```
                .TITLE  PACEDI,'  00344A   04/01/75'                          8.
                ;                                                            9.
;       PACEDI IS A DIAGNOSTIC PROGRAM WHICH EXERCISES THE PACE              10.
;       CHIP TO TEST FOR THE PROPER OPERATION OF THE PACE                    11.
;       INSTRUCTION SET.  THE DIAGNOSTICS DO NOT CHECK FOR THE               12.
;       PROPER OPERATION OF USER INTERRUPTS, USER FLAGS, OR                  13.
;       USER JUMP CONDITIONS.                                                14.
;                                                                            15.
;                                                                            16.
;         TEST OPERATION                                                     17.
;                                                                            18.
;         THE DIAGNOSTIC USER HAS THE FOLLOWING OPTIONS:                     19.
;           1. VARIABLE TEST RANGE                                           20.
;           2. ONE LOOP/CONTINUOUS LOOP ON ENTIRE RANGE                      21.
;           3. TIGHT LOOP ON INDIVIDUAL TESTS ON ERROR                       22.
;           4. UNCONDITIONAL TIGHT LOOP ON EACH TEST.                        23.
;                                                                            24.
;         USE OF REGISTERS AT START OF TEST                                  25.
;           AC0 - STARTING TEST NUMBER IN HEX                                26.
;           AC1 - LAST TEST NUMBER IN HEX; MUST BE GREATER THAN              27.
;                 OR EQUAL TO THE STARTING TEST NUMBER                       28.
;           AC2 - LOOP CONDITIONS                                            29.
;           AC3 - TEST MODE - CONTINUOUS/NON-CONTINUOUS                      30.
;                                                                            31.
;           AC2: LOOP CONDITIONS                                             32.
;             0 - HALT ON ERROR; NO LOOPING ON INDIVIDUAL TEST.              33.
;                 DEPRESS 'RUN' TO EXECUTE NEXT TEST.                        34.
;               1 - HALT ON ERROR; DEPRESS 'RUN' TO LOOP (TIGHT)             35.
;                 ON FAILED TEST. TO EXECUTE NEXT TEST FROM A                36.
;                 TIGHT LOOP, DEPRESS 'INIT', SET PC TO X'129,               37.
;                 AND DEPRESS 'RUN'.                                         38.
;               2 - UNCONDITIONAL TIGHT LOOP ON EACH TEST. TO                39.
;                 EXECUTE NEXT TEST, DEPRESS 'INIT', SET PC TO               40.
;                 X'129, AND DEPRESS 'RUN'.                                  41.
;                                                                            42.
;           AC3: TEST MODE                                                   43.
;             0 - ONE PASS THROUGH SPECIFIED RANGE                           44.
;            -1 - CONTINUOUS LOOP ON SPECIFIED RANGE.                        45.
;                                                                            46.
;                                                                            47.
;       THERE ARE TWO HALT POINTS IN THE TEST. FIRST IS THE                  48.
;       INITIAL HALT. THIS HALT POINT ENABLES THE USER TO                    49.
;       MODIFY REGISTER CONTENTS FOR PROPER TEST CONDITIONS.                 50.
;       THE SECOND HALT IS AN ERROR HALT.                                    51.
;       AC3 HOLDS THE FAILED TEST NO.                                        52.
;                                                                            53.
;         HALT LOCATION          SIGNIFICANCE                              54.
;                                                                            55.
;         104 (PC = 105)         HALT TO ENABLE USER TO                    56.
;                                CHOOSE TEST OPTIONS                       57.
;         12F (PC = 130)         ERROR HALT. AN ERROR HAS                  58.
```

```
;                                   BEEN DETECTED IN ONE OF THE
;                                   TESTS
;
;                IF THE USER DOES NOT ALTER THE CONTENTS OF THE REGISTERS AT
;                THE START OF THE TEST, THE DEFAULT CONDITIONS ARE:
;                  1. TEST RANGE IS ENTIRE TEST; AC0=1 AND AC1=66
;                  2. LOOP CONDITION IS 0, HALT ON ERROR; AC2=0
;                  3. TEST MODE IS -1, CONTINUOUS TEST THROUGH ENTIRE
;                     RANGE; AC3=-1
;
;
;                TEST RANGES ARE:
;
;                  BASIC INSTRUCTION SET - 1 THROUGH X'66
;
;             THE FLAG 'SYNC' IS USED AS A SCOPE TRIGGER
;             OUTPUT FOR TIGHT LOOP ON FAILURE.
```

```
          .PAGE
;
;*************************************************************************
;*                                                                      *
;*        PACE LOADING PROCEDURE                                        *
;*                                                                      *
;*************************************************************************
;
;    A. FROM CARDS
;         1) PLACE LM CARD DECK OF PACEDI IN CARD READER AND MAKE THE
;            CARD READER READY.
;         2) DEPRESS 'INIT'.
;         3) SET MODE SWITCH TO PC.
;         4) SET THE VALUE X'7F00 INTO THE SWITCHES.
;         5) DEPRESS 'LOAD DATA'.
;         6) SET MODE SWITCH TO PROG DATA.
;         7) DEPRESS RUN.
;
;    B. FROM PAPER TAPE
;         1) PLACE PAPER TAPE OF PACEDI IN TAPE READER.
;         2) DEPRESS 'INIT'.
;         3) DEPRESS 'LOAD PROG'.
;         4) TURN READER ON.
;         5) AFTER THE LOADING IS COMPLETED, DEPRESS 'RUN' TO EXECUTE
;            PACEDI.
```

```
                .PAGE                                                   101.
                ;                                                       102.
                ;  THE NORMAL OPERATING SEQUENCE TO EXECUTE PACEDI FOLLOWS:     103.
                ;                                                       104.
                ;    1. LOAD DIAGNOSTIC INTO MAIN MEMORY.               105.
                ;    2. PROGRAM SHOULD HALT WITH X'105 IN THE PC.       106.
                ;    3. SELECT TEST PARAMETERS (IF NECESSARY).          107.
                ;       A. SET MODE SWITCH TO 'AC0'.                    108.
                ;       B. SET STARTING TEST NUMBER INTO SWITCHES (1 THRU X'66).  109.
                ;       C. DEPRESS 'LOAD DATA'.                         110.
                ;       D. SET MODE SWITCH TO 'AC1'.                    111.
                ;       E. SET LAST TEST NUMBER INTO SWITCHES (1 THRU X'66 -      112.
                ;          MUST BE GREATER THAN OR EQUAL TO STEP B VALUE).       113.
                ;       F. DEPRESS 'LOAD DATA'.                         114.
                ;       G. SET MODE SWITCH TO 'AC2'.                    115.
                ;       H. SET SWITCHES TO LOOP OPTION NUMBER.          116.
                ;            0 : HALT ON ERROR.                         117.
                ;            1 : HALT ON ERROR, LOOP ON FAILED TEST.    118.
                ;            2 : UNCONDITIONAL LOOP ON EACH TEST.       119.
                ;       I. DEPRESS 'LOAD DATA'.                         120.
                ;       J. SET MODE SWITCH TO 'AC3'.                    121.
                ;       K. SET SWITCHES FOR CONTINUOUS TESTING MODE SELECTION.    122.
                ;            0 : NON-CONTINUOUS; HALTS AFTER THE COMPLETION OF THE  123.
                ;                LAST TEST                              124.
                ;          FFFF : CONTINUOUS;                           125.
                ;       L. DEPRESS 'LOAD DATA'.                         126.
                ;    4. RESTART PROGRAM EXECUTION, BY DEPRESSING RUN.   127.
                ;    5. AFTER PROGRAM AGAIN HALTS, CHECK THE ADDRESS IN THE PC.  128.
                ;       IF PC=X'105, ALL SELECTED TESTS WERE EXECUTED WITHOUT ANY  129.
                ;       ERRORS BEING DETECTED.                          130.
                ;         TO REPEAT THE SELECTED TESTING, RETURN TO STEP 4 ABOVE.  131.
                ;         TO MAKE NEW TESTING SELECTIONS, RETURN TO STEP 3 ABOVE.  132.
                ;       IF PC=X'130, A TEST HAS DETECTED AN ERROR. THE GENERAL REGISTERS 133.
                ;       MAY BE DISPLAYED: AC0, AC1, & AC2 HOLDING TEST RESULTS AND AC3   134.
                ;       HOLDING TEST NUMBER.                            135.
                ;         TO CONTINUE TESTING, RETURN TO STEP 4 ABOVE.  136.
                ;         TO ENTER NEW TESTING SELECTIONS, EXECUTE STEP 7 BELOW.  137.
                ;    6. WHEN THERE ARE NO ERRORS, THE PROGRAM EXECUTION WILL NOT HALT IF 138.
                ;       EITHER THE UNCONDITIONAL-LOOP OPTION OR THE CONTINUOUS-TEST MODE 139.
                ;       IS SELECTED. TO INTERRUPT ANY CONTINUOUS TESTING, HALT THE  140.
                ;       COMPUTER, THEN EXECUTE STEP 7 BELOW.            141.
                ;    7. DEPRESS 'INIT', SET PC TO X'100, THEN DEPRESS 'RUN',    142.
                ;       PC SHOULD READ X'105. RETURN TO STEP 3.         143.
```

```
                                .PAGE                                   144.
                                .ASECT                                  145.
                        ;                                               146.
                        ;       GENERAL REGISTERS                       147.
                        ;                                               148.
0000 A ACO      =       0                                               149.
0001 A AC1      =       1                                               150.
0002 A AC2      =       2                                               151.
0003 A AC3      =       3                                               152.
                        ;                                               153.
                        ;       FLAGS                                   154.
                        ;                                               155.
0001 A IEN1     =       1                                               156.
0002 A IEN2     =       2                                               157.
0003 A IEN3     =       3                                               158.
0004 A IEN4     =       4                                               159.
0005 A IEN5     =       5                                               160.
0006 A OVFLW    =       6                                               161.
0007 A CARRY    =       7                                               162.
000A A BYTE     =       10                                              163.
000E A SYNC     =       14                                              164.
                        ;                                               165.
                        ;       BOC EXPRESSIONS                         166.
                        ;                                               167.
0000 A STKFUL   =       0                                               168.
0001 A ZRO      =       1                                               169.
0002 A POS      =       2                                               170.
0003 A BTO      =       3                                               171.
0004 A BT1      =       4                                               172.
0005 A NZR      =       5                                               173.
0006 A BT2      =       6                                               174.
0008 A LINK     =       8                                               175.
0009 A IEN      =       9                                               176.
000A A CY       =       10                                              177.
000B A NEG      =       11                                              178.
000C A OV       =       12                                              179.
                        ;                                               180.
                        ;       GENERAL CONSTANTS                       181.
                        ;                                               182.
0080 A CRYMSK   =       X'80                                            183.
0040 A OVFMSK   =       X'40                                            184.
0100 A LNKMSK   =       X'100                                           185.
                        ;                                               186.
                        ;       REFERENCED VARIABLES IN BASE PAGE       187.
                        ;                                               188.
0060 A BASE     =       060                                             189.
0060 A CTST     =       BASE                                            190.
0061 A FTST     =       CTST+1                                          191.
0062 A FIRST    =       FTST+1                                          192.
0063 A STNUM    =       FIRST+1                                         193.
0064 A LTNUM    =       STNUM+1                                         194.
0065 A TNUM     =       LTNUM+1                                         195.
```

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 189      0066 A LOOPM    =       TNUM+1                             196.
 190      0067 A TESTM    =       LOOPM+1                            197.
 191      0068 A RESLT    =       TESTM +1                           198.
 192      0069 A CLUE     =       RESLT+1                            199.
 193      006D A TIGHT    =       CLUE+4                             200.
 194      006E A WAS      =       TIGHT+1                            201.
 195      006F A TADR     =       WAS+1                              202.
 196      0070 A TSTR     =       TADR+1                             203.
 197      0071 A BOCSW    =       TSTR+1                             204.
 198      0072 A TVAL1    =       TSTR+2                             205.
 199      0073 A TVAL2    =       TSTR+3                             206.
 200      007E A INDMSEL  =       BASE+01E                           207.
 201      007F A INDMRTN  =       BASE+01F                           208.
```

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 202                          .PAGE                                                                  209.
 203                          .LOCAL                                                                 210.
 204                 ;****************************************************************************  211.
 205                 ;*                                                                              212.
 206                 ;*       PACEDI CONTROL ROUTINE                                                 213.
 207                 ;*                                                                              214.
 208                 ;****************************************************************************  215.
 209                 ;                                                                               216.
 210                 ;        THIS IS THE CENTRCL ROUTINE FOR PACEDI.  IT IS IN CHARGE               217.
 211                 ;        OF IMPLEMENTING ALL SELECTED CPTIONS.  THE FOLLOWING                   218.
 212                 ;        INSTRUCTIONS MUST BE OPERATIONAL FOR PROPER OPERATION                  219.
 213                 ;        OF THE PACEDI CONTROL ROUTINE:                                         220.
 214                 ;                                                                               221.
 215                 ;        LD                                                                     222.
 216                 ;        ST                                                                     223.
 217                 ;        JMP                                                                    224.
 218                 ;        CAI                                                                    225.
 219                 ;        AISZ                                                                   226.
 220                 ;        RADD                                                                   227.
 221                 ;        PULL                                                                   228.
 222                 ;        HALT                                                                   229.
 223                 ;                                                                               230.
 224 0000                     .=X'100                                                                231.
 225 0100 C068 A MSELCT: LD       AC0,STNUM         ; GET DEFAULT TEST OPTIONS                      232.
 226 0101 C464 A          LD       AC1,LTNUM                                                          233.
 227 0102 C866 A          LD       AC2,LOOPM                                                          234.
 228 0103 CC67 A          LD       AC3,TESTM                                                          235.
 229                 ;                                                                               236.
 230 0104 0000 A           HALT                     ; OPERATOR MAY ALTER TEST OPTIONS               237.
 231                 ;                                                                               238.
 232 0105 D063 A           ST      AC0,STNUM                                                          239.
 233 0106 D464 A           ST      AC1,LTNUM                                                          240.
 234 0107 D866 A           ST      AC2,LOOPM                                                          241.
 235 0108 DC67 A           ST      AC3,TESTM                                                          242.
 236 0109 D065 A           ST      AC0,TNUM                                                           243.
 237 010A CC62 A MAINLP:  LD       AC3,FIRST         ; GET ADDR TEST NO. 1                           244.
 238 010B 5200 A           LI      AC2,0                                                              245.
 239 010C D86D A           ST      AC2,TIGHT                                                          246.
 240 010D 6B80 A ML:       RADD    AC2,AC3          ; THIS BLOCK COMPUTES                            247.
 241 010E DC61 A           ST      AC3,FTST         ; THE ADDRESS OF START TEST                      248.
 242 010F CB00 A           LD      AC2,0(AC3)                                                         249.
 243 0110 7A00 A           AISZ    AC2,0                                                              250.
 244 0111 1901 A           JMP     .+2                                                                251.
 245 0112 19ED A           JMP     MSELCT                                                             252.
 246 0113 78FF A           AISZ    AC0,-1           ; AC0 HAS START TEST NO.                         253.
 247 0114 19F8 A           JMP     ML                                                                 254.
 248 0115 1934 A           JMP     MG                                                                 255.
```

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249                        .PAGE                                                          256.
250                  ;                                                                    257.
251 0116 D069 A MRETRN: ST      AC0,CLUE                                                  258.
252 0117 D46A A         ST      AC1,CLUE+1                                                259.
253 0118 D86B A         ST      AC2,CLUE+2                                                260.
254 0119 DC6C A         ST      AC3,CLUE+3                                                261.
255                  ;                                                                    262.
256 011A C066 A         LD      AC0,LOOPM          ; TEST FOR LOOP MODE 2                 263.
257 011B 78FE A         AISZ    AC0,-2                                                    264.
258 011C 190C A         JMP     LM01               ; LOOP MODE 0 OR 1                     265.
259 011D C06E A LM12:   LD      AC0,WAS            ; LOOP MODE = 2                        266.
260 011E 7800 A         AISZ    AC0,0              ; TEST FOR TIGHT LOOP DONE             267.
261 011F 1905 A         JMP     NXT                ; TIGHT LOOP ON TEST DONE              268.
262 0120 50FF A         LI      AC0,-1             ; TIGHT LOOP ON TEST                   269.
263 0121 D06E A         ST      AC0,WAS                                                   270.
264 0122 D06D A         ST      AC0,TIGHT                                                 271.
265 0123 5000 A         LI      AC0,0                                                     272.
266 0124 192C A         JMP     INITJT                                                    273.
267                  ;                                                                    274.
268 0125 C066 A NXT:    LD      AC0,LOOPM                                                 275.
269 0126 78FE A         AISZ    AC0,-2             ; TEST FOR LOOP MODE 2                 276.
270 0127 190B A         JMP     MCNTUE             ; MUST BE LOOP MODE 1                  277.
271 0128 190C A         JMP     CNTUE2                                                    278.
272                  ;                                                                    279.
273 0129 C068 A LM01:   LD      AC0,RESLT          ; TEST FOR ERROR                       280.
274 012A 7800 A         AISZ    AC0,0                                                     281.
275 012B 1901 A         JMP     .+2                ; ERROR                                282.
276 012C 1906 A         JMP     MCNTUE             ; NO ERROR                             283.
277                  ;                                                                    284.
278 012D CC65 A         LD      AC3,TNUM           ; AC3 HAS FAILED TEST NO.              285.
279 012E C069 A         LD      AC0,CLUE                                                  286.
280 012F 0000 A         HALT                       ; **  ERROR HALT  **                   287.
281                  ;                                                                    288.
282 0130 C066 A         LD      AC0,LOOPM                                                 289.
283 0131 7800 A         AISZ    AC0,0              ; TEST FOR LOOP MODE 0 OR 1            290.
284 0132 19EA A         JMP     LM12               ; LOOP MODE 1                          291.
285                  ;                                                                    292.
286 0133 5000 A MCNTUE: LI      AC0,0                                                     293.
287 0134 D06D A         ST      AC0,TIGHT          ; TIGHT <- 0                           294.
288 0135 C065 A CNTUE2: LD      AC0,TNUM                                                  295.
289 0136 7801 A         AISZ    AC0,1              ; INCR TEST NO.                        296.
290 0137 D065 A         ST      AC0,TNUM                                                  297.
291 0138 C464 A         LD      AC1,LTNUM                                                 298.
292 0139 7100 A         CAI     AC1,0              ; TEST FOR LAST TEST NO.               299.
293 013A 6900 A         RADD    AC0,AC1                                                   300.
294 013B 7900 A         AISZ    AC1,0                                                     301.
295 013C 1906 A         JMP     MT                 ; MORE TESTS                           302.
296 013D C067 A TEND:   LD      AC0,TESTM          ; END OF RANGE                         303.
297 013E 7801 A         AISZ    AC0,1                                                     304.
298 013F 19C0 A         JMP     MSELCT             ; NON-CONTINUOUS MODE                  305.
299 0140 C063 A         LD      AC0,STNUM          ; CONTINUOUS MODE                      306.
300 0141 D065 A         ST      AC0,TNUM                                                  307.
```

```
   301 0142 19C7 A          JMP     MAINLP                                  308.
   302                      ;                                               309.
   303 0143 CC60 A MT:      LD      AC3,CTST        ; COMPUTE BEGIN ADDR    310.
   304 0144 CB00 A          LD      AC2,0(AC3)      ; OF NEXT TEST          311.
   305 0145 6880 A          RADD    AC2,AC3                                 312.
   306 0146 CB00 A          LD      AC2,(AC3)       ; AC2 <- BEGIN ADDR     313.
   307 0147 7A00 A          AISZ    AC2,0                                   314.
   308 0148 1901 A          JMP     .+2                                     315.
   309 0149 19F3 A          JMP     TEND                                    316.
   310                      ;                                               317.
   311 014A DC60 A MG:      ST      AC3,CTST        ; SAVE NEW BEGIN ADDR   318.
   312 014B 510A A          LI      AC1,10          ; CLEAR STACK           319.
   313 014C 6400 A          PULL    AC0                                     320.
   314 014D 79FF A          AISZ    AC1,-1                                  321.
   315 014E 19FD A          JMP     .-2                                     322.
   316 014F 5000 A          LI      AC0,0                                   323.
   317 0150 D06E A          ST      AC0,WAS         ; WAS <- 0              324.
   318                      ;                                               325.
   319 0151 D069 A INITJT:  ST      AC0,CLUE                                326.
   320 0152 D068 A          ST      AC0,RESLT       ; INIT ERROR SWITCH     327.
   321 0153 5100 A          LI      AC1,0                                   328.
   322 0154 C860 A          LD      AC2,CTST        ; GET BEGIN ADDR        329.
   323 0155 CC6D A          LD      AC3,TIGHT       ; SET TIGHT LOOP SWITCH 330.
   324 0156 1A01 A          JMP     1(AC2)          ; EXECUTE TEST          331.
```

```
                                .PAGE
                       ;
                       ;        TEST 1: TEST SKG WITH ACO>MEMCRY
                       ;
                       ;                ACO IS LOADED WITH A POSITIVE VALUE AND IS COMPARED
                       ;                AGAINST THE VALUE ZERO. FAILURE TO SKIP INDICATES
                       ;                FAILURE OF THIS TEST.
                       ;
                       ;                ON ERROR:
                       ;                  ACO: -1, INDICATING AN ERROR
                       ;                  AC1:  1, THE TEST VALUE
                       TN1:
    0157 0009 A                 .WORD   $A9-.
    0158 5001 A                 LI      AC0,1
    0159 3E00 A $A1:            PFLG    SYNC            ; SCOPE SIGNAL
    015A 9C68 A                 SKG     AC0,RESLT
    015B 51FF A                 LI      AC1,-1
    015C 7B00 A                 AISZ    AC3,0           ; TIGHT LOOP
    015D 19FB A                 JMP     $A1
                       ;
    015E D468 A                 ST      AC1,RESLT
    015F 987F A                 JMP     @INDMRTN
                $A9:
```

```
348                     .PAGE                                                   355.
349                     ;                                                       356.
350                     ;       TEST 2: TEST SKG WITH AC0<MEMORY                357.
351                     ;                                                       358.
352                     ;               AC0 IS LOADED WITH A LARGE POSITIVE VALUE AND IS        359.
353                     ;               COMPARE AGAINST A LARGER POSITIVE VALUE. EXECUTION      360.
354                     ;               OF THE  SKIP INDICATES FAILURE OF THIS TEST.            361.
355                     ;                                                       362.
356                     ;               ON ERROR:                               363.
357                     ;                 AC0: X'7FFE, THE TEST VALUE           364.
358                     ;                 AC1:     -1, INDICATING AN ERROR      365.
359                     ;                 AC2: X'7FFF, THE COMPARED VALUE       366.
360                     TN2:                                                    367.
361 0160 000F A         .WORD   $B9-.                                           368.
362 0161 C10B A         LD      AC0,$B3                                         369.
363 0162 3E00 A $B2:    PFLG    SYNC            ; SCOPE SIGNAL                  370.
364 0163 5100 A         LI      AC1,0                                           371.
365 0164 9D09 A         SKG     AC0,$B4                                         372.
366 0165 51FF A         LI      AC1,-1                                          373.
367 0166 7B00 A         AISZ    AC3,0           ; TIGHT LOOP                    374.
368 0167 19FA A         JMP     $B2                                             375.
369                     ;                                                       376.
370 0168 7100 A         CAI     AC1,0                                           377.
371 0169 D468 A         ST      AC1,RESLT                                       378.
372 016A C502 A         LD      AC1,$B3                                         379.
373 016B C902 A         LD      AC2,$B4                                         380.
374 016C 987F A         JMP     @INDMRTN                                        381.
375                     ;                                                       382.
376 016D 7FFE A $B3:    .WORD   X'7FFF-1                                        383.
377 016E 7FFF A $B4:    .WORD   X'7FFF                                          384.
378                     $B9:                                                    385.
```

```
                        .PAGE                                                   386.
                    ;                                                           387.
                    ;       TEST 3: TEST SKG WITH AC0=MEMORY                    388.
                    ;                                                           389.
                    ;               AC0 IS LOADED WITH A LARGE NEGATIVE VALUE AND IS    390.
                    ;               COMPARED AGAINST THE SAME VALUE. EXECUTION OF THE   391.
                    ;               SKIP INDICATES FAILURE OF THIS TEST.        392.
                    ;                                                           393.
                    ;               CN ERROR:                                   394.
                    ;                 AC0: X'9DFF, THE COMPARED VALUE           395.
                    ;                 AC1: X'9DFF, THE TEST VALUE               396.
                TN3:                                                            397.
016F 0008 A             .WORD   $C9-.                                           398.
0170 C101 A             LD      AC0,$C2                                         399.
0171 3E00 A $C1:        PFLG    SYNC            ; SCOPE SIGNAL                  400.
0172 9DFF A $C2:        SKG     AC0,$C2                                         401.
0173 51FF A             LI      AC1,-1                                          402.
0174 7800 A             AISZ    AC3,0           ; TIGHT LOOP                    403.
0175 19FB A             JMP     $C1                                             404.
                    ;                                                           405.
0176 7100 A             CAI     AC1,0                                           406.
0177 D468 A             ST      AC1,RESLT                                       407.
0178 C1F9 A             LD      AC0,$C2                                         408.
0179 987F A             JMP     @INDMRTN                                        409.
                $C9:                                                            410.
```

```
404                        .PAGE                                                    411.
405              ;                                                                  412.
406              ;         TEST 4: TEST SKG WITH ACO>MEMORY                         413.
407              ;                                                                  414.
408              ;                  ACO IS LOADED WITH A LARGE NEGATIVE VALUE, INCREMENTED   415.
409              ;                  BY ONE, AND IS FINALLY COMPARED AGAINST THE ORIGINAL     416.
410              ;                  VALUE. FAILURE TO SKIP INDICATES FAILURE OF THIS TEST.   417.
411              ;                                                                  418.
412              ;                  CN ERROR:                                       419.
413              ;                    ACO: X'9E00, THE TEST VALUE                   420.
414              ;                    AC1: X'9DFF, THE COMPARED VALUE               421.
415              TN4:                                                               422.
416 017A 000B A           .WORD   $D9-.                                             423.
417 017B C102 A           LD      ACO,$D2                                           424.
418 017C 7801 A           AISZ    ACO,1                                             425.
419 017D 3E00 A $D1:      PFLG    SYNC               ; SCOPE SIGNAL                 426.
420 017E 9DFF A $D2:      SKG     ACO,$D2                                           427.
421 017F 51FF A           LI      AC1,-1                                            428.
422 0180 7800 A           AISZ    AC3,0              ; TIGHT LOOP                   429.
423 0181 19FB A           JMP     $D1                                               430.
424 0182 D468 A           ST      AC1,RESLT                                         431.
425 0183 C5FA A           LD      AC1,$D2                                           432.
426 0184 987F A           JMP     @INDMRTN                                          433.
427              $D9:                                                               434.
```

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                            .PAGE
                  ;
                  :         TEST 5: TEST SKG WITH AC0<MEMCRY
                  ;
                  ;                 AC0 IS LCADED WITH A NEGATIVE VALUE, DECREMENTED
                  ;                 BY ONE, AND IS FINALLY COMPARED AGAINST THE ORIGINAL
                  ;                 VALUE. EXECUTION OF THE SKIP INDICATES FAILURE OF
                  ;                 THIS TEST.
                  ;
                  ;                 CN ERROR:
                  ;                   AC0: X'9DFE, THE TEST VALUE
                  ;                   AC2: X'9DFF, THE COMPARED VALUE
                  TN5:
0185 000C A                 .WORD   $E9-.
0186 C102 A                 LD      AC0,$E2
0187 78FF A                 AISZ    AC0,-1
0188 3E00 A       $E1:      PFLG    SYNC              ; SCOPE SIGNAL
0189 9DFF A       $E2:      SKG     AC0,$E2
018A 51FF A                 LI      AC1,-1
018B 7800 A                 AISZ    AC3,0             ; TIGHT LOOP
018C 19FB A                 JMP     $E1
                  ;
018D 7100 A                 CAI     AC1,0
018E D468 A                 ST      AC1,RESLT
018F C9F9 A                 LD      AC2,$E2
0190 987F A                 JMP     @INDMRTN
                  $E9:
```

```
                              .PAGE
                        ;
                        ;     TEST 6: TEST PUSH AND PULL STACK
                        ;
                        ;             THE VALUES 0, -1, AND 0 ARE PUSHED ONTO THE STACK.
                        ;             NEXT, THE TOP TWO VALUES ARE PULLED OFF. THE FIRST
                        ;             SHOULD BE 0, AND THE SECOND SHOULD BE -1.
                        ;
                        ;             ON ERROR:
                        ;               AC0: ERROR CODE
                        ;               AC1: 0, THE 1ST WORD OUT
                        ;               AC2: 0, THE 2ND WORD OUT PLUS ONE
                        ;
                        ;             ERROR CODE:
                        ;               BIT 0 - 1ST WORD OUT IS BAD
                        ;               BIT 1 - 2ND WORD OUT IS BAD
                        TN6:  .LOCAL
0191 0011 A                   .WORD   $A9-.
0192 51FF A             $A1:  LI      AC1,-1
0193 5200 A                   LI      AC2,0
0194 6200 A                   PUSH    AC2
0195 3E00 A                   PFLG    SYNC              ; SCOPE SIGNAL
0196 6100 A                   PUSH    AC1
0197 6200 A                   PUSH    AC2
0198 6500 A                   PULL    AC1
0199 6600 A                   PULL    AC2
019A 7B00 A                   AISZ    AC3,0             ; TIGHT LOOP
019B 19F6 A                   JMP     $A1
                        ;
019C 7900 A                   AISZ    AC1,0
019D 5001 A                   LI      AC0,1
019E 7A01 A                   AISZ    AC2,1
019F 7802 A                   AISZ    AC0,2
01A0 D068 A                   ST      AC0,RESLT
01A1 987F A                   JMP     @INDMRTN
                        $A9:
```

```
                             .PAGE
                     ;
                     ;       TEST 7: TEST PUSH AND PULL STACK WITH 'ALTERNATING ONES'
                     ;               PATTERNS
                     ;
                     ;               THE BINARY PATTERNS 0000, 1010, AND 0101 ARE PUSHED
                     ;               ONTO THE STACK. PULLING THE TOP TWO PATTERNS OFF THE
                     ;               STACK, THEY ARE OR'ED AND COMPARED AGAINST THE EXPECTED
                     ;               VALUE X'FFFF.
                     ;
                     ;               ON ERROR:
                     ;                 AC0: X'5555, 3RD IN/1ST OUT
                     ;                 AC1: X'0000, 1ST IN/3RD OUT
                     ;                 AC2: X'AAAA, 2ND IN/2ND OUT
                     TN7:
01A2 0016 A                  .WORD   $B9-.
01A3 5EC0 A                  RCPY    AC3,AC2
01A4 6000 A                  PUSH    AC0
01A5 C110 A $B1:             LD      AC0,$B2
01A6 CD10 A                  LD      AC3,$B3
01A7 3E00 A                  PFLG    SYNC            ; SCOPE SIGNAL
01A8 6000 A                  PUSH    AC0
01A9 6300 A                  PUSH    AC3
01AA 6400 A                  PULL    AC0
01AB 6700 A                  PULL    AC3
01AC 7A00 A                  AISZ    AC2,0           ; TIGHT LOOP
01AD 19F7 A                  JMP     $B1
                     ;
01AE 5D00 A                  RCPY    AC0,AC1
01AF 59C0 A                  RXOR    AC3,AC1
01B0 7901 A                  AISZ    AC1,1
01B1 51FF A                  LI      AC1,-1
01B2 D468 A                  ST      AC1,RESLT
01B3 6500 A                  PULL    AC1
01B4 5EC0 A                  RCPY    AC3,AC2
01B5 987F A                  JMP     @INDMRTN
01B6 AAAA A $B2:             .WORD   X'AAAA          ; 2ND IN/2ND OUT
01B7 5555 A $B3:             .WORD   X'5555          ; 3RD IN/1ST OUT
            $B9:
```

```
530                          .PAGE                                                    537.
531                 ;                                                                 538.
532                 ;        TEST 8: TEST JSR WITH PC RELATIVE INDEXING              539.
533                 ;                                                                 540.
534                 ;                THIS TEST EXECUTES THE JSR INSTRUCTION WITH PC RELATIVE  541.
535                 ;                INDEXING. FAILURE TO EXECUTE THE JSR INSTRUCTION  542.
536                 ;                CORRECTLY INDICATES FAILURE OF THIS TEST.        543.
537                 ;                                                                 544.
538                 ;                ON ERROR:                                        545.
539                 ;                  AC0: -1, INDICATING AN ERROR                   546.
540                 ;                  AC2: THE JSR RETURN ADDRESS                    547.
541                 TN8:                                                              548.
542 01B8 0009 A              .WORD    $C9-.                                           549.
543 01B9 3E00 A $C1:         PFLG     SYNC              ; SCOPE SIGNAL               550.
544 01BA 1501 A              JSR      $C2                                             551.
545 01BB 50FF A              LI       AC0,-1                                          552.
546 01BC 6600 A $C2:         PULL     AC2                                             553.
547 01BD 7B00 A              AISZ     AC3,0             ; TIGHT LOOP                 554.
548 01BE 19FA A              JMP      $C1                                             555.
549                 ;                                                                 556.
550 01BF D068 A              ST       AC0,RESLT                                       557.
551 01C0 987F A              JMP      @INDMRTN                                        558.
552                 $C9:                                                              559.
```

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553                           .PAGE                                                      560.
554                 ;                                                                    561.
555                 ;         TEST 9: TEST THE RETURN ADDRESS OF THE JSR INSTRUCTION     562.
556                 ;                                                                    563.
557                 ;                 THIS TEST EXECUTES THE JSR INSTRUCTION AND PULLS THE   564.
558                 ;                 RETURN ADDRESS INTO AC2. THE CONTENT OF THE RETURN     565.
559                 ;                 ADDRESS IS LOADED INTO AC3 AND INCREMENTED BY ONE.     566.
560                 ;                 FAILURE TO CORRESPOND TO THE EXPECTED RESULT OF ZERO   567.
561                 ;                 INDICATES FAILURE OF THIS TEST.                        568.
562                 ;                                                                    569.
563                 ;                 ON ERROR:                                          570.
564                 ;                   AC0: -1, INDICATING AN ERROR                     571.
565                 ;                   AC1: -1, THE CONTENTS OF THE RETURN ADDRESS      572.
566                 ;                   AC2: THE JSR RETURN ADDRESS                      573.
567                 TN9:                                                                 574.
568 01C1 000D A               .WORD   $D9-.                                              575.
569 01C2 3E00 A $D1:          PFLG    SYNC            ; SCOPE SIGNAL                     576.
570 01C3 1501 A               JSR     .+2                                                577.
571 01C4 FFFF A $D2:          .WORD   -1                                                 578.
572 01C5 6600 A               PULL    AC2                                                579.
573 01C6 7B00 A               AISZ    AC3,0           ; TIGHT LOOP                       580.
574 01C7 19FA A               JMP     $D1                                                581.
575                 ;                                                                    582.
576 01C8 CE00 A               LD      AC3,0(AC2)                                         583.
577 01C9 7B01 A               AISZ    AC3,1                                              584.
578 01CA 50FF A               LI      AC0,-1                                             585.
579 01CB C5F8 A               LD      AC1,$D2                                            586.
580 01CC D068 A               ST      AC0,RESLT                                          587.
581 01CD 987F A               JMP     @INDMRTN                                           588.
582                 ;                                                                    589.
583                 $D9:                                                                 590.
```

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                          .PAGE
                ;
                ;         TEST A: TEST JSR AND RTS INSTRUCTIONS
                ;
                ;                 THIS TEST EXECUTES A JSR INSTRUCTION FOLLOWED BY AN
                ;                 RTS INSTRUCTION. FAILURE TO EXECUTE EITHER INSTRUCTION
                ;                 CORRECTLY INDICATES A FAILURE OF THIS TEST. IF THE JSR
                ;                 INSTRUCTION FAILS, THE RTS INSTRUCTION IS NOT TESTED.
                ;
                ;                 ON ERROR:
                ;                   AC1: ERROR CODE
                ;
                ;                 ERROR CODE:
                ;                   BIT 0 - DID NOT EXECUTE JSR CORRECTLY
                ;                   BIT 1 - FAILURE TO EXECUTE RTS
                ;                   BIT 2 - DID NOT EXECUTE RTS CORRECTLY
                TNA:
01CE 000E A               .WORD   $E9-.
01CF 510D A     $E1:      LI      AC1,5+8
01D0 3E00 A               PFLG    SYNC              ; SCOPE SIGNAL
01D1 1502 A               JSR     $E3
01D2 79FC A     $E2:      AISZ    AC1,-4
01D3 1903 A               JMP     $E5
01D4 79FF A     $E3:      AISZ    AC1,-1
01D5 8000 A               RTS
01D6 7902 A     $E4:      AISZ    AC1,2
01D7 7B00 A     $E5:      AISZ    AC3,0             ; TIGHT LOOP
01D8 19F6 A               JMP     $E1
                ;
01D9 79F8 A               AISZ    AC1,-8
01DA D468 A               ST      AC1,RESLT
01DB 987F A               JMP     @INDMRTN
                $E9:
```

```
 617                   .PAGE                                                624.
 618               ;                                                        625.
 619               ;   TEST B: TEST LD WITH AC3 AS AN INDEX REGISTER        626.
 620               ;                                                        627.
 621               ;            INITIALLY EXECUTING A JSR INSTRUCTION, AC3 IS LOADED   628.
 622               ;            WITH THE INDEX ADDRESS BY PULLING THE RETURN ADDRESS   629.
 623               ;            INTO AC3. FINALLY, AC0 IS LOADED WITH THE EXPECTED     630.
 624               ;            VALUE ZERO USING 'DISPLACEMENT+AC3' AS AN EFFECTIVE    631.
 625               ;            ADDRESS.                                    632.
 626               ;                                                        633.
 627               ;            ON ERROR:                                   634.
 628               ;              AC0: 0, THE LOADED RESULTANT              635.
 629               ;              AC1: 0, THE EXPECTED RESULTANT            636.
 630               ;              AC2: THE INDEX ADDRESS                    637.
 631               TNB:                                                     638.
 632 01DC 000E A         .WORD    $F9-.                                     639.
 633 01DD 5EC0 A         RCPY     AC3,AC2                                   640.
 634 01DE 3E00 A $F1:    PFLG     SYNC            ; SCOPE SIGNAL            641.
 635 01DF 1500 A         JSR      .+1                                       642.
 636 01E0 6700 A $F2:    PULL     AC3                                       643.
 637 01E1 50FF A         LI       AC0,-1                                    644.
 638 01E2 C309 A         LD       AC0,$F3-$F2(AC3)                          645.
 639 01E3 7A00 A         AISZ     AC2,0           ; TIGHT LOOP              646.
 640 01E4 19F9 A         JMP      $F1                                       647.
 641               ;                                                        648.
 642 01E5 D068 A         ST       AC0,RESLT                                 649.
 643 01E6 5EC0 A         RCPY     AC3,AC2                                   650.
 644 01E7 C501 A         LD       AC1,$F3                                   651.
 645 01E8 987F A         JMP      @INDMRTN                                  652.
 646 01E9 0000 A $F3:    .WORD    0                                         653.
 647             $F9:                                                       654.
```

```
648                         .PAGE                                                      655.
649                :                                                                   656.
650                :        TEST C: TEST LD WITH AC2 AS AN INDEX REGISTER              657.
651                :                                                                   658.
652                :                INITIALLY EXECUTING A JSR INSTRUCTION, AC2 IS LOADED 659.
653                :                WITH THE INDEX ADDRESS BY PULLING THE RETURN ADDRESS 660.
654                :                INTO AC2. NEXT, USING ITSELF AS AN INDEX, AC2 IS     661.
655                :                LOADED WITH THE EXPECTED VALUE OF MINUS ONE. FINALLY, 662.
656                :                FAILURE TO OBTAIN THE VALUE ZERO AFTER INCREMENTING  663.
657                :                THE LOADED VALUE BY ONE INDICATES FAILURE OF THIS    664.
658                :                TEST.                                                665.
659                :                                                                   666.
660                :                ON ERROR:                                            667.
661                :                  ACO: THE INDEX ADDRESS                             668.
662                :                  AC1: -1, THE TEST VALUE                            669.
663                :                  AC2: -1, THE LOADED RESULTANT                      670.
664                TNC:                                                                671.
665 01EA 000F A             .WORD   $G9-.                                              672.
666 01EB 1500 A $G2:        JSR     .+1                                                673.
667 01EC 6600 A $G3:        PULL    AC2                                                674.
668 01ED 5C80 A             RCPY    AC2,AC0                                            675.
669 01EE 3E00 A             PFLG    SYNC              ; SCOPE SIGNAL                   676.
670 01EF CA0C A             LD      AC2,$G1-$G3(AC2)                                   677.
671 01F0 7B00 A             AISZ    AC3,0             ; TIGHT LOOP                     678.
672 01F1 19F9 A             JMP     $G2                                                679.
673                :                                                                   680.
674 01F2 5D80 A             RCPY    AC2,AC1                                            681.
675 01F3 7901 A             AISZ    AC1,1                                              682.
676 01F4 51FF A             LI      AC1,-1                                             683.
677 01F5 D468 A             ST      AC1,RESLT                                          684.
678 01F6 C501 A             LD      AC1,$G1                                            685.
679 01F7 987F A             JMP     @INDMRTN                                           686.
680 01F8 FFFF A $G1:        .WORD   -1                                                 687.
681                $G9:                                                                688.
```

```
                                .PAGE
                     ;
                     ;          TEST D: TEST LD AND ST WITH AC3 AS AN INDEX REGISTER
                     ;
                     ;                  PART 1. INITIALLY SET EQUAL TO ZERO, THE CONTENT OF ACO
                     ;                          IS STORED INTO TADR USING AC3 AS AN INDEX. AC1
                     ;                          IS THEN LOADED WITH THE CONTENT OF TADR USING
                     ;                          AC3 AS AN INDEX AND FINALLY COMPARED AGAINST THE
                     ;                          EXPECTED VALUE ZERO.
                     ;                  PART 2: INITIALLY SET EQUAL TO MINUS ONE, THE ABOVE
                     ;                          SEQUENCE IS REPEATED, AND THE RESULT IS COMPARED
                     ;                          AGAINST ZERO AFTER BEING INCREMENTED BY ONE. IF
                     ;                          PART 1 IS IN ERROR, PART 2 IS NOT TESTED.
                     ;
                     ;                  ON ERROR:
                     ;                    AC0: THE TEST VALUE
                     ;                    AC1: THE LOADED RESULTANT
                     ;                    AC2: ERROR CODE
                     ;
                     ;                  ERROR CODE:
                     ;                    BIT 0 - PART 1 IN ERROR
                     ;                    BIT 1 - PART 2 IN ERROR
                     TND:
 01F9 0017 A $H:        .WORD   $H9-.
 01FA DC70 A            ST      AC3,TSTR
 01FB 5201 A            LI      AC2,1
 01FC CD12 A            LD      AC3,$AD
 01FD 5000 A $H2:       LI      AC0,0
 01FE 3E00 A            PFLG    SYNC            ; SCOPE SIGNAL
 01FF D300 A            ST      AC0,(AC3)
 0200 51FF A            LI      AC1,-1
 0201 C700 A            LD      AC1,(AC3)
 0202 7900 A            AISZ    AC1,0
 0203 1906 A            JMP     $H3
 0204 50FF A            LI      AC0,-1
 0205 D300 A            ST      AC0,(AC3)
 0206 C700 A            LD      AC1,(AC3)
 0207 5E40 A            RCPY    AC1,AC2
 0208 7A01 A            AISZ    AC2,1
 0209 5202 A            LI      AC2,2
 020A CC70 A $H3:       LD      AC3,TSTR
 020B 7800 A            AISZ    AC3,0           ; TIGHT LOOP
 020C 19F0 A            JMP     $H2
                     ;
 020D D868 A            ST      AC2,RESLT
 020E 987F A            JMP     @INDMRTN
 020F 006F A $AD:       .WORD   TADR
             $H9:
```

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 730                             .PAGE                                                        737.
 731                  ;                                                                       738.
 732                  ;          TEST E: TEST ADDRESS DISPLACEMENT VALUES -128 THROUGH 127 WITH   739.
 733                  ;                  AC2 AND AC3 AS INDEXES                               740.
 734                  ;                                                                       741.
 735                  ;                  A LOOP IS SET UP IN WHICH RESULTS ARE REPEATEDLY LOADED  742.
 736                  ;                  INTO AC1 FROM THE SAME LOCATION. WITH AN INITIAL VALUE   743.
 737                  ;                  OF -128, THE DISPLACEMENT IS CONTINUALLY INCREMENTED AS  744.
 738                  ;                  THE CONTENTS OF AC2 IS DECREMENTED UNTIL AN OVERFLOW IN  745.
 739                  ;                  THE INSTRUCTION DISPLACEMENT CAUSES THE INSTRUCTION TO   746.
 740                  ;                  REFERENCE AC3 UNTIL THE ENTIRE DISPLACEMENT RANGE HAS    747.
 741                  ;                  BEEN TESTED.                                         748.
 742                  ;                                                                       749.
 743                  ;                  CN ERROR:                                            750.
 744                  ;                    AC0: X'AAAA, THE TEST VALUE                        751.
 745                  ;                    AC1: X'AAAA, THE LOADED TEST VALUE                 752.
 746                  ;                    AC2: THE CURRENT INDEX VALUE                       753.
 747 0210 0021 A TNE:    .WORD    $J9-.                                                       754.
 748 0211 DC70 A         ST       AC3,TSTR                                                    755.
 749 0212 1500 A $J1:    JSR      .+1                                                         756.
 750 0213 6600 A $J2:    PULL     AC2                                                         757.
 751 0214 7A1D A         AISZ     AC2,$J82-$J2+1                                              758.
 752 0215 7A7F A         AISZ     AC2,127                                                     759.
 753 0216 C119 A         LD       AC0,$J84                                                    760.
 754 0217 D106 A         ST       AC0,$J4                                                     761.
 755 0218 50C0 A         LI       AC0,-64                                                     762.
 756 0219 2804 A         SHL      AC0,2,0                                                     763.
 757 021A 5F80 A $J3:    RCPY     AC2,AC3                                                     764.
 758 021B 5100 A         LI       AC1,0                                                       765.
 759 021C D912 A         ST       AC2,$J82                                                    766.
 760 021D 3E00 A         PFLG     SYNC                ; SCOPE SIGNAL                          767.
 761 021E 0000 A $J4:    HALT                                                                 768.
 762 021F 5B40 A         RXOR     AC1,AC3                                                     769.
 763 0220 7B00 A         AISZ     AC3,0                                                       770.
 764 0221 1907 A         JMP      $J6                                                         771.
 765 0222 7AFF A         AISZ     AC2,-1                                                      772.
 766 0223 C5FA A         LD       AC1,$J4                                                     773.
 767 0224 7901 A         AISZ     AC1,1                                                       774.
 768 0225 D5F8 A         ST       AC1,$J4                                                     775.
 769 0226 7801 A         AISZ     AC0,1                                                       776.
 770 0227 19F2 A         JMP      $J3                                                         777.
 771 0228 5000 A $J5:    LI       AC0,0                                                       778.
 772 0229 CC70 A $J6:    LD       AC3,TSTR                                                    779.
 773 022A 7B00 A         AISZ     AC3,0               ; TIGHT LOOP                            780.
 774 022B 19E6 A         JMP      $J1                                                         781.
 775                  ;                                                                       782.
 776 022C D068 A         ST       AC0,RESLT                                                   783.
 777 022D C101 A         LD       AC0,$J82                                                    784.
 778 022E 987F A         JMP      @INDMRTN                                                    785.
 779 022F 0000 A $J82:   .WORD    0                   ; TEST LOCATION                         786.
 780 0230 C680 A $J84:   LD       AC1,-128(AC2)                                               787.
 781             $J9:                                                                         788.
```

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 782                    .PAGE                                                    789.
 783                ;                                                            790.
 784                ;       TEST F: TEST DATA RETENTION                          791.
 785                ;                                                            792.
 786                ;               ALL REGISTERS AND ALL LEVELS OF THE STACK ARE 793.
 787                ;               LOADED WITH X'FFFF, AND A DELAY SET UP.  AFTER THE 794.
 788                ;               DELAY, THE REGISTERS AND STACK ARE CHECKED TO INSURE 795.
 789                ;               THAT ALL DATA WAS RETAINED THROUGHOUT THE DELAY. 796.
 790                ;                                                            797.
 791                ;               ON ERROR:                                    798.
 792                ;                 AC0: ERROR CODE                            799.
 793                ;                                                            800.
 794                ;               ERROR CODE:                                  801.
 795                ;                 BIT 0 - AC0 FAILED                         802.
 796                ;                 BIT 1 - AC1 FAILED                         803.
 797                ;                 BIT 2 - AC2 FAILED                         804.
 798                ;                 BIT 3 - AC3 FAILED                         805.
 799                ;                 BIT 4 - STACK FAILED                       806.
 800            TNF:                                                             807.
 801 0231 0026 A        .WORD   $K9-.                                            808.
 802 0232 3E00 A $K1:   PFLG    SYNC            ; SCOPE SIGNAL                   809.
 803 0233 DC6F A        ST      AC3,TADR                                         810.
 804 0234 3900 A        PFLG    IEN                                              811.
 805 0235 5000 A        LI      AC0,0                                            812.
 806 0236 D070 A        ST      AC0,TSTR                                         813.
 807 0237 50FF A        LI      AC0,-1                                           814.
 808 0238 510A A        LI      AC1,10                                           815.
 809 0239 6000 A        PUSH    AC0                                              816.
 810 023A 79FF A        ISZ     AC1,-1                                           817.
 811 023B 19FD A        JMP     .-2                                              818.
 812 023C 50FF A        LI      AC0,-1                                           819.
 813 023D 51FF A        LI      AC1,-1                                           820.
 814 023E 52FF A        LI      AC2,-1                                           821.
 815 023F 53FF A        LI      AC3,-1                                           822.
 816 0240 8C70 A        ISZ     TSTR            ; DELAY                          823.
 817 0241 19FE A        JMP     .-1                                              824.
 818                ;                                                            825.
 819 0242 7801 A        AISZ    AC0,1                                            826.
 820 0243 5001 A        LI      AC0,1                                            827.
 821 0244 7901 A        AISZ    AC1,1                                            828.
 822 0245 7802 A        AISZ    AC0,2                                            829.
 823 0246 7A01 A        AISZ    AC2,1                                            830.
 824 0247 7804 A        AISZ    AC0,4                                            831.
 825 0248 7B01 A        AISZ    AC3,1                                            832.
 826 0249 7808 A        AISZ    AC0,8                                            833.
 827 024A 510A A        LI      AC1,10                                           834.
 828 024B 6600 A        PULL    AC2                                              835.
 829 024C 7A01 A        AISZ    AC2,1                                            836.
 830 024D 1903 A        JMP     .+4                                              837.
 831 024E 79FF A        AISZ    AC1,-1                                           838.
 832 024F 19FB A        JMP     .-4                                              839.
 833 0250 1901 A        JMP     .+2                                              840.
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  834 0251 7810 A          AISZ    AC0,16                                  841.
  835 0252 CC6F A          LD      AC3,TADR                                842.
  836 0253 7B00 A          AISZ    AC3,0           ; TIGHT LOOP            843.
  837 0254 19DD A          JMP     $K1                                     844.
  838                ;                                                     845.
  839 0255 D068 A          ST      AC0,RESLT                               846.
  840 0256 987F A          JMP     @INDMRTN                                847.
  841              $K9:                                                    848.
```

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842                      .PAGE                                                    849.
843              ;                                                                850.
844              ;       TEST 10: TEST SKIP AND NO-SKIP FUNCTIONS OF ISZ AND AISZ 851.
845              ;                                                                852.
846              ;                 PART 1. AC2 IS INITIALIZED TO -2 AND INCREMENTED TO  853.
847              ;                         ZERO USING THE AISZ INSTRUCTION.       854.
848              ;                 PART 2. MEMORY LOCATION TADR IS INITIALIZED TO -2    855.
849              ;                         AND INCREMENTED TO ZERO USING THE ISZ  856.
850              ;                         INSTRUCTION.                           857.
851              ;                                                                858.
852              ;                 ON ERROR:                                      859.
853              ;                   AC0: ERROR CODE 1                            860.
854              ;                   AC1: ERROR CODE 2                            861.
855              ;                   AC2: 0. THE RESULT OF THE ISZ                862.
856              ;                                                                863.
857              ;                 ERROR CODE 1:                                  864.
858              ;                   BIT 0 - AISZ NO-SKIP IN ERROR                865.
859              ;                   BIT 1 - AISZ SKIP IN ERROR                   866.
860              ;                                                                867.
861              ;                 ERROR CODE 2:                                  868.
862              ;                   BIT 0 - ISZ NO-SKIP IN ERROR                 869.
863              ;                   BIT 1 - ISZ SKIP IN ERROR                    870.
864              TN10:                                                            871.
865 0257 0016 A          .WORD   $L9-.                                            872.
866 0258 5000 A          LI      AC0,0                                            873.
867 0259 52FE A          LI      AC2,-2                                           874.
868 025A 7A01 A          AISZ    AC2,1                                            875.
869 025B 1901 A          JMP     .+2                                              876.
870 025C 7801 A          AISZ    AC0,1                                            877.
871 025D 7A01 A          AISZ    AC2,1                                            878.
872 025E 7802 A          AISZ    AC0,2                                            879.
873 025F 5100 A $L1:     LI      AC1,0                                            880.
874 0260 52FE A          LI      AC2,-2                                           881.
875 0261 D86F A          ST      AC2,TADR                                         882.
876 0262 3E00 A          PFLG    SYNC            ; SCOPE SIGNAL                   883.
877 0263 8C6F A          ISZ     TADR                                             884.
878 0264 1901 A          JMP     .+2                                              885.
879 0265 7901 A          AISZ    AC1,1                                            886.
880 0266 8C6F A          ISZ     TADR                                             887.
881 0267 7902 A          AISZ    AC1,2                                            888.
882 0268 7800 A          AISZ    AC3,0                                            889.
883 0269 19F5 A          JMP     $L1             ; TIGHT LOOP                     890.
884              ;                                                                891.
885 026A D46B A          ST      AC1,RESLT                                        892.
886 026B C86F A          LD      AC2,TADR                                         893.
887 026C 987F A          JMP     @INDMRTN                                         894.
888              $L9:                                                             895.
```

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  889                        .PAGE                                                    896.
  890                :                                                                897.
  891                :       TEST 11: TEST SKIP AND NO-SKIP FUNCTIONS OF DSZ AND AISZ 898.
  892                :                                                                899.
  893                :               PART 1. AC2 IS INITIALIZED TO 2 AND DECREMENTED TO 900.
  894                :                       ZERO USING THE AISZ INSTRUCTION.         901.
  895                :               PART 2. MEMORY LOCATION $M1 IS INITIALIZED TO 2  902.
  896                :                       AND DECREMENTED TO ZERO USING THE DSZ    903.
  897                :                       INSTRUCTION.                             904.
  898                :                                                                905.
  899                :               ON ERROR:                                        906.
  900                :                 AC0: ERROR CODE 1                              907.
  901                :                 AC1: ERROR CODE 2                              908.
  902                :                 AC2: 0,THE RESULT OF THE DSZ                   909.
  903                :                                                                910.
  904                :                ERROR CODE 1:                                   911.
  905                :                  BIT 0 - AISZ NO-SKIP IN ERROR                 912.
  906                :                  BIT 1 - AISZ SKIP  IN ERROR                   913.
  907                :                                                                914.
  908                :                ERROR CODE 2:                                   915.
  909                :                  BIT 0 - DSZ NO-SKIP IN ERROR                  916.
  910                :                  BIT 1 - DSZ SKIP IN ERROR                     917.
  911               TN11:                                                             918.
  912 026D 0016 A            .WORD   $M9-.                                            919.
  913 026E 5000 A            LI      AC0,0                                            920.
  914 026F 5202 A            LI      AC2,2                                            921.
  915 0270 7AFF A            AISZ    AC2,-1                                           922.
  916 0271 1901 A            JMP     .+2                                              923.
  917 0272 7801 A            AISZ    AC0,1                                            924.
  918 0273 7AFF A            AISZ    AC2,-1                                           925.
  919 0274 7802 A            AISZ    AC0,2                                            926.
  920 0275 5100 A   $M2:     LI      AC1,0                                            927.
  921 0276 5202 A            LI      AC2,2                                            928.
  922 0277 D86F A            ST      AC2,TADR                                         929.
  923                :                                                                930.
  924 0278 3E00 A            PFLG    SYNC              ; SCOPE SIGNAL                 931.
  925 0279 AC6F A            DSZ     TADR                                             932.
  926 027A 1901 A            JMP     .+2                                              933.
  927 027B 7901 A            AISZ    AC1,1                                            934.
  928 027C AC6F A            DSZ     TADR                                             935.
  929 027D 7902 A            AISZ    AC1,2                                            936.
  930 027E 7B00 A            AISZ    AC3,0             ; TIGHT LOOP                   937.
  931 027F 19F5 A            JMP     $M2                                              938.
  932                :                                                                939.
  933 0280 D468 A            ST      AC1,RESLT                                        940.
  934 0281 C86F A            LD      AC2,TADR                                         941.
  935 0282 987F A            JMP     @INDMRTN                                         942.
  936               $M9:                                                              943.
```

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937                     .PAGE                                                   944.
938              ;                                                              945.
939              ;      TEST 12: TEST ISZ AND DSZ WITH INDEXING                 946.
940              ;                                                              947.
941              ;               THE TEST VALUE -1 AND +1 ARE STORED INTO MEMORY. USING  948.
942              ;               INDEXED ADDRESSING, THE TEST VALUES ARE INCREMENTED     949.
943              ;               AND DECREMENTED RESPECTIVELY AND COMPARED AGAINST ZERO. 950.
944              ;                                                              951.
945              ;               ON ERROR:                                      952.
946              ;                 AC0: ERROR CODE                              953.
947              ;                 AC1: 0, THE INCREMENTED VALUE                954.
948              ;                 AC2: 0, THE DECREMENTED VALUE                955.
949              ;                                                              956.
950              ;               ERROR CODE:                                    957.
951              ;                 BIT 0 - ISZ SKIP IN ERROR                    958.
952              ;                 BIT 1 - DSZ SKIP IN ERROR                    959.
953              TN12:                                                          960.
954 0283 0013 A         .WORD   $N9-.                                           961.
955 0284 C910 A $N2:    LD      AC2,$N                                          962.
956 0285 51FF A $N3:    LI      AC1,-1                                          963.
957 0286 D600 A         ST      AC1,(AC2)                                       964.
958 0287 5101 A         LI      AC1,1                                           965.
959 0288 D601 A         ST      AC1,1(AC2)                                      966.
960 0289 5000 A         LI      AC0,0                                           967.
961 028A 3E00 A         PFLG    SYNC             ; SCOPE SIGNAL                 968.
962 028B 8E00 A         ISZ     (AC2)                                           969.
963 028C 7801 A         AISZ    AC0,1                                           970.
964 028D AE01 A         DSZ     1(AC2)                                          971.
965 028E 7802 A         AISZ    AC0,2                                           972.
966 028F 7800 A         AISZ    AC3,0            ; TIGHT LOOP                   973.
967 0290 19F4 A         JMP     $N3                                             974.
968              ;                                                              975.
969 0291 D068 A         ST      AC0,RESLT                                       976.
970 0292 C46F A         LD      AC1,TADR                                        977.
971 0293 C870 A         LD      AC2,TADR+1                                      978.
972 0294 987F A         JMP     @INDMRTN                                        979.
973 0295 006F A $N:     .WORD   TADR                                            980.
974              $N9:                                                           981.
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 975                          .PAGE                                                        982.
 976                 ;                                                                     983.
 977                 ;        TEST 13 & 14 TEST RAND                                       984.
 978                 ;                                                                     985.
 979                 ;                 THIS TEST FIRST AND'S THE TEST VALUE WITH ZERO AND  986.
 980                 ;                 COMPARES THE RESULT AGAINST ZERO. NEXT, ZERO IS AND'ED 987.
 981                 ;                 WITH THE TEST VALUE AND IS AGAIN COMPARED AGAINST THE 988.
 982                 ;                 VALUE ZERO. FINALLY, THE TEST VALUE IS AND'ED WITH  989.
 983                 ;                 ITSELF AND TESTED FOR EQUALITY WITH ITSELF.         990.
 984                 ;                                                                     991.
 985                 ;                 ON ERROR:                                           992.
 986                 ;                   AC0: TEST VALUE (TV)                              993.
 987                 ;                   AC1: 0, (TV .AND. TV .EOR. TV)                    994.
 988                 ;                   AC2: ERROR CODE                                   995.
 989                 ;                                                                     996.
 990                 ;                 TEST VALUE:                                         997.
 991                 ;                   TEST 13 - X'5555                                  998.
 992                 ;                   TEST 14 - X'AAAA                                  999.
 993                 ;                                                                    1000.
 994                 ;                 ERROR CODE:                                        1001.
 995                 ;                   BIT 0 - TV .AND. 0 NOT EQUAL TO ZERO             1002.
 996                 ;                   BIT 1 - 0 .AND. TV NOT EQUAL TO ZERO             1003.
 997                 ;                   BIT 2 - TV .AND. TV NOT EQUAL TO TV              1004.
 998                 TN13:                                                                1005.
 999 0296 0005 A              .WORD   $P9-.                                               1006.
1000 0297 C102 A              LD      AC0,$P1          ; TEST VALUE X'5555                1007.
1001 0298 D06F A              ST      AC0,TADR                                            1008.
1002 0299 1904 A              JMP     $Q1                                                 1009.
1003 029A 5555 A $P1:         .WORD   X'5555                                              1010.
1004                 $P9:                                                                 1011.
1005                 ;                                                                    1012.
1006                 TN14:                                                                1013.
1007 029B 0018 A              .WORD   $Q9-.                                               1014.
1008 029C C115 A              LD      AC0,$Q3          ; TEST VALUE X'AAAA'               1015.
1009 029D D06F A              ST      AC0,TADR                                            1016.
1010 029E 5200 A $Q1:         LI      AC2,0                                               1017.
1011 029F 5100 A              LI      AC1,0                                               1018.
1012 02A0 3E00 A              PFLG    SYNC             ; SCOPE SIGNAL                     1019.
1013 02A1 5500 A              RAND    AC0,AC1                                             1020.
1014 02A2 7900 A              AISZ    AC1,0                                               1021.
1015 02A3 7A01 A              AISZ    AC2,1                                               1022.
1016 02A4 5100 A              LI      AC1,0                                               1023.
1017 02A5 5440 A              RAND    AC1,AC0                                             1024.
1018 02A6 7800 A              AISZ    AC0,0                                               1025.
1019 02A7 7A02 A              AISZ    AC2,2                                               1026.
1020 02A8 C06F A              LD      AC0,TADR                                            1027.
1021 02A9 5D00 A              RCPY    AC0,AC1                                             1028.
1022 02AA 5500 A              RAND    AC0,AC1                                             1029.
1023 02AB 5900 A              RXOR    AC0,AC1                                             1030.
1024 02AC 7900 A              AISZ    AC1,0                                               1031.
1025 02AD 7A04 A              AISZ    AC2,4                                               1032.
1026 02AE 7800 A              AISZ    AC3,0            ; TIGHT LOOP                       1033.
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1027 02AF 19EE A          JMP     $Q1                                  1034.
1028                      ;                                            1035.
1029 02B0 D868 A          ST      AC2,RESLT                            1036.
1030 02B1 987F A          JMP     @INDMRTN                             1037.
1031 02B2 AAAA A $Q3:     .WORD   X'AAAA                               1038.
1032              $Q9:                                                 1039.
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1033                    .PAGE                                                   1040.
1034                    ;                                                       1041.
1035                    ;       TEST 15 THRU 1C: TEST RXCH IN THE EXCHANGING OF VARIOUS VALUES  1042.
1036                    ;                                                       1043.
1037                    ;           THIS TEST INITIALIZES AC2 TO THE TEST VALUE, COPIES THE 1044.
1038                    ;           VALUE INTO AC0 AND AC1, DOUBLES THE VALUE IN AC0 AND    1045.
1039                    ;           COPIES IT INTO AC2. THE VALUES IN AC1 AND AC2 ARE EX-   1046.
1040                    ;           CHANGED. AC1 AND AC0 ARE THEN COMPARED FOR EQUALITY,    1047.
1041                    ;           AND AC2 IS COMPARED WITH THE ORIGINAL TEST VALUE FOR    1048.
1042                    ;           EQUALITY. IF EITHER TEST FAILS TO CORRESPOND TO THE     1049.
1043                    ;           ORIGINAL VALUE, A FAILURE IS INDICATED FOR THIS TEST.   1050.
1044                    ;                                                       1051.
1045                    ;           ON ERROR:                                   1052.
1046                    ;             AC0: ERROR CODE                           1053.
1047                    ;             AC1: TWICE THE TEST VALUE                 1054.
1048                    ;             AC2: THE TEST VALUE                       1055.
1049                    ;                                                       1056.
1050                    ;           ERROR CODE:                                 1057.
1051                    ;             BIT 0 - THE VALUE IN AC1 IS IN ERROR      1058.
1052                    ;             BIT 1 - THE VALUE IN AC2 IS IN ERROR      1059.
1053                    ;                                                       1060.
1054                    ;           TEST VALUE:                                 1061.
1055                    ;             TEST 15 - X'FFFE                          1062.
1056                    ;             TEST 16 - X'FFF8                          1063.
1057                    ;             TEST 17 - X'FFEF                          1064.
1058                    ;             TEST 18 - X'FFBF                          1065.
1059                    ;             TEST 19 - X'FEFF                          1066.
1060                    ;             TEST 1A - X'FBFF                          1067.
1061                    ;             TEST 1B - X'EFFF                          1068.
1062                    ;             TEST 1C - X'BFFF                          1069.
1063                    ;                                                       1070.
1064                    TN15:                                                   1071.
1065 02B3 0004 A                .WORD   4                                       1072.
1066 02B4 C930 A                LD      AC2,$R3                                 1073.
1067 02B5 D86F A                ST      AC2,TADR                                1074.
1068 02B6 1918 A                JMP     $R1                                     1075.
1069                    TN16:                                                   1076.
1070 02B7 0004 A                .WORD   4                                       1077.
1071 02B8 C92D A                LD      AC2,$R3+1                               1078.
1072 02B9 D86F A                ST      AC2,TADR                                1079.
1073 02BA 1917 A                JMP     $R1                                     1080.
1074                    TN17:                                                   1081.
1075 02BB 0004 A                .WORD   4                                       1082.
1076 02BC C92A A                LD      AC2,$R3+2                               1083.
1077 02BD D86F A                ST      AC2,TADR                                1084.
1078 02BE 1913 A                JMP     $R1                                     1085.
1079                    TN18:                                                   1086.
1080 02BF 0004 A                .WORD   4                                       1087.
1081 02C0 C927 A                LD      AC2,$R3+3                               1088.
1082 02C1 D86F A                ST      AC2,TADR                                1089.
1083 02C2 190F A                JMP     $R1                                     1090.
1084                    TN19:                                                   1091.
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1085 02C3 0004 A          .WORD   4                                   1092.
1086 02C4 C924 A          LD      AC2,$R3+4                           1093.
1087 02C5 D86F A          ST      AC2,TADR                            1094.
1088 02C6 1908 A          JMP     $R1                                 1095.
1089              TN1A:                                               1096.
1090 02C7 0004 A          .WORD   4                                   1097.
1091 02C8 C921 A          LD      AC2,$R3+5                           1098.
1092 02C9 D86F A          ST      AC2,TADR                            1099.
1093 02CA 1907 A          JMP     $R1                                 1100.
1094              TN1B:                                               1101.
1095 02CB 0004 A          .WORD   4                                   1102.
1096 02CC C91E A          LD      AC2,$R3+6                           1103.
1097 02CD D86F A          ST      AC2,TADR                            1104.
1098 02CE 1903 A          JMP     $R1                                 1105.
1099              ;                                                   1106.
1100              TN1C:                                               1107.
1101 02CF 001E A          .WORD   $R9-.                               1108.
1102 02D0 C91B A          LD      AC2,$R3+7                           1109.
1103 02D1 D86F A          ST      AC2,TADR                            1110.
1104 02D2 5C80 A $R1:     RCPY    AC2,AC0                             1111.
1105 02D3 5D00 A          RCPY    AC0,AC1                             1112.
1106 02D4 6800 A          RADD    AC0,AC0                             1113.
1107 02D5 5E00 A          RCPY    AC0,AC2                             1114.
1108 02D6 3E00 A          PFLG    SYNC        ; SCOPE SIGNAL          1115.
1109 02D7 6D80 A          RXCH    AC2,AC1                             1116.
1110 02D8 7B00 A          AISZ    AC3,0       ; TIGHT LOOP            1117.
1111 02D9 19F8 A          JMP     $R1                                 1118.
1112              ;                                                   1119.
1113 02DA 5300 A          LI      AC3,0                               1120.
1114 02DB 5840 A          RXOR    AC1,AC0                             1121.
1115 02DC 7800 A          AISZ    AC0,0                               1122.
1116 02DD 7B01 A          AISZ    AC3,1                               1123.
1117 02DE C06F A          LD      AC0,TADR                            1124.
1118 02DF 5880 A          RXOR    AC2,AC0                             1125.
1119 02E0 7800 A          AISZ    AC0,0                               1126.
1120 02E1 7B02 A          AISZ    AC3,2                               1127.
1121              ;                                                   1128.
1122 02E2 DC68 A          ST      AC3,RESLT                           1129.
1123 02E3 5CC0 A          RCPY    AC3,AC0                             1130.
1124 02E4 987F A          JMP     @INDMRTN                            1131.
1125 02E5 FFFE A $R3:     .WORD   X'FFFE,X'FFFB,X'FFEF,X'FFBF         1132.
     02E6 FFFB A
     02E7 FFEF A
     02E8 FFBF A
1126 02E9 FEFF A          .WORD   X'FEFF,X'FBFF,X'EFFF,X'BFFF         1133.
     02EA FBFF A
     02EB EFFF A
     02EC BFFF A
1127              $R9:                                                1134.
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1128                        .PAGE                                                1135.
1129                    ;                                                        1136.
1130                    ;       TEST 1D: TEST SKNE WITH AC0=MEMORY               1137.
1131                    ;                                                        1138.
1132                    ;                ACO IS LOADED WITH A LARGE POSITIVE VALUE AND IS   1139.
1133                    ;                COMPARED AGAINST THE SAME VALUE. EXECUTION OF THE  1140.
1134                    ;                SKIP INDICATES FAILURE OF THIS TEST.               1141.
1135                    ;                                                                   1142.
1136                    ;                ON ERROR:                                          1143.
1137                    ;                  AC0: X'7FFF, THE TEST VALUE                      1144.
1138                    ;                  AC1:     -1, INDICATING AN ERROR                 1145.
1139                    ;                  AC2: X'7FFF, THE COMPARED VALUE                  1146.
1140                    ;                                                                   1147.
1141                TN1D:                                                                   1148.
1142 02ED 000C A               .WORD   $S9-.                                               1149.
1143 02EE 51FF A               LI      AC1,-1                                              1150.
1144 02EF C108 A               LD      AC0,$S3                                             1151.
1145 02F0 3E00 A $S1:          PFLG    SYNC            ; SCOPE SIGNAL                      1152.
1146 02F1 F106 A               SKNE    AC0,$S3                                             1153.
1147 02F2 5100 A               LI      AC1,0                                               1154.
1148 02F3 7B00 A               AISZ    AC3,0           ; TIGHT LOOP                        1155.
1149 02F4 19FB A               JMP     $S1                                                 1156.
1150                    ;                                                                   1157.
1151 02F5 D468 A               ST      AC1,RESLT                                           1158.
1152 02F6 C901 A               LD      AC2,$S3                                             1159.
1153 02F7 987F A               JMP     @INDMRTN                                            1160.
1154 02F8 7FFF A $S3:          .WORD   X'7FFF                                              1161.
1155                    $S9:                                                            1162.
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1156                        .PAGE                                                    1163.
1157                    ;                                                            1164.
1158                    ;       TEST 1E: TEST SKNE WITH AC1=MEMORY                   1165.
1159                    ;                AC1 IS LOADED WITH A LARGE NEGATIVE VALUE AND IS    1166.
1160                    ;                COMPARED AGAINST THE SAME VALUE. EXECUTION OF THE   1167.
1161                    ;                SKIP INDICATES FAILURE OF THIS TEST.        1168.
1162                    ;                                                            1169.
1163                    ;                ON ERROR:                                   1170.
1164                    ;                  AC0:     -1, INDICATING AN ERROR          1171.
1165                    ;                  AC1: X'F5FF, THE TEST VALUE               1172.
1166                    ;                  AC2: X'F5FF, THE COMPARED VALUE           1173.
1167                TN1E:                                                            1174.
1168 02F9 000B A           .WORD   $T9-.                                            1175.
1169 02FA 50FF A           LI      AC0,-1                                           1176.
1170 02FB 3E00 A $T1:      PFLG    SYNC            ; SCOPE SIGNAL                   1177.
1171 02FC C500 A           LD      AC1,$T2                                          1178.
1172 02FD F5FF A $T2:      SKNE    AC1,$T2                                          1179.
1173 02FE 5000 A           LI      AC0,0                                            1180.
1174 02FF 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                     1181.
1175 0300 19FA A           JMP     $T1                                              1182.
1176                    ;                                                            1183.
1177 0301 D068 A           ST      AC0,RESLT                                        1184.
1178 0302 C9FA A           LD      AC2,$T2                                          1185.
1179 0303 987F A           JMP     @INDMRTN                                         1186.
1180                    $T9:                                                         1187.
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1181                        .PAGE                                                    1188.
1182                    ;                                                            1189.
1183                    ;       TEST 1F: TEST SKNE WITH AC2<MEMORY                   1190.
1184                    ;                                                            1191.
1185                    ;               AC2 IS LOADED WITH THE VALUE X'FFFF AND IS COMPARED  1192.
1186                    ;               AGAINST THE VALUE X'7FFF. FAILURE TO SKIP INDICATES  1193.
1187                    ;               THAT THE SIGN BIT IS NOT BEING CONSIDERED IN THE     1194.
1188                    ;               COMPARISON.                                  1195.
1189                    ;                                                            1196.
1190                    ;               ON ERROR:                                    1197.
1191                    ;                 AC0:     -1, INDICATING AN ERROR           1198.
1192                    ;                 AC1: X'7FFF, THE COMPARED VALUE            1199.
1193                    ;                 AC2: X'FFFF, THE TEST VALUE                1200.
1194                    TN1F:                                                        1201.
1195 0304 000B A               .WORD   $U9-.                                        1202.
1196 0305 5000 A               LI      AC0,0                                        1203.
1197 0306 52FF A               LI      AC2,-1                                       1204.
1198 0307 3E00 A $U1:          PFLG    SYNC            ; SCOPE SIGNAL               1205.
1199 0308 F9EF A               SKNE    AC2,$S3                                      1206.
1200 0309 50FF A               LI      AC0,-1                                       1207.
1201 030A 7B00 A               AISZ    AC3,0           ; TIGHT LOOP                 1208.
1202 030B 19FB A               JMP     $U1                                          1209.
1203                    ;                                                            1210.
1204 030C D068 A               ST      AC0,RESLT                                    1211.
1205 030D C5EA A               LD      AC1,$S3                                      1212.
1206 030E 987F A               JMP     @INDMRTN                                     1213.
1207                    $U9:                                                         1214.
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1208                        .PAGE                                                    1215.
1209                    ;                                                            1216.
1210                    ;   TEST 20: TEST SKNE WITH AC3>MEMORY                      1217.
1211                    ;                                                            1218.
1212                    ;           AC3 IS LOADED WITH THE VALUE X'5555 AND IS COMPARED 1219.
1213                    ;           AGAINST ITS TWOS COMPLEMENTED VALUE X'AAAB. FAILURE 1220.
1214                    ;           TO SKIP INDICATES FAILURE OF THIS TEST.          1221.
1215                    ;                                                            1222.
1216                    ;           ON ERROR:                                        1223.
1217                    ;             AC0:    -1, INDICATING AN ERROR                1224.
1218                    ;             AC1: X'AAAB, THE CCMPARED VALUE                1225.
1219                    ;             AC2: X'5555, THE TEST VALUE                    1226.
1220                    TN20:                                                        1227.
1221 030F 000F A               .WORD   $V9-.                                        1228.
1222 0310 5EC0 A               RCPY    AC3,AC2                                      1229.
1223 0311 CD0A A               LD      AC3,$V2                                      1230.
1224 0312 5000 A               LI      AC0,0                                        1231.
1225 0313 3E00 A $V1:          PFLG    SYNC            ; SCOPE SIGNAL               1232.
1226 0314 FD08 A               SKNE    AC3,$V3                                      1233.
1227 0315 50FF A               LI      AC0,-1                                       1234.
1228 0316 7AC0 A               AISZ    AC2,0           ; TIGHT LOOP                 1235.
1229 0317 19FB A               JMP     $V1                                          1236.
1230                    ;                                                            1237.
1231 0318 D068 A               ST      AC0,RESLT                                    1238.
1232 0319 C503 A               LD      AC1,$V3                                      1239.
1233 031A 5EC0 A               RCPY    AC3,AC2                                      1240.
1234 031B 987F A               JMP     @INDMRTN                                     1241.
1235 031C 5555 A $V2:          .WORD   X'5555                                       1242.
1236 031D AAAB A $V3:          .WORD   X'AAAB                                       1243.
1237                    $V9:                                                         1244.
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1238                        .PAGE                                                1245.
1239                    ;                                                        1246.
1240                    ;       TEST 21: TEST SKAZ WITH AC0=MEMORY               1247.
1241                    ;                                                        1248.
1242                    ;            AC0 IS LOADED WITH A POSITIVE VALUE AND IS CCMPARED 1249.
1243                    ;            AGAINST THE SAME VALUE. EXECUTION OF THE SKIP 1250.
1244                    ;            INDICATES FAILURE OF THIS TEST.             1251.
1245                    ;                                                        1252.
1246                    ;            CN ERROR:                                   1253.
1247                    ;              AC0: X'40 THE TEST VALUE                  1254.
1248                    ;              AC1: X'40, (X'40 .AND. X'40)              1255.
1249                    ;              AC2: X'40, THE COMPARED VALUE             1256.
1250                    TN21:                                                    1257.
1251 031E 000F A          .WORD   $W9-.                                         1258.
1252 031F C10B A          LD      AC0,$W2                                       1259.
1253 0320 51FF A          LI      AC1,-1                                        1260.
1254 0321 3E00 A $W1:     PFLG    SYNC            ; SCOPE SIGNAL                1261.
1255 0322 B908 A          SKAZ    AC0,$W2                                       1262.
1256 0323 5100 A          LI      AC1,0                                         1263.
1257 0324 7B00 A          AISZ    AC3,0           ; TIGHT LOOP                  1264.
1258 0325 19FB A          JMP     $W1                                           1265.
1259                    ;                                                       1266.
1260 0326 D468 A          ST      AC1,RESLT                                     1267.
1261 0327 C903 A          LD      AC2,$W2                                       1268.
1262 0328 5140 A          LI      AC1,X'40                                      1269.
1263 0329 5540 A          RAND    AC1,AC1                                       1270.
1264 032A 987F A          JMP     @INDMRTN                                      1271.
1265 032B 0040 A $W2:     .WORD   X'0040                                        1272.
1266 032C AFBF A $W3:     .WORD   X'AFBF                                        1273.
1267                    $W9:                                                    1274.
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1268                        .PAGE                                                   1275.
1269                    ;                                                           1276.
1270                    ;       TEST 22: TEST SKAZ WITH ZERO RESULT                 1277.
1271                    ;                                                           1278.
1272                    ;                ACO IS LOADED WITH THE VALUE X'AFBF AND IS SKAZ'ED 1279.
1273                    ;                WITH THE VALUE X'0040. FAILURE TO SKIP INDICATES 1280.
1274                    ;                FAILURE OF THIS TEST.                      1281.
1275                    ;                                                           1282.
1276                    ;                ON ERROR:                                  1283.
1277                    ;                  ACO:      0, THE RANDED EQUIVALENT      1284.
1278                    ;                  AC1: X'AFBF, THE TEST VALUE             1285.
1279                    ;                  AC2: X'AFBF, THE COMPARED VALUE         1286.
1280                    TN22:                                                       1287.
1281 032D 000D A               .WORD    $X9-.                                      1288.
1282 032E C1FD A               LD       AC0,$W3                                    1289.
1283 032F 3E00 A $X1:          PFLG     SYNC            ; SCOPE SIGNAL             1290.
1284 0330 B9FA A               SKAZ     AC0,$W2                                    1291.
1285 0331 51FF A               LI       AC1,-1                                     1292.
1286 0332 7B00 A               AISZ     AC3,0           ; TIGHT LOOP               1293.
1287 0333 19FB A               JMP      $X1                                        1294.
1288                    ;                                                           1295.
1289 0334 D468 A               ST       AC1,RESLT                                  1296.
1290 0335 C1F6 A               LD       AC0,$W3                                    1297.
1291 0336 5240 A               LI       AC2,X'40                                   1298.
1292 0337 5480 A               RAND     AC2,AC0                                    1299.
1293 0338 C9F3 A               LD       AC2,$W3                                    1300.
1294 0339 987F A               JMP      @INDMRTN                                   1301.
1295                    $X9:                                                        1302.
```

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1296                        .PAGE                                                    1303.
1297                    ;                                                            1304.
1298                    ;   TEST 23: TEST SHL WITH AC1 AND AC2                      1305.
1299                    ;                                                            1306.
1300                    ;       AC1 IS LOADED WITH THE TEST VALUE X'5519, AND AC2 IS 1307.
1301                    ;       LOADED WITH THE TEST VALUE X'AA19. NEXT, BOTH ARE    1308.
1302                    ;       SHIFTED LEFT NINE BITS AND COMPARED WITH THE EXPECTED 1309.
1303                    ;       VALUE. FAILURE OF EITHER TO CORRESPOND INDICATES     1310.
1304                    ;       FAILURE OF THIS TEST.                                1311.
1305                    ;                                                            1312.
1306                    ;       ON ERROR:                                            1313.
1307                    ;         AC0: ERROR CODE                                    1314.
1308                    ;         AC1: X'3200, THE RESULTANT TEST VALUE              1315.
1309                    ;         AC2: X'3200, THE RESULTANT TEST VALUE              1316.
1310                    ;                                                            1317.
1311                    ;       ERROR CODE:                                          1318.
1312                    ;         BIT 0 - SHL AC1,9,0 IN ERROR                       1319.
1313                    ;         BIT 1 - SHL AC2,9,0 IN ERROR                       1320.
1314                TN23:                                                            1321.
1315 033A 0014 A           .WORD   $Y9-.                                            1322.
1316 033B C50F A $Y1:      LD      AC1,$Y2                                           1323.
1317 033C C90F A           LD      AC2,$Y3                                           1324.
1318 033D 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                    1325.
1319 033E 2912 A           SHL     AC1,9,0                                           1326.
1320 033F 2A12 A           SHL     AC2,9,0                                           1327.
1321 0340 7B00 A           AISZ    AC3,0                                             1328.
1322 0341 19F9 A           JMP     $Y1                                               1329.
1323 0342 5000 A           LI      AC0,0                                             1330.
1324 0343 F509 A           SKNE    AC1,$Y4                                           1331.
1325 0344 1901 A           JMP     .+2                                               1332.
1326 0345 7801 A           AISZ    AC0,1                                             1333.
1327 0346 F906 A           SKNE    AC2,$Y4                                           1334.
1328 0347 1901 A           JMP     .+2                                               1335.
1329 0348 7802 A           AISZ    AC0,2           ; TIGHT LOOP                      1336.
1330 0349 D068 A           ST      AC0,RESLT                                         1337.
1331                    ;                                                            1338.
1332 034A 987F A           JMP     @INDMRTN                                          1339.
1333 034B 5519 A $Y2:      .WORD   X'5519                                            1340.
1334 034C AA19 A $Y3:      .WORD   X'AA19                                            1341.
1335 034D 3200 A $Y4:      .WORD   X'3200                                            1342.
1336                $Y9:                                                             1343.
```

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1337                        .PAGE                                                    1344.
1338                    ;                                                            1345.
1339                    ;       TEST 24: TEST SHR WITH AC0 AND AC3                   1346.
1340                    ;                                                            1347.
1341                    ;                ACO IS LOADED WITH THE TEST VALUE X'9855, AND AC3 IS  1348.
1342                    ;                LOADED WITH THE TEST VALUE X'98AA. NEXT, BOTH ARE     1349.
1343                    ;                SHIFTED RIGHT 10 BITS AND COMPARED WITH THE EXPECTED  1350.
1344                    ;                VALUE. FAILURE OF EITHER TO CORRESPOND INDICATES      1351.
1345                    ;                FAILURE OF THIS TEST.                                 1352.
1346                    ;                                                                      1353.
1347                    ;                ON ERROR:                                             1354.
1348                    ;                  AC0: X'26, THE RESULTANT TEST VALUE                 1355.
1349                    ;                  AC1: ERROR CODE                                     1356.
1350                    ;                  AC2: X'26, THE RESULTANT TEST VALUE OF AC3.         1357.
1351                    ;                                                                      1358.
1352                    ;                ERROR CODE:                                           1359.
1353                    ;                  BIT 0 - SHR AC0,10,0 IN ERROR                       1360.
1354                    ;                  BIT 1 - SHR AC3,10,0 IN ERROR                       1361.
1355                TN24:                                                                      1362.
1356 034E 0015 A           .WORD   $Z9-.                                                      1363.
1357 034F 5EC0 A           RCPY    AC3,AC2                                                    1364.
1358 0350 C10F A $Z1:       LD      AC0,$Z2                                                    1365.
1359 0351 CD0F A           LD      AC3,$Z3                                                    1366.
1360 0352 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                             1367.
1361 0353 2C14 A           SHR     AC0,0A,0                                                   1368.
1362 0354 2F14 A           SHR     AC3,0A,0                                                   1369.
1363 0355 7A00 A           AISZ    AC2,0           ; TIGHT LOOP                               1370.
1364 0356 19F9 A           JMP     $Z1                                                        1371.
1365                    :                                                                  1372.
1366 0357 5100 A           LI      AC1,0                                                      1373.
1367 0358 F109 A           SKNE    AC0,$Z4                                                    1374.
1368 0359 1901 A           JMP     .+2                                                        1375.
1369 035A 7901 A           AISZ    AC1,1                                                      1376.
1370 035B FD06 A           SKNE    AC3,$Z4                                                    1377.
1371 035C 1901 A           JMP     .+2                                                        1378.
1372 035D 7902 A           AISZ    AC1,2                                                      1379.
1373 035E D468 A           ST      AC1,RESLT                                                  1380.
1374 035F 987F A           JMP     @INDMRTN                                                   1381.
1375 0360 9855 A $Z2:       .WORD   X'9855                                                     1382.
1376 0361 98AA A $Z3:       .WORD   X'98AA                                                     1383.
1377 0362 0026 A $Z4:       .WORD   X'26                                                       1384.
1378                    $Z9:                                                                1385.
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1379                        .PAGE                                                   1386.
1380                    ;                                                           1387.
1381                    ;   TEST 25: TEST SHL WHEN SHIFTING 0, 16, 32, AND 64 BITS 1388.
1382                    ;                                                           1389.
1383                    ;           AC1 IS FIRST LOADED WITH -1 AND SHIFTED 0 BITS. 1390.
1384                    ;           FAILURE IS INDICATED IF AC0 IS NOT STILL -1 AFTER 1391.
1385                    ;           THE SHIFT. AC2 AND THEN AC1 ARE ALTERNATELY LOADED 1392.
1386                    ;           WITH -1 AND SHIFTED 16, 32, AND 64 BITS. AFTER THE 1393.
1387                    ;           SHIFT, A NON-ZERO REGISTER IS INTERPRETED AS A  1394.
1388                    ;           FAILURE.                                        1395.
1389                    ;                                                           1396.
1390                    ;           ON ERROR:                                       1397.
1391                    ;             AC0: ERROR CODE                               1398.
1392                    ;             AC1: 0, THE RESULTANT OF THE LAST SHIFT       1399.
1393                    ;             AC2: 0, THE RESULTANT OF THE NEXT TO LAST SHIFT 1400.
1394                    ;                                                           1401.
1395                    ;           ERROR CODE:                                     1402.
1396                    ;             BIT 0 - SHIFT  0 BITS IN ERROR                1403.
1397                    ;             BIT 1 - SHIFT 16 BITS IN ERROR                1404.
1398                    ;             BIT 2 - SHIFT 32 BITS IN ERROR                1405.
1399                    ;             BIT 3 - SHIFT 64 BITS IN ERROR                1406.
1400                        .LOCAL                                                  1407.
1401                TN25:                                                           1408.
1402 0363 0017 A           .WORD   $AA9-.                                          1409.
1403 0364 51FF A $AA1:     LI      AC1,-1                                          1410.
1404 0365 5000 A           LI      AC0,0                                           1411.
1405 0366 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                  1412.
1406 0367 2900 A           SHL     AC1,0,0                                         1413.
1407 0368 7901 A           AISZ    AC1,1                                           1414.
1408 0369 7801 A           AISZ    AC0,1                                           1415.
1409 036A 52FF A           LI      AC2,-1                                          1416.
1410 036B 2A20 A           SHL     AC2,010,0                                       1417.
1411 036C 7A00 A           AISZ    AC2,0                                           1418.
1412 036D 7802 A           AISZ    AC0,2                                           1419.
1413 036E 51FF A           LI      AC1,-1                                          1420.
1414 036F 2940 A           SHL     AC1,020,0                                       1421.
1415 0370 7900 A           AISZ    AC1,0                                           1422.
1416 0371 7804 A           AISZ    AC0,4                                           1423.
1417 0372 52FF A           LI      AC2,-1                                          1424.
1418 0373 2A80 A           SHL     AC2,040,0                                       1425.
1419 0374 7A00 A           AISZ    AC2,0                                           1426.
1420 0375 7808 A           AISZ    AC0,8                                           1427.
1421 0376 7800 A           AISZ    AC3,0           ; TIGHT LOOP                    1428.
1422 0377 19EC A           JMP     $AA1                                            1429.
1423                    ;                                                          1430.
1424 0378 D068 A           ST      AC0,RESLT                                       1431.
1425 0379 987F A           JMP     @INDMRTN                                        1432.
1426                    $AA9:                                                      1433.
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1427                        .PAGE                                                   1434.
1428                    ;                                                           1435.
1429                    ;   TEST 26: TEST ROL WITH AC2                             1436.
1430                    ;                                                           1437.
1431                    ;       AC2 IS LOADED WITH THE TEST VALUE X'98E0, ROTATED   1438.
1432                    ;       LEFT 5 BITS, AND COMPARED AGAINST THE EXPECTED      1439.
1433                    ;       VALUE X'1C13                                        1440.
1434                    ;                                                           1441.
1435                    ;       ON ERROR:                                           1442.
1436                    ;         AC0: X'98E0, THE ORIGINAL TEST VALUE              1443.
1437                    ;         AC1: X'1C13, THE EXPECTED RESULTANT               1444.
1438                    ;         AC2: X'1C13, THE RESULTANT TEST VALUE             1445.
1439                        .LOCAL                                                  1446.
1440                TN26:                                                           1447.
1441 037A 000F A           .WORD   $A9-.                                           1448.
1442 037B C90B A $A1:      LD      AC2,$A2                                         1449.
1443 037C 5C80 A           RCPY    AC2,AC0                                         1450.
1444 037D 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                  1451.
1445 037E 220A A           ROL     AC2,5,0                                         1452.
1446 037F 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                    1453.
1447 0380 19FA A           JMP     $A1                                             1454.
1448                    ;                                                           1455.
1449 0381 51FF A           LI      AC1,-1                                          1456.
1450 0382 F905 A           SKNE    AC2,$A3                                         1457.
1451 0383 5100 A           LI      AC1,0                                           1458.
1452 0384 D468 A           ST      AC1,RESLT                                       1459.
1453 0385 C502 A           LD      AC1,$A3                                         1460.
1454 0386 987F A           JMP     @INDMRTN                                        1461.
1455 0387 98E0 A $A2:      .WORD   X'98E0          ; 1001 1000 1110 0000 BEFORE    1462.
1456 0388 1C13 A $A3:      .WORD   X'1C13          ; 0001 1100 0001 0011 AFTER     1463.
1457                $A9:                                                        1464.
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1458                        .PAGE                                                    1465.
1459                    ;                                                            1466.
1460                    ;       TEST 27: TEST ROR WITH AC3                           1467.
1461                    ;                                                            1468.
1462                    ;                AC3 IS LOADED WITH THE TEST VALUE X'98E0, ROTATED   1469.
1463                    ;                RIGHT SIX BITS, AND COMPARED AGAINST THE EXPECTED   1470.
1464                    ;                VALUE X'8263.                               1471.
1465                    ;                                                            1472.
1466                    ;                ON ERROR:                                   1473.
1467                    ;                  AC0: X'98E0, THE ORIGINAL TEST VALUE      1474.
1468                    ;                  AC1: X'8263, THE EXPECTED RESULTANT       1475.
1469                    ;                  AC2: X'8263, THE RESULTANT TEST VALUE     1476.
1470                    TN27:                                                        1477.
1471 0389 0011 A               .WORD   $B9-.                                        1478.
1472 038A 5EC0 A               RCPY    AC3,AC2                                      1479.
1473 038B CD0C A       $B1:    LD      AC3,$B2                                      1480.
1474 038C 5CC0 A               RCPY    AC3,AC0                                      1481.
1475 038D 3E00 A               PFLG    SYNC            ; SCOPE SIGNAL               1482.
1476 038E 270C A               ROR     AC3,6,0                                      1483.
1477 038F 7A00 A               AISZ    AC2,0           ; TIGHT LOOP                 1484.
1478 0390 19FA A               JMP     $B1                                          1485.
1479                    ;                                                            1486.
1480 0391 51FF A               LI      AC1,-1                                       1487.
1481 0392 FD06 A               SKNE    AC3,$B3                                      1488.
1482 0393 5100 A               LI      AC1,0                                        1489.
1483 0394 0468 A               ST      AC1,RESLT                                    1490.
1484 0395 5EC0 A               RCPY    AC3,AC2                                      1491.
1485 0396 C502 A               LD      AC1,$B3                                      1492.
1486 0397 987F A               JMP     @INDMRTN                                     1493.
1487 0398 98E0 A       $B2:    .WORD   X'98E0          ; 1001 1000 1110 0000 BEFORE 1494.
1488 0399 8263 A       $B3:    .WORD   X'8263          ; 1000 0010 0110 0011 AFTER  1495.
1489                    $B9:                                                         1496.
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1490                        .PAGE                                                   1497.
1491                    ;                                                           1498.
1492                    ;       TEST 28: TEST ROL WHEN ROTATING 0, 16, 32, AND 64 BITS  1499.
1493                    ;                                                           1500.
1494                    ;               AC0 AND THEN AC1 ARE ALTERNATELY LOADED WITH THE VALUE 1501.
1495                    ;               X'0789 AND ROTATED 0, 16, 32, AND 64 BITS. AFTER EACH  1502.
1496                    ;               ROTATION, THE RESULT IS COMPARED AGAINST THE ORIGINAL  1503.
1497                    ;               VALUE. FAILURE OF ANY TO CORRESPOND INDICATES FAILURE  1504.
1498                    ;               OF THIS TEST.                               1505.
1499                    ;                                                           1506.
1500                    ;               ON ERROR:                                   1507.
1501                    ;                 AC0: THE RESULTANT OF THE LAST ROTATION   1508.
1502                    ;                 AC1: THE RESULTANT OF THE NEXT TO LAST ROTATION 1509.
1503                    ;                 AC2: ERROR CODE                           1510.
1504                    ;                                                           1511.
1505                    ;               ERROR CODE:                                 1512.
1506                    ;                 BIT 0 - ROTATE  0 BITS IN ERROR           1513.
1507                    ;                 BIT 1 - ROTATE 16 BITS IN ERROR           1514.
1508                    ;                 BIT 2 - ROTATE 32 BITS IN ERROR           1515.
1509                    ;                 BIT 3 - ROTATE 64 BITS IN ERROR           1516.
1510                TN28:                                                           1517.
1511 039A 001C A           .WORD   $C9-.                                           1518.
1512 039B 3E00 A $C1:      PFLG    SYNC            ; SCOPE SIGNAL                  1519.
1513 039C 5200 A           LI      AC2,0                                           1520.
1514 039D C117 A           LD      AC0,$C2                                         1521.
1515 039E 2000 A           ROL     AC0,0,0                                         1522.
1516 039F F115 A           SKNE    AC0,$C2                                         1523.
1517 03A0 1901 A           JMP     .+2                                             1524.
1518 03A1 7A01 A           AISZ    AC2,1                                           1525.
1519 03A2 C512 A           LD      AC1,$C2                                         1526.
1520 03A3 2120 A           ROL     AC1,010,0                                       1527.
1521 03A4 F510 A           SKNE    AC1,$C2                                         1528.
1522 03A5 1901 A           JMP     .+2                                             1529.
1523 03A6 7A02 A           AISZ    AC2,2                                           1530.
1524 03A7 C10D A           LD      AC0,$C2                                         1531.
1525 03A8 2040 A           ROL     AC0,020,0                                       1532.
1526 03A9 F108 A           SKNE    AC0,$C2                                         1533.
1527 03AA 1901 A           JMP     .+2                                             1534.
1528 03AB 7A04 A           AISZ    AC2,4                                           1535.
1529 03AC C508 A           LD      AC1,$C2                                         1536.
1530 03AD 2180 A           ROL     AC1,040,0                                       1537.
1531 03AE F506 A           SKNE    AC1,$C2                                         1538.
1532 03AF 1901 A           JMP     .+2                                             1539.
1533 03B0 7A08 A           AISZ    AC2,8                                           1540.
1534 03B1 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                    1541.
1535 03B2 19E8 A           JMP     $C1                                             1542.
1536                    ;                                                           1543.
1537 03B3 D868 A           ST      AC2,RESLT                                       1544.
1538 03B4 987F A           JMP     @INDMRTN                                        1545.
1539 03B5 0789 A $C2:      .WORD   X'0789                                          1546.
1540                    $C9:                                                        1547.
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1541                        .PAGE                                                   1548.
1542                    ;                                                           1549.
1543                    ;       TEST 29: TEST THAT 'ROL 15' IS EQUIVALENT TO 'ROR 1'    1550.
1544                    ;                                                           1551.
1545                    ;               AC0 AND AC1 ARE BOTH LOADED WITH THE VALUE X'8841.  1552.
1546                    ;               AC0 IS THEN ROTATED 15 BITS TO THE LEFT WHILE AC1   1553.
1547                    ;               IS ROTATED 1 BIT TO THE RIGHT. FINALLY, THE TWO     1554.
1548                    ;               REGISTERS ARE COMPARED AGAINST THE EXPECTED VALUE   1555.
1549                    ;               X'C420. FAILURE OF EITHER TO CORRESPOND INDICATES   1556.
1550                    ;               FAILURE OF THIS TEST.                               1557.
1551                    ;                                                           1558.
1552                    ;               ON ERROR:                                   1559.
1553                    ;                 AC0: X'C420, THE RESULTANT OF THE ROL     1560.
1554                    ;                 AC1: X'C420, THE RESULTANT OF THE ROR     1561.
1555                    ;                 AC2: ERROR CODE                           1562.
1556                    ;                                                           1563.
1557                    ;               ERROR CODE:                                 1564.
1558                    ;                 BIT 0 - ROL IN ERROR                      1565.
1559                    ;                 BIT 1 - ROR IN ERROR                      1566.
1560                TN29:                                                           1567.
1561 03B6 0013 A           .WORD   $D9-.                                           1568.
1562 03B7 C10F A $D1:      LD      AC0,$D2                                         1569.
1563 03B8 C50E A           LD      AC1,$D2                                         1570.
1564 03B9 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                  1571.
1565 03BA 201E A           ROL     AC0,0F,0                                        1572.
1566 03BB 2502 A           ROR     AC1,1,0                                         1573.
1567 03BC 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                    1574.
1568 03BD 19F9 A           JMP     $D1                                             1575.
1569                    ;                                                           1576.
1570 03BE 5200 A           LI      AC2,0                                           1577.
1571 03BF F108 A           SKNE    AC0,$D3                                         1578.
1572 03C0 1901 A           JMP     .+2                                             1579.
1573 03C1 7A01 A           AISZ    AC2,1                                           1580.
1574 03C2 F505 A           SKNE    AC1,$D3                                         1581.
1575 03C3 1901 A           JMP     .+2                                             1582.
1576 03C4 7AC2 A           AISZ    AC2,2                                           1583.
1577 03C5 D868 A           ST      AC2,RESLT                                       1584.
1578 03C6 987F A           JMP     @INDMRTN                                        1585.
1579 03C7 8841 A $D2:      .WORD   X'8841          ; 1000 1000 0100 0001 BEFORE    1586.
1580 03C8 C420 A $D3:      .WORD   X'C420          ; 1100 0100 0010 0000 AFTER     1587.
1581                   $D9:                                                         1588.
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1582                    .PAGE                                                   1589.
1583                ;                                                           1590.
1584                ;       TEST 2A: TEST AND WITH ZERO RESULT                  1591.
1585                ;                                                           1592.
1586                ;               AC0 IS FIRST LOADED WITH THE VALUE X'AAAA, AND  1593.
1587                ;               THEN ORED WITH THE VALUE X'5555. A NON-ZERO RESULT  1594.
1588                ;               INDICATES FAILURE OF THIS TEST.             1595.
1589                ;                                                           1596.
1590                ;               ON ERROR:                                   1597.
1591                ;                 AC0: 0, THE RESULTANT TEST VALUE          1598.
1592                ;                 AC2: 1, INDICATING AN ERROR               1599.
1593                TN2A:                                                       1600.
1594 03C9 000D A           .WORD   $E9-.                                        1601.
1595 03CA C109 A $E1:      LD      AC0,$E2                                      1602.
1596 03CB 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL               1603.
1597 03CC A908 A           AND     AC0,$E3                                      1604.
1598 03CD 7800 A           AISZ    AC3,0           ; TIGHT LOOP                 1605.
1599 03CE 19FB A           JMP     $E1                                          1606.
1600                ;                                                           1607.
1601 03CF 5200 A           LI      AC2,0                                        1608.
1602 03D0 7800 A           AISZ    AC0,0                                        1609.
1603 03D1 5201 A           LI      AC2,1                                        1610.
1604 03D2 D868 A           ST      AC2,RESLT                                    1611.
1605 03D3 987F A           JMP     @INDMRTN                                     1612.
1606 03D4 AAAA A $E2:      .WORD   X'AAAA                                       1613.
1607 03D5 5555 A $E3:      .WORD   X'5555                                       1614.
1608                $E9:                                                        1615.
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1609                        .PAGE                                                   1616.
1610                    ;                                                           1617.
1611                    ;       TEST 2B: TEST AND WITH NON-ZERO RESULTS             1618.
1612                    ;                                                           1619.
1613                    ;                ACO IS FIRST LOADED WITH THE VALUE X'FFFF. ACO IS  1620.
1614                    ;                THEN ANDED WITH THE VALUE X'FFAA. AND THEN ANDED   1621.
1615                    ;                WITH THE VALUE X'0055. FAILURE OF ACO TO CORRESPOND 1622.
1616                    ;                TO THE EXPECTED RESULT OF 0 INDICATES FAILURE OF   1623.
1617                    ;                THIS TEST.                                         1624.
1618                    ;                                                           1625.
1619                    ;                ON ERROR:                                  1626.
1620                    ;                  AC0: 0, THE RESULTANT TEST VALUE         1627.
1621                    ;                  AC2: 1, INDICATING AN ERROR              1628.
1622                    TN2B:                                                       1629.
1623 03D6 000E A               .WORD   $F9-.                                       1630.
1624 03D7 50FF A $F3:          LI      AC0,-1                                      1631.
1625 03D8 3E00 A               PFLG    SYNC            ; SCOPE SIGNAL              1632.
1626 03D9 A908 A               AND     AC0,$F1                                     1633.
1627 03DA A908 A               AND     AC0,$F2                                     1634.
1628 03DB 7B00 A               AISZ    AC3,0           ; TIGHT LOOP                1635.
1629 03DC 19FA A               JMP     $F3                                         1636.
1630                    ;                                                           1637.
1631 03DD 5200 A               LI      AC2,0                                       1638.
1632 03DE 7800 A               AISZ    AC0,0                                       1639.
1633 03DF 7A01 A               AISZ    AC2,1                                       1640.
1634 03E0 D868 A               ST      AC2,RESLT                                   1641.
1635 03E1 987F A               JMP     @INDMRTN                                    1642.
1636 03E2 FFAA A $F1:          .WORD   -X'56                                       1643.
1637 03E3 0055 A $F2:          .WORD   X'55                                        1644.
1638                    $F9:                                                        1645.
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                          .PAGE
                  ;
                  ;       TEST 2C: TEST OR WITH NON-ZERO RESULTS
                  ;
                  ;                  ACO IS FIRST LOADED WITH THE VALUE X'AAAA, AND
                  ;                  THEN ORED WITH THE VALUE X'5555. FAILURE OF ACO
                  ;                  TO CORRESPOND TO THE EXPECTED RESULT OF X'FFFF
                  ;                  INDICATES FAILURE OF THIS TEST.
                  ;
                  ;                  ON ERROR:
                  ;                    ACO:  0, THE RESULTANT TEST VALUE + 1
                  ;                    AC2:  1, INDICATING AN ERROR
                  TN2C:
03E4 000D A               .WORD    $G9-.
03E5 C109 A $G1:          LD       ACO,$G2
03E6 3E00 A               PFLG     SYNC              ; SCOPE SIGNAL
03E7 A508 A               OR       ACO,$G3
03E8 7B00 A               AISZ     AC3,0             ; TIGHT LOOP
03E9 19FB A               JMP      $G1
                  ;
03EA 5200 A               LI       AC2,0
03EB 7801 A               AISZ     ACO,1
03EC 5201 A               LI       AC2,1
03ED D868 A               ST       AC2,RESLT
03EE 987F A               JMP      @INDMRTN
03EF AAAA A $G2:          .WORD    X'AAAA
03F0 5555 A $G3:          .WORD    X'5555
            $G9:
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1667                        .PAGE                                                   1674.
1668                    ;                                                           1675.
1669                    ;       TEST 2D: TEST OR WITH A ZERO OPERAND                1676.
1670                    ;                                                           1677.
1671                    ;           AC0 IS FIRST LOADED WITH THE VALUE 0, THEN CRED 1678.
1672                    ;           WITH THE VALUE X'FFAA. AC0 IS THEN ORED WITH THE 1679.
1673                    ;           VALUE X'0055, AND 1 IS ADDED TO THE RESULT. A   1680.
1674                    ;           NON-ZERO RESULT INDICATES FAILURE OF THIS TEST. 1681.
1675                    ;                                                           1682.
1676                    ;           ON ERROR:                                       1683.
1677                    ;             AC0: 0, THE RESULTANT TEST VALUE              1684.
1678                    ;             AC2: 1, INDICATING AN ERROR                   1685.
1679                TN2D:                                                           1686.
1680 03F1 000E A           .WORD   $H9-.                                           1687.
1681 03F2 5000 A $H3:      LI      AC0,0                                           1688.
1682 03F3 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                  1689.
1683 03F4 A508 A           OR      AC0,$H1                                         1690.
1684 03F5 A508 A           OR      AC0,$H2                                         1691.
1685 03F6 7800 A           AISZ    AC3,0           ; TIGHT LOOP                    1692.
1686 03F7 19FA A           JMP     $H3                                             1693.
1687                    ;                                                           1694.
1688 03F8 5200 A           LI      AC2,0                                           1695.
1689 03F9 7801 A           AISZ    AC0,1                                           1696.
1690 03FA 7A01 A           AISZ    AC2,1                                           1697.
1691 03FB D868 A           ST      AC2,RESLT                                       1698.
1692 03FC 987F A           JMP     @INDMRTN                                        1699.
1693 03FD FFAA A $H1:      .WORD   -X'56                                           1700.
1694 03FE 0055 A $H2:      .WORD   X'55                                            1701.
1695                       $H9:                                                    1702.
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1696                        .PAGE                                                   1703.
1697                    ;                                                           1704.
1698                    ;   TEST 2E: TEST LINK BIT IN SHIFT AND ROTATE INSTRUCTIONS 1705.
1699                    ;                                                           1706.
1700                    ;       THE LINK BIT IS INCLUDED IN ALL SHIFTS AND ROTATES  1707.
1701                    ;       IN THIS TEST. AFTER THE LINK BIT IS CLEARED, AC0 IS  1708.
1702                    ;       LOADED WITH THE VALUE X'FFFF AND ROTATED TWO BITS    1709.
1703                    ;       TO THE LEFT CAUSING THE LINK TO BE ROTATED INTO      1710.
1704                    ;       BIT ONE. THE RESULT IS THEN RECOPIED INTO AC1 WHERE  1711.
1705                    ;       IT IS INCREMENTED BY THREE AND COMPARED AGAINST THE  1712.
1706                    ;       EXPECTED VALUE ZERO.                                1713.
1707                    ;                                                           1714.
1708                    ;       ON ERROR:                                           1715.
1709                    ;         AC0: X'FFFD, THE RESULTANT OF THE ROL             1716.
1710                    ;         AC1:      0, THE RESULTANT TEST VALUE             1717.
1711                TN2E:                                                           1718.
1712 03FF 000C A           .WORD   $J9-.                                           1719.
1713 0400 5000 A $J1:      LI      AC0,0                                           1720.
1714 0401 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                  1721.
1715 0402 2803 A           SHL     AC0,1,1                                         1722.
1716 0403 50FF A           LI      AC0,-1          ; REG0 SHOULD BE -3             1723.
1717 0404 2005 A           ROL     AC0,2,1                                         1724.
1718 0405 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                    1725.
1719 0406 19F9 A           JMP     $J1                                             1726.
1720                    ;                                                           1727.
1721 0407 5D00 A           RCPY    AC0,AC1                                         1728.
1722 0408 7903 A           AISZ    AC1,3                                           1729.
1723 0409 D468 A           ST      AC1,RESLT                                       1730.
1724 040A 987F A           JMP     @INDMRTN                                        1731.
1725                $J9:                                                        1732.
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1726                        .PAGE                                                    1733.
1727                    ;                                                            1734.
1728                    ;   TEST 2F: TEST SETTING OF LINK BIT TO 'ZERO' AND 'ONE' LEVEL  1735.
1729                    ;                                                            1736.
1730                    ;       THE LINK BIT IS INCLUDED IN ALL SHIFTS AND ROTATES   1737.
1731                    ;       IN THIS TEST. AFTER THE LINK BIT IS CLEARED, AC0 IS   1738.
1732                    ;       LOADED WITH THE VALUE X'FFFF AND ROTATED TWICE, EACH 1739.
1733                    ;       TIME ROTATING ONE BIT TO THE LEFT. AFTER THE FIRST   1740.
1734                    ;       ROTATION, AC1 IS SHIFTED ONE BIT TO THE RIGHT, THUS  1741.
1735                    ;       CLEARING THE LINK PRIOR TO THE EXECUTION OF THE LAST 1742.
1736                    ;       ROTATION. BECAUSE AC1 HAS BEEN SET TO ZERO PRIOR TO  1743.
1737                    ;       THE SHIFT, THE RESULTANT VALUE IN AC0 IS X'FFFC AND  1744.
1738                    ;       IN AC1 IS X'8000. TO CHECK THE RESULTS, AC2 IS LOADED 1745.
1739                    ;       WITH THE VALUE X'8000, RXOR'ED WITH AC1, ADDED WITH  1746.
1740                    ;       AC0, INCREMENTED BY FOUR, AND FINALLY COMPARED WITH  1747.
1741                    ;       THE EXPECTED VALUE ZERO.                             1748.
1742                    ;                                                            1749.
1743                    ;       ON ERROR:                                            1750.
1744                    ;         AC0: X'FFFC, THE RESULTANT OF THE TWO ROL'S        1751.
1745                    ;         AC1: X'8000, THE RESULTANT OF THE SHR              1752.
1746                    ;         AC2:      0, THE RESULTANT TEST VALUE              1753.
1747                TN2F:                                                            1754.
1748 0408 0010 A           .WORD   $K9-.                                            1755.
1749 040C 3800 A $K1:      PFLG    LINK                                             1756.
1750 040D 50FF A           LI      AC0,-1                                           1757.
1751 040E 2003 A           ROL     AC0,1,1                                          1758.
1752 040F 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                   1759.
1753 0410 2503 A           ROR     AC1,1,1                                          1760.
1754 0411 2003 A           ROL     AC0,1,1                                          1761.
1755 0412 7800 A           AISZ    AC3,0           ; TIGHT LOOP                     1762.
1756 0413 19F8 A           JMP     $K1                                              1763.
1757                    ;                                                           1764.
1758 0414 C905 A           LD      AC2,$K2                                          1765.
1759 0415 5A40 A           RXOR    AC1,AC2                                          1766.
1760 0416 6A00 A           RADD    AC0,AC2                                          1767.
1761 0417 7A04 A           AISZ    AC2,4                                            1768.
1762 0418 D868 A           ST      AC2,RESLT                                        1769.
1763 0419 987F A           JMP     @INDMRTN                                         1770.
1764 041A 8000 A $K2:      .WORD   X'8000                                           1771.
1765              $K9:                                                             1772.
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1766                        .PAGE                                                   1773.
1767                    ;                                                           1774.
1768                    ;   TEST 30: TEST LINK BIT IN THE TRANSFER OF A 'ONE' BIT FROM   1775.
1769                    ;       ONE REGISTER TO ANOTHER                             1776.
1770                    ;                                                           1777.
1771                    ;       THE LINK BIT IS INCLUDED WITH ALL SHIFTS AND ROTATES  1778.
1772                    ;       IN THIS TEST. AFTER THE LINK BIT IS CLEARED, AC0 IS  1779.
1773                    ;       LOADED WITH THE VALUE X'FFFF AND AC1 WITH ZERO. AC0  1780.
1774                    ;       IS THEN SHIFTED ONE BIT TO THE LEFT TO SET THE LINK  1781.
1775                    ;       BIT. NEXT, THE LINK BIT IS TRANSFERRED TO AC1 BY     1782.
1776                    ;       SHIFTING AC1 FIFTEEN BITS TO THE RIGHT. FINALLY, THE 1783.
1777                    ;       TWO RESULTS ARE SUMMED AND COMPARED AGAINST THE      1784.
1778                    ;       EXPECTED VALUE ZERO.                                1785.
1779                    ;                                                           1786.
1780                    ;       ON ERROR:                                           1787.
1781                    ;         AC0: X'FFFE, THE RESULTANT OF THE SHL             1788.
1782                    ;         AC1: X'0002, THE RESULTANT OF THE SHR             1789.
1783                    ;         AC2:     0, THE RESULTANT SUM OF AC0 AND AC1      1790.
1784                TN30:                                                           1791.
1785 0418 000E A           .WORD   $L9-.                                           1792.
1786 041C 3E00 A $L1:      PFLG    SYNC            ; SCOPE SIGNAL                  1793.
1787 041D 3800 A           PFLG    LINK                                            1794.
1788 041E 50FF A           LI      AC0,-1                                          1795.
1789 041F 5100 A           LI      AC1,0                                           1796.
1790 0420 2803 A           SHL     AC0,1,1                                         1797.
1791 0421 2D03 A           SHR     AC1,1,1                                         1798.
1792 0422 2D1C A           SHR     AC1,0E,0                                        1799.
1793 0423 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                    1800.
1794 0424 19F7 A           JMP     $L1                                             1801.
1795                    ;                                                           1802.
1796 0425 5E00 A           RCPY    AC0,AC2                                         1803.
1797 0426 6A40 A           RADD    AC1,AC2                                         1804.
1798 0427 D868 A           ST      AC2,RESLT                                       1805.
1799 0428 987F A           JMP     @INDMRTN                                        1806.
1800                    $L9:                                                        1807.
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1801                        .PAGE                                                1808.
1802                    ;                                                        1809.
1803                    ;   TEST 31: TEST THAT 'RCR 16' IS EQUIVALENT TO 'ROL 1' WHEN   1810.
1804                    ;         THE LINK BIT IS USED                           1811.
1805                    ;                                                        1812.
1806                    ;         THE LINK BIT IS INCLUDED IN ALL SHIFTS AND ROTATES   1813.
1807                    ;         IN THIS TEST. AFTER BOTH AC0 AND AC1 ARE LOADED WITH 1814.
1808                    ;         THE VALUE X'FFAC, AC1 IS ROTATED 1 BIT TO THE LEFT   1815.
1809                    ;         WHILE AC0 IS ROTATED SIXTEEN BITS TO THE RIGHT. TO   1816.
1810                    ;         CHECK THE EQUIVALENCE, THE TWO REGISTERS ARE RXORED  1817.
1811                    ;         AND COMPARED AGAINST THE EXPECTED VALUE ZERO.        1818.
1812                    ;                                                        1819.
1813                    ;         ON ERROR:                                      1820.
1814                    ;           AC0: X'FF59, THE RESULTANT OF THE ROR        1821.
1815                    ;           AC1: X'FF59, THE RESULTANT OF THE ROL        1822.
1816                    ;           AC2:      0, (AC0 .XOR. AC1)                 1823.
1817                TN31:                                                        1824.
1818 0429 000E A           .WORD   $M9-.                                        1825.
1819 042A 50FF A $M1:      LI      AC0,-1                                       1826.
1820 042B 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL               1827.
1821 042C 2821 A           SHL     AC0,010,1                                    1828.
1822 042D 50AC A           LI      AC0,-X'54                                    1829.
1823 042E 51AC A           LI      AC1,-X'54                                    1830.
1824 042F 2103 A           ROL     AC1,1,1                                      1831.
1825 0430 2421 A           ROR     AC0,010,1                                    1832.
1826 0431 7800 A           AISZ    AC3,0           ; TIGHT LOOP                 1833.
1827 0432 19F7 A           JMP     $M1                                          1834.
1828                    ;                                                        1835.
1829 0433 5E40 A           RCPY    AC1,AC2                                      1836.
1830 0434 5A00 A           RXOR    AC0,AC2                                      1837.
1831 0435 D868 A           ST      AC2,RESLT                                    1838.
1832 0436 987F A           JMP     @INDMRTN                                     1839.
1833                    $M9:                                                     1840.
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1834                        .PAGE                                                    1841.
1835                    ;                                                            1842.
1836                    ;   TEST 32: TEST THAT 'ROR 118' IS EQUIVALENT TO 'ROL 120' WHEN  1843.
1837                    ;           THE LINK BIT IS USED                             1844.
1838                    ;                                                            1845.
1839                    ;           THE LINK BIT IS INCLUDED WITH ALL SHIFTS AND ROTATES  1846.
1840                    ;           IN THIS TEST. AFTER THE LINK BIT IS CLEARED, BOTH  1847.
1841                    ;           AC0 AND AC1 ARE LOADED WITH THE VALUE X'5555, AC0  1848.
1842                    ;           IS RCTATED 118 BITS TO THE RIGHT, WHILE AC1 IS   1849.
1843                    ;           ROTATED 120 BITS TO THE LEFT. TO CHECK THE EQUIV-  1850.
1844                    ;           ALENCE, THE TWO RESULTS ARE RXORED AND COMPARED  1851.
1845                    ;           AGAINST THE EXPECTED VALUE ZERO.                 1852.
1846                    ;                                                            1853.
1847                    ;           ON ERROR:                                        1854.
1848                    ;             AC0: X'AAAA, THE RESULTANT OF THE LEFT ROTATION  1855.
1849                    ;             AC1: X'AAAA, THE RESULTANT OF THE RIGHT ROTATION  1856.
1850                    ;             AC2:      0, (AC0 .XOR. AC1)                   1857.
1851                TN32:                                                            1858.
1852 0437 000E A           .WORD    $N9-.                                            1859.
1853 0438 2803 A $N1:      SHL      AC0,1,1                                          1860.
1854 0439 C10A A           LD       AC0,$N2                                          1861.
1855 043A 5D00 A           RCPY     AC0,AC1                                          1862.
1856 043B 3E00 A           PFLG     SYNC              ; SCOPE SIGNAL                 1863.
1857 043C 24ED A           ROR      AC0,076,1                                        1864.
1858 043D 21F1 A           ROL      AC1,078,1                                        1865.
1859 043E 7B00 A           AISZ     AC3,0             ; TIGHT LOOP                   1866.
1860 043F 19F8 A           JMP      $N1                                              1867.
1861                    ;                                                            1868.
1862 0440 5E00 A           RCPY     AC0,AC2                                          1869.
1863 0441 5A40 A           RXOR     AC1,AC2                                          1870.
1864 0442 D868 A           ST       AC2,RESLT                                        1871.
1865 0443 987F A           JMP      @INDMRTN                                         1872.
1866 0444 5555 A $N2:      .WORD    X'5555                                           1873.
1867                       $N9:                                                     1874.
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1868                            .PAGE                                                   1875.
1869                    ;                                                               1876.
1870                    ;       TEST 33: TEST THE PUSHING OF THE LINK BIT ONTO THE STACK 1877.
1871                    ;                                                               1878.
1872                    ;               THE LINK BIT IS INCLUDED IN ALL SHIFTS AND ROTATES 1879.
1873                    ;               IN THIS TEST. WITH THE LINK BIT SET, AC2 IS LOADED 1880.
1874                    ;               WITH THE VALUE X'FFFD AND ROTATED ONE BIT TO THE RIGHT, 1881.
1875                    ;               THUS SETTING THE LINK BIT. AFTER THE FLAGS ARE PULLED 1882.
1876                    ;               INTO AC0, AC2, WHICH NOW CONTAINS THE VALUE X'FFFE, 1883.
1877                    ;               IS AGAIN ROTATED ONE BIT TO THE RIGHT, THUS RESETTING 1884.
1878                    ;               THE LINK BIT. AFTER THE FLAGS ARE PULLED INTO AC1, 1885.
1879                    ;               THE RESULTANT TEST VALUE IN AC2 IS COMPARED AGAINST 1886.
1880                    ;               THE EXPECTED VALUE X'FFFF AND THE LINK BITS SAVED IN 1887.
1881                    ;               AC0 AND AC1 ARE COMPARED AGAINST THE EXPECTED RESULTS. 1888.
1882                    ;                                                               1889.
1883                    ;               CN ERROR:                                       1890.
1884                    ;                 AC0: X'8000, THE LINK FLAG SET                1891.
1885                    ;                 AC1: X'0000, THE LINK FLAG RESET              1892.
1886                    ;                 AC2: ERROR CODE                               1893.
1887                    ;                                                               1894.
1888                    ;               ERROR CODE:                                     1895.
1889                    ;                 BIT 0 - SET LINK BIT NOT PUSHED ONTO STACK    1896.
1890                    ;                 BIT 1 - RESET LINK BIT NOT PUSHED ONTO STACK  1897.
1891                    ;                 BIT 2 - RESULTANT TEST VALUE IN ERROR         1898.
1892 0445 001B A TN33:  .WORD   $P9-.                                                   1899.
1893 0446 51FF A $P1:   LI      AC1,-1                                                  1900.
1894 0447 2903 A        SHL     AC1,1,1                                                 1901.
1895 0448 52FD A        LI      AC2,-3                                                  1902.
1896 0449 2603 A        ROR     AC2,1,1                                                 1903.
1897 044A 3E00 A        PFLG    SYNC            ; SCOPE SIGNAL                          1904.
1898 044B 0C00 A        PUSHF                                                           1905.
1899 044C 6400 A        PULL    AC0                                                     1906.
1900 044D 2603 A        ROR     AC2,1,1                                                 1907.
1901 044E 0C00 A        PUSHF                                                           1908.
1902 044F 6500 A        PULL    AC1                                                     1909.
1903 0450 7B00 A        AISZ    AC3,0           ; TIGHT LOOP                            1910.
1904 0451 19F4 A        JMP     $P1                                                     1911.
1905 0452 7A01 A        AISZ    AC2,1                                                   1912.
1906 0453 5204 A        LI      AC2,4                                                   1913.
1907 0454 A90A A        AND     AC0,LNK                                                 1914.
1908 0455 7800 A        AISZ    AC0,0                                                   1915.
1909 0456 1901 A        JMP     .+2                                                     1916.
1910 0457 7A01 A        AISZ    AC2,1                                                   1917.
1911 0458 6D00 A        RXCH    AC0,AC1                                                 1918.
1912 0459 A905 A        AND     AC0,LNK                                                 1919.
1913 045A 6D00 A        RXCH    AC0,AC1                                                 1920.
1914 045B 7900 A        AISZ    AC1,0                                                   1921.
1915 045C 7A02 A        AISZ    AC2,2                                                   1922.
1916 045D D868 A        ST      AC2,RESLT                                               1923.
1917 045E 987F A        JMP     @INDMRTN                                                1924.
1918 045F 0100 A LNK:   .WORD   LNKMSK                                                  1925.
1919             $P9:                                                                   1926.
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1920                        .PAGE                                                    1927.
1921                    ;                                                            1928.
1922                    ;       TEST 34: TEST THE SETTING AND RESETTING OF THE LINK BIT FROM   1929.
1923                    ;                THE STACK                                   1930.
1924                    ;                                                            1931.
1925                    ;                THE LINK BIT IS INCLUDED IN ALL SHIFTS AND ROTATES   1932.
1926                    ;                IN THIS TEST. WITH AC1 SET EQUAL TO X'0009, THE LINK   1933.
1927                    ;                BIT IS SET BY ROTATING AC1 ONE BIT TO THE RIGHT, AND   1934.
1928                    ;                THE FLAGS ARE PUSHED ONTO THE STACK. THEN, THE LINK   1935.
1929                    ;                BIT IS SET TO ZERO, AND THE STACK IS PULLED INTO THE   1936.
1930                    ;                FLAGS, RESETTING THE LINK BIT TO ONE. AC0, INITIALLY   1937.
1931                    ;                SET TO ZERO, IS ROTATED ONE BIT TO THE LEFT TO SAVE   1938.
1932                    ;                THE LINK. THE LINK IS THEN CLEARED AND AGAIN PUSHED   1939.
1933                    ;                ONTO THE STACK. FINALLY, AFTER THE LINK IS CLEARED,   1940.
1934                    ;                THE FLAGS ARE PULLED FROM THE STACK, AND THE LINK IS   1941.
1935                    ;                AGAIN ROTATED INTO AC0. DECREMENTED BY TWO, FAILURE   1942.
1936                    ;                OF THE TEST VALUE TO YIELD THE EXPECTED VALUE ZERO   1943.
1937                    ;                INDICATES FAILURE OF THIS TEST.             1944.
1938                    ;                                                            1945.
1939                    ;                ON ERROR:                                   1946.
1940                    ;                  AC0:      2, THE RESULTANT OF THE ROL     1947.
1941                    ;                  AC1: X'2000, THE RESULTANT OF THE ROR     1948.
1942                    ;                  AC2:      0, THE RESULTANT TEST VALUE     1949.
1943                TN34:                                                            1950.
1944 0460 0014 A                .WORD   $Q9-.                                        1951.
1945 0461 3800 A $Q1:           PFLG    LINK                                         1952.
1946 0462 5109 A                LI      AC1,9                                        1953.
1947 0463 2503 A                ROR     AC1,1,1                                      1954.
1948 0464 0C00 A                PUSHF                   ; LNK->STK                   1955.
1949 0465 2503 A                ROR     AC1,1,1                                      1956.
1950 0466 3E00 A                PFLG    SYNC            ; SCOPE SIGNAL               1957.
1951 0467 1000 A                PULLF                   ; STK->LNK (LNK=1)           1958.
1952 0468 2003 A                ROL     AC0,1,1                                      1959.
1953 0469 2503 A                ROR     AC1,1,1                                      1960.
1954 046A 0C00 A                PUSHF                   ; LNK->STK                   1961.
1955 046B 2503 A                ROR     AC1,1,1                                      1962.
1956 046C 1000 A                PULLF                   ; STK->LNK (LNK=0)           1963.
1957 046D 2003 A                ROL     AC0,1,1                                      1964.
1958 046E 7B00 A                AISZ    AC3,0           ; TIGHT LOOP                 1965.
1959 046F 19F1 A                JMP     $Q1                                          1966.
1960                        ;                                                        1967.
1961 0470 5E00 A                RCPY    AC0,AC2                                      1968.
1962 0471 7AFE A                AISZ    AC2,-2                                       1969.
1963 0472 D868 A                ST      AC2,RESLT                                    1970.
1964 0473 987F A                JMP     @INDMRTN                                     1971.
1965                    $Q9:                                                         1972.
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1966                        .PAGE                                                    1973.
1967                    ;                                                            1974.
1968                    ;   TEST 35 & 36: TEST THE BOC INSTRUCTIONS                 1975.
1969                    ;                                                            1976.
1970                    ;       AC0 IS INITIALIZED TO THE APPROPRIATE VALUE ANC THE  1977.
1971                    ;       APPLICABLE BCC INSTRUCTIONS ARE EXECUTED.            1978.
1972                    ;                                                            1979.
1973                    ;       ON ERROR:                                            1980.
1974                    ;         AC0: TEST VALUE                                    1981.
1975                    ;         AC1: ERROR INDICATOR                               1982.
1976                    ;              (TEST 35 - X'007C)                            1983.
1977                    ;              (TEST 36 - X'0003)                            1984.
1978                    ;         AC2: NON-ZERO INDICATES AN ERROR                   1985.
1979                    ;                                                            1986.
1980                    ;       TEST VALUE:                                          1987.
1981                    ;         TEST 35 -  0                                       1988.
1982                    ;         TEST 36 - -1                                       1989.
1983                    ;                                                            1990.
1984                    ;       ERROR INDICATOR:                                     1991.
1985                    ;         THE LOWER SEVEN BITS OF AC1 SHOULD BE:             1992.
1986                    ;              TEST 35 - 1 1 1 1 1 0 0                       1993.
1987                    ;              TEST 36 - 0 0 0 0 0 1 1                       1994.
1988                    ;         ANY OTHER COMBINATION IS AN ERROR.                 1995.
1989                TN35:                                                            1996.
1990 0474 001A A            .WORD   $R9-.                                            1997.
1991 0475 5000 A            LI      AC0,0                                            1998.
1992 0476 5100 A $R1:       LI      AC1,0                                            1999.
1993 0477 3E00 A            PFLG    SYNC            ; SCOPE SIGNAL                   2000.
1994 0478 4101 A            BOC     ZRO,.+2                                          2001.
1995 0479 5101 A            LI      AC1,1                                            2002.
1996 047A 4201 A            BOC     POS,.+2                                          2003.
1997 047B 7902 A            AISZ    AC1,2                                            2004.
1998 047C 4301 A            BOC     BT0,.+2                                          2005.
1999 047D 7904 A            AISZ    AC1,4                                            2006.
2000 047E 4401 A            BOC     BT1,.+2                                          2007.
2001 047F 7908 A            AISZ    AC1,8                                            2008.
2002 0480 4501 A            BOC     NZR,.+2                                          2009.
2003 0481 7910 A            AISZ    AC1,X'10                                         2010.
2004 0482 4601 A            BOC     BT2,.+2                                          2011.
2005 0483 7920 A            AISZ    AC1,X'20                                         2012.
2006 0484 4B01 A            BOC     NEG,.+2                                          2013.
2007 0485 7940 A            AISZ    AC1,X'40                                         2014.
2008 0486 7800 A            AISZ    AC3,0           ; TIGHT LOOP                     2015.
2009 0487 19EE A            JMP     $R1                                              2016.
2010                    ;                                                            2017.
2011 0488 7800 A            AISZ    AC0,0                                            2018.
2012 0489 1907 A            JMP     $S1                                              2019.
2013 048A 5E40 A            RCPY    AC1,AC2                                          2020.
2014 048B 7A84 A            AISZ    AC2,-X'7C                                        2021.
2015 048C D868 A            ST      AC2,RESLT                                        2022.
2016 048D 987F A            JMP     @INDMRTN                                         2023.
2017                $R9:                                                             2024.
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2018                        .PAGE                                    2025.
2019                TN36:                                            2026.
2020 048E 0007 A            .WORD   $S9-.                            2027.
2021 048F 50FF A            LI      AC0,-1                           2028.
2022 0490 19E5 A            JMP     $R1                              2029.
2023 0491 5E40 A $S1:       RCPY    AC1,AC2                          2030.
2024 0492 7AFD A            AISZ    AC2,-X'03                        2031.
2025 0493 D868 A            ST      AC2,RESLT                        2032.
2026 0494 987F A            JMP     @INDMRTN                         2033.
2027                $S9:                                             2034.
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2028                        .PAGE                                                2035.
2029                    ;                                                        2036.
2030                    ;       TEST 37: TEST 'BRANCH ON NON-ZERO' FOR ANY BIT SET IN AC0    2037.
2031                    ;                                                        2038.
2032                    ;               EACH OF THE 16 BITS OF AC0 IS INDIVIDUALLY SET AND   2039.
2033                    ;               TESTED. THE 16 BITS OF AC0 ARE SET BY INITIALLY      2040.
2034                    ;               LOADING AC0 WITH THE VALUE ONE AND SHIFTING ONE BIT  2041.
2035                    ;               TO THE LEFT PRIOR TO THE NEXT EXECUTION OF THE BOC   2042.
2036                    ;               INSTRUCTION.                                         2043.
2037                    ;                                                        2044.
2038                    ;               ON ERROR:                                2045.
2039                    ;                 FAILURES TO BRANCH ARE INDICATED BY THE CORRESPONDING2046.
2040                    ;                 BITS SET IN AC2.                       2047.
2041                TN37:                                                        2048.
2042 0495 000F A           .WORD   $T9-.                                        2049.
2043 0496 5200 A $T1:      LI      AC2,0                                        2050.
2044 0497 5101 A           LI      AC1,1                                        2051.
2045 0498 5001 A           LI      AC0,1                                        2052.
2046 0499 3E00 A $T2:      PFLG    SYNC            ; SCOPE SIGNAL               2053.
2047 049A 4501 A           BOC     NZR,$T3                                      2054.
2048 049B 6A40 A           RADD    AC1,AC2                                      2055.
2049 049C 2803 A $T3:      SHL     AC0,1,1                                      2056.
2050 049D 2903 A           SHL     AC1,1,1                                      2057.
2051 049E 7900 A           AISZ    AC1,0                                        2058.
2052 049F 19F9 A           JMP     $T2                                          2059.
2053 04A0 7800 A           AISZ    AC3,0           ; TIGHT LOOP                 2060.
2054 04A1 19F4 A           JMP     $T1                                          2061.
2055                    ;                                                       2062.
2056 04A2 D868 A           ST      AC2,RESLT                                    2063.
2057 04A3 987F A           JMP     @INDMRTN                                     2064.
2058                $T9:                                                        2065.
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2059                    .PAGE                                                   2066.
2060                ;                                                           2067.
2061                ;       TEST 38: TEST 'BRANCH ON BIT 0' AND 'BRANCH ON BIT 1'   2068.
2062                ;                                                           2069.
2063                ;               AC0 IS LOADED WITH THE VALUES 1, 2, AND -4, AND IN  2070.
2064                ;               EACH INSTANCE, BIT 0 AND BIT 1 ARE TESTED.  2071.
2065                ;                                                           2072.
2066                ;               ON ERROR:                                   2073.
2067                ;                 AC0: X'FFFC, THE LAST TEST VALUE          2074.
2068                ;                 AC1: ERROR INDICATOR                      2075.
2069                ;                 AC2: NON-ZERO INDICATES AN ERROR          2076.
2070                ;                                                           2077.
2071                ;               ERROR INDICATOR:                            2078.
2072                ;                 THE LOWER SIX BITS OF AC1 SHOULD BE:      2079.
2073                ;                     1 1 0 1 1 0                           2080.
2074                ;                 ANY OTHER COMBINATION IS AN ERROR.        2081.
2075            TN38:                                                           2082.
2076 04A4 0018 A       .WORD   $U9-.                                           2083.
2077 04A5 5100 A $U1:  LI      AC1,0                                           2084.
2078 04A6 5001 A       LI      AC0,1                                           2085.
2079 04A7 3E00 A       PFLG    SYNC            ; SCOPE SIGNAL                  2086.
2080 04A8 4301 A       BOC     BT0,.+2                                         2087.
2081 04A9 5101 A       LI      AC1,1                                           2088.
2082 04AA 4401 A       BOC     BT1,.+2                                         2089.
2083 04AB 7902 A       AISZ    AC1,2                                           2090.
2084 04AC 5002 A       LI      AC0,2                                           2091.
2085 04AD 4301 A       BOC     BT0,.+2                                         2092.
2086 04AE 7904 A       AISZ    AC1,4                                           2093.
2087 04AF 4401 A       BOC     BT1,.+2                                         2094.
2088 04B0 7908 A       AISZ    AC1,8                                           2095.
2089 04B1 78FA A       AISZ    AC0,-6                                          2096.
2090 04B2 4301 A       BOC     BT0,.+2                                         2097.
2091 04B3 7910 A       AISZ    AC1,X'10                                        2098.
2092 04B4 4401 A       BOC     BT1,.+2                                         2099.
2093 04B5 7920 A       AISZ    AC1,X'20                                        2100.
2094 04B6 7B00 A       AISZ    AC3,0           ; TIGHT LOOP                    2101.
2095 04B7 19ED A       JMP     $U1                                             2102.
2096                ;                                                           2103.
2097 04B8 5E40 A       RCPY    AC1,AC2                                         2104.
2098 04B9 7ACA A       AISZ    AC2,-X'36                                       2105.
2099 04BA D868 A       ST      AC2,RESLT                                       2106.
2100 04BB 987F A       JMP     @INDMRTN                                        2107.
2101            $U9:                                                            2108.
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 2102                           .PAGE                                                      2109.
 2103                 ;                                                                    2110.
 2104                 ;         TEST 39: TEST 'BRANCH ON POSITIVE', 'BRANCH ON NEGATIVE', AND  2111.
 2105                 ;                  'BRANCH ON ZERO' INSTRUCTIONS                     2112.
 2106                 ;                                                                    2113.
 2107                 ;                  AFTER ACO IS LOADED WITH THE VALUE X'8000, THE TEST  2114.
 2108                 ;                  INSTRUCTIONS ARE EXECUTED. NEXT, ACO IS LOADED WITH  2115.
 2109                 ;                  THE VALUE X'7FFF, AND THE INSTRUCTIONS ARE AGAIN  2116.
 2110                 ;                  EXECUTED.                                         2117.
 2111                 ;                                                                    2118.
 2112                 ;                  ON ERROR:                                         2119.
 2113                 ;                    ACO: X'7FFF, THE SECOND TEST VALUE              2120.
 2114                 ;                    AC1: ERROR INDICATOR                            2121.
 2115                 ;                    AC2: NON-ZERO INDICATES AN ERROR                2122.
 2116                 ;                                                                    2123.
 2117                 ;                  ERROR INDICATOR:                                  2124.
 2118                 ;                    THE LOWER SIX BITS OF AC1 SHOULD BE:            2125.
 2119                 ;                        1 1 0 1 0 1                                 2126.
 2120                 ;                    ANY OTHER COMBINATION INDICATES AN ERROR.       2127.
 2121                 TN39:                                                                2128.
 2122 04BC 0018 A               .WORD    $V9-.                                             2129.
 2123 04BD 5100 A $V1:          LI       AC1,0                                             2130.
 2124 04BE C114 A               LD       ACO,$V2                                           2131.
 2125 04BF 3E00 A               PFLG     SYNC              ; SCOPE SIGNAL                  2132.
 2126 04C0 4201 A               BOC      POS,.+2                                           2133.
 2127 04C1 5101 A               LI       AC1,1                                             2134.
 2128 04C2 4B01 A               BOC      NEG,.+2                                           2135.
 2129 04C3 7902 A               AISZ     AC1,2                                             2136.
 2130 04C4 4101 A               BOC      ZRO,.+2                                           2137.
 2131 04C5 7904 A               AISZ     AC1,4                                             2138.
 2132 04C6 78FF A               AISZ     ACO,-1                                            2139.
 2133 04C7 4201 A               BOC      POS,.+2                                           2140.
 2134 04C8 7908 A               AISZ     AC1,8                                             2141.
 2135 04C9 4B01 A               BOC      NEG,.+2                                           2142.
 2136 04CA 7910 A               AISZ     AC1,X'10                                          2143.
 2137 04CB 4101 A               BOC      ZRO,.+2                                           2144.
 2138 04CC 7920 A               AISZ     AC1,X'20                                          2145.
 2139 04CD 7B00 A               AISZ     AC3,0             ; TIGHT LOOP                    2146.
 2140 04CE 19EE A               JMP      $V1                                               2147.
 2141                 ;                                                                    2148.
 2142 04CF 5E40 A               RCPY     AC1,AC2                                           2149.
 2143 04D0 7ACB A               AISZ     AC2,-X'35                                         2150.
 2144 04D1 D868 A               ST       AC2,RESLT                                         2151.
 2145 04D2 987F A               JMP      @INDMRTN                                          2152.
 2146                 ;                                                                    2153.
 2147 04D3 8000 A $V2:          .WORD    X'8000                                            2154.
 2148                 $V9:                                                                 2155.
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2149                        .PAGE                                                    2156.
2150                    ;                                                            2157.
2151                    ;       TEST 3A: TEST THE SETTING OF THE CARRY FLAG          2158.
2152                    ;                                                            2159.
2153                    ;                ACO IS LOADED WITH X'FFFF, AND THE CARRY FLAG IS   2160.
2154                    ;                CLEARED. ACO IS THEN ADDED TO ITSELF TO SET THE    2161.
2155                    ;                CARRY FLAG.                                        2162.
2156                    ;                THE CARRY CONDITION IS TESTED AND THE STATUS FLAGS 2163.
2157                    ;                ARE PULLED INTO ACO TO ALSO CHECK FOR THE CARRY    2164.
2158                    ;                CONDITION. FAILURE TO SET THE CARRY FLAG INDICATES 2165.
2159                    ;                FAILURE OF THIS TEST.                              2166.
2160                    ;                                                                   2167.
2161                    ;                ON ERROR:                                          2168.
2162                    ;                  ACO: X'0080, THE STATUS OF THE CARRY FLAG        2169.
2163                    ;                  AC1: X'FFFE, THE RESULTANT TEST VALUE            2170.
2164                    ;                  AC2: ERROR CODE                                  2171.
2165                    ;                                                                   2172.
2166                    ;                ERROR CODE:                                        2173.
2167                    ;                  BIT 0 - BOC CY INDICATES FLAG NOT SET            2174.
2168                    ;                  BIT 1 - ACO IN ERROR (FLAG DID NOT PUSH INTO STACK) 2175.
2169                TN3A:                                                               2176.
2170 04D4 0014 A           .WORD   $W9-.                                               2177.
2171 04D5 5200 A           LI      AC2,0                                               2178.
2172 04D6 50FF A $W1:      LI      AC0,-1                                              2179.
2173 04D7 3700 A           PFLG    CARRY                                               2180.
2174 04D8 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                      2181.
2175 04D9 6800 A           RADD    AC0,AC0                                             2182.
2176 04DA 0C00 A           PUSHF                                                       2183.
2177 04DB 4A01 A           BOC     CY,.+2                                              2184.
2178 04DC 5201 A           LI      AC2,1                                               2185.
2179 04DD 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                        2186.
2180 04DE 19F7 A           JMP     $W1                                                 2187.
2181                    ;                                                           2188.
2182 04DF 6D00 A           RXCH    AC0,AC1                                             2189.
2183 04E0 6400 A           PULL    AC0                                                 2190.
2184 04E1 A905 A           AND     AC0,CRY                                             2191.
2185 04E2 7800 A           AISZ    AC0,0                                               2192.
2186 04E3 1901 A           JMP     .+2                                                 2193.
2187 04E4 7A02 A           AISZ    AC2,2                                               2194.
2188 04E5 D868 A           ST      AC2,RESLT                                           2195.
2189 04E6 987F A           JMP     @INDMRTN                                            2196.
2190 04E7 0080 A CRY:      .WORD   CRYMSK                                              2197.
2191                    $W9:                                                        2198.
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2192                        .PAGE                                                    2199.
2193                    ;                                                            2200.
2194                    ;   TEST 3B: TEST THE RESETTING OF THE CARRY FLAG           2201.
2195                    ;                                                            2202.
2196                    ;       AC1 IS LOADED WITH VALUE X'FFFF AND THE CARRY FLAG   2203.
2197                    ;       IS SET.  THEN AC1 IS ADDED WITH ZERO TO RESET THE    2204.
2198                    ;       CARRY FLAG.                                          2205.
2199                    ;       THE CARRY CONDITION IS TESTED AND THE STATUS FLAGS   2206.
2200                    ;       ARE PULLED INTO AC0 TO ALSO TEST FOR THE CARRY CON-  2207.
2201                    ;       DITION. FAILURE TO RESET THE CARRY FLAG INDICATES    2208.
2202                    ;       FAILURE OF THIS TEST.                                2209.
2203                    ;                                                            2210.
2204                    ;       ON ERROR:                                            2211.
2205                    ;         AC0:     0, THE STATUS OF THE CARRY FLAG           2212.
2206                    ;         AC1: X'FFFE, THE RESULTANT TEST VALUE              2213.
2207                    ;         AC2: ERROR CODE                                    2214.
2208                    ;                                                            2215.
2209                    ;       ERROR CODE:                                          2216.
2210                    ;         BIT 0 - BOC CY INDICATES FLAG NOT RESET            2217.
2211                    ;         BIT 1 - AC0 IN ERROR                               2218.
2212                TN3B:                                                            2219.
2213 04E8 0013 A           .WORD   $X9-.                                            2220.
2214 04E9 5200 A           LI      AC2,0                                            2221.
2215 04EA 51FF A $X1:      LI      AC1,-1                                           2222.
2216 04EB 6940 A           RADD    AC1,AC1                                          2223.
2217 04EC 3780 A           SFLG    CARRY                                            2224.
2218 04ED 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                   2225.
2219 04EE 6900 A           RADD    AC0,AC1                                          2226.
2220 04EF 0C00 A           PUSHF                                                    2227.
2221 04F0 4A01 A           BOC     CY,.+2                                           2228.
2222 04F1 1901 A           JMP     .+2                                              2229.
2223 04F2 5201 A           LI      AC2,1                                            2230.
2224 04F3 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                     2231.
2225 04F4 19F5 A           JMP     $X1                                              2232.
2226                    ;                                                           2233.
2227 04F5 6400 A           PULL    AC0                                              2234.
2228 04F6 A9F0 A           AND     AC0,CRY                                          2235.
2229 04F7 7800 A           AISZ    AC0,0                                            2236.
2230 04F8 7A02 A           AISZ    AC2,2                                            2237.
2231 04F9 D868 A           ST      AC2,RESLT                                        2238.
2232 04FA 987F A           JMP     @INDMRTN                                         2239.
2233                $X9:                                                         2240.
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2234                        .PAGE                                                   2241.
2235                    ;                                                           2242.
2236                    ;       TEST 3C: TEST THE SETTING AND RESETTING OF THE CARRY FLAG   2243.
2237                    ;               FROM THE STACK                              2244.
2238                    ;                                                           2245.
2239                    ;               THE CARRY FLAG IS FIRST SET, AND THE FLAGS THEN   2246.
2240                    ;               PUSHED ONTO THE STACK.  THE CARRY FLAG IS THEN   2247.
2241                    ;               CLEARED, AND THE FLAGS PULLED FROM THE STACK IN   2248.
2242                    ;               ORDER TO SEE IF THE CARRY FLAG CAN BE SET FROM   2249.
2243                    ;               THE STACK.  NEXT THE SEQUENCE IS REVERSED.  FIRST   2250.
2244                    ;               THE CARRY FLAG IS CLEARED, AND THE FLAGS PUSHED   2251.
2245                    ;               ONTO THE STACK.  THE CARRY FLAG IS THEN SET, AND   2252.
2246                    ;               THE FLAGS PULLED FROM THE STACK IN ORDER TO SEE   2253.
2247                    ;               IF THE CARRY FLAG CAN BE RESET FROM THE STACK.   2254.
2248                    ;               FAILURE OF THE CARRY FLAG TO SET OR RESET FROM   2255.
2249                    ;               THE STACK INDICATES FAILURE OF THIS TEST.   2256.
2250                    ;                                                           2257.
2251                    ;               ON ERROR:                                   2258.
2252                    ;                 AC0: X'FFFD, THE RESULTANT TEST VALUE   2259.
2253                    ;                 AC1: ERROR CODE                           2260.
2254                    ;                                                           2261.
2255                    ;               ERROR CODE:                                 2262.
2256                    ;                 BIT 0 - CANNOT BE SET FROM THE STACK      2263.
2257                    ;                 BIT 1 - CANNOT BE RESET FROM THE STACK    2264.
2258                TN3C:                                                           2265.
2259 04FB 0015 A               .WORD   $Y9-.                                       2266.
2260 04FC 5100 A               LI      AC1,0                                       2267.
2261 04FD 50FF A $Y1:          LI      AC0,-1                                      2268.
2262 04FE 3780 A               SFLG    CARRY           ; 1->CRY                    2269.
2263 04FF 3E00 A               PFLG    SYNC            ; SCOPE SIGNAL              2270.
2264 0500 0C00 A               PUSHF                   ; CRY->STK                  2271.
2265 0501 3700 A               PFLG    CARRY           ; 0->CRY                    2272.
2266 0502 1000 A               PULLF                   ; STK->CRY                  2273.
2267 0503 4A01 A               BOC     CY,.+2                                      2274.
2268 0504 5101 A               LI      AC1,1                                       2275.
2269 0505 3700 A               PFLG    CARRY           ; 0->CRY                    2276.
2270 0506 0C00 A               PUSHF                                               2277.
2271 0507 3780 A               SFLG    CARRY           ; 1->CRY                    2278.
2272 0508 1000 A               PULLF                                               2279.
2273 0509 4A01 A               BOC     CY,.+2                                      2280.
2274 050A 1901 A               JMP     .+2                                         2281.
2275 050B 7902 A               AISZ    AC1,2                                       2282.
2276 050C 7800 A               AISZ    AC3,0           ; TIGHT LOOP                2283.
2277 050D 19EF A               JMP     $Y1                                         2284.
2278                    ;                                                           2285.
2279 050E D468 A               ST      AC1,RESLT                                   2286.
2280 050F 987F A               JMP     @INDMRTN                                    2287.
2281                $Y9:                                                           2288.
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2282                        .PAGE                                                    2289.
2283                    ;                                                            2290.
2284                    ;   TEST 3D: TEST THE SETTING OF THE OVERFLOW FLAG WHEN NEGATIVE  2291.
2285                    ;           OVERFLOW OCCURS                                  2292.
2286                    ;                                                            2293.
2287                    ;           ACO IS LOADED WITH THE LARGEST NEGATIVE VALUE X'8000  2294.
2288                    ;           AND THE OVERFLOW FLAG IS CLEARED.  THEN ACO IS ADDED  2295.
2289                    ;           WITH -1 TO SET THE OVFLW FLAG. THE OVERFLOW CONDITION  2296.
2290                    ;           IS TESTED AND THE STATUS FLAGS ARE PULLED INTO ACO  2297.
2291                    ;           TO ALSO CHECK FOR THE OVERFLOW CONDITION. FAILURE TO  2298.
2292                    ;           SET THE OVERFLOW FLAG INDICATES FAILURE OF THIS TEST.  2299.
2293                    ;                                                            2300.
2294                    ;           ON ERROR:                                        2301.
2295                    ;             AC0: X'0040, THE STATUS OF THE OVERFLOW FLAG   2302.
2296                    ;             AC1: X'7FFF, THE RESULTANT TEST VALUE          2303.
2297                    ;             AC2: ERROR CODE                                2304.
2298                    ;                                                            2305.
2299                    ;           ERROR CODE:                                      2306.
2300                    ;             BIT 0 - BOC OV INDICATES FLAG NOT SET          2307.
2301                    ;             BIT 1 - AC1 IN ERROR                           2308.
2302                TN3D:                                                            2309.
2303 0510 0016 A           .WORD   $Z9-.                                             2310.
2304 0511 5200 A           LI      AC2,0                                             2311.
2305 0512 C111 A $Z1:      LD      AC0,MAXNEG                                        2312.
2306 0513 3600 A           PFLG    OVFLW                                             2313.
2307 0514 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                    2314.
2308 0515 51FF A           LI      AC1,-1                                            2315.
2309 0516 6840 A           RADD    AC1,AC0                                           2316.
2310 0517 0C00 A           PUSHF                                                     2317.
2311 0518 4C01 A           BOC     OV,.+2                                            2318.
2312 0519 5201 A           LI      AC2,1                                             2319.
2313 051A 7800 A           AISZ    AC3,0           ; TIGHT LOOP                      2320.
2314 051B 19F6 A           JMP     $Z1                                               2321.
2315                    ;                                                            2322.
2316 051C 6D00 A           RXCH    AC0,AC1                                           2323.
2317 051D 6400 A           PULL    AC0                                               2324.
2318 051E A906 A           AND     AC0,OVF                                           2325.
2319 051F 7800 A           AISZ    AC0,0                                             2326.
2320 0520 1901 A           JMP     .+2                                               2327.
2321 0521 7A02 A           AISZ    AC2,2                                             2328.
2322 0522 D868 A           ST      AC2,RESLT                                         2329.
2323 0523 987F A           JMP     @INDMRTN                                          2330.
2324 0524 8000 A MAXNEG:   .WORD   X'8000                                            2331.
2325 0525 0040 A OVF:      .WORD   OVFMSK                                            2332.
2326                    $Z9:                                                         2333.
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2327                        .PAGE                                                    2334.
2328                    ;                                                            2335.
2329                    ;   TEST 3E: TEST THE SETTING OF THE OVERFLOW FLAG WHEN POSITIVE  2336.
2330                    ;         OVERFLOW OCCURS                                    2337.
2331                    ;                                                            2338.
2332                    ;         AC1 IS LOADED WITH THE LARGEST POSITIVE VALUE X'7FFF  2339.
2333                    ;         AND THE OVERFLOW FLAG IS CLEARED.  THEN AC1 IS ADDED  2340.
2334                    ;         WITH 1 TO SET THE OVFLW FLAG. THE OVERFLOW CONDITION  2341.
2335                    ;         AND THE STATUS FLAGS ARE PULLED INTO AC0 TO ALSO     2342.
2336                    ;         CHECK FOR THE OVERFLOW CONDITION. FAILURE TO SET THE  2343.
2337                    ;         OVERFLOW FLAG INDICATES FAILURE OF THIS TEST.       2344.
2338                    ;                                                            2345.
2339                    ;         ON ERROR:                                          2346.
2340                    ;           AC0: X'0040, THE STATUS OF THE OVERFLOW FLAG     2347.
2341                    ;           AC1: X'8000, THE RESULTANT TEST VALUE            2348.
2342                    ;           AC2: ERROR CODE                                  2349.
2343                    ;                                                            2350.
2344                    ;         ERROR CODE:                                        2351.
2345                    ;           BIT 0 - BOC OV INDICATES FLAG NOT SET            2352.
2346                    ;           BIT 1 - AC0 IN ERROR                             2353.
2347                        .LOCAL                                                   2354.
2348                TN3E:                                                        2355.
2349 0526 0014 A           .WORD   $A9-.                                            2356.
2350 0527 5200 A           LI      AC2,0                                            2357.
2351 0528 C510 A $A1:      LD      AC1,MAXPOS                                       2358.
2352 0529 3600 A           PFLG    OVFLW                                            2359.
2353 052A 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                   2360.
2354 052B 5001 A           LI      AC0,1                                            2361.
2355 052C 6900 A           RADD    AC0,AC1                                          2362.
2356 052D 0C00 A           PUSHF                                                    2363.
2357 052E 4C01 A           BOC     OV,.+2                                           2364.
2358 052F 5201 A           LI      AC2,1                                            2365.
2359 0530 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                     2366.
2360 0531 19F6 A           JMP     $A1                                              2367.
2361                    ;                                                           2368.
2362 0532 6400 A           PULL    AC0                                              2369.
2363 0533 A9F1 A           AND     AC0,OVF                                          2370.
2364 0534 7800 A           AISZ    AC0,0                                            2371.
2365 0535 1901 A           JMP     .+2                                              2372.
2366 0536 7A02 A           AISZ    AC2,2                                            2373.
2367 0537 D868 A           ST      AC2,RESLT                                        2374.
2368 0538 987F A           JMP     @INDMRTN                                         2375.
2369 0539 7FFF A MAXPOS:   .WORD   X'7FFF                                           2376.
2370                    $A9:                                                        2377.
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2371                        .PAGE                                                   2378.
2372                    ;                                                           2379.
2373                    ;       TEST 3F: TEST THE RESETTING OF THE OVERFLOW FLAG    2380.
2374                    ;                                                           2381.
2375                    ;               ACO IS LOADED WITH THE LARGEST NEGATIVE VALUE X'8000  2382.
2376                    ;               AND DECREMENTED BY ONE, AND THE OVERFLOW FLAG IS      2383.
2377                    ;               SET.  ACO IS THEN SET TO X'FFFE BY BEING SHIFTED ONE  2384.
2378                    ;               BIT TO THE LEFT, AND ADDED TO ITSELF TO SET THE       2385.
2379                    ;               OVERFLOW CONDITION.  FINALLY, THE OVERFLOW CON-       2386.
2380                    ;               DITION IS TESTED AND THE STATUS FLAGS ARE PULLED      2387.
2381                    ;               INTO ACO TO ALSO TEST FOR THE OVERFLOW CONDITION.     2388.
2382                    ;               FAILURE TO RESET THE OVERFLOW FLAG INDICATES FAILURE  2389.
2383                    ;               OF THIS TEST.                                         2390.
2384                    ;                                                           2391.
2385                    ;               CN ERROR:                                   2392.
2386                    ;                 ACO:      0, THE STATUS OF THE OVERFLOW FLAG  2393.
2387                    ;                 AC1: X'FFFC, THE RESULTANT TEST VALUE         2394.
2388                    ;                 AC2: ERROR CODE                               2395.
2389                    ;                                                           2396.
2390                    ;               ERROR CODE:                                 2397.
2391                    ;                 BIT 0 - BOC OV INDICATES FLAG NOT RESET       2398.
2392                    ;                 BIT 1 - ACO IN ERROR                          2399.
2393                TN3F:                                                           2400.
2394 053A 0015 A               .WORD   $B9-.                                       2401.
2395 053B 5200 A               LI      AC2,0                                       2402.
2396 053C C1E7 A $B1:          LD      ACO,MAXNEG                                  2403.
2397 053D 78FF A               AISZ    ACO,-1                                      2404.
2398 053E 3680 A               SFLG    OVFLW                                       2405.
2399 053F 2802 A               SHL     ACO,1,0                                     2406.
2400 0540 3E00 A               PFLG    SYNC            ; SCOPE SIGNAL              2407.
2401 0541 6800 A               RADD    ACO,ACO                                     2408.
2402 0542 0C00 A               PUSHF                                               2409.
2403 0543 4C01 A               BOC     OV,.+2                                      2410.
2404 0544 1901 A               JMP     .+2                                         2411.
2405 0545 5201 A               LI      AC2,1                                       2412.
2406 0546 7800 A               AISZ    AC3,0           ; TIGHT LOOP                2413.
2407 0547 19F4 A               JMP     $B1                                         2414.
2408                    ;                                                           2415.
2409 0548 6D00 A               RXCH    ACO,AC1                                     2416.
2410 0549 6400 A               PULL    ACO                                         2417.
2411 054A A9DA A               AND     ACO,OVF                                     2418.
2412 054B 7800 A               AISZ    ACO,0                                       2419.
2413 054C 7A02 A               AISZ    AC2,2                                       2420.
2414 054D D868 A               ST      AC2,RESLT                                   2421.
2415 054E 987F A               JMP     @IKDMRTN                                    2422.
2416                    $B9:                                                        2423.
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2417                        .PAGE                                                   2424.
2418                    ;                                                           2425.
2419                    ;   TEST 40: TEST THE SETTING AND RESETTING OF THE OVERFLOW FLAG   2426.
2420                    ;           FROM THE STACK                                  2427.
2421                    ;                                                           2428.
2422                    ;           THE OVERFLOW FLAG IS FIRST SET, AND THE FLAGS THEN  2429.
2423                    ;           PUSHED ONTO THE STACK.  THE OVERFLOW FLAG IS THEN    2430.
2424                    ;           CLEARED, AND THE FLAGS PULLED FROM THE STACK IN     2431.
2425                    ;           ORDER TO SEE IF THE OVERFLOW FLAG CAN BE SET FROM   2432.
2426                    ;           THE STACK.  NEXT THE SEQUENCE IS REVERSED.  FIRST   2433.
2427                    ;           THE OVERFLOW FLAG IS CLEARED, AND THE FLAGS PUSHED  2434.
2428                    ;           ONTO THE STACK.  THE OVERFLOW FLAG IS THEN SET, AND 2435.
2429                    ;           THE FLAGS PULLED FROM THE STACK IN ORDER TO SEE     2436.
2430                    ;           IF THE OVERFLOW FLAG CAN BE RESET FROM THE STACK.   2437.
2431                    ;           FAILURE OF THE OVERFLOW FLAG TO BE SET OR RESET FROM  2438.
2432                    ;           THE STACK INDICATES FAILURE OF THIS TEST.           2439.
2433                    ;                                                           2440.
2434                    ;           ON ERROR:                                       2441.
2435                    ;             AC0: X'8000, THE RESULTANT TEST VALUE         2442.
2436                    ;             AC1: ERROR CODE                               2443.
2437                    ;                                                           2444.
2438                    ;           ERROR CODE:                                     2445.
2439                    ;             BIT 0 - CANNOT BE SET FROM THE STACK          2446.
2440                    ;             BIT 1 - CANNOT BE RESET FROM THE STACK        2447.
2441                TN40:                                                           2448.
2442 054F 0015 A               .WORD   $C9-.                                       2449.
2443 0550 5100 A               LI      AC1,0                                       2450.
2444 0551 C1D2 A $C1:          LD      AC0,MAXNEG                                  2451.
2445 0552 3680 A               SFLG    OVFLW           ; 1->OVF                    2452.
2446 0553 3E00 A               PFLG    SYNC            ; SCOPE SIGNAL              2453.
2447 0554 0C00 A               PUSHF                   ; OVF->STK                  2454.
2448 0555 3600 A               PFLG    OVFLW           ; 0->OVF                    2455.
2449 0556 1000 A               PULLF                   ; STK->OVF                  2456.
2450 0557 4C01 A               BOC     OV,.+2                                      2457.
2451 0558 5101 A               LI      AC1,1                                       2458.
2452 0559 3600 A               PFLG    OVFLW           ; 0->OVF                    2459.
2453 055A 0C00 A               PUSHF                   ; OVF->STK                  2460.
2454 055B 3680 A               SFLG    OVFLW           ; 1->OVF                    2461.
2455 055C 1000 A               PULLF                   ; STK->OVF                  2462.
2456 055D 4C01 A               BOC     OV,.+2                                      2463.
2457 055E 1901 A               JMP     .+2                                         2464.
2458 055F 7902 A               AISZ    AC1,2                                       2465.
2459 0560 7B00 A               AISZ    AC3,0           ; TIGHT LOOP                2466.
2460 0561 19EF A               JMP     $C1                                         2467.
2461                    ;                                                           2468.
2462 0562 D468 A               ST      AC1,RESLT                                   2469.
2463 0563 987F A               JMP     @INDMRTN                                    2470.
2464                    $C9:                                                        2471.
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2465                        .PAGE                                                   2472.
2466                    ;                                                           2473.
2467                    ;   TEST 41: TEST THE ADD AND SUB MEMORY REFERENCE INSTRUCTIONS  2474.
2468                    ;                                                           2475.
2469                    ;       BOTH AC0 AND AC1 ARE LOADED WITH X'AAAA. THEN, AC0  2476.
2470                    ;       IS SUBTRACTED WITH X'AAAA WHILE AC1 IS ADDED WITH   2477.
2471                    ;       X'5556. FAILURE OF THE SUB TO SET THE CARRY FLAG    2478.
2472                    ;       IS INDICATED IF THE BOC ON CARRY DOES NOT BRANCH.   2479.
2473                    ;       FAILURE OF THE SUB TC RESET THE OVERFLOW FLAG IS    2480.
2474                    ;       INDICATED IF THE BOC ON OVERFLOW DOES BRANCH. A     2481.
2475                    ;       FAILURE OF THIS TEST IS ALSO INDICATED IF EITHER    2482.
2476                    ;       THE ADD OR THE SUB DOES NOT YIELD A ZERO.           2483.
2477                    ;                                                           2484.
2478                    ;       CN ERROR:                                           2485.
2479                    ;         AC0: 0, RESULT OF THE SUBB                        2486.
2480                    ;         AC1: 0, RESULT OF THE ADD                         2487.
2481                    ;         AC2: ERROR CODE                                   2488.
2482                    ;                                                           2489.
2483                    ;       ERROR CODE:                                         2490.
2484                    ;         BIT 0 - SUB RESULT IS BAD                         2491.
2485                    ;         BIT 1 - ADD RESULT IS BAD                         2492.
2486                    ;         BIT 2 - CARRY FLAG NOT SET                        2493.
2487                    ;         BIT 3 - OVERFLOW FLAG NOT RESET                   2494.
2488                TN41:                                                           2495.
2489 0564 0017 A               .WORD   $D9-.                                       2496.
2490 0565 C113 A $D1:   LD      AC0,$D2                                             2497.
2491 0566 C512 A        LD      AC1,$D2                                             2498.
2492 0567 3E00 A        PFLG    SYNC            ; SCOPE SIGNAL                      2499.
2493 0568 E511 A        ADD     AC1,$D3                                             2500.
2494 0569 3780 A        SFLG    CARRY                                               2501.
2495 056A 910E A        SUBB    AC0,$D2                                             2502.
2496 056B 5200 A        LI      AC2,0                                               2503.
2497 056C 4A01 A        BOC     CY,.+2                                              2504.
2498 056D 5204 A        LI      AC2,4                                               2505.
2499 056E 4C01 A        BOC     CV,.+2                                              2506.
2500 056F 1901 A        JMP     .+2                                                 2507.
2501 0570 7A08 A        AISZ    AC2,8                                               2508.
2502 0571 7B00 A        AISZ    AC3,0           ; TIGHT LOOP                        2509.
2503 0572 19F2 A        JMP     $D1                                                 2510.
2504                    ;                                                           2511.
2505 0573 7800 A        AISZ    AC0,0                                               2512.
2506 0574 7A01 A        AISZ    AC2,1                                               2513.
2507 0575 7900 A        AISZ    AC1,0                                               2514.
2508 0576 7A02 A        AISZ    AC2,2                                               2515.
2509 0577 D868 A        ST      AC2,RESLT                                           2516.
2510 0578 987F A        JMP     @INDMRTN                                            2517.
2511 0579 AAAA A $D2:   .WORD   X'AAAA                                              2518.
2512 057A 5556 A $D3:   .WORD   X'5556                                              2519.
2513                    $D9:                                                        2520.
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2514                         .PAGE                                                      2521.
2515                :                                                                   2522.
2516                :        TEST 42: TEST THE SETTING OF BOTH THE CARRY AND OVERFLOW FLAGS  2523.
2517                :                 WITH ADD INSTRUCTION                              2524.
2518                :                                                                   2525.
2519                :                 AC1 IS LOADED WITH X'8000, AND THE CARRY AND OVFLW  2526.
2520                :                 FLAGS BOTH CLEARED.  AC1 IS THEN ADDED WITH X'8000 TO  2527.
2521                :                 SET BOTH FLAGS. FAILURE OF THE ADD TO SET THE CARRY  2528.
2522                :                 FLAG IS INDICATED IF THE BOC ON CARRY DOES NOT BRANCH. 2529.
2523                :                 FAILURE OF THE ADD TO SET THE OVERFLOW FLAG IS ALSO  2530.
2524                :                 INDICATED IF THE BOC ON OVERFLOW DOES NOT BRANCH.  2531.
2525                :                 FINALLY, A NON-ZERO RESULT FROM THE ADD IS ALSO AN  2532.
2526                :                 INDICATION OF FAILURE FOR THIS TEST.              2533.
2527                :                                                                   2534.
2528                :                 ON ERROR:                                         2535.
2529                :                   AC1: 0, RESULT OF THE ADD                       2536.
2530                :                   AC2: ERROR CODE                                 2537.
2531                :                                                                   2538.
2532                :                 ERROR CODE:                                       2539.
2533                :                   BIT 0 - ADD RESULT IS BAD                       2540.
2534                :                   BIT 1 - CARRY FLAG NOT SET                      2541.
2535                :                   BIT 2 - OVERFLOW NOT SET                        2542.
2536                TN42:                                                               2543.
2537 057B 0012 A             .WORD    $E9-.                                             2544.
2538 057C C50F A $E1:        LD       AC1,MSB                                           2545.
2539 057D 3700 A             PFLG     CARRY                                             2546.
2540 057E 3600 A             PFLG     OVFLW                                             2547.
2541 057F 3E00 A             PFLG     SYNC              ; SCOPE SIGNAL                  2548.
2542 0580 E50B A             ADD      AC1,MSB                                           2549.
2543 0581 5200 A             LI       AC2,0                                             2550.
2544 0582 4A01 A             BOC      CY,.+2                                            2551.
2545 0583 5202 A             LI       AC2,2                                             2552.
2546 0584 4C01 A             BOC      OV,.+2                                            2553.
2547 0585 7A04 A             AISZ     AC2,4                                             2554.
2548 0586 7B00 A             AISZ     AC3,0             ; TIGHT LOOP                    2555.
2549 0587 19F4 A             JMP      $E1                                               2556.
2550                :                                                                   2557.
2551 0588 7900 A             AISZ     AC1,0                                             2558.
2552 0589 7A01 A             AISZ     AC2,1                                             2559.
2553 058A D868 A             ST       AC2,RESLT                                         2560.
2554 058B 987F A             JMP      @INDMRTN                                          2561.
2555 058C 8000 A MSB:        .WORD    X'8000                                            2562.
2556             $E9:                                                                   2563.
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2557                        .PAGE                                                    2564.
2558                    ;                                                            2565.
2559                    ;       TEST 43: TEST THE SETTING OF BOTH THE CARRY AND OVERFLOW FLAGS  2566.
2560                    ;                WITH THE SUB INSTRUCTION                    2567.
2561                    ;                                                            2568.
2562                    ;                ACO IS LOADED WITH X'8000, AND SUBTRACTED WITH  2569.
2563                    ;                X'7FFF TO SET BOTH FLAGS. FAILURE OF THE SUB TO SET  2570.
2564                    ;                THE CARRY FLAG IS INDICATED IF THE BOC ON CARRY DOES  2571.
2565                    ;                NOT BRANCH. FAILURE OF THE SUB TO SET THE OVERFLOW  2572.
2566                    ;                FLAG IS INDICATED IF THE BOC ON OVERFLOW DOES NOT  2573.
2567                    ;                BRANCH. A FAILURE OF THIS TEST IS ALSO INDICATED IF  2574.
2568                    ;                THE SUB MINUS ONE DOES NOT YIELD A ZERO.    2575.
2569                    ;                                                            2576.
2570                    ;                ON ERROR:                                   2577.
2571                    ;                  ACO: 0, RESULT OF SUB MINUS ONE           2578.
2572                    ;                  AC1: ERROR CODE                           2579.
2573                    ;                                                            2580.
2574                    ;                ERROR CODE:                                 2581.
2575                    ;                  BIT 0 - SUB RESULT IS BAD                 2582.
2576                    ;                  BIT 1 - CARRY FLAG NOT SET                2583.
2577                    ;                  BIT 2 - OVERFLOW NOT SET                  2584.
2578                TN43:                                                            2585.
2579 058D 0011 A           .WORD   $F9-.                                             2586.
2580 058E C1FD A $F1:      LD      AC0,MSB                                           2587.
2581 058F 3600 A           PFLG    OVFLW                                             2588.
2582 0590 3E00 A           PFLG    SYNC                ; SCOPE SIGNAL                2589.
2583 0591 3780 A           SFLG    CARRY                                             2590.
2584 0592 9120 A           SUBB    AC0,POSMAX                                        2591.
2585 0593 5100 A           LI      AC1,0                                             2592.
2586 0594 4A01 A           BOC     CY,.+2                                            2593.
2587 0595 5102 A           LI      AC1,2                                             2594.
2588 0596 4C01 A           BOC     OV,.+2                                            2595.
2589 0597 7904 A           AISZ    AC1,4                                             2596.
2590 0598 7B00 A           AISZ    AC3,0               ; TIGHT LOOP                  2597.
2591 0599 19F4 A           JMP     $F1                                               2598.
2592                    ;                                                            2599.
2593 059A 78FF A           AISZ    AC0,-1                                            2600.
2594 059B 7901 A           AISZ    AC1,1                                             2601.
2595 059C D468 A           ST      AC1,RESLT                                         2602.
2596 059D 987F A           JMP     @INDMRTN                                          2603.
2597                  $F9:                                                           2604.
```

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2598                    .PAGE                                                   2605.
2599                ;                                                           2606.
2600                ;       TEST 44: TEST THE SETTING OF THE OVERFLOW FLAG WHILE RESETTING  2607.
2601                ;                THE CARRY FLAG WITH THE ADD INSTRUCTION    2608.
2602                ;                                                           2609.
2603                ;                INITIALLY THE OVFLW FLAG IS CLEARED AND THE CARRY FLAG 2610.
2604                ;                SET. AFTER AC3 IS LOADED WITH X'7FFF, IT IS ADDED WITH 2611.
2605                ;                THE VALUE ONE. FAILURE TO SET THE OVERFLOW FLAG OR TO  2612.
2606                ;                RESET THE CARRY FLAG INDICATES FAILURE OF THIS TEST.   2613.
2607                ;                                                           2614.
2608                ;                ON ERROR:                                  2615.
2609                ;                  AC1: X'8000, THE RESULTANT TEST VALUE    2616.
2610                ;                  AC2: ERROR CODE                          2617.
2611                ;                                                           2618.
2612                ;                ERROR CODE:                                2619.
2613                ;                  BIT 0 - ADD RESULT IS BAD                2620.
2614                ;                  BIT 1 - CARRY FLAG NOT RESET             2621.
2615                ;                  BIT 2 - OVERFLOW FLAG NOT SET            2622.
2616            TN44:                                                           2623.
2617 059E 0018 A           .WORD   $G9-.                                       2624.
2618 059F 5CC0 A           RCPY    AC3,AC0                                     2625.
2619 05A0 3780 A $G1:      SFLG    CARRY                                       2626.
2620 05A1 3600 A           PFLG    OVFLW                                       2627.
2621 05A2 CD10 A           LD      AC3,POSMAX                                  2628.
2622 05A3 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL              2629.
2623 05A4 ED0F A           ADD     AC3,PCS1                                    2630.
2624 05A5 5200 A           LI      AC2,0                                       2631.
2625 05A6 4A01 A           BOC     CY,.+2                                      2632.
2626 05A7 1901 A           JMP     .+2                                         2633.
2627 05A8 5202 A           LI      AC2,2                                       2634.
2628 05A9 4C01 A           BOC     OV,.+2                                      2635.
2629 05AA 7A04 A           AISZ    AC2,4                                       2636.
2630 05AB 7800 A           AISZ    AC0,0           ; TIGHT LOOP                2637.
2631 05AC 19F3 A           JMP     $G1                                         2638.
2632                ;                                                           2639.
2633 05AD 5DC0 A           RCPY    AC3,AC1                                     2640.
2634 05AE 2302 A           ROL     AC3,1,0                                     2641.
2635 05AF 7BFF A           AISZ    AC3,-1                                      2642.
2636 05B0 7A01 A           AISZ    AC2,1                                       2643.
2637 05B1 D868 A           ST      AC2,RESLT                                   2644.
2638 05B2 987F A           JMP     @INDMRTN                                    2645.
2639 05B3 7FFF A POSMAX:   .WORD   X'7FFF                                      2646.
2640 05B4 0001 A POS1:     .WORD   1                                           2647.
2641 05B5 FFFF A NEG1:     .WORD   -1                                          2648.
2642            $G9:                                                            2649.
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2643                        .PAGE                                                   2650.
2644                    ;                                                           2651.
2645                    ;       TEST 45: TEST THE SETTING OF THE OVERFLOW FLAG WHILE RESETTING  2652.
2646                    ;                THE CARRY FLAG WITH THE SUB INSTRUCTION    2653.
2647                    ;                                                           2654.
2648                    ;                INITIALLY THE OVFLW FLAG IS CLEARED AND THE CARRY FLAG 2655.
2649                    ;                SET. AFTER AC0 IS LOADED WITH X'7FFF, IT IS SUBTRACTED 2656.
2650                    ;                WITH THE VALUE MINUS ONE. FAILURE TO SET THE OVERFLOW  2657.
2651                    ;                FLAG OR TO RESET THE CARRY FLAG INDICATES FAILURE OF   2658.
2652                    ;                THIS TEST.                                 2659.
2653                    ;                                                           2660.
2654                    ;                ON ERROR:                                  2661.
2655                    ;                  AC1: X'8000, THE RESULTANT TEST VALUE    2662.
2656                    ;                  AC2: ERROR CODE                          2663.
2657                    ;                                                           2664.
2658                    ;                ERROR CODE:                                2665.
2659                    ;                  BIT 0 - SUB RESULT IS BAD                2666.
2660                    ;                  BIT 1 - CARRY FLAG NOT RESET             2667.
2661                    ;                  BIT 2 - OVERFLOW FLAG NOT SET            2668.
2662                TN45:                                                           2669.
2663 05B6 0015 A           .WORD   $H9-.                                           2670.
2664 05B7 50FF A $H1:      LI      AC0,-1                                          2671.
2665 05B8 78FF A           AISZ    AC0,-1                                          2672.
2666 05B9 C1F9 A           LD      AC0,POSMAX                                      2673.
2667 05BA 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                  2674.
2668 05BB 3780 A           SFLG    CARRY                                           2675.
2669 05BC 91F8 A           SUBB    AC0,NEG1                                        2676.
2670 05BD 5200 A           LI      AC2,0                                           2677.
2671 05BE 4A01 A           BOC     CY,.+2                                          2678.
2672 05BF 1901 A           JMP     .+2                                             2679.
2673 05C0 5202 A           LI      AC2,2                                           2680.
2674 05C1 4C01 A           BOC     OV,.+2                                          2681.
2675 05C2 7A04 A           AISZ    AC2,4                                           2682.
2676 05C3 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                    2683.
2677 05C4 19F2 A           JMP     $H1                                             2684.
2678                    ;                                                           2685.
2679 05C5 5D00 A           RCPY    AC0,AC1                                         2686.
2680 05C6 2002 A           ROL     AC0,1,0                                         2687.
2681 05C7 78FF A           AISZ    AC0,-1                                          2688.
2682 05C8 7A01 A           AISZ    AC2,1                                           2689.
2683 05C9 D868 A           ST      AC2,RESLT                                       2690.
2684 05CA 987F A           JMP     @INDMRTN                                        2691.
2685                    $H9:                                                        2692.
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2686                        .PAGE                                                    2693.
2687                    ;                                                            2694.
2688                    ;   TEST 46: TEST THE SETTING OF THE CARRY FLAG WHILE RESETTING 2695.
2689                    ;       THE OVERFLOW FLAG WITH THE ADD INSTRUCTION            2696.
2690                    ;                                                            2697.
2691                    ;       INITIALLY THE OVERFLOW FLAG IS SET AND THE CARRY FLAG 2698.
2692                    ;       CLEARED. AFTER AC2 IS LOADED WITH MINUS ONE, IT IS    2699.
2693                    ;       ADDED WITH THE VALUE ONE. FAILURE TO SET THE CARRY    2700.
2694                    ;       FLAG OR TO RESET THE OVERFLOW FLAG INDICATES FAILURE  2701.
2695                    ;       OF THIS TEST.                                         2702.
2696                    ;                                                            2703.
2697                    ;       ON ERROR:                                             2704.
2698                    ;         AC1: ERROR CODE                                     2705.
2699                    ;         AC2: 0. THE RESULTANT TEST VALUE                    2706.
2700                    ;                                                            2707.
2701                    ;       ERROR CODE:                                           2708.
2702                    ;         BIT 0 - ADD RESULT BAD                              2709.
2703                    ;         BIT 1 - CARRY FLAG NOT SET                          2710.
2704                    ;         BIT 2 - OVERFLOW FLAG NOT RESET                     2711.
2705                TN46:                                                            2712.
2706 05CB 0012 A           .WORD   $J9-.                                            2713.
2707 05CC 3680 A $J1:      SFLG    OVFLW                                            2714.
2708 05CD 3700 A           PFLG    CARRY                                            2715.
2709 05CE 52FF A           LI      AC2,-1                                           2716.
2710 05CF 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                   2717.
2711 05D0 E9E3 A           ADD     AC2,PCS1                                         2718.
2712 05D1 5100 A           LI      AC1,0                                            2719.
2713 05D2 4A01 A           BOC     CY,.+2                                           2720.
2714 05D3 5102 A           LI      AC1,2                                            2721.
2715 05D4 4C01 A           BOC     OV,.+2                                           2722.
2716 05D5 1901 A           JMP     .+2                                              2723.
2717 05D6 7904 A           AISZ    AC1,4                                            2724.
2718 05D7 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                     2725.
2719 05D8 19F3 A           JMP     $J1                                              2726.
2720                    ;                                                           2727.
2721 05D9 7A00 A           AISZ    AC2,0                                            2728.
2722 05DA 7901 A           AISZ    AC1,1                                            2729.
2723 05DB D468 A           ST      AC1,RESLT                                        2730.
2724 05DC 987F A           JMP     @INDMRTN                                         2731.
2725                $J9:                                                         2732.
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2726                        .PAGE                                                   2733.
2727                    ;                                                           2734.
2728                    ;       TEST 47: TEST THE SETTING OF THE CARRY FLAG WHILE RESETTING  2735.
2729                    ;                THE OVERFLOW FLAG WITH THE SUB INSTRUCTION  2736.
2730                    ;                                                           2737.
2731                    ;                INITIALLY THE OVERFLOW FLAG IS SET AND THE CARRY FLAG  2738.
2732                    ;                CLEARED. AFTER AC0 IS LOADED WITH MINUS ONE, IT IS  2739.
2733                    ;                SUBTRACTED WITH THE VALUE ONE. FAILURE TO SET THE  2740.
2734                    ;                CARRY FLAG OR TO RESET THE OVERFLOW FLAG INDICATES  2741.
2735                    ;                FAILURE OF THIS TEST.                      2742.
2736                    ;                                                           2743.
2737                    ;                ON ERROR:                                  2744.
2738                    ;                  AC1: ERROR CODE                          2745.
2739                    ;                  AC2: RESULTANT TEST VALUE                2746.
2740                    ;                                                           2747.
2741                    ;                ERROR CODE:                                2748.
2742                    ;                  BIT 0 - SUB RESULT IS BAD                2749.
2743                    ;                  BIT 1 - CARRY FLAG NOT SET               2750.
2744                    ;                  BIT 2 - OVERFLOW FLAG NOT RESET          2751.
2745                TN47:                                                           2752.
2746 05D0 0013 A               .WORD   $K9-.                                       2753.
2747 05DE 3680 A   $K1:        SFLG    OVFLW                                       2754.
2748 05DF 3700 A               PFLG    CARRY                                       2755.
2749 05E0 C1D4 A               LD      AC0,NEG1                                    2756.
2750 05E1 3E00 A               PFLG    SYNC            ; SCOPE SIGNAL              2757.
2751 05E2 3780 A               SFLG    CARRY                                       2758.
2752 05E3 91D1 A               SUBB    AC0,NEG1                                    2759.
2753 05E4 5100 A               LI      AC1,0                                       2760.
2754 05E5 4A01 A               BOC     CY,.+2                                      2761.
2755 05E6 5102 A               LI      AC1,2                                       2762.
2756 05E7 4C01 A               BOC     OV,.+2                                      2763.
2757 05E8 1901 A               JMP     .+2                                         2764.
2758 05E9 7904 A               AISZ    AC1,4                                       2765.
2759 05EA 7800 A               AISZ    AC3,0           ; TIGHT LOOP                2766.
2760 05EB 19F2 A               JMP     $K1                                         2767.
2761                    ;                                                           2768.
2762 05EC 7800 A               AISZ    AC0,0                                       2769.
2763 05ED 7901 A               AISZ    AC1,1                                       2770.
2764 05EE D468 A               ST      AC1,RESLT                                   2771.
2765 05EF 987F A               JMP     @INDMRTN                                    2772.
2766                    $K9:                                                        2773.
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2767                        .PAGE                                                   2774.
2768                    ;                                                           2775.
2769                    ;       TEST 48: TEST THE RESPONSE OF THE STACK-FULL JUMP CONDITION  2776.
2770                    ;                WITH INTERRUPTS DISABLED.                  2777.
2771                    ;                                                           2778.
2772                    ;                WITH THE INTERRUPT-ENABLE CONDITIONS DISABLED, THE  2779.
2773                    ;                STACK IS FILLED ONE WORD AT A TIME, AND THE BOC  2780.
2774                    ;                STACK-FULL CONDITION IS CHECKED AFTER EACH PUSH.  2781.
2775                    ;                ONCE FULL, ONE VALUE IS PULLED FROM THE STACK TO  2782.
2776                    ;                RESET THE STACK-FULL CONDITION. PREMATURE SETTING  2783.
2777                    ;                OF THE STACK-FULL CONDITION, FAILURE OF STACK-FULL  2784.
2778                    ;                CONDITION TO SET, AND FAILURE OF STACK-FULL CONDITION  2785.
2779                    ;                TO RESET, ALL INDICATE FAILURE OF THIS TEST.  2786.
2780                TN48:                                                           2787.
2781 05F0 001D A           .WORD   $L9-.                                            2788.
2782      0002 A STKINT    =       2               ; STACK INTERRUPT POINTER        2789.
2783 05F1 C11A A           LD      AC0,$L7         ; INITIALIZE INTERRUPT ENTRY POINT  2790.
2784 05F2 D002 A           ST      AC0,STKINT      ; IF INTERRUPT OCCURS IN THIS TEST,  2791.
2785 05F3 4001 A           BOC     STKFUL,$L1      ; IT IS ERRONEOUS.               2792.
2786 05F4 1901 A           JMP     .+2             ; STACK IS NOT FULL              2793.
2787 05F5 5101 A $L1:      LI      AC1,1           ; ERRONEOUS STACK-FULL CONDITION  2794.
2788 05F6 52F8 A           LI      AC2,-8          ; FILL 8 ELEMENTS OF STACK       2795.
2789 05F7 6000 A $L2:      PUSH    AC0                                              2796.
2790 05F8 4003 A           BOC     STKFUL,$L3      ; STACK NOT YET FULL             2797.
2791 05F9 7A01 A           AISZ    AC2,1                                            2798.
2792 05FA 19FC A           JMP     $L2                                              2799.
2793 05FB 1901 A           JMP     .+2                                              2800.
2794 05FC 5101 A $L3:      LI      AC1,1           ; ERRONEOUS STACK-FULL CONDITION  2801.
2795 05FD 3E00 A $L4:      PFLG    SYNC            ; SCOPE SIGNAL                   2802.
2796 05FE 6000 A           PUSH    AC0             ; STACK IS FULL                  2803.
2797 05FF 4001 A           BOC     STKFUL,.+2                                       2804.
2798 0600 7904 A           AISZ    AC1,4           ; STACK-FULL CONDITION FAILED    2805.
2799 0601 7B00 A           AISZ    AC3,0           ; TO RESPOND                     2806.
2800 0602 19FA A           JMP     $L4                                              2807.
2801 0603 6400 A           PULL    AC0                                              2808.
2802 0604 4001 A           BOC     STKFUL,$L5      ; STACK IS NOT FULL              2809.
2803 0605 1901 A           JMP     .+2                                              2810.
2804 0606 7908 A $L5:      AISZ    AC1,8           ; PULL FAILED TO CLEAR STACK-FULL  2811.
2805 0607 D468 A           ST      AC1,RESLT                                        2812.
2806 0608 987F A           JMP     @INDMRTN                                         2813.
2807 0609 7902 A $L6:      AISZ    AC1,2           ; STACK-FULL INTERRUPT OCCURRED  2814.
2808 060A D468 A           ST      AC1,RESLT                                        2815.
2809 060B 987F A           JMP     @INDMRTN                                         2816.
2810 060C 0609 A $L7:      .WORD   $L6             ; INTERRUPT ENTRY ADDRESS        2817.
2811                    $L9:                                                        2818.
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2812                    .PAGE                                                   2819.
2813                    ;                                                       2820.
2814                    ;       TEST 49: TEST STACK-FULL AND STACK EMPTY INTERRUPTS  2821.
2815                    ;                                                       2822.
2816                    ;               WITH THE INTERRUPT-ENABLE CONDITIONS SET, THE STACK  2823.
2817                    ;               IS FILLED UNTIL A STACK INTERRUPT SHOULD OCCUR. THEN  2824.
2818                    ;               THE STACK IS PULLED UNTIL A STACK-EMPTY INTERRUPT  2825.
2819                    ;               OCCURS. FAILURE OF THE STACK-FULL AND STACK-EMPTY  2826.
2820                    ;               INTERRUPTS TO OCCUR WHEN EXPECTED, OR UNEXPECTED  2827.
2821                    ;               OCCURRENCES OF THESE INTERRUPTS INDICATES FAILURE  2828.
2822                    ;               OF THIS TEST.                           2829.
2823                    ;                                                       2830.
2824                    ;               ON ERROR:                               2831.
2825                    ;                 AC0: LAST VALUE PULLED FROM STACK     2832.
2826                    ;                 AC1: ERROR CODE                       2833.
2827                    ;                                                       2834.
2828                    ;               ERROR CODE:                             2835.
2829                    ;                 BIT 0 - INTEN COND IN ERROR           2836.
2830                    ;                 BIT 1 - STACK-FULL INT FAILED TO OCCUR  2837.
2831                    ;                 BIT 2 - STACK-FULL COND NOT SET       2838.
2832                    ;                 BIT 3 - STACK-EMPTY INTR FAILED TO OCCUR  2839.
2833                    ;                 BIT 4 - STACK INTR OCCURED BEFORE STACK EMPTY  2840.
2834                    ;                                                       2841.
2835                TN49:                                                       2842.
2836 060D 002A A          .WORD   $M9-.                                         2843.
2837 060E 3E00 A          PFLG    SYNC            ; SCOPE SIGNAL                2844.
2838 060F 4901 A          BOC     IEN,.+2         ; INTERRUPTS SHOULD NOT BE ENABLED  2845.
2839 0610 1901 A          JMP     .+2                                           2846.
2840 0611 5101 A          LI      AC1,1           ; INTERRUPT-ENABLE CONDITION HIGH  2847.
2841 0612 CD21 A          LD      AC3,$M6         ; INITIALIZE INT ENTRY POINT  2848.
2842 0613 52F9 A          LI      AC2,-7          ; FILL 7 STACK ELEMENTS       2849.
2843 0614 5055 A          LI      AC0,055                                       2850.
2844 0615 6000 A $M1:     PUSH    AC0                                           2851.
2845 0616 7A01 A          AISZ    AC2,1                                         2852.
2846 0617 19FD A          JMP     $M1                                           2853.
2847 0618 DC02 A          ST      AC3,STKINT                                    2854.
2848 0619 C11C A          LD      AC0,$M8         ; ENABLE IEN AND IEN1         2855.
2849 061A 0800 A          CRF     AC0                                           2856.
2850 061B 5055 A          LI      AC0,055                                       2857.
2851 061C 6000 A          PUSH    AC0                                           2858.
2852 061D 6000 A          PUSH    AC0             ; SHOULD FILL STACK           2859.
2853 061E 7902 A          AISZ    AC1,2           ; STACK INTERRUPT FAILED TO OCCUR ON  2860.
2854 061F 4001 A $M2:     BOC     STKFUL,.+2      ; STACK-FULL CONDITION        2861.
2855 0620 7904 A          AISZ    AC1,4           ; STACK-FULL COND NOT SET     2862.
2856 0621 6400 A          PULL    AC0             ; STACK NO LONGER FULL        2863.
2857 0622 C112 A          LD      AC0,$M7         ; SET INTERRUPT ENTRY POINT   2864.
2858 0623 D002 A          ST      AC0,STKINT                                    2865.
2859 0624 3100 A          PFLG    IEN1            ; CLEAR INTERRUPT             2866.
2860 0625 C110 A          LD      AC0,$M8         ; ENABLE IEN AND IEN1         2867.
2861 0626 0800 A          CRF     AC0                                           2868.
2862 0627 52F7 A          LI      AC2,-9          ; PULL STACK UNTIL EMPTY      2869.
2863 0628 6400 A $M3:     PULL    AC0                                           2870.
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2864 0629 7A01 A          AISZ    AC2,1                                          2871.
2865 062A 19FD A          JMP     $M3                                            2872.
2866 062B 7908 A          AISZ    AC1,8       ; STACK-EMPTY FAILED TO CAUSE INTERRUPT 2873.
2867 062C 1902 A          JMP     $M5                                            2874.
2868 062D 7A01 A $M4:     AISZ    AC2,1       ; STACK-EMPTY INTERRUPT ENTRY      2875.
2869 062E 7910 A          AISZ    AC1,16      ; STACK INTERRUPT OCCURRED TO EARLY 2876.
2870 062F D468 A $M5:     ST      AC1,RESLT                                      2877.
2871 0630 5200 A          LI      AC2,0                                          2878.
2872 0631 6200 A          PUSH    AC2                                            2879.
2873 0632 1000 A          PULLF                                                  2880.
2874 0633 987F A          JMP     @INDMRTN                                       2881.
2875                      ;                                                      2882.
2876 0634 061F A $M6:     .WORD   $M2                                            2883.
2877 0635 062D A $M7:     .WORD   $M4                                            2884.
2878 0636 0202 A $M8:     .WORD   0202                                           2885.
2879              $M9:                                                           2886.
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2880                        .PAGE                                                    2887.
2881                    ;                                                            2888.
2882                    ;       TEST 4A: TEST THE DATA HANDLING CAPABILITIES OF THE STACK   2889.
2883                    ;                USING PUSH AND PULL                         2890.
2884                    ;                                                            2891.
2885                    ;                EACH OF THE VALUES LISTED BELOW IS PUSHED TO THE   2892.
2886                    ;                BOTTOM OF THE STACK, AND THEN PULLED UP AND OUT OF  2893.
2887                    ;                THE STACK. A FAILURE IS INDICATED WHEN A VALUE IS   2894.
2888                    ;                ALTERED IN ITS TRAVELS THROUGH ALL NINE LEVELS OF   2895.
2889                    ;                THE STACK.                                  2896.
2890                    ;                                                            2897.
2891                    ;                ON ERROR:                                   2898.
2892                    ;                  AC0: RESULTANT TEST VALUE - ANY BITS THAT ARE SET   2899.
2893                    ;                       WERE ALTERED IN THEIR TRAVEL THRU THE STACK.   2900.
2894                TN4A:                                                            2901.
2895 0637 0024 A $P:       .WORD    $P9-.                                            2902.
2896 0638 DC70 A           ST       AC3,TSTR                                         2903.
2897 0639 5300 A $P1:      LI       AC3,0                                            2904.
2898 063A 5001 A           LI       AC0,1                                            2905.
2899 063B C51E A           LD       AC1,$P5                                          2906.
2900 063C D46F A $P2:      ST       AC1,TADR                                         2907.
2901 063D 5207 A           LI       AC2,7                                            2908.
2902 063E 3E00 A           PFLG     SYNC              ; SCOPE SIGNAL                 2909.
2903 063F 6100 A           PUSH     AC1               ; PUSH 1010 OR 0101 PATTER     2910.
2904 0640 6000 A           PUSH     AC0               ; PUSH TEST VALUE              2911.
2905 0641 6100 A $P3:      PUSH     AC1                                              2912.
2906 0642 7100 A           CAI      AC1,0             ; PUSH TEST VALUE TO BOTTC     2913.
2907 0643 7AFF A           AISZ     AC2,-1            ; ALTERNATE 1010 & 0101        2914.
2908 0644 19FC A           JMP      $P3               ; VALUES ON TOP                2915.
2909 0645 5107 A           LI       AC1,7                                            2916.
2910 0646 6600 A $P4:      PULL     AC2               ; PULL TOP 7 VALUES FROM       2917.
2911 0647 79FF A           AISZ     AC1,-1            ; STACK INTO REGISTER 2        2918.
2912 0648 19FD A           JMP      $P4                                              2919.
2913 0649 6500 A           PULL     AC1               ; PULL TEST VALUE INTO REG     2920.
2914 064A 5900 A           RXOR     AC0,AC1                                          2921.
2915 064B 7900 A           AISZ     AC1,0                                            2922.
2916 064C 6B00 A           RADD     AC0,AC3                                          2923.
2917 064D C46F A           LD       AC1,TADR                                         2924.
2918 064E 7100 A           CAI      AC1,0                                            2925.
2919 064F 1D00 A           XCHRS    AC1                                              2926.
2920 0650 6500 A           PULL     AC1                                              2927.
2921 0651 2802 A           SHL      AC0,1,0                                          2928.
2922 0652 7800 A           AISZ     AC0,0                                            2929.
2923 0653 19E8 A           JMP      $P2                                              2930.
2924 0654 5CC0 A           RCPY     AC3,AC0                                          2931.
2925 0655 CC70 A           LD       AC3,TSTR                                         2932.
2926 0656 7B00 A           AISZ     AC3,0             ; TIGHT LOOP                   2933.
2927 0657 19E1 A           JMP      $P1               ; BOTTOM OF STACK              2934.
2928 0658 D068 A           ST       AC0,RESLT                                        2935.
2929 0659 987F A           JMP      @INDMRTN                                         2936.
2930 065A AAAA A $P5:      .WORD    X'AAAA                                           2937.
2931                       $P9:                                                     2938.
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2932                        .PAGE                                                   2939.
2933                    ;                                                           2940.
2934                    ;   TEST 4B: TEST CARRY AND OVERFLOW FLAGS                 2941.
2935                    ;                                                           2942.
2936                    ;       THIS TEST SETS/RESETS THE CARRY/OVERFLOW FLAGS, THEN 2943.
2937                    ;       EXECUTES A SHL INSTRUCTION. A CHANGE IN THE STATUS  2944.
2938                    ;       OF CARRY/OVERFLOW FLAGS INDICATES FAILURE OF THIS   2945.
2939                    ;       TEST. THE PATTERN BEING SHIFTED ONE BIT TO THE LEFT 2946.
2940                    ;       IS X'0F0F.                                          2947.
2941                    ;                                                           2948.
2942                    ;       ON ERROR:                                           2949.
2943                    ;         AC0: THE STATUS FLAGS AFTER THE SHIFT             2950.
2944                    ;         AC1: THE SHIFTED PATTERN                          2951.
2945                    ;         AC2: THE STATUS FLAGS EXPECTED                    2952.
2946                    ;                                                           2953.
2947 065B 001F A          .WORD   END58-.                                           2954.
2948                TN4B:                                                         2955.
2949                        .LOCAL                                                  2956.
2950 065C 5002 A L158:  LI      AC0,2                                               2957.
2951 065D D073 A        ST      AC0,TVAL2                                           2958.
2952 065E C517 A L258:  LD      AC1,D0F0F                                           2959.
2953 065F C919 A        LD      AC2,D8001                                           2960.
2954 0660 D872 A L358:  ST      AC2,TVAL1                                           2961.
2955 0661 6200 A        PUSH    AC2                                                 2962.
2956 0662 1000 A        PULLF                                                       2963.
2957 0663 5C00 A        NOP                                                         2964.
2958 0664 3E00 A        PFLG    SYNC            ; SCOPE SIGNAL                      2965.
2959 0665 2902 A        SHL     AC1,1,0                                             2966.
2960 0666 5C00 A        NOP                                                         2967.
2961 0667 0C00 A        PUSHF                                                       2968.
2962 0668 6400 A        PULL    AC0                                                 2969.
2963 0669 F072 A        SKNE    AC0,TVAL1                                           2970.
2964 066A 1901 A        JMP     .+2                                                 2971.
2965 066B 1906 A        JMP     E58                                                 2972.
2966 066C A50B A        OR      AC0,D00C0                                           2973.
2967 066D 5E00 A        RCPY    AC0,AC2                                             2974.
2968 066E 7900 A        AISZ    AC1,0                                               2975.
2969 066F 19F0 A        JMP     L358                                                2976.
2970 0670 AC73 A        DSZ     TVAL2                                               2977.
2971 0671 19EC A        JMP     L258                                                2978.
2972 0672 7B00 A E58:   AISZ    AC3,0           ; TIGHT LOOP                        2979.
2973 0673 19E8 A        JMP     L158                                                2980.
2974                    ;                                                           2981.
2975 0674 D468 A        ST      AC1,RESLT                                           2982.
2976 0675 987F A        JMP     @INDMRTN                                            2983.
2977                    ;                                                           2984.
2978 0676 0F0F A D0F0F: .WORD   X'0F0F                                              2985.
2979 0677 2000 A D2000: .WORD   X'2000                                              2986.
2980 0678 00C0 A D00C0: .WORD   X'00C0                                              2987.
2981 0679 8001 A D8001: .WORD   X'8001                                              2988.
2982                END58:                                                        2989.
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2983                        .PAGE                                                   2990.
2984                    ;                                                           2991.
2985                    ;       TEST 4C: TEST CARRY AND OVERFLOW FLAGS              2992.
2986                    ;                                                           2993.
2987                    ;               THIS TEST SETS/RESETS THE CARRY/OVERFLOW FLAGS, THEN  2994.
2988                    ;               EXECUTES A ROL INSTRUCTION. A CHANGE IN THE STATUS    2995.
2989                    ;               OF CARRY/OVERFLOW FLAGS INDICATES FAILURE OF THIS     2996.
2990                    ;               TEST. THE PATTERN BEING ROTATED ONE BIT TO THE LEFT   2997.
2991                    ;               IS X'0F0F.                                  2998.
2992                    ;                                                           2999.
2993                    ;               ON ERROR:                                   3000.
2994                    ;                 AC0: THE STATUS FLAGS AFTER THE ROTATE    3001.
2995                    ;                 AC1: THE ROTATED PATTERN                  3002.
2996                    ;                 AC2: THE STATUS FLAGS EXPECTED            3003.
2997                    ;                                                           3004.
2998 067A 001D A          .WORD   END59-.                                           3005.
2999 067B 5002 A L159:    LI      AC0,2                                             3006.
3000 067C D073 A          ST      AC0,TVAL2                                         3007.
3001 067D C5F8 A L259:    LD      AC1,D0F0F                                         3008.
3002 067E C9FA A          LD      AC2,D8001                                         3009.
3003 067F D872 A L359:    ST      AC2,TVAL1                                         3010.
3004 0680 6200 A          PUSH    AC2                                               3011.
3005 0681 1000 A          PULLF                                                     3012.
3006 0682 5C00 A          NOP                                                       3013.
3007 0683 3E00 A          PFLG    SYNC            ; SCOPE SIGNAL                    3014.
3008 0684 2102 A          ROL     AC1,1,0                                           3015.
3009 0685 5C00 A          NOP                                                       3016.
3010 0686 0C00 A          PUSHF                                                     3017.
3011 0687 6400 A          PULL    AC0                                               3018.
3012 0688 F072 A          SKNE    AC0,TVAL1                                         3019.
3013 0689 1901 A          JMP     .+2                                               3020.
3014 068A 1908 A          JMP     E59                                               3021.
3015 068B A5EC A          OR      AC0,D00C0                                         3022.
3016 068C 5E00 A          RCPY    AC0,AC2                                           3023.
3017 068D F5E8 A          SKNE    AC1,D0F0F                                         3024.
3018 068E 1901 A          JMP     .+2                                               3025.
3019 068F 19EF A          JMP     L359                                              3026.
3020 0690 AC73 A          DSZ     TVAL2                                             3027.
3021 0691 19EB A          JMP     L259                                              3028.
3022 0692 5100 A          LI      AC1,0                                             3029.
3023 0693 7B00 A E59:     AISZ    AC3,0           ; TIGHT LOOP                      3030.
3024 0694 19E6 A          JMP     L159                                              3031.
3025                    ;                                                           3032.
3026 0695 D468 A          ST      AC1,RESLT                                         3033.
3027 0696 987F A          JMP     @INDMRTN                                          3034.
3028                  END59:                                                        3035.
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3029                        .PAGE                                                   3036.
3030                    ;                                                           3037.
3031                    ;   TEST 4D: TEST LOAD INDIRECT AC0 WITH AC3 AS THE INDEX REGISTER  3038.
3032                    ;                                                           3039.
3033                    ;           AFTER AC3 IS LOADED WITH THE INDEX ADDRESS $R4+1,  3040.
3034                    ;           THE CONTENTS OF $R2 IS LOADED INTO AC0 INDIRECTLY  3041.
3035                    ;           THROUGH LOCATION $R4, WHICH IS THE EFFECTIVE      3042.
3036                    ;           ADDRESS OF AC3 INDEX VALUE PLUS A DISPLACEMENT OF  3043.
3037                    ;           MINUS ONE. FAILURE TO LOAD THE CONTENTS OF $R2     3044.
3038                    ;           INDICATES FAILURE OF THIS TEST.                   3045.
3039                    ;                                                           3046.
3040                    ;           ON ERROR:                                       3047.
3041                    ;             AC0: THE EFFECTIVE ADDRESS                    3048.
3042                    ;             AC1: THE INDEX ADDRESS                        3049.
3043                    ;             AC2: THE TEST VALUE                           3050.
3044                TN4D:                                                           3051.
3045 0697 0013 A           .WORD   $R9-.                                           3052.
3046 0698 5EC0 A           RCPY    AC3,AC2                                         3053.
3047 0699 CD0E A $R1:      LD      AC3,$R3                                         3054.
3048 069A 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                  3055.
3049 069B 5CC0 A           RCPY    AC3,AC0                                         3056.
3050 069C A3FF A           LD      0,@-1(AC3)                                      3057.
3051 069D 7A00 A           AISZ    AC2,0           ; TIGHT LOOP                    3058.
3052 069E 19FA A           JMP     $R1                                             3059.
3053                    ;                                                           3060.
3054 069F C908 A           LD      AC2,$R3                                         3061.
3055 06A0 6A00 A           RADD    AC0,AC2                                         3062.
3056 06A1 7A01 A           AISZ    AC2,1                                           3063.
3057 06A2 D868 A           ST      AC2,RESLT                                       3064.
3058 06A3 5E00 A           RCPY    AC0,AC2                                         3065.
3059 06A4 C503 A           LD      AC1,$R3                                         3066.
3060 06A5 C103 A           LD      AC0,$R4                                         3067.
3061 06A6 987F A           JMP     @INDMRTN                                        3068.
3062 06A7 F955 A $R2:      .WORD   -$R4-2                                          3069.
3063 06A8 06AA A $R3:      .WORD   $R4+1                                           3070.
3064 06A9 06A7 A $R4:      .WORD   $R2                                             3071.
3065              $R9:                                                          3072.
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3066                        .PAGE                                                   3073.
3067                    ;                                                           3074.
3068                    ;       TEST 4E: TEST STORE INDIRECT AC0 WITH AC3 AS THE INDEX REGISTER 3075.
3069                    ;                                                           3076.
3070                    ;               AFTER AC3 IS LOADED WITH THE INDEX ADDRESS $S5-1 3077.
3071                    ;               THE CONTENTS OF AC0 IS STORED INTO $S2 INDIRECTLY 3078.
3072                    ;               THROUGH LOCATION $S5, WHICH IS THE EFFECTIVE ADDRESS 3079.
3073                    ;               OF AC3 INDEX VALUE WITH A DISPLACEMENT OF PLUS ONE. 3080.
3074                    ;               FAILURE OF THE STORED VALUE TO EQUAL THE FETCHED 3081.
3075                    ;               VALUE INDICATES FAILURE OF THIS TEST.       3082.
3076                    ;                                                           3083.
3077                    ;               ON ERROR:                                   3084.
3078                    ;                 AC0: THE EFFECTIVE ADDRESS                3085.
3079                    ;                 AC1: THE TEST VALUE                       3086.
3080                    ;                 AC2: THE LOADED RESULTANT                 3087.
3081                TN4E:                                                           3088.
3082 06AA 0015 A               .WORD   $S9-.                                       3089.
3083 06AB 5EC0 A               RCPY    AC3,AC2                                     3090.
3084 06AC C50F A               LD      AC1,$S3                                     3091.
3085 06AD CD0F A               LD      AC3,$S4                                     3092.
3086 06AE D46F A               ST      AC1,TADR                                    3093.
3087 06AF 5CC0 A               RCPY    AC3,AC0                                     3094.
3088 06B0 3E00 A $S1:          PFLG    SYNC            ; SCOPE SIGNAL              3095.
3089 06B1 B301 A               ST      AC0,@1(AC3)                                 3096.
3090 06B2 7A00 A               AISZ    AC2,0           ; TIGHT LOOP                3097.
3091 06B3 19FC A               JMP     $S1                                         3098.
3092                    ;                                                           3099.
3093 06B4 C86F A               LD      AC2,TADR                                    3100.
3094 06B5 6A40 A               RADD    AC1,AC2                                     3101.
3095 06B6 7A01 A               AISZ    AC2,1                                       3102.
3096 06B7 D868 A               ST      AC2,RESLT                                   3103.
3097 06B8 5E00 A               RCPY    AC0,AC2                                     3104.
3098 06B9 C46F A               LD      AC1,TADR                                    3105.
3099 06BA C103 A               LD      AC0,$S5                                     3106.
3100 06BB 987F A               JMP     @INDMRTN                                    3107.
3101 06BC F942 A $S3:          .WORD   -$S5                                        3108.
3102 06BD 06BD A $S4:          .WORD   $S5-1                                       3109.
3103 06BE 006F A $S5:          .WORD   TADR                                        3110.
3104                    $S9:                                                        3111.
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3105                       .PAGE                                                         3112.
3106                 ;                                                                   3113.
3107                 ;     TEST 4F: TEST JMP AND JMP INDIRECT                            3114.
3108                 ;                                                                   3115.
3109                 ;              IN THIS TEST, THE TWO JMP INSTRUCTIONS BOTH HAVE     3116.
3110                 ;              AN EFFECTIVE ADDRESS THAT IS PC RELATIVE PLUS A      3117.
3111                 ;              DISPLACEMENT VALUE OF ZERO.                          3118.
3112                 ;                                                                   3119.
3113                 ;              ON ERROR:                                            3120.
3114                 ;                ACO: ERROR CODE                                    3121.
3115                 ;                                                                   3122.
3116                 ;              ERROR CODE:                                          3123.
3117                 ;                BIT 0 - JMP  .+1 IN ERROR                          3124.
3118                 ;                BIT 2 - JMP @.+1 IN ERROR                          3125.
3119                 TN4F:                                                               3126.
3120 06BF 000F A           .WORD   $T9-.                                                 3127.
3121 06C0 500D A $T1:      LI      ACO,5+8                                               3128.
3122 06C1 1900 A           JMP     .+1                                                   3129.
3123 06C2 78FF A $T2:      AISZ    ACO,-1                                                3130.
3124 06C3 3E00 A           PFLG    SYNC              ; SCOPE SIGNAL                      3131.
3125 06C4 9900 A           JMP     @.+1                                                  3132.
3126 06C5 06C8 A           .WORD   $T4                                                   3133.
3127 06C6 7802 A $T3:      AISZ    ACO,2                                                 3134.
3128 06C7 1901 A           JMP     .+2                                                   3135.
3129 06C8 78FC A $T4:      AISZ    ACO,-4                                                3136.
3130 06C9 7800 A           AISZ    AC3,0             ; TIGHT LOOP                        3137.
3131 06CA 19F5 A           JMP     $T1                                                   3138.
3132                 ;                                                                   3139.
3133 06CB 78F8 A           AISZ    ACO,-8                                                3140.
3134 06CC D068 A           ST      ACO,RESLT                                             3141.
3135 06CD 987F A           JMP     @INDMRTN                                              3142.
3136                 $T9:                                                                3143.
```

```
3137                        .PAGE                                                   3144.
3138                        ;                                                       3145.
3139                        ;       TEST 50: TEST JSR INDIRECT WITH AC2 AS AN INDEX REGISTER   3146.
3140                        ;                                                       3147.
3141                        ;               WITH AC2 LOADED WITH THE INDEX ADDRESS $U4+1, THIS  3148.
3142                        ;               TEST EXECUTES A JSR INDIRECT THROUGH THE INDIRECT   3149.
3143                        ;               LOCATION $U4, WHICH IS THE EFFECTIVE ADDRESS OF AC2 3150.
3144                        ;               INDEX VALUE PLUS A DISPLACEMENT OF MINUS ONE. FAILURE  3151.
3145                        ;               TO JSR INDIRECT INDICATES A FAILURE OF THIS TEST.   3152.
3146                        ;                                                       3153.
3147                        ;               ON ERROR:                               3154.
3148                        ;                 AC0: -1, INDICATING AN ERROR          3155.
3149                        ;                 AC1: THE EFFECTIVE INDIRECT ADDRESS   3156.
3150                        ;                 AC2: THE RETURN ADDRESS FROM THE STACK  3157.
3151                    TN50:                                                       3158.
3152 06CE 000D A           .WORD   $U9-.                                           3159.
3153 06CF C90A A           LD      AC2,$U5                                         3160.
3154 06D0 3E00 A $U1:      PFLG    SYNC            ; SCOPE SIGNAL                  3161.
3155 06D1 9AFF A           JMP     @-1(AC2)                                        3162.
3156 06D2 50FF A $U2:      LI      AC0,-1                                          3163.
3157 06D3 7B00 A $U3:      AISZ    AC3,0           ; TIGHT LOOP                    3164.
3158 06D4 19FB A           JMP     $U1                                             3165.
3159                        ;                                                       3166.
3160 06D5 7800 A           AISZ    AC0,0                                           3167.
3161 06D6 D068 A           ST      AC0,RESLT                                       3168.
3162 06D7 C6FF A           LD      AC1,-1(AC2)                                     3169.
3163 06D8 987F A           JMP     @INDMRTN                                        3170.
3164 06D9 06D3 A $U4:      .WORD   $U3                                             3171.
3165 06DA 06DA A $U5:      .WORD   $U4+1                                           3172.
3166                    $U9:                                                        3173.
```

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                             .PAGE
                   ;
                   ;         TEST 51: TEST THE SETTING OF ALL THE FLAGS FROM THE STACK
                   ;                  WITH MAJOR EMPHASIS ON THE CARRY AND OVERFLOW FLAGS
                   ;
                   ;                  INITIALLY SET, THE FLAGS ARE PULLED INTO AC2 AND
                   ;                  COMPARED AGAINST THE EXPECTED VALUE AFTER A DELAY CON-
                   ;                  TROLLED BY THE CONSTANT $W8. DURING THE DELAY, BOTH
                   ;                  THE CARRY AND OVERFLOW FLAGS ARE REPEATEDLY TESTED FOR
                   ;                  THE SET CONDITION. THIS TEST IS RE-EXECUTED THE NUMBER
                   ;                  OF TIMES INDICATED BY THE CONSTANT $W75, AND PRIOR TO
                   ;                  EACH EXECUTION, THE FLAGS ARE CLEARED. FAILURE OF
                   ;                  EITHER SET OR RESET ANY FLAG INDICATES A FAILURE OF
                   ;                  THIS TEST.
                   ;
                   ;                  ON ERROR:
                   ;                    AC0: THE CONTENTS OF THE FLAGS
                   ;                    AC1: THE NUMBER OF MAJOR LOOPS EXECUTED
                   ;                    AC2: THE NUMBER OF MINOR LOOPS EXECUTED
                   TN51:
06DB 0035 A                  .WORD   $W9-.
06DC C130 A                  LD      AC0,$W75        ; INITIALIZE MAJOR LOOP COUNT
06DD D070 A                  ST      AC0,TSTR
06DE 5100 A                  LI      AC1,0
06DF C12C A                  LD      AC0,$W6
06E0 C92D A        $W1:      LD      AC2,$W8         ; INITIALIZE MINOR LOOP COUNT
06E1 D86F A                  ST      AC2,TADR
06E2 6600 A                  PULL    AC2             ; EMPTY 3 LOCS IN STACK
06E3 6600 A                  PULL    AC2
06E4 6600 A                  PULL    AC2
06E5 6000 A                  PUSH    AC0
06E6 3E00 A                  PFLG    SYNC            ; SCOPE SIGNAL
06E7 1000 A                  PULLF                   ; SET FLAGS
06E8 4C01 A        $W2:      BOC     OV,.+2
06E9 1909 A                  JMP     $W3             ; ERROR - OVFL NOT SET
06EA 4A01 A                  BOC     CY,.+2
06EB 1907 A                  JMP     $W3             ; ERROR - CARRY NOT SET
06EC AC6F A                  DSZ     TADR
06ED 19FA A                  JMP     $W2
06EE 6100 A                  PUSH    AC1             ; PUSH ZEROS ONTO THE STACK
06EF 0C00 A                  PUSHF
06F0 6600 A                  PULL    AC2
06F1 F91A A                  SKNE    AC2,$W6
06F2 190D A                  JMP     $W5             ; FLAGS SET PROPERLY
06F3 0C00 A        $W3:      PUSHF
06F4 6400 A                  PULL    AC0
06F5 D068 A        $W4:      ST      AC0,RESLT
06F6 C116 A                  LD      AC0,$W75
06F7 3780 A                  SFLG    CARRY
06F8 9070 A                  SUBB    AC0,TSTR
06F9 5D00 A                  RCPY    AC0,AC1
06FA C113 A                  LD      AC0,$W8
```

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3219 06F8 3780 A         SFLG    CARRY                                    3226.
3220 06FC 906F A         SUBB    AC0,TADR                                 3227.
3221 06FD 5E00 A         RCPY    AC0,AC2                                  3228.
3222 06FE C068 A         LD      AC0,RESLT                                3229.
3223 06FF 987F A         JMP     @INDMRTN                                 3230.
3224                     ;                                                3231.
3225 0700 6100 A $W5:    PUSH    AC1             ; CLEAR FLAGS            3232.
3226 0701 1000 A         PULLF                                            3233.
3227 0702 6000 A         PUSH    AC0                                      3234.
3228 0703 0C00 A         PUSHF                                            3235.
3229 0704 6600 A         PULL    AC2                                      3236.
3230 0705 F909 A         SKNE    AC2,$W85                                 3237.
3231 0706 1901 A         JMP     .+2                                      3238.
3232 0707 19EB A         JMP     $W3             ; ERROR - FLAGS NOT CLEARED 3239.
3233 0708 AC70 A         DSZ     TSTR                                     3240.
3234 0709 19D6 A         JMP     $W1                                      3241.
3235 070A 5000 A         LI      AC0,0           ; TEST RESULTS OK        3242.
3236 070B 19E9 A         JMP     $W4                                      3243.
3237 070C F9FF A $W6:    .WORD   X'F9FF          ; ACTIVE BIT MASK        3244.
3238 070D 000F A $W75:   .WORD   15              ; MAJOR LOOP LIMIT       3245.
3239 070E 03E8 A $W8:    .WORD   1000            ; MINOR LOOP LIMIT       3246.
3240 070F 8001 A $W85:   .WORD   X'8001                                   3247.
3241             $W9:                                                     3248.
```

```
3242                         .PAGE                                                        3249.
3243                 ;                                                                    3250.
3244                 ;       TEST 52: TEST THE SETTING OF ALL THE FLAGS FROM THE STACK    3251.
3245                 ;                                                                    3252.
3246                 ;                INITIALLY SET, THE FLAGS ARE PULLED INTO AC2 AND    3253.
3247                 ;                COMPARED AGAINST THE EXPECTED VALUE AFTER A DELAY CON- 3254.
3248                 ;                TROLLED BY THE CONSTANT $X86. THIS TEST IS RE-EXECUTED 3255.
3249                 ;                THE NUMBER OF TIMES INDICATED BY THE CONSTANT $X83,  3256.
3250                 ;                AND PRIOR TO EACH EXECUTION, THE FLAGS ARE CLEARED.  3257.
3251                 ;                FAILURE OF EITHER TO SET OR RESET ANY FLAG INDICATES 3258.
3252                 ;                A FAILURE OF THIS TEST.                              3259.
3253                 ;                                                                    3260.
3254                 ;                ON ERROR:                                           3261.
3255                 ;                  AC0: THE CONTENTS OF THE FLAGS                    3262.
3256                 ;                  AC1: THE NUMBER OF MAJOR LOOPS EXECUTED           3263.
3257                 ;                  AC2: THE NUMBER OF MINOR LOOPS EXECUTED           3264.
3258                 TN52:                                                                3265.
3259 0710 0030 A             .WORD    $X9-.                                               3266.
3260 0711 C12C A             LD       AC0,$X83          ; INITIALIZE MAJOR LOOP COUNT     3267.
3261 0712 D070 A             ST       AC0,TSTR                                            3268.
3262 0713 5100 A             LI       AC1,0                                               3269.
3263 0714 C128 A             LD       AC0,$X6                                             3270.
3264 0715 C929 A $X1:        LD       AC2,$X86          ; INITIALIZE MINOR LOOP COUNT     3271.
3265 0716 D86F A             ST       AC2,TADR                                            3272.
3266 0717 6600 A             PULL     AC2               ; EMPTY 3 LOCS IN STACK           3273.
3267 0718 6600 A             PULL     AC2                                                 3274.
3268 0719 6600 A             PULL     AC2                                                 3275.
3269 071A 6000 A             PUSH     AC0                                                 3276.
3270 071B 3E00 A             PFLG     SYNC              ; SCOPE SIGNAL                    3277.
3271 071C 1000 A             PULLF                      ; SET FLAGS                       3278.
3272 071D AC6F A $X2:        DSZ      TADR                                                3279.
3273 071E 19FE A             JMP      $X2                                                 3280.
3274 071F 6100 A             PUSH     AC1               ; PUSH ZEROS ONTO THE STACK       3281.
3275 0720 0C00 A             PUSHF                                                        3282.
3276 0721 6600 A             PULL     AC2                                                 3283.
3277 0722 F91A A             SKNE     AC2,$X6                                             3284.
3278 0723 190D A             JMP      $X5               ; FLAGS SET PROPERLY              3285.
3279 0724 0C00 A $X3:        PUSHF                                                        3286.
3280 0725 6400 A             PULL     AC0                                                 3287.
3281 0726 D068 A $X4:        ST       AC0,RESLT                                           3288.
3282 0727 C116 A             LD       AC0,$X83                                            3289.
3283 0728 3780 A             SFLG     CARRY                                               3290.
3284 0729 9070 A             SUBB     AC0,TSTR                                            3291.
3285 072A 5D00 A             RCPY     AC0,AC1                                             3292.
3286 072B C113 A             LD       AC0,$X86                                            3293.
3287 072C 3780 A             SFLG     CARRY                                               3294.
3288 072D 906F A             SUBB     AC0,TADR                                            3295.
3289 072E 5E00 A             RCPY     AC0,AC2                                             3296.
3290 072F C068 A             LD       AC0,RESLT                                           3297.
3291 0730 987F A             JMP      @INDMRTN                                            3298.
3292 0731 6100 A $X5:        PUSH     AC1               ; CLEAR FLAGS                     3299.
3293 0732 1000 A             PULLF                                                        3300.
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3294 0733 6000 A          PUSH    AC0                                    3301.
3295 0734 0C00 A          PUSHF                                          3302.
3296 0735 6600 A          PULL    AC2                                    3303.
3297 0736 F9D8 A          SKNE    AC2,$W85                               3304.
3298 0737 1901 A          JMP     .+2                                    3305.
3299 0738 19EB A          JMP     $X3             ; ERROR - FLAGS NOT CLEARED 3306.
3300 0739 AC70 A          DSZ     TSTR                                   3307.
3301 073A 19DA A          JMP     $X1                                    3308.
3302 073B 5000 A          LI      AC0,0           ; TEST RESULTS OK      3309.
3303 073C 19E9 A          JMP     $X4                                    3310.
3304                 ;                                                   3311.
3305 073D F9FF A $X6:     .WORD   X'F9FF          ; ACTIVE BIT MASK      3312.
3306 073E 000F A $X83:    .WORD   15              ; MAJOR LOOP LIMIT     3313.
3307 073F 03E8 A $X86:    .WORD   1000            ; MINOR LOOP LIMIT     3314.
3308              $X9:                                                  3315.
```

```
3309                        .PAGE                                                    3316.
3310                    ;                                                            3317.
3311                    ;   TEST 53: TEST LSEX CAPABILITY OF EXTENDING BIT 7 CORRECTLY 3318.
3312                    ;                                                            3319.
3313                    ;           AC0 IS FIRST LOADED WITH THE TEST VALUE X'00FF USING 3320.
3314                    ;           LSEX, AND THE RESULT COMPARED WITH THE EXPECTED RESULT 3321.
3315                    ;           X'FFFF. AC0 IS THEN LOADED WITH THE TEST VALUE X'007F, 3322.
3316                    ;           AND THE RESULT COMPARED WITH THE EXPECTED RESULT     3323.
3317                    ;           X'007F. FAILURE OF EITHER PART TO YIELD THE EXPECTED 3324.
3318                    ;           RESULT INDICATES FAILURE OF THIS TEST.               3325.
3319                    ;                                                            3326.
3320                    ;           ON ERROR:                                        3327.
3321                    ;             AC0: RESULTANT TEST VALUE                      3328.
3322                    ;             AC1: ERROR CODE                                3329.
3323                    ;                                                            3330.
3324                    ;           ERROR CODE:                                      3331.
3325                    ;             BIT 0 - NEG. SIGN EXT. FAILED                  3332.
3326                    ;             BIT 1 - POS. SIGN EXT. FAILED                  3333.
3327                        .LOCAL                                                   3334.
3328                TN53:                                                            3335.
3329 0740 0012 A            .WORD   $A9-.                                            3336.
3330 0741 5100 A $A1:       LI      AC1,0                                            3337.
3331 0742 3E00 A            PFLG    SYNC            ; SCOPE SIGNAL                   3338.
3332 0743 BD0B A            LSEX    AC0,$A2                                          3339.
3333 0744 F10B A            SKNE    AC0,$A3                                          3340.
3334 0745 1901 A            JMP     .+2                                              3341.
3335 0746 7901 A            AISZ    AC1,1                                            3342.
3336 0747 BD09 A            LSEX    AC0,$A4                                          3343.
3337 0748 F108 A            SKNE    AC0,$A4                                          3344.
3338 0749 1901 A            JMP     .+2                                              3345.
3339 074A 7902 A            AISZ    AC1,2                                            3346.
3340 074B 7800 A            AISZ    AC3,0           ; TIGHT LOOP                     3347.
3341 074C 19F4 A            JMP     $A1                                              3348.
3342                    ;                                                            3349.
3343 074D D468 A            ST      AC1,RESLT                                        3350.
3344 074E 987F A            JMP     @INDMRTN                                         3351.
3345 074F 00FF A $A2:       .WORD   X'FF                                             3352.
3346 0750 FFFF A $A3:       .WORD   X'FFFF                                           3353.
3347 0751 007F A $A4:       .WORD   X'7F                                             3354.
3348                $A9:                                                             3355.
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3349                        .PAGE                                                    3356.
3350                    ;                                                            3357.
3351                    ;       TEST 54: TEST COPY FLAGS TO REGISTER INSTRUCTION     3358.
3352                    ;                                                            3359.
3353                    ;               ALL OF THE FLAGS (EXCEPT BYTE) ARE INITIALLY SET USING 3360.
3354                    ;               THE PULLF INSTRUCTION. THE FLAGS ARE THEN COPIED INTO  3361.
3355                    ;               ACO USING CFR, AND THE RESULTS COMPARED WITH THE       3362.
3356                    ;               ORIGINAL VALUE. NEXT ALL OF THE FLAGS ARE CLEARED      3363.
3357                    ;               USING THE PULLF INSTRUCTION. THEN THE FLAGS ARE AGAIN  3364.
3358                    ;               COPIED INTO ACO AND THE RESULT COMPARED WITH THE       3365.
3359                    ;               ORIGINAL VALUE. FAILURE OF EITHER PART TO YIELD THE    3366.
3360                    ;               EXPECTED RESULTS INDICATES FAILURE OF THIS TEST.       3367.
3361                    ;               THE INITIAL CONTENTS OF THE FLAG WORD ARE SAVED, AND   3368.
3362                    ;               RESTORED AT THE END OF THE TEST.                       3369.
3363                    ;                                                            3370.
3364                    ;               ON ERROR:                                    3371.
3365                    ;                 ACO: RESULTANT VALUE OF SECOND CFR         3372.
3366                    ;                 AC1: ERROR CODE                            3373.
3367                    ;                 AC2: RESULTANT VALUE OF FIRST CFR          3374.
3368                    ;                                                            3375.
3369                    ;               ERROR CODE:                                  3376.
3370                    ;                 BIT 0 - FIRST TEST FAILED                  3377.
3371                    ;                 BIT 1 - SECOND TEST FAILED                 3378.
3372                    TN54:                                                        3379.
3373 0752 001A A               .WORD   $B9-.                                        3380.
3374 0753 0C00 A               PUSHF                                                3381.
3375 0754 3E00 A $B1:          PFLG    SYNC            ; SCOPE SIGNAL               3382.
3376 0755 C114 A               LD      ACO,$B2                                      3383.
3377 0756 6000 A               PUSH    ACO                                          3384.
3378 0757 1000 A               PULLF                                                3385.
3379 0758 5100 A               LI      AC1,0                                        3386.
3380 0759 0400 A               CFR     ACO                                          3387.
3381 075A F10F A               SKNE    ACO,$B2                                      3388.
3382 075B 1901 A               JMP     .+2                                          3389.
3383 075C 7901 A               AISZ    AC1,1                                        3390.
3384 075D 7B00 A               AISZ    AC3,0           ; TIGHT LOOP                 3391.
3385 075E 19F5 A               JMP     $B1                                          3392.
3386                    ;                                                           3393.
3387 075F C10B A               LD      ACO,$B3                                      3394.
3388 0760 6000 A               PUSH    ACO                                          3395.
3389 0761 1000 A               PULLF                                                3396.
3390 0762 0400 A               CFR     ACO                                          3397.
3391 0763 5E00 A               RCPY    ACO,AC2                                      3398.
3392 0764 F106 A               SKNE    ACO,$B3                                      3399.
3393 0765 1901 A               JMP     .+2                                          3400.
3394 0766 7902 A               AISZ    AC1,2                                        3401.
3395 0767 D468 A               ST      AC1,RESLT                                    3402.
3396 0768 1000 A               PULLF                                                3403.
3397 0769 987F A               JMP     @INDMRTN                                     3404.
3398 076A F9FF A $B2:          .WORD   X'F9FF                                       3405.
3399 076B 8001 A $B3:          .WORD   X'8001                                       3406.
3400                    $B9:                                                        3407.
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3401                        .PAGE                                                    3408.
3402                    ;                                                            3409.
3403                    ;   TEST 55: TEST COPY REGISTER TC FLAGS INSTRUCTION        3410.
3404                    ;                                                            3411.
3405                    ;       THE CRF INSTRUCTION IS USED TO SET ALL OF THE RALU   3412.
3406                    ;       FLAGS (EXCEPT BYTE). THE FLAGS ARE THEN PUSHED ONTO  3413.
3407                    ;       THE STACK, PULLED INTO AC0, AND COMPARED WITH THE    3414.
3408                    ;       EXPECTED VALUE. NEXT THE FLAGS ARE ALL CLEARED USING 3415.
3409                    ;       THE CRF INSTRUCTION. THE FLAGS ARE AGAIN PUSHED ONTO 3416.
3410                    ;       THE STACK, PULLED INTO AC0, AND COMPARED WITH THE    3417.
3411                    ;       EXPECTED VALUE. FAILURE OF CRF TO EITHER SET OR RESET 3418.
3412                    ;       ANY FLAG INDICATES FAILURE OF THIS TEST. THE INITIAL 3419.
3413                    ;       CONTENTS OF THE FLAG WORD ARE SAVED, AND RESTORED AT 3420.
3414                    ;       THE END OF THE TEST.                                 3421.
3415                    ;                                                            3422.
3416                    ;       ON ERROR:                                            3423.
3417                    ;         AC0: RESULTANT VALUE OF SECOND CRF                 3424.
3418                    ;         AC1: ERROR CODE                                    3425.
3419                    ;         AC2: RESULTANT VALUE OF FIRST CRF                  3426.
3420                    ;                                                            3427.
3421                    ;       ERROR CODE:                                          3428.
3422                    ;         BIT 0 - FIRST TEST FAILED                          3429.
3423                    ;         BIT 1 - SECOND TEST FAILED                         3430.
3424                TN55:                                                            3431.
3425 076C 001A A            .WORD   $C9-.                                            3432.
3426 076D 0C00 A            PUSHF                                                    3433.
3427 076E 3E00 A $C1:       PFLG    SYNC            ; SCOPE SIGNAL                   3434.
3428 076F C114 A            LD      AC0,$C2                                          3435.
3429 0770 0800 A            CRF     AC0                                              3436.
3430 0771 5100 A            LI      AC1,0                                            3437.
3431 0772 0C00 A            PUSHF                                                    3438.
3432 0773 6400 A            PULL    AC0                                              3439.
3433 0774 5E00 A            RCPY    AC0,AC2                                          3440.
3434 0775 F10E A            SKNE    AC0,$C2                                          3441.
3435 0776 1901 A            JMP     .+2                                              3442.
3436 0777 7901 A            AISZ    AC1,1                                            3443.
3437 0778 7800 A            AISZ    AC3,0           ; TIGHT LOOP                     3444.
3438 0779 19F4 A            JMP     $C1                                              3445.
3439                    ;                                                            3446.
3440 077A C10A A            LD      AC0,$C3                                          3447.
3441 077B 0800 A            CRF     AC0                                              3448.
3442 077C 0C00 A            PUSHF                                                    3449.
3443 077D 6400 A            PULL    AC0                                              3450.
3444 077E F106 A            SKNE    AC0,$C3                                          3451.
3445 077F 1901 A            JMP     .+2                                              3452.
3446 0780 7902 A            AISZ    AC1,2                                            3453.
3447 0781 D468 A            ST      AC1,RESLT                                        3454.
3448 0782 1000 A            PULLF                                                    3455.
3449 0783 987F A            JMP     @INDMRTN                                         3456.
3450 0784 F9FF A $C2:       .WORD   X'F9FF                                           3457.
3451 0785 8001 A $C3:       .WORD   X'8001                                           3458.
3452                        $C9:                                                     3459.
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 3453                      .PAGE                                                                3460.
 3454              ;                                                                            3461.
 3455              ;       TEST 56: TEST RADC CAPABILITY OF USING AND RESETTING CARRY FLAG     3462.
 3456              ;                                                                            3463.
 3457              ;                WITH THE CARRY FLAG INITIALLY SET, ACO IS LCADED WITH      3464.
 3458              ;                THE TEST VALUE X'000F, AND THEN ADDED WITH ZERO.           3465.
 3459              ;                FAILURE OF RADC TO RESET THE CARRY FLAG, OR OF THE         3466.
 3460              ;                RESULT TO MATCH THE EXPECTED RESULT, INDICATES             3467.
 3461              ;                FAILURE CF THIS TEST.                                      3468.
 3462              ;                                                                            3469.
 3463              ;                CN ERROR:                                                  3470.
 3464              ;                   ACO: RESULTANT TEST VALUE                               3471.
 3465              ;                   AC1: ERROR CODE                                         3472.
 3466              ;                                                                            3473.
 3467              ;                ERROR CCDE:                                                3474.
 3468              ;                   BIT 0 - ADDITION RESULTS BAD                            3475.
 3469              ;                   BIT 1 - CARRY NOT RESET                                 3476.
 3470              TN56:                                                                        3477.
 3471 0786 0013 A          .WORD   $D9-.                                                        3478.
 3472 0787 5100 A $D1:     LI      AC1,0                                                        3479.
 3473 0788 3E00 A          PFLG    SYNC              ; SCOPE SIGNAL                             3480.
 3474 0789 C10D A          LD      ACO,$D2                                                      3481.
 3475 078A 3780 A          SFLG    CARRY                                                        3482.
 3476 078B 7440 A          RADC    AC1,ACO                                                      3483.
 3477 078C F10B A          SKNE    ACO,$D3                                                      3484.
 3478 078D 1901 A          JMP     .+2                                                          3485.
 3479 078E 7901 A          AISZ    AC1,1                                                        3486.
 3480 078F 4A01 A          BOC     CY,.+2                                                       3487.
 3481 0790 1902 A          JMP     .+3                                                          3488.
 3482 0791 3700 A          PFLG    CARRY                                                        3489.
 3483 0792 7902 A          AISZ    AC1,2                                                        3490.
 3484 0793 7B00 A          AISZ    AC3,0             ; TIGHT LOOP                               3491.
 3485 0794 19F2 A          JMP     $D1                                                          3492.
 3486              ;                                                                            3493.
 3487 0795 D468 A          ST      AC1,RESLT                                                    3494.
 3488 0796 987F A          JMP     @INDMRTN                                                     3495.
 3489 0797 000F A $D2:     .WORD   X'000F                                                       3496.
 3490 0798 0010 A $D3:     .WORD   X'0010                                                       3497.
 3491              $D9:                                                                         3498.
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3492                        .PAGE                                                   3499.
3493                    ;                                                           3500.
3494                    ;       TEST 57: TEST DECA CAPABILITY OF ADDING MODULO 10.  3501.
3495                    ;                                                           3502.
3496                    ;               AC0 IS INITIALLY LOADED WITH THE TEST VALUE X'0555. 3503.
3497                    ;               AC0 IS THEN ADDED TO X'0679 USING THE DECA INSTRUCTION. 3504.
3498                    ;               FAILURE TO YIELD THE EXPECTED RESULT X'1234 INDICATES 3505.
3499                    ;               FAILURE OF THIS TEST.  DECA IS THEN TESTED  3506.
3500                    ;               WITH VALUES THAT DO NOT PRODUCE A CARRY OUT 3507.
3501                    ;               IN EACH BIT POSITION.                       3508.
3502                    ;                                                           3509.
3503                    ;               ON ERROR:                                   3510.
3504                    ;                 AC0: THE RESULTANT TEST VALUE             3511.
3505                    ;                 AC1: ERROR CODE                           3512.
3506                    ;               ERROR CODE:                                 3513.
3507                    ;                 BIT 0 - PART 1 FAILED                     3514.
3508                    ;                 BIT 1 - PART 2 FAILED                     3515.
3509                TN57:                                                           3516.
3510 0799 0017 A           .WORD   $E9-.                                            3517.
3511 079A 3E00 A $E1:      PFLG    SYNC            ; SCOPE SIGNAL                   3518.
3512 079B 5100 A           LI      AC1,0                                            3519.
3513 079C C10D A           LD      AC0,$E2                                          3520.
3514 079D 890D A           DECA    AC0,$E3                                          3521.
3515 079E F10D A           SKNE    AC0,$E4                                          3522.
3516 079F 1901 A           JMP     .+2                                              3523.
3517 07A0 5101 A           LI      AC1,1                                            3524.
3518 07A1 C10B A           LD      AC0,$E5                                          3525.
3519 07A2 890B A           DECA    AC0,$E6                                          3526.
3520 07A3 F10B A           SKNE    AC0,$E7                                          3527.
3521 07A4 1901 A           JMP     .+2                                              3528.
3522 07A5 7902 A           AISZ    AC1,2                                            3529.
3523 07A6 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                     3530.
3524 07A7 19F2 A           JMP     $E1                                              3531.
3525                    ;                                                           3532.
3526 07A8 D468 A           ST      AC1,RESLT                                        3533.
3527 07A9 987F A           JMP     @INDMRTN                                         3534.
3528 07AA 0555 A $E2:      .WORD   X'0555                                           3535.
3529 07AB 0679 A $E3:      .WORD   X'0679                                           3536.
3530 07AC 1234 A $E4:      .WORD   X'1234                                           3537.
3531 07AD 3210 A $E5:      .WORD   X'3210                                           3538.
3532 07AE 6593 A $E6:      .WORD   X'6593                                           3539.
3533 07AF 9803 A $E7:      .WORD   X'9803                                           3540.
3534                       $E9:                                                     3541.
```

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3535                        .PAGE                                                   3542.
3536                    ;                                                           3543.
3537                    ;   TEST 58: TEST DECA CAPABILITY OF USING AND RESETTING THE 3544.
3538                    ;         CARRY FLAG                                        3545.
3539                    ;                                                           3546.
3540                    ;         AC0 IS INITIALLY LOADED WITH THE TEST VALUE X'0999. 3547.
3541                    ;         THE CARRY FLAG IS THEN SET, AND AC0 IS ADDED TO THE 3548.
3542                    ;         VALUE. THE CARRY FLAG IS THEN CHECKED, AND THE RESULT 3549.
3543                    ;         OF THE ADDITION COMPARED WITH THE EXPECTED RESULT. 3550.
3544                    ;         FAILURE OF DECA TO RESET THE CARRY FLAG, OR OF THE 3551.
3545                    ;         RESULT TO MATCH THE EXPECTED RESULT INDICATES     3552.
3546                    ;         FAILURE OF THIS TEST.                             3553.
3547                    ;                                                           3554.
3548                    ;         ON ERROR:                                         3555.
3549                    ;           AC0: X'1000, RESULTANT TEST VALUE               3556.
3550                    ;           AC1: ERROR CODE                                 3557.
3551                    ;                                                           3558.
3552                    ;         ERROR CODE:                                       3559.
3553                    ;           BIT 0 - ADDITION RESULTS BAD                    3560.
3554                    ;           BIT 1 - CARRY FLAG NOT RESET                    3561.
3555                TN58:                                                           3562.
3556 07B0 0014 A           .WORD   $F9-.                                           3563.
3557 07B1 3E00 A $F1:      PFLG    SYNC            ; SCOPE SIGNAL                  3564.
3558 07B2 5100 A           LI      AC1,0                                           3565.
3559 07B3 C10D A           LD      AC0,$F2                                         3566.
3560 07B4 3780 A           SFLG    CARRY                                           3567.
3561 07B5 890C A           DECA    AC0,$F3                                         3568.
3562 07B6 F10C A           SKNE    AC0,$F4                                         3569.
3563 07B7 1901 A           JMP     .+2                                             3570.
3564 07B8 7901 A           AISZ    AC1,1                                           3571.
3565 07B9 4A01 A           BOC     CY,.+2                                          3572.
3566 07BA 1902 A           JMP     .+3                                             3573.
3567 07BB 3700 A           PFLG    CARRY                                           3574.
3568 07BC 7902 A           AISZ    AC1,2                                           3575.
3569 07BD 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                    3576.
3570 07BE 19F2 A           JMP     $F1                                             3577.
3571                    ;                                                          3578.
3572 07BF D468 A           ST      AC1,RESLT                                       3579.
3573 07C0 987F A           JMP     @INDMRTN                                        3580.
3574 07C1 0999 A $F2:      .WORD   X'0999                                          3581.
3575 07C2 0000 A $F3:      .WORD   X'0000                                          3582.
3576 07C3 1000 A $F4:      .WORD   X'1000                                          3583.
3577                       $F9:                                                    3584.
```

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3578                    .PAGE                                                   3585.
3579                ;                                                           3586.
3580                ;       TEST 59: TEST RADC CAPABILITY OF SETTING BOTH CARRY AND  3587.
3581                ;                OVERFLOW FLAGS                             3588.
3582                ;                                                           3589.
3583                ;                ACO IS INITIALLY LOADED WITH THE X'8000, AND BOTH  3590.
3584                ;                CARRY AND OVLFW FLAGS RESET.  ACO IS ADDED TO ITSELF  3591.
3585                ;                USING THE RADC INSTRUCTION. FAILURE OF RADC TO SET  3592.
3586                ;                BOTH THE CARRY FLAG AND THE OVERFLOW FLAG, OR FAILURE  3593.
3587                ;                OF ACO TO YIELD A RESULT OF ZERO, INDICATES FAILURE  3594.
3588                ;                OF THIS TEST.                              3595.
3589                ;                                                           3596.
3590                ;                ON ERROR:                                  3597.
3591                ;                  ACO: 0, THE RESULTANT TEST VALUE         3598.
3592                ;                  AC1: ERROR CODE                          3599.
3593                ;                                                           3600.
3594                ;                ERROR CODE:                                3601.
3595                ;                  BIT 0 - ADDITION RESULTS BAD             3602.
3596                ;                  BIT 1 - CARRY FLAG NOT SET               3603.
3597                ;                  BIT 2 - OVERFLOW FLAG NOT SET            3604.
3598            TN59:                                                           3605.
3599 07C4 0012 A       .WORD   $G9-.                                            3606.
3600 07C5 3E00 A $G1:  PFLG    SYNC            ; SCOPE SIGNAL                   3607.
3601 07C6 5100 A       LI      AC1,0                                            3608.
3602 07C7 C10D A       LD      AC0,$G2                                          3609.
3603 07C8 3700 A       PFLG    CARRY                                            3610.
3604 07C9 3600 A       PFLG    OVFLW                                            3611.
3605 07CA 7400 A       RADC    AC0,AC0                                          3612.
3606 07CB 4A01 A       BOC     CY,.+2                                           3613.
3607 07CC 7902 A       AISZ    AC1,2                                            3614.
3608 07CD 4C01 A       BOC     OV,.+2                                           3615.
3609 07CE 7904 A       AISZ    AC1,4                                            3616.
3610 07CF 7800 A       AISZ    AC3,0           ; TIGHT LOOP                     3617.
3611 07D0 19F4 A       JMP     $G1                                              3618.
3612                ;                                                           3619.
3613 07D1 7800 A       AISZ    AC0,0                                            3620.
3614 07D2 7901 A       AISZ    AC1,1                                            3621.
3615 07D3 D468 A       ST      AC1,RESLT                                        3622.
3616 07D4 987F A       JMP     @INDMRTN                                         3623.
3617 07D5 8000 A $G2:  .WORD   X'8000                                           3624.
3618            $G9:                                                            3625.
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3619                        .PAGE                                                    3626.
3620                    ;                                                            3627.
3621                    ;       TEST 5A: TEST DECA CAPABILITY OF SETTING BOTH CARRY AND  3628.
3622                    ;               OVERFLOW FLAGS                               3629.
3623                    ;                                                            3630.
3624                    ;               AC0 IS INITIALLY LOADED WITH THE X'8000, AND BOTH 3631.
3625                    ;               CARRY AND OVFLW FLAGS RESET. THEN AC0 IS ADDED TO $H2, 3632.
3626                    ;               WHICH CONTAINS THE VALUE X'8000, USING THE DECA  3633.
3627                    ;               INSTRUCTION. FAILURE OF DECA TO SET BOTH THE CARRY 3634.
3628                    ;               AND THE OVERFLOW FLAGS, OR FAILURE OF OF AC0 TO YIELD 3635.
3629                    ;               THE CORRECT RESULT, INDICATES FAILURE OF THIS TEST. 3636.
3630                    ;                                                            3637.
3631                    ;               ON ERROR:                                    3638.
3632                    ;                 AC0: X'6000, THE RESULTANT TEST VALUE      3639.
3633                    ;                 AC1: ERROR CODE                            3640.
3634                    ;                                                            3641.
3635                    ;               ERROR CODE:                                  3642.
3636                    ;                 BIT 0 - ADDITION RESULTS BAD               3643.
3637                    ;                 BIT 1 - CARRY FLAG NOT SET                 3644.
3638                    ;                 BIT 2 - OVERFLOW FLAG NOT SET              3645.
3639                TN5A:                                                            3646.
3640 07D6 0014 A           .WORD   $H9-.                                             3647.
3641 07D7 3E00 A $H1:      PFLG    SYNC            ; SCOPE SIGNAL                    3648.
3642 07D8 5100 A           LI      AC1,0                                             3649.
3643 07D9 C10E A           LD      AC0,$H2                                           3650.
3644 07DA 3700 A           PFLG    CARRY                                             3651.
3645 07DB 3600 A           PFLG    CVFLW                                             3652.
3646 07DC 890B A           DECA    AC0,$H2                                           3653.
3647 07DD 4A01 A           BOC     CY,.+2                                            3654.
3648 07DE 7902 A           AISZ    AC1,2                                             3655.
3649 07DF 4C01 A           BOC     OV,.+2                                            3656.
3650 07E0 7904 A           AISZ    AC1,4                                             3657.
3651 07E1 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                      3658.
3652 07E2 19F4 A           JMP     $H1                                               3659.
3653                    ;                                                           3660.
3654 07E3 F105 A           SKNE    AC0,$H3                                           3661.
3655 07E4 1901 A           JMP     .+2                                               3662.
3656 07E5 7901 A           AISZ    AC1,1                                             3663.
3657 07E6 D468 A           ST      AC1,RESLT                                         3664.
3658 07E7 987F A           JMP     @INDMRTN                                          3665.
3659 07E8 8000 A $H2:      .WORD   X'8000                                            3666.
3660 07E9 6000 A $H3:      .WORD   X'6000                                            3667.
3661              $H9:                                                             3668.
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3662                        .PAGE                                                   3669.
3663                    ;                                                           3670.
3664                    ;       TEST 5B: TEST THE DATA TRANSFER OF THE MAIN MEMORY INTERFACE    3671.
3665                    ;                                                           3672.
3666                    ;               A LOOP IS SET UP IN WHICH AC1 IS INCREMENTED THROUGH    3673.
3667                    ;               THE RANGE, 0 TO X'FFFF, AND STORED INTO MEMORY. ON      3674.
3668                    ;               EACH CYCLE, AC2 IS LOADED FROM THE SAME MEMORY LOCA-    3675.
3669                    ;               TION AND COMPARED AGAINST THE EXPECTED VALUE IN AC1.    3676.
3670                    ;               FAILURE TO CORRESPOND TO THE INITIAL VALUE INDICATES    3677.
3671                    ;               A FAILURE OF THIS TEST.                         3678.
3672                    ;                                                           3679.
3673                    ;               ON ERROR:                                   3680.
3674                    ;                 AC0: THE CURRENT TEST VALUE MINUS ONE     3681.
3675                    ;                 AC1: THE CURRENT TEST VALUE               3682.
3676                    ;                 AC2: THE CONTENTS OF THE TEST ADDRESS     3683.
3677                TN5B:                                                           3684.
3678 07EA 0014 A           .WORD   $K9-.                                           3685.
3679 07EB 52FF A $K1:      LI      AC2,-1                                          3686.
3680 07EC 5100 A           LI      AC1,0                                           3687.
3681 07ED 5C80 A $K2:      RCPY    AC2,AC0                                         3688.
3682 07EE 3E00 A           PFLG    SYNC            ; SCOPE SIGNAL                  3689.
3683 07EF D46F A           ST      AC1,TADR                                        3690.
3684 07F0 C86F A           LD      AC2,TADR                                        3691.
3685 07F1 5A40 A           RXOR    AC1,AC2                                         3692.
3686 07F2 7A00 A           AISZ    AC2,0                                           3693.
3687 07F3 1905 A           JMP     $K3                                             3694.
3688 07F4 5201 A           LI      AC2,1                                           3695.
3689 07F5 6A00 A           RADD    AC0,AC2                                         3696.
3690 07F6 7901 A           AISZ    AC1,1                                           3697.
3691 07F7 19F5 A           JMP     $K2                                             3698.
3692 07F8 7200 A           CAI     AC2,0                                           3699.
3693 07F9 7B00 A $K3:      AISZ    AC3,0           ; TIGHT LOOP                    3700.
3694 07FA 19F0 A           JMP     $K1                                             3701.
3695                    ;                                                           3702.
3696 07FB D868 A           ST      AC2,RESLT                                       3703.
3697 07FC C86F A           LD      AC2,TADR                                        3704.
3698 07FD 987F A           JMP     @INDMRTN                                        3705.
3699                    $K9:                                                        3706.
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3700                    .PAGE                                                   3707.
3701                    .LOCAL                                                  3708.
3702                    ;                                                       3709.
3703                    ;       TEST 5C: TEST SHIFT AND ROTATE INSTRUCTIONS      3710.
3704                    ;                WHEN 'BYTE' FLAG IS SET                3711.
3705                    ;                                                       3712.
3706                    ;                AC0 AND AC1 ARE LOADED WITH TEST VALUES, 3713.
3707                    ;                THEN WITH THE 'BYTE' FLAG SET, THEY ARE 3714.
3708                    ;                SHIFTED AND ROTATED, WITH THE RESULTS  3715.
3709                    ;                COMPARED TO EXPECTED RESULTS.          3716.
3710                    ;                                                       3717.
3711                    ;                ON ERROR:                              3718.
3712                    ;                  AC0: ERROR CODE                      3719.
3713                    ;                                                       3720.
3714                    ;                ERROR CODE:                            3721.
3715                    ;                  BIT 0 - SHL AC0 FAILED               3722.
3716                    ;                  BIT 1 - SHR AC1 FAILED               3723.
3717                    ;                  BIT 2 - ROR AC0 FAILED               3724.
3718                    ;                  BIT 3 - ROL AC1 FAILED               3725.
3719                    TN5C:                                                   3726.
3720 07FE 0024 A                .WORD   $9-.                                    3727.
3721 07FF 5200 A $1:            LI      AC2,0                                   3728.
3722 0800 3E00 A                PFLG    SYNC            ; SCOPE SIGNAL          3729.
3723 0801 50FF A                LI      AC0,-1                                  3730.
3724 0802 51FF A                LI      AC1,-1                                  3731.
3725 0803 3A80 A                SFLG    BYTE                                    3732.
3726 0804 2C08 A                SHR     AC0,4,0                                 3733.
3727 0805 2908 A                SHL     AC1,4,0                                 3734.
3728 0806 3A00 A                PFLG    BYTE                                    3735.
3729 0807 F116 A                SKNE    AC0,$D1                                 3736.
3730 0808 1901 A                JMP     .+2                                     3737.
3731 0809 7A01 A                AISZ    AC2,1                                   3738.
3732 080A F514 A                SKNE    AC1,$D2                                 3739.
3733 080B 1901 A                JMP     .+2                                     3740.
3734 080C 7A02 A                AISZ    AC2,2                                   3741.
3735 080D C112 A                LD      AC0,$D3                                 3742.
3736 080E C512 A                LD      AC1,$D4                                 3743.
3737 080F 3A80 A                SFLG    BYTE                                    3744.
3738 0810 2404 A                ROR     AC0,2,0                                 3745.
3739 0811 2104 A                ROL     AC1,2,0                                 3746.
3740 0812 3A00 A                PFLG    BYTE                                    3747.
3741 0813 F10C A                SKNE    AC0,$D3                                 3748.
3742 0814 1901 A                JMP     .+2                                     3749.
3743 0815 7A04 A                AISZ    AC2,4                                   3750.
3744 0816 F50A A                SKNE    AC1,$D4                                 3751.
3745 0817 1901 A                JMP     .+2                                     3752.
3746 0818 7A08 A                AISZ    AC2,8                                   3753.
3747 0819 7B00 A                AISZ    AC3,0           ; TIGHT LOOP            3754.
3748 081A 19E4 A                JMP     $1                                      3755.
3749                    ;                                                       3756.
3750 081B 5C80 A                RCPY    AC2,AC0                                 3757.
3751 081C D068 A                ST      AC0,RESLT                               3758.
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3752 081D 987F A          JMP     @INDMRTN                              3759.
3753                      :                                             3760.
3754 081E 000F A $D1:     .WORD   C00F                                  3761.
3755 081F 00F0 A $D2:     .WORD   00F0                                  3762.
3756 0820 0055 A $D3:     .WORD   C055                                  3763.
3757 0821 00AA A $D4:     .WORD   00AA                                  3764.
3758              $9:                                                   3765.
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3759                            .PAGE                                                   3766.
3760                            .LOCAL                                                  3767.
3761                    ;                                                               3768.
3762                    ;       TEST 5D: TEST DECA CAPABILITY OF SETTING BOTH CARRY AND 3769.
3763                    ;                OVERFLOW FLAGS WHEN THE 'BYTE' FLAG IS SET     3770.
3764                    ;                                                               3771.
3765                    ;                ACO IS INITIALLY LOADED WITH THE X'80, AND BOTH 3772.
3766                    ;                CARRY AND OVFLW FLAGS RESET. THEN ACO IS ADDED TO 3773.
3767                    ;                $H2, WHICH CONTAINS THE VALUE X'80, USING THE DECA 3774.
3768                    ;               .INSTRUCTION. FAILURE OF DECA TO SET BOTH THE CARRY 3775.
3769                    ;                AND THE OVFLOW FLAGS, OR FAILURE OF OF ACO TO YIELD 3776.
3770                    ;                THE CORRECT RESULT, INDICATES FAILURE OF THIS TEST. 3777.
3771                    ;                                                               3778.
3772                    ;                ON ERROR:                                      3779.
3773                    ;                  AC0: X'0160, THE RESULTANT TEST VALUE        3780.
3774                    ;                  AC1: ERROR CODE                              3781.
3775                    ;                                                               3782.
3776                    ;                ERROR CODE:                                    3783.
3777                    ;                  BIT 0 - ADDITION RESULTS BAD                 3784.
3778                    ;                  BIT 1 - CARRY FLAG NOT SET                   3785.
3779                    ;                  BIT 2 - OVERFLOW FLAG NOT SET                3786.
3780                    TN5D:                                                           3787.
3781 0822 0016 A               .WORD   $H9-.                                           3788.
3782 0823 3E00 A $H1:          PFLG    SYNC            ; SCOPE SIGNAL                  3789.
3783 0824 5100 A               LI      AC1,0                                           3790.
3784 0825 C110 A               LD      AC0,$H2                                         3791.
3785 0826 3700 A               PFLG    CARRY                                           3792.
3786 0827 3600 A               PFLG    CVFLW                                           3793.
3787 0828 3A80 A               SFLG    BYTE                                            3794.
3788 0829 890C A               DECA    AC0,$H2                                         3795.
3789 082A 3A00 A               PFLG    BYTE                                            3796.
3790 082B 4A01 A               BOC     CY,.+2                                          3797.
3791 082C 7902 A               AISZ    AC1,2                                           3798.
3792 082D 4C01 A               BOC     OV,.+2                                          3799.
3793 082E 7904 A               AISZ    AC1,4                                           3800.
3794 082F 7B00 A               AISZ    AC3,0           ; TIGHT LOOP                    3801.
3795 0830 19F2 A               JMP     $H1                                             3802.
3796                    ;                                                               3803.
3797 0831 F105 A               SKNE    AC0,$H3                                         3804.
3798 0832 1901 A               JMP     .+2                                             3805.
3799 0833 7901 A               AISZ    AC1,1                                           3806.
3800 0834 D468 A               ST      AC1,RESLT                                       3807.
3801 0835 987F A               JMP     @INDMRTN                                        3808.
3802                    ;                                                               3809.
3803 0836 0080 A $H2:          .WORD   X'0080                                          3810.
3804 0837 0160 A $H3:          .WORD   X'0160                                          3811.
3805                    $H9:                                                            3812.
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3806                        .PAGE                                                   3813.
3807                        .LOCAL                                                  3814.
3808                        ;                                                       3815.
3809                        ;       TEST 5E: TEST THE ADC AND SUB MEMORY REFERENCE INSTRUCTIONS      3816.
3810                        ;               WHEN THE 'BYTE' FLAG IS SET             3817.
3811                        ;                                                       3818.
3812                        ;               BOTH AC0 AND AC1 ARE LOADED WITH X'AA. THEN, AC0        3819.
3813                        ;               IS SUBTRACTED WITH X'AAAA WHILE AC1 IS ADDED WITH       3820.
3814                        ;               X'56. FAILURE OF THE SUB TO SET THE CARRY FLAG          3821.
3815                        ;               IS INDICATED IF THE BCC ON CARRY DOES NOT BRANCH.       3822.
3816                        ;               FAILURE OF THE SUB TO RESET THE OVERFLOW FLAG IS        3823.
3817                        ;               INDICATED IF THE BOC ON OVERFLOW DOES BRANCH. A         3824.
3818                        ;               FAILURE OF THIS TEST IS ALSO INDICATED IF EITHER        3825.
3819                        ;               THE ADD OR THE SUB DOES NOT YIELD A ZERO.               3826.
3820                        ;                                                       3827.
3821                        ;               ON ERROR:                               3828.
3822                        ;                 AC0: 0, RESULT OF THE SUBB            3829.
3823                        ;                 AC1: 0, RESULT OF THE ADD             3830.
3824                        ;                 AC2: ERROR CODE                       3831.
3825                        ;                                                       3832.
3826                        ;               ERROR CODE:                             3833.
3827                        ;                 BIT 0 - SUB RESULT IS BAD             3834.
3828                        ;                 BIT 1 - ADD RESULT IS BAD             3835.
3829                        ;                 BIT 2 - CARRY FLAG NOT SET            3836.
3830                        ;                 BIT 3 - OVERFLOW FLAG NOT RESET       3837.
3831                    TN5E:                                                       3838.
3832 0838 001B A           .WORD   $D9-.                                           3839.
3833 0839 C117 A $D1:       LD      AC0,$D2                                         3840.
3834 083A C516 A            LD      AC1,$D2                                         3841.
3835 083B 3E00 A            PFLG    SYNC            ; SCOPE SIGNAL                  3842.
3836 083C E515 A            ADD     AC1,$D3                                         3843.
3837 083D 3A80 A            SFLG    BYTE                                            3844.
3838 083E 3780 A            SFLG    CARRY                                           3845.
3839 083F 9111 A            SUBB    AC0,$D2                                         3846.
3840 0840 5200 A            LI      AC2,0                                           3847.
3841 0841 4A01 A            BOC     CY,.+2                                          3848.
3842 0842 5204 A            LI      AC2,4                                           3849.
3843 0843 4C01 A            BOC     OV,.+2                                          3850.
3844 0844 1901 A            JMP     .+2                                             3851.
3845 0845 7A08 A            AISZ    AC2,8                                           3852.
3846 0846 7B00 A            AISZ    AC3,0           ; TIGHT LOOP                    3853.
3847 0847 19F1 A            JMP     $D1                                             3854.
3848                        ;                                                       3855.
3849 0848 4101 A            BOC     ZRO,.+2                                         3856.
3850 0849 7A01 A            AISZ    AC2,1                                           3857.
3851 084A 6D00 A            RXCH    AC0,AC1                                         3858.
3852 084B 4101 A            BOC     ZRO,.+2                                         3859.
3853 084C 7A02 A            AISZ    AC2,2                                           3860.
3854 084D 6D00 A            RXCH    AC0,AC1                                         3861.
3855 084E 3A00 A            PFLG    BYTE                                            3862.
3856 084F D868 A            ST      AC2,RESLT                                       3863.
3857 0850 987F A            JMP     @INDMRTN                                        3864.
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3858 0851 00AA A $D2:    .WORD   X'AA                                    3865.
3859 0852 0056 A $D3:    .WORD   X'56                                    3866.
3860             $D9:                                                    3867.
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3861                        .PAGE                                                3868.
3862                        .LOCAL                                               3869.
3863                ;                                                            3870.
3864                ;       TEST 5F: AISZ WITH 'BYTE' FLAG SET                   3871.
3865                ;                                                            3872.
3866                ;               AISZ IS TESTED TO SEE THAT IT IS NOT         3873.
3867                ;               AFFECTED BY THE 'BYTE' FLAG. AC0 IS          3874.
3868                ;               LOADED WITH X'01FF, AND THE 'BYTE' FLAG      3875.
3869                ;               SET.  THEN AC0 IS INCREMENTED BY 1 USING     3876.
3870                ;               THE AISZ INSTRUCTION.  FAILURE OF THIS       3877.
3871                ;               TEST IS INDICATED IF THE AISZ SKIPS.         3878.
3872                ;                                                            3879.
3873                ;               ON ERROR:                                    3880.
3874                ;                 AC0: RESULT OF THE AISZ                    3881.
3875                ;                                                            3882.
3876                TN5F:                                                        3883.
3877 0853 000E A           .WORD   $9-.                                          3884.
3878 0854 3E00 A $1:       PFLG    SYNC            ; SCOPE SIGNAL                3885.
3879 0855 5100 A           LI      AC1,0                                         3886.
3880 0856 C109 A           LD      AC0,H1FF                                      3887.
3881 0857 3A80 A           SFLG    BYTE                                          3888.
3882 0858 7801 A           AISZ    AC0,1                                         3889.
3883 0859 1901 A           JMP     .+2                                           3890.
3884 085A 5101 A           LI      AC1,1                                         3891.
3885 085B 3A00 A           PFLG    BYTE                                          3892.
3886 085C 7B00 A           AISZ    AC3,0           ; TIGHT LOOP                  3893.
3887 085D 19F6 A           JMP     $1                                            3894.
3888                ;                                                            3895.
3889 085E D468 A           ST      AC1,RESLT                                     3896.
3890 085F 987F A           JMP     @INDMRTN                                      3897.
3891                ;                                                            3898.
3892 0860 01FF A H1FF:     .WORD   01FF                                          3899.
3893                $9:                                                          3900.
```

```
3894                            .PAGE                                                   3901.
3895                            .LOCAL                                                  3902.
3896                    ;                                                               3903.
3897                    ;       TEST 60: TEST THAT SFLG CAN SET ALL FLAGS               3904.
3898                    ;                                                               3905.
3899                    ;               ALL FLAGS ARE FIRST CLEARED, THEN SET           3906.
3900                    ;               INDIVIDUALLY BY THE SFLG INSTRUCTION.           3907.
3901                    ;               FINALLY, THE FLAGS ARE CHECKED TO SEE           3908.
3902                    ;               THAT ALL WERE SET.                              3909.
3903                    ;                                                               3910.
3904                    ;               ON ERROR:                                       3911.
3905                    ;                       AC0: SFLG RESULTS (X'F9FF)              3912.
3906                    ;                                                               3913.
3907                    T60:                                                            3914.
3908 0861 001C A                .WORD   $9-.                                            3915.
3909 0862 3E00 A $1:            PFLG    SYNC            ; SCOPE SIGNAL                  3916.
3910 0863 5000 A                LI      AC0,0                                           3917.
3911 0864 5100 A                LI      AC1,0                                           3918.
3912 0865 0800 A                CRF     AC0                                             3919.
3913 0866 3180 A                SFLG    1                                               3920.
3914 0867 3280 A                SFLG    2                                               3921.
3915 0868 3380 A                SFLG    3                                               3922.
3916 0869 3480 A                SFLG    4                                               3923.
3917 086A 3580 A                SFLG    5                                               3924.
3918 086B 3680 A                SFLG    6                                               3925.
3919 086C 3780 A                SFLG    7                                               3926.
3920 086D 3880 A                SFLG    8                                               3927.
3921 086E 3B80 A                SFLG    11                                              3928.
3922 086F 3C80 A                SFLG    12                                              3929.
3923 0870 3D80 A                SFLG    13                                              3930.
3924 0871 3E80 A                SFLG    14                                              3931.
3925 0872 0400 A                CFR     AC0                                             3932.
3926 0873 F108 A                SKNE    AC0,$2                                          3933.
3927 0874 1901 A                JMP     .+2                                             3934.
3928 0875 7901 A                AISZ    AC1,1                                           3935.
3929 0876 7B00 A                AISZ    AC3,0           ; TIGHT LOOP                    3936.
3930 0877 19EA A                JMP     $1                                              3937.
3931                    ;                                                               3938.
3932 0878 5200 A                LI      AC2,0                                           3939.
3933 0879 0A00 A                CRF     AC2                                             3940.
3934 087A D468 A                ST      AC1,RESLT                                       3941.
3935 087B 987F A                JMP     @INDMRTN                                        3942.
3936                    ;                                                               3943.
3937 087C F9FF A $2:            .WORD   0F9FF                                           3944.
3938                    $9:                                                             3945.
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3939                    .PAGE                                                   3946.
3940                    .LOCAL                                                  3947.
3941                ;                                                           3948.
3942                ;       TEST 61: TEST THAT PFLG CAN CLEAR ALL FLAGS         3949.
3943                ;                                                           3950.
3944                ;               ALL FLAGS ARE FIRST SET, THEN CLEARED       3951.
3945                ;               INDIVIDUALLY BY THE PFLG INSTRUCTION.       3952.
3946                ;               FINALLY, THE FLAGS ARE CHECKED TO SEE       3953.
3947                ;               THAT ALL WERE CLEARED.                      3954.
3948                ;                                                           3955.
3949                ;               ON ERROR:                                   3956.
3950                ;                 AC0: PFLG RESULTS (X'8001')               3957.
3951                ;                                                           3958.
3952                TN61:                                                       3959.
3953 087D 001D A            .WORD   $9-.                                        3960.
3954 087E 3E00 A $1:        PFLG    SYNC            ; SCOPE SIGNAL              3961.
3955 087F 5100 A            LI      AC1,0                                       3962.
3956 0880 C117 A            LD      AC0,$2                                      3963.
3957 0881 0800 A            CRF     AC0                                         3964.
3958 0882 3100 A            PFLG    1                                           3965.
3959 0883 3200 A            PFLG    2                                           3966.
3960 0884 3300 A            PFLG    3                                           3967.
3961 0885 3400 A            PFLG    4                                           3968.
3962 0886 3500 A            PFLG    5                                           3969.
3963 0887 3600 A            PFLG    6                                           3970.
3964 0888 3700 A            PFLG    7                                           3971.
3965 0889 3800 A            PFLG    8                                           3972.
3966 088A 3B00 A            PFLG    11                                          3973.
3967 088B 3C00 A            PFLG    12                                          3974.
3968 088C 3D00 A            PFLG    13                                          3975.
3969 088D 3E00 A            PFLG    14                                          3976.
3970 088E 0400 A            CFR     AC0                                         3977.
3971 088F F109 A            SKNE    AC0,$3                                      3978.
3972 0890 1901 A            JMP     .+2                                         3979.
3973 0891 7901 A            AISZ    AC1,1                                       3980.
3974 0892 7B00 A            AISZ    AC3,0           ; TIGHT LOOP                3981.
3975 0893 19EA A            JMP     $1                                          3982.
3976                ;                                                           3983.
3977 0894 5200 A            LI      AC2,0                                       3984.
3978 0895 0A00 A            CRF     AC2                                         3985.
3979 0896 D468 A            ST      AC1,RESLT                                   3986.
3980 0897 987F A            JMP     @INDMRTN                                    3987.
3981                ;                                                           3988.
3982 0898 F9FF A $2:        .WORD   0F9FF                                       3989.
3983 0899 8001 A $3:        .WORD   08001                                       3990.
3984                $9:                                                         3991.
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3985                        .PAGE                                                    3992.
3986                        .LOCAL                                                   3993.
3987                ;                                                                3994.
3988                ;       TEST 62: EXCHANGE REGISTER AND STACK                     3995.
3989                ;                                                                3996.
3990                ;               ACO IS LOADED WITH THE VALUE X'5555, AND         3997.
3991                ;               THEN PUSHED ONTO THE STACK.  ACO IS THEN         3998.
3992                ;               LOADED WITH X'AAAA AND THE XCHRS INSTRUCTION     3999.
3993                ;               EXECUTED.  ACO IS THEN CHECKED FOR THE VALUE     4000.
3994                ;               X'5555, AND THE STACK PULLED AND CHECKED FOR     4001.
3995                ;               THE VALUE X'AAAA. THE PROCESS IS THEN            4002.
3996                ;               REVERSED AND REPEATED, USING AC1 AS THE          4003.
3997                ;               WORKING REGISTER.                                4004.
3998                ;                                                                4005.
3999                ;               ON ERROR:                                        4006.
4000                ;                 AC1: ERROR CODE                                4007.
4001                ;                                                                4008.
4002                ;               ERROR CODE:                                      4009.
4003                ;                 BIT 0 - PART 1  REG VALUE BAD                  4010.
4004                ;                 BIT 1 - PART 1  STACK VALUE BAD                4011.
4005                ;                 BIT 2 - PART 2  REG VALUE BAD                  4012.
4006                ;                 BIT 3 - PART 2  STACK VALUE BAD                4013.
4007                ;                                                                4014.
4008                TN62:                                                            4015.
4009 089A 0020 A            .WORD   $9-.                                             4016.
4010 089B 3E00 A $1:        PFLG    SYNC            ; SCOPE SIGNAL                   4017.
4011 089C 5200 A            LI      AC2,0                                            4018.
4012 089D C11A A            LD      AC0,$2                                           4019.
4013 089E 6000 A            PUSH    AC0                                              4020.
4014 089F C119 A            LD      AC0,$3                                           4021.
4015 08A0 1C00 A            XCHRS   AC0                                              4022.
4016 08A1 F116 A            SKNE    AC0,$2                                           4023.
4017 08A2 1901 A            JMP     .+2                                              4024.
4018 08A3 7A01 A            AISZ    AC2,1                                            4025.
4019 08A4 6500 A            PULL    AC1                                              4026.
4020 08A5 F513 A            SKNE    AC1,$3                                           4027.
4021 08A6 1901 A            JMP     .+2                                              4028.
4022 08A7 7A02 A            AISZ    AC2,2                                            4029.
4023                ;                                                                4030.
4024 08A8 C510 A            LD      AC1,$3                                           4031.
4025 08A9 6100 A            PUSH    AC1                                              4032.
4026 08AA C50D A            LD      AC1,$2                                           4033.
4027 08AB 1D00 A            XCHRS   AC1                                              4034.
4028 08AC F50C A            SKNE    AC1,$3                                           4035.
4029 08AD 1901 A            JMP     .+2                                              4036.
4030 08AE 7A04 A            AISZ    AC2,4                                            4037.
4031 08AF 6400 A            PULL    AC0                                              4038.
4032 08B0 F107 A            SKNE    AC0,$2                                           4039.
4033 08B1 1901 A            JMP     .+2                                              4040.
4034 08B2 7A08 A            AISZ    AC2,8                                            4041.
4035 08B3 7B00 A            AISZ    AC3,0           ; TIGHT LOOP                     4042.
4036 08B4 19E6 A            JMP     $1                                               4043.
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4037                    ;                                                   4044.
4038 08B5 5D80 A        RCPY    AC2,AC1                                     4045.
4039 08B6 D868 A        ST      AC2,RESLT                                   4046.
4040 08B7 987F A        JMP     @INDMRTN                                    4047.
4041                    ;                                                   4048.
4042 08B8 AAAA A $2:    .WORD   X'AAAA                                      4049.
4043 08B9 5555 A $3:    .WORD   X'5555                                      4050.
4044                    $9:                                                 4051.
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4045                        .PAGE                                          4052.
4046                        .LOCAL                                         4053.
4047                  ;                                                    4054.
4048                  ;     TEST 63: RETURN FROM INTERRUPT                 4055.
4049                  ;                                                    4056.
4050                  ;           TEST THAT RTI WILL SET THE PC CORRECTLY  4057.
4051                  ;           AND SET THE INTERRUPT ENABLE FLAG.       4058.
4052                  ;                                                    4059.
4053                  ;           ON ERROR:                                4060.
4054                  ;             AC0: ERROR CODE                        4061.
4055                  ;                                                    4062.
4056                  ;           ERROR CODE:                              4063.
4057                  ;             BIT 0 - RTS FUNCTION FAILED            4064.
4058                  ;             BIT 1 - SETTING OF IEN FAILED          4065.
4059                  ;                                                    4066.
4060                  TN63:                                                4067.
4061 08BA 0013 A                 .WORD   $9-.                             4068.
4062 08BB 3E00 A $1:             PFLG    SYNC          ; SCOPE SIGNAL     4069.
4063 08BC 5200 A                 LI      AC2,0                            4070.
4064 08BD C10E A                 LD      AC0,$3                           4071.
4065 08BE 6000 A                 PUSH    AC0                              4072.
4066 08BF 5000 A                 LI      AC0,0                            4073.
4067 08C0 0800 A                 CRF     0                                4074.
4068 08C1 7C00 A                 RTI                                      4075.
4069 08C2 7A01 A                 AISZ    AC2,1                            4076.
4070 08C3 4901 A $2:             BDC     IEN,.+2                          4077.
4071 08C4 7A02 A                 AISZ    AC2,2                            4078.
4072 08C5 5000 A                 LI      AC0,0                            4079.
4073 08C6 0800 A                 CRF     AC0                              4080.
4074 08C7 7800 A                 AISZ    AC3,0         ; TIGHT LOOP       4081.
4075 08C8 19F2 A                 JMP     $1                               4082.
4076                        ;                                            4083.
4077 08C9 5C80 A                 RCPY    AC2,AC0                          4084.
4078 08CA D868 A                 ST      AC2,RESLT                        4085.
4079 08CB 987F A                 JMP     @INDMRTN                         4086.
4080                        ;                                            4087.
4081 08CC 08C3 A $3:             .WORD   $2                               4088.
4082                        $9:                                          4089.
```

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4083                            .PAGE                                                   4090.
4084                            .LOCAL                                                  4091.
4085                    ;                                                               4092.
4086                    ;       TEST 64: REGISTER EXCLUSIVE OR                          4093.
4087                    ;                                                               4094.
4088                    ;               THE FOLLOWING TESTS ARE MADE, AND THE           4095.
4089                    ;               RESULTS COMPARED TO EXPECTED RESULTS.           4096.
4090                    ;                                                               4097.
4091                    ;                 (0) X'5555 .XOR. X'AAAA = X'FFFF              4098.
4092                    ;                 (1) X'5555 .XOR. X'5555 = X'0000              4099.
4093                    ;                 (2) X'FFFF .XOR. X'FFFF = X'0000              4100.
4094                    ;                 (3) X'FFFF .XOR. X'AAAA = X'5555              4101.
4095                    ;                 (4) X'0000 .XOR. X'0000 = X'0000              4102.
4096                    ;                                                               4103.
4097                    ;               ON ERROR:                                       4104.
4098                    ;                 AC1: ERROR CODE                               4105.
4099                    ;                                                               4106.
4100                    ;               ERROR CODE:                                     4107.
4101                    ;                 BIT 0 - TEST 0 FAILED                         4108.
4102                    ;                 BIT 1 - TEST 1 FAILED                         4109.
4103                    ;                 BIT 2 - TEST 2 FAILED                         4110.
4104                    ;                 BIT 3 - TEST 3 FAILED                         4111.
4105                    ;                 BIT 4 - TEST 4 FAILED                         4112.
4106                    ;                                                               4113.
4107                    TN64:                                                           4114.
4108 08CD 0023 A                .WORD   $9-.                                            4115.
4109 08CE 3E00 A $1:            PFLG    SYNC            ; SCOPE SIGNAL                  4116.
4110 08CF 5200 A                LI      AC2,0                                           4117.
4111 08D0 C11C A                LD      AC0,$5                                          4118.
4112 08D1 C51C A                LD      AC1,$2                                          4119.
4113 08D2 5840 A                RXOR    AC1,AC0                                         4120.
4114 08D3 F118 A                SKNE    AC0,$3                                          4121.
4115 08D4 1901 A                JMP     .+2                                             4122.
4116 08D5 7A01 A                AISZ    AC2,1                                           4123.
4117 08D6 C116 A                LD      AC0,$5                                          4124.
4118 08D7 C517 A                LD      AC1,$3                                          4125.
4119 08D8 5800 A                RXOR    AC0,AC0                                         4126.
4120 08D9 5940 A                RXOR    AC1,AC1                                         4127.
4121 08DA 7800 A                AISZ    AC0,0                                           4128.
4122 08DB 7A02 A                AISZ    AC2,2                                           4129.
4123 08DC 7900 A                AISZ    AC1,0                                           4130.
4124 08DD 7A04 A                AISZ    AC2,4                                           4131.
4125 08DE C110 A                LD      AC0,$3                                          4132.
4126 08DF C50E A                LD      AC1,$2                                          4133.
4127 08E0 5840 A                RXOR    AC1,AC0                                         4134.
4128 08E1 F10B A                SKNE    AC0,$5                                          4135.
4129 08E2 1901 A                JMP     .+2                                             4136.
4130 08E3 7A08 A                AISZ    AC2,8                                           4137.
4131 08E4 5000 A                LI      AC0,0                                           4138.
4132 08E5 5800 A                RXOR    AC0,AC0                                         4139.
4133 08E6 7800 A                AISZ    AC0,0                                           4140.
4134 08E7 7A10 A                AISZ    AC2,16                                          4141.
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4135 08E8 7B00 A          AISZ    AC3,0           ; TIGHT LOOP                    4142.
4136 08E9 19E4 A          JMP     $1                                              4143.
4137                      ;                                                       4144.
4138 08EA 5D80 A          RCPY    AC2,AC1                                         4145.
4139 08EB D868 A          ST      AC2,RESLT                                       4146.
4140 08EC 987F A          JMP     @INDMRTN                                        4147.
4141                      ;                                                       4148.
4142 08ED 5555 A $5:      .WORD   C5555                                           4149.
4143 08EE AAAA A $2:      .WORD   0AAAA                                           4150.
4144 08EF FFFF A $3:      .WORD   0FFFF                                           4151.
4145                      $9:                                                     4152.
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4146                    .PAGE                                                   4153.
4147                    .LOCAL                                                  4154.
4148                    ;                                                       4155.
4149                    ;       TEST 65: COMPLEMENT AND ADD IMMEDIATE           4156.
4150                    ;                                                       4157.
4151                    ;               THE FOLLOWING TESTS ARE MADE AND THE    4158.
4152                    ;               RESULTS COMPARED TO THE EXPECTED RESULTS. 4159.
4153                    ;                                                       4160.
4154                    ;                 (0) 1'S COMPLEMENT OF  0 = -1         4161.
4155                    ;                 (1) 1'S COMPLEMENT OF -1 =  0         4162.
4156                    ;                 (2) 2'S COMPLEMENT OF  1 = -1         4163.
4157                    ;                 (3) 2'S COMPLEMENT OF -1 =  1         4164.
4158                    ;                                                       4165.
4159                    ;               ON ERROR:                               4166.
4160                    ;                 AC1: ERROR CODE                       4167.
4161                    ;                                                       4168.
4162                    ;               ERROR CODE:                             4169.
4163                    ;                 BIT 0 - TEST 0 FAILED                 4170.
4164                    ;                 BIT 1 - TEST 1 FAILED                 4171.
4165                    ;                 BIT 2 - TEST 2 FAILED                 4172.
4166                    ;                 BIT 3 - TEST 3 FAILED                 4173.
4167                    ;                                                       4174.
4168                    TN65:                                                   4175.
4169 08F0 0018 A                .WORD   $9-.                                    4176.
4170 08F1 3E00 A $1:            PFLG    SYNC            ; SCOPE SIGNAL          4177.
4171 08F2 510C A                LI      AC1,0                                   4178.
4172 08F3 5000 A                LI      AC0,0                                   4179.
4173 08F4 7000 A                CAI     AC0,0                                   4180.
4174 08F5 F111 A                SKNE    AC0,$2                                  4181.
4175 08F6 1901 A                JMP     .+2                                     4182.
4176 08F7 7901 A                AISZ    AC1,1                                   4183.
4177 08F8 7000 A                CAI     AC0,0                                   4184.
4178 08F9 7800 A                AISZ    AC0,0                                   4185.
4179 08FA 7902 A                AISZ    AC1,2                                   4186.
4180                    ;                                                       4187.
4181 08FB 5001 A                LI      AC0,1                                   4188.
4182 08FC 7001 A                CAI     AC0,1                                   4189.
4183 08FD F109 A                SKNE    AC0,$2                                  4190.
4184 08FE 1901 A                JMP     .+2                                     4191.
4185 08FF 7904 A                AISZ    AC1,4                                   4192.
4186 0900 7001 A                CAI     AC0,1                                   4193.
4187 0901 78FF A                AISZ    AC0,-1                                  4194.
4188 0902 7908 A                AISZ    AC1,8                                   4195.
4189 0903 7800 A                AISZ    AC3,0           ; TIGHT LOOP            4196.
4190 0904 19EC A                JMP     $1                                      4197.
4191                    ;                                                       4198.
4192 0905 D468 A                ST      AC1,RESLT                               4199.
4193 0906 987F A                JMP     @INCMRTN                                4200.
4194 0907 FFFF A $2:            .WORD   OFFFF                                   4201.
4195                    $9:                                                     4202.
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4196                            .PAGE                                                   4203.
4197                            .LOCAL                                                  4204.
4198                    ;                                                               4205.
4199                    ;       TEST 66: TEST UNUSED OPCODES                            4206.
4200                    ;                                                               4207.
4201                    ;               THIS TEST CHECKS THE TWO UNUSED OPCODES OF THE  4208.
4202                    ;               PACE INSTRUCTION SET TO INSURE THAT THEY DO NOT 4209.
4203                    ;               CAUSE COMPLETELY DISASTROUS RESULTS, SUCH AS THE 4210.
4204                    ;               LOSS OF THE PANEL ON THE IPC-16P.  THE ONLY     4211.
4205                    ;               REQUIREMENT THAT MUST BE MET IS THE PROPER RETURN 4212.
4206                    ;               FROM THIS TEST, REGARDLESS OF THE RESULTS.      4213.
4207                    ;                                                               4214.
4208                    TN66:                                                           4215.
4209 0908 0012 A               .WORD   $9-.                                            4216.
4210 0909 5001 A               LI      AC0,1                                           4217.
4211 090A D068 A               ST      AC0,RESLT                                       4218.
4212 090B 3E00 A $1:           PFLG    SYNC            ; SCOPE SIGNAL                  4219.
4213 090C 8400 A               .WORD   08400                                           4220.
4214 090D 8401 A               .WORD   08401                                           4221.
4215 090E 8400 A               .WORD   C8400                                           4222.
4216 090F 8400 A               .WORD   08400                                           4223.
4217                    ;                                                               4224.
4218 0910 B400 A               .WORD   0B400                                           4225.
4219 0911 B401 A               .WORD   0B401                                           4226.
4220 0912 B400 A               .WORD   0B400                                           4227.
4221 0913 B400 A               .WORD   CB400                                           4228.
4222 0914 5C00 A               NOP                                                     4229.
4223 0915 7B00 A               AISZ    AC3,0           ; TIGHT LOOP                    4230.
4224 0916 19F4 A               JMP     $1                                              4231.
4225                    ;                                                               4232.
4226 0917 5000 A               LI      AC0,0                                           4233.
4227 0918 D068 A               ST      AC0,RESLT                                       4234.
4228 0919 987F A               JMP     @INDMRTN                                        4235.
4229                    $9:                                                             4236.
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4230                            .PAGE                                           4237.
4231 091A 091C A START:         .WORD   BSEC            ; PSEUDO-BASE SECTOR    4238.
4232 091B 006C A END:           .WORD   CLUE+3                                  4239.
4233 091C 0000 A BSEC:          .WORD   0               ; CURRENT TEST ADDRESS  4240.
4234 091D 0000 A                .WORD   0               ; FIRST TEST OF THIS RUN(ADDR 4241.
4235 091E 0157 A                .WORD   TN1             ; ADDR OF TEST 1        4242.
4236 091F 0001 A                .WORD   1               ; START TEST NUMBER     4243.
4237 0920 0066 A                .WORD   066             ; LAST TEST NUMBER      4244.
4238 0921 0000 A                .WORD   0               ; CURRENT TEST NUMBER   4245.
4239 0922 0000 A                .WORD   0               ; LOOP MODE             4246.
4240 0923 0000 A                .WORD   0               ; CONTINUOUS TESTING MODE 4247.
4241 0924 0000 A                .WORD   0               ; TEST RESULT           4248.
4242 0925 0000 A                .WORD   0,0,0,0         ; CLUE                  4249.
     0926 0000 A
     0927 0000 A
     0928 0000 A
4243 0929 0060 A BLOC:          .WORD   BASE                                    4250.
4244 092A C110 A INITLZ:        LD      AC0,INT1        ; INITIALIZE JUMP ADDRESSES 4251.
4245 092B D000 A                ST      AC0,0                                   4252.
4246 092C C10F A                LD      AC0,INT1+1                              4253.
4247 092D D07E A                ST      AC0,INDMSEL                             4254.
4248 092E C10E A                LD      AC0,INT1+2                              4255.
4249 092F D07F A                ST      AC0,INDMRTN                             4256.
4250 0930 5000 A                LI      AC0,0           ; INITIALIZE STATUS FLAGS 4257.
4251 0931 6000 A                PUSH    AC0                                     4258.
4252 0932 1000 A                PULLF                                           4259.
4253 0933 C9F5 A                LD      AC2,BLOC        ; SET UP BASE SECTOR    4260.
4254 0934 A1E5 A ILOOP:         LD      AC0,@START                              4261.
4255 0935 D200 A                ST      AC0,(AC2)                               4262.
4256 0936 8DE3 A                ISZ     START                                   4263.
4257 0937 7A01 A                AISZ    AC2,1                                   4264.
4258 0938 5C80 A                RCPY    2,0                                     4265.
4259 0939 9DE1 A                SKG     AC0,END                                 4266.
4260 093A 19F9 A                JMP     ILOOP                                   4267.
4261 093B 987E A INT1:          JMP     @INDMSEL                                4268.
4262 093C 0100 A                .WORD   MSELCT                                  4269.
4263 093D 0116 A                .WORD   MRETRN                                  4270.
4264      092A A                .END    INITLZ                                  4271.


   ******       0 ERRORS IN ASSEMBLY   ******
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```
$1)    $1,    $1-    $1.    $1/    $10    $11    $12    $13    $2-
07FF A 0854 A 0862 A 087E A 089B A 08BB A 08CE A 08F1 A 090B A 087C A

$2.    $2/    $20    $21    $22    $3.    $3/    $30    $31    $51
0898 A 08B8 A 08C3 A 08EE A 0907 A 0899 A 08B9 A 08CC A 08EF A 08ED A

$9)    $9,    $9-    $9.    $9/    $9C    $91    $92    $93    $A1"
0822 A 0861 A 087D A 089A A 08BA A 08CD A 08F0 A 0908 A 091A A 0159 A

$A1#   $A1%   $A1&   $A1(   $A2%   $A2(   $A3%   $A3(   $A4(   $A9"
0192 A 037B A 0528 A 0741 A 0387 A 074F A 0388 A 0750 A 0751 A 0160 A

$A9#   $A9%   $A9&   $A9(   $AA1$  $AA9$  $AD#   $B1#   $B1%   $B1&
01A2 A 0389 A 053A A 0752 A 0364 A 037A A 020F A 01A5 A 038B A 053C A

$B1(   $B2"   $B2#   $B2%   $B2(   $B3"   $B3#   $B3%   $B3(   $B4"
0754 A 0162 A 01B6 A 0398 A 076A A 016D A 01B7 A 0399 A 076B A 016E A

$B9"   $B9#   $B9%   $B9&   $B9(   $C1"   $C1#   $C1%   $C1&   $C1(
016F A 01B8 A 039A A 054F A 076C A 0171 A 01B9 A 039B A 0551 A 076E A

$C2"   $C2#   $C2%   $C2(   $C3(   $C9"   $C9#   $C9%   $C9&   $C9(
0172 A 01BC A 03B5 A 0784 A 0785 A 017A A 01C1 A 03B6 A 0564 A 0786 A

$D1"   $D1#   $D1%   $D1&   $D1(   $D1)   $D1+   $D2"   $D2#   $D2%
017D A 01C2 A 03B7 A 0565 A 0787 A 081E A 0839 A 017E A 01C4 A 03C7 A

$D2&   $D2(   $D2)   $D2+   $D3%   $D3&   $D3(   $D3)   $D3+   $D4)
0579 A 0797 A 081F A 0851 A 03C8 A 057A A 0798 A 0820 A 0852 A 0821 A

$D9"   $D9#   $D9%   $D9&   $D9(   $D9+   $E1"   $E1#   $E1%   $E1&
0185 A 01CE A 03C9 A 0578 A 0799 A 0853 A 0188 A 01CF A 03CA A 057C A

$E1(   $E2"   $E2#   $E2%   $E2(   $E3#   $E3%   $E3(   $E4#   $E4(
079A A 0189 A 01D2 A 03D4 A 07AA A 01D4 A 03D5 A 07AB A 01D6 A 07AC A

$E5#   $E5(   $E6(   $E7(   $E9"   $E9#   $E9%   $E9&   $E9(   $F1#
01D7 A 07AD A 07AE A 07AF A 0191 A 01DC A 03D6 A 058D A 07B0 A 01DE A

$F1%   $F1&   $F1(   $F2#   $F2%   $F2(   $F3#   $F3%   $F3(   $F4(
03E2 A 058E A 07B1 A 01E0 A 03E3 A 07C1 A 01E9 A 03D7 A 07C2 A 07C3 A

$F9#   $F9%   $F9&   $F9(   $G1#   $G1%   $G1&   $G1(   $G2#   $G2%
01EA A 03E4 A 059E A 07C4 A 01F8 A 03E5 A 05A0 A 07C5 A 01EB A 03EF A

$G2(   $G3#   $G3%   $G9#   $G9%   $G9&   $G9(   $H#    $H1%   $H1&
07D5 A 01EC A 03F0 A 01F9 A 03F1 A 05B6 A 07D6 A 01F9 A 03FD A 05B7 A

$H1(   $H1*   $H2#   $H2%   $H2(   $H2*   $H3#   $H3%   $H3(   $H3*
07D7 A 0823 A 01FD A 03FE A 07E8 A 0836 A 020A A 03F2 A 07E9 A 0837 A
```

$H9#	$H9%	$H9&	$H9(	$H9*	$J1#	$J1%	$J1&	$J2#	$J3#
0210 A	03FF A	05CB A	07EA A	0838 A	0212 A	0400 A	05CC A	0213 A	021A A

$J4#	$J5#	$J6#	$J82#	$J84#	$J9#	$J9%	$J9&	$K1#	$K1%
021E A	0228 A	0229 A	022F A	0230 A	0231 A	040B A	05DD A	0232 A	040C A

$K1&	$K1(	$K2%	$K2(	$K3(	$K9#	$K9%	$K9&	$K9(	$L1#
05DE A	07EB A	041A A	07ED A	07F9 A	0257 A	041B A	05F0 A	07FE A	025F A

$L1%	$L1&	$L2&	$L3&	$L4&	$L5&	$L6&	$L7&	$L9#	$L9%
041C A	05F5 A	05F7 A	05FC A	05FD A	0606 A	0609 A	060C A	026D A	0429 A

$L9&	$M1%	$M1&	$M2#	$M2&	$M3&	$M4&	$M5&	$M6&	$M7&
060D A	042A A	0615 A	0275 A	061F A	0628 A	062D A	062F A	0634 A	0635 A

$M8&	$M9#	$M9%	$M9&	$N#	$N1%	$N2#	$N2%	$N3#	$N9#
0636 A	0283 A	0437 A	0637 A	0295 A	0438 A	0284 A	0444 A	0285 A	0296 A

$N9%	$P&	$P1#	$P1%	$P1&	$P2&	$P3&	$P4&	$P5&	$P9#
0445 A	0637 A	029A A	0446 A	0639 A	063C A	0641 A	0646 A	065A A	029B A

$P9%	$P9&	$Q1#	$Q1%	$Q3#	$Q9#	$Q9%	$R1#	$R1%	$R1'
0460 A	065B A	029E A	0461 A	02B2 A	02B3 A	C474 A	02D2 A	0476 A	0699 A

$R2'	$R3#	$R3'	$R4'	$R9#	$R9%	$R9'	$S1#	$S1%	$S1'
06A7 A	02E5 A	06A8 A	06A9 A	02ED A	048E A	06AA A	02F0 A	0491 A	06B0 A

$S3#	$S3'	$S4'	$S5'	$S9#	$S9%	$S9'	$T1#	$T1%	$T1'
02F8 A	06BC A	06BD A	06BE A	02F9 A	0495 A	C6BF A	02FB A	0496 A	06C0 A

$T2#	$T2%	$T2'	$T3%	$T3'	$T4'	$T9#	$T9%	$T9'	$U1#
02FD A	0499 A	06C2 A	049C A	06C6 A	06C8 A	0304 A	04A4 A	06CE A	0307 A

$U1%	$U1'	$U2'	$U3'	$U4'	$U5'	$U9#	$U9%	$U9'	$V1#
04A5 A	06D0 A	06D2 A	06D3 A	06D9 A	06DA A	030F A	04BC A	06DB A	0313 A

$V1%	$V2#	$V2%	$V3#	$V9#	$V9%	$W1#	$W1%	$W1'	$W2#
04BD A	031C A	04D3 A	031D A	031E A	04D4 A	0321 A	04D6 A	06E0 A	032B A

$W2'	$W3#	$W3'	$W4'	$W5'	$W6'	$W75'	$W8'	$W85'	$W9#
06E8 A	032C A	06F3 A	06F5 A	0700 A	070C A	070D A	070E A	070F A	032D A

$W9%	$W9'	$X1#	$X1%	$X1'	$X2'	$X3'	$X4'	$X5'	$X6'
04E8 A	0710 A	032F A	04EA A	0715 A	071D A	0724 A	0726 A	0731 A	073D A

$X83'	$X86'	$X9#	$X9%	$X9'	$Y1#	$Y1%	$Y2#	$Y3#	$Y4#
073E A	073F A	033A A	04FB A	0740 A	033B A	C4FD A	034B A	034C A	034D A

$Y9#	$Y9%	$Z1#	$Z1%	$Z2#	$Z3#	$Z4#	$Z9#	$Z9%	AC0
034E A	0510 A	0350 A	0512 A	0360 A	0361 A	0362 A	0363 A	0526 A	0000 A

```
AC1     AC2     AC3     BASE    BLOC    BOCSW   BSEC    BT0     BT1     BT2
0001 A  0002 A  0003 A  0060 A  0929 A  0071 A  091C A  0003 A  0004 A  0006 A

BYTE    CARRY   CLUE    CNTUE2  CRY     CRYMSK  CTST    CY      DOOCO   DOFOF
000A A  0007 A  0069 A  0135 A  04E7 A  0080 A  0060 A  000A A  0678 A  0676 A

D2000   D8001   E58     E59     END     END58   END59   FIRST   FTST    HLFF
0677 A  0679 A  0672 A  0693 A  091B A  067A A  0697 A  0062 A  0061 A  0860 A

IEN     IEN1    IEN2    IEN3    IEN4    IEN5    ILOOP   INDMRT  INDMSE  INITJT
0009 A  0001 A  0002 A  0003 A  0004 A  0005 A  0934 A  007F A  007E A  0151 A

INITLZ  INT1    L158    L159    L258    L259    L358    L359    LINK    LM01
092A A  093B A  065C A  067B A  065E A  067D A  0660 A  067F A  0008 A  0129 A

LM12    LNK     LNKMSK  LOOPM   LTNUM   MAINLP  MAXNEG  MAXPOS  MCNTUE  MG
011D A  045F A  0100 A  0066 A  0064 A  010A A  0524 A  0539 A  0133 A  014A A

ML      MRETRN  MSB     MSELCT  MT      NEG     NEG1    NXT     NZR     OV
010D A  0116 A  058C A  0100 A  0143 A  000B A  05B5 A  0125 A  0005 A  000C A

OVF     OVFLW   OVFMSK  POS     POS1    POSMAX  RESLT   START   STKFUL  STKINT
0525 A  0006 A  0040 A  0002 A  05B4 A  05B3 A  0068 A  091A A  0000 A  0002 A

STNUM   SYNC    T60     TADR    TEND    TESTM   TIGHT   TN1     TN10    TN11
0063 A  000E A  0861 A  006F A  013D A  0067 A  006D A  0157 A  0257 A  026D A

TN12    TN13    TN14    TN15    TN16    TN17    TN18    TN19    TN1A    TN1B
0283 A  0296 A  029B A  02B3 A  02B7 A  02BB A  02BF A  02C3 A  02C7 A  02CB A

TN1C    TN1D    TN1E    TN1F    TN2     TN20    TN21    TN22    TN23    TN24
02CF A  02ED A  02F9 A  0304 A  0160 A  030F A  031E A  032D A  033A A  034E A

TN25    TN26    TN27    TN28    TN29    TN2A    TN2B    TN2C    TN2D    TN2E
0363 A  037A A  0389 A  039A A  03B6 A  03C9 A  03D6 A  03E4 A  03F1 A  03FF A

TN2F    TN3     TN30    TN31    TN32    TN33    TN34    TN35    TN36    TN37
040B A  016F A  041B A  0429 A  0437 A  0445 A  0460 A  0474 A  048E A  0495 A

TN38    TN39    TN3A    TN3B    TN3C    TN3D    TN3E    TN3F    TN4     TN40
04A4 A  04BC A  04D4 A  04E8 A  04FB A  0510 A  0526 A  053A A  017A A  054F A

TN41    TN42    TN43    TN44    TN45    TN46    TN47    TN48    TN49    TN4A
0564 A  057B A  058D A  059E A  05B6 A  05CB A  05DD A  05F0 A  060D A  0637 A

TN4B    TN4D    TN4E    TN4F    TN5     TN50    TN51    TN52    TN53    TN54
065C A  0697 A  06AA A  06BF A  0185 A  06CE A  06DB A  0710 A  0740 A  0752 A

TN55    TN56    TN57    TN58    TN59    TN5A    TN5B    TN5C    TN5D    TN5E
076C A  0786 A  0799 A  07B0 A  07C4 A  07D6 A  07EA A  07FE A  0822 A  0838 A
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TN5F    TN6     TN61    TN62    TN63    TN64    TN65    TN66    TN7     TN8
0853 A 0191 A 087D A 089A A 088A A 08CD A 08F0 A 0908 A 01A2 A 01B8 A

TN9     TNA     TNB     TNC     TND     TNE     TNF     TNUM    TSTR    TVAL1
01C1 A 01CE A 01DC A 01EA A 01F9 A 0210 A 0231 A 0065 A 0070 A 0072 A

TVAL2   WAS     ZRO
0073 A 006E A 0001 A


    808C    A09C
```