AND AC2=+52525;
13 10166 030404           LDA     2,.+4           ;
14 10167 000404           JMP     .+4             ;
15 10170 000000           +125253D
16        125253
17 10172 052525           +52525
18 10173 077001           DIVS                    ;AC1 MUST BE +2.
19 10174 176520           SUBZL   3,3             ;CHECK INPUT ALU0 AND
20 10175 177000           ADD     3,3             ;
21 10176 136414           SUB#    1,3,SZR         ;OUTPUT SET LINK OF LINK MUX
22                        ERROR
23 10177 063077           HALT
24
25
26        010177          E1521=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
27
```

```
10229  PRCST
01
02                C556:   DIV9    -,+
03 10200 020404           LDA     0,.+4           ;FOR (AC0,AC1)=-125253
04 10201 024404           LDA     1,.+4           ;AND AC2=+52525;
05 10202 030404           LDA     2,.+4           ;
06 10203 000404           JMP     .+4             ;
07 10204 177777           -125253D
08       052525
09 10206 052525           +52525
10 10207 077001           DIVS                    ;FOR PROPER DIVIDE CARRY BIT
11 10210 101002           MOV     0,0,SZC         ;MUST BE RESET, CHECK OUTPUT
12                        ERROR                   ;OF CRY MUX.
13 10211 063077           HALT
14
15
16       010211           E1522=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
17
18                C557:   DIV9    -,+
19 10212 020404           LDA     0,.+4           ;FOR (AC0,AC1)=-125253
20 10213 024404           LDA     1,.+4           ;AND AC2=+52525;
21 10214 030404           LDA     2,.+4           ;
22 10215 000404           JMP     .+4             ;
23 10216 177777           -125253D
24       052525
25 10220 052525           +52525
26 10221 077001           DIVS                    ;AC0 MUST BE -1
27 10222 176000           ADC     3,3             ;CHECK MICRO INSTRUCTION ABSAC0
28 10223 162414           SUB#    3,0,SZR         ;AND BN0. GR0(0) MUST BE 0, IF
29                        ERROR                   ;GOOD, CHECK DIV INSTRUCTION
30 10224 063077           HALT
31
32
33       010224           E1523=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
34
35                C558:   DIV9    -,+
36 10225 020404           LDA     0,.+4           ;FOR (AC0,AC1)=-125253
37 10226 024404           LDA     1,.+4           ;AND AC2=+52525;
38 10227 030404           LDA     2,.+4           ;
39 10230 000404           JMP     .+4             ;
40 10231 177777           -125253D
41       052525
42 10233 052525           +52525
43 10234 077001           DIVS                    ;AC1 MUST BE -2, CHECK
44 10235 176520           SUBZL   3,3             ;INPUT ALU0 AND OUTPUT SET
45 10236 174000           COM     3,3             ;LINK OF LINK MUX
46 10237 136414           SUB#    1,3,SZR         ;
47                        ERROR                   ;
48 10240 063077           HALT
49
50
51       010240           E1524=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
52
53                C559:   DIV9    +,-
54 10241 020404           LDA     0,.+4           ;FOR (AC0,AC1)=+125253
55 10242 024404           LDA     1,.+4           ;AND AC2=-52525;
56 10243 030404           LDA     2,.+4           ;
57 10244 000404           JMP     .+4             ;
58 10245 000000           +125253D
59       125253
60 10247 125253           -52525
```

```
 0230  PRCST
01 10250 077001           DIVS                    ;FOR GOOD DIVIDE, CARRY BIT MUST
02 10251 101002           MOV     0,0,SZC         ;BE RESET, CHECK OUTPUT SET CRY
03                        ERROR                   ;OF CARRY MUX
04 10252 063077           HALT
05
06
07       010252           E1525=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
08
09                C560:   DIV9    +,-
10 10253 020404           LDA     0,.+4           ;FOR (AC0,AC1)=+125253
11 10254 024404           LDA     1,.+4           ;AND AC2=-52525;
12 10255 030404           LDA     2,.+4           ;
13 10256 000404           JMP     .+4             ;
14 10257 000000           +125253D
15       125253
16 10261 125253           -52525
17 10262 077001           DIVS                    ;AC0 MUST BE +1
18 10263 176520           SUBZL   3,3             ;CHECK MICRO INSTRUCTIONS BM0
19 10264 116414           SUB#    0,3,SZR         ;AND BN0
20                        ERROR
21 10265 063077           HALT
22
23
24       010265           E1526=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
25
```

```
10231  PRCST
01
02                C561:   DIV9    +,-
03 10266 020404           LDA     0,.+4           ;FOR (AC0,AC1)=+125253
04 10267 024404           LDA     1,.+4           ;AND AC2=-52525;
05 10270 030404           LDA     2,.+4           ;
06 10271 000404           JMP     .+4             ;
07 10272 000000           +125253D
08       125253
09 10274 125253           -52525
10 10275 077001           DIVS                    ;AC1 MUST BE -2, CHECK INPUT
11 10276 176520           SUBZL   3,3             ;ALU0 AND OUTPUT SET LINK OF
12 10277 174000           COM     3,3             ;LINK MUX AND MICRO BP0
13 10300 136414           SUB#    1,3,SZR         ;
14                        ERROR                   ;
15 10301 063077           HALT
16
17
18       010301           E1527=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
19
20                C562:   DIV9    -,-
21 10302 020404           LDA     0,.+4           ;FOR (AC0,AC1)=-125253
22 10303 024404           LDA     1,.+4           ;AND AC2=-52525;
23 10304 030404           LDA     2,.+4           ;
24 10305 000404           JMP     .+4             ;
25 10306 177777           -125253D
26       052525
27 10310 125253           -52525
28 10311 077001           DIVS                    ;AC0 MUST BE -1
29 10312 176000           ADC     3,3             ;CHECK MICRO INSTRUCTIONS
30 10313 116414           SUB#    0,3,SZR         ;ABSAC0 AND BN0, GR0(0)
31                        ERROR                   ;MUST BE 0
32 10314 063077           HALT
33
34
35       010314           E1530=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
36
37                C563:   DIV9    -,-
38 10315 020404           LDA     0,.+4           ;FOR (AC0,AC1)=-125253
39 10316 024404           LDA     1,.+4           ;AND AC2=-52525;
40 10317 030404           LDA     2,.+4           ;
41 10320 000404           JMP     .+4             ;
42 10321 177777           -125253D
43       052525
44 10323 125253           -52525
45 10324 077001           DIVS                    ;AC1 MUST BE +2, CHECK OUTPUT
46 10325 176520           SUBZL   3,3             ;SET LINK OF LINK MUX, ALSO
47 10326 175400           INC     3,3             ;
48 10327 136414           SUB#    1,3,SZR         ;CHECK MICRO INSTRUCTION
49                        ERROR                   ;ABSAC1
50 10330 063077           HALT
51
52
53       010330           E1531=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
54
55                C564:   DIV9    -,-
56 10331 020404           LDA     0,.+4           ;FOR (AC0,AC1)=-125253
57 10332 024404           LDA     1,.+4           ;AND AC2=-52525;
58 10333 030404           LDA     2,.+4           ;
59 10334 000404           JMP     .+4             ;
60 10335 177777           -125253D
```

```
 0232  PRCST
01       052525
02 10337 125253           -52525
03 10340 077001           DIVS                    ;FOR PROPER DIVIDE, CARRY BIT
04 10341 101002           MOV     0,0,SZC         ;MUST BE RESET. CHECK OUTPUT
05                        ERROR                   ;SET CRY OF CARRY MUX
06 10342 063077           HALT
07
08
09       010342           E1532=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
10
11 10343 126440 C565:     SUBO    1,1             ;FOR (AC0,AC1)=1,000000 AND
12 10344 121140           MOVOL   1,0             ;AC2=2
13 10345 111120           MOVZL   0,2             ;CHECK MICRO INSTRUCTIONS
14 10346 077001           DIVS                    ;ABSAC0 AND TWOS
15 10347 101013           MOV#    0,0,SNC         ;CARRY SHOULD BE SET
16                        ERROR
17 10350 063077           HALT
18
19
20       010350           E1533=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
21
22 10351 126440 C566:     SUBO    1,1             ;FOR (AC0,AC1)=2,000000 AND
23 10352 020415           LDA     0,N2            ;AC0=2
24 10353 030415           LDA     2,N8            ;AC2=8
25
26 10354 077001           DIVS
27 10355 101004           MOV     0,0,SZR         ;AC0 SHOULD BE ZERO (REMAINDER)
28
29                        ERROR
30 10356 063077           HALT
31
32
33       010356           E1534=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
34
35
36
37
38
39 10357 126440           SUBO    1,1             ;FOR (AC0,AC1)=2,000000 AND
40
41 10360 020407           LDA     0,N2            ;AC0=2
42 10361 030407           LDA     2,N8            ;AC2=8
43
44 10362 077001           DIVS
45 10363 034406           LDA     3,N40           ;AC3=40000 (QUOTIENT)
46 10364 136414           SUB#    1,3,SZR         ;AC1 SHOULD BE 40000 (QUOTIENT)
47
48                        ERROR
49 10365 063077           HALT
50
51
52       010365           E1535=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
53
54
55 10366 000404           JMP     .+4
56
57
58 10367 000002 N2:       2
59 10370 000010 N8:       8.
60 10371 040000 N40:      40000
```

```
 0233  PRCST
01
02                ;CHECK IF TEST IS RUNNING WITH CAT/KITTEN
03 10372 020164 KC:       LDA 0,KATSW
04 10373 101005           MOV 0,0,SNR       ;SKP IS CAT/KITTEN RUN
05 10374 000416           JMP PRCSS         ;NOT CAT/KITTEN RUN
06 10375 014160           DSZ PKR00
07 10376 000201           JMP A1A
08 10377 020161           LDA 0,PKR01
09 10400 040160           STA 0,PKR00
10 10401 014150           DSZ TESTK
11 10402 000201           JMP A1A
12 10403 020122           LDA 0,K3.3K
13 10404 040150           STA 0,TESTK       ;SET UP LOOP CONSTANTS
14 10405 020110           LDA 0,K10
15 10406 040161           STA 0,PKR01
16 10407 040160           STA 0,PKR00
17 10410 002401           JMP @.+1
18 10411 011261           PASSC
19
```

```
10234  PRCST
                          .TITL PRCST
02
03                ;PROCESSOR I/O INSTR TESTS
04
05 10412 102620 PRCSS:    SUBZR 0,0
06 10413 060277           INTDS
07 10414 040001           STA 0,1           ;INTA'S WILL @0
08                ;ION SHD=0 NO SKIP ON BUSY NON ZERO
09 10415 063477 IO.00:    SKPBN CPU         ;ION=0 SHD NOT SKP
10 10416 101001           MOV 0,0,SKP
11                        ERROR             ;IR8 IR9=00 NO SKIP BN
12 10417 063077           HALT
13
14
15        010417          E1536=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
16                ;POWER LOW SHD=0 NO SKIP ON DONE NON ZERO
17 10420 063677 IO.01:    SKPDN CPU         ;SHD NOT SKP
18 10421 101001           MOV 0,0,SKP       ;DIDN'T IR8 IR9=10
19                        ERROR             ;SEE PWR LOW=1(SHDN'T)
20 10422 063077           HALT
21
22
23        010422          E1537=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
24
25                ;SKPBZ TO SKP ION=0 FIRST IO SKP TRUE
26 10423 063577 IO.02:    SKPBZ CPU         ;IR8 IR9=01
27                        ERROR             ;BUSY=0 DID NOT SKP
28 10424 063077           HALT
29
30
31        010424          E1540=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
32                ;TEST SKPDZ POWER LOW SHD=0
33 10425 063777 IO.03:    SKPDZ CPU         ;IR8 IR9=11
34                        ERROR             ;DONE=0 NO SKP(PWR LOW)
35 10426 063077           HALT
36
37
38        010426          E1541=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
39                ;NIO SHD NEITHER SKP NOR ALTER ANY AC'S
40 10427 102000 IO.04:    ADC 0,0
41 10430 105000           MOV 0,1           ;ALL AC'S=-1
42 10431 131000           MOV 1,2
43 10432 155000           MOV 2,3
44 10433 060077           NIO CPU           ;MAKE SURE IO SKP=0
45 10434 122001           ADC 1,0,SKP
46                        ERROR             ;NIO CPU SKIPPED
47 10435 063077           HALT
48
49
50        010435          E1542=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
51 10436 156000           ADC 2,3
52 10437 162414           SUB# 3,0,SZR
53                        ERROR             ;NIO CHANGED AN AC
54 10440 063077           HALT
55
56
57        010440          E1543=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
58
59                        .MACRO IOTS1
60                ;01^6 ^2, CPU SHOULD ONLY ALTER AC^2
```

```
0235  PRCST
                ;IO.^1:
                        LDA ^2,K5252
                        MOV ^2,^3               ;ALL AC'S=52525
                        MOV ^3,^4
                        MOV ^4,^5
                        DI^6 ^2,CPU     ;^7 ^2
                        SUB# ^3,^4,SZR  ;AC^3  SHD = AC^4
                        ERROR           ;DI^6 SKPD OR AC^3 NOT = AC^4
                        SUB# ^5,^4,SZR
                        ERROR           ;AC^3,^40R^5 ALTERED
                        SUB# ^2,^5,SNR  ;DID AC^2 CHANGE?
                        ERROR           ;AC^2 NOT LOADED
                %

                        IOTS1 05,0,1,2,3,A,READS
                  ;DIA 0, CPU SHOULD ONLY ALTER AC0
                ;IO.05:
10441 020142            LDA 0,K5252
10442 105000            MOV 0,1         ;ALL AC'S=52525
10443 131000            MOV 1,2
10444 155000            MOV 2,3
10445 060477            DIA 0,CPU       ;READS 0
10446 132414            SUB# 1,2,SZR    ;AC1  SHD = AC2
                        ERROR           ;DIA SKPD OR AC1 NOT = AC2
10447 063077            HALT

        010447          E1544=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
10450 172414            SUB# 3,2,SZR
                        ERROR           ;AC1,2OR3 ALTERED
10451 063077            HALT

        010451          E1545=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
10452 116415            SUB# 0,3,SNR    ;DID AC0 CHANGE?
                        ERROR           ;AC0 NOT LOADED
10453 063077            HALT

        010453          E1546=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
                        IOTS1 06,1,0,2,3,A,READS
                  ;DIA 1, CPU SHOULD ONLY ALTER AC1
                ;IO.06:
10454 024142            LDA 1,K5252
10455 121000            MOV 1,0         ;ALL AC'S=52525
10456 111000            MOV 0,2
10457 155000            MOV 2,3
10460 064477            DIA 1,CPU       ;READS 1
10461 112414            SUB# 0,2,SZR    ;AC0  SHD = AC2
                        ERROR           ;DIA SKPD OR AC0 NOT = AC2
10462 063077            HALT

        010462          E1547=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
10463 172414            SUB# 3,2,SZR
                        ERROR           ;AC0,2OR3 ALTERED
10464 063077            HALT

        010464          E1550=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
0236  PRCST
10465 136415            SUB# 1,3,SNR    ;DID AC1 CHANGE?
                        ERROR           ;AC1 NOT LOADED
10466 063077            HALT


        010466          E1551=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
                        IOTS1 07,2,3,0,1,A,READS
                  ;DIA 2, CPU SHOULD ONLY ALTER AC2
                ;IO.07:
10467 030142            LDA 2,K5252
10470 155000            MOV 2,3         ;ALL AC'S=52525
10471 161000            MOV 3,0
10472 105000            MOV 0,1
10473 070477            DIA 2,CPU       ;READS 2
10474 162414            SUB# 3,0,SZR    ;AC3  SHD = AC0
                        ERROR           ;DIA SKPD OR AC3 NOT = AC0
10475 063077            HALT


        010475          E1552=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
10476 122414            SUB# 1,0,SZR
                        ERROR           ;AC3,00R1 ALTERED
10477 063077            HALT


        010477          E1553=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
10500 146415            SUB# 2,1,SNR    ;DID AC2 CHANGE?
                        ERROR           ;AC2 NOT LOADED
10501 063077            HALT


        010501          E1554=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
                        IOTS1 08,3,0,1,2,A,READS
                  ;DIA 3, CPU SHOULD ONLY ALTER AC3
                ;IO.08:
10502 034142            LDA 3,K5252
10503 161000            MOV 3,0         ;ALL AC'S=52525
10504 105000            MOV 0,1
10505 131000            MOV 1,2
10506 074477            DIA 3,CPU       ;READS 3
10507 106414            SUB# 0,1,SZR    ;AC0  SHD = AC1
                        ERROR           ;DIA SKPD OR AC0 NOT = AC1
10510 063077            HALT


        010510          E1555=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
10511 146414            SUB# 2,1,SZR
                        ERROR           ;AC0,1OR2 ALTERED
10512 063077            HALT


        010512          E1556=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
10513 172415            SUB# 3,2,SNR    ;DID AC3 CHANGE?
                        ERROR           ;AC3 NOT LOADED
10514 063077            HALT


        010514          E1557=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
                        IOTS1 09,0,1,2,3,8,INTA
                  ;DIB 0, CPU SHOULD ONLY ALTER AC0
```

```
 0237  PRCST
01                     ;IO.09:
02 10515 020142                LDA 0,K5252
03 10516 105000                MOV 0,1          ;ALL AC'S=52525
04 10517 131000                MOV 1,2
05 10520 155000                MOV 2,3
06 10521 061477                DIB 0,CPU        ;INTA 0
07 10522 132414                SUB# 1,2,SZR     ;AC1  SHD = AC2
08                             ERROR            ;DIB SKPD OR AC1 NOT = AC2
09 10523 063077                HALT
10
11
12       010523                E1560=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
13 10524 172414                SUB# 3,2,SZR
14                             ERROR            ;AC1,2OR3 ALTERED
15 10525 063077                HALT
16
17
18       010525                E1561=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
19 10526 116415                SUB# 0,3,SNR     ;DID AC0 CHANGE?
20                             ERROR            ;AC0 NOT LOADED
21 10527 063077                HALT
22
23
24       010527                E1562=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
25                             IOTS1 10,1,0,3,2,8,INTA
26                   ;DIB 1, CPU SHOULD ONLY ALTER AC1
27                   ;IO.10:
28 10530 024142                LDA 1,K5252
29 10531 121000                MOV 1,0          ;ALL AC'S=52525
30 10532 115000                MOV 0,3
31 10533 171000                MOV 3,2
32 10534 065477                DIB 1,CPU        ;INTA 1
33 10535 116414                SUB# 0,3,SZR     ;AC0  SHD = AC3
34                             ERROR            ;DIB SKPD OR AC0 NOT = AC3
35 10536 063077                HALT
36
37
38       010536                E1563=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
39 10537 156414                SUB# 2,3,SZR
40                             ERROR            ;AC0,3OR2 ALTERED
41 10540 063077                HALT
42
43
44       010540                E1564=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
45 10541 132415                SUB# 1,2,SNR     ;DID AC1 CHANGE?
46                             ERROR            ;AC1 NOT LOADED
47 10542 063077                HALT
48
49
50       010542                E1565=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
51                             IOTS1 11,2,3,1,0,8,INTA
52                   ;DIB 2, CPU SHOULD ONLY ALTER AC2
53                   ;IO.11:
54 10543 030142                LDA 2,K5252
55 10544 155000                MOV 2,3          ;ALL AC'S=52525
56 10545 165000                MOV 3,1
57 10546 121000                MOV 1,0
58 10547 071477                DIB 2,CPU        ;INTA 2
59 10550 166414                SUB# 3,1,SZR     ;AC3  SHD = AC1
60                             ERROR            ;DIB SKPD OR AC3 NOT = AC1
```

```
 0238  PRCST
01 10551 063077                HALT
02
03
04       010551                E1566=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
05 10552 106414                SUB# 0,1,SZR
06                             ERROR            ;AC3,1OR0 ALTERED
07 10553 063077                HALT
08
09
10       010553                E1567=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
11 10554 142415                SUB# 2,0,SNR     ;DID AC2 CHANGE?
12                             ERROR            ;AC2 NOT LOADED
13 10555 063077                HALT
14
15
16       010555                E1570=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
17                             IOTS1 12,3,2,0,1,8,INTA
18                   ;DIB 3, CPU SHOULD ONLY ALTER AC3
19                   ;IO.12:
20 10556 034142                LDA 3,K5252
21 10557 171000                MOV 3,2          ;ALL AC'S=52525
22 10560 141000                MOV 2,0
23 10561 105000                MOV 0,1
24 10562 075477                DIB 3,CPU        ;INTA 3
25 10563 142414                SUB# 2,0,SZR     ;AC2  SHD = AC0
26                             ERROR            ;DIB SKPD OR AC2 NOT = AC0
27 10564 063077                HALT
28
29
30       010564                E1571=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
31 10565 122414                SUB# 1,0,SZR
32                             ERROR            ;AC2,0OR1 ALTERED
33 10566 063077                HALT
34
35
36       010566                E1572=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
37 10567 166415                SUB# 3,1,SNR     ;DID AC3 CHANGE?
38                             ERROR            ;AC3 NOT LOADED
39 10570 063077                HALT
40
41
42       010570                E1573=.-1        ;ERR # (8)- USED FOR ERROR DICTIONARY
43
```

```
10239  PRCST
01
02
03                ;FIRST TIME FOR ANY DOA -8 OR C
04 10571 176000 IO.13:  ADC 3,3
05 10572 102400         SUB 0,0
06 10573 062077         DOB 0,CPU       ;SHD NOT SKP ERROR OR ALTER AC'S
07 10574 101004         MOV 0,0,SZR
08                      ERROR           ;DOB SKPD OR ALTERED AC0
09 10575 063077         HALT
10
11
12       010575         E1574=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
13 10576 174004         COM 3,3,SZR
14                      ERROR           ;DOB ALTERED AC3
15 10577 063077         HALT
16
17
18       010577         E1575=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
19
20                ;IN TESTING FROM THIS POINT ON
21                ;TTO "DONE" IS USED FOR "TRUE" INTERRUPT TESTING
22                ;TTO DONE=0 AND BUSY=0 "FALSE" INTERRUPT TESTS
23                ;TTO DONE=0 AND BUSY=1 LOOP BACK TO A1A
24 10600 176000 IOX00:  ADC 3,3         ;SET PASS SWITCH
25 10601 063611         SKPDN TTO       ;DONE=?
26 10602 000413         JMP IOX01       ;=0
27 10603 063511         SKPBZ TTO       ;DONE=1  BUSY MUST=0
28                      ERROR           ;BUSY=0 OR DONE=1 FAILED
29 10604 063077         HALT
30
31
32       010604         E1576=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
33 10605 063711         SKPDZ TTO       ;DONE=2 Z SHD NOT SKP
34 10606 101001         MOV 0,0,SKP
35                      ERROR           ;"DZ" ERR OR MAYBE "DN"
36 10607 063077         HALT
37
38
39       010607         E1577=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
40 10610 063411         SKPBN TTO       ;DONE=1  BUSY CAN'T=1
41 10611 002403         JMP @IOX01-1    ;OK TO DO INTR TSTS
42                      ERROR           ;TTO IS BUSY NOT
43 10612 063077         HALT
44
45
46       010612         E1600=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
47 10613 000765         JMP IOX00
48 10614 011036         INTOO
49 10615 063511 IOX01:  SKPBZ TTO       ;NO SKP IS WAITING
50 10616 000201         JMP A1A         ;DON'T WAIT FOR TTO DONE
51 10617 175404         INC 3,3,SZR
52                      ERROR           ;2ND TRY
53 10620 063077         HALT
54
55
56       010620         E1601=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
57 10621 063711         SKPDZ TTO       ;FINITE TIME TWXT "DN" AND "BZ"
58 10622 000757         JMP IOX00+1     ;MAYBE DONE=1 (TIME LAPSE)
59                ;TTO DONE AND BUSY=0
60                ;PERFORM TESTS THAT REQUIRE  INTERRUPT TO BE FALSE
```

```
 0240  PRCST
01
02 10623 102620 NIN00:  SUBZR 0,0
03 10624 040001         STA 0,1         ;1=@0
04 10625 060177         NIOS CPU        ;1 TO ION "SHD NOT SKP"
05 10626 063477         SKPBN CPU       ;BUSY SHD=1 FOR CPU
06                      ERROR           ;ION DID NOT SET (NIOS SKPD)
07 10627 063077         HALT
08
09
10       010627         E1602=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
11 10630 063477         SKPBN CPU       ;ION=0 HERE IS INTR
12                      ERROR           ;SEE PI AND NOT INTR
13 10631 063077         HALT
14
15
16       010631         E1603=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
17                ;THERE SHD BE NO INTR REQUESTS PENDING
18                ;NIOC SHD CLR ION SKPBZ SHD NOT SKP
19 10632 060177 NIN01:  NIOS CPU        ;1 TO ION
20 10633 063577         SKPBZ CPU       ;BUSY=1
21 10634 063477         SKPBN CPU       ;SHD NOT CLR ION
22                      ERROR           ;BZ SKPD OR BN DIDN'T
23 10635 063077         HALT
24
25
26       010635         E1604=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
27 10636 060277 NIN02:  NIOC CPU        ;SHD CLR ION
28 10637 063477         SKPBN CPU       ;BUSY=0
29 10640 063577         SKPBZ CPU
30                      ERROR           ;"C" DID NOT CLR ION
31 10641 063077         HALT
32
33
34       010641         E1605=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
35
```

```
10241  PRCST
01
02                ;DOAC 0,CPU SHD CLR ION
03
04 10642 060177 NIN03:  NIOS CPU
05 10643 061277         DOAC 0,CPU              ;
06 10644 063577         SKPBZ CPU
07                      ERROR           ;DOAC 0,CPU FAILED CLR ION
08 10645 063077         HALT
09
10
11       010645         E1606=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
12
13                ;DOA SHD ONLY CLR IO BUS NOT ION
14 10646 060177 NIN04:  NIOS CPU
15 10647 061077         DOA 0,CPU       ;NO "C" ION SHD STILL=1
16 10650 063477         SKPBN CPU       ;IR8.9=00 DID ION CLR
17                      ERROR           ;DIS CLRD ION IR8.9=00
18 10651 063077         HALT
19
20
21       010651         E1607=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
22                ;SAME TEST WITH "P" SHD NOT CLR ION IR8.9=11
23 10652 060177 NIN05:  NIOS CPU
24 10653 061377         DOAP 0,CPU      ;IR8.9=11 "P" NOT "C"
25 10654 063477         SKPBN CPU
26                      ERROR           ;"P" CLRD ION
27 10655 063077         HALT
28
29
30       010655         E1610=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
31                ;"P" PULSE SHD NOT SET ION
32 10656 060277 NIN06:  NIOC CPU
33 10657 060377         NIOP CPU        ;IR8.9=11 "P" NOT "S"
34 10660 063577         SKPBZ CPU
35                      ERROR           ;"P" SET ION
36 10661 063077         HALT
37
38
39       010661         E1611=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
40                ;"S" WITH ION=1 SHD LEAVE IT=1
41 10662 060177 NIN07:  NIOS CPU        ;1 TO ION
42 10663 061177         DOAS 0,CPU      ;AGAIN WITH DOAC 0,CPU
43 10664 063477         SKPBN CPU
44                      ERROR           ;2ND "S" CLRD ION
45 10665 063077         HALT
46
47
48       010665         E1612=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
49                ;ION=1 AND SKPDN ON DEV 0 SHD NOT SKIP
50 10666 061277 NIN08:  DOAC 0,CPU
51 10667 060177         NIOS CPU        ;SET ION
52 10670 063600         SKPDN 0         ;DEV #0 SHD NOT SKP
53 10671 101001         MOV 0,0,SKP     ;OK
54                      ERROR           ;CPUINST IN IO SKIP
55 10672 063077         HALT
56
57
58       010672         E1613=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
59
60                ;TEST "AND'S" DECODING CPU INST FOR "FALSE"
```

```
 0242  PRCST
01                      .MACRO IOTS2
02                ;NIN^1:
03                      DOAC 0,CPU
04                      NIOS CPU        ;SET ION FOR DEV^2
05                      SKPBN ^2        ;TEST NOT BIT ^3
06                      MOV 0,0,SKP
07                      ERROR           ;ONLY DEV 77 SHD SKP
08                  ;IF ABOVE ERROR SEE BIT^3 INTO "CPU INST" AND'S
09                %
10                      IOTS2 09,76,15
11                ;NIN09:
12 10673 061277         DOAC 0,CPU
13 10674 060177         NIOS CPU        ;SET ION FOR DEV76
14 10675 063476         SKPBN 76        ;TEST NOT BIT 15
15 10676 101001         MOV 0,0,SKP
16                      ERROR           ;ONLY DEV 77 SHD SKP
17 10677 063077         HALT
18
19
20       010677         E1614=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
21                  ;IF ABOVE ERROR SEE BIT15 INTO "CPU INST" AND'S
22                      IOTS2 10,75,14
23                ;N1N10:
24 10700 061277         DOAC 0,CPU
25 10701 060177         NIOS CPU        ;SET ION FOR DEV75
26 10702 063475         SKPBN 75        ;TEST NOT BIT 14
27 10703 101001         MOV 0,0,SKP
28                      ERROR           ;ONLY DEV 77 SHD SKP
29 10704 063077         HALT
30
31
32       010704         E1615=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
33                  ;IF ABOVE ERROR SEE BIT14 INTO "CPU INST" AND'S
34                      IOTS2 11,73,13
35                ;NIN11:
36 10705 061277         DOAC 0,CPU
37 10706 060177         NIOS CPU        ;SET ION FOR DEV73
38 10707 063473         SKPBN 73        ;TEST NOT BIT 13
39 10710 101001         MOV 0,0,SKP
40                      ERROR           ;ONLY DEV 77 SHD SKP
41 10711 063077         HALT
42
43
44       010711         E1616=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
45                  ;IF ABOVE ERROR SEE BIT13 INTO "CPU INST" AND'S
46                      IOTS2 12,67,12
47                ;NIN12:
48 10712 061277         DOAC 0,CPU
49 10713 060177         NIOS CPU        ;SET ION FOR DEV67
50 10714 063467         SKPBN 67        ;TEST NOT BIT 12
51 10715 101001         MOV 0,0,SKP
52                      ERROR           ;ONLY DEV 77 SHD SKP
53 10716 063077         HALT
54
55
56       010716         E1617=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
57                  ;IF ABOVE ERROR SEE BIT12 INTO "CPU INST" AND'S
58                      IOTS2 13,57,11
59                ;NIN13:
60 10717 061277         DOAC 0,CPU
```

```
 0243  PRCST
01 10720 060177          NIOS CPU          ;SET ION FOR DEV57
02 10721 063457          SKPBN 57          ;TEST NOT BIT 11
03 10722 101001          MOV 0,0,SKP
04                       ERROR             ;ONLY DEV 77 SHD SKP
05 10723 063077          HALT
06
07
08       010723          E1620=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
09                ;IF ABOVE ERROR SEE BIT11 INTO "CPU INST" AND'S
10                        IOTS2 14,37,10
11                ;NIN14:
12 10724 061277          DOAC 0,CPU
13 10725 060177          NIOS CPU          ;SET ION FOR DEV37
14 10726 063437          SKPBN 37          ;TEST NOT BIT 10
15 10727 101001          MOV 0,0,SKP
16                       ERROR             ;ONLY DEV 77 SHD SKP
17 10730 063077          HALT
18
19
20       010730          E1621=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
21                ;IF ABOVE ERROR SEE BIT10 INTO "CPU INST" AND'S
22
```

```
10244  PRCST
01
02                ;AN "S" PULSE WITH DEV 0 (NOT CPU INST)
03                ;SHD NOT SET ION
04 10731 061277 NIN15:   DOAC 0,CPU
05 10732 060100          NIOS 0            ;"NOT" CPU BUT "S"
06 10733 063577          SKPBZ CPU         ;SEE 9301 GENERATING SETION
07                       ERROR             ;ION=1 ILLEGAL (CPU INST NOT)
08 10734 063077          HALT
09
10
11       010734          E1622=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
12
13                ;A "C" PULSE WITH DEV 0 (NOT CPU INST) SHD NOT CLR ION
14 10735 061277 NIN16:   DOAC 0,CPU
15 10736 060177          NIOS CPU
16 10737 060200          NIOC 0            ;NOT CPU BUT "C"
17 10740 063477          SKPBN CPU         ;ION SHD STILL=1
18                       ERROR             ;"C" CLRD ION (NOT CPU-DEV 0)
19 10741 063077          HALT
20
21
22       010741          E1623=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
23
24                ;IO SKIPS SHD NOT GET TO  PTS1 "S" SHD NOT BE GEN
25 10742 061277 NIN17:   DOAC 0,CPU
26 10743 063577          SKPBZ CPU         ;IR8,9=01 BUT IS NOT "S"
27                       ERROR
28 10744 063077          HALT
29
30
31       010744          E1624=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
32 10745 063577          SKPBZ CPU         ;ION SHD STILL=0
33                       ERROR             ;FIRST BZ GEN'D "S"
34 10746 063077          HALT
35
36
37       010746          E1625=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
38
39                ;IO SKIP "DN" SHD NOT="C" NO PTS1
40 10747 060177 NIN18:   NIOS CPU
41 10750 063677          SKPDN CPU         ;IR8,9=10 BUT IS NOT "C"
42 10751 101001          MOV 0,0,SKP       ;POWER LOW=0 SHD NOT SKP
43                       ERROR             ;DN SKP'D WITH ION=1
44 10752 063077          HALT
45
46
47       010752          E1626=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
48 10753 063477          SKPBN CPU         ;ABOVE ERROR SEE NOT IR8
49                       ERROR             ;"DN" CLRD ION
50 10754 063077          HALT
51
52
53       010754          E1627=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
54                ;SET UP ALL CONDITIONS FOR IO SKP EXCEPT IN/OUT TIME
55 10755 061277 NIN19:   DOAC 0,CPU
56 10756 102420          SUBZ 0,0
57 10757 103577          ANDCL# 0,0,SBN    ;EVERYTHING=0 NO SKP
58 10760 101001          MOV 0,0,SKP
59                       ERROR             ;AND=SKPBZ CPU
60 10761 063077          HALT
```

```
 0245  PRCST
01
02
03       010761          E1630=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
04                 ;SET UP ALL CONDITIONS FOR NIOS CPU EXCEPT PTS1
05 10762 061277 NIN20:  DOAC 0,CPU
06 10763 102040         ADCO 0,0
07 10764 100177         COMCL# 0,0,SBN  ;ALL=0 NO SKP
08 10765 063577         SKPBZ CPU       ;ION SHD STILL=0
09                      ERROR           ;COMCL#=NIOS CPU
10 10766 063077         HALT
11
12
13       010766         E1631=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
14
15                 ;SET UP ALL CONDITIONS FOR NIOS CPU
16                 ;EXCEPT IO ALCEN=0
17 10767 061277 NIN21:  DOAC 0,CPU
18 10770 020177         LDA 0,177       ;NO IOALCEN
19 10771 063577         SKPBZ CPU       ;SEE IOALCEN (NOT).PTS1
20                      ERROR           ;LDA=NIOS CPU
21 10772 063077         HALT
22
23
24       010772         E1632=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10246  PRCST
01                 ;SET UP ALL CONDITIONS FOR IO SKPBZ CPU EX(IN/OUT)
02 10773 176400 NIN22:  SUB 3,3         ;USING AN LDA
03 10774 054177         STA 3,177       ;MAKE SURE SKP DOESN'T SET
04 10775 054000         STA 3,0
05 10776 023577         LDA 0,@177,3    ;ALMOST AN SKPBZ CPU
06 10777 101004         MOV 0,0,SZR
07                      ERROR           ;LDA=SKPBZ CPU
08 11000 063077         HALT
09
10
11       011000         E1633=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
12 11001 014160         DSZ PKR00
13 11002 000201         JMP A1A
14 11003 020161         LDA 0,PKR01
15 11004 040160         STA 0,PKR00
```

```
10247  PRCST
01
02
03                ;START DEL CODE TO TTO
04                ;FOR INTERRUPT TESTING WHEN DONE=1
05
06 11005 102000 TTO00:  ADC 0,0           ;-1
07 11006 061111         DOAS 0,TTO        ;OUT TO TTO
08
09
10 11007 063611         SKPDN TTO         ;WAIT TILL DONE
11 11010 000777         JMP     .-1       ;               IS SET.
12 11011 061111         DOAS    0,TTO     ;ANOTHER CHARACTER TO TTY.
13 11012 063611         SKPDN   TTO       ;DONE SHOULD BE ZERO
14 11013 102414         SUB#    0,0,SZR
15                      ERROR
16 11014 063077         HALT
17
18
19       011014         E1634=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
20 11015 063611         SKPDN   TTO       ;WAIT TILL DONE
21 11016 000777         JMP     .-1       ;               IS SET.
22 11017 061111         DOAS 0,TTO        ;ANOTHER CHAR OUT TO TTO
23 11020 063411         SKPBN TTO         ;BUSY SHD=1
24                      ERROR             ;NO SKP TTO "BN"
25 11021 063077         HALT
26
27
28       011021         E1635=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
29 11022 063611         SKPDN   TTO       ;WAIT TILL DONE
30 11023 000777         JMP     .-1       ;               IS SET.
31 11024 061111         DOAS    0,TTO     ;ANOTHER CHARACTER TO TTY.
32 11025 063511         SKPBZ TTO         ;
33 11026 102414         SUB#    0,0,SZR
34                      ERROR             ;TTO "BZ" ERR
35 11027 063077         HALT
36
37
38       011027         E1636=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
39 11030 063611         SKPDN   TTO       ;WAIT TILL DONE
40 11031 000777         JMP     .-1       ;               IS SET.
41 11032 061111         DOAS    0,TTO     ;ANOTHER CHARACTERR TO TTY.
42 11033 063711         SKPDZ TTO         ;DONE SHD=0 TTO
43                      ERROR             ;TTO "DZ" ERR
44 11034 063077         HALT
45
46
47       011034         E1637=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
48 11035 000201         JMP A1A           ;OK LOOP THROUGH TEST
49
50                ;TTO DONE=1 USE TO TEST INTERRUPTS
51 11036 020416 INT00:  LDA 0,INT0K
52 11037 024157         LDA 1,JMP3K
53 11040 030102         LDA 2,K2          ;SET UP FOR
54 11041 050001         STA 2,1           ;TEST FIRST
55 11042 044002         STA 1,2           ;REAL INTERRUPT
56 11043 040300         STA 0,300
57 11044 176400         SUB 3,3
58 11045 076077         DOB 3,CPU         ;0 MSKO
59 11046 054000         STA 3,0           ;0 ADRS 0
60 11047 060177         NIOS CPU          ;ION
```

```
 0248  PRCST
01 11050 000401         JMP .+1           ;WAIT
02                      ERROR             ;INTERRUPT DID NOT OCCUR
03 11051 063077         HALT
04
05
06       011051         E1640=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
07                      ERROR
08 11052 063077         HALT
09
10
11       011052         E1641=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
12 11053 011051         .-2
13 11054 011055 INT0K:  .+1
14 11055 034000         LDA 3,0
15 11056 020775         LDA 0,INT0K-1
16 11057 116414         SUB# 0,3,SZR
17                      ERROR             ;(0) NOT=NIOS+2
18 11060 063077         HALT
19
20
21       011060         E1642=.-1         ;ERR # (8)- USED FOR ERROR DICTIONARY
```

```
10249  PRCST
01
02                ;TEST TO MAKE SURE @IN LOC 1 WILL DEFER
03 11061 020102 INT01:  LDA 0,K2        ;AND KEEP DEFERING
04 11062 103240         ADDOR 0,0
05 11063 040001         STA 0,1         ;@2 ALSO=COM 0,0,SZC
06 11064 024157         LDA 1,JMP3K     ;JMP @300
07 11065 044003         STA 1,3         ;WILL EXECUTE IN ERR
08 11066 030414         LDA 2,INT1K     ;IF FETCH IS DIRECTLY TO 1
09 11067 050300         STA 2,300       ;OR 2ND DEFER FAILS
10 11070 151400         INC 2,2         ;LEGAL RET
11 11071 050004         STA 2,4         ;WILL BE IN 4
12 11072 103000         ADD 0,0         ;@4=COM 0,0,SZR (WON'T SKIP)
13 11073 103240         ADDOR 0,0
14 11074 040002         STA 0,2         ;@4 TO LOC 2
15 11075 101020         MOVZ 0,0        ;0 CRY JMP @300 IN0
16 11076 060177         NIOS CPU
17 11077 000401         JMP .+1         ;FIRST INTR @@
18                      ERROR
19 11100 063077         HALT
20
21
22       011100         E1643=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
23                      ERROR
24 11101 063077         HALT
25
26
27       011101         E1644=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
28 11102 011103 INT1K:  .+1
29                      ERROR           ;LOC 1 OR 2 EXECUTED
30 11103 063077         HALT
31
32
33       011103         E1645=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
34                ;ABOVE ERROR INTERRUPT IS NOT DOING @1
35                ;OR DEFER BIT IN LOC 1 WAS NOT RECOGNIZED
36
37                ;ION/IOF SHOULD NOT INTR
38 11104 102400 INT02:  SUB 0,0
39 11105 040000         STA 0,0
40 11106 101240         MOVOR 0,0
41 11107 040001         STA 0,1
42 11110 060177         NIOS CPU        ;ION
43 11111 060277         NIOC CPU        ;IOF
44 11112 000401         JMP .+1         ;STALL
45 11113 024000         LDA 1,0
46 11114 125004         MOV 1,1,SZR
47                      ERROR           ;INTR AFTER IOF
48 11115 063077         HALT
49
50
51       011115         E1646=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
52
```

```
10250  PRCST
01
02                ;MSK0=-1 SHD NOT ALLOW TTO INTR
03 11116 102000 INT03:  ADC 0,0
04 11117 062177         DOBS 0,CPU      ;MSK0=-1
05 11120 000401         JMP .+1         ;STALL
06 11121 024000         LDA 1,0         ;AWHILE
07 11122 063477         SKPBN CPU
08                      ERROR           ;MASK0=1 ALLOWED TTO INTR
09 11123 063077         HALT
10
11
12       011123         E1647=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
13 11124 125004         MOV 1,1,SZR
14                      ERROR           ;LOC 0 ALTERED
15 11125 063077         HALT
16
17
18       011125         E1650=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
19 11126 102400         SUB 0,0
20 11127 062077         DOB 0,CPU       ;0'S TO MASK 0
21 11130 000401         JMP .+1         ;STALL WAIT FOR INTR
22 11131 024000         LDA 1,0         ;INTR DID NOT OCCUR
23 11132 063577         SKPBZ CPU       ;IF BZ NO SKP
24                      ERROR
25 11133 063077         HALT
26
27
28       011133         E1651=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
29 11134 125005         MOV 1,1,SNR     ;OR LOC0
30                      ERROR           ;WAS STILL=0
31 11135 063077         HALT
32
33
34       011135         E1652=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
35                ;INTERRUPT OVER A SKIP INSTRUCTION
36                ;SHD STORE THE CORRECT ADDRESS IN LOC 0
37 11136 024407 INT04:  LDA 1,INT4K     ;RET ADRS
38 11137 044001         STA 1,1         ;TO LOC 1
39 11140 060177         NIOS CPU        ;ION
40 11141 125005         MOV 1,1,SNR     ;SET SKIP
41                      ERROR
42 11142 063077         HALT
43
44
45       011142         E1653=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
46                      ERROR
47 11143 063077         HALT
48
49
50       011143         E1654=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
51 11144 011143         .-1
52 11145 011146 INT4K:  .+1
53 11146 101001         MOV 0,0,SKP
54                      ERROR           ;INTR SKIPD
55 11147 063077         HALT
56
57
58       011147         E1655=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
59 11150 020000         LDA 0,0
60 11151 030773         LDA 2,INT4K-1   ;ADRS (LOC 0) SHD=
```

```
 0251  PRCST
01 11152 142414          SUB# 2,0,SZR
02                       ERROR              ;(LOC 0) INCOR
03 11153 063077          HALT
04
05
06       011153          E1656=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
07                ;INTERRUPT OVER SKIP INST FAILED
08                ;INTERRUPT AFTER AN I/O SKIP
09                ;SHD STORE CORRECT RESULT IN LOC 0
10 11154 024407 INT05:   LDA 1,INT5K
11 11155 044001          STA 1,1            ;RET ADRS
12 11156 060177          NIOS CPU           ;ION
13 11157 063477          SKPBN CPU          ;IO SKIP SET SKIP
14                       ERROR
15 11160 063077          HALT
16
17
18       011160          E1657=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
19                       ERROR
20 11161 063077          HALT
21
22
23       011161          E1660=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
24 11162 011161          .-1
25 11163 011164 INT5K:   .+1
26 11164 020000          LDA 0,0            ;INTR SKP WILL MISS THIS
27 11165 030775          LDA 2,INT5K-1      ;VALID INTR ADRS
28 11166 142414          SUB# 2,0,SZR
29                       ERROR              ;INC PC IN LOC 0
30 11167 063077          HALT
31
32
33       011167          E1661=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
34
```

```
!0252  PRCST
01
02                ;INTERRUPT AFTER A JSR SHD STORE
03                ;THE CORRECT ADDRESS IN LOC 0
04 11170 030410 INT06:   LDA 2,INT6K
05 11171 050001          STA 2,1
06 11172 153240          ADDOR 2,2          ;BIT 0 OF AC2=1
07 11173 060177          NIOS CPU           ;ION JSR GOES .+2
08 11174 005375          JSR -3,2           ;JSR ADRS CALC BIT 0=1
09                       ERROR
10 11175 063077          HALT
11
12
13       011175          E1662=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
14                       ERROR              ;JSR/INT PREVENTS
15 11176 063077          HALT
16
17
18       011176          E1663=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
19                       ERROR              ;EITHER HALT
20 11177 063077          HALT
21
22
23       011177          E1664=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
24 11200 011201 INT6K:   .+1
25 11201 165401          INC 3,1,SKP        ;JSR+1 SHD=INTR ADRS
26                       ERROR
27 11202 063077          HALT
28
29
30       011202          E1665=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
31 11203 020000          LDA 0,0            ;GET (LOC 0)
32 11204 101112          MOVL# 0,0,SZC      ;BIT 0 MUST=0
33                       ERROR              ;BIT 0 LOC 0=1
34 11205 063077          HALT
35
36
37       011205          E1666=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
38 11206 106414          SUB# 0,1,SZR       ;
39                       ERROR              ;LOC 0 OR AC3 INCORRECT
40 11207 063077          HALT
41
42
43       011207          E1667=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
44                ;LOC 0 SHD=PC AFTER JSR  (JSR+2)
45                ;AC3 SHD=PC BEFORE JSR  (JSR+1)
46                ;NEITHER SHOULD HAVE BIT 0=1 -SEE CPB0-
47                ;NOT JSR OR FIXBIT0 FORCES NOT CPB0
48 11210 102620          SUBZR 0,0
49 11211 040001          STA 0,1            ;LOC 1 = @0
50 11212 014160          DSZ PKR00
51 11213 000201          JMP A1A
52 11214 020161          LDA 0,PKR01
53 11215 040160          STA 0,PKR00
54 11216 014150          DSZ TESTK
55 11217 000410          JMP INT07
56
57 11220 024147          LDA 1,K60
58 11221 044150          STA 1,TESTK
59 11222 020110          LDA 0,K10
60 11223 040160          STA 0,PKR00
```

```
 0253  PRCST
01 11224 040161          STA 0,PKR01             ;RESTORE LOOP CNT
02 11225 002401          JMP @.+1
03 11226 011261          PASSC
04
05                  ;FIRST LEVEL INTERRUPT TESTS COMPLETE
06                  ;CLR TTO DONE AND ION
07                  ;REDO NON INT TESTS
08 11227 102620 INT07:   SUBZR 0,0
09 11230 040001          STA 0,1
10 11231 101120          MOVZL 0,0
11 11232 040000          STA 0,0
12 11233 060177          NIOS CPU
13 11234 060211          NIOC TTO
14 11235 060210          NIOC TTI
15 11236 000401          JMP .+1
16 11237 024000          LDA 1,0
17 11240 101004          MOV 0,0,SZR
18                       ERROR              ;NIOC FAILED TO STOP INTERRUPT
19 11241 063077          HALT
20
21
22       011241          E1670=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
23 11242 063511          SKPBZ TTO
24                       ERROR              ;NIOC DID NOT MAKE TTY BUSY=0
25 11243 063077          HALT
26
27
28       011243          E1671=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
29 11244 063411          SKPBN TTO
30 11245 101001          MOV 0,0,SKP
31                       ERROR    ;TTO DUSY SHD =0
32 11246 063077          HALT
33
34
35       011246          E1672=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
36 11247 063711          SKPDZ TTO
37                       ERROR    ;TTO DONE SHD =0
38 11250 063077          HALT
39
40
41       011250          E1673=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
42 11251 063611          SKPDN TTO
43 11252 101001          MOV 0,0,SKP
44                       ERROR
45 11253 063077          HALT
46
47
48       011253          E1674=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
49 11254 060277          NIOC CPU           ;RESET ION
50 11255 063577          SKPBZ CPU
51                       ERROR
52 11256 063077          HALT
53
54
55       011256          E1675=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
56 11257 002401          JMP @.+1
57 11260 010415          IO.00
```

```
10254  PRCST
01                  ;60 PASSES THROUGH INTERRUPT TESTS - PASS COMPLETE
02 11261 020151 PASSC:   LDA 0,K215         ;TRY VARIOUS WAIT LOOPS
03 11262 061111          DOAS 0,TTO         ;OUT CAR RET
04 11263 063411          SKPBN TTO          ;BUSY SHD=1
05                       ERROR
06 11264 063077          HALT
07
08
09       011264          E1676=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
10 11265 063711          SKPDZ TTO          ;DONE SHD=0
11                       ERROR
12 11266 063077          HALT
13
14
15       011266          E1677=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
16 11267 063511          SKPBZ TTO          ;WAIT LOOP
17 11270 000777          JMP .-1            ;FIRST TIME THIS WAY
18 11271 063611          SKPDN TTO          ;DONE=1 IF REAL "BZ"
19                       ERROR
20 11272 063077          HALT
21
22
23       011272          E1700=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
24                  ;NOW OUTPUT LINE FEED
25 11273 024152          LDA 1,K212
26 11274 065111          DOAS 1,TTO
27 11275 063711          SKPDZ TTO
28                       ERROR
29 11276 063077          HALT
30
31
32       011276          E1701=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
33 11277 063411          SKPBN TTO
34                       ERROR
35 11300 063077          HALT
36
37
38       011300          E1702=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
39 11301 063611          SKPDN TTO          ;FIRST SKPDN
40 11302 000777          JMP .-1            ;WAIT LOOP
41 11303 063511          SKPBZ TTO          ;BUSY=0 IF REAL DONE
42                       ERROR
43 11304 063077          HALT
44
45
46       011304          E1703=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
47                  ;OUTPUT P
48 11305 030156          LDA 2,K320
49 11306 071111          DOAS 2,TTO
50 11307 063511          SKPBZ TTO          ;ION STILL=1
51 11310 000777          JMP .-1            ;WHEN IT=0 TTO DONE
52 11311 063611          SKPDN TTO          ;TTO DONE=0
53                       ERROR              ;BZ BEFORE INTR
54 11312 063077          HALT
55
56
57       011312          E1704=.-1          ;ERR # (8)- USED FOR ERROR DICTIONARY
58
```

```
10255  PRCST
01
02                    ;OUTPUT "A"
03 11313 034131               LDA 3,K300
04 11314 175400               INC 3,3
05 11315 024164               LDA 1,KATSW
06 11316 060177               NIOS CPU
07 11317 075111               DOAS 3,TTO
08 11320 125004               MOV 1,1,SZR     ;DON'T CHECK ION IF RUNNING CAT
09 11321 000403               JMP .+3
10 11322 063477               SKPBN CPU       ;ION SHD STILL=1
11                            ERROR
12 11323 063077               HALT
13
14
15       011323               E1705=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
16 11324 020142 PASL1:        LDA 0,KC80
17 11325 126000               ADC 1,1         ;DO XOR'S
18 11326 131000               MOV 1,2         ;WHILE WAITING
19 11327 113520               ANDZL 0,2       ;ODD BITS XOR'D TO
20 11330 107000               ADD 0,1         ;-1=ENEN BITS
21 11331 146400               SUB 2,1         ;XOR'D TO -1
22 11332 152000               ADC 2,2         ;AGAIN SHOULD=
23 11333 155000               MOV 2,3         ;THE ODD BITS
24 11334 137520               ANDZL 1,3
25 11335 133000               ADD 1,2
26 11336 172400               SUB 3,2
27 11337 142414               SUB# 2,0,SZR
28                            ERROR           ;PROCESSOR ARITH ERR
29 11340 063077               HALT
30
31
32       011340               E1706=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
33 11341 063577               SKPBZ CPU       ;INTR OCCUR YET
34 11342 000762               JMP PASL1       ;NO
35 11343 063611               SKPDN TTO       ;TTO YES DONE=1
36                            ERROR           ;NO ERROR AT "BZ"
37 11344 063077               HALT
38
39
40       011344               E1707=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
41 11345 030153               LDA 2,K323
42 11346 071111               DOAS 2,TTO      ;OUTPUT FIRST S
43 11347 063511               SKPBZ TTO               ;WAIT FOR TTO
44 11350 000777               JMP .-1
45 11351 063611               SKPDN TTO               ;DONE SHD =1
46                            ERROR
47 11352 063077               HALT
48
49
50       011352               E1710=.-1       ;ERR # (8)- USED FOR ERROR DICTIONARY
51 11353 071111               DOAS 2,TTO              ;OUTPUT SECOND S
52 11354 063511               SKPBZ TTO
53 11355 000777               JMP .-1
54 11356 060211               NIOC TTO
55
56                  ;DTOS MONITOR STUFF
57 11357 034045               LDA 3,45
58 11360 021404               LDA 0,4,3
59 11361 101005               MOV 0,0,SNR     ;SKP IS DTOS RUN
60 11362 000417               JMP NXTPAS
```

```
 0256  PRCST
01 11363 020164               LDA 0,KATSW
02 11364 101005               MOV 0,0,SNR     ;SKP IS CAT ALREADY STARTED
03 11365 000415               JMP CKCAT
04 11366 034045 ATOCK:        LDA 3,45
05 11367 021400               LDA 0,0,3       ;GET AUTO SWITCH
06 11370 101005               MOV 0,0,SNR     ;SKP IS AUTO-RUN
07 11371 000410               JMP NXTPAS      ;NOT AUTO,CONTINUE
08 11372 015403               DSZ 3,3
09 11373 000406               JMP NXTPAS
10 11374 062677               IORST
11 11375 021403               LDA 0,3,3
12 11376 035404               LDA 3,4,3
13 11377 041776               STA 0,-2,3
14 11400 001400               JMP 0,3         ;RETURN TO DTOS
15 11401 000201 NXTPAS:       JMP A1A
16
```

```
10257  PRCST
01
02                ;CKCAT- CHECK IF DTOS RUN WITH CAT
03 11402 021402 CKCAT:  LDA 0,2,3       ;GET DTOS CAT SWITCH
04 11403 101005         MOV 0,0,SNR     ;SKP IS WITH CAT/KITTEN
05 11404 000762         JMP ATOCK       ;NO CAT/KITTEN
06 11405 040164         STA 0,KATSW     ;SET SWITCH
07 11406 020122         LDA 0,K3.3K
08 11407 040150         STA 0,TESTK     ;SET UP FOR LONG LOOP COUNT
09 11410 025404         LDA 1,4,3       ;GET DTOS START ADDR
10 11411 030162         LDA 2,K1377
11 11412 146400         SUB 2,1         ;FORM CAT/KITTEN ADDR
12 11413 135000         MOV 1,3
13 11414 005400         JSR 0,3         ;START CAT/KITTEN
14 11415 000751         JMP ATOCK
15
16 11416 000000 EGGS:   0
17 11417 000000         0
18 11420 000000         0
19 11421 000000         0
20 11422 000000         0
21 11423 000000 SWREG:  0
22 11424 047503         .TXT    !COPYRIGHT © DATA GENERAL CORPORATION 1978!
23       054520
24       044522
25       044107
26       020124
27       041450
28       020051
29       040504
30       040524
31       043440
32       047105
33       051105
34       046101
35       041440
36       051117
37       047520
38       040522
39       044524
40       047117
41       030440
42       033471
43       000070
44 11452 046101         .TXT    !ALL RIGHTS RESERVED.!
45       020114
46       044522
47       044107
48       051524
49       051040
50       051505
51       051105
52       042526
53       027104
54       000000
55 11465 044514         .TXT    !LICENSED MATERIAL - DATA GENERAL CORPORATION.!
56       042503
57       051516
58       042105
59       046440
60       052101
```

```
 0258  PRCST
01       051105
02       040511
03       020114
04       020055
05       040504
06       040524
07       043440
08       047105
09       051105
10       046101
11       041440
12       051117
13       047520
14       040522
15       044524
16       047117
17       000056
18
19 11514 132116 DIRT:   .TXTE !N4LGCTST 01!
20       043714
21       152303
22       152123
23       030240
24       000261
25 11522 000000         0
26 11523 000201         DTOSB
27 11524 173774         173774
28 11525 000000         0
29 11526 000000         0
30 11527 000000         0
31 11530 000000         0
32 11531 000000         0
33 11532 000000         0               ;EXTENSION OF DIRT BLOCK.
34 11533 000000         0
35 11534 000000         0               ;NOT DEFINED FOR NOVA-3
36 11535 177776         177776          ;DGC NOVA.
37 11536 000000         0
38 11537 000000         0
39 11540 000000         0
```

```
10259  PRCST
01
02
03       000203          PC=E0    ;** ERROR NUMBER 0 **
04
05
06
07
08               ;THIS TEST WILL VERIFY THAT A ALC
09               ;INSTRUCTION WILL NOT SKIP/THEN SKIP UNCONDITIONALLY
10
11       000213          PC=E1    ;** ERROR NUMBER 1 **
12
13
14
15
16               ;TEST CARRY (CRY FLOP) AND SKIP LOGIC
17               ;ZERO INPUT TO CARRY FAILED
18
19       000216          PC=E2    ;** ERROR NUMBER 2 **
20
21
22
23
24               ;ALSO TEST ZERO HOLD OF CRY
25
26       000220          PC=E3    ;** ERROR NUMBER 3 **
27
28
29
30
31               ;CARRY=0 NOT NEWCARRY.IR14.NOT IR15
32
33       000222          PC=E4    ;** ERROR NUMBER 4 **
34
35
36
37
38               ;TEST FOR TRUE CALC=IR15
39               ;1'S INPUT TO CRY CALC WAS NOT 1
40
41       000225          PC=E5    ;** ERROR NUMBER 5 **
42
43
44
45
46               ;TEST FOR CALC.IR15 FALSE
47               ;ALSO TEST ONES HOLD OF CRY
48
49       000230          PC=E6    ;** ERROR NUMBER 6 **
50
51
52
53
54               ;TEST NOT NOT NEWCARRY.IR14.NOT IR15
55
56       000232          PC=E7    ;** ERROR NUMBER 7 **
57
58
59
60
```

```
 0260  PRCST
01               ;CHECK OF TRANSITION TO 0 ON NOT NEWCARRY
02
03
04       000236          PC=E10   ;** ERROR NUMBER 10 **
05
06
07
08               ;CRY=0 IS SNC FAILED
09
10
11       000241          PC=E11   ;** ERROR NUMBER 11 **
12
13
14
15               ;CRY SHD HAVE STAYED 0
16
17
18       000245          PC=E12   ;** ERROR NUMBER 12 **
19
20
21
22               ;TEST CARRY TO TRANSITION FROM 0 TO 1
23
24
25       000251          PC=E13   ;** ERROR NUMBER 13 **
26
27
28
29               ;TEST COMPLIMENT OF CARRY IR11.IR10
30
```

```
10261  PRCST
01
02        000255          PC=E14  ;** ERROR NUMBER 14 **
03
04
05
06              ;CARRY SHD REALLY=0
07
08
09        000257          PC=E15  ;** ERROR NUMBER 15 **
10
11
12
13              ;AC0 ANYTHING BUT 0 IS SNR FAILED
14
15
16        000262          PC=E16  ;** ERROR NUMBER 16 **
17
18
19
20              ;SZR SHOULD NOT SKIP WHEN AC0 NOT=0
21
22
23        000265          PC=E17  ;** ERROR NUMBER 17 **
24
25
26
27              ;ATTEMPT TO GENERATE AN ALL 0'S CONSTANT VIA ADC+COM
28              ;ALSO TESTS SZR TO SKIP IN GROSS CASE
29
30
31        000270          PC=E20  ;** ERROR NUMBER 20 **
32
33
34
35              ;TEST ZERO CARRY SKIP FROM COM 0,0
36
37
38        000273          PC=E21  ;** ERROR NUMBER 21 **
39
40
41
42              ;TEST SKIP EITHER ZERO WITH BOTH AC AND CARRY=0
43              ;SEZ FAILED BOTH=0
44
45
46        000304          PC=E22  ;** ERROR NUMBER 22 **
47
48
49
50              ;TEST SKIP EITHER ZERO WITH AC=0 AND CARRY=1
51
52
53        000313          PC=E23  ;** ERROR NUMBER 23 **
54
55
56
57              ;AC1 DEST. DISTURBED AC0
58
59
60        000315          PC=E24  ;** ERROR NUMBER 24 **
```

```
 0262  PRCST
01
02
03
04              ;AC1 DEST. DISTURBED AC2
05
06
07        000317          PC=E25  ;** ERROR NUMBER 25 **
08
09
10
11              ;AC1 DEST. DISTURBED AC3
12
13
14        000326          PC=E26  ;** ERROR NUMBER 26 **
15
16
17
18              ;AC2 DEST. DISTURBED AC1
19
20
21        000330          PC=E27  ;** ERROR NUMBER 27 **
22
23
24
25              ;AC2 DEST. DISTURBED AC3
26
27
28        000332          PC=E30  ;** ERROR NUMBER 30 **
29
30
31
32              ;AC2 DEST. DISTURBED AC0
33
```

```
!0263  PRCST
01
02        000341          PC=E31  ;** ERROR NUMBER 31 **
03
04
05
06              ;AC3 DEST. DISTURBED AC2
07
08
09        000343          PC=E32  ;** ERROR NUMBER 32 **
10
11
12
13              ;AC3 DEST. DISTURBED AC0
14
15
16        000345          PC=E33  ;** ERROR NUMBER 33 **
17
18
19
20              ;AC3 DEST. DISTURBED AC1
21
22
23        000354          PC=E34  ;** ERROR NUMBER 34 **
24
25
26
27              ;AC0 DEST. DISTURBED AC3
28
29
30        000356          PC=E35  ;** ERROR NUMBER 35 **
31
32
33
34              ;AC0 DEST. DISTURBED AC1
35
36
37        000360          PC=E36  ;** ERROR NUMBER 36 **
38
39
40
41              ;AC0 DEST. DISTURBED AC2
42
43
44        000364          PC=E37  ;** ERROR NUMBER 37 **
45
46
47
48              ;0'S TO AC1 DISTURBED AC0
49
50
51        000370          PC=E40  ;** ERROR NUMBER 40 **
52
53
54
55              ;0'S TO AC2 DISTURBED AC0
56
57
58        000374          PC=E41  ;** ERROR NUMBER 41 **
59
60
```

```
 0264  PRCST
01
02              ;0'S TO AC3 DISTURBED AC0
03
04
05        000444          PC=E42  ;** ERROR NUMBER 42 **
06
07
08
09              ;0'S TO AC0 DISTURBED AC1
10
11
12        000450          PC=E43  ;** ERROR NUMBER 43 **
13
14
15
16              ;0'S TO AC2 DISTURBED AC1
17
18
19        000454          PC=E44  ;** ERROR NUMBER 44 **
20
21
22
23              ;0'S TO AC3 DISTURBED AC1
24
25
26        000460          PC=E45  ;** ERROR NUMBER 45 **
27
28
29
30              ;0'S TO AC0 DISTURBED AC2
31
```

```
:0265  PRCST
01
02        000464          PC=E46  ;** ERROR NUMBER 46 **
03
04
05              ;0'S TO AC1 DISTURBED AC2
06
07
08        000470          PC=E47  ;** ERROR NUMBER 47 **
09
10
11              ;0'S TO AC3 DISTURBED AC2
12
13
14        000474          PC=E50  ;** ERROR NUMBER 50 **
15
16
17              ;0'S TO AC0 DISTURBED AC3
18
19
20        000500          PC=E51  ;** ERROR NUMBER 51 **
21
22
23              ;0'S TO AC1 DISTURBED AC3
24
25
26        000504          PC=E52  ;** ERROR NUMBER 52 **
27
28
29              ;0'S TO AC2 DISTURBED AC3
30
31
32        000510          PC=E53  ;** ERROR NUMBER 53 **
33
34
35              ;TEST LEFT SHIFT OF A 1 INTO 0 CRY
36
37
38        000514          PC=E54  ;** ERROR NUMBER 54 **
39
40
41              ;TEST LEFT SHIFT OF A 0 INTO A 1 CRY
42
43        000520          PC=E55  ;** ERROR NUMBER 55 **
44
45
46              ;TEST FOR NO BITS TO PICK UP ON SHIFT LEFT
47
48        000523          PC=E56  ;** ERROR NUMBER 56 **
49
50
```

```
 0266  PRCST
01
02
03              ;TEST THE TRANSFER OF A CRY=1 INTO BIT 15 AC 0
04
05
06        000527          PC=E57  ;** ERROR NUMBER 57 **
07
08
09              ;TEST BIT 15=1 STRAIGHT TRANSFER THROUGH (SHIFT LEFT TEST).
10
11
12        000531          PC=E60  ;** ERROR NUMBER 60 **
13
14
15              ;TEST RIGHT SHIFT LOGIC INTO CRY
16
17
18        000534          PC=E61  ;** ERROR NUMBER 61 **
19
20              ;TEST RIGHT SHIFT LOGIC INTO CRY
21
22
23        000540          PC=E62  ;** ERROR NUMBER 62 **
24
25
26              ;TEST RIGHT 0 INPUT TO CRY=1
27
28
29
30
31
32
```

```
!0267  PRCST
01
02        000544          PC=E63  ;** ERROR NUMBER 63 **
03
04
05
06                ;TEST FOR NO BITS TO PICK UP ON RIGHT SHIFT
07                ;RIGHT SHIFT ALL 0'S FAILED
08
09
10        000550          PC=E64  ;** ERROR NUMBER 64 **
11
12
13
14                ;RIGHT SHIFT CRY=1 FAILED
15
16
17        000555          PC=E65  ;** ERROR NUMBER 65 **
18
19
20
21                ;TEST RIGHT SHIFT OF AC0=0'S INTO AC1
22                ;RIGHT SHIFT ALL 0'S TO AC1
23
24
25        000562          PC=E66  ;** ERROR NUMBER 66 **
26
27
28
29                ;TRANSFER CRY=1 INTO AC1 BIT 0 RIGHT SHIFT
30                ;AC1 SHD=100000
31
32
33        000566          PC=E67  ;** ERROR NUMBER 67 **
34
35
36
37                ;BIT 0 SETUP FAILED IN RIGHT SHIFT TEST
38
39
40        000571          PC=E70  ;** ERROR NUMBER 70 **
41
42
43
44                ;THIS IS A R SHIFT TEST OF BIT 0 TO BIT 1
45
46
47        000573          PC=E71  ;** ERROR NUMBER 71 **
48
49
50
51                ;THIS IS A R SHIFT TEST OF BIT 0 TO BIT 1
52
53
54        000576          PC=E72  ;** ERROR NUMBER 72 **
55
56
57
58                ;THIS IS A R SHIFT TEST OF BIT 1 TO BIT 2
59
60
```

```
 0268  PRCST
01        000600          PC=E73  ;** ERROR NUMBER 73 **
02
03
04
05                ;THIS IS A R SHIFT TEST OF BIT 1 TO BIT 2
06
07
08        000603          PC=E74  ;** ERROR NUMBER 74 **
09
10
11
12                ;THIS IS A R SHIFT TEST OF BIT 2 TO BIT 3
13
14
15        000605          PC=E75  ;** ERROR NUMBER 75 **
16
17
18
19                ;THIS IS A R SHIFT TEST OF BIT 2 TO BIT 3
20
21
22        000610          PC=E76  ;** ERROR NUMBER 76 **
23
24
25
26                ;THIS IS A R SHIFT TEST OF BIT 3 TO BIT 4
27
```

```
10269  PRCST
01
02        000612          PC=E77  ;** ERROR NUMBER 77 **
03
04
05
06              ;THIS IS A R SHIFT TEST OF BIT 3 TO BIT 4
07
08
09        000615          PC=E100 ;** ERROR NUMBER 100 **
10
11
12              ;THIS IS A R SHIFT TEST OF BIT 4 TO BIT 5
13
14
15        000617          PC=E101 ;** ERROR NUMBER 101 **
16
17
18              ;THIS IS A R SHIFT TEST OF BIT 4 TO BIT 5
19
20
21        000622          PC=E102 ;** ERROR NUMBER 102 **
22
23
24              ;THIS IS A R SHIFT TEST OF BIT 5 TO BIT 6
25
26
27        000624          PC=E103 ;** ERROR NUMBER 103 **
28
29
30              ;THIS IS A R SHIFT TEST OF BIT 5 TO BIT 6
31
32
33        000627          PC=E104 ;** ERROR NUMBER 104 **
34
35
36              ;THIS IS A R SHIFT TEST OF BIT 6 TO BIT 7
37
38
39        000631          PC=E105 ;** ERROR NUMBER 105 **
40
41
42              ;THIS IS A R SHIFT TEST OF BIT 6 TO BIT 7
43
44
45        000634          PC=E106 ;** ERROR NUMBER 106 **
46
47
48              ;THIS IS A R SHIFT TEST OF BIT 7 TO BIT 8
49
50
51        000636          PC=E107 ;** ERROR NUMBER 107 **
52
53
54              ;THIS IS A R SHIFT TEST OF BIT 7 TO BIT 8
55
56
57        000641          PC=E110 ;** ERROR NUMBER 110 **
58
59
60              ;THIS IS A R SHIFT TEST OF BIT 8 TO BIT 9
```

```
 0270  PRCST
01
02
03        000643          PC=E111 ;** ERROR NUMBER 111 **
04
05
06              ;THIS IS A R SHIFT TEST OF BIT 8 TO BIT 9
07
08
09        000646          PC=E112 ;** ERROR NUMBER 112 **
10
11
12              ;THIS IS A R SHIFT TEST OF BIT 9 TO BIT 10
13
14
15        000650          PC=E113 ;** ERROR NUMBER 113 **
16
17
18              ;THIS IS A R SHIFT TEST OF BIT 9 TO BIT 10
19
```

```
!0271  PRCST
01
02        000653          PC=E114 ;** ERROR NUMBER 114 **
03
04
05              ;THIS IS A R SHIFT TEST OF BIT 10 TO BIT 11
06
07
08        000655          PC=E115 ;** ERROR NUMBER 115 **
09
10
11              ;THIS IS A R SHIFT TEST OF BIT 10 TO BIT 11
12
13
14        000660          PC=E116 ;** ERROR NUMBER 116 **
15
16
17              ;THIS IS A R SHIFT TEST OF BIT 11 TO BIT 12
18
19
20        000662          PC=E117 ;** ERROR NUMBER 117 **
21
22
23              ;THIS IS A R SHIFT TEST OF BIT 11 TO BIT 12
24
25
26        000665          PC=E120 ;** ERROR NUMBER 120 **
27
28
29              ;THIS IS A R SHIFT TEST OF BIT 12 TO BIT 13
30
31
32        000667          PC=E121 ;** ERROR NUMBER 121 **
33
34
35              ;THIS IS A R SHIFT TEST OF BIT 12 TO BIT 13
36
37
38        000672          PC=E122 ;** ERROR NUMBER 122 **
39
40
41              ;THIS IS A R SHIFT TEST OF BIT 13 TO BIT 14
42
43
44        000674          PC=E123 ;** ERROR NUMBER 123 **
45
46
47              ;THIS IS A R SHIFT TEST OF BIT 13 TO BIT 14
48
49
50        000677          PC=E124 ;** ERROR NUMBER 124 **
51
52
53              ;THIS IS A R SHIFT TEST OF BIT 14 TO BIT 15
54
55
56        000701          PC=E125 ;** ERROR NUMBER 125 **
57
58
59              ;THIS IS A R SHIFT TEST OF BIT 14 TO BIT 15
60
```

```
 0272  PRCST
01
02        000704          PC=E126 ;** ERROR NUMBER 126 **
03
04
05              ;BIT 15 R SHIFT FAILED IF AC1=0 IF=000001 BIT 15 INTO ZR AND GATES
06
07
08        000706          PC=E127 ;** ERROR NUMBER 127 **
09
10
11              ;BIT 15 R SHIFT FAILED IF AC1=0 IF=000001 BIT 15 INTO ZR AND GATES
12
13
14        000712          PC=E130 ;** ERROR NUMBER 130 **
15
16
17              ;AC0 SHD=1 SETUP FAILED - LEFT SHIFT SINGLE BIT TEST
18
```

```
10273  PRCST
01
02        000715          PC=E131 ;** ERROR NUMBER 131 **
03
04
05              ;THIS IS A L SHIFT TEST OF BIT 15 TO BIT 14
06
07
08        000717          PC=E132 ;** ERROR NUMBER 132 **
09
10
11              ;THIS IS A L SHIFT TEST OF BIT 15 TO BIT 14
12
13
14
15        000722          PC=E133 ;** ERROR NUMBER 133 **
16
17
18              ;THIS IS A L SHIFT TEST OF BIT 14 TO BIT 13
19
20
21        000724          PC=E134 ;** ERROR NUMBER 134 **
22
23
24              ;THIS IS A L SHIFT TEST OF BIT 14 TO BIT 13
25
26
27        000727          PC=E135 ;** ERROR NUMBER 135 **
28
29
30              ;THIS IS A L SHIFT TEST OF BIT 13 TO BIT 12
31
32
33        000731          PC=E136 ;** ERROR NUMBER 136 **
34
35
36              ;THIS IS A L SHIFT TEST OF BIT 13 TO BIT 12
37
38
39        000734          PC=E137 ;** ERROR NUMBER 137 **
40
41
42              ;THIS IS A L SHIFT TEST OF BIT 12 TO BIT 11
43
44
45        000736          PC=E140 ;** ERROR NUMBER 140 **
46
47
48              ;THIS IS A L SHIFT TEST OF BIT 12 TO BIT 11
49
50
51        000741          PC=E141 ;** ERROR NUMBER 141 **
52
53
54              ;THIS IS A L SHIFT TEST OF BIT 11 TO BIT 10
55
56
57        000743          PC=E142 ;** ERROR NUMBER 142 **
58
59
60              ;THIS IS A L SHIFT TEST OF BIT 11 TO BIT 10
```

```
 0274  PRCST
01
02
03        000746          PC=E143 ;** ERROR NUMBER 143 **
04
05
06              ;THIS IS A L SHIFT TEST OF BIT 10 TO BIT 09
07
08
09        000750          PC=E144 ;** ERROR NUMBER 144 **
10
11
12              ;THIS IS A L SHIFT TEST OF BIT 10 TO BIT 09
13
14
15        000753          PC=E145 ;** ERROR NUMBER 145 **
16
17
18              ;THIS IS A L SHIFT TEST OF BIT 09 TO BIT 08
19
```

```
10275  PRCST
01
02        000755          PC=E146 ;** ERROR NUMBER 146 **
03
04
05                ;THIS IS A L SHIFT TEST OF BIT 09 TO BIT 08
06
07
08        000760          PC=E147 ;** ERROR NUMBER 147 **
09
10
11                ;THIS IS A L SHIFT TEST OF BIT 08 TO BIT 07
12
13
14        000762          PC=E150 ;** ERROR NUMBER 150 **
15
16
17                ;THIS IS A L SHIFT TEST OF BIT 08 TO BIT 07
18
19
20        000765          PC=E151 ;** ERROR NUMBER 151 **
21
22
23               ;THIS IS A L SHIFT TEST OF BIT 07 TO BIT 06
24
25
26        000767          PC=E152 ;** ERROR NUMBER 152 **
27
28
29                ;THIS IS A L SHIFT TEST OF BIT 07 TO BIT 06
30
31
32        000772          PC=E153 ;** ERROR NUMBER 153 **
33
34
35                ;THIS IS A L SHIFT TEST OF BIT 06 TO BIT 05
36
37
38        000774          PC=E154 ;** ERROR NUMBER 154 **
39
40
41                ;THIS IS A L SHIFT TEST OF BIT 06 TO BIT 05
42
43
44        000777          PC=E155 ;** ERROR NUMBER 155 **
45
46
47                ;THIS IS A L SHIFT TEST OF BIT 05 TO BIT 04
48
49
50        001001          PC=E156 ;** ERROR NUMBER 156 **
51
52
53                ;THIS IS A L SHIFT TEST OF BIT 05 TO BIT 04
54
55
56        001004          PC=E157 ;** ERROR NUMBER 157 **
57
58
59                ;THIS IS A L SHIFT TEST OF BIT 04 TO BIT 03
60
```

```
 0276  PRCST
01
02        001006          PC=E160 ;** ERROR NUMBER 160 **
03
04
05                ;THIS IS A L SHIFT TEST OF BIT 04 TO BIT 03
06
07
08        001011          PC=E161 ;** ERROR NUMBER 161 **
09
10
11                ;THIS IS A L SHIFT TEST OF BIT 03 TO BIT 02
12
13
14        001013          PC=E162 ;** ERROR NUMBER 162 **
15
16
17                ;THIS IS A L SHIFT TEST OF BIT 03 TO BIT 02
18
```

```
10277  PRCST
01
02        001016          PC=E163 ;** ERROR NUMBER 163 **
03
04
05                ;THIS IS A L SHIFT TEST OF BIT 02 TO BIT 01
06
07
08        001020          PC=E164 ;** ERROR NUMBER 164 **
09
10
11                ;THIS IS A L SHIFT TEST OF BIT 02 TO BIT 01
12
13
14        001023          PC=E165 ;** ERROR NUMBER 165 **
15
16
17                ;THIS IS A L SHIFT TEST OF BIT 01 TO BIT 00
18
19
20        001025          PC=E166 ;** ERROR NUMBER 166 **
21
22
23                ;THIS IS A L SHIFT TEST OF BIT 01 TO BIT 00
24
25
26        001030          PC=E167 ;** ERROR NUMBER 167 **
27
28
29                ;BIT 00 L SHIFT FAILED IF AC1=0 IF=100000 BIT 00 INTO ZR AND GATES
30
31
32        001032          PC=E170 ;** ERROR NUMBER 170 **
33
34
35                ;BIT 00 L SHIFT FAILED IF AC1=0 IF=100000 BIT 00 INTO ZR AND GATES
36
37
38        001037          PC=E171 ;** ERROR NUMBER 171 **
39
40
41                ;SETUP FAILED CRY=0 TO BIT 0, SHIFT A 0 BIT IN FIELD OF ONES TEST
42
43
44        001044          PC=E172 ;** ERROR NUMBER 172 **
45
46
47                ;SETUP FAILED CRY=0 TO BIT 0, SHIFT A 0 BIT IN FIELD OF ONES TEST
48
49
50        001047          PC=E173 ;** ERROR NUMBER 173 **
51
52
53                ;THIS IS A R SHIFT TEST OF NOT BIT 0 TO NOT BIT 1
54
55
56        001053          PC=E174 ;** ERROR NUMBER 174 **
57
58
59                ;THIS IS A R SHIFT TEST OF NOT BIT 0 TO NOT BIT 1
60
```

```
 0278  PRCST
01
02        001057          PC=E175 ;** ERROR NUMBER 175 **
03
04
05                ;THIS IS A R SHIFT TEST OF NOT BIT 1 TO NOT BIT 2
06
07
08        001063          PC=E176 ;** ERROR NUMBER 176 **
09
10
11                ;THIS IS A R SHIFT TEST OF NOT BIT 1 TO NOT BIT 2
12
13
14        001067          PC=E177 ;** ERROR NUMBER 177 **
15
16
17                ;THIS IS A R SHIFT TEST OF NOT BIT 2 TO NOT BIT 3
18
```

```
10279  PRCST
01
02        001073          PC=E200 ;** ERROR NUMBER 200 **
03
04
05                ;THIS IS A R SHIFT TEST OF NOT BIT 2 TO NOT BIT 3
06
07
08        001077          PC=E201 ;** ERROR NUMBER 201 **
09
10
11                ;THIS IS A R SHIFT TEST OF NOT BIT 3 TO NOT BIT 4
12
13
14        001103          PC=E202 ;** ERROR NUMBER 202 **
15
16
17                ;THIS IS A R SHIFT TEST OF NOT BIT 3 TO NOT BIT 4
18
19
20        001107          PC=E203 ;** ERROR NUMBER 203 **
21
22
23                ;THIS IS A R SHIFT TEST OF NOT BIT 4 TO NOT BIT 5
24
25
26        001113          PC=E204 ;** ERROR NUMBER 204 **
27
28
29                ;THIS IS A R SHIFT TEST OF NOT BIT 4 TO NOT BIT 5
30
31
32        001117          PC=E205 ;** ERROR NUMBER 205 **
33
34
35                ;THIS IS A R SHIFT TEST OF NOT BIT 5 TO NOT BIT 6
36
37
38        001123          PC=E206 ;** ERROR NUMBER 206 **
39
40
41                ;THIS IS A R SHIFT TEST OF NOT BIT 5 TO NOT BIT 6
42
43
44        001127          PC=E207 ;** ERROR NUMBER 207 **
45
46
47                ;THIS IS A R SHIFT TEST OF NOT BIT 6 TO NOT BIT 7
48
49
50        001133          PC=E210 ;** ERROR NUMBER 210 **
51
52
53                ;THIS IS A R SHIFT TEST OF NOT BIT 6 TO NOT BIT 7
54
55
56        001137          PC=E211 ;** ERROR NUMBER 211 **
57
58
59                ;THIS IS A R SHIFT TEST OF NOT BIT 7 TO NOT BIT 8
60
```

```
 0280  PRCST
01
02        001143          PC=E212 ;** ERROR NUMBER 212 **
03
04
05                ;THIS IS A R SHIFT TEST OF NOT BIT 7 TO NOT BIT 8
06
07
08        001147          PC=E213 ;** ERROR NUMBER 213 **
09
10
11                ;THIS IS A R SHIFT TEST OF NOT BIT 8 TO NOT BIT 9
12
13
14        001153          PC=E214 ;** ERROR NUMBER 214 **
15
16
17                ;THIS IS A R SHIFT TEST OF NOT BIT 8 TO NOT BIT 9
18
```

```
10281  PRCST
01
02
03       001157          PC=E215 ;** ERROR NUMBER 215 **
04
05
06               ;THIS IS A R SHIFT TEST OF NOT BIT 9 TO NOT BIT 10
07
08
09       001163          PC=E216 ;** ERROR NUMBER 216 **
10
11
12               ;THIS IS A R SHIFT TEST OF NOT BIT 9 TO NOT BIT 10
13
14
15       001167          PC=E217 ;** ERROR NUMBER 217 **
16
17
18               ;THIS IS A R SHIFT TEST OF NOT BIT 10 TO NOT BIT 11
19
20
21       001173          PC=E220 ;** ERROR NUMBER 220 **
22
23
24               ;THIS IS A R SHIFT TEST OF NOT BIT 10 TO NOT BIT 11
25
26
27       001177          PC=E221 ;** ERROR NUMBER 221 **
28
29
30               ;THIS IS A R SHIFT TEST OF NOT BIT 11 TO NOT BIT 12
31
32
33       001203          PC=E222 ;** ERROR NUMBER 222 **
34
35
36               ;THIS IS A R SHIFT TEST OF NOT BIT 11 TO NOT BIT 12
37
38
39       001207          PC=E223 ;** ERROR NUMBER 223 **
40
41
42               ;THIS IS A R SHIFT TEST OF NOT BIT 12 TO NOT BIT 13
43
44
45       001213          PC=E224 ;** ERROR NUMBER 224 **
46
47
48               ;THIS IS A R SHIFT TEST OF NOT BIT 12 TO NOT BIT 13
49
50
51       001217          PC=E225 ;** ERROR NUMBER 225 **
52
53
54               ;THIS IS A R SHIFT TEST OF NOT BIT 12 TO NOT BIT 13
55
56
57       001223          PC=E226 ;** ERROR NUMBER 226 **
58
59
60               ;THIS IS A R SHIFT TEST OF NOT BIT 13 TO NOT BIT 14
```

```
 0282  PRCST
01
02
03       001227          PC=E227 ;** ERROR NUMBER 227 **
04
05
06               ;THIS IS A R SHIFT TEST OF NOT BIT 14 TO NOT BIT 15
07
08
09       001233          PC=E230 ;** ERROR NUMBER 230 **
10
11
12               ;THIS IS A R SHIFT TEST OF NOT BIT 14 TO NOT BIT 15
13
14
15       001237          PC=E231 ;** ERROR NUMBER 231 **
16
17
18               ;AN R16 TO R30 MAY HAVE LOST (MOVOR TEST)
19
```

```
10283  PRCST
01
02        001241          PC=E232 ;** ERROR NUMBER 232 **
03
04
05                ;CRY SHD=0 FROM LAST MOVOR
06
07
08        001246          PC=E233 ;** ERROR NUMBER 233 **
09
10
11                ;SETUP SERIES OF LEFT SHIFT TESTS SET AC0=177776
12                ;LEFT SHIFT SETUP FAILED
13
14
15        001250          PC=E234 ;** ERROR NUMBER 234 **
16
17
18                ;SETUP SERIES OF LEFT SHIFT TESTS SET AC0=177776
19                ;LEFT SHIFT SETUP FAILED
20
21
22        001253          PC=E235 ;** ERROR NUMBER 235 **
23
24
25                ;THIS IS A L SHIFT TEST OF NOT BIT 15 TO NOT BIT 14
26
27
28        001257          PC=E236 ;** ERROR NUMBER 236 **
29
30
31                ;THIS IS A L SHIFT TEST OF NOT BIT 15 TO NOT BIT 14
32
33
34        001263          PC=E237 ;** ERROR NUMBER 237 **
35
36
37                ;THIS IS A L SHIFT TEST OF NOT BIT 14 TO NOT BIT 13
38
39
40        001267          PC=E240 ;** ERROR NUMBER 240 **
41
42
43                ;THIS IS A L SHIFT TEST OF NOT BIT 14 TO NOT BIT 13
44
45
46        001273          PC=E241 ;** ERROR NUMBER 241 **
47
48
49                ;THIS IS A L SHIFT TEST OF NOT BIT 13 TO NOT BIT 12
50
51
52        001277          PC=E242 ;** ERROR NUMBER 242 **
53
54
55                ;THIS IS A L SHIFT TEST OF NOT BIT 13 TO NOT BIT 12
56
57
58        001303          PC=E243 ;** ERROR NUMBER 243 **
59
60
```

```
 0284  PRCST
01                ;THIS IS A L SHIFT TEST OF NOT BIT 12 TO NOT BIT 11
02
03
04        001307          PC=E244 ;** ERROR NUMBER 244 **
05
06
07                ;THIS IS A L SHIFT TEST OF NOT BIT 12 TO NOT BIT 11
08
09
10        001313          PC=E245 ;** ERROR NUMBER 245 **
11
12
13                ;THIS IS A L SHIFT TEST OF NOT BIT 11 TO NOT BIT 10
14
15
16        001317          PC=E246 ;** ERROR NUMBER 246 **
17
18
19                ;THIS IS A L SHIFT TEST OF NOT BIT 11 TO NOT BIT 10
20
```

```
10285  PRCST
01
02        001323          PC=E247 ;** ERROR NUMBER 247 **
03
04
05                ;THIS IS A L SHIFT TEST OF NOT BIT 10 TO NOT BIT 09
06
07
08        001327          PC=E250 ;** ERROR NUMBER 250 **
09
10
11                ;THIS IS A L SHIFT TEST OF NOT BIT 10 TO NOT BIT 09
12
13
14        001333          PC=E251 ;** ERROR NUMBER 251 **
15
16
17                ;THIS IS A L SHIFT TEST OF NOT BIT 09 TO NOT BIT 08
18
19
20        001337          PC=E252 ;** ERROR NUMBER 252 **
21
22
23                ;THIS IS A L SHIFT TEST OF NOT BIT 09 TO NOT BIT 08
24
25
26        001343          PC=E253 ;** ERROR NUMBER 253 **
27
28
29                ;THIS IS A L SHIFT TEST OF NOT BIT 08 TO NOT BIT 07
30
31
32        001347          PC=E254 ;** ERROR NUMBER 254 **
33
34
35                ;THIS IS A L SHIFT TEST OF NOT BIT 08 TO NOT BIT 07
36
37
38        001353          PC=E255 ;** ERROR NUMBER 255 **
39
40
41                ;THIS IS A L SHIFT TEST OF NOT BIT 07 TO NOT BIT 06
42
43
44        001357          PC=E256 ;** ERROR NUMBER 256 **
45
46
47                ;THIS IS A L SHIFT TEST OF NOT BIT 07 TO NOT BIT 06
48
49
50        001363          PC=E257 ;** ERROR NUMBER 257 **
51
52
53                ;THIS IS A L SHIFT TEST OF NOT BIT 06 TO NOT BIT 05
54
55
56        001367          PC=E260 ;** ERROR NUMBER 260 **
57
58
59                ;THIS IS A L SHIFT TEST OF NOT BIT 06 TO NOT BIT 05
60
```

```
 0286  PRCST
01
02        001373          PC=E261 ;** ERROR NUMBER 261 **
03
04
05                ;THIS IS A L SHIFT TEST OF NOT BIT 05 TO NOT BIT 04
06
07
08        001377          PC=E262 ;** ERROR NUMBER 262 **
09
10
11                ;THIS IS A L SHIFT TEST OF NOT BIT 05 TO NOT BIT 04
12
13
14        001403          PC=E263 ;** ERROR NUMBER 263 **
15
16
17                ;THIS IS A L SHIFT TEST OF NOT BIT 04 TO NOT BIT 03
18
```

```
10287  PRCST
01
02        001407          PC=E264 ;** ERROR NUMBER 264 **
03
04
05                ;THIS IS A L SHIFT TEST OF NOT BIT 04 TO NOT BIT 03
06
07
08        001413          PC=E265 ;** ERROR NUMBER 265 **
09
10
11                ;THIS IS A L SHIFT TEST OF NOT BIT 03 TO NOT BIT 02
12
13
14        001417          PC=E266 ;** ERROR NUMBER 266 **
15
16
17                ;THIS IS A L SHIFT TEST OF NOT BIT 03 TO NOT BIT 02
18
19
20        001423          PC=E267 ;** ERROR NUMBER 267 **
21
22
23                ;THIS IS A L SHIFT TEST OF NOT BIT 02 TO NOT BIT 01
24
25
26        001427          PC=E270 ;** ERROR NUMBER 270 **
27
28
29                ;THIS IS A L SHIFT TEST OF NOT BIT 02 TO NOT BIT 01
30
31
32        001433          PC=E271 ;** ERROR NUMBER 271 **
33
34
35                ;THIS IS A L SHIFT TEST OF NOT BIT 01 TO NOT BIT 00
36
37
38        001437          PC=E272 ;** ERROR NUMBER 272 **
39
40
41                ;THIS IS A L SHIFT TEST OF NOT BIT 01 TO NOT BIT 00
42
43
44        001443          PC=E273 ;** ERROR NUMBER 273 **
45
46
47                ;SHD RESULT IN AC1=-1, MOVOL TEST.
48
49
50        001445          PC=E274 ;** ERROR NUMBER 274 **
51
52
53                ;BIT 0 TO CRY FAILED
54
55
56
57        001451          PC=E275 ;** ERROR NUMBER 275 **
58
59
60                ;ADD 0+0 GENERATED A CARRY
```

```
 0288  PRCST
01
02
03        001453          PC=E276 ;** ERROR NUMBER 276 **
04
05
06                ;ADD 0+0 GENERATED A CARRY
07
08
09        001456          PC=E277 ;** ERROR NUMBER 277 **
10
11
12                ;SET UP AC0 TO=+1 SET UP FAILED
13
14
15        001466          PC=E300 ;** ERROR NUMBER 300 **
16
17
18                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
19                ;AC0=1 COMING INTO THE TEST
20
```

```
!0289  PRCST
01
02        001477          PC=E301 ;** ERROR NUMBER 301 **
03
04
05                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
06                ;AC0=2 COMING INTO THE TEST
07
08
09        001510          PC=E302 ;** ERROR NUMBER 302 **
10
11
12                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
13                ;AC0=4 COMING INTO THE TEST
14
15
16        001521          PC=E303 ;** ERROR NUMBER 303 **
17
18
19                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
20                ;AC0=10 COMING INTO THE TEST
21
22
23        001532          PC=E304 ;** ERROR NUMBER 304 **
24
25
26                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
27                ;AC0=20 COMING INTO THE TEST
28
29
30        001543          PC=E305 ;** ERROR NUMBER 305 **
31
32
33                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
34                ;AC0=40 COMING INTO THE TEST
35
36
37        001554          PC=E306 ;** ERROR NUMBER 306 **
38
39
40                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
41                ;AC0=100 COMING INTO THE TEST
42
43
44        001565          PC=E307 ;** ERROR NUMBER 307 **
45
46
47                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
48                ;AC0=200 COMING INTO THE TEST
49
50
51        001576          PC=E310 ;** ERROR NUMBER 310 **
52
53
54                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
55                ;AC0=400 COMING INTO THE TEST
56
57
58        001607          PC=E311 ;** ERROR NUMBER 311 **
59
60
```

```
 0290  PRCST
01                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
02                ;AC0=1000 COMING INTO THE TEST
03
04
05        001620          PC=E312 ;** ERROR NUMBER 312 **
06
07
08                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
09                ;AC0=2000 COMING INTO THE TEST
10
11
12        001631          PC=E313 ;** ERROR NUMBER 313 **
13
14
15                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
16                ;AC0=4000 COMING INTO THE TEST
17
```

```
10291  PRCST
01
02        001642          PC=E314 ;** ERROR NUMBER 314 **
03
04
05                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
06                ;AC0=10000 COMING INTO THE TEST
07
08
09        001653          PC=E315 ;** ERROR NUMBER 315 **
10
11
12                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
13                ;AC0=20000 COMING INTO THE TEST
14
15
16        001664          PC=E316 ;** ERROR NUMBER 316 **
17
18
19                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
20                ;AC0=40000 COMING INTO THE TEST
21
22
23        001675          PC=E317 ;** ERROR NUMBER 317 **
24
25
26                ;TEST ADD INSTRUCTION NO CARRY WHEN SRC IS NON ZERO
27                ;AC0=100000 COMING INTO THE TEST
28
29
30        001701          PC=E320 ;** ERROR NUMBER 320 **
31
32
33                ;RESET UP AC0 FOR DEST NOT=0 ADD TEST
34
35
36        001711          PC=E321 ;** ERROR NUMBER 321 **
37
38
39                ;AC0=1 COMING INTO THE TEST
40
41
42        001722          PC=E322 ;** ERROR NUMBER 322 **
43
44
45                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
46                ;AC0=2 COMING INTO THE TEST
47
48
49        001733          PC=E323 ;** ERROR NUMBER 323 **
50
51
52                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
53                ;AC0=4 COMING INTO THE TEST
54
55
56        001744          PC=E324 ;** ERROR NUMBER 324 **
57
58
59                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
60                ;AC0=10 COMING INTO THE TEST
```

```
 0292  PRCST
01
02
03        001755          PC=E325 ;** ERROR NUMBER 325 **
04
05
06                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
07                ;AC0=20 COMING INTO THE TEST
08
09
10        001766          PC=E326 ;** ERROR NUMBER 326 **
11
12
13                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
14                ;AC0=40 COMING INTO THE TEST
15
```

```
10293  PRCST
01
02        001777          PC=E327 ;** ERROR NUMBER 327 **
03
04
05                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
06                ;AC0=100 COMING INTO THE TEST
07
08
09
10        002010          PC=E330 ;** ERROR NUMBER 330 **
11
12
13                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
14                ;AC0=200 COMING INTO THE TEST
15
16
17        002021          PC=E331 ;** ERROR NUMBER 331 **
18
19
20                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
21                ;AC0=400 COMING INTO THE TEST
22
23
24        002032          PC=E332 ;** ERROR NUMBER 332 **
25
26
27                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
28                ;AC0=1000 COMING INTO THE TEST
29
30
31        002043          PC=E333 ;** ERROR NUMBER 333 **
32
33
34                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
35                ;AC0=2000 COMING INTO THE TEST
36
37
38        002054          PC=E334 ;** ERROR NUMBER 334 **
39
40
41                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
42                ;AC0=4000 COMING INTO THE TEST
43
44
45        002065          PC=E335 ;** ERROR NUMBER 335 **
46
47
48                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
49                ;AC0=10000 COMING INTO THE TEST
50
51
52        002076          PC=E336 ;** ERROR NUMBER 336 **
53
54
55                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
56                ;AC0=20000 COMING INTO THE TEST
57
58
59        002107          PC=E337 ;** ERROR NUMBER 337 **
60
```

```
 0294  PRCST
01
02                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
03                ;AC0=40000 COMING INTO THE TEST
04
05
06        002120          PC=E340 ;** ERROR NUMBER 340 **
07
08
09                ;TEST ADD INSTRUCTION NO CARRY WHEN DEST IS NON ZERO
10                ;AC0=100000 COMING INTO THE TEST
11
```

```
!0295  PRCST
01
02        002124          PC=E341 ;** ERROR NUMBER 341 **
03
04
05                ;SET UP BIT 15 FOR ADD TESTS
06                ;AC0 SHD=+1
07
08
09        002132          PC=E342 ;** ERROR NUMBER 342 **
10
11
12                ;TEST SINGLE BIT CARRY ADD BIT 15 TO ITSELF
13                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 14
14                ;AND SUM BIT 15 TO GO TO 0 RESULT SHD=2
15
16
17        002141          PC=E343 ;** ERROR NUMBER 343 **
18
19
20                ;TEST SINGLE BIT CARRY ADD BIT 14 TO ITSELF
21                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 13
22                ;AND SUM BIT 14 TO GO TO 0 RESULT SHD=4
23
24
25        002150          PC=E344 ;** ERROR NUMBER 344 **
26
27
28                ;TEST SINGLE BIT CARRY ADD BIT 13 TO ITSELF
29                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 12
30                ;AND SUM BIT 13 TO GO TO 0 RESULT SHD=10
31
32
33        002157          PC=E345 ;** ERROR NUMBER 345 **
34
35
36                ;TEST SINGLE BIT CARRY ADD BIT 12 TO ITSELF
37                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 11
38                ;AND SUM BIT 12 TO GO TO 0 RESULT SHD=20
39
40
41        002166          PC=E346 ;** ERROR NUMBER 346 **
42
43
44                ;TEST SINGLE BIT CARRY ADD BIT 11 TO ITSELF
45                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 10
46                ;AND SUM BIT 11 TO GO TO 0 RESULT SHD=40
47
48
49        002175          PC=E347 ;** ERROR NUMBER 347 **
50
51
52                ;TEST SINGLE BIT CARRY ADD BIT 10 TO ITSELF
53                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 9
54                ;AND SUM BIT 10 TO GO TO 0 RESULT SHD=100
55
56
57        002204          PC=E350 ;** ERROR NUMBER 350 **
58
59
60                ;TEST SINGLE BIT CARRY ADD BIT 9 TO ITSELF
```

```
 0296  PRCST
01                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 8
02                ;AND SUM BIT 9 TO GO TO 0 RESULT SHD=200
03
04
05        002213          PC=E351 ;** ERROR NUMBER 351 **
06
07
08                ;TEST SINGLE BIT CARRY ADD BIT 8 TO ITSELF
09                ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 7
10                ;AND SUM BIT 8 TO GO TO 0 RESULT SHD=400
11
```

```
!0297  PRCST
01
02        002222          PC=E352 ;** ERROR NUMBER 352 **
03
04
05              ;TEST SINGLE BIT CARRY ADD BIT 7 TO ITSELF
06              ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 6
07              ;AND SUM BIT 7 TO GO TO 0 RESULT SHD=1000
08
09
10        002231          PC=E353 ;** ERROR NUMBER 353 **
11
12
13              ;TEST SINGLE BIT CARRY ADD BIT 6 TO ITSELF
14              ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 5
15              ;AND SUM BIT 6 TO GO TO 0 RESULT SHD=2000
16
17
18
19        002240          PC=E354 ;** ERROR NUMBER 354 **
20
21
22              ;TEST SINGLE BIT CARRY ADD BIT 5 TO ITSELF
23              ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 4
24              ;AND SUM BIT 5 TO GO TO 0 RESULT SHD=4000
25
26
27        002247          PC=E355 ;** ERROR NUMBER 355 **
28
29
30              ;TEST SINGLE BIT CARRY ADD BIT 4 TO ITSELF
31              ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 3
32              ;AND SUM BIT 4 TO GO TO 0 RESULT SHD=10000
33
34
35        002256          PC=E356 ;** ERROR NUMBER 356 **
36
37
38              ;TEST SINGLE BIT CARRY ADD BIT 3 TO ITSELF
39              ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 2
40              ;AND SUM BIT 3 TO GO TO 0 RESULT SHD=20000
41
42
43        002265          PC=E357 ;** ERROR NUMBER 357 **
44
45
46              ;TEST SINGLE BIT CARRY ADD BIT 2 TO ITSELF
47              ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 1
48              ;AND SUM BIT 2 TO GO TO 0 RESULT SHD=40000
49
50
51        002274          PC=E360 ;** ERROR NUMBER 360 **
52
53
54              ;TEST SINGLE BIT CARRY ADD BIT 1 TO ITSELF
55              ;LOOK FOR RESULTANT CARRY INTO NEXT BIT 0
56              ;AND SUM BIT 1 TO GO TO 0 RESULT SHD=100000
57
58
59        002300          PC=E361 ;** ERROR NUMBER 361 **
60
```

```
 0298  PRCST
01
02              ;TEST ADD BIT 0 TO BIT0 AC0=100000
03              ;SEE THAT CRYOUT GETS TO CRY
04
05
06        002302          PC=E362 ;** ERROR NUMBER 362 **
07
08
09              ;TEST ADD BIT 0 TO BIT0 AC0=100000
10              ;SEE THAT CRYOUT GETS TO CRY
11
```

```
10299  PRCST
01
02        002305          PC=E363 ;** ERROR NUMBER 363 **
03
04
05              ;TEST AND INSTRUCTION AND VARIATIONS
06              ;FIRST TEST GROSS CASE AND -1 TO -1
07
08
09        002307          PC=E364 ;** ERROR NUMBER 364 **
10
11
12              ;TEST AND INSTRUCTION AND VARIATIONS
13              ;FIRST TEST GROSS CASE AND -1 TO -1
14
15
16        002313          PC=E365 ;** ERROR NUMBER 365 **
17
18
19              ;TEST AND 0'S TO 0'S RESULT SHD REMAIN=0
20
21
22        002315          PC=E366 ;** ERROR NUMBER 366 **
23
24
25              ;TEST AND 0'S TO 0'S RESULT SHD REMAIN=0
26
27
28        002321          PC=E367 ;** ERROR NUMBER 367 **
29
30
31              ;AND -1 TO 0 WITH 0 AS DESTINATION
32              ;RESULT SHOULD AGAIN=0'S
33
34
35        002323          PC=E370 ;** ERROR NUMBER 370 **
36
37
38              ;AND -1 TO 0 WITH 0 AS DESTINATION
39              ;RESULT SHOULD AGAIN=0'S
40
41
42        002327          PC=E371 ;** ERROR NUMBER 371 **
43
44
45              ;TEST AND OF 0 TO -1 WITH -1 ORIGINAL DESTINATION
46
47
48        002331          PC=E372 ;** ERROR NUMBER 372 **
49
50
51              ;TEST AND OF 0 TO -1 WITH -1 ORIGINAL DESTINATION
52
53
54        002334          PC=E373 ;** ERROR NUMBER 373 **
55
56
57              ;SET UP AC0=1 FOR FIRST AND TEST
58
59
60        002337          PC=E374 ;** ERROR NUMBER 374 **
```

```
 0300  PRCST
01
02
03              ;IS AN AND TST OF BIT 15
04              ;BIT 15 SHD REMAIN=1
05
06
07        002343          PC=E375 ;** ERROR NUMBER 375 **
08
09
10              ;MORE THAN 1 BIT IN AND OF 1
11
12
13        002346          PC=E376 ;** ERROR NUMBER 376 **
14
15
16              ;SOURCE WILL=1 DEST WILL=COMPLIMENT
17              ;AND OF 1 AND ITS COM FAILED
18
```

```
10301  PRCST
01
02        002352          PC=E377 ;** ERROR NUMBER 377 **
03
04
05                ;DEST=1 AND SRC=COM
06                ;AND OF 1 AND ITS COM FAILED
07
08
09        002356          PC=E400 ;** ERROR NUMBER 400 **
10
11
12                ;IS AN AND TST OF BIT 14
13                ;BIT 14 SHD REMAIN=1
14
15
16        002362          PC=E401 ;** ERROR NUMBER 401 **
17
18
19                ;MORE THAN 1 BIT IN AND OF 2
20
21
22        002365          PC=E402 ;** ERROR NUMBER 402 **
23
24
25                ;SOURCE WILL=2 DEST WILL=COMPLIMENT
26                ;AND OF 2 AND ITS COM FAILED
27
28
29        002371          PC=E403 ;** ERROR NUMBER 403 **
30
31
32                ;DEST=2 AND SRC=COM
33                ;AND OF 2 AND ITS COM FAILED
34
35
36        002375          PC=E404 ;** ERROR NUMBER 404 **
37
38
39                ;IS AN AND TST OF BIT 13
40                ;BIT 13 SHD REMAIN=1
41
42
43        002401          PC=E405 ;** ERROR NUMBER 405 **
44
45
46                ;MORE THAN 1 BIT IN AND OF 4
47
48
49
50        002404          PC=E406 ;** ERROR NUMBER 406 **
51
52
53                ;SOURCE WILL=4 DEST WILL=COMPLIMENT
54                ;AND OF 4 AND ITS COM FAILED
55
56
57        002410          PC=E407 ;** ERROR NUMBER 407 **
58
59
60                ;DEST=4 AND SRC=COM
```

```
 0302  PRCST
01                ;AND OF 4 AND ITS COM FAILED
02
03
04        002414          PC=E410 ;** ERROR NUMBER 410 **
05
06
07                ;IS AN AND TST OF BIT 12
08                ;BIT 12 SHD REMAIN=1
09
10
11        002420          PC=E411 ;** ERROR NUMBER 411 **
12
13
14                ;MORE THAN 1 BIT IN AND OF 10
15
```

```
10303  PRCST
01
02        002423          PC=E412 ;** ERROR NUMBER 412 **
03
04
05                ;SOURCE WILL=10 DEST WILL=COMPLIMENT
06                ;AND OF 10 AND ITS COM FAILED
07
08
09        002427          PC=E413 ;** ERROR NUMBER 413 **
10
11
12                ;DEST=10 AND SRC=COM
13                ;AND OF 10 AND ITS COM FAILED
14
15
16        002433          PC=E414 ;** ERROR NUMBER 414 **
17
18
19                ;IS AN AND TST OF BIT 11
20                ;BIT 11 SHD REMAIN=1
21
22
23        002437          PC=E415 ;** ERROR NUMBER 415 **
24
25
26                ;MORE THAN 1 BIT IN AND OF 20
27
28
29        002442          PC=E416 ;** ERROR NUMBER 416 **
30
31
32                ;SOURCE WILL=20 DEST WILL=COMPLIMENT
33                ;AND OF 20 AND ITS COM FAILED
34
35
36        002446          PC=E417 ;** ERROR NUMBER 417 **
37
38
39                ;DEST=20 AND SRC=COM
40                ;AND OF 20 AND ITS COM FAILED
41
42
43        002452          PC=E420 ;** ERROR NUMBER 420 **
44
45
46                ;IS AN AND TST OF BIT 10
47                ;BIT 10 SHD REMAIN=1
48
49
50        002456          PC=E421 ;** ERROR NUMBER 421 **
51
52
53                ;MORE THAN 1 BIT IN AND OF 40
54
55
56        002461          PC=E422 ;** ERROR NUMBER 422 **
57
58
59                ;SOURCE WILL=40 DEST WILL=COMPLIMENT
60                ;AND OF 40 AND ITS COM FAILED
```

```
 0304  PRCST
01
02
03        002465          PC=E423 ;** ERROR NUMBER 423 **
04
05
06                ;DEST=40 AND SRC=COM
07                ;AND OF 40 AND ITS COM FAILED
08
09
10        002471          PC=E424 ;** ERROR NUMBER 424 **
11
12
13                ;IS AN AND TST OF BIT 9
14                ;BIT 9 SHD REMAIN=1
15
```

```
10305  PRCST
01
02        002475          PC=E425 ;** ERROR NUMBER 425 **
03
04
05                ;MORE THAN 1 BIT IN AND OF 100
06
07
08        002500          PC=E426 ;** ERROR NUMBER 426 **
09
10
11                ;SOURCE WILL=100 DEST WILL=COMPLIMENT
12                ;AND OF 100 AND ITS COM FAILED
13
14
15        002504          PC=E427 ;** ERROR NUMBER 427 **
16
17
18                ;DEST=100 AND SRC=COM
19                ;AND OF 100 AND ITS COM FAILED
20
21
22        002510          PC=E430 ;** ERROR NUMBER 430 **
23
24
25                ;IS AN AND TST OF BIT 8
26                ;BIT 8 SHD REMAIN=1
27
28
29        002514          PC=E431 ;** ERROR NUMBER 431 **
30
31
32                ;MORE THAN 1 BIT IN AND OF 200
33
34
35        002517          PC=E432 ;** ERROR NUMBER 432 **
36
37
38                ;SOURCE WILL=200 DEST WILL=COMPLIMENT
39                ;AND OF 200 AND ITS COM FAILED
40
41
42        002523          PC=E433 ;** ERROR NUMBER 433 **
43
44
45                ;DEST=200 AND SRC=COM
46                ;AND OF 200 AND ITS COM FAILED
47
48
49        002527          PC=E434 ;** ERROR NUMBER 434 **
50
51
52                ;IS AN AND TST OF BIT 7
53                ;BIT 7 SHD REMAIN=1
54
55
56        002533          PC=E435 ;** ERROR NUMBER 435 **
57
58
59                ;MORE THAN 1 BIT IN AND OF 400
60
```

```
 0306  PRCST
01
02        002536          PC=E436 ;** ERROR NUMBER 436 **
03
04
05                ;SOURCE WILL=400 DEST WILL=COMPLIMENT
06                ;AND OF 400 AND ITS COM FAILED
07
08
09        002542          PC=E437 ;** ERROR NUMBER 437 **
10
11
12                ;DEST=400 AND SRC=COM
13                ;AND OF 400 AND ITS COM FAILED
14
```

```
10307  PRCST
01
02        002546          PC=E440 ;** ERROR NUMBER 440 **
03
04
05                ;IS AN AND TST OF BIT 6
06                ;BIT 6 SHD REMAIN=1
07
08
09        002552          PC=E441 ;** ERROR NUMBER 441 **
10
11
12                ;MORE THAN 1 BIT IN AND OF 1000
13
14
15        002555          PC=E442 ;** ERROR NUMBER 442 **
16
17
18                ;SOURCE WILL=1000 DEST WILL=COMPLIMENT
19                ;AND OF 1000 AND ITS COM FAILED
20
21
22
23        002561          PC=E443 ;** ERROR NUMBER 443 **
24
25
26                ;DEST=1000 AND SRC=COM
27                ;AND OF 1000 AND ITS COM FAILED
28
29
30        002565          PC=E444 ;** ERROR NUMBER 444 **
31
32
33                ;IS AN AND TST OF BIT 5
34                ;BIT 5 SHD REMAIN=1
35
36
37        002571          PC=E445 ;** ERROR NUMBER 445 **
38
39
40                ;MORE THAN 1 BIT IN AND OF 2000
41
42
43        002574          PC=E446 ;** ERROR NUMBER 446 **
44
45
46                ;SOURCE WILL=2000 DEST WILL=COMPLIMENT
47                ;AND OF 2000 AND ITS COM FAILED
48
49
50        002600          PC=E447 ;** ERROR NUMBER 447 **
51
52
53                ;DEST=2000 AND SRC=COM
54                ;AND OF 2000 AND ITS COM FAILED
55
56
57        002604          PC=E450 ;** ERROR NUMBER 450 **
58
59
60                ;IS AN AND TST OF BIT 4
```

```
 0308  PRCST
01                ;BIT 4 SHD REMAIN=1
02
03
04        002610          PC=E451 ;** ERROR NUMBER 451 **
05
06
07                ;MORE THAN 1 BIT IN AND OF 4000
08
09
10        002613          PC=E452 ;** ERROR NUMBER 452 **
11
12
13                ;SOURCE WILL=4000 DEST WILL=COMPLIMENT
14                ;AND OF 4000 AND ITS COM FAILED
15
```

```
!0309  PRCST
01
02        002617          PC=E453 ;** ERROR NUMBER 453 **
03
04
05                ;DEST=4000 AND SRC=COM
06                ;AND OF 4000 AND ITS COM FAILED
07
08
09        002623          PC=E454 ;** ERROR NUMBER 454 **
10
11
12                ;IS AN AND TST OF BIT 3
13                ;BIT 3 SHD REMAIN=1
14
15
16        002627          PC=E455 ;** ERROR NUMBER 455 **
17
18
19                ;MORE THAN 1 BIT IN AND OF 10000
20
21
22        002632          PC=E456 ;** ERROR NUMBER 456 **
23
24
25                ;SOURCE WILL=10000 DEST WILL=COMPLIMENT
26                ;AND OF 10000 AND ITS COM FAILED
27
28
29        002636          PC=E457 ;** ERROR NUMBER 457 **
30
31
32                ;DEST=10000 AND SRC=COM
33                ;AND OF 10000 AND ITS COM FAILED
34
35
36        002642          PC=E460 ;** ERROR NUMBER 460 **
37
38
39                ;IS AN AND TST OF BIT 2
40                ;BIT 2 SHD REMAIN=1
41
42
43        002646          PC=E461 ;** ERROR NUMBER 461 **
44
45
46                ;MORE THAN 1 BIT IN AND OF 20000
47
48
49        002651          PC=E462 ;** ERROR NUMBER 462 **
50
51
52                ;SOURCE WILL=20000 DEST WILL=COMPLIMENT
53
54
55        002655          PC=E463 ;** ERROR NUMBER 463 **
56
57
58                ;AND OF 20000 AND ITS COM FAILED
59
60
```

```
 0310  PRCST
01        002661          PC=E464 ;** ERROR NUMBER 464 **
02
03
04                ;DEST=20000 AND SRC=COM
05                ;AND OF 20000 AND ITS COM FAILED
06
07
08        002665          PC=E465 ;** ERROR NUMBER 465 **
09
10
11                ;IS AN AND TST OF BIT 1
12                ;BIT 1 SHD REMAIN=1
13
```

```
10311  PRCST
01
02        002670          PC=E466 ;** ERROR NUMBER 466 **
03
04
05              ;MORE THAN 1 BIT IN AND OF 40000
06
07
08        002674          PC=E467 ;** ERROR NUMBER 467 **
09
10
11              ;SOURCE WILL=40000 DEST WILL=COMPLIMENT
12              ;AND OF 40000 AND ITS COM FAILED
13
14
15        002700          PC=E470 ;** ERROR NUMBER 470 **
16
17
18              ;DEST=40000 AND SRC=COM
19              ;AND OF 40000 AND ITS COM FAILED
20
21
22        002704          PC=E471 ;** ERROR NUMBER 471 **
23
24
25              ;IS AN AND TST OF BIT 0
26              ;BIT 0 SHD REMAIN=1
27
28
29        002707          PC=E472 ;** ERROR NUMBER 472 **
30
31
32              ;MORE THAN 1 BIT IN AND OF 100000
33
34
35        002713          PC=E473 ;** ERROR NUMBER 473 **
36
37
38              ;SOURCE WILL=100000 DEST WILL=COMPLIMENT
39              ;AND OF 100000 AND ITS COM FAILED
40
41
42        002717          PC=E474 ;** ERROR NUMBER 474 **
43
44
45              ;DEST=100000 AND SRC=COM
46              ;AND OF 100000 AND ITS COM FAILED
47
48
49        002722          PC=E475 ;** ERROR NUMBER 475 **
50
51
52              ;AND SET CRY=1
53
54
55        002726          PC=E476 ;** ERROR NUMBER 476 **
56
57
58              ;AND OF -1,-1 CLEARED CARRY
59
60
```

```
 0312  PRCST
01        002732          PC=E477 ;** ERROR NUMBER 477 **
02
03
04              ;TEST AND WITH 00 TO NOT CHNG CRY 0 TO 1
05
```

```
10313  PRCST
01
02        002735          PC=E500 ;** ERROR NUMBER 500 **
03
04
05                ;TEST AND WITH 00 TO NOT CHNG CRY 1 TO 0
06
07
08        002740          PC=E501 ;** ERROR NUMBER 501 **
09
10
11                ;REPEAT TESTS CHANGING STATE OF CRY DURING AND
12
13
14        002744          PC=E502 ;** ERROR NUMBER 502 **
15
16
17                ;CRY WENT TO 0 AND -1 TO -1
18
19
20
21        002750          PC=E503 ;** ERROR NUMBER 503 **
22
23
24                ;CRY WENT TO 1 AND 0 TO 0
25
26
27        002754          PC=E504 ;** ERROR NUMBER 504 **
28
29
30                ;CRY WENT 1 TO 0 AND OF 0 TO 0
31
32
33        002756          PC=E505 ;** ERROR NUMBER 505 **
34
35
36                ;"INC" INSTRUCTION TEST
37                ;AC0 SHD=+1
38
39
40        002760          PC=E506 ;** ERROR NUMBER 506 **
41
42
43                ;"INC" INSTRUCTION TEST
44                ;RESULT SHOULD GET BACK TO AC0
45
46
47        002765          PC=E507 ;** ERROR NUMBER 507 **
48
49
50                ;EXAMINE AC0 FOR EXTRA BITS INC
51
52
53        002770          PC=E510 ;** ERROR NUMBER 510 **
54
55
56                ;TEST INC OF +1 TO +2 (2ND TIME FOR INC)
57                ;1+1 SHD=2
58
59
60        002776          PC=E511 ;** ERROR NUMBER 511 **
```

```
 0314  PRCST
01
02
03                ;AC0 INC'D+1 INCORRECT
04
05
06        003000          PC=E512 ;** ERROR NUMBER 512 **
07
08
09                ;TEST TO INSURE ONLY SRC REG IS INVOLVED IN INC
10                ;ALU CRY FAILED (?) ALRDY TESTED
11
12
13        003005          PC=E513 ;** ERROR NUMBER 513 **
14
15
16                ;TEST TO INSURE ONLY SRC REG IS INVOLVED IN INC
17                ;PROBABLY DESTINATION REG ALSO ADDED
18
```

```
10315  PRCST
01
02        003011          PC=E514 ;** ERROR NUMBER 514 **
03
04
05              ;AC0=0+1 SHD BE NON ZERO
06              ;INC RESULT SHD=1
07
08
09        003015          PC=E515 ;** ERROR NUMBER 515 **
10
11
12              ;ADC SUM OF 1+3 SHD = -1, THEN 0
13
14
15        003021          PC=E516 ;** ERROR NUMBER 516 **
16
17
18              ;AC0=1+1 SHD BE NON ZERO
19              ;INC RESULT SHD=2
20
21
22        003025          PC=E517 ;** ERROR NUMBER 517 **
23
24
25              ;ADC SUM OF 1+3 SHD = -1, THEN 0
26
27
28        003031          PC=E520 ;** ERROR NUMBER 520 **
29
30
31              ;AC0=3+1 SHD BE NON ZERO
32              ;INC RESULT SHD=4
33
34
35        003035          PC=E521 ;** ERROR NUMBER 521 **
36
37
38              ;ADC SUM OF 1+3 SHD = -1, THEN 0
39
40
41        003041          PC=E522 ;** ERROR NUMBER 522 **
42
43
44              ;AC0=7+1 SHD BE NON ZERO
45              ;INC RESULT SHD=10
46
47
48        003045          PC=E523 ;** ERROR NUMBER 523 **
49
50
51              ;ADC SUM OF 1+3 SHD = -1, THEN 0
52
53
54        003051          PC=E524 ;** ERROR NUMBER 524 **
55
56
57              ;AC0=17+1 SHD BE NON ZERO
58              ;INC RESULT SHD=20
59
60
```

```
 0316  PRCST
01        003055          PC=E525 ;** ERROR NUMBER 525 **
02
03
04              ;ADC SUM OF 1+3 SHD = -1, THEN 0
05
06
07        003061          PC=E526 ;** ERROR NUMBER 526 **
08
09
10              ;AC0=37+1 SHD BE NON ZERO
11              ;INC RESULT SHD=40
12
13
14        003065          PC=E527 ;** ERROR NUMBER 527 **
15
16
17              ;ADC SUM OF 1+3 SHD = -1, THEN 0
18
19
20        003071          PC=E530 ;** ERROR NUMBER 530 **
21
22
23              ;AC0=77+1 SHD BE NON ZERO
24              ;INC RESULT SHD=100
25
26
27        003075          PC=E531 ;** ERROR NUMBER 531 **
28
29
30              ;ADC SUM OF 1+3 SHD = -1, THEN 0
31
32
33        003101          PC=E532 ;** ERROR NUMBER 532 **
34
35
36              ;AC0=177+1 SHD BE NON ZERO
37              ;INC RESULT SHD=200
38
39
40        003105          PC=E533 ;** ERROR NUMBER 533 **
41
42
43              ;ADC SUM OF 1+3 SHD = -1, THEN 0
44
45
46        003111          PC=E534 ;** ERROR NUMBER 534 **
47
48
49              ;AC0=377+1 SHD BE NON ZERO
50              ;INC RESULT SHD=400
51
52
53        003115          PC=E535 ;** ERROR NUMBER 535 **
54
55
56              ;ADC SUM OF 1+3 SHD = -1, THEN 0
57
58
59        003121          PC=E536 ;** ERROR NUMBER 536 **
60
```

```
 0317  PRCST
01
02              ;AC0=777+1 SHD BE NON ZERO
03              ;INC RESULT SHD=1000
04
05
06       003125         PC=E537 ;** ERROR NUMBER 537 **
07
08
09              ;ADC SUM OF 1+3 SHD = -1, THEN 0
10
11
12       003131         PC=E540 ;** ERROR NUMBER 540 **
13
14
15              ;AC0=1777+1 SHD BE NON ZERO
16              ;INC RESULT SHD=2000
17
18
19       003135         PC=E541 ;** ERROR NUMBER 541 **
20
21
22              ;ADC SUM OF 1+3 SHD = -1, THEN 0
23
```

```
 0318  PRCST
01
02       003141         PC=E542 ;** ERROR NUMBER 542 **
03
04
05              ;AC0=3777+1 SHD BE NON ZERO
06              ;INC RESULT SHD=4000
07
08
09       003145         PC=E543 ;** ERROR NUMBER 543 **
10
11
12              ;ADC SUM OF 1+3 SHD=-1
13              ;THEN 0
14
15
16       003151         PC=E544 ;** ERROR NUMBER 544 **
17
18
19              ;AC0=7777+1 SHD BE NON ZERO
20              ;INC RESULT SHD=10000
21
22
23       003155         PC=E545 ;** ERROR NUMBER 545 **
24
25
26              ;ADC SUM OF 1+3 SHD=-1
27              ;THEN 0
28
29
30       003161         PC=E546 ;** ERROR NUMBER 546 **
31
32
33              ;AC0=17777+1 SHD BE NON ZERO
34              ;INC RESULT SHD=20000
35
36
37       003165         PC=E547 ;** ERROR NUMBER 547 **
38
39
40              ;ADC SUM OF 1+3 SHD=-1
41              ;THEN 0
42
43
44       003171         PC=E550 ;** ERROR NUMBER 550 **
45
46
47              ;AC0=37777+1 SHD BE NON ZERO
48              ;INC RESULT SHD=40000
49
50
51       003175         PC=E551 ;** ERROR NUMBER 551 **
52
53
54              ;ADC SUM OF 1+3 SHD=-1
55              ;THEN 0
56
57
58       003201         PC=E552 ;** ERROR NUMBER 552 **
59
60
```

```
 0319  PRCST
01              ;AC0=77777+1 SHD BE NON ZERO
02              ;INC RESULT SHD=100000
03
04
05       003206         PC=E553 ;** ERROR NUMBER 553 **
06
07
08              ;ADC SUM OF 1+3 SHD=-1
09              ;THEN 0
10
```

```
10320  PRCST
01
02       003210         PC=E554 ;** ERROR NUMBER 554 **
03
04
05              ;INC=1 DID NOT=0
06
07
08       003213         PC=E555 ;** ERROR NUMBER 555 **
09
10
11              ;CRY OUT DID NOT COM 0 TO 1
12
13
14       003215         PC=E556 ;** ERROR NUMBER 556 **
15
16
17              ;INC=1 DID NOT=0
18
19
20       003220         PC=E557 ;** ERROR NUMBER 557 **
21
22
23              ;CRY OUT DID NOT COM 1 TO 0
24
25
26       003222         PC=E560 ;** ERROR NUMBER 560 **
27
28
29              ;NEG MAY=COM+INC+SUB
30
31
32       003226         PC=E561 ;** ERROR NUMBER 561 **
33
34
35              ;NEG OF -1 SOMETHING OTHER THAN +1
36
37
38       003230         PC=E562 ;** ERROR NUMBER 562 **
39
40
41              ;THE NEGATION OF +1 SHD=-1
42
43
44       003234         PC=E563 ;** ERROR NUMBER 563 **
45
46
47              ;NEG OF +1 SOMETHING OTHER THAN -1
48
49
50       003240         PC=E564 ;** ERROR NUMBER 564 **
51
52
53              ;CARRY WENT THROUGH BIT 15,NEG TEST
54
55
56       003244         PC=E565 ;** ERROR NUMBER 565 **
57
58
59              ;RESULT COM -1 SHD=0,NEG TEST
60
```

```
 0321  PRCST
01
02        003250          PC=E566 ;** ERROR NUMBER 566 **
03
04
05                ;177777 DID NOT NEG TO 1
06
07
08        003254          PC=E567 ;** ERROR NUMBER 567 **
09
10
11                ;CARRY WENT THROUGH BIT 14,NEG TEST
12
13
14        003260          PC=E570 ;** ERROR NUMBER 570 **
15
16
17                ;RESULT COM =1 SHD=0,NEG TEST
18
```

```
 0322  PRCST
01
02        003264          PC=E571 ;** ERROR NUMBER 571 **
03
04
05                ;177776 DID NOT NEG TO 2,NEG TEST
06
07
08        003270          PC=E572 ;** ERROR NUMBER 572 **
09
10
11                ;CARRY WENT THROUGH BIT 13,NEG TEST
12
13
14        003274          PC=E573 ;** ERROR NUMBER 573 **
15
16
17                ;RESULT COM =1 SHD=0,NEG TEST
18
19
20        003300          PC=E574 ;** ERROR NUMBER 574 **
21
22
23                ;177774 DID NOT NEG TO 4
24
25
26        003304          PC=E575 ;** ERROR NUMBER 575 **
27
28
29                ;CARRY WENT THROUGH BIT 12,NEG TEST
30
31
32        003310          PC=E576 ;** ERROR NUMBER 576 **
33
34
35                ;RESULT COM =1 SHD=0,NEG TEST
36
37
38        003314          PC=E577 ;** ERROR NUMBER 577 **
39
40
41                ;177770 DID NOT NEG TO 10
42
43
44        003320          PC=E600 ;** ERROR NUMBER 600 **
45
46
47                ;CARRY WENT THROUGH BIT 11,NEG TEST
48
49
50        003324          PC=E601 ;** ERROR NUMBER 601 **
51
52
53                ;RESULT COM =1 SHD=0,NEG TEST
54
55
56
57        003330          PC=E602 ;** ERROR NUMBER 602 **
58
59
60                ;177760 DID NOT NEG TO 20
```

```
 0323  PRCST
01
02
03        003334          PC=E603 ;** ERROR NUMBER 603 **
04
05
06              ;CARRY WENT THROUGH BIT 10,NEG TEST
07
08
09        003340          PC=E604 ;** ERROR NUMBER 604 **
10
11
12              ;RESULT COM -1 SHD=0,NEG TEST
13
14
15        003344          PC=E605 ;** ERROR NUMBER 605 **
16
17
18              ;177740 DID NOT NEG TO 40
19
```

```
 0324  PRCST
01
02        003350          PC=E606 ;** ERROR NUMBER 606 **
03
04
05              ;CARRY WENT THROUGH BIT 9,NEG TEST
06
07
08        003354          PC=E607 ;** ERROR NUMBER 607 **
09
10
11              ;RESULT COM -1 SHD=0,NEG TEST
12
13
14        003360          PC=E610 ;** ERROR NUMBER 610 **
15
16
17              ;177700 DID NOT NEG TO 100
18
19
20        003364          PC=E611 ;** ERROR NUMBER 611 **
21
22
23              ;CARRY WENT THROUGH BIT 8,NEG TEST
24
25
26        003370          PC=E612 ;** ERROR NUMBER 612 **
27
28
29              ;RESULT COM -1 SHD=0,NEG TEST
30
31
32        003374          PC=E613 ;** ERROR NUMBER 613 **
33
34
35              ;177600 DID NOT NEG TO 200
36
37
38        003400          PC=E614 ;** ERROR NUMBER 614 **
39
40
41              ;CARRY WENT THROUGH BIT 7,NEG TEST
42
43
44        003404          PC=E615 ;** ERROR NUMBER 615 **
45
46
47              ;RESULT COM -1 SHD=0,NEG TEST
48
49
50        003410          PC=E616 ;** ERROR NUMBER 616 **
51
52
53              ;177400 DID NOT NEG TO 400
54
55
56        003414          PC=E617 ;** ERROR NUMBER 617 **
57
58
59              ;CARRY WENT THROUGH BIT 6,NEG TEST
60
```

```
 0325  PRCST
01
02        003420          PC=E620 ;** ERROR NUMBER 620 **
03
04
05                ;RESULT COM -1 SHD=0,,NEG TEST
06
07
08        003424          PC=E621 ;** ERROR NUMBER 621 **
09
10
11                ;177000 DID NOT NEG TO 1000
12
13
14        003430          PC=E622 ;** ERROR NUMBER 622 **
15
16
17                ;CARRY WENT THROUGH BIT 5,NEG TEST
18
```

```
 0326  PRCST
01
02        003434          PC=E623 ;** ERROR NUMBER 623 **
03
04
05                ;RESULT COM -1 SHD=0,NEG TEST
06
07
08        003440          PC=E624 ;** ERROR NUMBER 624 **
09
10
11                ;176000 DID NOT NEG TO 2000
12
13
14        003444          PC=E625 ;** ERROR NUMBER 625 **
15
16
17                ;CARRY WENT THROUGH BIT 4,NEG TEST
18
19
20        003450          PC=E626 ;** ERROR NUMBER 626 **
21
22
23                ;RESULT COM -1 SHD=0
24
25
26        003454          PC=E627 ;** ERROR NUMBER 627 **
27
28
29                ;174000 DID NOT NEG TO 4000
30
31
32        003460          PC=E630 ;** ERROR NUMBER 630 **
33
34
35                ;CARRY WENT THROUGH BIT 3,NEG TEST
36
37
38        003464          PC=E631 ;** ERROR NUMBER 631 **
39
40
41                ;RESULT COM -1 SHD=0,NEG TEST
42
43
44        003470          PC=E632 ;** ERROR NUMBER 632 **
45
46
47                ;170000 DID NOT NEG TO 10000
48
49
50        003474          PC=E633 ;** ERROR NUMBER 633 **
51
52
53                ;CARRY WENT THROUGH BIT 1
54
55
56        003500          PC=E634 ;** ERROR NUMBER 634 **
57
58
59                ;RESULT COM -1 SHD=0
60
```

```
 0327  PRCST
01
02        003504          PC=E635 ;** ERROR NUMBER 635 **
03
04
05              ;160000 DID NOT NEG TO 20000
06
07
08        003510          PC=E636 ;** ERROR NUMBER 636 **
09
10
11              ;CARRY WENT THROUGH BIT 1,NEG TEST
12
13
14        003514          PC=E637 ;** ERROR NUMBER 637 **
15
16
17              ;RESULT COM -1 SHD=0,NEG TEST
18
```

```
10328  PRCST
01
02        003520          PC=E640 ;** ERROR NUMBER 640 **
03
04
05              ;140000 DID NOT NEG TO 40000
06
07
08        003524          PC=E641 ;** ERROR NUMBER 641 **
09
10
11              ;CARRY WENT THROUGH BIT 0,NEG TEST
12
13
14        003530          PC=E642 ;** ERROR NUMBER 642 **
15
16
17              ;RESULT COM -1 SHD=0,NEG TEST
18
19
20        003534          PC=E643 ;** ERROR NUMBER 643 **
21
22
23              ;100000 DID NOT NEG TO 100000
24
25
26        003540          PC=E644 ;** ERROR NUMBER 644 **
27
28
29              ;CARRY IS THROUGH BIT 0 AND SHOULD COM CRY
30
31
32        003544          PC=E645 ;** ERROR NUMBER 645 **
33
34
35              ;SEE AC2 SHD =0,NEG TEST
36
37
38        003550          PC=E646 ;** ERROR NUMBER 646 **
39
40
41              ;AC2 =0 IT SHD NEGATE TO =0 IN AC3
42
43
44        003554          PC=E647 ;** ERROR NUMBER 647 **
45
46
47              ;NEGATING 0 SHOULD COMPLIMENT CRY 0 TO 1
48
49
50        003557          PC=E650 ;** ERROR NUMBER 650 **
51
52
53              ;NEGATING 0 SHOULD COM CRY 1 TO 0
54
55
56        003562          PC=E651 ;** ERROR NUMBER 651 **
57
58
59              ;SUB -1 FROM -1,FAILED
60
```

```
 0329  PRCST
01
02        003564          PC=E652 ;** ERROR NUMBER 652 **
03
04
05                ;SUBTRACT +1 FROM +1 CHECK FOR 0 RESULT (2ND SUB)
06
07
08        003571          PC=E653 ;** ERROR NUMBER 653 **
09
10
11                ;SUB +1-+1 FAILED SEE AC0
12
13
14        003573          PC=E654 ;** ERROR NUMBER 654 **
15
16
17                ;AC0=1 COMING INTO THIS TEST 1-1 SHOULD=0 RESULT
18                ;0-1 NEGATED-1 SHD=0 INTO AC3
19
```

```
10330  PRCST
01
02        003601          PC=E655 ;** ERROR NUMBER 655 **
03
04
05                ;0 CRY SHD =1 FROM CRYOUT,SUB TEST
06
07
08        003603          PC=E656 ;** ERROR NUMBER 656 **
09
10
11                ;0-1 SHOULD=-1 NEGATED TO AC3
12
13
14        003607          PC=E657 ;** ERROR NUMBER 657 **
15
16
17                ;CRY SHD COMP 1 TO 0
18
19
20        003611          PC=E660 ;** ERROR NUMBER 660 **
21
22
23                ;0-2 NEGATED-2 SHD=0 INTO AC3
24
25
26        003617          PC=E661 ;** ERROR NUMBER 661 **
27
28
29                ;0 CRY SHD =1 FROM CRYOUT,SUB TEST
30
31
32        003621          PC=E662 ;** ERROR NUMBER 662 **
33
34
35                ;0-2 SHOULD=-2 NEGATED TO AC3
36
37
38
39        003625          PC=E663 ;** ERROR NUMBER 663 **
40
41
42                ;CRY SHD COMP 1 TO 0,SUB TEST
43
44
45        003627          PC=E664 ;** ERROR NUMBER 664 **
46
47
48                ;0-4 NEGATED-4 SHD=0 INTO AC3,SUB TEST
49
50
51        003635          PC=E665 ;** ERROR NUMBER 665 **
52
53
54                ;0 CRY SHD =1 FROM CRYOUT,SUB TEST
55
56
57        003637          PC=E666 ;** ERROR NUMBER 666 **
58
59
60                ;0-4 SHOULD=-4 NEGATED TO AC3
```

```
 0331  PRCST
01
02
03        003643          PC=E667 ;** ERROR NUMBER 667 **
04
05
06                ;CRY SHD COMP 1 TO 0,SUB TEST
07
08
09        003645          PC=E670 ;** ERROR NUMBER 670 **
10
11
12                ;AC0=10 COMING INTO THIS TEST 10-10 SHOULD=0 RESULT
13
14
15        003653          PC=E671 ;** ERROR NUMBER 671 **
16
17
18                ;CRY SHD =1 FROM CRYOUT,SUB TEST
19
```

```
!0332  PRCST
01
02        003655          PC=E672 ;** ERROR NUMBER 672 **
03
04
05                ;0-10 SHOULD=-10 NEGATED TO AC3
06
07
08        003661          PC=E673 ;** ERROR NUMBER 673 **
09
10
11                ;CRY SHD COMP 1 TO 0,SUB TEST
12
13
14        003663          PC=E674 ;** ERROR NUMBER 674 **
15
16
17                ;AC0=20 COMING INTO THIS TEST 20-20 SHOULD=0 RESULT
18
19
20        003671          PC=E675 ;** ERROR NUMBER 675 **
21
22
23                ;AC0=20(?) CRY SHD=1
24
25
26        003673          PC=E676 ;** ERROR NUMBER 676 **
27
28
29                ;0-20 SHOULD=-20 NEGATED TO AC3
30
31
32        003677          PC=E677 ;** ERROR NUMBER 677 **
33
34
35                ;CRY SHD COMP 1 TO 0
36
37
38        003701          PC=E700 ;** ERROR NUMBER 700 **
39
40
41                ;AC0=40 COMING INTO THIS TEST 40-40 SHOULD=0 RESULT
42
43
44        003707          PC=E701 ;** ERROR NUMBER 701 **
45
46
47                ;0 CRY SHD =1 FROM CRYOUT,SUB TEST
48
49
50        003711          PC=E702 ;** ERROR NUMBER 702 **
51
52
53                ;0-40 SHOULD=-40 NEGATED TO AC3
54
55
56        003715          PC=E703 ;** ERROR NUMBER 703 **
57
58
59                ;CRY SHD COMP 1 TO 0,SUB TEST
60
```

```
 0333  PRCST
01
02        003717          PC=E704 ;** ERROR NUMBER 704 **
03
04
05                ;AC0=100 COMING INTO THIS TEST 100-100 SHOULD=0 RESULT
06
07
08        003725          PC=E705 ;** ERROR NUMBER 705 **
09
10
11                ;0 CRY SHD =1 FROM CRYOUT
12
13
14        003727          PC=E706 ;** ERROR NUMBER 706 **
15
16
17                ;0-100 SHOULD=-100 NEGATED TO AC3
18
```

```
10334  PRCST
01
02        003733          PC=E707 ;** ERROR NUMBER 707 **
03
04
05                ;CRY SHD COMP 1 TO 0
06
07
08        003735          PC=E710 ;** ERROR NUMBER 710 **
09
10
11                ;AC0=200 COMING INTO THIS TEST 200-200 SHOULD=0 RESULT
12
13
14        003743          PC=E711 ;** ERROR NUMBER 711 **
15
16
17                ;0 CRY SHD =1 FROM CRYOUT,SUB TEST
18
19
20        003745          PC=E712 ;** ERROR NUMBER 712 **
21
22
23                ;0-200 SHOULD=-200 NEGATED TO AC3,SUB TEST
24
25
26        003751          PC=E713 ;** ERROR NUMBER 713 **
27
28
29                ;CRY SHD COMP 1 TO 0,SUB TEST
30
31
32        003753          PC=E714 ;** ERROR NUMBER 714 **
33
34
35                ;AC0=400 COMING INTO THIS TEST 400-400 SHOULD=0 RESULT
36
37
38        003761          PC=E715 ;** ERROR NUMBER 715 **
39
40
41                ;AC0=400(?) CRY SHD=1,SUB TEST
42
43
44        003763          PC=E716 ;** ERROR NUMBER 716 **
45
46
47                ;0-400 SHOULD=-400 NEGATED TO AC3
48
49
50        003767          PC=E717 ;** ERROR NUMBER 717 **
51
52
53                ;CRY SHD COMP 1 TO 0
54
55
56        003771          PC=E720 ;** ERROR NUMBER 720 **
57
58
59                ;AC0=1000 COMING INTO THIS TEST 1000-1000 SHOULD=0 RESULT
60
```

```
 0335  PRCST
01
02        003777          PC=E721 ;** ERROR NUMBER 721 **
03
04
05              ;AC0=1000(?) CRY SHD=1,SUB TEST
06
07
08        004001          PC=E722 ;** ERROR NUMBER 722 **
09
10
11              ;1000-1000 SHD=0 AGAIN
12
13
14        004005          PC=E723 ;** ERROR NUMBER 723 **
15
16
17              ;CRY SHD COMP 1 TO 0
18
```

```
10336  PRCST
01
02        004007          PC=E724 ;** ERROR NUMBER 724 **
03
04
05              ;AC0=2000 COMING INTO THIS TEST 2000-2000 SHOULD=0 RESULT
06
07
08        004015          PC=E725 ;** ERROR NUMBER 725 **
09
10
11              ;0 CRY SHD =1 FROM CRYOUT
12
13
14        004017          PC=E726 ;** ERROR NUMBER 726 **
15
16
17              ;2000-2000 SHD=0 AGAIN
18
19
20        004023          PC=E727 ;** ERROR NUMBER 727 **
21
22
23              ;CRY SHD COMP 1 TO 0
24
25
26        004025          PC=E730 ;** ERROR NUMBER 730 **
27
28
29              ;AC0=4000 COMING INTO THIS TEST 4000-4000 SHOULD=0 RESULT
30
31
32        004033          PC=E731 ;** ERROR NUMBER 731 **
33
34
35              ;0 CRY SHD =1 FROM CRYOUT
36
37
38        004035          PC=E732 ;** ERROR NUMBER 732 **
39
40
41              ;4000-4000 SHD=0 AGAIN
42
43
44        004041          PC=E733 ;** ERROR NUMBER 733 **
45
46
47              ;CRY SHD COMP 1 TO 0
48
49
50        004043          PC=E734 ;** ERROR NUMBER 734 **
51
52
53              ;AC0=10000 COMING INTO THIS TEST 10000-10000 SHOULD=0 RESULT
54
55
56        004051          PC=E735 ;** ERROR NUMBER 735 **
57
58
59              ;0 CRY SHD =1 FROM CRYOUT
60
```

```
 0337  PRCST
01
02        004053          PC=E736 ;** ERROR NUMBER 736 **
03
04
05                ;10000-10000 SHD=0 AGAIN
06
07
08        004057          PC=E737 ;** ERROR NUMBER 737 **
09
10
11                ;CRY SHD COMP 1 TO 0
12
13
14        004061          PC=E740 ;** ERROR NUMBER 740 **
15
16
17                ;AC0=20000 COMING INTO THIS TEST 20000-20000 SHOULD=0 RESULT
18
```

```
10338  PRCST
01
02        004067          PC=E741 ;** ERROR NUMBER 741 **
03
04
05                ;0 CRY SHD =1 FROM CRYOUT
06
07
08        004071          PC=E742 ;** ERROR NUMBER 742 **
09
10
11                ;20000-20000 SHD=0 AGAIN
12
13
14        004075          PC=E743 ;** ERROR NUMBER 743 **
15
16
17                ;CRY SHD COMP 1 TO 0
18
19
20        004077          PC=E744 ;** ERROR NUMBER 744 **
21
22
23                ;AC0=40000 COMING INTO THIS TEST 40000-40000 SHOULD=0 RESULT
24
25
26
27        004105          PC=E745 ;** ERROR NUMBER 745 **
28
29
30                ;0 CRY SHD =1 FROM CRYOUT
31
32
33        004107          PC=E746 ;** ERROR NUMBER 746 **
34
35
36                ;40000-40000 SHD=0 AGAIN
37
38
39        004113          PC=E747 ;** ERROR NUMBER 747 **
40
41
42                ;CRY SHD COMP 1 TO 0
43
44
45        004115          PC=E750 ;** ERROR NUMBER 750 **
46
47
48                ;AC0=100000 COMING INTO THIS TEST 100000-100000 SHOULD=0 RESULT
49
50
51        004123          PC=E751 ;** ERROR NUMBER 751 **
52
53
54                ;AC0=100000(?) CRY SHD=1
55
56
57        004125          PC=E752 ;** ERROR NUMBER 752 **
58
59
60                ;100000-100000 SHD=0 AGAIN
```

```
 0339  PRCST
01
02
03        004133          PC=E753 ;** ERROR NUMBER 753 **
04
05
06                ;CRY SHD COMP 1 TO 0
07
08
09        004135          PC=E754 ;** ERROR NUMBER 754 **
10
11
12                ;DID NOT LOAD AC0 WITH+1
13
14
15        004141          PC=E755 ;** ERROR NUMBER 755 **
16
17
18                ;CHECK AC0 TO REALLY=+1, LDA TEST
19
```

```
 0340  PRCST
01
02        004145          PC=E756 ;** ERROR NUMBER 756 **
03
04
05                ;LDA OF 0 DIST AC1
06
07
08        004151          PC=E757 ;** ERROR NUMBER 757 **
09
10
11                ;LDA OF 0 DIST AC2
12
13
14        004155          PC=E760 ;** ERROR NUMBER 760 **
15
16
17                ;LDA OF 0 DIST AC3
18
19
20        004161          PC=E761 ;** ERROR NUMBER 761 **
21
22
23                ;LDA OF 1 DIST AC0
24
25
26        004165          PC=E762 ;** ERROR NUMBER 762 **
27
28
29                ;LDA OF 1 DIST AC2
30
31
32        004171          PC=E763 ;** ERROR NUMBER 763 **
33
34
35                ;LDA OF 1 DIST AC3
36
37
38        004175          PC=E764 ;** ERROR NUMBER 764 **
39
40
41                ;LDA OF 2 DIST AC0
42
43
44        004201          PC=E765 ;** ERROR NUMBER 765 **
45
46
47                ;LDA OF 2 DIST AC1
48
49
50        004205          PC=E766 ;** ERROR NUMBER 766 **
51
52
53                ;LDA OF 2 DIST AC3
54
55
56        004211          PC=E767 ;** ERROR NUMBER 767 **
57
58
59                ;LDA OF 3 DIST AC0
60
```

```
 0341  PRCST
01
02        004215          PC=E770 ;** ERROR NUMBER 770 **
03
04
05                ;LDA OF 3 DIST AC1
06
07
08        004217          PC=E771 ;** ERROR NUMBER 771 **
09
10
11                ;LDA OF 3 DIST AC2
12
13
14        004223          PC=E772 ;** ERROR NUMBER 772 **
15
16
17                ;SET UP 8 FAILED SEE AC0,S/B= 1
18
```

```
10342  PRCST
01
02        004230          PC=E773 ;** ERROR NUMBER 773 **
03
04
05                ;GET 1 TO AC1
06
07
08        004235          PC=E774 ;** ERROR NUMBER 774 **
09
10
11                ;GET 2 TO AC1
12
13
14        004242          PC=E775 ;** ERROR NUMBER 775 **
15
16
17                ;GET 4 TO AC1
18
19
20        004247          PC=E776 ;** ERROR NUMBER 776 **
21
22
23                ;GET 10 TO AC1
24
25
26        004254          PC=E777 ;** ERROR NUMBER 777 **
27
28
29                ;GET 20 TO AC1
30
31
32
33        004261          PC=E1000          ;** ERROR NUMBER1000 **
34
35                ;GET 40 TO AC1
36
37
38
39        004266          PC=E1001          ;** ERROR NUMBER1001 **
40
41                ;GET 100 TO AC1
42
43
44
45        004273          PC=E1002          ;** ERROR NUMBER1002 **
46
47                ;GET 200 TO AC1
48
49
50
51        004300          PC=E1003          ;** ERROR NUMBER1003 **
52
53                ;GET 400 TO AC1
54
55
56
57        004305          PC=E1004          ;** ERROR NUMBER1004 **
58
59                ;GET 1000 TO AC1
60
```

```
 0343  PRCST
01
02
03       004312          PC=E1005        ;** ERROR NUMBER1005 **
04
05              ;GET 2000 TO AC1
06
07
08
09       004317          PC=E1006        ;** ERROR NUMBER1006 **
10
11              ;GET 4000 TO AC1
12
13
14
15       004324          PC=E1007        ;** ERROR NUMBER1007 **
16
17              ;GET 10000 TO AC1
18
```

```
10344  PRCST
01
02
03       004331          PC=E1010        ;** ERROR NUMBER1010 **
04
05              ;GET 20000 TO AC1
06
07
08
09       004336          PC=E1011        ;** ERROR NUMBER1011 **
10
11              ;GET 40000 TO AC1
12
13
14
15       004342          PC=E1012        ;** ERROR NUMBER1012 **
16
17              ;GET 100000 TO AC1
18
19
20
21       004345          PC=E1013        ;** ERROR NUMBER1013 **
22
23              ;EXAMINE AC0 FOR "SWAP" ERR
24
25
26
27       004350          PC=E1014        ;** ERROR NUMBER1014 **
28
29              ;CRY SHD REMAIN=0,BYTE SWAP TEST
30
31
32
33       004353          PC=E1015        ;** ERROR NUMBER1015 **
34
35              ;CRY SHD REMAIN=1,BYTE SWAP TEST
36
37
38
39       004360          PC=E1016        ;** ERROR NUMBER1016 **
40
41              ;A 1 IN CRY SHD NOT AFFECT "S"
42
43
44
45       004362          PC=E1017        ;** ERROR NUMBER1017 **
46
47              ;"S" BIT 15 TO BIT 7
48
49
50
51       004366          PC=E1020        ;** ERROR NUMBER1020 **
52
53              ;"S" BIT 15 TO 7 FAILED EX AC2
54
55
56
57       004373          PC=E1021        ;** ERROR NUMBER1021 **
58
59              ;"S" A0 IN BIT 15 TO 7 SEE AC2
60
```

```
 0345  PRCST
01
02
03        004375          PC=E1022        ;** ERROR NUMBER1022 **
04
05                ;"S" BIT 14 TO BIT 6
06
07
08
09        004401          PC=E1023        ;** ERROR NUMBER1023 **
10
11                ;"S" BIT 14 TO 6 FAILED EX AC2
12
13
14
15        004406          PC=E1024        ;** ERROR NUMBER1024 **
16
17                ;"S" A0 IN BIT 14 TO 6 SEE AC2
18
```

```
10346  PRCST
01
02
03        004410          PC=E1025        ;** ERROR NUMBER1025 **
04
05                ;"S" BIT 13 TO BIT 5
06
07
08
09        004414          PC=E1026        ;** ERROR NUMBER1026 **
10
11                ;"S" BIT 13 TO 5 FAILED EX AC2
12
13
14
15        004421          PC=E1027        ;** ERROR NUMBER1027 **
17
18                ;"S" A0 IN BIT 13 TO 5 SEE AC2
19
20
21
22        004423          PC=E1030        ;** ERROR NUMBER1030 **
23
24                ;"S" BIT 12 TO BIT 4
25
26
27
28        004427          PC=E1031        ;** ERROR NUMBER1031 **
29
30                ;"S" BIT 12 TO 4 FAILED EX AC2
31
32
33
34        004434          PC=E1032        ;** ERROR NUMBER1032 **
35
36                ;"S" A0 IN BIT 12 TO 4 SEE AC2
37
38
39
40        004436          PC=E1033        ;** ERROR NUMBER1033 **
41
42                ;"S" BIT 11 TO BIT 3
43
44
45
46        004442          PC=E1034        ;** ERROR NUMBER1034 **
47
48                ;"S" BIT 11 TO 3 FAILED EX AC2
49
50
51
52        004447          PC=E1035        ;** ERROR NUMBER1035 **
53
54                ;"S" A0 IN BIT 11 TO 3 SEE AC2
55
56
57
58        004451          PC=E1036        ;** ERROR NUMBER1036 **
59
60                ;"S" BIT 10 TO BIT 2
```

```
 0347  PRCST
01
02
03
04        004455          PC=E1037          ;** ERROR NUMBER1037 **
05
06                ;"S" BIT 10 TO 2 FAILED EX AC2
07
08
09
10        004462          PC=E1040          ;** ERROR NUMBER1040 **
11
12                ;"S" A0 IN BIT 10 TO 2 SEE AC2
13
14
15
16        004464          PC=E1041          ;** ERROR NUMBER1041 **
17
18                ;"S" BIT 9 TO BIT 1
19
```

```
10348  PRCST
01
02
03        004470          PC=E1042          ;** ERROR NUMBER1042 **
04
05                ;"S" BIT 9 TO 1 FAILED EX AC2
06
07
08
09        004475          PC=E1043          ;** ERROR NUMBER1043 **
10
11                ;"S" A0 IN BIT 9 TO 1 SEE AC2
12
13
14
15        004477          PC=E1044          ;** ERROR NUMBER1044 **
16
17                ;"S" BIT 8 TO BIT 0
18
19
20
21        004503          PC=E1045          ;** ERROR NUMBER1045 **
22
23                ;"S" BIT 8 TO 0 FAILED EX AC2
24
25
26
27        004510          PC=E1046          ;** ERROR NUMBER1046 **
28
29                ;"S" A0 IN BIT 8 TO 0 SEE AC2
30
31
32
33        004512          PC=E1047          ;** ERROR NUMBER1047 **
34
35                ;"S" BIT 7 TO BIT 15
36
37
38
39        004516          PC=E1050          ;** ERROR NUMBER1050 **
40
41                ;"S" BIT 7 TO 15 FAILED EX AC2
42
43
44
45        004523          PC=E1051          ;** ERROR NUMBER1051 **
46
47                ;"S" A0 IN BIT 7 TO 15 SEE AC2
48
49
50
51        004525          PC=E1052          ;** ERROR NUMBER1052 **
52
53                ;"S" BIT 6 TO BIT 14
54
55
56
57        004531          PC=E1053          ;** ERROR NUMBER1053 **
58
59                ;"S" BIT 6 TO 14 FAILED EX AC2
60
```

```
 0349  PRCST
01
02
03        004536          PC=E1054        ;** ERROR NUMBER1054 **
04
05                ;"S" A0 IN BIT 6 TO 14 SEE AC2
06
07
08
09        004540          PC=E1055        ;** ERROR NUMBER1055 **
10
11                ;"S" BIT 5 TO BIT 13
12
13
14
15        004544          PC=E1056        ;** ERROR NUMBER1056 **
16
17                ;"S" BIT 5 TO 13 FAILED EX AC2
18
```

```
!0350  PRCST
01
02
03        004551          PC=E1057        ;** ERROR NUMBER1057 **
04
05                ;"S" A0 IN BIT 5 TO 13 SEE AC2
06
07
08
09        004553          PC=E1060        ;** ERROR NUMBER1060 **
10
11                ;"S" BIT 4 TO BIT 12
12
13
14
15        004557          PC=E1061        ;** ERROR NUMBER1061 **
16
17                ;"S" BIT 4 TO 12 FAILED EX AC2
18
19
20
21        004564          PC=E1062        ;** ERROR NUMBER1062 **
22
23                ;"S" A0 IN BIT 4 TO 12 SEE AC2
24
25
26
27        004566          PC=E1063        ;** ERROR NUMBER1063 **
28
29                ;"S" BIT 3 TO BIT 11
30
31
32
33        004572          PC=E1064        ;** ERROR NUMBER1064 **
34
35                ;"S" BIT 3 TO 11 FAILED EX AC2
36
37
38
39        004577          PC=E1065        ;** ERROR NUMBER1065 **
40
41                ;"S" A0 IN BIT 3 TO 11 SEE AC2
42
43
44
45        004601          PC=E1066        ;** ERROR NUMBER1066 **
46
47                ;"S" BIT 2 TO BIT 10
48
49
50
51        004605          PC=E1067        ;** ERROR NUMBER1067 **
52
53                ;"S" BIT 2 TO 10 FAILED EX AC2
54
55
56
57        004612          PC=E1070        ;** ERROR NUMBER1070 **
58
59                ;"S" A0 IN BIT 2 TO 10 SEE AC2
60
```

```
 0351  PRCST
01
02
03        004614          PC=E1071        ;** ERROR NUMBER1071 **
04
05              ;"S" BIT 1 TO BIT 9
06
07
08
09        004620          PC=E1072        ;** ERROR NUMBER1072 **
10
11              ;"S" BIT 1 TO 9 FAILED EX AC2
12
13
14
15        004625          PC=E1073        ;** ERROR NUMBER1073 **
16
17              ;"S" A0 IN BIT 1 TO 9 SEE AC2
18
```

```
10352  PRCST
01
02
03        004627          PC=E1074        ;** ERROR NUMBER1074 **
04
05              ;"S" BIT 0 TO BIT 8
06
07
08
09        004633          PC=E1075        ;** ERROR NUMBER1075 **
10
11              ;"S" BIT 0 TO 8 FAILED EX AC2
12
13
14
15        004637          PC=E1076        ;** ERROR NUMBER1076 **
16
17              ;"S" A0 IN BIT 0 TO 8 SEE AC2
18
19
20
21        004642          PC=E1077        ;** ERROR NUMBER1077 **
22
23              ;AC0 SHD HAVE =-1, NO LOAD TEST
24
25
26
27        004646          PC=E1100        ;** ERROR NUMBER1100 **
28
29              ;AC0 SHD STILL=0'S, NO LOAD TEST
30
31
32
33        004651          PC=E1101        ;** ERROR NUMBER1101 **
34
35              ;AC1 SHD HAVE =-1, NO LOAD TEST
36
37
38
39        004655          PC=E1102        ;** ERROR NUMBER1102 **
40
41              ;AC1 SHD STILL=0'S, NO LOAD TEST
42
43
44
45        004660          PC=E1103        ;** ERROR NUMBER1103 **
46
47              ;AC2 SHD HAVE =-1, NO LOAD TEST
48
49
50
51        004664          PC=E1104        ;** ERROR NUMBER1104 **
52
53              ;AC2 SHD STILL=0'S, NO LOAD TEST
54
55
56
57        004667          PC=E1105        ;** ERROR NUMBER1105 **
58
59              ;AC3 SHD HAVE =-1, NO LOAD TEST
60
```

```
 0353  PRCST
01
02
03        004673          PC=E1106        ;** ERROR NUMBER1106 **
04
05              ;AC3 SHD STILL=0'S, NO LOAD TEST
06
07
08
09        004677          PC=E1107        ;** ERROR NUMBER1107 **
10
11              ;NO LOAD CARRY IR12=1
12
13
14
15        004704          PC=E1110        ;** ERROR NUMBER1110 **
16
17              ;NOT NEWCARRY,NOT LOADCARRY
18
```

```
!0354  PRCST
01
02
03
04        004711          PC=E1111        ;** ERROR NUMBER1111 **
05
06              ;FIRST USE OF STA
07              ;FIRST LDA OF LOC "10"
08
09
10
11        004716          PC=E1112        ;** ERROR NUMBER1112 **
12
13              ;STORE 0'S IN LOC 10 RETRY LDA 0,10
14
15
16
17        004724          PC=E1113        ;** ERROR NUMBER1113 **
18
19              ;CONTINUATION OF LDA TESTS
20              ;ADDRESSING MODE 01 (IR7=1 IR6=0)
21
22
23
24        004732          PC=E1114        ;** ERROR NUMBER1114 **
25
26              ;TEST FORWARD "LDA .+1" +1 OFFSET
27
28
29
30        004740          PC=E1115        ;** ERROR NUMBER1115 **
31
32              ;TEST MODE 01 NEGATIVE OFFSET OF-1
33
34
35
36        004742          PC=E1116        ;** ERROR NUMBER1116 **
37
38              ;LDA 1,.+1 FAILED
39
40
41
42        004744          PC=E1117        ;** ERROR NUMBER1117 **
43
44              ;LDA 2,.+2 FAILED
45
46
47
48        004752          PC=E1120        ;** ERROR NUMBER1120 **
49
50              ;LDA 3,.+3 FAILED
51
52
53
54        004754          PC=E1121        ;** ERROR NUMBER1121 **
55
56              ;LDA .-1 FAILED
57
58
59
60        004756          PC=E1122        ;** ERROR NUMBER1122 **
```

```
 0355  PRCST
01
02                ;LDA .-2 FAILED
03
04
05
06        004764          PC=E1123        ;** ERROR NUMBER1123 **
07
08                ;LDA .-3 FAILED
09
10
11
12        004770          PC=E1124        ;** ERROR NUMBER1124 **
13
14                ;ISZ (0+1) SKIPPED
15
16
17
18        004772          PC=E1125        ;** ERROR NUMBER1125 **
19
20                ;0+1 DID NOT=+1
21
```

```
 0356  PRCST
01
02
03        004777          PC=E1126        ;** ERROR NUMBER1126 **
04
05                ;ISZ CHANGED AC2
06
07
08
09        005002          PC=E1127        ;** ERROR NUMBER1127 **
10
11                ;DSZ SKIPPED 0-1
12
13
14
15        005004          PC=E1130        ;** ERROR NUMBER1130 **
16
17                ;DSZ RESULT NOT=-1
18
19
20
21        005011          PC=E1131        ;** ERROR NUMBER1131 **
22
23                ;DSZ CHANGED AC3
24
25
26
27        005013          PC=E1132        ;** ERROR NUMBER1132 **
28
29                ;ISZ-1 DID NOT SKIP
30
31
32
33        005016          PC=E1133        ;** ERROR NUMBER1133 **
34
35                ;CARRY OUT CHANGED CRY
36
37
38
39        005021          PC=E1134        ;** ERROR NUMBER1134 **
40
41                ;(LOC 10) DID NOT=0 AFTER ISZ
42
43
44
45        005026          PC=E1135        ;** ERROR NUMBER1135 **
46
47                ;ISZ CHANGED AC2
48
49
50
51        005030          PC=E1136        ;** ERROR NUMBER1136 **
52
53                ;DSZ DID NOT SKIP
54
55
56
57        005033          PC=E1137        ;** ERROR NUMBER1137 **
58
59                ;ALUCARRYOUT CHANGED CARRY
60
```

```
 0357  PRCST
01
02
03       005041          PC=E1140        ;** ERROR NUMBER1140 **
04
05               ;DSZ CHANGED AC3
06
07
08
09       005043          PC=E1141        ;** ERROR NUMBER1141 **
10
11               ;JMP DID NOT JMP
12
13
14
15       005053          PC=E1142        ;** ERROR NUMBER1142 **
16
17               ;JMP CHANGED AC3 (JSR?)
18
```

```
10358  PRCST
01
02
03       005055          PC=E1143        ;** ERROR NUMBER1143 **
04
05               ;LOC 10=ADDRS JMP TEST
06
07
08
09       005063          PC=E1144        ;** ERROR NUMBER1144 **
10
11               ;JMP CHNGED AC0 OR AC3
12
13
14
15       005067          PC=E1145        ;** ERROR NUMBER1145 **
16
17               ;JSR DID NOT CHNG PC
18
19
20
21       005077          PC=E1146        ;** ERROR NUMBER1146 **
22
23               ;JSR FAILED TO LOAD AC3
24
25
26
27       005103          PC=E1147        ;** ERROR NUMBER1147 **
28
29               ;FIRST JSR - OFFSET
30               ;JSR DID NOT CHNG PC
31
32
33
34       005115          PC=E1150        ;** ERROR NUMBER1150 **
35
36               ;JSR FAILED TO LOAD AC3
37
38
39
40       005122          PC=E1151        ;** ERROR NUMBER1151 **
41
42               ;LDA 1,0,2 FAILED
43
44
45
46       005130          PC=E1152        ;** ERROR NUMBER1152 **
47
48               ;DIRECT ACCESS 210
49               ;NOT=LDA OR STA
50
51
52
53       005136          PC=E1153        ;** ERROR NUMBER1153 **
54
55               ;STA 0,1,2 FAILED
56
57
58
59       005146          PC=E1154        ;** ERROR NUMBER1154 **
60
```

```
 0359  PRCST
01              ;STA 1,-1,2 FAILED
02
03
04
05        005155          PC=E1155        ;** ERROR NUMBER1155 **
06
07              ;FIRST USE OF INDEX 3
08
09
10
11        005165          PC=E1156        ;** ERROR NUMBER1156 **
12
13              ;LDA DIDN'T GET (HLOC 300)
14
15
16
17        005176          PC=E1157        ;** ERROR NUMBER1157 **
18
19              ;LDA 1,-1,3 FAILED
20
```

```
!0360  PRCST
01
02
03        005201          PC=E1160        ;** ERROR NUMBER1160 **
04
05              ;REFERENCE LOC 20 FAILED
06
07
08
09        005212          PC=E1161        ;** ERROR NUMBER1161 **
10
11              ;FIRST DEFER FAILED
12
13
14
15        005216          PC=E1162        ;** ERROR NUMBER1162 **
16
17              ;AUTO INC OR DEC LOC 10
18
19
20
21        005227          PC=E1163        ;** ERROR NUMBER1163 **
22
23              ;AUTO (@20) FAILED LDA
24
25
26
27        005233          PC=E1164        ;** ERROR NUMBER1164 **
28
29              ;@20 DID NOT +1
30
31
32
33        005246          PC=E1165        ;** ERROR NUMBER1165 **
34
35              ;FIRST AUTO DEC FAILED
36
37
38
39        005303          PC=E1166        ;** ERROR NUMBER1166 **
40
41              ;(30) NOT=207 AUTO DEC
42
43
44
45
46        005313          PC=E1167        ;** ERROR NUMBER1167 **
47
48              ;DEFER DEFERRED FAILED
49
50
51
52        005314          PC=E1170        ;** ERROR NUMBER1170 **
53
54              ;CASCADED DEFERS AUTO FAILED
55
56
57
58        005316          PC=E1171        ;** ERROR NUMBER1171 **
59
60              ;JMP @ FAILED TO
```

```
 0361  PRCST
01
02
03
04        005317          PC=E1172        ;** ERROR NUMBER1172 **
05
06                ;JMP AT ALL
07
08
09
10        005322          PC=E1173        ;** ERROR NUMBER1173 **
11
12                ;@ WAS IGNORED
13
14
15
16        005334          PC=E1174        ;** ERROR NUMBER1174 **
17
18                ;@.+3 MAY BE SKIP ALSO
19
```

```
 0362  PRCST
01
02
03        005346          PC=E1175        ;** ERROR NUMBER1175 **
04
05                ;AC0 OR 3 CHANGED ON A JMP@
06
07
08
09        005365          PC=E1176        ;** ERROR NUMBER1176 **
10
11                ;INDEX "CPB0" DEFERRED
12
13
14
15        005371          PC=E1177        ;** ERROR NUMBER1177 **
16
17                ;BIT 0 CAUSED A DEFER
18
19
20
21        005402          PC=E1200        ;** ERROR NUMBER1200 **
22
23                ;DEFERRED OR AC3 BIT 0=1
24
25
26
27        005406          PC=E1201        ;** ERROR NUMBER1201 **
28
29                ;AC3 SHD = JSR+1.
30
31
32
33        005411          PC=E1202        ;** ERROR NUMBER1202 **
34
35                ;AC0 NOT=0 OR ISZ SKPD
36
37
38
39        005422          PC=E1203        ;** ERROR NUMBER1203 **
40
41                ;AC1-2-OR 3 ALTERED "ISZ"
42
43
44
45        005426          PC=E1204        ;** ERROR NUMBER1204 **
46
47                ;ISZ 10 DID NOT CHNG (10)
48
49
50
51        005437          PC=E1205        ;** ERROR NUMBER1205 **
52
53                ;TEST AGAIN 0'S TO NOT ALTER ONES
54
55
56
57        005443          PC=E1206        ;** ERROR NUMBER1206 **
58
59                ;AC1-2 OR 3, ALTERED BY ISZ
60
```

```
 0363  PRCST
01
02
03        005453          PC=E1207          ;** ERROR NUMBER1207 **
04
05                ;DSZ CHANGED AC2
06
07
08
09        005457          PC=E1210          ;** ERROR NUMBER1210 **
10
11                ;DSZ CHANGED AC0-1 OR 3
12
13
14
15        005462          PC=E1211          ;** ERROR NUMBER1211 **
16
17                ;DSZ DID NOT SKP
18
```

```
!0364  PRCST
01
02
03        005477          PC=E1212          ;** ERROR NUMBER1212 **
04
05                ;AC0 1 2 OR 3 ALTERED BY DSZ
06
07
08
09        005510          PC=E1213          ;** ERROR NUMBER1213 **
10
11                ;DSZ DID NOT CHNG (0)
12
13
14
15        005512          PC=E1214          ;** ERROR NUMBER1214 **
16
17                ;AUTO INC ALTERED AN AC
18
19
20
21        005520          PC=E1215          ;** ERROR NUMBER1215 **
22
23                ;AUTO DEC TO LOC 7
24                ;AC0 OR 1 ALTERED
25
26
27
28        005531          PC=E1216          ;** ERROR NUMBER1216 **
29
30                ;AC2 OR 3 ALTERED
31
32
33
34        005542          PC=E1217          ;** ERROR NUMBER1217 **
35
36                ;AN LDA WITH IR12=1 SHD NOT "NO LOAD"
37                ;CALC=0
38
39
40
41        005553          PC=E1220          ;** ERROR NUMBER1220 **
42
43                ;ISZ/DSZ SEQ FAILED 2
44
45
46
47        005564          PC=E1221          ;** ERROR NUMBER1221 **
48
49                ;ISZ/DSZ SEQ FAILED 4
50
51
52
53        005575          PC=E1222          ;** ERROR NUMBER1222 **
54
55                ;ISZ/DSZ SEQ FAILED 10
56
57
58
59        005606          PC=E1223          ;** ERROR NUMBER1223 **
60
```

```
 0365  PRCST
01                ;ISZ/DSZ SEQ FAILED 20
02
03
04
05        005617          PC=E1224          ;** ERROR NUMBER1224 **
06
07                ;ISZ/DSZ SEQ FAILED 40
08
09
10
11        005630          PC=E1225          ;** ERROR NUMBER1225 **
12
13                ;ISZ/DSZ SEQ FAILED 100
14
15
16
17        005641          PC=E1226          ;** ERROR NUMBER1226 **
18
19                ;ISZ/DSZ SEQ FAILED 200
20
```

```
10366  PRCST
01
02
03        005652          PC=E1227          ;** ERROR NUMBER1227 **
04
05                ;ISZ/DSZ SEQ FAILED 400
06
07
08
09        005663          PC=E1230          ;** ERROR NUMBER1230 **
10
11                ;ISZ/DSZ SEQ FAILED 1000
12
13
14
15        005674          PC=E1231          ;** ERROR NUMBER1231 **
16
17                ;ISZ/DSZ SEQ FAILED 2000
18
19
20
21        005705          PC=E1232          ;** ERROR NUMBER1232 **
22
23                ;ISZ/DSZ SEQ FAILED 4000
24
25
26
27        005716          PC=E1233          ;** ERROR NUMBER1233 **
28
29                ;ISZ/DSZ SEQ FAILED 10K
30
31
32
33        005727          PC=E1234          ;** ERROR NUMBER1234 **
34
35                ;ISZ/DSZ SEQ FAILED 20K
36
37
38
39        005733          PC=E1235          ;** ERROR NUMBER1235 **
40
41                ;ISZ/DSZ SEQ FAILED 40K
42
43
44
45        005742          PC=E1236          ;** ERROR NUMBER1236 **
46
47                ;ISZ/DSZ SEQ FAILED 100K
48
49
50
51        005747          PC=E1237          ;** ERROR NUMBER1237 **
52
53                ;ERROR....SHD HAVE TRAPPED
54
55
56
57        005753          PC=E1240          ;** ERROR NUMBER1240 **
58
59                ;ERROR= TRAP DIDN'T SAVE PC
60
```

```
 0367  PRCST
01
02
03        005760          PC=E1241        ;** ERROR NUMBER1241 **
04
05                ;TRAP DIDN'T JMP @5
06
07
08
09        005764          PC=E1242        ;** ERROR NUMBER1242 **
10
11                ;TRAP DISTURBED AC0
12
13
14
15        005771          PC=E1243        ;** ERROR NUMBER1243 **
16
17                ;TRAP DIDN'T JMP @5
18
```

```
 0368  PRCST
01
02
03        005775          PC=E1244        ;** ERROR NUMBER1244 **
04
05                ;TRAP DISTURBED AC1
06
07
08
09        006002          PC=E1245        ;** ERROR NUMBER1245 **
10
11                ;TRAP DIDN'T JMP @5
12
13
14
15        006006          PC=E1246        ;** ERROR NUMBER1246 **
16
17                ;TRAP DISTURBED AC2
18
19
20
21        006016          PC=E1247        ;** ERROR NUMBER1247 **
22
23                ;TRAP DIDN'T JMP @5
24
25
26
27        006026          PC=E1250        ;** ERROR NUMBER1250 **
28
29                ;TRAP DISTURBED AC3
30
31
32
33        006030          PC=E1251        ;** ERROR NUMBER1251 **
34
35                ;ERROR HALT..DEFER TEST DIDN'T WORK
36
37
38
39        006040          PC=E1252        ;** ERROR NUMBER1252 **
40
41                ;STACK INSTR DIDN'T LOAD AC0
42
43
44
45        006042          PC=E1253        ;** ERROR NUMBER1253 **
46
47                ;CHECK P FOR BIT 0 OFF, STACK TEST
48
49
50
51        006044          PC=E1254        ;** ERROR NUMBER1254 **
52
53                ;STACK ERROR,AC1 SHD= AC0
54
55
56
57        006054          PC=E1255        ;** ERROR NUMBER1255 **
58
59                ;MFSP 1 DISTURBED AC2
60
```

```
 0369  PRCST
01
02
03        006056          PC=E1256        ;** ERROR NUMBER1256 **
04
05                ;MFSP 1 DISTURBED AC3
06
07
08
09        006060          PC=E1257        ;** ERROR NUMBER1257 **
10
11                ;STACK ERROR,AC2 SHD= AC1
12
13
14
15        006070          PC=E1260        ;** ERROR NUMBER1260 **
16
17                ;MFSP 2 DISTURBED AC3
18
```

```
 0370  PRCST
01
02
03        006072          PC=E1261        ;** ERROR NUMBER1261 **
04
05                ;MFSP 2 DISTURBED AC0
06
07
08
09        006074          PC=E1262        ;** ERROR NUMBER1262 **
10
11                ;STACK ERROR,AC3 SHD= AC2
12
13
14
15        006104          PC=E1263        ;** ERROR NUMBER1263 **
16
17                ;MFSP 3 DISTURBED AC0
18
19
20
21        006106          PC=E1264        ;** ERROR NUMBER1264 **
22
23                ;MFSP 3 DISTURBED AC1
24
25
26
27        006110          PC=E1265        ;** ERROR NUMBER1265 **
28
29                ;STACK ERROR,AC0 SHD= AC3
30
31
32
33        006120          PC=E1266        ;** ERROR NUMBER1266 **
34
35                ;MFSP 0 DISTURBED AC1
36
37
38
39        006122          PC=E1267        ;** ERROR NUMBER1267 **
40
41                ;MFSP 0 DISTURBED AC2
42
43
44
45        006124          PC=E1270        ;** ERROR NUMBER1270 **
46
47                ;STACK ERROR,AC1 SHD= AC0
48
49
50
51        006134          PC=E1271        ;** ERROR NUMBER1271 **
52
53                ;MFSP 1 DISTURBED AC2
54
55
56
57        006136          PC=E1272        ;** ERROR NUMBER1272 **
58
59                ;MFFP 1 DISTURBED AC3
60
```

```
 0371  PRCST
01
02
03       006140          PC=E1273        ;** ERROR NUMBER1273 **
04
05              ;STACK ERROR,AC2 SHD= AC1
06
07
08
09       006150          PC=E1274        ;** ERROR NUMBER1274 **
10
11              ;MFSP 2 DISTURBED AC3
12
13
14
15       006152          PC=E1275        ;** ERROR NUMBER1275 **
16
17              ;MFFP 2 DISTURBED AC0
18
```

```
10372  PRCST
01
02
03       006154          PC=E1276        ;** ERROR NUMBER1276 **
04
05              ;STACK ERROR,AC3 SHD= AC2
06
07
08
09       006164          PC=E1277        ;** ERROR NUMBER1277 **
10
11              ;MFSP 3 DISTURBED AC0
12
13
14
15       006166          PC=E1300        ;** ERROR NUMBER1300 **
16
17              ;MFFP 3 DISTURBED AC1
18
19
20
21       006170          PC=E1301        ;** ERROR NUMBER1301 **
22
23              ;STACK ERROR,AC0 SHD= AC3
24
25
26
27       006177          PC=E1302        ;** ERROR NUMBER1302 **
28
29              ;MFSP 0 DISTURBED AC1
30
31
32
33       006204          PC=E1303        ;** ERROR NUMBER1303 **
34
35              ;MFFP 0 DISTURBED AC2
36
37
38
39       006221          PC=E1304        ;** ERROR NUMBER1304 **
40
41              ;AC3/FP NOT= 0'S
42
43
44
45       006231          PC=E1305        ;** ERROR NUMBER1305 **
46
47              ;WAS NOT =-1 SP/SF INTERFERRANCE
48
49
50
51       006243          PC=E1306        ;** ERROR NUMBER1306 **
52
53              ;POP INSTR DIDN'T LOAD AC0
54
55
56
57       006245          PC=E1307        ;** ERROR NUMBER1307 **
58
59              ;POP DIDN'T LOAD AC1 WITH -1
60
```

```
 0373  PRCST
01
02
03        006251          PC=E1310        ;** ERROR NUMBER1310 **
04
05                ;PSH SKIPPED
06
07
08
09        006260          PC=E1311        ;** ERROR NUMBER1311 **
10
11                ;PSH OVERFLOWED
12
13
14
15        006263          PC=E1312        ;** ERROR NUMBER1312 **
16
17                ;PSH DIDN'T WORK
18
```

```
10374  PRCST
01
02
03        006272          PC=E1313        ;** ERROR NUMBER1313 **
04
05                ;ERROR..AC0 NOT EQUAL TO AC1, PSH/POP TESTING
06
07
08
09        006275          PC=E1314        ;** ERROR NUMBER1314 **
10
11                ;STACK OVERFLOW ERROR
12
13
14
15        006304          PC=E1315        ;** ERROR NUMBER1315 **
16
17                ;ERROR..AC1 NOT EQUAL TO AC2, PSH/POP TESTING
18
19
20
21        006307          PC=E1316        ;** ERROR NUMBER1316 **
22
23                ;STACK OVERFLOW ERROR
24
25
26
27        006316          PC=E1317        ;** ERROR NUMBER1317 **
28
29                ;ERROR..AC2 NOT EQUAL TO AC3
30
31
32
33        006321          PC=E1320        ;** ERROR NUMBER1320 **
34
35                ;STACK OVERFLOW ERROR
36
37
38
39        006327          PC=E1321        ;** ERROR NUMBER1321 **
40
41                ;ERROR..AC3 NOT EQUAL TO AC0
42
43
44
45        006334          PC=E1322        ;** ERROR NUMBER1322 **
46
47                ;STACK OVERFLOW ERROR
48
49
50
51        006336          PC=E1323        ;** ERROR NUMBER1323 **
52
53                ;TEST PSH OVER BOUNDARY CAUSES STACK OVERFLOW ERROR
54
55
56
57        006352          PC=E1324        ;** ERROR NUMBER1324 **
58
59                ;PSH DIDN'T COMPLETE STORE OF AC3
60
```

```
 0375  PRCST
01
02
03        006361          PC=E1325        ;** ERROR NUMBER1325 **
04
05              ;OVERFLOW DID NOT RESET ION
06
07
08
09        006366          PC=E1326        ;** ERROR NUMBER1326 **
10
11              ;TEST TRAP WITH OVFLO SET .
12              ;SHDN'T GET TO HERE
13
14
15
16        006372          PC=E1327        ;** ERROR NUMBER1327 **
17
18              ;PC SAVE ERROR--TRAP INSTR.
19
```

```
 0376  PRCST
01
02
03
04        006402          PC=E1330        ;** ERROR NUMBER1330 **
05
06              ;INTERRUPT FROM OVERFLO LOST?
07
08
09
10        006406          PC=E1331        ;** ERROR NUMBER1331 **
11
12              ;OVFLO DIDN'T RESET ION
13
14
15
16        006421          PC=E1332        ;** ERROR NUMBER1332 **
17
18              ;PSH DIDN'T INC SP
19
20
21
22        006425          PC=E1333        ;** ERROR NUMBER1333 **
23
24              ;SP NOT DECREMENTED BY POP
25
26
27
28        006430          PC=E1334        ;** ERROR NUMBER1334 **
29
30              ;SAVE CHANGED THE CARRY BIT...
31
32
33
34        006433          PC=E1335        ;** ERROR NUMBER1335 **
35
36              ;STACK POINTER NOT = AC3 AFTER SAVE
37
38
39
40        006436          PC=E1336        ;** ERROR NUMBER1336 **
41
42              ;FP NOT=AC3
43
44
45
46        006442          PC=E1337        ;** ERROR NUMBER1337 **
47
48              ;AC1 NOT = ORIG. SP + 5 ....ERROR HALT
49
50
51
52        006446          PC=E1340        ;** ERROR NUMBER1340 **
53
54              ;SAVE INSTR DIDN'T SAVE THE CRY
55
56
57
58        006451          PC=E1341        ;** ERROR NUMBER1341 **
59
60              ;SAVE DIDN'T STORE AC3 CORRECTLY
```

```
 0377  PRCST
01
02
03
04        006455          PC=E1342        ;** ERROR NUMBER1342 **
05
06                ;SAVE DIDN'T STORE FP CORRECTLY
07
08
09
10        006461          PC=E1343        ;** ERROR NUMBER1343 **
11
12                ;AC0 NOT = 0, SAVE TEST
13
14
15
16        006500          PC=E1344        ;** ERROR NUMBER1344 **
17
18                ;AC1 NOT SAVED CORRECTLY
19
```

```
!0378  PRCST
01
02
03        006501          PC=E1345        ;** ERROR NUMBER1345 **
04
05                ;AC2 NOT = 2, SAVE TEST
06
07
08
09        006505          PC=E1346        ;** ERROR NUMBER1346 **
10
11                ;RETURN INSTRUCTION
12                ;ERROR HALT,SHDN'T GET HERE
13
14
15
16        006510          PC=E1347        ;** ERROR NUMBER1347 **
17
18                ;IF RTN INSTR. WORKED
19
20
21
22        006513          PC=E1350        ;** ERROR NUMBER1350 **
23
24                ;RETURN INSTR CHANGED CARRY OF 0
25
26
27
28        006516          PC=E1351        ;** ERROR NUMBER1351 **
29
30                ;AC2 NOT CORRECT AFTER RETURN
31
32
33
34        006522          PC=E1352        ;** ERROR NUMBER1352 **
35
36                ;AC1 NOT = 10 AFTER RETURN
37
38
39
40        006525          PC=E1353        ;** ERROR NUMBER1353 **
41
42                ;AC0 NOT=100 AFTER RETURN
43
44
45
46        006530          PC=E1354        ;** ERROR NUMBER1354 **
47
48                ;SP NOT =400, RETURN TEST
49
50
51
52        006543          PC=E1355        ;** ERROR NUMBER1355 **
53
54                ;FP NOT = 400 AFTER RETURN
55
56
57
58        006544          PC=E1356        ;** ERROR NUMBER1356 **
59
60                ;SAVED FP NOT = CURRENT FP
```

```
 0379  PRCST
01
02
03
04        006554          PC=E1357        ;** ERROR NUMBER1357 **
05
06                ;FORCE OVER FLOW/INTERRUPT
07                ;IF INT. WORKS SHDN'T GET HERE
08
09
10
11        006561          PC=E1360        ;** ERROR NUMBER1360 **
12
13                ;FORCE OVER FLOW/INTERRUPT
14                ;IF INT. WORKS SHDN'T GET HERE
15
16
17
18        006565          PC=E1361        ;** ERROR NUMBER1361 **
19
20                ;ILLEGAL RETURN ADDRESS..HALT
21
```

```
10380  PRCST
01
02
03        006575          PC=E1362        ;** ERROR NUMBER1362 **
04
05                ;SHDN'T GET HERE IF INT. OCCURRED
06
07
08
09        006601          PC=E1363        ;** ERROR NUMBER1363 **
10
11                ;ION NOT RESET AFTER OVFLO
12
13
14
15        006606          PC=E1364        ;** ERROR NUMBER1364 **
16
17                ;ILLEGAL OVERFLOW -STACK
18
19
20
21        006614          PC=E1365        ;** ERROR NUMBER1365 **
22
23                ;SHOULD LOAD ZEROS IN
24                ;UPPER HALF.
25
26
27
28        006622          PC=E1366        ;** ERROR NUMBER1366 **
29
30                ;THE "LDB" SHOULD LOAD ZEROS
31                ;IN UPPER HALF.
32
33
34
35        006631          PC=E1367        ;** ERROR NUMBER1367 **
36
37                ;"LDB" FAILED.  C(AC0) WAS
38                ;NOT CHANGED BY THE "LDB"
39
40
41
42        006640          PC=E1370        ;** ERROR NUMBER1370 **
43
44                ;THERE SHOULD NEVER BE A
45                ;(1) IN THE SIGN BIT OF C(ACD)
46                ;AFTER A LDB INSTRUCTION.
47
48
49
50        006646          PC=E1371        ;** ERROR NUMBER1371 **
51
52                ;THERE SHOULD NEVER BE A
53                ;(1) IN THE SIGN BIT OF C(ACD)
54                ;AFTER A LDB INSTRUCTION.
55
56
57
58
59        006655          PC=E1372        ;** ERROR NUMBER1372 **
60
```

```
 0381  PRCST
01                ;LDB FAILED.
02
03
04
05        006664          PC=E1373          ;** ERROR NUMBER1373 **
06
07                ;LDB SHOULD LOAD TO
08                ;C(AC0) THE LOWER (BITS 8-15)
09                ;BYTE OF LOCATION C114+1.
10
11
12
13        006673          PC=E1374          ;** ERROR NUMBER1374 **
14
15                ;TEST LOADING A BYTE
16                ;FROM MEMORY BITS 8-15.
17
```

```
 0382  PRCST
01
02
03        006702          PC=E1375          ;** ERROR NUMBER1375 **
04
05                ;TEST LOADING A BYTE
06                ;FROM MEMORY BITS 8-15.
07
08
09
10        006711          PC=E1376          ;** ERROR NUMBER1376 **
11
12                ;TEST LOADING A BYTE
13                ;FROM MEMORY BITS 8-15.
14
15
16
17        006720          PC=E1377          ;** ERROR NUMBER1377 **
18
19                ;TEST LOADING A BYTE
20                ;FROM MEMORY BITS 8-15.
21
22
23
24        006727          PC=E1400          ;** ERROR NUMBER1400 **
25
26                ;TEST LOADING A BYTE
27                ;FROM MEMORY BITS 8-15.
28
29
30
31        006736          PC=E1401          ;** ERROR NUMBER1401 **
32
33                ;TEST LOADING A BYTE
34                ;FROM MEMORY BITS 8-15.
35
36
37
38        006745          PC=E1402          ;** ERROR NUMBER1402 **
39
40                ;TEST LOADING A BYTE
41                ;FROM MEMORY BITS 8-15.
42
43
44
45        006754          PC=E1403          ;** ERROR NUMBER1403 **
46
47                ;TEST LOADING A BYTE
48                ;FROM MEMORY BITS 8-15.
49
50
51
52        006763          PC=E1404          ;** ERROR NUMBER1404 **
53
54                ;TEST LOADING A BYTE
55                ;FROM MEMORY BITS 8-15.
56
57
58
59        006772          PC=E1405          ;** ERROR NUMBER1405 **
60
```

```
 0383  PRCST
01              ;TEST LOADING A BYTE
02              ;FROM MEMORY BITS 8-15.
03
04
05
06        007006          PC=E1406          ;** ERROR NUMBER1406 **
07
08              ;TEST LOADING A BYTE
09              ;FROM MEMORY BITS 8-15.
10
11
12
13        007022          PC=E1407          ;** ERROR NUMBER1407 **
14
15              ;TEST LOADING A BYTE
16              ;FROM MEMORY BITS 8-15.
17
```

```
10384  PRCST
01
02
03        007036          PC=E1410          ;** ERROR NUMBER1410 **
04
05              ;TEST LOADING A BYTE
06              ;FROM MEMORY BITS 0-7.
07
08
09
10        007052          PC=E1411          ;** ERROR NUMBER1411 **
11
12              ;TEST LOADING A BYTE
13              ;FROM MEMORY BITS 0-7.
14
15
16
17        007066          PC=E1412          ;** ERROR NUMBER1412 **
18
19              ;TEST LOADING A BYTE
20              ;FROM MEMORY BITS 0-7.
21
22
23
24        007102          PC=E1413          ;** ERROR NUMBER1413 **
25
26              ;TEST LOADING A BYTE
27              ;FROM MEMORY BITS 0-7.
28
29
30
31        007116          PC=E1414          ;** ERROR NUMBER1414 **
32
33              ;TEST LOADING A BYTE
34              ;FROM MEMORY BITS 0-7.
35
36
37
38        007132          PC=E1415          ;** ERROR NUMBER1415 **
39
40              ;TEST LOADING A BYTE
41              ;FROM MEMORY BITS 0-7.
42
43
44
45        007146          PC=E1416          ;** ERROR NUMBER1416 **
46
47              ;TEST LOADING A BYTE
48              ;FROM MEMORY BITS 0-7.
49
50
51
52        007162          PC=E1417          ;** ERROR NUMBER1417 **
53
54              ;TEST LOADING A BYTE
55              ;FROM MEMORY BITS 0-7.
56
57
58
59        007176          PC=E1420          ;** ERROR NUMBER1420 **
60
```

```
 0385  PRCST
01                ;TEST LOADING A BYTE
02                ;FROM MEMORY BITS 0-7.
03
04
05
06        007212          PC=E1421          ;** ERROR NUMBER1421 **
07
08                ;TEST LOADING A BYTE
09                ;FROM MEMORY BITS 0-7.
10
11
12
13        007220          PC=E1422          ;** ERROR NUMBER1422 **
14
15                ;TEST LOADING A BYTE
16                ;FROM MEMORY BITS 0-7.
17
```

```
 0386  PRCST
01
02
03        007227          PC=E1423          ;** ERROR NUMBER1423 **
04
05                ;TEST LOADING A BYTE
06                ;FROM MEMORY BITS 0-7.
07
08
09
10        007235          PC=E1424          ;** ERROR NUMBER1424 **
11
12                ;STB CHANGED THE C(CARRY).
13
14
15
16        007244          PC=E1425          ;** ERROR NUMBER1425 **
17
18                ;STB CHANGED THE CONTENTS OF CARRY.
19
20
21
22        007257          PC=E1426          ;** ERROR NUMBER1426 **
23
24                ;"STB" SHOULD STORE ZEROS,
25                ;FROM AC0, INTO MEMORY
26                ;BITS 8-15.
27
28
29
30        007272          PC=E1427          ;** ERROR NUMBER1427 **
31
32                ;"STB" SHOULD STORE ZEROS.
33                ;FROM AC0, INTO MEMORY
34                ;BITS 0-7.
35
36
37
38        007304          PC=E1430          ;** ERROR NUMBER1430 **
39
40                ;"STB" SHOULD STORE ZEROS
41                ;IN MEMORY BITS 0-7.
42                ;C(MEMORY) HOWEVER WAS
43                ;NOT CHANGED.
44
45
46
47        007332          PC=E1431          ;** ERROR NUMBER1431 **
48
49                ;"MUL" FAILED. AC0 S/B =177777
50
51
52
53        007340          PC=E1432          ;** ERROR NUMBER1432 **
54
55                ;"MUL" FAILED. AC1 S/B =177777
56
57
58
59        007346          PC=E1433          ;** ERROR NUMBER1433 **
60
```

```
 0387  PRCST
01                ;AC0 SHOULD BE 0, "MUL" FAILED
02
03
04
05        007354          PC=E1434          ;** ERROR NUMBER1434 **
06
07                ;AC1 NOW S/B =0. "MUL" FAILED
08
09
10
11        007362          PC=E1435          ;** ERROR NUMBER1435 **
12
13                ;AC0(15) MUST BE 0, "MUL" FAILED.
14
```

```
!0388  PRCST
01
02
03        007371          PC=E1436          ;** ERROR NUMBER1436 **
04
05                ;AC1 BITS 0-14 MUST BE ZERO, "MUL" FAILED.
06
07
08
09        007400          PC=E1437          ;** ERROR NUMBER1437 **
10
11                ;AC1(15) MUST BE 0, "MUL" FAILED
12
13
14
15        007407          PC=E1440          ;** ERROR NUMBER1440 **
16
17                ;AC0(15) MUST BE 1, "MUL" FAILED
18
19
20
21        007417          PC=E1441          ;** ERROR NUMBER1441 **
22
23                ;"MUL" FAILED
24
25
26
27        007433          PC=E1442          ;** ERROR NUMBER1442 **
28
29                ;"MUL" FAILED.
30
31
32
33        007441          PC=E1443          ;** ERROR NUMBER1443 **
34
35                ;AC0 BITS 1-15 NOT ZERO, "MULS"FAILED
36
37
38
39        007447          PC=E1444          ;** ERROR NUMBER1444 **
40
41                ;SIGN BIT AC0(0) IS NOT 0, "MULS" FAILED
42
43
44
45        007455          PC=E1445          ;** ERROR NUMBER1445 **
46
47                ;AC1 SHOULD BE 0, "MULS" FAILED
48
49
50
51        007463          PC=E1446          ;** ERROR NUMBER1446 **
52
53                ;SIGN BIT AC0(0) MUST BE 1
54                ;"MULS" FAILED
55
56
57
58        007471          PC=E1447          ;** ERROR NUMBER1447 **
59
60                ;"MULS" FAILED
```

```
 0389  PRCST
01
02
03
04       007500          PC=E1450        ;** ERROR NUMBER1450 **
05
06              ;"MULS" FAILED
07
08
09
10       007506          PC=E1451        ;** ERROR NUMBER1451 **
11
12              ;"MULS" FAILED
13
14
15
16       007516          PC=E1452        ;** ERROR NUMBER1452 **
17
18              ;"MULS" FAILED
19
```

```
 0390  PRCST
01
02
03       007526          PC=E1453        ;** ERROR NUMBER1453 **
04
05              ;"MULS" FAILED
06
07
08
09       007537          PC=E1454        ;** ERROR NUMBER1454 **
10
11              ;"MULS" FAILED
12
13                      —
14
15       007550          PC=E1455        ;** ERROR NUMBER1455 **
16
17              ;"MULS" FAILED
18
19
20
21       007561          PC=E1456        ;** ERROR NUMBER1456 **
22
23              ;"MULS" FAILED
24
25
26
27       007571          PC=E1457        ;** ERROR NUMBER1457 **
28
29              ;SIGN BIT AC0(0) MUST BE 0; "MULS" FAILED
30
31
32
33       007601          PC=E1460        ;** ERROR NUMBER1460 **
34
35              ;AC0 MUST BE 0; "MULS" FAILED.
36
37
38
39       007613          PC=E1461        ;** ERROR NUMBER1461 **
40
41              ;"MULS" FAILED
42
43
44
45       007622          PC=E1462        ;** ERROR NUMBER1462 **
46
47              ;THE SIGN OF RESULT MUST BE
48              ;+VE, AC0(0) MUST BE 0. "MULS" FAILED
49
50
51
52       007634          PC=E1463        ;** ERROR NUMBER1463 **
53
54              ;"MULS" FAILED
55
56
57
58       007646          PC=E1464        ;** ERROR NUMBER1464 **
59
60              ;"MULS" FAILED
```

```
 0391  PRCST
01
02
03
04        007660          PC=E1465        ;** ERROR NUMBER1465 **
05
06              ;"MULS" FAILED
07
08
09
10        007666          PC=E1466        ;** ERROR NUMBER1466 **
11
12              ;FOR AC0=AC2=0, OVERFLOW MUST
13              ;OCCUR AND CARRY MUST BE SET, "DIV" FAILED
14
15
16
17        007674          PC=E1467        ;** ERROR NUMBER1467 **
18
19              ;AC0 MUST NOT CHANGE, "DIV" FAILED
20
```

```
 0392  PRCST
01
02
03        007702          PC=E1470        ;** ERROR NUMBER1470 **
04
05              ;AC1 MUST NOT CHANGE FOR
06              ;OVERFLOW CONDITION, "DIV" FAILED
07
08
09
10        007710          PC=E1471        ;** ERROR NUMBER1471 **
11
12              ;FOR AC0=AC2=177777, OVERFLOW
13              ;MUST OCCUR, CARRY MUST BE SET. "DIV" FAILED
14
15
16
17        007716          PC=E1472        ;** ERROR NUMBER1472 **
18
19              ;AC0 MUST NOT CHANGE, "DIV" FAILED
20
21
22
23        007724          PC=E1473        ;** ERROR NUMBER1473 **
24
25              ;AC1 MUST NOT CHANGE FOR
26              ;OVERFLOW CONDITION. "DIV" FAILED
27
28
29
30        007732          PC=E1474        ;** ERROR NUMBER1474 **
31
32              ;FOR AC0>AC2, OVERFLOW MUST OCCUR
33              ;CARRY MUST BE SET, "DIV" FAILED
34
35
36
37        007740          PC=E1475        ;** ERROR NUMBER1475 **
38
39              ;AC1 MUST NOT CHANGE FOR
40              ;OVERFLOW CONDITION, "DIV" FAILED
41
42
43
44        007746          PC=E1476        ;** ERROR NUMBER1476 **
45
46              ;AC0 MUST NOT CHANGE FOR
47              ;OVERFLOW, "DIV" FAILED
48
49
50
51        007754          PC=E1477        ;** ERROR NUMBER1477 **
52
53              ;PROPER DIVIDE, CARRY BIT
54              ;MUST BE RESET
55
56
57
58        007764          PC=E1500        ;** ERROR NUMBER1500 **
59
60              ;"DIV" FAILED.
```

```
 0393  PRCST
01
02
03
04        007773          PC=E1501        ;** ERROR NUMBER1501 **
05
06                ;"DIV" FAILED.
07
08
09
10        010002    .     PC=E1502        ;** ERROR NUMBER1502 **
11
12                ;"DIV" FAILED.
13
14
15
16        010010          PC=E1503        ;** ERROR NUMBER1503 **
17
18                ;AC1 MUST BE 0, "DIV" FAILED
19
```

```
10394  PRCST
01
02
03        010016          PC=E1504        ;** ERROR NUMBER1504 **
04
05                ;FOR PROPER DIVIDE CARRY BIT
06                ;MUST BE CLEARED.
07
08
09
10        010024          PC=E1505        ;** ERROR NUMBER1505 **
11
12                ;AC0 MUST BE 0, "DIV" FAILED
13
14
15
16        010032          PC=E1506        ;** ERROR NUMBER1506 **
17
18                ;"DIV" FAILED
19
20
21
22        010042          PC=E1507        ;** ERROR NUMBER1507 **
23
24                ;FOR PROPER DIVIDE, CARRY BIT
25                ;MUST BE CLEARED.
26
27
28
29        010053          PC=E1510        ;** ERROR NUMBER1510 **
30
31                ;"DIV" FAILED
32
33
34
35        010065          PC=E1511        ;** ERROR NUMBER1511 **
36
37                ;"DIV" FAILED
38
39
40
41        010075          PC=E1512        ;** ERROR NUMBER1512 **
42
43                ;FOR PROPER DIVIDE,
44                ;CARRY MUST BE CLEARED.
45
46
47
48        010106          PC=E1513        ;** ERROR NUMBER1513 **
49
50                ;"DIV" FAILED
51
52
53
54        010121          PC=E1514        ;** ERROR NUMBER1514 **
55
56                ;"DIV" FAILED
57
58
59
60        010130          PC=E1515        ;** ERROR NUMBER1515 **
```

```
 0395  PRCST
01
02              ;OVERFLOW MUST OCCUR FOR
03              ;AC0=AC2, "DIVS" FAILED
04
05
06
07        010136          PC=E1516        ;** ERROR NUMBER1516 **
08
09              ;OVERFLOW MUST OCCUR, MAGNITUDE
10              ;OF AC1 TOO LARGE, "DIVS" FAILED
11
12
13
14        010150          PC=E1517        ;** ERROR NUMBER1517 **
15
16              ;FOR PROPER DIVIDE, CARRY BIT
17              ;MUST BE RESET.
18
```

```
10396  PRCST
01
02
03        010163          PC=E1520        ;** ERROR NUMBER1520 **
04
05              ;"DIVS" FAILED
06
07
08
09        010177          PC=E1521        ;** ERROR NUMBER1521 **
10
11              ;"DIVS" FAILED
12
13
14
15        010211          PC=E1522        ;** ERROR NUMBER1522 **
16
17              ;FOR PROPER DIVIDE CARRY BIT
18              ;MUST BE RESET.
19
20
21
22        010224          PC=E1523        ;** ERROR NUMBER1523 **
23
24              ;"DIVS" FAILED
25
26
27
28        010240          PC=E1524        ;** ERROR NUMBER1524 **
29
30              ;"DIVS" FAILED
31
32
33
34        010252          PC=E1525        ;** ERROR NUMBER1525 **
35
36              ;FOR GOOD DIVIDE, CARRY BIT MUST
37              ;BE RESET.
38
39
40
41        010265          PC=E1526        ;** ERROR NUMBER1526 **
42
43              ;"DIVS" FAILED
44
45
46
47        010301          PC=E1527        ;** ERROR NUMBER1527 **
48
49              ;"DIVS" FAILED
50
51
52
53        010314          PC=E1530        ;** ERROR NUMBER1530 **
54
55              ;"DIVS" FAILED
56
57
58
59        010330          PC=E1531        ;** ERROR NUMBER1531 **
60
```

```
 0397  PRCST
01              ;"DIVS" FAILED
02
03
04
05        010342          PC=E1532        ;** ERROR NUMBER1532 **
06
07              ;FOR PROPER DIVIDE, CARRY BIT
08              ;MUST BE RESET.
09
10                .
11
12        010350          PC=E1533        ;** ERROR NUMBER1533 **
13
14              ;"DIVS" FAILED
15
```

```
 0398  PRCST
01
02
03        010356          PC=E1534        ;** ERROR NUMBER1534 **
04
05              ;AC0 SHOULD BE ZERO (REMAINDER), "DIVS" FAILED
06
07
08
09        010365          PC=E1535        ;** ERROR NUMBER1535 **
10
11              ;AC1 SHOULD BE 40000 (QUOTIENT), "DIVS" FAILED
12
13
14
15        010417          PC=E1536        ;** ERROR NUMBER1536 **
16
17              ;ION SHD=0 NO SKIP ON BUSY NON ZERO
18
19
20
21        010422          PC=E1537        ;** ERROR NUMBER1537 **
22
23              ;POWER LOW SHD=0 NO SKIP ON DONE NON ZERO
24
25
26
27        010424          PC=E1540        ;** ERROR NUMBER1540 **
28
29              ;SKPBZ TO SKP ION=0 FIRST IO SKP TRUE
30
31
32
33        010426          PC=E1541        ;** ERROR NUMBER1541 **
34
35              ;TEST SKPDZ POWER LOW SHD=0
36
37
38
39        010435          PC=E1542        ;** ERROR NUMBER1542 **
40
41              ;NIO SHD NEITHER SKP NOR ALTER ANY AC'S
42
43
44
45        010440          PC=E1543        ;** ERROR NUMBER1543 **
46
47              ;NIO CHANGED AN AC
48
49
50
51        010447          PC=E1544        ;** ERROR NUMBER1544 **
52
53              ;DIA SKPD OIR AC1 NOT =AC2
54
55
56
57        010451          PC=E1545        ;** ERROR NUMBER1545 **
58
59              ;AC1,2 OR 3 ALTERED - DIA TEST
60
```

```
 0399  PRCST
01
02
03        010453          PC=E1546        ;** ERROR NUMBER1546 **
04
05                ;AC0 NOT LOADED - DIA TEST
06
07
08
09        010462          PC=E1547        ;** ERROR NUMBER1547 **
10
11                ;DIA SKPD OR AC0 NOT =AC2
12
13
14
15        010464          PC=E1550        ;** ERROR NUMBER1550 **
16
17                ;AC0,2 OR 3 ALTERED - DIA TEST
18
```

```
10400  PRCST
01
02
03        010466          PC=E1551        ;** ERROR NUMBER1551 **
04
05                ;AC1 NOT LOADED - DIA TEST
06
07
08
09        010475          PC=E1552        ;** ERROR NUMBER1552 **
10
11                ;DIA SKPD OR AC3 NOT =AC0
12
13
14
15        010477          PC=E1553        ;** ERROR NUMBER1553 **
16
17                ;AC3,0 OR 1 ALTERED
18
19
20
21        010501          PC=E1554        ;** ERROR NUMBER1554 **
22
23                ;AC2 NOT LOADED
24
25
26
27        010510          PC=E1555        ;** ERROR NUMBER1555 **
28
29                ;DIA SKPD OR AC0 NOT =AC1
30
31
32
33        010512          PC=E1556        ;** ERROR NUMBER1556 **
34
35                ;AC0,1 OR 2 ALTERED
36
37
38
39        010514          PC=E1557        ;** ERROR NUMBER1557 **
40
41                ;AC3 NOT LOADED
42
43
44
45        010523          PC=E1560        ;** ERROR NUMBER1560 **
46
47                ;DIB SKPD OR AC1 NOT = AC2
48
49
50
51        010525          PC=E1561        ;** ERROR NUMBER1561 **
52
53                ;AC1,2 OR 3 ALTERED
54
55
56
57        010527          PC=E1562        ;** ERROR NUMBER1562 **
58
59                ;AC0 NOT LOADED
60
```

```
 0401  PRCST
01
02
03       010536          PC=E1563        ;** ERROR NUMBER1563 **
04
05               ;DIB SKPD OR AC0 NOT = AC3
06
07
08
09       010540          PC=E1564        ;** ERROR NUMBER1564 **
10
11               ;AC0,3 OR 2 ALTERED
12
13
14
15       010542          PC=E1565        ;** ERROR NUMBER1565 **
16
17               ;AC1 NOT LOADED
18
```

```
 0402  PRCST
01
02
03       010551          PC=E1566        ;** ERROR NUMBER1566 **
04
05               ;DIB SKPD OR AC3 NOT = AC1
06
07
08
09       010553          PC=E1567        ;** ERROR NUMBER1567 **
10
11               ;AC3,1 OR 0 ALTERED
12
13
14
15       010555          PC=E1570        ;** ERROR NUMBER1570 **
16
17               ;AC2 NOT LOADED
18
19
20
21       010564          PC=E1571        ;** ERROR NUMBER1571 **
22
23               ;DIB SKPD OR AC2 NOT = AC0
24
25
26
27       010566          PC=E1572        ;** ERROR NUMBER1572 **
28
29               ;AC2,0 OR 1 ALTERED
30
31
32
33       010570          PC=E1573        ;** ERROR NUMBER1573 **
34
35               ;AC3 NOT LOADED
36
37
38
39       010575          PC=E1574        ;** ERROR NUMBER1574 **
40
41               ;DOB SKPD OR ALTERED AC0
42
43
44
45       010577          PC=E1575        ;** ERROR NUMBER1575 **
46
47               ;DOB ALTERED AC3
48
49
50
51       010604          PC=E1576        ;** ERROR NUMBER1576 **
52
53               ;BUSY=0 OR DONE=1 FAILED
54
55
56
57       010607          PC=E1577        ;** ERROR NUMBER1577 **
58
59               ;"DZ" ERR OR MAYBE "DN"
60
```

```
0403  PRCST
01
02
03        010612          PC=E1600        ;** ERROR NUMBER1600 **
04
05                ;TTO IS BUSY NOT
06
07
08
09        010620          PC=E1601        ;** ERROR NUMBER1601 **
10
11                ;2ND TRY - TTO IS BUSY NOT
12
13
14
15        010627          PC=E1602        ;** ERROR NUMBER1602 **
16
17                ;ION DID NOT SET (NIOS SKPD)
18
```

```
0404  PRCST
01
02
03        010631          PC=E1603        ;** ERROR NUMBER1603 **
04
05                ;IONN=0 HERE IS INTR
06
07
08
09        010635          PC=E1604        ;** ERROR NUMBER1604 **
10
11                ;BZ SKPD OR BN DIDN'T
12
13
14
15        010641          PC=E1605        ;** ERROR NUMBER1605 **
16
17                ;"C" DID NOT CLR ION
18
19
20
21        010645          PC=E1606        ;** ERROR NUMBER1606 **
22
23                ;DOAC 0, CPU FAILED CLR ION
24
25
26
27        010651          PC=E1607        ;** ERROR NUMBER1607 **
28
29                ;DIS CLRD ION IR8.9=00
30
31
32
33        010655          PC=E1610        ;** ERROR NUMBER1610 **
34
35                ;"P" CLRD ION
36
37
38
39        010661          PC=E1611        ;** ERROR NUMBER1611 **
40
41                ;"P" SET ION
42
43
44
45        010665          PC=E1612        ;** ERROR NUMBER1612 **
46
47                ;AGAIN WITH DOAC 0, CPU
48                ;2ND "S" CLRD ION
49
50
51
52        010672          PC=E1613        ;** ERROR NUMBER1613 **
53
54                ;CPUINST IN IO SKIP
55
56
57
58        010677          PC=E1614        ;** ERROR NUMBER1614 **
59
60                ;ONLY DEV 77 SHD SKP - DOAC TEST
```

```
 0405  PRCST
01
02
03
04       010704          PC=E1615        ;** ERROR NUMBER1615 **
05
06              ;ONLY DEV 77 SHD SKP - DOAC TEST
07
08
09
10       010711   .      PC=E1616        ;** ERROR NUMBER1616 **
11
12              ;ONLY DEV 77 SHD SKP - DOAC TEST
13
14
15
16       010716          PC=E1617        ;** ERROR NUMBER1617 **
17
18              ;ONLY DEV 77 SHD SKP - DOAC TEST
19
```

```
10406  PRCST
01
02
03       010723          PC=E1620        ;** ERROR NUMBER1620 **
04
05              ;ONLY DEV 77 SHD SKP - DOAC TEST
06
07
08
09       010730          PC=E1621        ;** ERROR NUMBER1621 **
10
11              ;ONLY DEV 77 SHD SKP - DOAC TEST
12
13
14
15       010734          PC=E1622        ;** ERROR NUMBER1622 **
16
17              ;ION=1 ILLEGAL (CPU INST NOT)
18
19
20
21       010741          PC=E1623        ;** ERROR NUMBER1623 **
22
23              ;"C" CLRD ION (NOT CPU-DEV 0)
24
25
26
27       010744          PC=E1624        ;** ERROR NUMBER1624 **
28
29              ;IO SKIPS SHD NOT GET TO PTS1 "S" SHD NOT BE GEN
30
31
32
33       010746          PC=E1625        ;** ERROR NUMBER1625 **
34
35              ;FIRST BZ GEN'D "S"
36
37
38
39       010752          PC=E1626        ;** ERROR NUMBER1626 **
40
41              ;IO SKIP "DN" SHD NOT="C" NO PTS1
42
43
44
45       010754          PC=E1627        ;** ERROR NUMBER1627 **
46
47              ;"DN" CLRD ION
48
49
50
51       010761          PC=E1630        ;** ERROR NUMBER1630 **
52
53              ;SET UP ALL CONDITIONS FOR IO SKP EXCEPT IN/OUT TIME
54
55
56
57       010766          PC=E1631        ;** ERROR NUMBER1631 **
58
59              ;SET UP ALL CONDITIONS FOR NIOS CPU EXCEPT PTS1
60
```

```
 0407  PRCST
01
02
03        010772          PC=E1632        ;** ERROR NUMBER1632 **
04
05                ;SET UP ALL CONDITIONS FOR NIOS CPU
06                ;EXCEPT TO ALCEN=0
07
08
09
10        011000    .     PC=E1633        ;** ERROR NUMBER1633 **
11
12                ;SET UP ALL CONDITIONS FOR IO SKPBZ CPU EX(IN/OUT)
13
14
15
16        011014          PC=E1634        ;** ERROR NUMBER1634 **
17
18                ;NO SKP TTO "BN"
19
```

```
 0408  PRCST
01
02
03        011021          PC=E1635        ;** ERROR NUMBER1635 **
04
05                ;TTO "BZ" ERR
06
07
08
09        011027          PC=E1636        ;** ERROR NUMBER1636 **
10
11                ;TTO "DZ" ERR
12
13
14
15        011034          PC=E1637        ;** ERROR NUMBER1637 **
16
17                ;TTO DONE=1 IN ERR
18
19
20
21        011051          PC=E1640        ;** ERROR NUMBER1640 **
22
23                ;INTERRUPT DID NOT OCCUR
24
25
26
27        011052          PC=E1641        ;** ERROR NUMBER1641 **
28
29                ;INTERRUPT DID NOT OCCUR
30
31
32
33        011060          PC=E1642        ;** ERROR NUMBER1642 **
34
35                ;(0) NOT=NIOS+2
36
37
38
39        011100          PC=E1643        ;** ERROR NUMBER1643 **
40
41                ;TEST TO MAKE SURE @IN LOC 1 WILL DEFER
42
43
44
45        011101          PC=E1644        ;** ERROR NUMBER1644 **
46
47                ;FIRST INTR @@
48
49
50
51        011103          PC=E1645        ;** ERROR NUMBER1645 **
52
53                ;SECOND INTR @@
54
55
56
57        011115          PC=E1646        ;** ERROR NUMBER1646 **
58
59                ;LOC 1 OR 2 EXECUTED
60
```

```
 0409  PRCST
01
02
03       011123          PC=E1647        ;** ERROR NUMBER1647 **
04
05               ;INTR AFTER IOF
06
07
08
09       011125          PC=E1650        ;** ERROR NUMBER1650 **
10
11               ;MASK0=1 ALLOWED TTO INTR
12
13
14
15       011133          PC=E1651        ;** ERROR NUMBER1651 **
16
17               ;0'S TO MASK 0
18               ;INTR DID NOT OCCUR
19
```

```
10410  PRCST
01
02
03       011135          PC=E1652        ;** ERROR NUMBER1652 **
04
05               ;OR LOCO
06               ;WAS STILL=0
07
08
09
10       011142          PC=E1653        ;** ERROR NUMBER1653 **
11
12               ;INTERRUPT OVER A SKIP INSTRUCTION
13               ;SHD STORE THE CORRECT ADDRESS IN LOC 0
14
15
16
17       011143          PC=E1654        ;** ERROR NUMBER1654 **
18
19               ;INTERRUPT OVER A SKIP INSTRUCTION
20               ;SHD STORE THE CORRECT ADDRESS IN LOC 0
21
22
23
24       011147          PC=E1655        ;** ERROR NUMBER1655 **
25
26               ;INTR SKIPD
27
28
29
30       011153          PC=E1656        ;** ERROR NUMBER1656 **
31
32               ;(LOC 0) INCOR
33
34
35
36       011160          PC=E1657        ;** ERROR NUMBER1657 **
37
38               ;INTERRUPT OVER SKIP INST FAILED
39               ;INTERRUPT AFTER AN I/O SKIP
40               ;SHD STORE CORRECT RESULT IN LOC 0
41
42
43
44       011161          PC=E1660        ;** ERROR NUMBER1660 **
45
46               ;INTERRUPT OVER SKIP INST FAILED
47               ;INTERRUPT AFTER AN I/O SKIP
48               ;SHD STORE CORRECT RESULT IN LOC 0
49
50
51
52       011167          PC=E1661        ;** ERROR NUMBER1661 **
53
54               ;INC PC IN LOC 0
55
56
57
58       011175          PC=E1662        ;** ERROR NUMBER1662 **
59
60               ;INTERRUPT AFTER A JSR SHD STORE
```

```
0411  PRCST
01                ;THE CORRECT ADDRESS IN LOC 0
02
03
04
05        011176          PC=E1663          ;** ERROR NUMBER1663 **
06
07                ;JSR/INT PREVENTS FAILED
08
09
10
11        011177          PC=E1664          ;** ERROR NUMBER1664 **
12
13                ;INTR AFTER A JSR FAILED
14
```

```
0412  PRCST
01
02
03        011202          PC=E1665          ;** ERROR NUMBER1665 **
04
05                ;JSR+1 SHD=INTR ADRS
06
07
08
09        011205          PC=E1666          ;** ERROR NUMBER1666 **
10
11                ;BIT 0 LOC 0=1
12
13
14
15        011207          PC=E1667          ;** ERROR NUMBER1667 **
16
17                ;LOC 0 OR AC3 INCORRECT
18
19
20
21        011241          PC=E1670          ;** ERROR NUMBER1670 **
22
23                ;NIOC FAILED TO STOP INTERRUPT
24
25
26
27        011243          PC=E1671          ;** ERROR NUMBER1671 **
28
29                ;NIOC DID NOT MAKE TTY BUSY=0
30
31
32
33        011246          PC=E1672          ;** ERROR NUMBER1672 **
34
35                ;TTO BUSY SHD =0
36
37
38
39        011250          PC=E1673          ;** ERROR NUMBER1673 **
40
41                ;TTO DONE SHD =0
42
43
44
45        011253          PC=E1674          ;** ERROR NUMBER1674 **
46
47                ;NON INT TEST FAILED
48
49
50
51        011256          PC=E1675          ;** ERROR NUMBER1675 **
52
53                ;NON INT TEST FAILED
54
55
56
57        011264          PC=E1676          ;** ERROR NUMBER1676 **
58
59                ;BUSY SHD=1
60
```

```
 0413  PRCST
01
02
03        011266          PC=E1677        ;** ERROR NUMBER1677 **
04
05                ;DONE SHD=0
06
07
08
09        011272          PC=E1700        ;** ERROR NUMBER1700 **
10
11                ;DONE=1 IF REAL "BZ"
12
13
14
15        011276          PC=E1701        ;** ERROR NUMBER1701 **
16
17                ;INT TEST FAILED
18
```

```
10414  PRCST
01
02
03        011300          PC=E1702        ;** ERROR NUMBER1702 **
04
05                ;INT TEST FAILED
06
07
08
09        011304          PC=E1703        ;** ERROR NUMBER1703 **
10
11                ;BUSY=0 IF REAL DONE
12
13
14
15        011312          PC=E1704        ;** ERROR NUMBER1704 **
16
17                ;BZ BEFORE INTR
18
19
20
21        011323          PC=E1705        ;** ERROR NUMBER1705 **
22
23                ;ION SHD STILL=1
24
25
26
27        011340          PC=E1706        ;** ERROR NUMBER1706 **
28
29                ;PROCESSOR ARITH ERR
30
31
32
33        011344          PC=E1707        ;** ERROR NUMBER1707 **
34
35                ;NO ERROR AT "BZ"
36
37
38
39        011352          PC=E1710        ;** ERROR NUMBER1710 **
40
41                ;DONE SHD =1
42
43
44
45                .END
46  00000-000276
47        000200
48        000201
49        000123
50        000377
51        000000
52        177777
53        177400
54        123456

**00000 TOTAL ERRORS, 00000 FIRST PASS ERRORS
```

```
C515   007501        211/16#
C516   007507        211/29#
C517   007517        211/43#
C518   007527        211/57#
C519   007540        213/02#
C520   007551        213/17#
C521   007562        213/33#
C522   007572        213/47#
C523   007602        214/01#
C524   007614        215/02#
C525   007623        215/15#
C526   007635        215/31#
C527   007647        215/47#
C528   007661        218/10#
C529   007667        218/22#
C530   007675        218/34#
C531   007703        218/46#
C532   007711        218/58#
C533   007717        219/10#
C534   007725        220/02#
C535   007733        220/14#
C536   007741        220/26#
C537   007747        220/38#
C538   007755        220/50#
C539   007765        221/04#
C540   007774        222/02#
C541   010003        222/15#
C542   010011        222/27#
C543   010017        222/39#
C544   010025        222/51#
C545   010033        223/05#
C546   010043        224/02#
C547   010054        224/17#
C548   010066        224/33#
C549   010076        224/47#
C550   010107        225/02#
C551   010122        227/11#
C552   010131        227/25#
C553   010137        227/37#
C554   010151        227/53#
C555   010164        228/10#
C556   010200        229/02#
C557   010212        229/18#
C558   010225        229/35#
C559   010241        229/53#
C560   010253        230/09#
C561   010266        231/02#
C562   010302        231/20#
C563   010315        231/37#
C564   010331        231/55#
C565   010343        232/11#
C566   010351        232/22#
CKCAT  011402        256/03  257/03#
CONS   007306        203/20# 203/21  203/22
DIRT   011514         13/09  258/19#
DIV1   001023  MC     12/04# 218/10  218/22  218/34
DIV2   001034  MC     12/10# 218/46  218/58  219/10
DIV3   001046  MC     12/16# 220/02  220/14  220/26
```



```
DIV4   001060  MC     12/22# 220/38  220/50  221/04  222/02  222/15
DIV5   001072  MC     12/27# 222/27  222/39  222/51  227/25
DIV6   001104  MC     12/33# 223/05  224/02  224/17
DIV7   001121  MC     12/41# 224/33  224/47  225/02
DIV8   001140  MC     12/49# 227/11
DIV9   001142  MC     12/53# 227/37  227/53  228/10  229/02  229/18  229/35
                      229/53  230/09  231/02  231/20  231/37  231/55

DSZ00  004773        146/31#
DSZ01  005022        148/04#
DSZ02  005427        161/26#
DSZ03  005444        161/49#
DTOSB  000201         15/15# 258/26
E0     000203         15/22# 259/03
E1     000213         16/09# 259/11
E10    000236         17/14# 260/04
E100   000615         32/56# 269/09
E1000  004261        129/36# 342/33
E1001  004266        129/47# 342/39
E1002  004273        129/58# 342/45
E1003  004300        130/09# 342/51
E1004  004305        130/20# 342/57
E1005  004312        130/31# 343/03
E1006  004317        130/42# 343/09
E1007  004324        130/53# 343/15
E101   000617         33/02# 269/15
E1010  004331        131/04# 344/03
E1011  004336        131/15# 344/09
E1012  004342        132/12# 344/15
E1013  004345        132/19# 344/21
E1014  004350        132/26# 344/27
E1015  004353        132/33# 344/33
E1016  004360        133/10# 344/39
E1017  004362        133/16# 344/45
E102   000622         33/14# 269/21
E1020  004366        133/25# 344/51
E1021  004373        133/39# 344/57
E1022  004375        133/45# 345/03
E1023  004401        133/54# 345/09
E1024  004406        134/08# 345/15
E1025  004410        134/14# 346/03
E1026  004414        134/23# 346/09
E1027  004421        134/37# 346/16
E103   000624         33/20# 269/27
E1030  004423        134/43# 346/22
E1031  004427        134/52# 346/28
E1032  004434        135/06# 346/34
E1033  004436        135/12# 346/40
E1034  004442        135/21# 346/46
E1035  004447        135/35# 346/52
E1036  004451        135/41# 346/58
E1037  004455        135/50# 347/04
E104   000627         33/32# 269/33
E1040  004462        136/04# 347/10
E1041  004464        136/10# 347/16
E1042  004470        136/19# 348/03
E1043  004475        136/33# 348/09
E1044  004477        136/39# 348/15
E1045  004503        136/48# 348/21
```

E1046	004510	137/02# 348/27
E1047	004512	137/08# 348/33
E105	000631	33/38# 269/39
E1050	004516	137/17# 348/39
E1051	004523	137/31# 348/45
E1052	004525	137/37# 348/51
E1053	004531	137/46# 348/57
E1054	004536	137/60# 349/03
E1055	004540	138/06# 349/09
E1056	004544	138/15# 349/15
E1057	004551	138/29# 350/03
E106	000634	33/50# 269/45
E1060	004553	138/35# 350/09
E1061	004557	138/44# 350/15
E1062	004564	138/58# 350/21
E1063	004566	139/04# 350/27
E1064	004572	139/13# 350/33
E1065	004577	139/27# 350/39
E1066	004601	139/33# 350/45
E1067	004605	139/42# 350/51
E107	000636	33/56# 269/51
E1070	004612	139/56# 350/57
E1071	004614	140/02# 351/03
E1072	004620	140/11# 351/09
E1073	004625	140/25# 351/15
E1074	004627	140/31# 352/03
E1075	004633	140/40# 352/09
E1076	004637	141/22# 352/15
E1077	004642	141/29# 352/21
E11	000241	17/25# 260/11
E110	000641	34/08# 269/57
E1100	004646	141/38# 352/27
E1101	004651	141/45# 352/33
E1102	004655	141/54# 352/39
E1103	004660	142/01# 352/45
E1104	004664	142/10# 352/51
E1105	004667	142/17# 352/57
E1106	004673	143/12# 353/03
E1107	004677	143/23# 353/09
E111	000643	34/14# 270/03
E1110	004704	143/38# 353/15
E1111	004711	143/48# 354/04
E1112	004716	144/14# 354/11
E1113	004724	144/27# 354/17
E1114	004732	144/39# 354/24
E1115	004740	144/50# 354/30
E1116	004742	144/56# 354/36
E1117	004744	145/02# 354/42
E112	000646	34/26# 270/09
E1120	004752	145/14# 354/48
E1121	004754	145/20# 354/54
E1122	004756	145/26# 354/60
E1123	004764	146/12# 355/06
E1124	004770	146/20# 355/12
E1125	004772	146/26# 355/18
E1126	004777	146/39# 356/03
E1127	005002	146/46# 356/09
E113	000650	34/32# 270/15

E1130	005004	146/52# 356/15
E1131	005011	147/04# 356/21
E1132	005013	147/10# 356/27
E1133	005016	147/17# 356/33
E1134	005021	147/24# 356/39
E1135	005026	148/12# 356/45
E1136	005030	148/18# 356/51
E1137	005033	148/25# 356/57
E114	000653	34/44# 271/02
E1140	005041	148/38# 357/03
E1141	005043	148/44# 357/09
E1142	005053	148/57# 357/15
E1143	005055	149/03# 358/03
E1144	005063	150/14# 358/09
E1145	005067	150/22# 358/15
E1146	005077	150/35# 358/21
E1147	005103	150/43# 358/27
E115	000655	34/50# 271/08
E1150	005115	150/60# 358/34
E1151	005122	152/14# 358/40
E1152	005130	152/28# 358/46
E1153	005136	152/40# 358/53
E1154	005146	152/58# 358/59
E1155	005155	153/13# 359/05
E1156	005165	154/16# 359/11
E1157	005176	154/34# 359/17
E116	000660	35/02# 271/14
E1160	005201	154/41# 360/03
E1161	005212	155/18# 360/09
E1162	005216	155/26# 360/15
E1163	005227	155/46# 360/21
E1164	005233	155/54# 360/27
E1165	005246	156/19# 360/33
E1166	005303	156/60# 360/39
E1167	005313	158/16# 360/46
E117	000662	35/08# 271/20
E1170	005314	158/21# 360/52
E1171	005316	158/27# 360/58
E1172	005317	158/32# 361/04
E1173	005322	158/39# 361/10
E1174	005334	158/58# 361/16
E1175	005346	159/19# 362/03
E1176	005365	159/45# 362/09
E1177	005371	159/53# 362/15
E12	000245	18/11# 260/18
E120	000665	35/20# 271/26
E1200	005402	160/08# 362/21
E1201	005406	160/16# 362/27
E1202	005411	160/23# 362/33
E1203	005422	161/15# 362/39
E1204	005426	161/23# 362/45
E1205	005437	161/38# 362/51
E1206	005443	161/46# 362/57
E1207	005453	161/60# 363/03
E121	000667	35/26# 271/32
E1210	005457	162/08# 363/09
E1211	005462	162/15# 363/15
E1212	005477	163/20# 364/03

0421 PRCST

E1213	005510	163/35# 364/09
E1214	005512	163/41# 364/15
E1215	005520	163/55# 364/21
E1216	005531	164/32# 364/28
E1217	005542	164/48# 364/34
E122	000672	35/38# 271/38
E1220	005553	165/04# 364/41
E1221	005564	165/20# 364/47
E1222	005575	165/36# 364/53
E1223	005606	165/52# 364/59
E1224	005617	166/08# 365/05
E1225	005630	166/24# 365/11
E1226	005641	166/40# 365/17
E1227	005652	166/56# 366/03
E123	000674	35/44# 271/44
E1230	005663	167/12# 366/09
E1231	005674	167/28# 366/15
E1232	005705	167/44# 366/21
E1233	005716	167/60# 366/27
E1234	005727	168/16# 366/33
E1235	005733	169/13# 366/39
E1236	005742	169/24# 366/45
E1237	005747	169/49# 366/51
E124	000677	35/56# 271/50
E1240	005753	169/57# 366/57
E1241	005760	170/08# 367/03
E1242	005764	170/16# 367/09
E1243	005771	170/27# 367/15
E1244	005775	170/35# 368/03
E1245	006002	170/46# 368/09
E1246	006006	170/54# 368/15
E1247	006016	171/11# 368/21
E125	000701	36/02# 271/56
E1250	006026	172/14# 368/27
E1251	006030	172/20# 368/33
E1252	006040	172/59# 368/39
E1253	006042	173/05# 368/45
E1254	006044	173/11# 368/51
E1255	006054	173/25# 368/57
E1256	006056	173/31# 369/03
E1257	006060	173/37# 369/09
E126	000704	36/11# 272/02
E1260	006070	173/51# 369/15
E1261	006072	173/57# 370/03
E1262	006074	174/03# 370/09
E1263	006104	174/17# 370/15
E1264	006106	174/23# 370/21
E1265	006110	174/29# 370/27
E1266	006120	174/43# 370/33
E1267	006122	174/49# 370/39
E127	000706	36/17# 272/08
E1270	006124	174/55# 370/45
E1271	006134	175/09# 370/51
E1272	006136	175/15# 370/57
E1273	006140	175/21# 371/03
E1274	006150	175/35# 371/09
E1275	006152	175/41# 371/15
E1276	006154	175/47# 372/03

0422 PRCST

E1277	006164	176/01# 372/09
E13	000251	18/23# 260/25
E130	000712	37/12# 272/14
E1300	006166	176/07# 372/15
E1301	006170	176/13# 372/21
E1302	006177	177/13# 372/27
E1303	006204	177/22# 372/33
E1304	006221	178/25# 372/39
E1305	006231	178/39# 372/45
E1306	006243	178/56# 372/51
E1307	006245	179/02# 372/57
E131	000715	37/24# 273/02
E1310	006251	179/10# 373/03
E1311	006260	180/27# 373/09
E1312	006263	180/35# 373/15
E1313	006272	180/47# 374/03
E1314	006275	180/55# 374/09
E1315	006304	181/07# 374/15
E1316	006307	181/15# 374/21
E1317	006316	181/27# 374/27
E132	000717	37/30# 273/08
E1320	006321	181/35# 374/33
E1321	006327	182/15# 374/39
E1322	006334	182/24# 374/45
E1323	006336	182/30# 374/51
E1324	006352	182/48# 374/57
E1325	006361	182/59# 375/03
E1326	006366	183/08# 375/09
E1327	006372	183/16# 375/16
E133	000722	37/42# 273/15
E1330	006402	183/30# 376/04
E1331	006406	183/36# 376/10
E1332	006421	184/19# 376/16
E1333	006425	184/29# 376/22
E1334	006430	184/36# 376/28
E1335	006433	184/43# 376/34
E1336	006436	184/50# 376/40
E1337	006442	184/59# 376/46
E134	000724	37/48# 273/21
E1340	006446	185/07# 376/52
E1341	006451	185/14# 376/58
E1342	006455	185/22# 377/04
E1343	006461	185/30# 377/10
E1344	006500	186/19# 377/16
E1345	006501	186/24# 378/03
E1346	006505	186/32# 378/09
E1347	006510	186/40# 378/16
E135	000727	37/60# 273/27
E1350	006513	186/47# 378/22
E1351	006516	186/54# 378/28
E1352	006522	187/02# 378/34
E1353	006525	187/09# 378/40
E1354	006530	187/16# 378/46
E1355	006543	188/19# 378/52
E1356	006544	188/24# 378/58
E1357	006554	188/39# 379/04
E136	000731	38/06# 273/33
E1360	006561	188/48# 379/11

E1361	006565	188/56#	379/18
E1362	006575	189/11#	380/03
E1363	006601	191/10#	380/09
E1364	006606	191/27#	380/15
E1365	006614	191/45#	380/21
E1366	006622	191/56#	380/28
E1367	006631	192/08#	380/35
E137	000734	38/18#	273/39
E1370	006640	193/13#	380/42
E1371	006646	193/24#	380/50
E1372	006655	193/40#	380/59
E1373	006664	193/54#	381/05
E1374	006673	194/08#	381/13
E1375	006702	194/22#	382/03
E1376	006711	194/36#	382/10
E1377	006720	194/50#	382/17
E14	000255	18/34#	261/02
E140	000736	38/24#	273/45
E1400	006727	195/04#	382/24
E1401	006736	195/18#	382/31
E1402	006745	195/32#	382/38
E1403	006754	195/46#	382/45
E1404	006763	195/60#	382/52
E1405	006772	196/14#	382/59
E1406	007006	197/19#	383/06
E1407	007022	197/38#	383/13
E141	000741	38/36#	273/51
E1410	007036	197/57#	384/03
E1411	007052	198/16#	384/10
E1412	007066	198/35#	384/17
E1413	007102	198/54#	384/24
E1414	007116	199/13#	384/31
E1415	007132	199/32#	384/38
E1416	007146	199/51#	384/45
E1417	007162	200/10#	384/52
E142	000743	38/42#	273/57
E1420	007176	200/29#	384/59
E1421	007212	200/48#	385/06
E1422	007220	201/19#	385/13
E1423	007227	201/32#	386/03
E1424	007235	201/44#	386/10
E1425	007244	201/57#	386/16
E1426	007257	202/18#	386/22
E1427	007272	202/35#	386/30
E143	000746	38/54#	274/03
E1430	007304	202/51#	386/38
E1431	007332	205/20#	386/47
E1432	007340	205/32#	386/53
E1433	007346	205/44#	386/59
E1434	007354	205/56#	387/05
E1435	007362	206/08#	387/11
E1436	007371	206/21#	388/03
E1437	007400	207/13#	388/09
E144	000750	38/60#	274/09
E1440	007407	207/26#	388/15
E1441	007417	207/40#	388/21
E1442	007433	207/57#	388/27
E1443	007441	209/20#	388/33

E1444	007447	209/32#	388/39
E1445	007455	209/44#	388/45
E1446	007463	209/57#	388/51
E1447	007471	210/10#	388/58
E145	000753	39/12#	274/15
E1450	007500	211/14#	389/04
E1451	007506	211/27#	389/10
E1452	007516	211/41#	389/16
E1453	007526	211/55#	390/03
E1454	007537	212/10#	390/09
E1455	007550	213/15#	390/15
E1456	007561	213/30#	390/21
E1457	007571	213/45#	390/27
E146	000755	39/18#	275/02
E1460	007601	213/59#	390/33
E1461	007613	214/15#	390/39
E1462	007622	215/13#	390/45
E1463	007634	215/29#	390/52
E1464	007646	215/45#	390/58
E1465	007660	216/01#	391/04
E1466	007666	216/20#	391/10
E1467	007674	218/32#	391/17
E147	000760	39/30#	275/08
E1470	007702	218/44#	392/03
E1471	007710	218/56#	392/10
E1472	007716	219/08#	392/17
E1473	007724	219/20#	392/23
E1474	007732	220/12#	392/30
E1475	007740	220/24#	392/37
E1476	007746	220/36#	392/44
E1477	007754	220/48#	392/51
E15	000257	19/11#	261/09
E150	000762	39/36#	275/14
E1500	007764	221/02#	392/58
E1501	007773	221/15#	393/04
E1502	010002	222/13#	393/10
E1503	010010	222/25#	393/16
E1504	010016	222/37#	394/03
E1505	010024	222/49#	394/10
E1506	010032	223/01#	394/16
E1507	010042	223/17#	394/22
E151	000765	39/48#	275/20
E1510	010053	224/15#	394/29
E1511	010065	224/31#	394/35
E1512	010075	224/45#	394/41
E1513	010106	224/60#	394/48
E1514	010121	225/17#	394/54
E1515	010130	227/23#	394/60
E1516	010136	227/35#	395/07
E1517	010150	227/51#	395/14
E152	000767	39/54#	275/26
E1520	010163	228/08#	396/03
E1521	010177	228/26#	396/09
E1522	010211	229/16#	396/15
E1523	010224	229/33#	396/22
E1524	010240	229/51#	396/28
E1525	010252	230/07#	396/34
E1526	010265	230/24#	396/41

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E1527	010301	231/18#	396/47
E153	000772	40/06#	275/32
E1530	010314	231/35#	396/53
E1531	010330	231/53#	396/59
E1532	010342	232/09#	397/05
E1533	010350	232/20#	397/12
E1534	010356	232/33#	398/03
E1535	010365	232/52#	398/09
E1536	010417	234/15#	398/15
E1537	010422	234/23#	398/21
E154	000774	40/12#	275/38
E1540	010424	234/31#	398/27
E1541	010426	234/38#	398/33
E1542	010435	234/50#	398/39
E1543	010440	234/57#	398/45
E1544	010447	235/28#	398/51
E1545	010451	235/34#	398/57
E1546	010453	235/40#	399/03
E1547	010462	235/54#	399/09
E155	000777	40/24#	275/44
E1550	010464	235/60#	399/15
E1551	010466	236/06#	400/03
E1552	010475	236/20#	400/09
E1553	010477	236/26#	400/15
E1554	010501	236/32#	400/21
E1555	010510	236/46#	400/27
E1556	010512	236/52#	400/33
E1557	010514	236/58#	400/39
E156	001001	40/30#	275/50
E1560	010523	237/12#	400/45
E1561	010525	237/18#	400/51
E1562	010527	237/24#	400/57
E1563	010536	237/38#	401/03
E1564	010540	237/44#	401/09
E1565	010542	237/50#	401/15
E1566	010551	238/04#	402/03
E1567	010553	238/10#	402/09
E157	001004	40/42#	275/56
E1570	010555	238/16#	402/15
E1571	010564	238/30#	402/21
E1572	010566	238/36#	402/27
E1573	010570	238/42#	402/33
E1574	010575	239/12#	402/39
E1575	010577	239/18#	402/45
E1576	010604	239/32#	402/51
E1577	010607	239/39#	402/57
E16	000262	19/23#	261/16
E160	001006	40/48#	276/02
E1600	010612	239/46#	403/03
E1601	010620	239/56#	403/09
E1602	010627	240/10#	403/15
E1603	010631	240/16#	404/03
E1604	010635	240/26#	404/09
E1605	010641	240/34#	404/15
E1606	010645	241/11#	404/21
E1607	010651	241/21#	404/27
E161	001011	40/60#	276/08
E1610	010655	241/30#	404/33

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E1611	010661	241/39#	404/39
E1612	010665	241/48#	404/45
E1613	010672	241/58#	404/52
E1614	010677	242/20#	404/58
E1615	010704	242/32#	405/04
E1616	010711	242/44#	405/10
E1617	010716	242/56#	405/16
E162	001013	41/06#	276/14
E1620	010723	243/08#	406/03
E1621	010730	243/20#	406/09
E1622	010734	244/11#	406/15
E1623	010741	244/22#	406/21
E1624	010744	244/31#	406/27
E1625	010746	244/37#	406/33
E1626	010752	244/47#	406/39
E1627	010754	244/53#	406/45
E163	001016	41/18#	277/02
E1630	010761	245/03#	406/51
E1631	010766	245/13#	406/57
E1632	010772	245/24#	407/03
E1633	011000	246/11#	407/10
E1634	011014	247/19#	407/16
E1635	011021	247/28#	408/03
E1636	011027	247/38#	408/09
E1637	011034	247/47#	408/15
E164	001020	41/24#	277/08
E1640	011051	248/06#	408/21
E1641	011052	248/11#	408/27
E1642	011060	248/21#	408/33
E1643	011100	249/22#	408/39
E1644	011101	249/27#	408/45
E1645	011103	249/33#	408/51
E1646	011115	249/51#	408/57
E1647	011123	250/12#	409/03
E165	001023	41/36#	277/14
E1650	011125	250/18#	409/09
E1651	011133	250/28#	409/15
E1652	011135	250/34#	410/03
E1653	011142	250/45#	410/10
E1654	011143	250/50#	410/17
E1655	011147	250/58#	410/24
E1656	011153	251/06#	410/30
E1657	011160	251/18#	410/36
E166	001025	41/42#	277/20
E1660	011161	251/23#	410/44
E1661	011167	251/33#	410/52
E1662	011175	252/13#	410/58
E1663	011176	252/18#	411/05
E1664	011177	252/23#	411/11
E1665	011202	252/30#	412/03
E1666	011205	252/37#	412/09
E1667	011207	252/43#	412/15
E167	001030	41/51#	277/26
E1670	011241	253/22#	412/21
E1671	011243	253/28#	412/27
E1672	011246	253/35#	412/33
E1673	011250	253/41#	412/39
E1674	011253	253/48#	412/45

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E1675	011256	253/55#	412/51
E1676	011264	254/09#	412/57
E1677	011266	254/15#	413/03
E17	000265	19/35#	261/23
E170	001032	41/57#	277/32
E1700	011272	254/23#	413/09
E1701	011276	254/32#	413/15
E1702	011300	254/38#	414/03
E1703	011304	254/46#	414/09
E1704	011312	254/57#	414/15
E1705	011323	255/15#	414/21
E1706	011340	255/32#	414/27
E1707	011344	255/40#	414/33
E171	001037	42/28#	277/38
E1710	011352	255/50#	414/39
E172	001044	42/37#	277/44
E173	001047	43/11#	277/50
E174	001053	43/19#	277/56
E175	001057	43/33#	278/02
E176	001063	43/41#	278/08
E177	001067	43/55#	278/14
E2	000216	16/18#	259/19
E20	000270	19/48#	261/31
E200	001073	44/03#	279/02
E201	001077	44/17#	279/08
E202	001103	44/25#	279/14
E203	001107	44/39#	279/20
E204	001113	44/47#	279/26
E205	001117	45/01#	279/32
E206	001123	45/09#	279/38
E207	001127	45/23#	279/44
E21	000273	19/59#	261/38
E210	001133	45/31#	279/50
E211	001137	45/45#	279/56
E212	001143	45/53#	280/02
E213	001147	46/07#	280/08
E214	001153	46/15#	280/14
E215	001157	46/29#	281/03
E216	001163	46/37#	281/09
E217	001167	46/51#	281/15
E22	000304	20/13#	261/46
E220	001173	46/59#	281/21
E221	001177	47/13#	281/27
E222	001203	47/21#	281/33
E223	001207	47/35#	281/39
E224	001213	47/43#	281/45
E225	001217	47/57#	281/51
E226	001223	48/05#	281/57
E227	001227	48/19#	282/03
E23	000313	21/31#	261/53
E230	001233	48/27#	282/09
E231	001237	48/39#	282/15
E232	001241	48/45#	283/02
E233	001246	48/56#	283/08
E234	001250	49/02#	283/15
E235	001253	50/11#	283/22
E236	001257	50/19#	283/28
E237	001263	50/33#	283/34

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E24	000315	21/38#	261/60
E240	001267	50/41#	283/40
E241	001273	50/55#	283/46
E242	001277	51/03#	283/52
E243	001303	51/17#	283/58
E244	001307	51/25#	284/04
E245	001313	51/39#	284/10
E246	001317	51/47#	284/16
E247	001323	52/01#	285/02
E25	000317	21/45#	262/07
E250	001327	52/09#	285/08
E251	001333	52/23#	285/14
E252	001337	52/31#	285/20
E253	001343	52/45#	285/26
E254	001347	52/53#	285/32
E255	001353	53/07#	285/38
E256	001357	53/15#	285/44
E257	001363	53/29#	285/50
E26	000326	21/59#	262/14
E260	001367	53/37#	285/56
E261	001373	53/51#	286/02
E262	001377	53/59#	286/08
E263	001403	54/13#	286/14
E264	001407	54/21#	287/02
E265	001413	54/35#	287/08
E266	001417	54/43#	287/14
E267	001423	54/57#	287/20
E27	000330	22/06#	262/21
E270	001427	55/05#	287/26
E271	001433	55/19#	287/32
E272	001437	55/27#	287/38
E273	001443	55/39#	287/44
E274	001445	55/45#	287/50
E275	001451	56/29#	287/57
E276	001453	56/35#	288/03
E277	001456	56/44#	288/09
E3	000220	16/26#	259/26
E30	000332	22/13#	262/28
E300	001466	57/18#	288/15
E301	001477	57/37#	289/02
E302	001510	57/56#	289/09
E303	001521	58/15#	289/16
E304	001532	58/34#	289/23
E305	001543	58/53#	289/30
E306	001554	59/12#	289/37
E307	001565	59/31#	289/44
E31	000341	22/27#	263/02
E310	001576	59/50#	289/51
E311	001607	60/09#	289/58
E312	001620	60/28#	290/05
E313	001631	60/47#	290/12
E314	001642	61/06#	291/02
E315	001653	61/25#	291/09
E316	001664	61/44#	291/16
E317	001675	62/03#	291/23
E32	000343	22/34#	263/09
E320	001701	62/14#	291/30
E321	001711	62/32#	291/36

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E322	001722	62/51# 291/42
E323	001733	63/10# 291/49
E324	001744	63/29# 291/56
E325	001755	63/48# 292/03
E326	001766	64/07# 292/10
E327	001777	64/26# 293/02
E33	000345	22/41# 263/16
E330	002010	64/45# 293/10
E331	002021	65/04# 293/17
E332	002032	65/23# 293/24
E333	002043	65/42# 293/31
E334	002054	66/01# 293/38
E335	002065	66/20# 293/45
E336	002076	66/39# 293/52
E337	002107	66/58# 293/59
E34	000354	22/55# 263/23
E340	002120	67/17# 294/06
E341	002124	68/26# 295/02
E342	002132	68/42# 295/09
E343	002141	68/59# 295/17
E344	002150	69/16# 295/25
E345	002157	69/33# 295/33
E346	002166	69/51# 295/41
E347	002175	70/08# 295/49
E35	000356	23/02# 263/30
E350	002204	70/25# 295/57
E351	002213	70/42# 296/05
E352	002222	70/60# 297/02
E353	002231	71/17# 297/10
E354	002240	71/34# 297/19
E355	002247	71/51# 297/27
E356	002256	72/09# 297/35
E357	002265	72/26# 297/43
E36	000360	23/09# 263/37
E360	002274	72/43# 297/51
E361	002300	72/55# 297/59
E362	002302	73/01# 298/06
E363	002305	74/11# 299/02
E364	002307	74/19# 299/09
E365	002313	74/31# 299/16
E366	002315	74/37# 299/22
E367	002321	74/49# 299/28
E37	000364	24/20# 263/44
E370	002323	74/55# 299/35
E371	002327	75/06# 299/42
E372	002331	75/12# 299/48
E373	002334	76/45# 299/54
E374	002337	77/12# 299/60
E375	002343	77/20# 300/07
E376	002346	77/33# 300/13
E377	002352	77/46# 301/02
E4	000222	16/34# 259/33
E40	000370	24/31# 263/51
E400	002356	77/59# 301/09
E401	002362	78/07# 301/16
E402	002365	78/20# 301/22
E403	002371	78/33# 301/29
E404	002375	78/46# 301/36

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E405	002401	78/54# 301/43
E406	002404	79/07# 301/50
E407	002410	79/20# 301/57
E41	000374	24/42# 263/58
E410	002414	79/33# 302/04
E411	002420	79/41# 302/11
E412	002423	79/54# 303/02
E413	002427	80/07# 303/09
E414	002433	80/20# 303/16
E415	002437	80/28# 303/23
E416	002442	80/41# 303/29
E417	002446	80/54# 303/36
E42	000444	24/56# 264/05
E420	002452	81/07# 303/43
E421	002456	81/15# 303/50
E422	002461	81/28# 303/56
E423	002465	81/41# 304/03
E424	002471	81/54# 304/10
E425	002475	82/02# 305/02
E426	002500	82/15# 305/08
E427	002504	82/28# 305/15
E43	000450	25/07# 264/12
E430	002510	82/41# 305/22
E431	002514	82/49# 305/29
E432	002517	83/02# 305/35
E433	002523	83/15# 305/42
E434	002527	83/28# 305/49
E435	002533	83/36# 305/56
E436	002536	83/49# 306/02
E437	002542	84/02# 306/09
E44	000454	25/18# 264/19
E440	002546	84/15# 307/02
E441	002552	84/23# 307/09
E442	002555	84/36# 307/15
E443	002561	84/49# 307/23
E444	002565	85/02# 307/30
E445	002571	85/10# 307/37
E446	002574	85/23# 307/43
E447	002600	85/36# 307/50
E45	000460	25/29# 264/26
E450	002604	85/49# 307/57
E451	002610	85/57# 308/04
E452	002613	86/10# 308/10
E453	002617	86/23# 309/02
E454	002623	86/36# 309/09
E455	002627	86/44# 309/16
E456	002632	86/57# 309/22
E457	002636	87/10# 309/29
E46	000464	25/40# 265/02
E460	002642	87/23# 309/36
E461	002646	87/31# 309/43
E462	002651	87/44# 309/49
E463	002655	87/57# 309/55
E464	002661	88/10# 310/01
E465	002665	88/18# 310/08
E466	002670	88/31# 311/02
E467	002674	88/44# 311/08
E47	000470	25/51# 265/09

E470	002700	88/57# 311/15
E471	002704	89/05# 311/22
E472	002707	89/18# 311/29
E473	002713	89/31# 311/35
E474	002717	90/11# 311/42
E475	002722	90/20# 311/49
E476	002726	90/31# 311/55
E477	002732	90/40# 312/01
E5	000225	16/43# 259/41
E50	000474	26/02# 265/16
E500	002735	90/50# 313/02
E501	002740	90/58# 313/08
E502	002744	91/07# 313/14
E503	002750	91/16# 313/21
E504	002754	92/10# 313/27
E505	002756	92/16# 313/33
E506	002760	92/22# 313/40
E507	002765	92/36# 313/47
E51	000500	26/13# 265/23
E510	002770	92/43# 313/53
E511	002776	92/57# 313/60
E512	003000	93/03# 314/06
E513	003005	94/34# 314/13
E514	003011	94/42# 315/02
E515	003015	94/55# 315/09
E516	003021	95/03# 315/15
E517	003025	95/16# 315/22
E52	000504	26/24# 265/30
E520	003031	95/24# 315/28
E521	003035	95/37# 315/35
E522	003041	95/45# 315/41
E523	003045	95/58# 315/48
E524	003051	96/06# 315/54
E525	003055	96/19# 316/01
E526	003061	96/27# 316/07
E527	003065	96/40# 316/14
E53	000510	27/25# 265/37
E530	003071	96/48# 316/20
E531	003075	97/01# 316/27
E532	003101	97/09# 316/33
E533	003105	97/22# 316/40
E534	003111	97/30# 316/46
E535	003115	97/43# 316/53
E536	003121	97/51# 316/59
E537	003125	98/04# 317/06
E54	000514	27/37# 265/45
E540	003131	98/12# 317/12
E541	003135	98/25# 317/19
E542	003141	98/33# 318/02
E543	003145	98/46# 318/09
E544	003151	98/54# 318/16
E545	003155	99/07# 318/23
E546	003161	99/15# 318/30
E547	003165	99/28# 318/37
E55	000520	28/11# 265/52
E550	003171	99/36# 318/44
E551	003175	99/49# 318/51
E552	003201	99/57# 318/58

E553	003206	100/09# 319/05
E554	003210	100/15# 320/02
E555	003213	100/27# 320/08
E556	003215	100/33# 320/14
E557	003220	101/11# 320/20
E56	000523	28/20# 265/59
E560	003222	101/17# 320/26
E561	003226	101/29# 320/32
E562	003230	101/35# 320/38
E563	003234	103/20# 320/44
E564	003240	103/28# 320/50
E565	003244	103/38# 320/56
E566	003250	103/54# 321/02
E567	003254	104/02# 321/08
E57	000527	28/35# 266/06
E570	003260	104/12# 321/14
E571	003264	104/28# 322/02
E572	003270	104/36# 322/08
E573	003274	104/46# 322/14
E574	003300	105/02# 322/20
E575	003304	105/10# 322/26
E576	003310	105/20# 322/32
E577	003314	105/36# 322/38
E6	000230	16/53# 259/49
E60	000531	28/48# 266/13
E600	003320	105/44# 322/44
E601	003324	105/54# 322/50
E602	003330	106/10# 322/57
E603	003334	106/18# 323/03
E604	003340	106/28# 323/09
E605	003344	106/44# 323/15
E606	003350	106/52# 324/02
E607	003354	107/02# 324/08
E61	000534	28/58# 266/20
E610	003360	107/18# 324/14
E611	003364	107/26# 324/20
E612	003370	107/36# 324/26
E613	003374	107/52# 324/32
E614	003400	107/60# 324/38
E615	003404	108/10# 324/44
E616	003410	108/26# 324/50
E617	003414	108/34# 324/56
E62	000540	29/09# 266/27
E620	003420	108/44# 325/02
E621	003424	108/60# 325/08
E622	003430	109/08# 325/14
E623	003434	109/18# 326/02
E624	003440	109/34# 326/08
E625	003444	109/42# 326/14
E626	003450	109/52# 326/20
E627	003454	110/08# 326/26
E63	000544	30/10# 267/02
E630	003460	110/16# 326/32
E631	003464	110/26# 326/38
E632	003470	110/42# 326/44
E633	003474	110/50# 326/50
E634	003500	110/60# 326/56
E635	003504	111/16# 327/02

E636	003510	111/24# 327/08
E637	003514	111/34# 327/14
E64	000550	30/23# 267/10
E640	003520	111/50# 328/02
E641	003524	111/58# 328/08
E642	003530	112/08# 328/14
E643	003534	113/08# 328/20
E644	003540	113/16# 328/26
E645	003544	113/25# 328/32
E646	003550	113/37# 328/38
E647	003554	113/48# 328/44
E65	000555	30/39# 267/17
E650	003557	114/11# 328/50
E651	003562	114/19# 328/56
E652	003564	114/25# 329/02
E653	003571	115/12# 329/08
E654	003573	115/18# 329/14
E655	003601	115/29# 330/02
E656	003603	115/35# 330/08
E657	003607	115/47# 330/14
E66	000562	30/51# 267/25
E660	003611	115/53# 330/20
E661	003617	116/04# 330/26
E662	003621	116/10# 330/32
E663	003625	116/22# 330/39
E664	003627	116/28# 330/45
E665	003635	116/39# 330/51
E666	003637	116/45# 330/57
E667	003643	116/57# 331/03
E67	000566	31/23# 267/33
E670	003645	117/03# 331/09
E671	003653	117/14# 331/15
E672	003655	117/20# 332/02
E673	003661	117/32# 332/08
E674	003663	117/38# 332/14
E675	003671	117/49# 332/20
E676	003673	117/55# 332/26
E677	003677	118/07# 332/32
E7	000232	17/03# 259/56
E70	000571	31/36# 267/40
E700	003701	118/13# 332/38
E701	003707	118/24# 332/44
E702	003711	118/30# 332/50
E703	003715	118/42# 332/56
E704	003717	118/48# 333/02
E705	003725	118/59# 333/08
E706	003727	119/05# 333/14
E707	003733	119/17# 334/02
E71	000573	31/43# 267/47
E710	003735	119/23# 334/08
E711	003743	119/34# 334/14
E712	003745	119/40# 334/20
E713	003751	119/52# 334/26
E714	003753	119/58# 334/32
E715	003761	120/09# 334/38
E716	003763	120/15# 334/44
E717	003767	120/27# 334/50
E72	000576	31/56# 267/54

E720	003771	120/33# 334/56
E721	003777	120/44# 335/02
E722	004001	120/50# 335/08
E723	004005	121/02# 335/14
E724	004007	121/08# 336/02
E725	004015	121/19# 336/08
E726	004017	121/25# 336/14
E727	004023	121/37# 336/20
E73	000600	32/03# 268/01
E730	004025	121/43# 336/26
E731	004033	121/54# 336/32
E732	004035	121/60# 336/38
E733	004041	122/12# 336/44
E734	004043	122/18# 336/50
E735	004051	122/29# 336/56
E736	004053	122/35# 337/02
E737	004057	122/47# 337/08
E74	000603	32/16# 268/08
E740	004061	122/53# 337/14
E741	004067	123/04# 338/02
E742	004071	123/10# 338/08
E743	004075	123/22# 338/14
E744	004077	123/28# 338/20
E745	004105	123/39# 338/27
E746	004107	123/45# 338/33
E747	004113	123/57# 338/39
E75	000605	32/23# 268/15
E750	004115	124/03# 338/45
E751	004123	124/14# 338/51
E752	004125	124/20# 338/57
E753	004133	125/10# 339/03
E754	004135	125/16# 339/09
E755	004141	125/44# 339/15
E756	004145	125/54# 340/02
E757	004151	126/04# 340/08
E76	000610	32/36# 268/22
E760	004155	126/14# 340/14
E761	004161	126/24# 340/20
E762	004165	126/34# 340/26
E763	004171	126/44# 340/32
E764	004175	126/54# 340/38
E765	004201	127/04# 340/44
E766	004205	127/14# 340/50
E767	004211	127/24# 340/56
E77	000612	32/43# 269/02
E770	004215	127/34# 341/02
E771	004217	128/19# 341/08
E772	004223	128/30# 341/14
E773	004230	128/41# 342/02
E774	004235	128/52# 342/08
E775	004242	129/03# 342/14
E776	004247	129/14# 342/20
E777	004254	129/25# 342/26
EGGS	011416	13/13 257/16#
ERROR	000134	MC 6/36# 15/19 16/06 16/15 16/23 16/31 16/40 16/50 16/60 17/10 17/21 18/07 18/19 18/30 19/07 19/19 19/31 19/44 19/55 20/09 21/27 21/34 21/41 21/55 22/02 22/09 22/23 22/30

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22/37	22/51	22/58	23/05	24/16	24/27	24/38
24/52	25/03	25/14	25/25	25/36	25/47	25/58
26/09	26/20	27/21	27/33	28/07	28/16	28/31
28/44	28/54	29/05	30/06	30/19	30/35	30/47
31/19	31/32	31/39	31/52	31/59	32/12	32/19
32/32	32/39	32/52	32/58	33/10	33/16	33/28
33/34	33/46	33/52	34/04	34/10	34/22	34/28
34/40	34/46	34/58	35/04	35/16	35/22	35/34
35/40	35/52	35/58	36/07	36/13	37/08	37/20
37/26	37/38	37/44	37/56	38/02	38/14	38/20
38/32	38/38	38/50	38/56	39/08	39/14	39/26
39/32	39/44	39/50	40/02	40/08	40/20	40/26
40/38	40/44	40/56	41/02	41/14	41/20	41/32
41/38	41/47	41/53	42/24	42/33	43/07	43/15
43/29	43/37	43/51	43/59	44/13	44/21	44/35
44/43	44/57	45/05	45/19	45/27	45/41	45/49
46/03	46/11	46/25	46/33	46/47	46/55	47/09
47/17	47/31	47/39	47/53	48/01	48/15	48/23
48/35	48/41	48/52	48/58	50/07	50/15	50/29
50/37	50/51	50/59	51/13	51/21	51/35	51/43
51/57	52/05	52/19	52/27	52/41	52/49	53/03
53/11	53/25	53/33	53/47	53/55	54/09	54/17
54/31	54/39	54/53	55/01	55/15	55/23	55/35
55/41	56/25	56/31	56/40	57/14	57/33	57/52
58/11	58/30	58/49	59/08	59/27	59/46	60/05
60/24	60/43	61/02	61/21	61/40	61/59	62/10
62/28	62/47	63/06	63/25	63/44	64/03	64/22
64/41	64/60	65/19	65/38	65/57	66/16	66/35
66/54	67/13	68/22	68/38	68/55	69/12	69/29
69/47	70/04	70/21	70/38	70/56	71/13	71/30
71/47	72/05	72/22	72/39	72/51	72/57	74/07
74/15	74/27	74/33	74/45	74/51	75/02	75/08
76/41	77/08	77/16	77/29	77/42	77/55	78/03
78/16	78/29	78/42	78/50	79/03	79/16	79/29
79/37	79/50	80/03	80/16	80/24	80/37	80/50
81/03	81/11	81/24	81/37	81/50	81/58	82/11
82/24	82/37	82/45	82/58	83/11	83/24	83/32
83/45	83/58	84/11	84/19	84/32	84/45	84/58
85/06	85/19	85/32	85/45	85/53	86/06	86/19
86/32	86/40	86/53	87/06	87/19	87/27	87/40
87/53	88/06	88/14	88/27	88/40	88/53	89/01
89/14	89/27	90/07	90/16	90/27	90/36	90/46
90/54	91/03	91/12	92/06	92/12	92/18	92/32
92/39	92/53	92/59	94/30	94/38	94/51	94/59
95/12	95/20	95/33	95/41	95/54	96/02	96/15
96/23	96/36	96/44	96/57	97/05	97/18	97/26
97/39	97/47	97/60	98/08	98/21	98/29	98/42
98/50	99/03	99/11	99/24	99/32	99/45	99/53
100/05	100/11	100/23	100/29	101/07	101/13	101/25
101/31	103/16	103/24	103/34	103/50	103/58	104/08
104/24	104/32	104/42	104/58	105/06	105/16	105/32
105/40	105/50	106/06	106/14	106/24	106/40	106/48
106/58	107/14	107/22	107/32	107/48	107/56	108/06
108/22	108/30	108/40	108/56	109/04	109/14	109/30
109/38	109/48	110/04	110/12	110/22	110/38	110/46
110/56	111/12	111/20	111/30	111/46	111/54	112/04
113/04	113/12	113/21	113/33	113/44	114/07	114/15
114/21	115/08	115/14	115/25	115/31	115/43	115/49

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115/60	116/06	116/18	116/24	116/35	116/41	116/53
116/59	117/10	117/16	117/28	117/34	117/45	117/51
118/03	118/09	118/20	118/26	118/38	118/44	118/55
119/01	119/13	119/19	119/30	119/36	119/48	119/54
120/05	120/11	120/23	120/29	120/40	120/46	120/58
121/04	121/15	121/21	121/33	121/39	121/50	121/56
122/08	122/14	122/25	122/31	122/43	122/49	122/60
123/06	123/18	123/24	123/35	123/41	123/53	123/59
124/10	124/16	125/06	125/12	125/40	125/50	125/60
126/10	126/20	126/30	126/40	126/50	126/60	127/10
127/20	127/30	128/15	128/26	128/37	128/48	128/59
129/10	129/21	129/32	129/43	129/54	130/05	130/16
130/27	130/38	130/49	130/60	131/11	132/08	132/15
132/22	132/29	133/06	133/12	133/21	133/35	133/41
133/50	134/04	134/10	134/19	134/33	134/39	134/48
135/02	135/08	135/17	135/31	135/37	135/46	135/60
136/06	136/15	136/29	136/35	136/44	136/58	137/04
137/13	137/27	137/33	137/42	137/56	138/02	138/11
138/25	138/31	138/40	138/54	138/60	139/09	139/23
139/29	139/38	139/52	139/58	140/07	140/21	140/27
140/36	141/18	141/25	141/34	141/41	141/50	141/57
142/06	142/13	143/08	143/19	143/34	143/44	144/10
144/23	144/35	144/46	144/52	144/58	145/10	145/16
145/22	146/08	146/16	146/22	146/35	146/42	146/48
146/60	147/06	147/13	147/20	148/08	148/14	148/21
148/34	148/40	148/53	148/59	150/10	150/18	150/31
150/39	150/56	152/10	152/24	152/36	152/54	153/09
154/12	154/30	154/37	155/14	155/22	155/42	155/50
156/15	156/56	158/12	158/17	158/23	158/28	158/35
158/54	159/15	159/41	159/49	160/04	160/12	160/19
161/11	161/19	161/34	161/42	161/56	162/04	162/11
163/16	163/31	163/37	163/51	164/28	164/44	164/60
165/16	165/32	165/48	166/04	166/20	166/36	166/52
167/08	167/24	167/40	167/56	168/12	169/09	169/20
169/45	169/53	170/04	170/12	170/23	170/31	170/42
170/50	171/07	172/10	172/16	172/55	173/01	173/07
173/21	173/27	173/33	173/47	173/53	173/59	174/13
174/19	174/25	174/39	174/45	174/51	175/05	175/11
175/17	175/31	175/37	175/43	175/57	176/03	176/09
177/09	177/18	178/21	178/35	178/52	178/58	179/06
180/23	180/31	180/43	180/51	181/03	181/11	181/23
181/31	182/11	182/20	182/26	182/44	182/55	183/04
183/12	183/26	183/34	184/15	184/25	184/32	184/39
184/46	184/55	185/03	185/10	185/18	185/26	186/15
186/20	186/28	186/36	186/43	186/50	186/58	187/05
187/12	188/15	188/20	188/35	188/44	188/52	189/07
191/06	191/23	191/41	191/52	192/04	193/09	193/20
193/36	193/50	194/04	194/18	194/32	194/46	194/60
195/14	195/28	195/42	195/56	196/10	197/15	197/34
197/53	198/12	198/31	198/50	199/09	199/28	199/47
200/06	200/25	200/44	201/15	201/28	201/40	201/53
202/14	202/31	202/47	205/16	205/28	205/40	205/52
206/04	206/17	207/09	207/22	207/36	207/53	209/16
209/28	209/40	209/53	210/06	211/10	211/23	211/37
211/51	212/06	213/11	213/26	213/41	213/55	214/11
215/09	215/25	215/41	215/57	218/16	218/28	218/40
218/52	219/04	219/16	220/08	220/20	220/32	220/44
220/58	221/11	222/09	222/21	222/33	222/45	222/57

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	223/13	224/11	224/27	224/41	224/56	225/13	227/19
	227/31	227/47	228/04	228/22	229/12	229/29	229/47
	230/03	230/20	231/14	231/31	231/49	232/05	232/16
	232/29	232/48	234/11	234/19	234/27	234/34	234/46
	234/53	235/24	235/30	235/36	235/50	235/56	236/02
	236/16	236/22	236/28	236/42	236/48	236/54	237/08
	237/14	237/20	237/34	237/40	237/46	237/60	238/06
	238/12	238/26	238/32	238/38	239/08	239/14	239/28
	239/35	239/42	239/52	240/06	240/12	240/22	240/30
	241/07	241/17	241/26	241/35	241/44	241/54	242/16
	242/28	242/40	242/52	243/04	243/16	244/07	244/18
	244/27	244/33	244/43	244/49	244/59	245/09	245/20
	246/07	247/15	247/24	247/34	247/43	248/02	248/07
	248/17	249/18	249/23	249/29	249/47	250/08	250/14
	250/24	250/30	250/41	250/46	250/54	251/02	251/14
	251/19	251/29	252/09	252/14	252/19	252/26	252/33
	252/39	253/18	253/24	253/31	253/37	253/44	253/51
	254/05	254/11	254/19	254/28	254/34	254/42	254/53
	255/11	255/28	255/36	255/46			
HELP 000056 MC	6/09#	259/03	259/11	259/19	259/26	259/33	259/41
	259/49	259/56	260/03	260/10	260/17	260/24	261/01
	261/08	261/15	261/22	261/30	261/37	261/45	261/52
	261/59	262/06	262/13	262/20	262/27	263/01	263/08
	263/15	263/22	263/29	263/36	263/43	263/50	263/57
	264/04	264/11	264/18	264/25	265/01	265/08	265/15
	265/22	265/29	265/36	265/44	265/51	265/58	266/05
	266/12	266/19	266/26	267/01	267/09	267/16	267/24
	267/32	267/39	267/46	267/53	267/60	268/07	268/14
	268/21	269/01	269/08	269/14	269/20	269/26	269/32
	269/38	269/44	269/50	269/56	270/02	270/08	270/14
	271/01	271/07	271/13	271/19	271/25	271/31	271/37
	271/43	271/49	271/55	272/01	272/07	272/13	273/01
	273/07	273/14	273/20	273/26	273/32	273/38	273/44
	273/50	273/56	274/02	274/08	274/14	275/01	275/07
	275/13	275/19	275/25	275/31	275/37	275/43	275/49
	275/55	276/01	276/07	276/13	277/01	277/07	277/13
	277/19	277/25	277/31	277/37	277/43	277/49	277/55
	278/01	278/07	278/13	279/01	279/07	279/13	279/19
	279/25	279/31	279/37	279/43	279/49	279/55	280/01
	280/07	280/13	281/02	281/08	281/14	281/20	281/26
	281/32	281/38	281/44	281/50	281/56	282/02	282/08
	282/14	283/01	283/07	283/14	283/21	283/27	283/33
	283/39	283/45	283/51	283/57	284/03	284/09	284/15
	285/01	285/07	285/13	285/19	285/25	285/31	285/37
	285/43	285/49	285/55	286/01	286/07	286/13	287/01
	287/07	287/13	287/19	287/25	287/31	287/37	287/43
	287/49	287/56	288/02	288/08	288/14	289/01	289/08
	289/15	289/22	289/29	289/36	289/43	289/50	289/57
	290/04	290/11	291/01	291/08	291/15	291/22	291/29
	291/35	291/41	291/48	291/55	292/02	292/09	293/01
	293/09	293/16	293/23	293/30	293/37	293/44	293/51
	293/58	294/05	295/01	295/08	295/16	295/24	295/32
	295/40	295/48	295/56	296/04	297/01	297/09	297/18
	297/26	297/34	297/42	297/50	297/58	298/05	299/01
	299/08	299/15	299/21	299/27	299/34	299/41	299/47
	299/53	299/59	300/06	300/12	301/01	301/08	301/15
	301/21	301/28	301/35	301/42	301/49	301/56	302/03
	302/10	303/01	303/08	303/15	303/22	303/28	303/35

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	303/42	303/49	303/55	304/02	304/09	305/01	305/07
	305/14	305/21	305/28	305/34	305/41	305/48	305/55
	306/01	306/08	307/01	307/08	307/14	307/22	307/29
	307/36	307/42	307/49	307/56	308/03	308/09	309/01
	309/08	309/15	309/21	309/28	309/35	309/42	309/48
	309/54	309/60	310/07	311/01	311/07	311/14	311/21
	311/28	311/34	311/41	311/48	311/54	311/60	313/01
	313/07	313/13	313/20	313/26	313/32	313/39	313/46
	313/52	313/59	314/05	314/12	315/01	315/08	315/14
	315/21	315/27	315/34	315/40	315/47	315/53	315/60
	316/06	316/13	316/19	316/26	316/32	316/39	316/45
	316/52	316/58	317/05	317/11	317/18	318/01	318/08
	318/15	318/22	318/29	318/36	318/43	318/50	318/57
	319/04	320/01	320/07	320/13	320/19	320/25	320/31
	320/37	320/43	320/49	320/55	321/01	321/07	321/13
	322/01	322/07	322/13	322/19	322/25	322/31	322/37
	322/43	322/49	322/56	323/02	323/08	323/14	324/01
	324/07	324/13	324/19	324/25	324/31	324/37	324/43
	324/49	324/55	325/01	325/07	325/13	326/01	326/07
	326/13	326/19	326/25	326/31	326/37	326/43	326/49
	326/55	327/01	327/07	327/13	328/01	328/07	328/13
	328/19	328/25	328/31	328/37	328/43	328/49	328/55
	329/01	329/07	329/13	330/01	330/07	330/13	330/19
	330/25	330/31	330/38	330/44	330/50	330/56	331/02
	331/08	331/14	332/01	332/07	332/13	332/19	332/25
	332/31	332/37	332/43	332/49	332/55	333/01	333/07
	333/13	334/01	334/07	334/13	334/19	334/25	334/31
	334/37	334/43	334/49	334/55	335/01	335/07	335/13
	336/01	336/07	336/13	336/19	336/25	336/31	336/37
	336/43	336/49	336/55	337/01	337/07	337/13	338/01
	338/07	338/13	338/19	338/26	338/32	338/38	338/44
	338/50	338/56	339/02	339/08	339/14	340/01	340/07
	340/13	340/19	340/25	340/31	340/37	340/43	340/49
	340/55	341/01	341/07	341/13	342/01	342/07	342/13
	342/19	342/25	342/31	342/37	342/43	342/49	342/55
	343/01	343/07	343/13	344/01	344/07	344/13	344/19
	344/25	344/31	344/37	344/43	344/49	344/55	345/01
	345/07	345/13	346/01	346/07	346/14	346/20	346/26
	346/32	346/38	346/44	346/50	346/56	347/02	347/08
	347/14	348/01	348/07	348/13	348/19	348/25	348/31
	348/37	348/43	348/49	348/55	349/01	349/07	349/13
	350/01	350/07	350/13	350/19	350/25	350/31	350/37
	350/43	350/49	350/55	351/01	351/07	351/13	352/01
	352/07	352/13	352/19	352/25	352/31	352/37	352/43
	352/49	352/55	353/01	353/07	353/13	354/02	354/09
	354/15	354/22	354/28	354/34	354/40	354/46	354/52
	354/58	355/04	355/10	355/16	356/01	356/07	356/13
	356/19	356/25	356/31	356/37	356/43	356/49	356/55
	357/01	357/07	357/13	358/01	358/07	358/13	358/19
	358/25	358/32	358/38	358/44	358/51	358/57	359/03
	359/09	359/15	360/01	360/07	360/13	360/19	360/25
	360/31	360/37	360/44	360/50	360/56	361/02	361/08
	361/14	362/01	362/07	362/13	362/19	362/25	362/31
	362/37	362/43	362/49	362/55	363/01	363/07	363/13
	364/01	364/07	364/13	364/19	364/26	364/32	364/39
	364/45	364/51	364/57	365/03	365/09	365/15	366/01
	366/07	366/13	366/19	366/25	366/31	366/37	366/43
	366/49	366/55	367/01	367/07	367/13	368/01	368/07

		368/13	368/19	368/25	368/31	368/37	368/43	368/49
		368/55	369/01	369/07	369/13	370/01	370/07	370/13
		370/19	370/25	370/31	370/37	370/43	370/49	370/55
		371/01	371/07	371/13	372/01	372/07	372/13	372/19
		372/25	372/31	372/37	372/43	372/49	372/55	373/01
		373/07	373/13	374/01	374/07	374/13	374/19	374/25
		374/31	374/37	374/43	374/49	374/55	375/01	375/07
		375/14	376/02	376/08	376/14	376/20	376/26	376/32
		376/38	376/44	376/50	376/56	377/02	377/08	377/14
		378/01	378/07	378/14	378/20	378/26	378/32	378/38
		378/44	378/50	378/56	379/02	379/09	379/16	380/01
		380/07	380/13	380/19	380/26	380/33	380/40	380/48
		380/57	381/03	381/11	382/01	382/08	382/15	382/22
		382/29	382/36	382/43	382/50	382/57	383/04	383/11
		384/01	384/08	384/15	384/22	384/29	384/36	384/43
		384/50	384/57	385/04	385/11	386/01	386/08	386/14
		386/20	386/28	386/36	386/45	386/51	386/57	387/03
		387/09	388/01	388/07	388/13	388/19	388/25	388/31
		388/37	388/43	388/49	388/56	389/02	389/08	389/14
		390/01	390/07	390/13	390/19	390/25	390/31	390/37
		390/43	390/50	390/56	391/02	391/08	391/15	392/01
		392/08	392/15	392/21	392/28	392/35	392/42	392/49
		392/56	393/02	393/08	393/14	394/01	394/08	394/14
		394/20	394/27	394/33	394/39	394/46	394/52	394/58
		395/05	395/12	396/01	396/07	396/13	396/20	396/26
		396/32	396/39	396/45	396/51	396/57	397/03	397/10
		398/01	398/07	398/13	398/19	398/25	398/31	398/37
		398/43	398/49	398/55	399/01	399/07	399/13	400/01
		400/07	400/13	400/19	400/25	400/31	400/37	400/43
		400/49	400/55	401/01	401/07	401/13	402/01	402/07
		402/13	402/19	402/25	402/31	402/37	402/43	402/49
		402/55	403/01	403/07	403/13	404/01	404/07	404/13
		404/19	404/25	404/31	404/37	404/43	404/50	404/56
		405/02	405/08	405/14	406/01	406/07	406/13	406/19
		406/25	406/31	406/37	406/43	406/49	406/55	407/01
		407/08	407/14	408/01	408/07	408/13	408/19	408/25
		408/31	408/37	408/43	408/49	408/55	409/01	409/07
		409/13	410/01	410/08	410/15	410/22	410/28	410/34
		410/42	410/50	410/56	411/03	411/09	412/01	412/07
		412/13	412/19	412/25	412/31	412/37	412/43	412/49
		412/55	413/01	413/07	413/13	414/01	414/07	414/13
		414/19	414/25	414/31	414/37			
ILOVF	006574	189/03	189/06#					
INC00	002751	92/03#						
INC01	002761	92/28#						
INC02	002771	92/48#						
INC20	003204	100/03#						
INC21	003211	100/21#						
INCTS	001710 MC	94/04#	94/24	94/45	95/06	95/27	95/48	96/09
		96/30	96/51	97/12	97/33	97/54	98/15	98/36
		98/57	99/18	99/39				
INT00	011036	239/48	247/51#					
INT01	011061	249/03#						
INT02	011104	249/38#						
INT03	011116	250/03#						
INT04	011136	250/37#						
INT05	011154	251/10#						
INT06	011170	252/04#						

INT07	011227	252/55	253/08#					
INT0K	011054	247/51	248/13#	248/15				
INT1K	011102	249/08	249/28#					
INT4K	011145	250/37	250/52#	250/60				
INT5K	011163	251/10	251/25#	251/27				
INT6K	011200	252/04	252/24#					
IOTS1	002557 MC	234/59#	235/15	235/41	236/07	236/33	236/59	237/25
		237/51	238/17					
IOTS2	002622 MC	242/01#	242/10	242/22	242/34	242/46	242/58	243/10
IOX00	010600	239/24#	239/47	239/58				
IOX01	010615	239/26	239/41	239/49#				
IO.00	010415	234/09#	253/57					
IO.01	010420	234/17#						
IO.02	010423	234/26#						
IO.03	010425	234/33#						
IO.04	010427	234/40#						
IO.13	010571	239/04#						
ISDST	002353 MC	164/03#	164/17	164/33	164/49	165/05	165/21	165/37
		165/53	166/09	166/25	166/41	166/57	167/13	167/29
		167/45	168/01					
ISZ00	004757	146/03#						
ISZ01	005005	146/56#						
ISZ02	005372	159/56#						
ISZ03	005412	161/03#						
JMP00	005034	148/29#	148/31					
JMP01	005044	148/46#	148/48					
JMP02	005306	158/07#	158/09					
JMP2L	005315	158/11	158/22#					
JMP3K	000157	14/52#	247/52	249/06				
JS02K	005365	159/28	159/41#					
JSR00	005056	150/05#	150/07					
JSR01	005070	150/24#	150/26					
JSR02	005347	159/25#						
K0	000146	14/43#	172/48	174/32	180/17			
K0777	000127	14/27#	174/06	175/50				
K1	000101	14/05#	125/04	125/38	125/48	125/58	126/08	126/18
		126/28	126/38	126/48	126/58	127/08	127/18	127/28
		128/23	133/02	136/55	186/06	186/34		
K10	000110	14/12#	128/56	134/29	138/22	150/47	159/26	163/23
		164/52	186/07	186/41	233/14	252/59		
K100	000113	14/15#	129/29	135/56	139/49	152/48	165/40	186/08
		186/48						
K1000	000117	14/19#	130/02	133/32	137/23	166/28		
K100K	000126	14/26#	131/08	136/26	140/17	168/04		
K10K	000123	14/23#	130/35	134/59	138/50	167/16		
K1377	000162	14/55#	257/10					
K2	000102	14/06#	128/34	133/31	137/24	164/20	180/37	188/08
		247/53	249/03					
K20	000111	14/13#	129/07	134/58	138/51	154/05	156/28	159/06
		165/08						
K200	000114	14/16#	129/40	136/25	140/18	152/47	153/04	165/56
K2000	000120	14/20#	130/13	134/01	137/52	166/44		
K20K	000124	14/24#	130/46	135/28	139/19	167/32		
K210	000135	14/33#	152/06	152/19	152/31	154/22	155/34	
K212	000152	14/47#	254/25					
K215	000151	14/46#	254/02					
K2525	000143	14/39#	173/14	174/58				
K3	000103	14/07#	184/53					

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K300	000131		14/29#	153/03	155/06	156/07	156/44	158/45	159/07
			159/31	255/03					
K320	000156		14/51#	254/48					
K323	000153		14/48#	255/41					
K377	000155		14/50#	182/06	182/33	197/11	197/30	197/49	198/08
			198/27	198/46	199/05	199/24	199/43	200/02	200/21
			200/40						
K3.3K	000122		14/22#	233/12	257/07				
K4	000104		14/08#	128/45	133/60	137/53	164/36		
K40	000112		14/14#	129/18	135/27	139/20	165/24	181/17	
K400	000116		14/18#	129/51	133/03	136/54	154/06	166/12	171/04
			178/06	178/16	178/29	178/30	178/46	182/37	183/20
			184/07	185/01	186/02	186/55	188/07		
K4000	000121		14/21#	130/24	134/30	138/21	166/60		
K405	000115		14/17#	184/37					
K40K	000125		14/25#	130/57	135/57	139/48	167/48		
K420	000144		14/41#						
K5	000105		14/09#	150/15					
K5252	000142		14/40#	173/40	175/24	235/18	235/44	236/10	236/36
			237/02	237/28	237/54	238/20			
K6	000106		14/10#	180/57					
K60	000147		14/44#	252/57					
K7	000107		14/11#	150/36	163/04				
KATSW	000164		14/57#	15/05	233/03	255/05	256/01	257/06	
KC	010372		14/58	233/03#					
KCBE	000141		14/37#	163/08					
KCBO	000142		14/38#	14/40	163/25	255/16			
KD11	000133		14/31#	156/05					
KD17	000134		14/32#	156/29					
KD21	000137		14/35#	156/38	156/42				
KD300	000132		14/30#	170/60					
KD37	000140		14/36#	157/02					
KJRET	000145		14/42#	159/35					
KLDA.	000130		14/28#	144/08					
KM8	000136		14/34#	156/31					
KTTO	000154		14/49#						
LABEL	000142	MC	7/01#	15/21	16/08	16/17	16/25	16/33	16/42
			16/52	17/02	17/12	17/23	18/09	18/21	18/32
			19/09	19/21	19/33	19/46	19/57	20/11	21/29
			21/36	21/43	21/57	22/04	22/11	22/25	22/32
			22/39	22/53	22/60	23/07	24/18	24/29	24/40
			24/54	25/05	25/16	25/27	25/38	25/49	25/60
			26/11	26/22	27/23	27/35	28/09	28/18	28/33
			28/46	28/56	29/07	30/08	30/21	30/37	30/49
			31/21	31/34	31/41	31/54	32/01	32/14	32/21
			32/34	32/41	32/54	32/60	33/12	33/18	33/30
			33/36	33/48	33/54	34/06	34/12	34/24	34/30
			34/42	34/48	34/60	35/06	35/18	35/24	35/36
			35/42	35/54	35/60	36/09	36/15	37/10	37/22
			37/28	37/40	37/46	37/58	38/04	38/16	38/22
			38/34	38/40	38/52	38/58	39/10	39/16	39/28
			39/34	39/46	39/52	40/04	40/10	40/22	40/28
			40/40	40/46	40/58	41/04	41/16	41/22	41/34
			41/40	41/49	41/55	42/26	42/35	43/09	43/17
			43/31	43/39	43/53	44/01	44/15	44/23	44/37
			44/45	44/59	45/07	45/21	45/29	45/43	45/51
			46/05	46/13	46/27	46/35	46/49	46/57	47/11
			47/19	47/33	47/41	47/55	48/03	48/17	48/25

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48/37	48/43	48/54	48/60	50/09	50/17	50/31
50/39	50/53	51/01	51/15	51/23	51/37	51/45
51/59	52/07	52/21	52/29	52/43	52/51	53/05
53/13	53/27	53/35	53/49	53/57	54/11	54/19
54/33	54/41	54/55	55/03	55/17	55/25	55/37
55/43	56/27	56/33	56/42	57/16	57/35	57/54
58/13	58/32	58/51	59/10	59/29	59/48	60/07
60/26	60/45	61/04	61/23	61/42	62/01	62/12
62/30	62/49	63/08	63/27	63/46	64/05	64/24
64/43	65/02	65/21	65/40	65/59	66/18	66/37
66/56	67/15	68/24	68/40	68/57	69/14	69/31
69/49	70/06	70/23	70/40	70/58	71/15	71/32
71/49	72/07	72/24	72/41	72/53	72/59	74/09
74/17	74/29	74/35	74/47	74/53	75/04	75/10
76/43	77/10	77/18	77/31	77/44	77/57	78/05
78/18	78/31	78/44	78/52	79/05	79/18	79/31
79/39	79/52	80/05	80/18	80/26	80/39	80/52
81/05	81/13	81/26	81/39	81/52	81/60	82/13
82/26	82/39	82/47	82/60	83/13	83/26	83/34
83/47	83/60	84/13	84/21	84/34	84/47	84/60
85/08	85/21	85/34	85/47	85/55	86/08	86/21
86/34	86/42	86/55	87/08	87/21	87/29	87/42
87/55	88/08	88/16	88/29	88/42	88/55	89/03
89/16	89/29	90/09	90/18	90/29	90/38	90/48
90/56	91/05	91/14	92/08	92/14	92/20	92/34
92/41	92/55	93/01	94/32	94/40	94/53	95/01
95/14	95/22	95/35	95/43	95/56	96/04	96/17
96/25	96/38	96/46	96/59	97/07	97/20	97/28
97/41	97/49	98/02	98/10	98/23	98/31	98/44
98/52	99/05	99/13	99/26	99/34	99/47	99/55
100/07	100/13	100/25	100/31	101/09	101/15	101/27
101/33	103/18	103/26	103/36	103/52	103/60	104/10
104/26	104/34	104/44	104/60	105/08	105/18	105/34
105/42	105/52	106/08	106/16	106/26	106/42	106/50
106/60	107/16	107/24	107/34	107/50	107/58	108/08
108/24	108/32	108/42	108/58	109/06	109/16	109/32
109/40	109/50	110/06	110/14	110/24	110/40	110/48
110/58	111/14	111/22	111/32	111/48	111/56	112/06
113/06	113/14	113/23	113/35	113/46	114/09	114/17
114/23	115/10	115/16	115/27	115/33	115/45	115/51
116/02	116/08	116/20	116/26	116/37	116/43	116/55
117/01	117/12	117/18	117/30	117/36	117/47	117/53
118/05	118/11	118/22	118/28	118/40	118/46	118/57
119/03	119/15	119/21	119/32	119/38	119/50	119/56
120/07	120/13	120/25	120/31	120/42	120/48	120/60
121/06	121/17	121/23	121/35	121/41	121/52	121/58
122/10	122/16	122/27	122/33	122/45	122/51	123/02
123/08	123/20	123/26	123/37	123/43	123/55	124/01
124/12	124/18	125/08	125/14	125/42	125/52	126/02
126/12	126/22	126/32	126/42	126/52	127/02	127/12
127/22	127/32	128/17	128/28	128/39	128/50	129/01
129/12	129/23	129/34	129/45	129/56	130/07	130/18
130/29	130/40	130/51	131/02	131/13	132/10	132/17
132/24	132/31	133/08	133/14	133/23	133/37	133/43
133/52	134/06	134/12	134/21	134/35	134/41	134/50
135/04	135/10	135/19	135/33	135/39	135/48	136/02
136/08	136/17	136/31	136/37	136/46	136/60	137/06
137/15	137/29	137/35	137/44	137/58	138/04	138/13

NIN16	010735		244/14#
NIN17	010742		244/25#
NIN18	010747		244/40#
NIN19	010755		244/55#
NIN20	010762		245/05#
NIN21	010767		245/17#
NIN22	010773		246/02#
NLD1	004634		141/15#
NLD2	004643		141/31#
NLD3	004652		141/47#
NLD4	004661		142/03#
NOLOD	002320	MC	141/05# 141/14 141/30 141/46 142/02
NTEST	000165		14/58# 203/50
NXTPA	011401		255/60 256/07 256/09 256/15#
PASL1	011324		255/16# 255/34
PASSC	011261		233/18 253/03 254/02#
PC	011352		259/03# 259/11# 259/19# 259/26# 259/33# 259/41# 259/49#
			259/56# 260/04# 260/11# 260/18# 260/25# 261/02# 261/09#
			261/16# 261/23# 261/31# 261/38# 261/46# 261/53# 261/60#
			262/07# 262/14# 262/21# 262/28# 263/02# 263/09# 263/16#
			263/23# 263/30# 263/37# 263/44# 263/51# 263/58# 264/05#
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			265/30# 265/37# 265/45# 265/52# 265/59# 266/06# 266/13#
			266/20# 266/27# 267/02# 267/10# 267/17# 267/25# 267/33#
			267/40# 267/47# 267/54# 268/01# 268/08# 268/15# 268/22#
			269/02# 269/09# 269/15# 269/21# 269/27# 269/33# 269/39#
			269/45# 269/51# 269/57# 270/03# 270/09# 270/15# 271/02#
			271/08# 271/14# 271/20# 271/26# 271/32# 271/38# 271/44#
			271/50# 271/56# 272/02# 272/08# 272/14# 273/02# 273/08#
			273/15# 273/21# 273/27# 273/33# 273/39# 273/45# 273/51#
			273/57# 274/03# 274/09# 274/15# 275/02# 275/08# 275/14#
			275/20# 275/26# 275/32# 275/38# 275/44# 275/50# 275/56#
			276/02# 276/08# 276/14# 277/02# 277/08# 277/14# 277/20#
			277/26# 277/32# 277/38# 277/44# 277/50# 277/56# 278/02#
			278/08# 278/14# 279/02# 279/08# 279/14# 279/20# 279/26#
			279/32# 279/38# 279/44# 279/50# 279/56# 280/02# 280/08#
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			285/08# 285/14# 285/20# 285/26# 285/32# 285/38# 285/44#
			285/50# 285/56# 286/02# 286/08# 286/14# 287/02# 287/08#
			287/14# 287/20# 287/26# 287/32# 287/38# 287/44# 287/50#
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			289/23# 289/30# 289/37# 289/44# 289/51# 289/58# 290/05#
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			291/42# 291/49# 291/56# 292/03# 292/10# 293/02# 293/10#
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			294/06# 295/02# 295/09# 295/17# 295/25# 295/33# 295/41#
			295/49# 295/57# 296/05# 297/02# 297/10# 297/19# 297/27#
			297/35# 297/43# 297/51# 297/59# 298/06# 299/02# 299/09#
			299/16# 299/22# 299/28# 299/35# 299/42# 299/48# 299/54#
			299/60# 300/07# 300/13# 301/02# 301/09# 301/16# 301/22#
			301/29# 301/36# 301/43# 301/50# 301/57# 302/04# 302/11#
			303/02# 303/09# 303/16# 303/23# 303/29# 303/36# 303/43#
			303/50# 303/56# 304/03# 304/10# 305/02# 305/08# 305/15#
			305/22# 305/29# 305/35# 305/42# 305/49# 305/56# 306/02#
			306/09# 307/02# 307/09# 307/15# 307/23# 307/30# 307/37#

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310/01# 310/08# 311/02# 311/08# 311/15# 311/22# 311/29#
311/35# 311/42# 311/49# 311/55# 312/01# 313/02# 313/08#
313/14# 313/21# 313/27# 313/33# 313/40# 313/47# 313/53#
313/60# 314/06# 314/13# 315/02# 315/09# 315/15# 315/22#
315/28# 315/35# 315/41# 315/48# 315/54# 316/01# 316/07#
316/14# 316/20# 316/27# 316/33# 316/40# 316/46# 316/53#
316/59# 317/06# 317/12# 317/19# 318/02# 318/09# 318/16#
318/23# 318/30# 318/37# 318/44# 318/51# 318/58# 319/05#
320/02# 320/08# 320/14# 320/20# 320/26# 320/32# 320/38#
320/44# 320/50# 320/56# 321/02# 321/08# 321/14# 322/02#
322/08# 322/14# 322/20# 322/26# 322/32# 322/38# 322/44#
322/50# 322/57# 323/03# 323/09# 323/15# 324/02# 324/08#
324/14# 324/20# 324/26# 324/32# 324/38# 324/44# 324/50#
324/56# 325/02# 325/08# 325/14# 326/02# 326/08# 326/14#
326/20# 326/26# 326/32# 326/38# 326/44# 326/50# 326/56#
327/02# 327/08# 327/14# 328/02# 328/08# 328/14# 328/20#
328/26# 328/32# 328/38# 328/44# 328/50# 328/56# 329/02#
329/08# 329/14# 330/02# 330/08# 330/14# 330/20# 330/26#
330/32# 330/39# 330/45# 330/51# 330/57# 331/03# 331/09#
331/15# 332/02# 332/08# 332/14# 332/20# 332/26# 332/32#
332/38# 332/44# 332/50# 332/56# 333/02# 333/08# 333/14#
334/02# 334/08# 334/14# 334/20# 334/26# 334/32# 334/38#
334/44# 334/50# 334/56# 335/02# 335/08# 335/14# 336/02#
336/08# 336/14# 336/20# 336/26# 336/32# 336/38# 336/44#
336/50# 336/56# 337/02# 337/08# 337/14# 338/02# 338/08#
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341/02# 341/08# 341/14# 342/02# 342/08# 342/14# 342/20#
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343/09# 343/15# 344/03# 344/09# 344/15# 344/21# 344/27#
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345/15# 346/03# 346/09# 346/16# 346/22# 346/28# 346/34#
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354/24# 354/30# 354/36# 354/42# 354/48# 354/54# 354/60#
355/06# 355/12# 355/18# 356/03# 356/09# 356/15# 356/21#
356/27# 356/33# 356/39# 356/45# 356/51# 356/57# 357/03#
357/09# 357/15# 358/03# 358/09# 358/15# 358/21# 358/27#
358/34# 358/40# 358/46# 358/53# 358/59# 359/05# 359/11#
359/17# 360/03# 360/09# 360/15# 360/21# 360/27# 360/33#
360/39# 360/46# 360/52# 360/58# 361/04# 361/10# 361/16#
362/03# 362/09# 362/15# 362/21# 362/27# 362/33# 362/39#
362/45# 362/51# 362/57# 363/03# 363/09# 363/15# 364/03#
364/09# 364/15# 364/21# 364/28# 364/34# 364/41# 364/47#
364/53# 364/59# 365/05# 365/11# 365/17# 366/03# 366/09#
366/15# 366/21# 366/27# 366/33# 366/39# 366/45# 366/51#
366/57# 367/03# 367/09# 367/15# 368/03# 368/09# 368/15#
368/21# 368/27# 368/33# 368/39# 368/45# 368/51# 368/57#
369/03# 369/09# 369/15# 370/03# 370/09# 370/15# 370/21#
370/27# 370/33# 370/39# 370/45# 370/51# 370/57# 371/03#

0449 PRCST

SWP03	004351		132/27#					
SWPTS	002234	MC	132/37#	132/58	133/27	133/56	134/25	134/54	135/23
			135/52	136/21	136/50	137/19	137/48	138/17	138/46
			139/15	139/44	140/13				
SWREG	011423		257/21#						
TAB	000051	MC	6/03#	259/03	259/11	259/19	259/26	259/33	259/41
			259/49	259/56	260/03	260/10	260/17	260/24	261/01
			261/08	261/15	261/22	261/30	261/37	261/45	261/52
			261/59	262/06	262/13	262/20	262/27	263/01	263/08
			263/15	263/22	263/29	263/36	263/43	263/50	263/57
			264/04	264/11	264/18	264/25	265/01	265/08	265/15
			265/22	265/29	265/36	265/44	265/51	265/58	266/05
			266/12	266/19	266/26	267/01	267/09	267/16	267/24
			267/32	267/39	267/46	267/53	267/60	268/07	268/14
			268/21	269/01	269/08	269/14	269/20	269/26	269/32
			269/38	269/44	269/50	269/56	270/02	270/08	270/14
			271/01	271/07	271/13	271/19	271/25	271/31	271/37
			271/43	271/49	271/55	272/01	272/07	272/13	273/01
			273/07	273/14	273/20	273/26	273/32	273/38	273/44
			273/50	273/56	274/02	274/08	274/14	275/01	275/07
			275/13	275/19	275/25	275/31	275/37	275/43	275/49
			275/55	276/01	276/07	276/13	277/01	277/07	277/13
			277/19	277/25	277/31	277/37	277/43	277/49	277/55
			278/01	278/07	278/13	279/01	279/07	279/13	279/19
			279/25	279/31	279/37	279/43	279/49	279/55	280/01
			280/07	280/13	281/02	281/08	281/14	281/20	281/26
			281/32	281/38	281/44	281/50	281/56	282/02	282/08
			282/14	283/01	283/07	283/14	283/21	283/27	283/33
			283/39	283/45	283/51	283/57	284/03	284/09	284/15
			285/01	285/07	285/13	285/19	285/25	285/31	285/37
			285/43	285/49	285/55	286/01	286/07	286/13	287/01
			287/07	287/13	287/19	287/25	287/31	287/37	287/43
			287/49	287/56	288/02	288/08	288/14	289/01	289/08
			289/15	289/22	289/29	289/36	289/43	289/50	289/57
			290/04	290/11	291/01	291/08	291/15	291/22	291/29
			291/35	291/41	291/48	291/55	292/02	292/09	293/01
			293/09	293/16	293/23	293/30	293/37	293/44	293/51
			293/58	294/05	295/01	295/08	295/16	295/24	295/32
			295/40	295/48	295/56	296/04	297/01	297/09	297/18
			297/26	297/34	297/42	297/50	297/58	298/05	299/01
			299/08	299/15	299/21	299/27	299/34	299/41	299/47
			299/53	299/59	300/06	300/12	301/01	301/08	301/15
			301/21	301/28	301/35	301/42	301/49	301/56	302/03
			302/10	303/01	303/08	303/15	303/22	303/28	303/35
			303/42	303/49	303/55	304/02	304/09	305/01	305/07
			305/14	305/21	305/28	305/34	305/41	305/48	305/55
			306/01	306/08	307/01	307/08	307/14	307/22	307/29
			307/36	307/42	307/49	307/56	308/03	308/09	309/01
			309/08	309/15	309/21	309/28	309/35	309/42	309/48
			309/54	309/60	310/07	311/01	311/07	311/14	311/21
			311/28	311/34	311/41	311/48	311/54	311/60	313/01
			313/07	313/13	313/20	313/26	313/32	313/39	313/46
			313/52	313/59	314/05	314/12	315/01	315/08	315/14
			315/21	315/27	315/34	315/40	315/47	315/53	315/60
			316/06	316/13	316/19	316/26	316/32	316/39	316/45
			316/52	316/58	317/05	317/11	317/18	318/01	318/08
			318/15	318/22	318/29	318/36	318/43	318/50	318/57
			319/04	320/01	320/07	320/13	320/19	320/25	320/31

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320/37	320/43	320/49	320/55	321/01	321/07	321/13
322/01	322/07	322/13	322/19	322/25	322/31	322/37
322/43	322/49	322/56	323/02	323/08	323/14	324/01
324/07	324/13	324/19	324/25	324/31	324/37	324/43
324/49	324/55	325/01	325/07	325/13	326/01	326/07
326/13	326/19	326/25	326/31	326/37	326/43	326/49
326/55	327/01	327/07	327/13	328/01	328/07	328/13
328/19	328/25	328/31	328/37	328/43	328/49	328/55
329/01	329/07	329/13	330/01	330/07	330/13	330/19
330/25	330/31	330/38	330/44	330/50	330/56	331/02
331/08	331/14	332/01	332/07	332/13	332/19	332/25
332/31	332/37	332/43	332/49	332/55	333/01	333/07
333/13	334/01	334/07	334/13	334/19	334/25	334/31
334/37	334/43	334/49	334/55	335/01	335/07	335/13
336/01	336/07	336/13	336/19	336/25	336/31	336/37
336/43	336/49	336/55	337/01	337/07	337/13	338/01
338/07	338/13	338/19	338/26	338/32	338/38	338/44
338/50	338/56	339/02	339/08	339/14	340/01	340/07
340/13	340/19	340/25	340/31	340/37	340/43	340/49
340/55	341/01	341/07	341/13	342/01	342/07	342/13
342/19	342/25	342/31	342/37	342/43	342/49	342/55
343/01	343/07	343/13	344/01	344/07	344/13	344/19
344/25	344/31	344/37	344/43	344/49	344/55	345/01
345/07	345/13	346/01	346/07	346/14	346/20	346/26
346/32	346/38	346/44	346/50	346/56	347/02	347/08
347/14	348/01	348/07	348/13	348/19	348/25	348/31
348/37	348/43	348/49	348/55	349/01	349/07	349/13
350/01	350/07	350/13	350/19	350/25	350/31	350/37
350/43	350/49	350/55	351/01	351/07	351/13	352/01
352/07	352/13	352/19	352/25	352/31	352/37	352/43
352/49	352/55	353/01	353/07	353/13	354/02	354/09
354/15	354/22	354/28	354/34	354/40	354/46	354/52
354/58	355/04	355/10	355/16	356/01	356/07	356/13
356/19	356/25	356/31	356/37	356/43	356/49	356/55
357/01	357/07	357/13	358/01	358/07	358/13	358/19
358/25	358/32	358/38	358/44	358/51	358/57	359/03
359/09	359/15	360/01	360/07	360/13	360/19	360/25
360/31	360/37	360/44	360/50	360/56	361/02	361/08
361/14	362/01	362/07	362/13	362/19	362/25	362/31
362/37	362/43	362/49	362/55	363/01	363/07	363/13
364/01	364/07	364/13	364/19	364/26	364/32	364/39
364/45	364/51	364/57	365/03	365/09	365/15	366/01
366/07	366/13	366/19	366/25	366/31	366/37	366/43
366/49	366/55	367/01	367/07	367/13	368/01	368/07
368/13	368/19	368/25	368/31	368/37	368/43	368/49
368/55	369/01	369/07	369/13	370/01	370/07	370/13
370/19	370/25	370/31	370/37	370/43	370/49	370/55
371/01	371/07	371/13	372/01	372/07	372/13	372/19
372/25	372/31	372/37	372/43	372/49	372/55	373/01
373/07	373/13	374/01	374/07	374/13	374/19	374/25
374/31	374/37	374/43	374/49	374/55	375/01	375/07
375/14	376/02	376/08	376/14	376/20	376/26	376/32
376/38	376/44	376/50	376/56	377/02	377/08	377/14
378/01	378/07	378/14	378/20	378/26	378/32	378/38
378/44	378/50	378/56	379/02	379/09	379/16	380/01
380/07	380/13	380/19	380/26	380/33	380/40	380/48
380/57	381/03	381/11	382/01	382/08	382/15	382/22
382/29	382/36	382/43	382/50	382/57	383/04	383/11

			384/01	384/08	384/15	384/22	384/29	384/36	384/43
			384/50	384/57	385/04	385/11	386/01	386/08	386/14
			386/20	386/28	386/36	386/45	386/51	386/57	387/03
			387/09	388/01	388/07	388/13	388/19	388/25	388/31
			388/37	388/43	388/49	388/56	389/02	389/08	389/14
			390/01	390/07	390/13	390/19	390/25	390/31	390/37
			390/43	390/50	390/56	391/02	391/08	391/15	392/01
			392/08	392/15	392/21	392/28	392/35	392/42	392/49
			392/56	393/02	393/08	393/14	394/01	394/08	394/14
			394/20	394/27	394/33	394/39	394/46	394/52	394/58
			395/05	395/12	396/01	396/07	396/13	396/20	396/26
			396/32	396/39	396/45	396/51	396/57	397/03	397/10
			398/01	398/07	398/13	398/19	398/25	398/31	398/37
			398/43	398/49	398/55	399/01	399/07	399/13	400/01
			400/07	400/13	400/19	400/25	400/31	400/37	400/43
			400/49	400/55	401/01	401/07	401/13	402/01	402/07
			402/13	402/19	402/25	402/31	402/37	402/43	402/49
			402/55	403/01	403/07	403/13	404/01	404/07	404/13
			404/19	404/25	404/31	404/37	404/43	404/50	404/56
			405/02	405/08	405/14	406/01	406/07	406/13	406/19
			406/25	406/31	406/37	406/43	406/49	406/55	407/01
			407/08	407/14	408/01	408/07	408/13	408/19	408/25
			408/31	408/37	408/43	408/49	408/55	409/01	409/07
			409/13	410/01	410/08	410/15	410/22	410/28	410/34
			410/42	410/50	410/56	411/03	411/09	412/01	412/07
			412/13	412/19	412/25	412/31	412/37	412/43	412/49
			412/55	413/01	413/07	413/13	414/01	414/07	414/13
			414/19	414/25	414/31	414/37			
TESTK	000150		14/45#	233/10	233/13	252/54	252/58	257/08	
TPACT	002404	MC	169/28#	169/40	169/59	170/18	170/37		
TPADR	000047		5/18#	169/07	169/42	170/01	170/20	170/39	171/01
			182/42						
TPLOC	000046		5/17#	169/17	182/39	182/53			
TP.00	005730		169/06#						
TP.01	005743		169/41#						
TP.02	005754		169/60#						
TP.03	005765		170/19#						
TP.04	005776		170/38#						
TP.05	006007		170/60#						
TP.08	006337		182/33#						
TP.5R	006020		171/02	171/13#					
TSTLC	000163		14/56#	186/26	187/10				
TTOOO	011005		247/06#						
XXYZ	000441		24/44	24/46#					
?G	001711		5/21#	259/03	259/07#	259/11	259/15#	259/19	259/23#
			259/26	259/30#	259/33	259/37#	259/41	259/45#	259/49
			259/53#	259/56	259/60#	260/03	260/07#	260/10	260/14#
			260/17	260/21#	260/24	260/28#	261/01	261/05#	261/08
			261/12#	261/15	261/19#	261/22	261/26#	261/30	261/34#
			261/37	261/41#	261/45	261/49#	261/52	261/56#	261/59
			262/03#	262/06	262/10#	262/13	262/17#	262/20	262/24#
			262/27	262/31#	263/01	263/05#	263/08	263/12#	263/15
			263/19#	263/22	263/26#	263/29	263/33#	263/36	263/40#
			263/43	263/47#	263/50	263/54#	263/57	264/01#	264/04
			264/08#	264/11	264/15#	264/18	264/22#	264/25	264/29#
			265/01	265/05#	265/08	265/12#	265/15	265/19#	265/22
			265/26#	265/29	265/33#	265/36	265/40#	265/44	265/48#
			265/51	265/55#	265/58	266/02#	266/05	266/09#	266/12

266/16#	266/19	266/23#	266/26	266/30#	267/01	267/05#	
267/09	267/13#	267/16	267/20#	267/24	267/28#	267/32	
267/36#	267/39	267/43#	267/46	267/50#	267/53	267/57#	
267/60	268/04#	268/07	268/11#	268/14	268/18#	268/21	
268/25#	269/01	269/05#	269/08	269/11#	269/14	269/17#	
269/20	269/23#	269/26	269/29#	269/32	269/35#	269/38	
269/41#	269/44	269/47#	269/50	269/53#	269/56	269/59#	
270/02	270/05#	270/08	270/11#	270/14	270/17#	271/01	
271/04#	271/07	271/10#	271/13	271/16#	271/19	271/22#	
271/25	271/28#	271/31	271/34#	271/37	271/40#	271/43	
271/46#	271/49	271/52#	271/55	271/58#	272/01	272/04#	
272/07	272/10#	272/13	272/16#	273/01	273/04#	273/07	
273/10#	273/14	273/17#	273/20	273/23#	273/26	273/29#	
273/32	273/35#	273/38	273/41#	273/44	273/47#	273/50	
273/53#	273/56	273/59#	274/02	274/05#	274/08	274/11#	
274/14	274/17#	275/01	275/04#	275/07	275/10#	275/13	
275/16#	275/19	275/22#	275/25	275/28#	275/31	275/34#	
275/37	275/40#	275/43	275/46#	275/49	275/52#	275/55	
275/58#	276/01	276/04#	276/07	276/10#	276/13	276/16#	
277/01	277/04#	277/07	277/10#	277/13	277/16#	277/19	
277/22#	277/25	277/28#	277/31	277/34#	277/37	277/40#	
277/43	277/46#	277/49	277/52#	277/55	277/58#	278/01	
278/04#	278/07	278/10#	278/13	278/16#	279/01	279/04#	
279/07	279/10#	279/13	279/16#	279/19	279/22#	279/25	
279/28#	279/31	279/34#	279/37	279/40#	279/43	279/46#	
279/49	279/52#	279/55	279/58#	280/01	280/04#	280/07	
280/10#	280/13	280/16#	281/02	281/05#	281/08	281/11#	
281/14	281/17#	281/20	281/23#	281/26	281/29#	281/32	
281/35#	281/38	281/41#	281/44	281/47#	281/50	281/53#	
281/56	281/59#	282/02	282/05#	282/08	282/11#	282/14	
282/17#	283/01	283/04#	283/07	283/10#	283/14	283/17#	
283/21	283/24#	283/27	283/30#	283/33	283/36#	283/39	
283/42#	283/45	283/48#	283/51	283/54#	283/57	283/60#	
284/03	284/06#	284/09	284/12#	284/15	284/18#	285/01	
285/04#	285/07	285/10#	285/13	285/16#	285/19	285/22#	
285/25	285/28#	285/31	285/34#	285/37	285/40#	285/43	
285/46#	285/49	285/52#	285/55	285/58#	286/01	286/04#	
286/07	286/10#	286/13	286/16#	287/01	287/04#	287/07	
287/10#	287/13	287/16#	287/19	287/22#	287/25	287/28#	
287/31	287/34#	287/37	287/40#	287/43	287/46#	287/49	
287/52#	287/56	287/59#	288/02	288/05#	288/08	288/11#	
288/14	288/17#	289/01	289/04#	289/08	289/11#	289/15	
289/18#	289/22	289/25#	289/29	289/32#	289/36	289/39#	
289/43	289/46#	289/50	289/53#	289/57	289/60#	290/04	
290/07#	290/11	290/14#	291/01	291/04#	291/08	291/11#	
291/15	291/18#	291/22	291/25#	291/29	291/32#	291/35	
291/38#	291/41	291/44#	291/48	291/51#	291/55	291/58#	
292/02	292/05#	292/09	292/12#	293/01	293/04#	293/09	
293/12#	293/16	293/19#	293/23	293/26#	293/30	293/33#	
293/37	293/40#	293/44	293/47#	293/51	293/54#	293/58	
294/01#	294/05	294/08#	295/01	295/04#	295/08	295/11#	
295/16	295/19#	295/24	295/27#	295/32	295/35#	295/40	
295/43#	295/48	295/51#	295/56	295/59#	296/04	296/07#	
297/01	297/04#	297/09	297/12#	297/18	297/21#	297/26	
297/29#	297/34	297/37#	297/42	297/45#	297/50	297/53#	
297/58	298/01#	298/05	298/08#	299/01	299/04#	299/08	
299/11#	299/15	299/18#	299/21	299/24#	299/27	299/30#	
299/34	299/37#	299/41	299/44#	299/47	299/50#	299/53	

299/56#	299/59	300/02#	300/06	300/09#	300/12	300/15#
301/01	301/04#	301/08	301/11#	301/15	301/18#	301/21
301/24#	301/28	301/31#	301/35	301/38#	301/42	301/45#
301/49	301/52#	301/56	301/59#	302/03	302/06#	302/10
302/13#	303/01	303/04#	303/08	303/11#	303/15	303/18#
303/22	303/25#	303/28	303/31#	303/35	303/38#	303/42
303/45#	303/49	303/52#	303/55	303/58#	304/02	304/05#
304/09	304/12#	305/01	305/04#	305/07	305/10#	305/14
305/17#	305/21	305/24#	305/28	305/31#	305/34	305/37#
305/41	305/44#	305/48	305/51#	305/55	305/58#	306/01
306/04#	306/08	306/11#	307/01	307/04#	307/08	307/11#
307/14	307/17#	307/22	307/25#	307/29	307/32#	307/36
307/39#	307/42	307/45#	307/49	307/52#	307/56	307/59#
308/03	308/06#	308/09	308/12#	309/01	309/04#	309/08
309/11#	309/15	309/18#	309/21	309/24#	309/28	309/31#
309/35	309/38#	309/42	309/45#	309/48	309/51#	309/54
309/57#	309/60	310/03#	310/07	310/10#	311/01	311/04#
311/07	311/10#	311/14	311/17#	311/21	311/24#	311/28
311/31#	311/34	311/37#	311/41	311/44#	311/48	311/51#
311/54	311/57#	311/60	312/03#	313/01	313/04#	313/07
313/10#	313/13	313/16#	313/20	313/23#	313/26	313/29#
313/32	313/35#	313/39	313/42#	313/46	313/49#	313/52
313/55#	313/59	314/02#	314/05	314/08#	314/12	314/15#
315/01	315/04#	315/08	315/11#	315/14	315/17#	315/21
315/24#	315/27	315/30#	315/34	315/37#	315/40	315/43#
315/47	315/50#	315/53	315/56#	315/60	316/03#	316/06
316/09#	316/13	316/16#	316/19	316/22#	316/26	316/29#
316/32	316/35#	316/39	316/42#	316/45	316/48#	316/52
316/55#	316/58	317/01#	317/05	317/08#	317/11	317/14#
317/18	317/21#	318/01	318/04#	318/08	318/11#	318/15
318/18#	318/22	318/25#	318/29	318/32#	318/36	318/39#
318/43	318/46#	318/50	318/53#	318/57	318/60#	319/04
319/07#	320/01	320/04#	320/07	320/10#	320/13	320/16#
320/19	320/22#	320/25	320/28#	320/31	320/34#	320/37
320/40#	320/43	320/46#	320/49	320/52#	320/55	320/58#
321/01	321/04#	321/07	321/10#	321/13	321/16#	322/01
322/04#	322/07	322/10#	322/13	322/16#	322/19	322/22#
322/25	322/28#	322/31	322/34#	322/37	322/40#	322/43
322/46#	322/49	322/52#	322/56	322/59#	323/02	323/05#
323/08	323/11#	323/14	323/17#	324/01	324/04#	324/07
324/10#	324/13	324/16#	324/19	324/22#	324/25	324/28#
324/31	324/34#	324/37	324/40#	324/43	324/46#	324/49
324/52#	324/55	324/58#	325/01	325/04#	325/07	325/10#
325/13	325/16#	326/01	326/04#	326/07	326/10#	326/13
326/16#	326/19	326/22#	326/25	326/28#	326/31	326/34#
326/37	326/40#	326/43	326/46#	326/49	326/52#	326/55
326/58#	327/01	327/04#	327/07	327/10#	327/13	327/16#
328/01	328/04#	328/07	328/10#	328/13	328/16#	328/19
328/22#	328/25	328/28#	328/31	328/34#	328/37	328/40#
328/43	328/46#	328/49	328/52#	328/55	328/58#	329/01
329/04#	329/07	329/10#	329/13	329/16#	330/01	330/04#
330/07	330/10#	330/13	330/16#	330/19	330/22#	330/25
330/28#	330/31	330/34#	330/38	330/41#	330/44	330/47#
330/50	330/53#	330/56	330/59#	331/02	331/05#	331/08
331/11#	331/14	331/17#	332/01	332/04#	332/07	332/10#
332/13	332/16#	332/19	332/22#	332/25	332/28#	332/31
332/34#	332/37	332/40#	332/43	332/46#	332/49	332/52#
332/55	332/58#	333/01	333/04#	333/07	333/10#	333/13

333/16#	334/01	334/04#	334/07	334/10#	334/13	334/16#
334/19	334/22#	334/25	334/28#	334/31	334/34#	334/37
334/40#	334/43	334/46#	334/49	334/52#	334/55	334/58#
335/01	335/04#	335/07	335/10#	335/13	335/16#	336/01
336/04#	336/07	336/10#	336/13	336/16#	336/19	336/22#
336/25	336/28#	336/31	336/34#	336/37	336/40#	336/43
336/46#	336/49	336/52#	336/55	336/58#	337/01	337/04#
337/07	337/10#	337/13	337/16#	338/01	338/04#	338/07
338/10#	338/13	338/16#	338/19	338/22#	338/26	338/29#
338/32	338/35#	338/38	338/41#	338/44	338/47#	338/50
338/53#	338/56	338/59#	339/02	339/05#	339/08	339/11#
339/14	339/17#	340/01	340/04#	340/07	340/10#	340/13
340/16#	340/19	340/22#	340/25	340/28#	340/31	340/34#
340/37	340/40#	340/43	340/46#	340/49	340/52#	340/55
340/58#	341/01	341/04#	341/07	341/10#	341/13	341/16#
342/01	342/04#	342/07	342/10#	342/13	342/16#	342/19
342/22#	342/25	342/28#	342/31	342/34#	342/37	342/40#
342/43	342/46#	342/49	342/52#	342/55	342/58#	343/01
343/04#	343/07	343/10#	343/13	343/16#	344/01	344/04#
344/07	344/10#	344/13	344/16#	344/19	344/22#	344/25
344/28#	344/31	344/34#	344/37	344/40#	344/43	344/46#
344/49	344/52#	344/55	344/58#	345/01	345/04#	345/07
345/10#	345/13	345/16#	346/01	346/04#	346/07	346/10#
346/14	346/17#	346/20	346/23#	346/26	346/29#	346/32
346/35#	346/38	346/41#	346/44	346/47#	346/50	346/53#
346/56	346/59#	347/02	347/05#	347/08	347/11#	347/14
347/17#	348/01	348/04#	348/07	348/10#	348/13	348/16#
348/19	348/22#	348/25	348/28#	348/31	348/34#	348/37
348/40#	348/43	348/46#	348/49	348/52#	348/55	348/58#
349/01	349/04#	349/07	349/10#	349/13	349/16#	350/01
350/04#	350/07	350/10#	350/13	350/16#	350/19	350/22#
350/25	350/28#	350/31	350/34#	350/37	350/40#	350/43
350/46#	350/49	350/52#	350/55	350/58#	351/01	351/04#
351/07	351/10#	351/13	351/16#	352/01	352/04#	352/07
352/10#	352/13	352/16#	352/19	352/22#	352/25	352/28#
352/31	352/34#	352/37	352/40#	352/43	352/46#	352/49
352/52#	352/55	352/58#	353/01	353/04#	353/07	353/10#
353/13	353/16#	354/02	354/05#	354/09	354/12#	354/15
354/18#	354/22	354/25#	354/28	354/31#	354/34	354/37#
354/40	354/43#	354/46	354/49#	354/52	354/55#	354/58
355/01#	355/04	355/07#	355/10	355/13#	355/16	355/19#
356/01	356/04#	356/07	356/10#	356/13	356/16#	356/19
356/22#	356/25	356/28#	356/31	356/34#	356/37	356/40#
356/43	356/46#	356/49	356/52#	356/55	356/58#	357/01
357/04#	357/07	357/10#	357/13	357/16#	358/01	358/04#
358/07	358/10#	358/13	358/16#	358/19	358/22#	358/25
358/28#	358/32	358/35#	358/38	358/41#	358/44	358/47#
358/51	358/54#	358/57	358/60#	359/03	359/06#	359/09
359/12#	359/15	359/18#	360/01	360/04#	360/07	360/10#
360/13	360/16#	360/19	360/22#	360/25	360/28#	360/31
360/34#	360/37	360/40#	360/44	360/47#	360/50	360/53#
360/56	360/59#	361/02	361/05#	361/08	361/11#	361/14
361/17#	362/01	362/04#	362/07	362/10#	362/13	362/16#
362/19	362/22#	362/25	362/28#	362/31	362/34#	362/37
362/40#	362/43	362/46#	362/49	362/52#	362/55	362/58#
363/01	363/04#	363/07	363/10#	363/13	363/16#	364/01
364/04#	364/07	364/10#	364/13	364/16#	364/19	364/22#
364/26	364/29#	364/32	364/35#	364/39	364/42#	364/45

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364/48#	364/51	364/54#	364/57	364/60#	365/03	365/06#
365/09	365/12#	365/15	365/18#	366/01	366/04#	366/07
366/10#	366/13	366/16#	366/19	366/22#	366/25	366/28#
366/31	366/34#	366/37	366/40#	366/43	366/46#	366/49
366/52#	366/55	366/58#	367/01	367/04#	367/07	367/10#
367/13	367/16#	368/01	368/04#	368/07	368/10#	368/13
368/16#	368/19	368/22#	368/25	368/28#	368/31	368/34#
368/37	368/40#	368/43	368/46#	368/49	368/52#	368/55
368/58#	369/01	369/04#	369/07	369/10#	369/13	369/16#
370/01	370/04#	370/07	370/10#	370/13	370/16#	370/19
370/22#	370/25	370/28#	370/31	370/34#	370/37	370/40#
370/43	370/46#	370/49	370/52#	370/55	370/58#	371/01
371/04#	371/07	371/10#	371/13	371/16#	372/01	372/04#
372/07	372/10#	372/13	372/16#	372/19	372/22#	372/25
372/28#	372/31	372/34#	372/37	372/40#	372/43	372/46#
372/49	372/52#	372/55	372/58#	373/01	373/04#	373/07
373/10#	373/13	373/16#	374/01	374/04#	374/07	374/10#
374/13	374/16#	374/19	374/22#	374/25	374/28#	374/31
374/34#	374/37	374/40#	374/43	374/46#	374/49	374/52#
374/55	374/58#	375/01	375/04#	375/07	375/10#	375/14
375/17#	376/02	376/05#	376/08	376/11#	376/14	376/17#
376/20	376/23#	376/26	376/29#	376/32	376/35#	376/38
376/41#	376/44	376/47#	376/50	376/53#	376/56	376/59#
377/02	377/05#	377/08	377/11#	377/14	377/17#	378/01
378/04#	378/07	378/10#	378/14	378/17#	378/20	378/23#
378/26	378/29#	378/32	378/35#	378/38	378/41#	378/44
378/47#	378/50	378/53#	378/56	378/59#	379/02	379/05#
379/09	379/12#	379/16	379/19#	380/01	380/04#	380/07
380/10#	380/13	380/16#	380/19	380/22#	380/26	380/29#
380/33	380/36#	380/40	380/43#	380/48	380/51#	380/57
380/60#	381/03	381/06#	381/11	381/14#	382/01	382/04#
382/08	382/11#	382/15	382/18#	382/22	382/25#	382/29
382/32#	382/36	382/39#	382/43	382/46#	382/50	382/53#
382/57	382/60#	383/04	383/07#	383/11	383/14#	384/01
384/04#	384/08	384/11#	384/15	384/18#	384/22	384/25#
384/29	384/32#	384/36	384/39#	384/43	384/46#	384/50
384/53#	384/57	384/60#	385/04	385/07#	385/11	385/14#
386/01	386/04#	386/08	386/11#	386/14	386/17#	386/20
386/23#	386/28	386/31#	386/36	386/39#	386/45	386/48#
386/51	386/54#	386/57	386/60#	387/03	387/06#	387/09
387/12#	388/01	388/04#	388/07	388/10#	388/13	388/16#
388/19	388/22#	388/25	388/28#	388/31	388/34#	388/37
388/40#	388/43	388/46#	388/49	388/52#	388/56	388/59#
389/02	389/05#	389/08	389/11#	389/14	389/17#	390/01
390/04#	390/07	390/10#	390/13	390/16#	390/19	390/22#
390/25	390/28#	390/31	390/34#	390/37	390/40#	390/43
390/46#	390/50	390/53#	390/56	390/59#	391/02	391/05#
391/08	391/11#	391/15	391/18#	392/01	392/04#	392/08
392/11#	392/15	392/18#	392/21	392/24#	392/28	392/31#
392/35	392/38#	392/42	392/45#	392/49	392/52#	392/56
392/59#	393/02	393/05#	393/08	393/11#	393/14	393/17#
394/01	394/04#	394/08	394/11#	394/14	394/17#	394/20
394/23#	394/27	394/30#	394/33	394/36#	394/39	394/42#
394/46	394/49#	394/52	394/55#	394/58	395/01#	395/05
395/08#	395/12	395/15#	396/01	396/04#	396/07	396/10#
396/13	396/16#	396/20	396/23#	396/26	396/29#	396/32
396/35#	396/39	396/42#	396/45	396/48#	396/51	396/54#
396/57	396/60#	397/03	397/06#	397/10	397/13#	398/01

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398/04#	398/07	398/10#	398/13	398/16#	398/19	398/22#
398/25	398/28#	398/31	398/34#	398/37	398/40#	398/43
398/46#	398/49	398/52#	398/55	398/58#	399/01	399/04#
399/07	399/10#	399/13	399/16#	400/01	400/04#	400/07
400/10#	400/13	400/16#	400/19	400/22#	400/25	400/28#
400/31	400/34#	400/37	400/40#	400/43	400/46#	400/49
400/52#	400/55	400/58#	401/01	401/04#	401/07	401/10#
401/13	401/16#	402/01	402/04#	402/07	402/10#	402/13
402/16#	402/19	402/22#	402/25	402/28#	402/31	402/34#
402/37	402/40#	402/43	402/46#	402/49	402/52#	402/55
402/58#	403/01	403/04#	403/07	403/10#	403/13	403/16#
404/01	404/04#	404/07	404/10#	404/13	404/16#	404/19
404/22#	404/25	404/28#	404/31	404/34#	404/37	404/40#
404/43	404/46#	404/50	404/53#	404/56	404/59#	405/02
405/05#	405/08	405/11#	405/14	405/17#	406/01	406/04#
406/07	406/10#	406/13	406/16#	406/19	406/22#	406/25
406/28#	406/31	406/34#	406/37	406/40#	406/43	406/46#
406/49	406/52#	406/55	406/58#	407/01	407/04#	407/08
407/11#	407/14	407/17#	408/01	408/04#	408/07	408/10#
408/13	408/16#	408/19	408/22#	408/25	408/28#	408/31
408/34#	408/37	408/40#	408/43	408/46#	408/49	408/52#
408/55	408/58#	409/01	409/04#	409/07	409/10#	409/13
409/16#	410/01	410/04#	410/08	410/11#	410/15	410/18#
410/22	410/25#	410/28	410/31#	410/34	410/37#	410/42
410/45#	410/50	410/53#	410/56	410/59#	411/03	411/06#
411/09	411/12#	412/01	412/04#	412/07	412/10#	412/13
412/16#	412/19	412/22#	412/25	412/28#	412/31	412/34#
412/37	412/40#	412/43	412/46#	412/49	412/52#	412/55
412/58#	413/01	413/04#	413/07	413/10#	413/13	413/16#
414/01	414/04#	414/07	414/10#	414/13	414/16#	414/19
414/22#	414/25	414/28#	414/31	414/34#	414/37	414/40#

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5/22#	15/21	15/25#	16/08	16/12#	16/17	16/21#
16/25	16/29#	16/33	16/37#	16/42	16/46#	16/52
16/56#	17/02	17/06#	17/12	17/16#	17/23	17/27#
18/09	18/13#	18/21	18/25#	18/32	18/36#	19/09
19/15#	19/21	19/25#	19/33	19/37#	19/46	19/50#
19/57	20/01#	20/11	20/15#	21/29	21/33#	21/36
21/40#	21/43	21/47#	21/57	22/01#	22/04	22/08#
22/11	22/15#	22/25	22/29#	22/32	22/36#	22/39
22/43#	22/53	22/57#	22/60	23/04#	23/07	23/11#
24/18	24/22#	24/29	24/33#	24/40	24/44#	24/54
24/58#	25/05	25/09#	25/16	25/20#	25/27	25/31#
25/38	25/42#	25/49	25/53#	25/60	26/04#	26/11
26/15#	26/22	26/26#	27/23	27/27#	27/35	27/39#
28/09	28/13#	28/18	28/22#	28/33	28/37#	28/46
28/50#	28/56	28/60#	29/07	29/11#	30/08	30/12#
30/21	30/25#	30/37	30/41#	30/49	30/53#	31/21
31/25#	31/34	31/38#	31/41	31/45#	31/54	31/58#
32/01	32/05#	32/14	32/18#	32/21	32/25#	32/34
32/38#	32/41	32/45#	32/54	32/57#	32/60	33/03#
33/12	33/15#	33/18	33/21#	33/30	33/33#	33/36
33/39#	33/48	33/51#	33/54	33/57#	34/06	34/09#
34/12	34/15#	34/24	34/27#	34/30	34/33#	34/42
34/45#	34/48	34/51#	34/60	35/03#	35/06	35/09#
35/18	35/21#	35/24	35/27#	35/36	35/39#	35/42
35/45#	35/54	35/57#	35/60	36/03#	36/09	36/12#
36/15	36/18#	37/10	37/13#	37/22	37/25#	37/28
37/31#	37/40	37/43#	37/46	37/49#	37/58	38/01#

38/04	38/07#	38/16	38/19#	38/22	38/25#	38/34
38/37#	38/40	38/43#	38/52	38/55#	38/58	39/01#
39/10	39/13#	39/16	39/19#	39/28	39/31#	39/34
39/37#	39/46	39/49#	39/52	39/55#	40/04	40/07#
40/10	40/13#	40/22	40/25#	40/28	40/31#	40/40
40/43#	40/46	40/49#	40/58	41/01#	41/04	41/07#
41/16	41/19#	41/22	41/25#	41/34	41/37#	41/40
41/43#	41/49	41/52#	41/55	41/58#	42/26	42/29#
42/35	42/38#	43/09	43/12#	43/17	43/20#	43/31
43/34#	43/39	43/42#	43/53	43/56#	44/01	44/04#
44/15	44/18#	44/23	44/26#	44/37	44/40#	44/45
44/48#	44/59	45/02#	45/07	45/10#	45/21	45/24#
45/29	45/32#	45/43	45/46#	45/51	45/54#	46/05
46/08#	46/13	46/16#	46/27	46/30#	46/35	46/38#
46/49	46/52#	46/57	46/60#	47/11	47/14#	47/19
47/22#	47/33	47/36#	47/41	47/44#	47/55	47/58#
48/03	48/06#	48/17	48/20#	48/25	48/28#	48/37
48/40#	48/43	48/46#	48/54	48/57#	48/60	49/03#
50/09	50/12#	50/17	50/20#	50/31	50/34#	50/39
50/42#	50/53	50/56#	51/01	51/04#	51/15	51/18#
51/23	51/26#	51/37	51/40#	51/45	51/48#	51/59
52/02#	52/07	52/10#	52/21	52/24#	52/29	52/32#
52/43	52/46#	52/51	52/54#	53/05	53/08#	53/13
53/16#	53/27	53/30#	53/35	53/38#	53/49	53/52#
53/57	53/60#	54/11	54/14#	54/19	54/22#	54/33
54/36#	54/41	54/44#	54/55	54/58#	55/03	55/06#
55/17	55/20#	55/25	55/28#	55/37	55/40#	55/43
55/46#	56/27	56/30#	56/33	56/36#	56/42	56/45#
57/16	57/19#	57/35	57/38#	57/54	57/57#	58/13
58/16#	58/32	58/35#	58/51	58/54#	59/10	59/13#
59/29	59/32#	59/48	59/51#	60/07	60/10#	60/26
60/29#	60/45	60/48#	61/04	61/07#	61/23	61/26#
61/42	61/45#	62/01	62/04#	62/12	62/15#	62/30
62/33#	62/49	62/52#	63/08	63/11#	63/27	63/30#
63/46	63/49#	64/05	64/08#	64/24	64/27#	64/43
64/46#	65/02	65/05#	65/21	65/24#	65/40	65/43#
65/59	66/02#	66/18	66/21#	66/37	66/40#	66/56
66/59#	67/15	67/18#	68/24	68/27#	68/40	68/43#
68/57	68/60#	69/14	69/17#	69/31	69/34#	69/49
69/52#	70/06	70/09#	70/23	70/26#	70/40	70/43#
70/58	71/01#	71/15	71/18#	71/32	71/35#	71/49
71/52#	72/07	72/10#	72/24	72/27#	72/41	72/44#
72/53	72/56#	72/59	73/02#	74/09	74/12#	74/17
74/20#	74/29	74/32#	74/35	74/38#	74/47	74/50#
74/53	74/56#	75/04	75/07#	75/10	75/13#	76/43
76/46#	77/10	77/13#	77/18	77/21#	77/31	77/34#
77/44	77/47#	77/57	77/60#	78/05	78/08#	78/18
78/21#	78/31	78/34#	78/44	78/47#	78/52	78/55#
79/05	79/08#	79/18	79/21#	79/31	79/34#	79/39
79/42#	79/52	79/55#	80/05	80/08#	80/18	80/21#
80/26	80/29#	80/39	80/42#	80/52	80/55#	81/05
81/08#	81/13	81/16#	81/26	81/29#	81/39	81/42#
81/52	81/55#	81/60	82/03#	82/13	82/16#	82/26
82/29#	82/39	82/42#	82/47	82/50#	82/60	83/03#
83/13	83/16#	83/26	83/29#	83/34	83/37#	83/47
83/50#	83/60	84/03#	84/13	84/16#	84/21	84/24#
84/34	84/37#	84/47	84/50#	84/60	85/03#	85/08
85/11#	85/21	85/24#	85/34	85/37#	85/47	85/50#

85/55	85/58#	86/08	86/11#	86/21	86/24#	86/34
86/37#	86/42	86/45#	86/55	86/58#	87/08	87/11#
87/21	87/24#	87/29	87/32#	87/42	87/45#	87/55
87/58#	88/08	88/11#	88/16	88/19#	88/29	88/32#
88/42	88/45#	88/55	88/58#	89/03	89/06#	89/16
89/19#	89/29	89/32#	90/09	90/12#	90/18	90/21#
90/29	90/32#	90/38	90/41#	90/48	90/51#	90/56
90/59#	91/05	91/08#	91/14	91/17#	92/08	92/11#
92/14	92/17#	92/20	92/23#	92/34	92/37#	92/41
92/44#	92/55	92/58#	93/01	93/04#	94/32	94/35#
94/40	94/43#	94/53	94/56#	95/01	95/04#	95/14
95/17#	95/22	95/25#	95/35	95/38#	95/43	95/46#
95/56	95/59#	96/04	96/07#	96/17	96/20#	96/25
96/28#	96/38	96/41#	96/46	96/49#	96/59	97/02#
97/07	97/10#	97/20	97/23#	97/28	97/31#	97/41
97/44#	97/49	97/52#	98/02	98/05#	98/10	98/13#
98/23	98/26#	98/31	98/34#	98/44	98/47#	98/52
98/55#	99/05	99/08#	99/13	99/16#	99/26	99/29#
99/34	99/37#	99/47	99/50#	99/55	99/58#	100/07
100/10#	100/13	100/16#	100/25	100/28#	100/31	100/34#
101/09	101/12#	101/15	101/18#	101/27	101/30#	101/33
101/36#	103/18	103/21#	103/26	103/29#	103/36	103/39#
103/52	103/55#	103/60	104/03#	104/10	104/13#	104/26
104/29#	104/34	104/37#	104/44	104/47#	104/60	105/03#
105/08	105/11#	105/18	105/21#	105/34	105/37#	105/42
105/45#	105/52	105/55#	106/08	106/11#	106/16	106/19#
106/26	106/29#	106/42	106/45#	106/50	106/53#	106/60
107/03#	107/16	107/19#	107/24	107/27#	107/34	107/37#
107/50	107/53#	107/58	108/01#	108/08	108/11#	108/24
108/27#	108/32	108/35#	108/42	108/45#	108/58	109/01#
109/06	109/09#	109/16	109/19#	109/32	109/35#	109/40
109/43#	109/50	109/53#	110/06	110/09#	110/14	110/17#
110/24	110/27#	110/40	110/43#	110/48	110/51#	110/58
111/01#	111/14	111/17#	111/22	111/25#	111/32	111/35#
111/48	111/51#	111/56	111/59#	112/06	112/09#	113/06
113/09#	113/14	113/17#	113/23	113/26#	113/35	113/38#
113/46	113/49#	114/09	114/12#	114/17	114/20#	114/23
114/26#	115/10	115/13#	115/16	115/19#	115/27	115/30#
115/33	115/36#	115/45	115/48#	115/51	115/54#	116/02
116/05#	116/08	116/11#	116/20	116/23#	116/26	116/29#
116/37	116/40#	116/43	116/46#	116/55	116/58#	117/01
117/04#	117/12	117/15#	117/18	117/21#	117/30	117/33#
117/36	117/39#	117/47	117/50#	117/53	117/56#	118/05
118/08#	118/11	118/14#	118/22	118/25#	118/28	118/31#
118/40	118/43#	118/46	118/49#	118/57	118/60#	119/03
119/06#	119/15	119/18#	119/21	119/24#	119/32	119/35#
119/38	119/41#	119/50	119/53#	119/56	119/59#	120/07
120/10#	120/13	120/16#	120/25	120/28#	120/31	120/34#
120/42	120/45#	120/48	120/51#	120/60	121/03#	121/06
121/09#	121/17	121/20#	121/23	121/26#	121/35	121/38#
121/41	121/44#	121/52	121/55#	121/58	122/01#	122/10
122/13#	122/16	122/19#	122/27	122/30#	122/33	122/36#
122/45	122/48#	122/51	122/54#	123/02	123/05#	123/08
123/11#	123/20	123/23#	123/26	123/29#	123/37	123/40#
123/43	123/46#	123/55	123/58#	124/01	124/04#	124/12
124/15#	124/18	124/21#	125/08	125/11#	125/14	125/17#
125/42	125/45#	125/52	125/55#	126/02	126/05#	126/12
126/15#	126/22	126/25#	126/32	126/35#	126/42	126/45#

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218/57# 219/06 219/09# 219/18 219/21# 220/10 220/13#
220/22 220/25# 220/34 220/37# 220/46 220/49# 220/60
221/03# 221/13 221/16# 222/11 222/14# 222/23 222/26#
222/35 222/38# 222/47 222/50# 222/59 223/02# 223/15
223/18# 224/13 224/16# 224/29 224/32# 224/43 224/46#
224/58 225/01# 225/15 225/18# 227/21 227/24# 227/33
227/36# 227/49 227/52# 228/06 228/09# 228/24 228/27#
229/14 229/17# 229/31 229/34# 229/49 229/52# 230/05
230/08# 230/22 230/25# 231/16 231/19# 231/33 231/36#
231/51 231/54# 232/07 232/10# 232/18 232/21# 232/31
232/34# 232/50 232/53# 234/13 234/16# 234/21 234/24#
234/29 234/32# 234/36 234/39# 234/48 234/51# 234/55
234/58# 235/26 235/29# 235/32 235/35# 235/38 235/41#
235/52 235/55# 235/58 236/01# 236/04 236/07# 236/18
236/21# 236/24 236/27# 236/30 236/33# 236/44 236/47#
236/50 236/53# 236/56 236/59# 237/10 237/13# 237/16
237/19# 237/22 237/25# 237/36 237/39# 237/42 237/45#
237/48 237/51# 238/02 238/05# 238/08 238/11# 238/14
238/17# 238/28 238/31# 238/34 238/37# 238/40 238/43#
239/10 239/13# 239/16 239/19# 239/30 239/33# 239/37
239/40# 239/44 239/47# 239/54 239/57# 240/08 240/11#
240/14 240/17# 240/24 240/27# 240/32 240/35# 241/09
241/12# 241/19 241/22# 241/28 241/31# 241/37 241/40#

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	241/46	241/49#	241/56	241/59#	242/18	242/21#	242/30
	242/33#	242/42	242/45#	242/54	242/57#	243/06	243/09#
	243/18	243/21#	244/09	244/12#	244/20	244/23#	244/29
	244/32#	244/35	244/38#	244/45	244/48#	244/51	244/54#
	245/01	245/04#	245/11	245/14#	245/22	245/25#	246/09
	246/12#	247/17	247/20#	247/26	247/29#	247/36	247/39#
	247/45	247/48#	248/04	248/07#	248/09	248/12#	248/19
	248/22#	249/20	249/23#	249/25	249/28#	249/31	249/34#
	249/49	249/52#	250/10	250/13#	250/16	250/19#	250/26
	250/29#	250/32	250/35#	250/43	250/46#	250/48	250/51#
	250/56	250/59#	251/04	251/07#	251/16	251/19#	251/21
	251/24#	251/31	251/34#	252/11	252/14#	252/16	252/19#
	252/21	252/24#	252/28	252/31#	252/35	252/38#	252/41
	252/44#	253/20	253/23#	253/26	253/29#	253/33	253/36#
	253/39	253/42#	253/46	253/49#	253/53	253/56#	254/07
	254/10#	254/13	254/16#	254/21	254/24#	254/30	254/33#
	254/36	254/39#	254/44	254/47#	254/55	254/58#	255/13
	255/16#	255/30	255/33#	255/38	255/41#	255/48	255/51#
?L 000002	15/21#	15/22	15/25	16/08#	16/09	16/12	16/17#
	16/18	16/21	16/25#	16/26	16/29	16/33#	16/34
	16/37	16/42#	16/43	16/46	16/52#	16/53	16/56
	17/02#	17/03	17/06	17/12#	17/13	17/16	17/23#
	17/24	17/27	18/09#	18/10	18/13	18/21#	18/22
	18/25	18/32#	18/33	18/36	19/09#	19/10	19/13
	19/21#	19/22	19/25	19/33#	19/34	19/37	19/46#
	19/47	19/50	19/57#	19/58	20/01	20/11#	20/12
	20/15	21/29#	21/30	21/33	21/36#	21/37	21/40
	21/43#	21/44	21/47	21/57#	21/58	22/01	22/04#
	22/05	22/08	22/11#	22/12	22/15	22/25#	22/26
	22/29	22/32#	22/33	22/36	22/39#	22/40	22/43
	22/53#	22/54	22/57	22/60#	23/01	23/04	23/07#
	23/08	23/11	24/18#	24/19	24/22	24/29#	24/30
	24/33	24/40#	24/41	24/44	24/54#	24/55	24/58
	25/05#	25/06	25/09	25/16#	25/17	25/20	25/27#
	25/28	25/31	25/38#	25/39	25/42	25/49#	25/50
	25/53	25/60#	26/01	26/04	26/11#	26/12	26/15
	26/22#	26/23	26/26	27/23#	27/24	27/27	27/35#
	27/36	27/39	28/09#	28/10	28/13	28/18#	28/19
	28/22	28/33#	28/34	28/37	28/46#	28/47	28/50
	28/56#	28/57	28/60	29/07#	29/08	29/11	30/08#
	30/09	30/12	30/21#	30/22	30/25	30/37#	30/38
	30/41	30/49#	30/50	30/53	31/21#	31/22	31/25
	31/34#	31/35	31/38	31/41#	31/42	31/45	31/54#
	31/55	31/58	32/01#	32/02	32/05	32/14#	32/15
	32/18	32/21#	32/22	32/25	32/34#	32/35	32/38
	32/41#	32/42	32/45	32/54#	32/55	32/56	32/57
	32/60#	33/01	33/02	33/03	33/12#	33/13	33/14
	33/15	33/18#	33/19	33/20	33/21	33/30#	33/31
	33/32	33/33	33/36#	33/37	33/38	33/39	33/48#
	33/49	33/50	33/51	33/54#	33/55	33/56	33/57
	34/06#	34/07	34/08	34/09	34/12#	34/13	34/14
	34/15	34/24#	34/25	34/26	34/27	34/30#	34/31
	34/32	34/33	34/42#	34/43	34/44	34/45	34/48#
	34/49	34/50	34/51	34/60#	35/01	35/02	35/03
	35/06#	35/07	35/08	35/09	35/18#	35/19	35/20
	35/21	35/24#	35/25	35/26	35/27	35/36#	35/37
	35/38	35/39	35/42#	35/43	35/44	35/45	35/54#
	35/55	35/56	35/57	35/60#	36/01	36/02	36/03

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36/09#	36/10	36/11	36/12	36/15#	36/16	36/17
36/18	37/10#	37/11	37/12	37/13	37/22#	37/23
37/24	37/25	37/28#	37/29	37/30	37/31	37/40#
37/41	37/42	37/43	37/46#	37/47	37/48	37/49
37/58#	37/59	37/60	38/01	38/04#	38/05	38/06
38/07	38/16#	38/17	38/18	38/19	38/22#	38/23
38/24	38/25	38/34#	38/35	38/36	38/37	38/40#
38/41	38/42	38/43	38/52#	38/53	38/54	38/55
38/58#	38/59	38/60	39/01	39/10#	39/11	39/12
39/13	39/16#	39/17	39/18	39/19	39/28#	39/29
39/30	39/31	39/34#	39/35	39/36	39/37	39/46#
39/47	39/48	39/49	39/52#	39/53	39/54	39/55
40/04#	40/05	40/06	40/07	40/10#	40/11	40/12
40/13	40/22#	40/23	40/24	40/25	40/28#	40/29
40/30	40/31	40/40#	40/41	40/42	40/43	40/46#
40/47	40/48	40/49	40/58#	40/59	40/60	41/01
41/04#	41/05	41/06	41/07	41/16#	41/17	41/18
41/19	41/22#	41/23	41/24	41/25	41/34#	41/35
41/36	41/37	41/40#	41/41	41/42	41/43	41/49#
41/50	41/51	41/52	41/55#	41/56	41/57	41/58
42/26#	42/27	42/28	42/29	42/35#	42/36	42/37
42/38	43/09#	43/10	43/11	43/12	43/17#	43/18
43/19	43/20	43/31#	43/32	43/33	43/34	43/39#
43/40	43/41	43/42	43/53#	43/54	43/55	43/56
44/01#	44/02	44/03	44/04	44/15#	44/16	44/17
44/18	44/23#	44/24	44/25	44/26	44/37#	44/38
44/39	44/40	44/45#	44/46	44/47	44/48	44/59#
44/60	45/01	45/02	45/07#	45/08	45/09	45/10
45/21#	45/22	45/23	45/24	45/29#	45/30	45/31
45/32	45/43#	45/44	45/45	45/46	45/51#	45/52
45/53	45/54	46/05#	46/06	46/07	46/08	46/13#
46/14	46/15	46/16	46/27#	46/28	46/29	46/30
46/35#	46/36	46/37	46/38	46/49#	46/50	46/51
46/52	46/57#	46/58	46/59	46/60	47/11#	47/12
47/13	47/14	47/19#	47/20	47/21	47/22	47/33#
47/34	47/35	47/36	47/41#	47/42	47/43	47/44
47/55#	47/56	47/57	47/58	48/03#	48/04	48/05
48/06	48/17#	48/18	48/19	48/20	48/25#	48/26
48/27	48/28	48/37#	48/38	48/39	48/40	48/43#
48/44	48/45	48/46	48/54#	48/55	48/56	48/57
48/60#	49/01	49/02	49/03	50/09#	50/10	50/11
50/12	50/17#	50/18	50/19	50/20	50/31#	50/32
50/33	50/34	50/39#	50/40	50/41	50/42	50/53#
50/54	50/55	50/56	51/01#	51/02	51/03	51/04
51/15#	51/16	51/17	51/18	51/23#	51/24	51/25
51/26	51/37#	51/38	51/39	51/40	51/45#	51/46
51/47	51/48	51/59#	51/60	52/01	52/02	52/07#
52/08	52/09	52/10	52/21#	52/22	52/23	52/24
52/29#	52/30	52/31	52/32	52/43#	52/44	52/45
52/46	52/51#	52/52	52/53	52/54	53/05#	53/06
53/07	53/08	53/13#	53/14	53/15	53/16	53/27#
53/28	53/29	53/30	53/35#	53/36	53/37	53/38
53/49#	53/50	53/51	53/52	53/57#	53/58	53/59
53/60	54/11#	54/12	54/13	54/14	54/19#	54/20
54/21	54/22	54/33#	54/34	54/35	54/36	54/41#
54/42	54/43	54/44	54/55#	54/56	54/57	54/58
55/03#	55/04	55/05	55/06	55/17#	55/18	55/19
55/20	55/25#	55/26	55/27	55/28	55/37#	55/38

55/39	55/40	55/43#	55/44	55/45	55/46	56/27#
56/28	56/29	56/30	56/33#	56/34	56/35	56/36
56/42#	56/43	56/44	56/45	57/16#	57/17	57/18
57/19	57/35#	57/36	57/37	57/38	57/54#	57/55
57/56	57/57	58/13#	58/14	58/15	58/16	58/32#
58/33	58/34	58/35	58/51#	58/52	58/53	58/54
59/10#	59/11	59/12	59/13	59/29#	59/30	59/31
59/32	59/48#	59/49	59/50	59/51	60/07#	60/08
60/09	60/10	60/26#	60/27	60/28	60/29	60/45#
60/46	60/47	60/48	61/04#	61/05	61/06	61/07
61/23#	61/24	61/25	61/26	61/42#	61/43	61/44
61/45	62/01#	62/02	62/03	62/04	62/12#	62/13
62/14	62/15	62/30#	62/31	62/32	62/33	62/49#
62/50	62/51	62/52	63/08#	63/09	63/10	63/11
63/27#	63/28	63/29	63/30	63/46#	63/47	63/48
63/49	64/05#	64/06	64/07	64/08	64/24#	64/25
64/26	64/27	64/43#	64/44	64/45	64/46	65/02#
65/03	65/04	65/05	65/21#	65/22	65/23	65/24
65/40#	65/41	65/42	65/43	65/59#	65/60	66/01
66/02	66/18#	66/19	66/20	66/21	66/37#	66/38
66/39	66/40	66/56#	66/57	66/58	66/59	67/15#
67/16	67/17	67/18	68/24#	68/25	68/26	68/27
68/40#	68/41	68/42	68/43	68/57#	68/58	68/59
68/60	69/14#	69/15	69/16	69/17	69/31#	69/32
69/33	69/34	69/49#	69/50	69/51	69/52	70/06#
70/07	70/08	70/09	70/23#	70/24	70/25	70/26
70/40#	70/41	70/42	70/43	70/58#	70/59	70/60
71/01	71/15#	71/16	71/17	71/18	71/32#	71/33
71/34	71/35	71/49#	71/50	71/51	71/52	72/07#
72/08	72/09	72/10	72/24#	72/25	72/26	72/27
72/41#	72/42	72/43	72/44	72/53#	72/54	72/55
72/56	72/59#	72/60	73/01	73/02	74/09#	74/10
74/11	74/12	74/17#	74/18	74/19	74/20	74/29#
74/30	74/31	74/32	74/35#	74/36	74/37	74/38
74/47#	74/48	74/49	74/50	74/53#	74/54	74/55
74/56	75/04#	75/05	75/06	75/07	75/10#	75/11
75/12	75/13	76/43#	76/44	76/45	76/46	77/10#
77/11	77/12	77/13	77/18#	77/19	77/20	77/21
77/31#	77/32	77/33	77/34	77/44#	77/45	77/46
77/47	77/57#	77/58	77/59	77/60	78/05#	78/06
78/07	78/08	78/18#	78/19	78/20	78/21	78/31#
78/32	78/33	78/34	78/44#	78/45	78/46	78/47
78/52#	78/53	78/54	78/55	79/05#	79/06	79/07
79/08	79/18#	79/19	79/20	79/21	79/31#	79/32
79/33	79/34	79/39#	79/40	79/41	79/42	79/52#
79/53	79/54	79/55	80/05#	80/06	80/07	80/08
80/18#	80/19	80/20	80/21	80/26#	80/27	80/28
80/29	80/39#	80/40	80/41	80/42	80/52#	80/53
80/54	80/55	81/05#	81/06	81/07	81/08	81/13#
81/14	81/15	81/16	81/26#	81/27	81/28	81/29
81/39#	81/40	81/41	81/42	81/52#	81/53	81/54
81/55	81/60#	82/01	82/02	82/03	82/13#	82/14
82/15	82/16	82/26#	82/27	82/28	82/29	82/39#
82/40	82/41	82/42	82/47#	82/48	82/49	82/50
82/60#	83/01	83/02	83/03	83/13#	83/14	83/15
83/16	83/26#	83/27	83/28	83/29	83/34#	83/35
83/36	83/37	83/47#	83/48	83/49	83/50	83/60#
84/01	84/02	84/03	84/13#	84/14	84/15	84/16

84/21#	84/22	84/23	84/24	84/34#	84/35	84/36
84/37	84/47#	84/48	84/49	84/50	84/60#	85/01
85/02	85/03	85/08#	85/09	85/10	85/11	85/21#
85/22	85/23	85/24	85/34#	85/35	85/36	85/37
85/47#	85/48	85/49	85/50	85/55#	85/56	85/57
85/58	86/08#	86/09	86/10	86/11	86/21#	86/22
86/23	86/24	86/34#	86/35	86/36	86/37	86/42#
86/43	86/44	86/45	86/55#	86/56	86/57	86/58
87/08#	87/09	87/10	87/11	87/21#	87/22	87/23
87/24	87/29#	87/30	87/31	87/32	87/42#	87/43
87/44	87/45	87/55#	87/56	87/57	87/58	88/08#
88/09	88/10	88/11	88/16#	88/17	88/18	88/19
88/29#	88/30	88/31	88/32	88/42#	88/43	88/44
88/45	88/55#	88/56	88/57	88/58	89/03#	89/04
89/05	89/06	89/16#	89/17	89/18	89/19	89/29#
89/30	89/31	89/32	90/09#	90/10	90/11	90/12
90/18#	90/19	90/20	90/21	90/29#	90/30	90/31
90/32	90/38#	90/39	90/40	90/41	90/48#	90/49
90/50	90/51	90/56#	90/57	90/58	90/59	91/05#
91/06	91/07	91/08	91/14#	91/15	91/16	91/17
92/08#	92/09	92/10	92/11	92/14#	92/15	92/16
92/17	92/20#	92/21	92/22	92/23	92/34#	92/35
92/36	92/37	92/41#	92/42	92/43	92/44	92/55#
92/56	92/57	92/58	93/01#	93/02	93/03	93/04
94/32#	94/33	94/34	94/35	94/40#	94/41	94/42
94/43	94/53#	94/54	94/55	94/56	95/01#	95/02
95/03	95/04	95/14#	95/15	95/16	95/17	95/22#
95/23	95/24	95/25	95/35#	95/36	95/37	95/38
95/43#	95/44	95/45	95/46	95/56#	95/57	95/58
95/59	96/04#	96/05	96/06	96/07	96/17#	96/18
96/19	96/20	96/25#	96/26	96/27	96/28	96/38#
96/39	96/40	96/41	96/46#	96/47	96/48	96/49
96/59#	96/60	97/01	97/02	97/07#	97/08	97/09
97/10	97/20#	97/21	97/22	97/23	97/28#	97/29
97/30	97/31	97/41#	97/42	97/43	97/44	97/49#
97/50	97/51	97/52	98/02#	98/03	98/04	98/05
98/10#	98/11	98/12	98/13	98/23#	98/24	98/25
98/26	98/31#	98/32	98/33	98/34	98/44#	98/45
98/46	98/47	98/52#	98/53	98/54	98/55	99/05#
99/06	99/07	99/08	99/13#	99/14	99/15	99/16
99/26#	99/27	99/28	99/29	99/34#	99/35	99/36
99/37	99/47#	99/48	99/49	99/50	99/55#	99/56
99/57	99/58	100/07#	100/08	100/09	100/10	100/13#
100/14	100/15	100/16	100/25#	100/26	100/27	100/28
100/31#	100/32	100/33	100/34	101/09#	101/10	101/11
101/12	101/15#	101/16	101/17	101/18	101/27#	101/28
101/29	101/30	101/33#	101/34	101/35	101/36	103/18#
103/19	103/20	103/21	103/26#	103/27	103/28	103/29
103/36#	103/37	103/38	103/39	103/52#	103/53	103/54
103/55	103/60#	104/01	104/02	104/03	104/10#	104/11
104/12	104/13	104/26#	104/27	104/28	104/29	104/34#
104/35	104/36	104/37	104/44#	104/45	104/46	104/47
104/60#	105/01	105/02	105/03	105/08#	105/09	105/10
105/11	105/18#	105/19	105/20	105/21	105/34#	105/35
105/36	105/37	105/42#	105/43	105/44	105/45	105/52#
105/53	105/54	105/55	106/08#	106/09	106/10	106/11
106/16#	106/17	106/18	106/19	106/26#	106/27	106/28
106/29	106/42#	106/43	106/44	106/45	106/50#	106/51

106/52 106/53 106/60# 107/01 107/02 107/03 107/16#
107/17 107/18 107/19 107/24# 107/25 107/26 107/27
107/34# 107/35 107/36 107/37 107/50# 107/51 107/52
107/53 107/58# 107/59 107/60 108/01 108/08# 108/09
108/10 108/11 108/24# 108/25 108/26 108/27 108/32#
108/33 108/34 108/35 108/42# 108/43 108/44 108/45
108/58# 108/59 108/60 109/01 109/06# 109/07 109/08
109/09 109/16# 109/17 109/18 109/19 109/32# 109/33
109/34 109/35 109/40# 109/41 109/42 109/43 109/50#
109/51 109/52 109/53 110/06# 110/07 110/08 110/09
110/14# 110/15 110/16 110/17 110/24# 110/25 110/26
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152/58	153/11#	153/12	153/13	154/14#	154/15	154/16
154/32#	154/33	154/34	154/39#	154/40	154/41	155/16#
155/17	155/18	155/24#	155/25	155/26	155/44#	155/45
155/46	155/52#	155/53	155/54	156/17#	156/18	156/19
156/58#	156/59	156/60	158/14#	158/15	158/16	158/19#
158/20	158/21	158/25#	158/26	158/27	158/30#	158/31
158/32	158/37#	158/38	158/39	158/56#	158/57	158/58
159/17#	159/18	159/19	159/43#	159/44	159/45	159/51#
159/52	159/53	160/06#	160/07	160/08	160/14#	160/15
160/16	160/21#	160/22	160/23	161/13#	161/14	161/15
161/21#	161/22	161/23	161/36#	161/37	161/38	161/44#
161/45	161/46	161/58#	161/59	161/60	162/06#	162/07
162/08	162/13#	162/14	162/15	163/18#	163/19	163/20
163/33#	163/34	163/35	163/39#	163/40	163/41	163/53#
163/54	163/55	164/30#	164/31	164/32	164/46#	164/47
164/48	165/02#	165/03	165/04	165/18#	165/19	165/20
165/34#	165/35	165/36	165/50#	165/51	165/52	166/06#
166/07	166/08	166/22#	166/23	166/24	166/38#	166/39
166/40	166/54#	166/55	166/56	167/10#	167/11	167/12
167/26#	167/27	167/28	167/42#	167/43	167/44	167/58#
167/59	167/60	168/14#	168/15	168/16	169/11#	169/12
169/13	169/22#	169/23	169/24	169/47#	169/48	169/49
169/55#	169/56	169/57	170/06#	170/07	170/08	170/14#
170/15	170/16	170/25#	170/26	170/27	170/33#	170/34
170/35	170/44#	170/45	170/46	170/52#	170/53	170/54
171/09#	171/10	171/11	172/12#	172/13	172/14	172/18#
172/19	172/20	172/57#	172/58	172/59	173/03#	173/04
173/05	173/09#	173/10	173/11	173/23#	173/24	173/25
173/29#	173/30	173/31	173/35#	173/36	173/37	173/49#
173/50	173/51	173/55#	173/56	173/57	174/01#	174/02
174/03	174/15#	174/16	174/17	174/21#	174/22	174/23
174/27#	174/28	174/29	174/41#	174/42	174/43	174/47#
174/48	174/49	174/53#	174/54	174/55	175/07#	175/08
175/09	175/13#	175/14	175/15	175/19#	175/20	175/21
175/33#	175/34	175/35	175/39#	175/40	175/41	175/45#
175/46	175/47	175/59#	175/60	176/01	176/05#	176/06
176/07	176/11#	176/12	176/13	177/11#	177/12	177/13
177/20#	177/21	177/22	178/23#	178/24	178/25	178/37#
178/38	178/39	178/54#	178/55	178/56	178/60#	179/01
179/02	179/08#	179/09	179/10	180/25#	180/26	180/27
180/33#	180/34	180/35	180/45#	180/46	180/47	180/53#
180/54	180/55	181/05#	181/06	181/07	181/13#	181/14
181/15	181/25#	181/26	181/27	181/33#	181/34	181/35
182/13#	182/14	182/15	182/22#	182/23	182/24	182/28#
182/29	182/30	182/46#	182/47	182/48	182/57#	182/58
182/59	183/06#	183/07	183/08	183/14#	183/15	183/16
183/28#	183/29	183/30	183/36#	183/37	183/38	184/17#
184/18	184/19	184/27#	184/28	184/29	184/34#	184/35
184/36	184/41#	184/42	184/43	184/48#	184/49	184/50
184/57#	184/58	184/59	185/05#	185/06	185/07	185/12#
185/13	185/14	185/20#	185/21	185/22	185/28#	185/29
185/30	186/17#	186/18	186/19	186/22#	186/23	186/24
186/30#	186/31	186/32	186/38#	186/39	186/40	186/45#
186/46	186/47	186/52#	186/53	186/54	186/60#	187/01
187/02	187/07#	187/08	187/09	187/14#	187/15	187/16
188/17#	188/18	188/19	188/22#	188/23	188/24	188/37#
188/38	188/39	188/46#	188/47	188/48	188/54#	188/55
188/56	189/09#	189/10	189/11	191/08#	191/09	191/10

191/25#	191/26	191/27	191/43#	191/44	191/45	191/54#
191/55	191/56	192/06#	192/07	192/08	193/11#	193/12
193/13	193/22#	193/23	193/24	193/38#	193/39	193/40
193/52#	193/53	193/54	194/06#	194/07	194/08	194/20#
194/21	194/22	194/34#	194/35	194/36	194/48#	194/49
194/50	195/02#	195/03	195/04	195/16#	195/17	195/18
195/30#	195/31	195/32	195/44#	195/45	195/46	195/58#
195/59	195/60	196/12#	196/13	196/14	197/17#	197/18
197/19	197/36#	197/37	197/38	197/55#	197/56	197/57
198/14#	198/15	198/16	198/33#	198/34	198/35	198/52#
198/53	198/54	199/11#	199/12	199/13	199/30#	199/31
199/32	199/49#	199/50	199/51	200/08#	200/09	200/10
200/27#	200/28	200/29	200/46#	200/47	200/48	201/17#
201/18	201/19	201/30#	201/31	201/32	201/42#	201/43
201/44	201/55#	201/56	201/57	202/16#	202/17	202/18
202/33#	202/34	202/35	202/49#	202/50	202/51	205/18#
205/19	205/20	205/30#	205/31	205/32	205/42#	205/43
205/44	205/54#	205/55	205/56	206/06#	206/07	206/08
206/19#	206/20	206/21	207/11#	207/12	207/13	207/24#
207/25	207/26	207/38#	207/39	207/40	207/55#	207/56
207/57	209/18#	209/19	209/20	209/30#	209/31	209/32
209/42#	209/43	209/44	209/55#	209/56	209/57	210/08#
210/09	210/10	211/12#	211/13	211/14	211/25#	211/26
211/27	211/39#	211/40	211/41	211/53#	211/54	211/55
212/08#	212/09	212/10	213/13#	213/14	213/15	213/28#
213/29	213/30	213/43#	213/44	213/45	213/57#	213/58
213/59	214/13#	214/14	214/15	215/11#	215/12	215/13
215/27#	215/28	215/29	215/43#	215/44	215/45	215/59#
215/60	216/01	218/18#	218/19	218/20	218/30#	218/31
218/32	218/42#	218/43	218/44	218/54#	218/55	218/56
219/06#	219/07	219/08	219/18#	219/19	219/20	220/10#
220/11	220/12	220/22#	220/23	220/24	220/34#	220/35
220/36	220/46#	220/47	220/48	220/60#	221/01	221/02
221/13#	221/14	221/15	222/11#	222/12	222/13	222/23#
222/24	222/25	222/35#	222/36	222/37	222/47#	222/48
222/49	222/59#	222/60	223/01	223/15#	223/16	223/17
224/13#	224/14	224/15	224/29#	224/30	224/31	224/43#
224/44	224/45	224/58#	224/59	224/60	225/15#	225/16
225/17	227/21#	227/22	227/23	227/33#	227/34	227/35
227/49#	227/50	227/51	228/06#	228/07	228/08	228/24#
228/25	228/26	229/14#	229/15	229/16	229/31#	229/32
229/33	229/49#	229/50	229/51	230/05#	230/06	230/07
230/22#	230/23	230/24	231/16#	231/17	231/18	231/33#
231/34	231/35	231/51#	231/52	231/53	232/07#	232/08
232/09	232/18#	232/19	232/20	232/31#	232/32	232/33
232/50#	232/51	232/52	234/13#	234/14	234/15	234/21#
234/22	234/23	234/29#	234/30	234/31	234/36#	234/37
234/38	234/48#	234/49	234/50	234/55#	234/56	234/57
235/26#	235/27	235/28	235/32#	235/33	235/34	235/38#
235/39	235/40	235/52#	235/53	235/54	235/58#	235/59
235/60	236/04#	236/05	236/06	236/18#	236/19	236/20
236/24#	236/25	236/26	236/30#	236/31	236/32	236/44#
236/45	236/46	236/50#	236/51	236/52	236/56#	236/57
236/58	237/10#	237/11	237/12	237/16#	237/17	237/18
237/22#	237/23	237/24	237/36#	237/37	237/38	237/42#
237/43	237/44	237/48#	237/49	237/50	238/02#	238/03
238/04	238/08#	238/09	238/10	238/14#	238/15	238/16
238/28#	238/29	238/30	238/34#	238/35	238/36	238/40#

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44/01# 44/02 44/03 44/15# 44/16 44/17 44/23#
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56/42#	56/43	56/44	57/16#	57/17	57/18	57/35#
57/36	57/37	57/54#	57/55	57/56	58/13#	58/14
58/15	58/32#	58/33	58/34	58/51#	58/52	58/53
59/10#	59/11	59/12	59/29#	59/30	59/31	59/48#
59/49	59/50	60/07#	60/08	60/09	60/26#	60/27
60/28	60/45#	60/46	60/47	61/04#	61/05	61/06
61/23#	61/24	61/25	61/42#	61/43	61/44	62/01#
62/02	62/03	62/12#	62/13	62/14	62/30#	62/31
62/32	62/49#	62/50	62/51	63/08#	63/09	63/10
63/27#	63/28	63/29	63/46#	63/47	63/48	64/05#
64/06	64/07	64/24#	64/25	64/26	64/43#	64/44
64/45	65/02#	65/03	65/04	65/21#	65/22	65/23
65/40#	65/41	65/42	65/59#	65/60	66/01	66/18#
66/19	66/20	66/37#	66/38	66/39	66/56#	66/57
66/58	67/15#	67/16	67/17	68/24#	68/25	68/26
68/40#	68/41	68/42	68/57#	68/58	68/59	69/14#
69/15	69/16	69/31#	69/32	69/33	69/49#	69/50
69/51	70/06#	70/07	70/08	70/23#	70/24	70/25
70/40#	70/41	70/42	70/58#	70/59	70/60	71/15#
71/16	71/17	71/32#	71/33	71/34	71/49#	71/50
71/51	72/07#	72/08	72/09	72/24#	72/25	72/26
72/41#	72/42	72/43	72/53#	72/54	72/55	72/59#
72/60	73/01	74/09#	74/10	74/11	74/17#	74/18
74/19	74/29#	74/30	74/31	74/35#	74/36	74/37
74/47#	74/48	74/49	74/53#	74/54	74/55	75/04#
75/05	75/06	75/10#	75/11	75/12	76/43#	76/44
76/45	77/10#	77/11	77/12	77/18#	77/19	77/20
77/31#	77/32	77/33	77/44#	77/45	77/46	77/57#
77/58	77/59	78/05#	78/06	78/07	78/18#	78/19
78/20	78/31#	78/32	78/33	78/44#	78/45	78/46
78/52#	78/53	78/54	79/05#	79/06	79/07	79/18#
79/19	79/20	79/31#	79/32	79/33	79/39#	79/40
79/41	79/52#	79/53	79/54	80/05#	80/06	80/07
80/18#	80/19	80/20	80/26#	80/27	80/28	80/39#
80/40	80/41	80/52#	80/53	80/54	81/05#	81/06
81/07	81/13#	81/14	81/15	81/26#	81/27	81/28
81/39#	81/40	81/41	81/52#	81/53	81/54	81/60#
82/01	82/02	82/13#	82/14	82/15	82/26#	82/27
82/28	82/39#	82/40	82/41	82/47#	82/48	82/49
82/60#	83/01	83/02	83/13#	83/14	83/15	83/26#
83/27	83/28	83/34#	83/35	83/36	83/47#	83/48
83/49	83/60#	84/01	84/02	84/13#	84/14	84/15
84/21#	84/22	84/23	84/34#	84/35	84/36	84/47#
84/48	84/49	84/60#	85/01	85/02	85/08#	85/09
85/10	85/21#	85/22	85/23	85/34#	85/35	85/36
85/47#	85/48	85/49	85/55#	85/56	85/57	86/08#
86/09	86/10	86/21#	86/22	86/23	86/34#	86/35
86/36	86/42#	86/43	86/44	86/55#	86/56	86/57
87/08#	87/09	87/10	87/21#	87/22	87/23	87/29#
87/30	87/31	87/42#	87/43	87/44	87/55#	87/56
87/57	88/08#	88/09	88/10	88/16#	88/17	88/18
88/29#	88/30	88/31	88/42#	88/43	88/44	88/55#
88/56	88/57	89/03#	89/04	89/05	89/16#	89/17
89/18	89/29#	89/30	89/31	90/09#	90/10	90/11
90/18#	90/19	90/20	90/29#	90/30	90/31	90/38#
90/39	90/40	90/48#	90/49	90/50	90/56#	90/57
90/58	91/05#	91/06	91/07	91/14#	91/15	91/16
92/08#	92/09	92/10	92/14#	92/15	92/16	92/20#

92/21	92/22	92/34#	92/35	92/36	92/41#	92/42
92/43	92/55#	92/56	92/57	93/01#	93/02	93/03
94/32#	94/33	94/34	94/40#	94/41	94/42	94/53#
94/54	94/55	95/01#	95/02	95/03	95/14#	95/15
95/16	95/22#	95/23	95/24	95/35#	95/36	95/37
95/43#	95/44	95/45	95/56#	95/57	95/58	96/04#
96/05	96/06	96/17#	96/18	96/19	96/25#	96/26
96/27	96/38#	96/39	96/40	96/46#	96/47	96/48
96/59#	96/60	97/01	97/07#	97/08	97/09	97/20#
97/21	97/22	97/28#	97/29	97/30	97/41#	97/42
97/43	97/49#	97/50	97/51	98/02#	98/03	98/04
98/10#	98/11	98/12	98/23#	98/24	98/25	98/31#
98/32	98/33	98/44#	98/45	98/46	98/52#	98/53
98/54	99/05#	99/06	99/07	99/13#	99/14	99/15
99/26#	99/27	99/28	99/34#	99/35	99/36	99/47#
99/48	99/49	99/55#	99/56	99/57	100/07#	100/08
100/09	100/13#	100/14	100/15	100/25#	100/26	100/27
100/31#	100/32	100/33	101/09#	101/10	101/11	101/15#
101/16	101/17	101/27#	101/28	101/29	101/33#	101/34
101/35	103/18#	103/19	103/20	103/26#	103/27	103/28
103/36#	103/37	103/38	103/52#	103/53	103/54	103/60#
104/01	104/02	104/10#	104/11	104/12	104/26#	104/27
104/28	104/34#	104/35	104/36	104/44#	104/45	104/46
104/60#	105/01	105/02	105/08#	105/09	105/10	105/18#
105/19	105/20	105/34#	105/35	105/36	105/42#	105/43
105/44	105/52#	105/53	105/54	106/08#	106/09	106/10
106/16#	106/17	106/18	106/26#	106/27	106/28	106/42#
106/43	106/44	106/50#	106/51	106/52	106/60#	107/01
107/02	107/16#	107/17	107/18	107/24#	107/25	107/26
107/34#	107/35	107/36	107/50#	107/51	107/52	107/58#
107/59	107/60	108/08#	108/09	108/10	108/24#	108/25
108/26	108/32#	108/33	108/34	108/42#	108/43	108/44
108/58#	108/59	108/60	109/06#	109/07	109/08	109/16#
109/17	109/18	109/32#	109/33	109/34	109/40#	109/41
109/42	109/50#	109/51	109/52	110/06#	110/07	110/08
110/14#	110/15	110/16	110/24#	110/25	110/26	110/40#
110/41	110/42	110/48#	110/49	110/50	110/58#	110/59
110/60	111/14#	111/15	111/16	111/22#	111/23	111/24
111/32#	111/33	111/34	111/48#	111/49	111/50	111/56#
111/57	111/58	112/06#	112/07	112/08	113/06#	113/07
113/08	113/14#	113/15	113/16	113/23#	113/24	113/25
113/35#	113/36	113/37	113/46#	113/47	113/48	114/09#
114/10	114/11	114/17#	114/18	114/19	114/23#	114/24
114/25	115/10#	115/11	115/12	115/16#	115/17	115/18
115/27#	115/28	115/29	115/33#	115/34	115/35	115/45#
115/46	115/47	115/51#	115/52	115/53	116/02#	116/03
116/04	116/08#	116/09	116/10	116/20#	116/21	116/22
116/26#	116/27	116/28	116/37#	116/38	116/39	116/43#
116/44	116/45	116/55#	116/56	116/57	117/01#	117/02
117/03	117/12#	117/13	117/14	117/18#	117/19	117/20
117/30#	117/31	117/32	117/36#	117/37	117/38	117/47#
117/48	117/49	117/53#	117/54	117/55	118/05#	118/06
118/07	118/11#	118/12	118/13	118/22#	118/23	118/24
118/28#	118/29	118/30	118/40#	118/41	118/42	118/46#
118/47	118/48	118/57#	118/58	118/59	119/03#	119/04
119/05	119/15#	119/16	119/17	119/21#	119/22	119/23
119/32#	119/33	119/34	119/38#	119/39	119/40	119/50#
119/51	119/52	119/56#	119/57	119/58	120/07#	120/08

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148/36#	148/42#	148/55#	149/01#	150/12#	150/20#	150/33#
150/41#	150/58#	152/12#	152/26#	152/38#	152/56#	153/11#
154/14#	154/32#	154/39#	155/16#	155/24#	155/44#	155/52#
156/17#	156/58#	158/14#	158/19#	158/25#	158/30#	158/37#
158/56#	159/17#	159/43#	159/51#	160/06#	160/14#	160/21#
161/13#	161/21#	161/36#	161/44#	161/58#	162/06#	162/13#
163/18#	163/33#	163/39#	163/53#	164/30#	164/46#	165/02#
165/18#	165/34#	165/50#	166/06#	166/22#	166/38#	166/54#
167/10#	167/26#	167/42#	167/58#	168/14#	169/11#	169/22#

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169/47#	169/55#	170/06#	170/14#	170/25#	170/33#	170/44#
170/52#	171/09#	172/12#	172/18#	172/57#	173/03#	173/09#
173/23#	173/29#	173/35#	173/49#	173/55#	174/01#	174/15#
174/21#	174/27#	174/41#	174/47#	174/53#	175/07#	175/13#
175/19#	175/33#	175/39#	175/45#	175/59#	176/05#	176/11#
177/11#	177/20#	178/23#	178/37#	178/54#	178/60#	179/08#
180/25#	180/33#	180/45#	180/53#	181/05#	181/13#	181/25#
181/33#	182/13#	182/22#	182/28#	182/46#	182/57#	183/06#
183/14#	183/28#	183/36#	184/17#	184/27#	184/34#	184/41#
184/48#	184/57#	185/05#	185/12#	185/20#	185/28#	186/17#
186/22#	186/30#	186/38#	186/45#	186/52#	186/60#	187/07#
187/14#	188/17#	188/22#	188/37#	188/46#	188/54#	189/09#
191/08#	191/25#	191/43#	191/54#	192/06#	193/11#	193/22#
193/38#	193/52#	194/06#	194/20#	194/34#	194/48#	195/02#
195/16#	195/30#	195/44#	195/58#	196/12#	197/17#	197/36#
197/55#	198/14#	198/33#	198/52#	199/11#	199/30#	199/49#
200/08#	200/27#	200/46#	201/17#	201/30#	201/42#	201/55#
202/16#	202/33#	202/49#	205/18#	205/30#	205/42#	205/54#
206/06#	206/19#	207/11#	207/24#	207/38#	207/55#	209/18#
209/30#	209/42#	209/55#	210/08#	211/12#	211/25#	211/39#
211/53#	212/08#	213/13#	213/28#	213/43#	213/57#	214/13#
215/11#	215/27#	215/43#	215/59#	218/18#	218/30#	218/42#
218/54#	219/06#	219/18#	220/10#	220/22#	220/34#	220/46#
220/60#	221/13#	222/11#	222/23#	222/35#	222/47#	222/59#
223/15#	224/13#	224/29#	224/43#	224/58#	225/15#	227/21#
227/33#	227/49#	228/06#	228/24#	229/14#	229/31#	229/49#
230/05#	230/22#	231/16#	231/33#	231/51#	232/07#	232/18#
232/31#	232/50#	234/13#	234/21#	234/29#	234/36#	234/48#
234/55#	235/26#	235/32#	235/38#	235/52#	235/58#	236/04#
236/18#	236/24#	236/30#	236/44#	236/50#	236/56#	237/10#
237/16#	237/22#	237/36#	237/42#	237/48#	238/02#	238/08#
238/14#	238/28#	238/34#	238/40#	239/10#	239/16#	239/30#
239/37#	239/44#	239/54#	240/08#	240/14#	240/24#	240/32#
241/09#	241/19#	241/28#	241/37#	241/46#	241/56#	242/18#
242/30#	242/42#	242/54#	243/06#	243/18#	244/09#	244/20#
244/29#	244/35#	244/45#	244/51#	245/01#	245/11#	245/22#
246/09#	247/17#	247/26#	247/36#	247/45#	248/04#	248/09#
248/19#	249/20#	249/25#	249/31#	249/49#	250/10#	250/16#
250/26#	250/32#	250/43#	250/48#	250/56#	251/04#	251/16#
251/21#	251/31#	252/11#	252/16#	252/21#	252/28#	252/35#
252/41#	253/20#	253/26#	253/33#	253/39#	253/46#	253/53#
254/07#	254/13#	254/21#	254/30#	254/36#	254/44#	254/55#
255/13#	255/30#	255/38#	255/48#			

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259/03#	259/07	259/11#	259/15	259/19#	259/23	259/26#
259/30	259/33#	259/37	259/41#	259/45	259/49#	259/53
259/56#	259/60	260/03#	260/07	260/10#	260/14	260/17#
260/21	260/24#	260/28	261/01#	261/05	261/08#	261/12
261/15#	261/19	261/22#	261/26	261/30#	261/34	261/37#
261/41	261/45#	261/49	261/52#	261/56	261/59#	262/03
262/06#	262/10	262/13#	262/17	262/20#	262/24	262/27#
262/31	263/01#	263/05	263/08#	263/12	263/15#	263/19
263/22#	263/26	263/29#	263/33	263/36#	263/40	263/43#
263/47	263/50#	263/54	263/57#	264/01	264/04#	264/08
264/11#	264/15	264/18#	264/22	264/25#	264/29	265/01#
265/05	265/08#	265/12	265/15#	265/19	265/22#	265/26
265/29#	265/33	265/36#	265/40	265/44#	265/48	265/51#
265/55	265/58#	266/02	266/05#	266/09	266/12#	266/16
266/19#	266/23	266/26#	266/30	267/01#	267/05	267/09#

267/13	267/16#	267/20	267/24#	267/28	267/32#	267/36
267/39#	267/43	267/46#	267/50	267/53#	267/57	267/60#
268/04	268/07#	268/11	268/14#	268/18	268/21#	268/25
269/01#	269/05	269/08#	269/09	269/11	269/14#	269/15
269/17	269/20#	269/21	269/23	269/26#	269/27	269/29
269/32#	269/33	269/35	269/38#	269/39	269/41	269/44#
269/45	269/47	269/50#	269/51	269/53	269/56#	269/57
269/59	270/02#	270/03	270/05	270/08#	270/09	270/11
270/14#	270/15	270/17	271/01#	271/02	271/04	271/07#
271/08	271/10	271/13#	271/14	271/16	271/19#	271/20
271/22	271/25#	271/26	271/28	271/31#	271/32	271/34
271/37#	271/38	271/40	271/43#	271/44	271/46	271/49#
271/50	271/52	271/55#	271/56	271/58	272/01#	272/02
272/04	272/07#	272/08	272/10	272/13#	272/14	272/16
273/01#	273/02	273/04	273/07#	273/08	273/10	273/14#
273/15	273/17	273/20#	273/21	273/23	273/26#	273/27
273/29	273/32#	273/33	273/35	273/38#	273/39	273/41
273/44#	273/45	273/47	273/50#	273/51	273/53	273/56#
273/57	273/59	274/02#	274/03	274/05	274/08#	274/09
274/11	274/14#	274/15	274/17	275/01#	275/02	275/04
275/07#	275/08	275/10	275/13#	275/14	275/16	275/19#
275/20	275/22	275/25#	275/26	275/28	275/31#	275/32
275/34	275/37#	275/38	275/40	275/43#	275/44	275/46
275/49#	275/50	275/52	275/55#	275/56	275/58	276/01#
276/02	276/04	276/07#	276/08	276/10	276/13#	276/14
276/16	277/01#	277/02	277/04	277/07#	277/08	277/10
277/13#	277/14	277/16	277/19#	277/20	277/22	277/25#
277/26	277/28	277/31#	277/32	277/34	277/37#	277/38
277/40	277/43#	277/44	277/46	277/49#	277/50	277/52
277/55#	277/56	277/58	278/01#	278/02	278/04	278/07#
278/08	278/10	278/13#	278/14	278/16	279/01#	279/02
279/04	279/07#	279/08	279/10	279/13#	279/14	279/16
279/19#	279/20	279/22	279/25#	279/26	279/28	279/31#
279/32	279/34	279/37#	279/38	279/40	279/43#	279/44
279/46	279/49#	279/50	279/52	279/55#	279/56	279/58
280/01#	280/02	280/04	280/07#	280/08	280/10	280/13#
280/14	280/16	281/02#	281/03	281/05	281/08#	281/09
281/11	281/14#	281/15	281/17	281/20#	281/21	281/23
281/26#	281/27	281/29	281/32#	281/33	281/35	281/38#
281/39	281/41	281/44#	281/45	281/47	281/50#	281/51
281/53	281/56#	281/57	281/59	282/02#	282/03	282/05
282/08#	282/09	282/11	282/14#	282/15	282/17	283/01#
283/02	283/04	283/07#	283/08	283/10	283/14#	283/15
283/17	283/21#	283/22	283/24	283/27#	283/28	283/30
283/33#	283/34	283/36	283/39#	283/40	283/42	283/45#
283/46	283/48	283/51#	283/52	283/54	283/57#	283/58
283/60	284/03#	284/04	284/06	284/09#	284/10	284/12
284/15#	284/16	284/18	285/01#	285/02	285/04	285/07#
285/08	285/10	285/13#	285/14	285/16	285/19#	285/20
285/22	285/25#	285/26	285/28	285/31#	285/32	285/34
285/37#	285/38	285/40	285/43#	285/44	285/46	285/49#
285/50	285/52	285/55#	285/56	285/58	286/01#	286/02
286/04	286/07#	286/08	286/10	286/13#	286/14	286/16
287/01#	287/02	287/04	287/07#	287/08	287/10	287/13#
287/14	287/16	287/19#	287/20	287/22	287/25#	287/26
287/28	287/31#	287/32	287/34	287/37#	287/38	287/40
287/43#	287/44	287/46	287/49#	287/50	287/52	287/56#
287/57	287/59	288/02#	288/03	288/05	288/08#	288/09

288/11	288/14#	288/15	288/17	289/01#	289/02	289/04
289/08#	289/09	289/11	289/15#	289/16	289/18	289/22#
289/23	289/25	289/29#	289/30	289/32	289/36#	289/37
289/39	289/43#	289/44	289/46	289/50#	289/51	289/53
289/57#	289/58	289/60	290/04#	290/05	290/07	290/11#
290/12	290/14	291/01#	291/02	291/04	291/08#	291/09
291/11	291/15#	291/16	291/18	291/22#	291/23	291/25
291/29#	291/30	291/32	291/35#	291/36	291/38	291/41#
291/42	291/44	291/48#	291/49	291/51	291/55#	291/56
291/58	292/02#	292/03	292/05	292/09#	292/10	292/12
293/01#	293/02	293/04	293/09#	293/10	293/12	293/16#
293/17	293/19	293/23#	293/24	293/26	293/30#	293/31
293/33	293/37#	293/38	293/40	293/44#	293/45	293/47
293/51#	293/52	293/54	293/58#	293/59	294/01	294/05#
294/06	294/08	295/01#	295/02	295/04	295/08#	295/09
295/11	295/16#	295/17	295/19	295/24#	295/25	295/27
295/32#	295/33	295/35	295/40#	295/41	295/43	295/48#
295/49	295/51	295/56#	295/57	295/59	296/04#	296/05
296/07	297/01#	297/02	297/04	297/09#	297/10	297/12
297/18#	297/19	297/21	297/26#	297/27	297/29	297/34#
297/35	297/37	297/42#	297/43	297/45	297/50#	297/51
297/53	297/58#	297/59	298/01	298/05#	298/06	298/08
299/01#	299/02	299/04	299/08#	299/09	299/11	299/15#
299/16	299/18	299/21#	299/22	299/24	299/27#	299/28
299/30	299/34#	299/35	299/37	299/41#	299/42	299/44
299/47#	299/48	299/50	299/53#	299/54	299/56	299/59#
299/60	300/02	300/06#	300/07	300/09	300/12#	300/13
300/15	301/01#	301/02	301/04	301/08#	301/09	301/11
301/15#	301/16	301/18	301/21#	301/22	301/24	301/28#
301/29	301/31	301/35#	301/36	301/38	301/42#	301/43
301/45	301/49#	301/50	301/52	301/56#	301/57	301/59
302/03#	302/04	302/06	302/10#	302/11	302/13	303/01#
303/02	303/04	303/08#	303/09	303/11	303/15#	303/16
303/18	303/22#	303/23	303/25	303/28#	303/29	303/31
303/35#	303/36	303/38	303/42#	303/43	303/45	303/49#
303/50	303/52	303/55#	303/56	303/58	304/02#	304/03
304/05	304/09#	304/10	304/12	305/01#	305/02	305/04
305/07#	305/08	305/10	305/14#	305/15	305/17	305/21#
305/22	305/24	305/28#	305/29	305/31	305/34#	305/35
305/37	305/41#	305/42	305/44	305/48#	305/49	305/51
305/55#	305/56	305/58	306/01#	306/02	306/04	306/08#
306/09	306/11	307/01#	307/02	307/04	307/08#	307/09
307/11	307/14#	307/15	307/17	307/22#	307/23	307/25
307/29#	307/30	307/32	307/36#	307/37	307/39	307/42#
307/43	307/45	307/49#	307/50	307/52	307/56#	307/57
307/59	308/03#	308/04	308/06	308/09#	308/10	308/12
309/01#	309/02	309/04	309/08#	309/09	309/11	309/15#
309/16	309/18	309/21#	309/22	309/24	309/28#	309/29
309/31	309/35#	309/36	309/38	309/42#	309/43	309/45
309/48#	309/49	309/51	309/54#	309/55	309/57	309/60#
310/01	310/03	310/07#	310/08	310/10	311/01#	311/02
311/04	311/07#	311/08	311/10	311/14#	311/15	311/17
311/21#	311/22	311/24	311/28#	311/29	311/31	311/34#
311/35	311/37	311/41#	311/42	311/44	311/48#	311/49
311/51	311/54#	311/55	311/57	311/60#	312/01	312/03
313/01#	313/02	313/04	313/07#	313/08	313/10	313/13#
313/14	313/16	313/20#	313/21	313/23	313/26#	313/27
313/29	313/32#	313/33	313/35	313/39#	313/40	313/42

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346/38# 346/40 346/44# 346/46 346/50# 346/52 346/56#
346/58 347/02# 347/04 347/08# 347/10 347/14# 347/16
348/01# 348/03 348/07# 348/09 348/13# 348/15 348/19#
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348/43# 348/45 348/49# 348/51 348/55# 348/57 349/01#
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358/34 358/38# 358/39 358/40 358/44# 358/45 358/46

358/51#	358/52	358/53	358/57#	358/58	358/59	359/03#
359/04	359/05	359/09#	359/10	359/11	359/15#	359/16
359/17	360/01#	360/02	360/03	360/07#	360/08	360/09
360/13#	360/14	360/15	360/19#	360/20	360/21	360/25#
360/26	360/27	360/31#	360/32	360/33	360/37#	360/38
360/39	360/44#	360/45	360/46	360/50#	360/51	360/52
360/56#	360/57	360/58	361/02#	361/03	361/04	361/08#
361/09	361/10	361/14#	361/15	361/16	362/01#	362/02
362/03	362/07#	362/08	362/09	362/13#	362/14	362/15
362/19#	362/20	362/21	362/25#	362/26	362/27	362/31#
362/32	362/33	362/37#	362/38	362/39	362/43#	362/44
362/45	362/49#	362/50	362/51	362/55#	362/56	362/57
363/01#	363/02	363/03	363/07#	363/08	363/09	363/13#
363/14	363/15	364/01#	364/02	364/03	364/07#	364/08
364/09	364/13#	364/14	364/15	364/19#	364/20	364/21
364/26#	364/27	364/28	364/32#	364/33	364/34	364/39#
364/40	364/41	364/45#	364/46	364/47	364/51#	364/52
364/53	364/57#	364/58	364/59	365/03#	365/04	365/05
365/09#	365/10	365/11	365/15#	365/16	365/17	366/01#
366/02	366/03	366/07#	366/08	366/09	366/13#	366/14
366/15	366/19#	366/20	366/21	366/25#	366/26	366/27
366/31#	366/32	366/33	366/37#	366/38	366/39	366/43#
366/44	366/45	366/49#	366/50	366/51	366/55#	366/56
366/57	367/01#	367/02	367/03	367/07#	367/08	367/09
367/13#	367/14	367/15	368/01#	368/02	368/03	368/07#
368/08	368/09	368/13#	368/14	368/15	368/19#	368/20
368/21	368/25#	368/26	368/27	368/31#	368/32	368/33
368/37#	368/38	368/39	368/43#	368/44	368/45	368/49#
368/50	368/51	368/55#	368/56	368/57	369/01#	369/02
369/03	369/07#	369/08	369/09	369/13#	369/14	369/15
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370/14	370/15	370/19#	370/20	370/21	370/25#	370/26
370/27	370/31#	370/32	370/33	370/37#	370/38	370/39
370/43#	370/44	370/45	370/49#	370/50	370/51	370/55#
370/56	370/57	371/01#	371/02	371/03	371/07#	371/08
371/09	371/13#	371/14	371/15	372/01#	372/02	372/03
372/07#	372/08	372/09	372/13#	372/14	372/15	372/19#
372/20	372/21	372/25#	372/26	372/27	372/31#	372/32
372/33	372/37#	372/38	372/39	372/43#	372/44	372/45
372/49#	372/50	372/51	372/55#	372/56	372/57	373/01#
373/02	373/03	373/07#	373/08	373/09	373/13#	373/14
373/15	374/01#	374/02	374/03	374/07#	374/08	374/09
374/13#	374/14	374/15	374/19#	374/20	374/21	374/25#
374/26	374/27	374/31#	374/32	374/33	374/37#	374/38
374/39	374/43#	374/44	374/45	374/49#	374/50	374/51
374/55#	374/56	374/57	375/01#	375/02	375/03	375/07#
375/08	375/09	375/14#	375/15	375/16	376/02#	376/03
376/04	376/08#	376/09	376/10	376/14#	376/15	376/16
376/20#	376/21	376/22	376/26#	376/27	376/28	376/32#
376/33	376/34	376/38#	376/39	376/40	376/44#	376/45
376/46	376/50#	376/51	376/52	376/56#	376/57	376/58
377/02#	377/03	377/04	377/08#	377/09	377/10	377/14#
377/15	377/16	378/01#	378/02	378/03	378/07#	378/08
378/09	378/14#	378/15	378/16	378/20#	378/21	378/22
378/26#	378/27	378/28	378/32#	378/33	378/34	378/38#
378/39	378/40	378/44#	378/45	378/46	378/50#	378/51
378/52	378/56#	378/57	378/58	379/02#	379/03	379/04
379/09#	379/10	379/11	379/16#	379/17	379/18	380/01#

380/02	380/03	380/07#	380/08	380/09	380/13#	380/14
380/15	380/19#	380/20	380/21	380/26#	380/27	380/28
380/33#	380/34	380/35	380/40#	380/41	380/42	380/48#
380/49	380/50	380/57#	380/58	380/59	381/03#	381/04
381/05	381/11#	381/12	381/13	382/01#	382/02	382/03
382/08#	382/09	382/10	382/15#	382/16	382/17	382/22#
382/23	382/24	382/29#	382/30	382/31	382/36#	382/37
382/38	382/43#	382/44	382/45	382/50#	382/51	382/52
382/57#	382/58	382/59	383/04#	383/05	383/06	383/11#
383/12	383/13	384/01#	384/02	384/03	384/08#	384/09
384/10	384/15#	384/16	384/17	384/22#	384/23	384/24
384/29#	384/30	384/31	384/36#	384/37	384/38	384/43#
384/44	384/45	384/50#	384/51	384/52	384/57#	384/58
384/59	385/04#	385/05	385/06	385/11#	385/12	385/13
386/01#	386/02	386/03	386/08#	386/09	386/10	386/14#
386/15	386/16	386/20#	386/21	386/22	386/28#	386/29
386/30	386/36#	386/37	386/38	386/45#	386/46	386/47
386/51#	386/52	386/53	386/57#	386/58	386/59	387/03#
387/04	387/05	387/09#	387/10	387/11	388/01#	388/02
388/03	388/07#	388/08	388/09	388/13#	388/14	388/15
388/19#	388/20	388/21	388/25#	388/26	388/27	388/31#
388/32	388/33	388/37#	388/38	388/39	388/43#	388/44
388/45	388/49#	388/50	388/51	388/56#	388/57	388/58
389/02#	389/03	389/04	389/08#	389/09	389/10	389/14#
389/15	389/16	390/01#	390/02	390/03	390/07#	390/08
390/09	390/13#	390/14	390/15	390/19#	390/20	390/21
390/25#	390/26	390/27	390/31#	390/32	390/33	390/37#
390/38	390/39	390/43#	390/44	390/45	390/50#	390/51
390/52	390/56#	390/57	390/58	391/02#	391/03	391/04
391/08#	391/09	391/10	391/15#	391/16	391/17	392/01#
392/02	392/03	392/08#	392/09	392/10	392/15#	392/16
392/17	392/21#	392/22	392/23	392/28#	392/29	392/30
392/35#	392/36	392/37	392/42#	392/43	392/44	392/49#
392/50	392/51	392/56#	392/57	392/58	393/02#	393/03
393/04	393/08#	393/09	393/10	393/14#	393/15	393/16
394/01#	394/02	394/03	394/08#	394/09	394/10	394/14#
394/15	394/16	394/20#	394/21	394/22	394/27#	394/28
394/29	394/33#	394/34	394/35	394/39#	394/40	394/41
394/46#	394/47	394/48	394/52#	394/53	394/54	394/58#
394/59	394/60	395/05#	395/06	395/07	395/12#	395/13
395/14	396/01#	396/02	396/03	396/07#	396/08	396/09
396/13#	396/14	396/15	396/20#	396/21	396/22	396/26#
396/27	396/28	396/32#	396/33	396/34	396/39#	396/40
396/41	396/45#	396/46	396/47	396/51#	396/52	396/53
396/57#	396/58	396/59	397/03#	397/04	397/05	397/10#
397/11	397/12	398/01#	398/02	398/03	398/07#	398/08
398/09	398/13#	398/14	398/15	398/19#	398/20	398/21
398/25#	398/26	398/27	398/31#	398/32	398/33	398/37#
398/38	398/39	398/43#	398/44	398/45	398/49#	398/50
398/51	398/55#	398/56	398/57	399/01#	399/02	399/03
399/07#	399/08	399/09	399/13#	399/14	399/15	400/01#
400/02	400/03	400/07#	400/08	400/09	400/13#	400/14
400/15	400/19#	400/20	400/21	400/25#	400/26	400/27
400/31#	400/32	400/33	400/37#	400/38	400/39	400/43#
400/44	400/45	400/49#	400/50	400/51	400/55#	400/56
400/57	401/01#	401/02	401/03	401/07#	401/08	401/09
401/13#	401/14	401/15	402/01#	402/02	402/03	402/07#
402/08	402/09	402/13#	402/14	402/15	402/19#	402/20

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306/02	306/08#	306/09	307/01#	307/02	307/08#	307/09
307/14#	307/15	307/22#	307/23	307/29#	307/30	307/36#
307/37	307/42#	307/43	307/49#	307/50	307/56#	307/57
308/03#	308/04	308/09#	308/10	309/01#	309/02	309/08#
309/09	309/15#	309/16	309/21#	309/22	309/28#	309/29
309/35#	309/36	309/42#	309/43	309/48#	309/49	309/54#
309/55	309/60#	310/01	310/07#	310/08	311/01#	311/02
311/07#	311/08	311/14#	311/15	311/21#	311/22	311/28#
311/29	311/34#	311/35	311/41#	311/42	311/48#	311/49
311/54#	311/55	311/60#	312/01	313/01#	313/02	313/07#
313/08	313/13#	313/14	313/20#	313/21	313/26#	313/27
313/32#	313/33	313/39#	313/40	313/46#	313/47	313/52#
313/53	313/59#	313/60	314/05#	314/06	314/12#	314/13
315/01#	315/02	315/08#	315/09	315/14#	315/15	315/21#
315/22	315/27#	315/28	315/34#	315/35	315/40#	315/41
315/47#	315/48	315/53#	315/54	315/60#	316/01	316/06#
316/07	316/13#	316/14	316/19#	316/20	316/26#	316/27
316/32#	316/33	316/39#	316/40	316/45#	316/46	316/52#
316/53	316/58#	316/59	317/05#	317/06	317/11#	317/12
317/18#	317/19	318/01#	318/02	318/08#	318/09	318/15#
318/16	318/22#	318/23	318/29#	318/30	318/36#	318/37
318/43#	318/44	318/50#	318/51	318/57#	318/58	319/04#
319/05	320/01#	320/02	320/07#	320/08	320/13#	320/14
320/19#	320/20	320/25#	320/26	320/31#	320/32	320/37#
320/38	320/43#	320/44	320/49#	320/50	320/55#	320/56
321/01#	321/02	321/07#	321/08	321/13#	321/14	322/01#
322/02	322/07#	322/08	322/13#	322/14	322/19#	322/20
322/25#	322/26	322/31#	322/32	322/37#	322/38	322/43#
322/44	322/49#	322/50	322/56#	322/57	323/02#	323/03
323/08#	323/09	323/14#	323/15	324/01#	324/02	324/07#
324/08	324/13#	324/14	324/19#	324/20	324/25#	324/26
324/31#	324/32	324/37#	324/38	324/43#	324/44	324/49#
324/50	324/55#	324/56	325/01#	325/02	325/07#	325/08
325/13#	325/14	326/01#	326/02	326/07#	326/08	326/13#
326/14	326/19#	326/20	326/25#	326/26	326/31#	326/32
326/37#	326/38	326/43#	326/44	326/49#	326/50	326/55#
326/56	327/01#	327/02	327/07#	327/08	327/13#	327/14
328/01#	328/02	328/07#	328/08	328/13#	328/14	328/19#
328/20	328/25#	328/26	328/31#	328/32	328/37#	328/38
328/43#	328/44	328/49#	328/50	328/55#	328/56	329/01#
329/02	329/07#	329/08	329/13#	329/14	330/01#	330/02
330/07#	330/08	330/13#	330/14	330/19#	330/20	330/25#
330/26	330/31#	330/32	330/38#	330/39	330/44#	330/45
330/50#	330/51	330/56#	330/57	331/02#	331/03	331/08#
331/09	331/14#	331/15	332/01#	332/02	332/07#	332/08
332/13#	332/14	332/19#	332/20	332/25#	332/26	332/31#
332/32	332/37#	332/38	332/43#	332/44	332/49#	332/50
332/55#	332/56	333/01#	333/02	333/07#	333/08	333/13#
333/14	334/01#	334/02	334/07#	334/08	334/13#	334/14
334/19#	334/20	334/25#	334/26	334/31#	334/32	334/37#
334/38	334/43#	334/44	334/49#	334/50	334/55#	334/56
335/01#	335/02	335/07#	335/08	335/13#	335/14	336/01#
336/02	336/07#	336/08	336/13#	336/14	336/19#	336/20
336/25#	336/26	336/31#	336/32	336/37#	336/38	336/43#
336/44	336/49#	336/50	336/55#	336/56	337/01#	337/02
337/07#	337/08	337/13#	337/14	338/01#	338/02	338/07#
338/08	338/13#	338/14	338/19#	338/20	338/26#	338/27
338/32#	338/33	338/38#	338/39	338/44#	338/45	338/50#

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338/51	338/56#	338/57	339/02#	339/03	339/08#	339/09
339/14#	339/15	340/01#	340/02	340/07#	340/08	340/13#
340/14	340/19#	340/20	340/25#	340/26	340/31#	340/32
340/37#	340/38	340/43#	340/44	340/49#	340/50	340/55#
340/56	341/01#	341/02	341/07#	341/08	341/13#	341/14
342/01#	342/02	342/07#	342/08	342/13#	342/14	342/19#
342/20	342/25#	342/26	342/31#	342/32	342/37#	342/38
342/43#	342/44	342/49#	342/50	342/55#	342/56	343/01#
343/02	343/07#	343/08	343/13#	343/14	344/01#	344/02
344/07#	344/08	344/13#	344/14	344/19#	344/20	344/25#
344/26	344/31#	344/32	344/37#	344/38	344/43#	344/44
344/49#	344/50	344/55#	344/56	345/01#	345/02	345/07#
345/08	345/13#	345/14	346/01#	346/02	346/07#	346/08
346/14#	346/15	346/20#	346/21	346/26#	346/27	346/32#
346/33	346/38#	346/39	346/44#	346/45	346/50#	346/51
346/56#	346/57	347/02#	347/03	347/08#	347/09	347/14#
347/15	348/01#	348/02	348/07#	348/08	348/13#	348/14
348/19#	348/20	348/25#	348/26	348/31#	348/32	348/37#
348/38	348/43#	348/44	348/49#	348/50	348/55#	348/56
349/01#	349/02	349/07#	349/08	349/13#	349/14	350/01#
350/02	350/07#	350/08	350/13#	350/14	350/19#	350/20
350/25#	350/26	350/31#	350/32	350/37#	350/38	350/43#
350/44	350/49#	350/50	350/55#	350/56	351/01#	351/02
351/07#	351/08	351/13#	351/14	352/01#	352/02	352/07#
352/08	352/13#	352/14	352/19#	352/20	352/25#	352/26
352/31#	352/32	352/37#	352/38	352/43#	352/44	352/49#
352/50	352/55#	352/56	353/01#	353/02	353/07#	353/08
353/13#	353/14	354/02#	354/03	354/09#	354/10	354/15#
354/16	354/22#	354/23	354/28#	354/29	354/34#	354/35
354/40#	354/41	354/46#	354/47	354/52#	354/53	354/58#
354/59	355/04#	355/05	355/10#	355/11	355/16#	355/17
356/01#	356/02	356/07#	356/08	356/13#	356/14	356/19#
356/20	356/25#	356/26	356/31#	356/32	356/37#	356/38
356/43#	356/44	356/49#	356/50	356/55#	356/56	357/01#
357/02	357/07#	357/08	357/13#	357/14	358/01#	358/02
358/07#	358/08	358/13#	358/14	358/19#	358/20	358/25#
358/26	358/32#	358/33	358/38#	358/39	358/44#	358/45
358/51#	358/52	358/57#	358/58	359/03#	359/04	359/09#
359/10	359/15#	359/16	360/01#	360/02	360/07#	360/08
360/13#	360/14	360/19#	360/20	360/25#	360/26	360/31#
360/32	360/37#	360/38	360/44#	360/45	360/50#	360/51
360/56#	360/57	361/02#	361/03	361/08#	361/09	361/14#
361/15	362/01#	362/02	362/07#	362/08	362/13#	362/14
362/19#	362/20	362/25#	362/26	362/31#	362/32	362/37#
362/38	362/43#	362/44	362/49#	362/50	362/55#	362/56
363/01#	363/02	363/07#	363/08	363/13#	363/14	364/01#
364/02	364/07#	364/08	364/13#	364/14	364/19#	364/20
364/26#	364/27	364/32#	364/33	364/39#	364/40	364/45#
364/46	364/51#	364/52	364/57#	364/58	365/03#	365/04
365/09#	365/10	365/15#	365/16	366/01#	366/02	366/07#
366/08	366/13#	366/14	366/19#	366/20	366/25#	366/26
366/31#	366/32	366/37#	366/38	366/43#	366/44	366/49#
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