9 P A C C
PROGRAM ACCOUNTING CLOCK TEST

B/M-564821, E. C.-298613-A

THIS PROGRAM UP DATES 9PACB TO ACCOMODATE AND TEST CLOCKS CONNECTED TO BOTH THE 709 AND THE 7090.

A. UNIT TESTED

THE PROGRAM ACCOUNTING CLOCK FEATURE OF THE 716 PRINTER.

1. METHOD

THE CLOCK IS TESTED BY READING INTO THE CLOCK WITH WRS OR RDS, AND THEN READING OUT THE CLOCK WITH RDS AND ECHO CHECKING.

THE BCD PRINT SUBROUTINE -SPLAT- IS USED FOR PRINTING, IT IS LOCATED AT 6500. ALSO A SPECIAL CONTROL PANEL FOR THE PRINTER IS REQUIRED.

2. MONITOR

WHEN THE PROGRAM BEGINS, ALL UNUSED PORTIONS OF CORE STORAGE, REGARDELESS OF SIZE, ARE FILLED WITH A TSX INSTRUCTION. IF THE PROGRAM SKIPS WILDLY INTO SPACE, OR IF THE PROGRAM GOES OUT OF SEQUENCE, THE MONITOR CAN RECOVER CONTROL.

B. AREA OF MACHINE REQUIRED

1. MAIN FRAME, CORE, CARD READER, 716 PRINTER WITH THE CLOCK FEATURE.

2. STORAGE LOCATIONS

ALL OF CORE STORAGE IS USED BY MONITOR.

C. PROGRAM CONTROL

1. DECK

000	9LD02A HIGH LOADER
001-051	9PACC PROGRAM
052	TRANSFER CARD
053-054	BLANK CARDS

2. SENSE SWITCHES

SWITCH 1. DOWN - REPEAT ROUTINE
UP - DO NOT REPEAT ROUTINE
SWITCH 2. DOWN - SKIP ERROR CHECKS
UP - PERFORM ERROR CHECKS AND HALT ON ERROR
SWITCH 3. NOT USED

SWITCH 4. DOWN - CONTINUE MANUAL CONTROL COUNTING
UP - CEASE COUNTING
SWITCH 5. DOWN - GO TO MANUAL ENTRY ROUTINE
UP - NO ACTION

SWITCH 6. DOWN - REPEAT PROGRAM
UP - SELECT CARD READER AT END OF PROGRAM PASS

3. KEYS

THE TIMING LOOPS IN THE PROGRAM MUST BE ADJUSTED TO FIT THE CLOCK AND CALCULATOR IN USE. TO DO THIS AN ENTRY MUST BE MADE ON KEYS S, 1 AND 2 AS FOLLOWS---

	.01 MIN	.1 MIN	.01 HOUR
7090	000	010	001
709	100	110	101

NOTICE THAT IF NO ENTRY IS MADE, THE PROGRAM WILL BE SET FOR THE .01 MINUTE CLOCK ATTACHED TO THE 7090. THIS ENTRY MUST BE MADE WHEN YOU START THE PROGRAM.

D. NORMAL STOPS

1213 ILLEGAL KEY ENTRY. PRINTER WILL PRINT REMARK.

1232 INCORRECT PRINTER BOARD. THE PRINTER WILL PRINT A REMARK.

SEE DIAGRAM FOR THE WIRING OF THE BOARD

1067 MANUAL CONTROL COUNT TEST-THE PRINTER WILL PRINT INSTRUCTIONS. TO COUNT, PUT DOWN SWITCH 4 AND PRESS START. THE CLOCK WILL BE RESET AND WILL START COUNTING WHEN LIGHT 4 GOES ON. COUNTING WILL CONTINUE UNTIL SWITCH 4 IS PUT UP, AT WHICH TIME THE CLOCK VALUE IS PRINTED AND THE PROGRAM PROCEEDS TO TEST SWITCHES 1 AND 6. THE CLOCK SHOULD COUNT 10 TIMES EACH 6 SECONDS. THIS TEST IS PERFORMED ON THE FIRST PROGRAM PASS ONLY, IT IS SKIPPED ON EACH SUCCEEDING PASS UNLESS MANUAL TRANSFER IS MADE TO IT.

1234 MANUAL ENTRY TEST.
THIS TEST IS ENTERED IF SWITCH 5 IS DOWN WHEN THE PROGRAM BEGINS AT 30. PUT INTO THE KEYS THE NUMBER YOU WISH TO BE READ INTO THE CLOCK IN BCD, PRESS START, AND OBSERVE THE PRINTER. THE NUMBER WILL BE READ OUT TO THE CLOCK AND ECHO CHECKED. HALT WILL OCCUR IF SWITCH 1 IS UP, YOU MAY THEN ENTER A NEW VALUE, OR PRESS START TO REPEAT. ANY ERROR INDICATIONS ARE PRINTED ON THE PRINTER IF SWITCH 2 IS UP. IF SWITCH 1 IS DOWN, THE ROUTINE WILL REPEAT NON-STOP UNDER SWITCH 2 CONTROL. THE ONLY WAY TO EXIT FROM THIS ROUTINE AND RETURN TO THE MAIN PROGRAM IS TO PUT UP SWITCH 5, AND THE PRESS RESET AND START.

E. ERROR STOPS

EACH ROUTINE HAS ITS OWN ERROR STOPS, AND ALL ERROR CONDITIONS ARE PRINTED ON THE PRINTER.

F. PRINT OUTS

EVERY ROUTINE PRINTS OUT ITS INFORMATION AND INSTRUCTIONS.

G. COMMENTS.

SKIP TO ONE IS EXECUTED TO EMPHASIZE INFORMATION PRINTED ON ERROR CONDITION, MANUAL COUNT TEST, AND END OF PROGRAM PASS.

EXAMPLE OF PRINT-OUT

```
         000000 TO READ IN TO CLOCK.
                  READ BACK FROM CLOCK TO CHECK.        CLOCK VALUE - - - 000000
```

EXAMPLE OF ERROR

```
         111111 TO READ IN TO CLOCK.
                  READ BACK FROM CLOCK TO CHECK.        CLOCK VALUE - - - 111181
                  READ BACK...111181 SHOULD HAVE BEEN 111111.
```

File Attachments: Source Cards Deck

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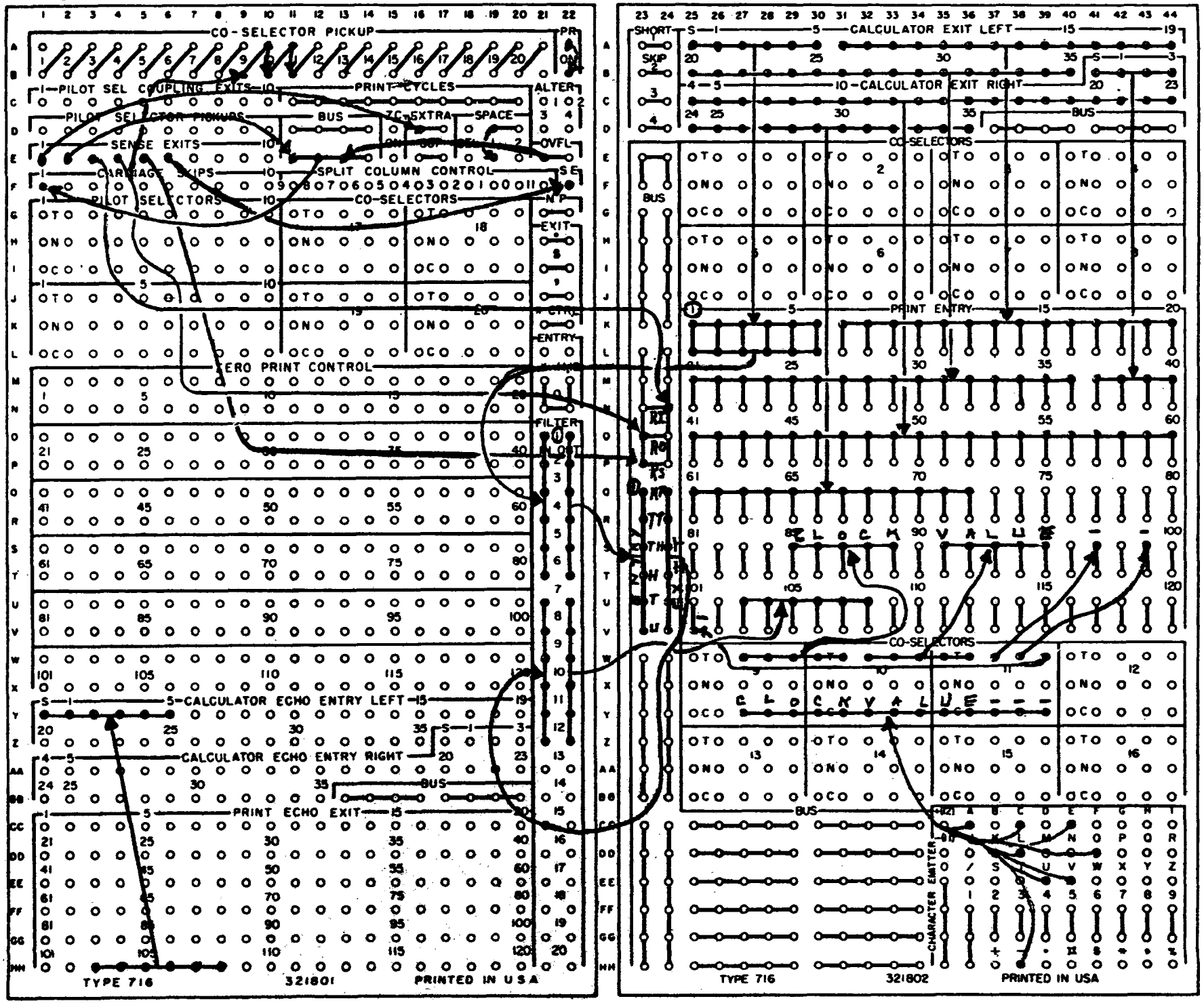
9PACC

IBM

TYPE 716 PRINTER

Form 24-6127-0
Printed in U.S.A.



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*                          9 P A C C


                 00001         ORG 1
00001  0074 00 4 01566         TSX SPACE,4
00002  0074 00 4 01566         TSX SPACE,4    FOR
00003  0074 00 4 01566         TSX SPACE,4     MONITOR
00004  0074 00 4 01566         TSX SPACE,4
00005  0074 00 4 01566         TSX SPACE,4
00006  0074 00 4 01566         TSX SPACE,4
00007  0074 00 4 01566         TSX SPACE,4
00010  0074 00 4 01566         TSX SPACE,4
00011  0074 00 4 01566         TSX SPACE,4
00012  0074 00 4 01566         TSX SPACE,4
00013  0074 00 4 01566         TSX SPACE,4
00014  0074 00 4 01566         TSX SPACE,4    FOR
00015  0074 00 4 01566         TSX SPACE,4    MONITOR
00016  0074 00 4 01566         TSX SPACE,4
00017  0074 00 4 01566         TSX SPACE,4
00020  0074 00 4 01566         TSX SPACE,4
00021  0074 00 4 01566         TSX SPACE,4
00022  0074 00 4 01566         TSX SPACE,4
00023  0074 00 4 01566         TSX SPACE,4
00024  0074 00 4 01566         TSX SPACE,4    FOR
00025  0074 00 4 01566         TSX SPACE,4     MONITOR
00026  0074 00 4 01566         TSX SPACE,4
00027  0074 00 4 01566         TSX SPACE,4

00030  0500 00 0 00036         CLA RSTRT      POST RESTART
00031  0601 00 0 00000         STO 0          AT ZERO

00032  0074 00 4 01214         TSX PANEL,4    TEST FOR CORRECT BOARD

00033  0760 00 0 00165         SWT 5          CHECK FOR MANUAL
00034  0020 00 0 00037         TRA HEY-1      AUTO
00035  0020 00 0 01234         TRA BUNG       MANUAL

00036  0020 00 0 00030  RSTRT  TRA 24

00037  0020 00 0 00040         TRA HEY        PROCEED

00040  0074 00 4 01546  HEY    TSX RESET,4

00041  0074 00 4 01143         TSX SPLOK,4
00042  0000 30 0 00004         HTR 4,,24
00043  114721232360            BCD 49PACC CLOCK TEST BEGINS
00044  234346234260
00045  632562636022
00046  252731456260

00047  0762 00 0 01361         RPRA
00050  0760 00 0 01361         SPRA 1         EXTRA SPACE
00051  0760 00 0 01365         SPRA 5         RESET
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```
00052  0074 00 4 01144         TSX SPLOK+1,4
00053  0000 12 0 00007         HTR 7,,10
00054  632562636051            BCD 4TEST RESET AND TRY TO RE
00055  256225636021
00056  452460635170
00057  606346605125
00060  212460222123            BCD 3AD BACK ZEROS.
00061  426071255146
00062  623360606060

00063  0760 00 0 00162         SWT 2
00064  0020 00 0 00066         TRA *+2
00065  0020 00 0 00130         TRA HEY3        SKIP ERROR CHECK
00066  0762 00 0 01361         RPRA
00067  0760 00 0 01364         SPRA 4          READ OUT

00070  0074 00 4 01144         TSX SPLOK+1,4
00071  0000 12 0 00007         HTR 7,,10
00072  512521246046            BCD 4READ OUT AFTER RESET AND
00073  646360212663
00074  255160512562
00075  256360214524
00076  233025234260            BCD 3CHECK FOR ZERO.
00077  264651607125
00100  514633606060

00101 -0500 00 0 01456         CAL ECHO
00102  0100 00 0 00126         TZE HEY2
00103  0602 00 0 00117         SLW HEY1        PUT ERROR WORD IN IMAGE
00104  0762 00 0 01361         RPRA
00105  0760 00 0 01361         SPRA 1          EXTRA SPACE

00106  0074 00 4 01144         TSX SPLOK+1,4
00107  0000 01 0 00012         HTR 10,,1
00110  512521246046            BCD 4READ OUT AFTER RESET SHO
00111  646360212663
00112  255160512562
00113  256360623046
00114  644324603021            BCD 3ULD HAVE ZERO GOT
00115  652560712551
00116  466027466360
00117  000000000000     HEY1   BCD 3000000 -INSTEAD
00120  604031456263
00121  252124606060

00122  0766 00 0 01361         WPRA
00123  0760 00 0 01362         SPRA 2          SKIP TO ONE
00124  0060 00 0 00124         TCOA *
00125  0000 00 0 00130         HTR HEY3        ERR IN RESET

00126  0074 00 4 01457  HEY2   TSX HECK,4      CHECK FOR 8-3, 8-4 ECHOS.

00127  0420 00 0 00040         HPR HEY         8-3, 8-4 ECHOS
                                               THE CLOCK
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00130  0760 00 0 00161  HEY3   SWT 1
00131  0020 00 0 00133         TRA DADY       PROCEED OR
00132  0020 00 0 00040         TRA HEY        REPEAT

                                    READ IN ALL ZEROS TO CLOCK

00133  0074 00 4 01514  DADY   TSX CLEAR,4

00134  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00135  000000000000            BCD 1000000
00136  0000 00 0 00141         HTR *+3        ERR IN RI
00137  0074 00 4 01457         TSX HECK,4     CHECK 8-3, 8-4 ECHOS
00140  0420 00 0 00133         HPR *-5        8-3, 8-4 ECHOS
00141  0760 00 0 00161         SWT 1
00142  0020 00 0 00144         TRA I          PROCEED OR
00143  0020 00 0 00133         TRA DADY       REPEAT


                                    READ IN ALL ONES TO CLOCK

00144  0074 00 4 01514  I      TSX CLEAR,4

00145  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00146  010101010101            BCD 1111111
00147  0000 00 0 00152         HTR *+3        ERR IN RI
00150  0074 00 4 01457         TSX HECK,4     CHECK 8-4,8-3, ECHO

00151  0420 00 0 00144         HPR *-5        8-3, 8-4 ECHOS
00152  0760 00 0 00161         SWT 1
00153  0020 00 0 00155         TRA WANA       PROCEED OR
00154  0020 00 0 00144         TRA I          REPEAT


                                    READ IN ALL 2-S TO CLOCK

00155  0074 00 0 01514  WANA   TSX CLEAR, 4

00156  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00157  020202020202            BCD 1222222
00160  0000 00 0 00163         HTR *+3        ERR IN RI

00161  0074 00 4 01457         TSX HECK,4     CHECK 8-4,8-3, ECHOS

00162  0420 00 0 00155         HPR *-5        8-3, 8-4 ECHOS
00163  0760 00 0 00161         SWT 1
00164  0020 00 0 00166         TRA DIA        PROCEED OR
00165  0020 00 0 00155         TRA WANA       REPEAT


                                    READ IN ALL 3-S TO CLOCK

00166  0074 00 4 01514  DIA    TSX CLEAR,4

00167  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00170  030303030303            BCD 1333333
00171  0000 00 0 00174         HTR *+3        ERR IN RI
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00172  0074 00 4 01457         TSX HECK,4     CHECK 8-4,8-3, ECHO

00173  0420 00 0 00166         HPR *-5        8-3, 8-4 ECHOS
00174  0760 00 0 00161         SWT 1
00175  0020 00 0 00177         TRA MOND       PROCEED OR
00176  0020 00 0 00166         TRA DIA        REPEAT


                                    READ IN ALL 4-S TO CLOCK

00177  0074 00 4 01514  MOND   TSX CLEAR,4

00200  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00201  040404040404            BCD 1444444
00202  0000 00 0 00205         HTR *+3        ERR IN RI

00203  0074 00 4 01457         TSX HECK,4     CHECK 8-4,8-3, ECHO

00204  0420 00 0 00177         HPR *-5        8-3, 8-4 ECHOS
00205  0760 00 0 00161         SWT 1
00206  0020 00 0 00210         TRA RING       PROCEED OR
00207  0020 00 0 00177         TRA MOND       REPEAT


                                    READ IN ALL 5-S TO CLOCK

00210  0074 00 4 01514  RING   TSX CLEAR,4

00211  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00212  050505050505            BCD 1555555
00213  0000 00 0 00216         HTR *+3        ERR IN RI

00214  0074 00 4 01457         TSX HECK,4     CHECK 8-4,8-3, ECHO

00215  0420 00 0 00210         HPR *-5        8-3, 8-4 ECHOS
00216  0760 00 0 00161         SWT 1
00217  0020 00 0 00221         TRA BRACE      PROCEED OR
00220  0020 00 0 00210         TRA RING       REPEAT


                                    READ IN ALL 6-S TO CLOCK

00221  0074 00 4 01514  BRACE  TSX CLEAR,4

00222  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00223  060606060606            BCD 1666666
00224  0000 00 0 00227         HTR *+3        ERR IN RI

00225  0074 00 4 01457         TSX HECK,4     CHECK 8-4,8-3, ECHO

00226  0420 00 0 00221         HPR *-5        8-3, 8-4 ECHOS
00227  0760 00 0 00161         SWT 1
00230  0020 00 0 00232         TRA LETS       PROCEED OR
00231  0020 00 0 00221         TRA BRACE      REPEAT
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                                    READ IN ALL 7-S TO CLOCK

00232  0074 00 4 01514  LETS   TSX CLEAR,4

00233  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00234  070707070707            BCD 1777777
00235  0000 00 0 00240         HTR *+3        ERR IN RI

00236  0074 00 4 01457         TSX HECK,4     CHECK 8-4,8-3, ECHO

00237  0420 00 0 00232         HPR *-5        8-3, 8-4 ECHOS
00240  0760 00 0 00161         SWT 1
00241  0020 00 0 00243         TRA EVERY      PROCEED OR
00242  0020 00 0 00232         TRA LETS       REPEAT


                                    READ IN ALL 8-S TO CLOCK

00243  0074 00 4 01514  EVERY  TSX CLEAR,4

00244  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00245  101010101010            BCD 1888888
00246  0000 00 0 00251         HTR *+3        ERR IN RI

00247  0074 00 4 01457         TSX HECK,4     CHECK 8-4,8-3, ECHO

00250  0420 00 0 00243         HPR *-5        8-3, 8-4 ECHOS
00251  0760 00 0 00161         SWT 1
00252  0020 00 0 00254         TRA THING      PROCEED OR
00253  0020 00 0 00243         TRA EVERY      REPEAT


                                    READ IN ALL 9-S TO CLOCK

00254  0074 00 4 01514  THING  TSX CLEAR,4

00255  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00256  111111111111            BCD 1999999
00257  0000 00 0 00262         HTR *+3        ERR IN RI

00260  0074 00 4 01457         TSX HECK,4     CHECK 8-4,8-3, ECHO

00261  0420 00 0 00254         HPR *-5        8-3, 8-4 ECHOS
00262  0760 00 0 00161         SWT 1
00263  0020 00 0 00265         TRA YOU        PROCEED OR
00264  0020 00 0 00254         TRA THING      REPEAT


                                    READ IN ALL 1-6 TO CLOCK

00265  0074 00 4 01514  YOU    TSX CLEAR,4

00266  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00267  010203040506            BCD 1123456
00270  0000 00 0 00273         HTR *+3        ERR IN RI
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00271  0074 00 4 01457         TSX HECK,4     CHECK 8-4,8-3, ECHO
00272  0420 00 0 00265         HPR *-5        8-3, 8-4 ECHOS
00273  0760 00 0 00161         SWT 1
00274  0020 00 0 00276         TRA GOTA       PROCEED OR
00275  0020 00 0 00265         TRA YOU        REPEAT

                                   READ IN ALL 9-4 TO CLOCK

00276  0074 00 4 01514  GOTA   TSX CLEAR,4
00277  0074 00 4 01271         TSX DIRTY,4    PRINT CONTROL
00300  111007060504            BCD 1987654
00301  0000 00 0 00304         HTR *+3        ERR IN RI

00302  0074 00 4 01457         TSX HECK,4     CHECK 8-4,8-3, ECHO

00303  0420 00 0 00276         HPR *-5        8-3, 8-4 ECHOS
00304  0760 00 0 00161         SWT 1
00305  0020 00 0 00307         TRA GET        PROCEED OR
00306  0020 00 0 00276         TRA GOTA       REPEAT

                                   CHECK FOR NO READ OUT ON RESET

00307  0074 00 4 01514  GET    TSX CLEAR,4

00310  0762 00 0 01361         RPRA
00311  0760 00 0 01361         SPRA 1         EXTRA SPACE
00312  0760 00 0 01365         SPRA 5         RESET

00313  0074 00 4 01144         TSX SPLOK+1,4
00314  0000 01 0 00005         HTR 5,,1
00315  233025234260            BCD 5CHECK FOR NO READ OUT ON RESET
00316  264651604546
00317  605125212460
00320  466463604645
00321  605125622563
00322  0760 00 0 00162         SWT 2
00323  0020 00 0 00325         TRA *+2        CHECK FOR ERR
00324  0020 00 0 00350         TRA GET1       SKIP ERR CHECK
00325 -0500 00 0 01456         CAL ECHO
00326  0100 00 0 00350         TZE GET1       OK IF ZERO.
00327  0602 00 0 00332         SLW *+3        ERR WORD TO IMAGE

00330  0074 00 4 01143         TSX SPLOK,4
00331  0000 00 1 00013         HTR 11,1
00332  000000000000            BCD 5000000, READ DURING RESET. R-1
00333  736051252124
00334  602464513145
00335  276051256225
00336  633360514001
00337  110660623046            BCD 596 SHOULD PREVENT READ OUT ON
00340  644324604751
00341  256525456360
00342  512521246046
00343  646360464560
00344  512562256333            BCD 1RESET.
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00345  0766 00 0 01361         WPRA
00346  0760 00 0 01362         SPRA 2          SKIP TO ONE
00347  0420 00 0 00307         HPR GET         READ-OUT DURING RESET

00350  0760 00 0 00161  GET1   SWT 1
00351  0020 00 0 00353         TRA THE         PROCEED OR
00352  0020 00 0 00307         TRA GET         REPEAT.


                                    CHECK READ OUT DURING READ IN

00353  0074 00 4 01514  THE    TSX CLEAR,4

00354  0762 00 0 01361         RPRA
00355  0760 00 0 01361         SPRA 1          EXTRA SPACE
00356  0760 00 0 01363         SPRA 3          READ IN

00357  0074 00 4 01144         TSX SPLOK+1,4
00360  0000 01 0 00007         HTR 7,,1
00361  030405060710            BCD 4345678-- CHECK READ OUT
00362  404060233025
00363  234260512521
00364  246046646360
00365  246451314527            BCD 3DURING READ IN.
00366  605125212460
00367  314533606060

00370  0760 00 0 00162         SWT 2
00371  0020 00 0 00373         TRA *+2         CHECK
00372  0020 00 0 00417         TRA THE1        SKIP ERR CHECK

00373 -0500 00 0 01456         CAL ECHO
00374  0100 00 0 00417         TZE THE1        OK IF ZERO
00375  0602 00 0 00400         SLW *+3

00376  0074 00 4 01143         TSX SPLOK,4
00377  0000 01 0 00014         HTR 12,,1
00400  000000000000            BCD 6000000, READ BACK DURING READ IN. R-
00401  736051252124
00402  602221234260
00403  246451314527
00404  605125212460
00405  314533605140
00406  020004606230            BCD 6204 SHOULD BLOCK READ-OUT ON READ-IN
00407  466443246022
00410  434623426051
00411  252124404664
00412  636046456051
00413  252124403145

00414  0766 00 0 01361         WPRA
00415  0760 00 0 01362         SPRA 2          SKIP TO ONE
00416  0420 00 0 00353         HPR THE         RO DURING RI

00417  0760 00 0 00161  THE1   SWT 1
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00420  0020 00 0 00422         TRA BEST       PROCEED OR
00421  0020 00 0 00353         TRA THE        REPEAT

                                   SIMULTANEOUS READ IN AND READ OUT
                                   PULSE. SHOULD NOT GET READ OUT EXIT.

00422  0074 00 4 01514  BEST    TSX CLEAR,4

00423  0762 00 0 01361         RPRA
00424  0760 00 0 01361         SPRA 1         EXTRA SPACE
00425  0760 00 0 01363         SPRA 3         READ IN
00426  0760 00 0 01364         SPRA 4         READ OUT

00427  0074 00 4 01144         TSX SPLOK+1,4
00430  0000 01 0 00013         HTR 11,,1
00431  050505050505            BCD 5555555, READ IN AND READ OUT S
00432  736051252124
00433  603145602145
00434  246051252124
00435  604664636062
00436  314464436321            BCD 6IMULTANEOUSLY, SHOULD NOT GET ECHOS.
00437  452546646243
00440  707360623046
00441  644324604546
00442  636027256360
00443  252330466233

00444  0760 00 0 00162         SWT 2
00445  0020 00 0 00447         TRA *+2        CHECK
00446  0020 00 0 00472         TRA BEST1      SKIP ERR CHECK

00447 -0500 00 0 01456         CAL ECHO
00450  0100 00 0 00472         TZE BEST1      OK IF ZERO
00451  0602 00 0 00454         SLW *+3

00452  0074 00 4 01143         TSX SPLOK,4
00453  0000 01 0 00013         HTR 11,,1
00454  000000000000            BCD 4000000 READ FROM CLOCK.
00455  605125212460
00456  265146446023
00457  434623423360
00460  514002000460            BCD 5R-204 SHOULD HAVE SUPPRESSED R
00461  623046644324
00462  603021652560
00463  626447475125
00464  626225246051
00465  252124404664            BCD 2EAD-OUT.
00466  633360606060

00467  0766 00 0 01361         WPRA
00470  0760 00 0 01362         SPRA 2         SKIP TO ONE
00471  0420 00 0 00422         HPR BEST       RO DURING RI-RO SIMULTA.

00472  0760 00 0 00161  BEST1  SWT 1
00473  0020 00 0 00475         TRA FOR        PROCEED OR
00474  0020 00 0 00422         TRA BEST       REPEAT
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                                        DIRECT ADD, RI WITHOUT RESET.
00475  0074 00 4 01514  FOR    TSX CLEAR,4

00476  0766 00 0 01361         WPRA
00477  0760 00 0 01365         SPRA 5         RESET

00500  0762 00 0 01361         RPRA
00501  0760 00 0 01363         SPRA 3         READ IN
00502  0074 00 4 01144         TSX SPLOK+1,4
00503  0000 01 0 00010         HTR 8,,1
00504  030405060710            BCD 4345678 TO READ IN THEN,
00505  606346605125
00506  212460314560
00507  633025457360
00510  663163304664            BCD 4WITHOUT RESET, READ IN-
00511  636051256225
00512  637360512521
00513  246031454060

00514  0762 00 0 01361         RPRA
00515  0760 00 0 01363         SPRA 3         READ IN
00516  0074 00 4 01144         TSX SPLOK+1,4
00517  0000 01 0 00005         HTR 5,,1
00520  050301110705            BCD 5531975,, SHOULD GET 876543
00521  737360623046
00522  644324602725
00523  636010070605
00524  040360606060

00525  0760 00 0 00162         SWT 2
00526  0020 00 0 00530         TRA *+2        CHECK
00527  0020 00 0 00562         TRA FOR1       SKIP ERR CHECK
00530  0762 00 0 01361         RPRA
00531  0760 00 0 01364         SPRA 4         READ OUT

00532  0074 00 4 01144         TSX SPLOK+1,4
00533  0000 12 0 00004         HTR 4,,10
00534  512521246046            BCD 4READ OUT CLOCK TO CHECK.
00535  646360234346
00536  234260634660
00537  233025234233

00540  0500 00 0 01456         CLA ECHO
00541  0340 00 0 00556         CAS FOR2
00542  0020 00 0 00544         TRA *+2        ERR
00543  0020 00 0 00562         TRA FOR1          OK
00544  0601 00 0 00547         STO *+3        ERR

00545  0074 00 4 01143         TSX SPLOK,4
00546  0000 01 0 00010         HTR 8,,1
00547  000000000000            BCD 4000000 READ FROM CLOCK,
00550  605125212460
00551  265146446023
00552  434623427360
00553  623046644324            BCD 3SHOULD HAVE BEEN..
00554  603021652560
```

```
00555  222525453333
00556  100706050403     FOR2   BCD 1876543
00557  0766 00 0 01361         WPRA
00560  0760 00 0 01362         SPRA 2          SKIP TO ONE
00561  0420 00 0 00475         HPR FOR         ERR IN SUCCESSIVE RI.

00562  0760 00 0 00161  FOR1   SWT 1
00563  0020 00 0 00565         TRA ME          PROCEED OR
00564  0020 00 0 00475         TRA FOR         REPEAT


                                    CARRY TEST, CARRY FROM 999 TO 1000

00565  0074 00 4 01514  ME     TSX CLEAR,4

00566  0760 00 0 00004  KEYS   ENK 4           DETERMINE TIMING OF LOOP
00567 -0130 00 0 00000         XCL
00570 -0760 00 0 00001         PBT             WHICH MACHINE
00571  0020 00 0 00612         TRA NINTY       7090

00572  0767 00 0 00001         ALS 1           709
00573 -0760 00 0 00001         PBT             WHICH CLOCK

00574  0020 00 0 00603         TRA *+7
00575  0774 00 2 00077         AXT 63,2        709 .1 MIN CLOCK
00576  0767 00 0 00001         ALS 1

00577 -0760 00 0 00001         PBT             CHECK FOR ILLEGALE ENTRY
00600  0020 00 0 00631         TRA TIME
00601  0020 00 0 01147         TRA DOPE
00602  0020 00 0 00631         TRA TIME

00603  0767 00 0 00001         ALS 1
00604 -0760 00 0 00001         PBT
00605  0020 00 0 00610         TRA *+3
00606  0774 00 2 00567         AXT 375,2       709 .01 HOUR CLOCK
00607  0020 00 0 00631         TRA TIME
00610  0774 00 2 00007         AXT 7,2         709 .01 MIN CLOCK
00611  0020 00 0 00631         TRA TIME

00612  0767 00 0 00001  NINTY  ALS 1
00613 -0760 00 0 00001         PBT
00614  0020 00 0 00623         TRA *+7
00615  0774 00 2 00536         AXT 350,2       7090 .1 MIN CLOCK
00616  0767 00 0 00001         ALS 1

00617 -0760 00 0 00001         PBT             CHECK FOR ILLEGAL ENTRY
00620  0020 00 0 00631         TRA TIME
00621  0020 00 0 01147         TRA DOPE
00622  0020 00 0 00631         TRA TIME

00623  0767 00 0 00001         ALS 1
00624 -0760 00 0 00001         PBT
00625  0020 00 0 00630         TRA *+3
00626  0774 00 2 04064         AXT 2100,2      7090 .01 HOUR CLOCK
00627  0020 00 0 00631         TRA TIME
```

```
00630  0774 00 2 00043         AXT 35,2       7090 .01 MIN CLOCK

00631  0140 00 0 00632  TIME   TOV *+1        TURN OFF LIGHT
00632  0634 00 2 00746         SXA TIME2,2    SET NEXT TIMING LOOP

00633  0766 00 0 01361         WPRA
00634  0760 00 0 01365         SPRA 5         RESET

00635  0762 00 0 01361         RPRA
00636  0760 00 0 01363         SPRA 3         READ IN

00637  0074 00 4 01144         TSX SPLOK+1,4
00640  0000 01 0 00013         HTR 11,,1
00641  000000111111            BCD 3000999 TO READ IN,
00642  606346605125
00643  212460314573
00644  604546666066            BCD 4 NOW WAIT FOR A COUNT PU
00645  213163602646
00646  516021602346
00647  644563604764
00650  436225602145            BCD 4LSE AND CHECK FOR CARRY.
00651  246023302523
00652  426026465160
00653  232151517033

00654  0774 00 1 07640         AXT 4000,1
00655  2 00001 1 00655         TIX *,1,1      WAIT FOR CLOCK PULSE
00656  2 00001 2 00654         TIX *-2,2,1
00657  0774 00 1 06560         AXT 3440,1     EXTRA 15 MSEC DELAY TO
00660  2 00001 1 00660         TIX *,1,1      ALLOW TIME FOR CARRY

00661  0762 00 0 01361         RPRA
00662  0760 00 0 01364         SPRA 4         READ OUT

00663  0074 00 4 01144         TSX SPLOK+1,4
00664  0000 12 0 00006         HTR 6,,10
00665  512521246023            BCD 4READ CLOCK AND CHECK FOR
00666  434623426021
00667  452460233025
00670  234260264651
00671  602321515170            BCD 2 CARRY.
00672  336060606060

00673  0760 00 0 00162         SWT 2
00674  0020 00 0 00676         TRA *+2        CHECK
00675  0020 00 0 00725         TRA ME2        SKIP ERR CHECK
00676 -0500 00 0 01456         CAL ECHO       WORD FROM CLOCK
00677 -0340 00 0 01424         LAS CARY       CHECK
00700  0020 00 0 00702         TRA *+2
00701  0020 00 0 00725         TRA ME2        OK

00702 -0340 00 0 01425         LAS CARY+1     COULD HAVE 2 COUNTS.
00703  0020 00 0 00705         TRA *+2        NG
00704  0020 00 0 00725         TRA ME2        OK
00705  0602 00 0 00710         SLW *+3
```

```
00706  0074 00 4 01143         TSX SPLOK,4
00707  0000 01 0 00012         HTR 10,,1
00710  000000000000            BCD 4000000 READ BACK AFTER C
00711  605125212460
00712  222123426021
00713  266325516023
00714  215151706063            BCD 4ARRY TEST. SHOULD BE 100
00715  256263336062
00716  304664432460
00717  222560010000
00720  006046516001            BCD 20 OR 1001.
00721  000001336060

00722  0766 00 0 01361         WPRA
00723  0760 00 0 01362         SPRA 2          SKIP TO ONE
00724  0420 00 0 00565         HPR ME          ERR IN CARRY TO THOUSANDS
00725  0760 00 0 00161  ME2    SWT 1
00726  0020 00 0 00730         TRA CA2         PROCEED OR
00727  0020 00 0 00565         TRA ME          REPEAT

                                CARRY TO ZERO FROM ALL NINES.

00730  0074 00 4 01514  CA2    TSX CLEAR,4

00731  0766 00 0 01361         WPRA
00732  0760 00 0 01365         SPRA 5          RESET

00733  0762 00 0 01361         RPRA
00734  0760 00 0 01363         SPRA 3          READ IN
00735  0074 00 4 01144         TSX SPLOK+1,4
00736  0000 01 0 00007         HTR 7,,1
00737  111111111111            BCD 4999999 TO CLOCK, ALLOW A
00740  606346602343
00741  462342736021
00742  434346666021
00743  602321515170            BCD 3 CARRY TO ZERO.
00744  606346607125
00745  514633606060

00746  0774 00 2 00000  TIME2  AXT 0,2
00747  0774 00 1 07640         AXT 4000,1
00750  2 00001 1 00750         TIX *,1,1       WAIT FOR CLOCK PULSE
00751  2 00001 2 00747         TIX *-2,2,1
00752  0774 00 1 15340         AXT 6880,1      EXTRA 30 MSEC DELAY TO
00753  2 00001 1 00753         TIX *,1,1       ALLOW TIME FOR CARRY


00754  0762 00 0 01361         RPRA
00755  0760 00 0 01364         SPRA 4          READ OUT
00756  0074 00 4 01144         TSX SPLOK+1,4
00757  0000 12 0 00006         HTR 6,,10
00760  512521246022            BCD 6READ BACK CLOCK AND CHECK CARRY
00761  212342602343
00762  462342602145
00763  246023302523
00764  426023215151
```

```
00765  706060606060

00766  0760 00 0 00162         SWT 2
00767  0020 00 0 00771         TRA *+2         CHECK
00770  0020 00 0 01015         TRA CA21        SKIP ERR CHECK

00771 -0500 00 0 01456         CAL ECHO        WORD FROM CLOCK
00772  0100 00 0 01015         TZE CA21        OK IF ZERO
00773 -0340 00 0 01423         LAS CARY-1      OR IF 000001
00774  0020 00 0 00776         TRA *+2         NG
00775  0020 00 0 01015         TRA CA21         OK
00776  0602 00 0 01001         SLW *+3
00777  0074 00 4 01143         TSX SPLOK,4
01000  0000 01 0 00011         HTR 9,,1
01001  000000000000            BCD 4000000 READ AFTER CARRY
01002  605125212460
01003  212663255160
01004  232151517060
01005  632562637360            BCD 4TEST, SHOULD BE ZERO OR
01006  623046644324
01007  602225607125
01010  514660465160
01011  000000000001            BCD 1000001

01012  0766 00 0 01361         WPRA
01013  0760 00 0 01362         SPRA 2          SKIP TO ONE
01014  0420 00 0 00730         HPR CA2         ERR IN CARRY TO ZERO

01015  0760 00 0 00161  CA21   SWT 1
01016  0020 00 0 01020         TRA COUNT       PROCEED OR
01017  0020 00 0 00730         TRA CA2           REPEAT


                               MANUAL COUNT TEST-OPERATES
                               AUTOMATICALLY ON FIRST PROGRAM
                               PASS, THEREAFTER ONLY IF
                               TRANSFERRED TO MANUALLY.

                               COUNTS UNTIL SWITCH 4 GOES UP.

01020  0074 00 4 01514  COUNT  TSX CLEAR,4

01021 -0500 00 0 01024         CAL *+3         WORKS FOR
01022  0602 00 0 01021         SLW *-1          FIRST PASS
01023  0020 00 0 01025         TRA CT             ONLY
01024  0020 00 0 01117         TRA END

01025  0766 00 0 01361  CT     WPRA
01026  0760 00 0 01361         SPRA 1          EXTRA SPACE

01027  0074 00 4 06500         TSX SPLAT,4
01030  0000 01 0 00007         HTR 7,,1
01031  442145642143            BCD 3MANUAL COUNT TEST.
01032  602346644563
01033  606325626333
01034  475125626260            BCD 4PRESS START TO BEGIN.
```

```
01035  626321516360
01036  634660222527
01037  314533606060

01040  0074 00 4 06500        TSX SPLAT,4
01041  0000 01 0 00010        HTR 8,,1
01042  234664456331           BCD 4COUNTING WILL BEGIN WHEN
01043  452760663143
01044  436022252731
01045  456066302545
01046  606225456225           BCD 4 SENSE LITE 4 GOES ON.
01047  604331632560
01050  046027462562
01051  604645336060
01052  0074 00 4 06500        TSX SPLAT,4
01053  0000 01 0 00010        HTR 8,,1
01054  214524606631           BCD 4AND WILL CONTINUE UNTIL
01055  434360234645
01056  633145642560
01057  644563314360
01060  606266316323           BCD 4 SWITCH 4 IS PUT UP.
01061  306004603162
01062  604764636064
01063  473360606060
01064  0766 00 0 01361        WPRA
01065  0760 00 0 01362        SPRA 2         SKIP TO ONE

01066  0420 00 0 00000        HPR
                                  PUT SWITCH 4 DOWN, AND PRESS
                                  START TO BEGIN COUNTING. COUNTING
                                  BEGINS WHEN LITE 4 GOES ON,
                                  AND CONTINUES UNTIL SSW4 IS PUT UP.
01067  0760 00 0 00140        SLF
01070  0766 00 0 01361        WPRA
01071  0760 00 0 01365        SPRA 5         RESET
01072  0766 00 0 01361        WPRA           WAIT FOR DISCONNECT
01073  0060 00 0 01073        TCOA *
01074  0760 00 0 00144        SLN 4          BEGIN

01075  0760 00 0 00164        SWT 4
01076  0020 00 0 01100        TRA *+2        STOP
01077  0020 00 0 01075        TRA *-2        CONTINUE UNTIL SSW4 IS UP.

01100  0766 00 0 01361        WPRA
01101  0760 00 0 01364        SPRA 4         READ OUT
01102  0074 00 4 06501        TSX SPLAT+1,4
01103  0000 01 0 00011        HTR 9,,1
01104  234664456360           BCD 4COUNT OVER, VALUE FROM
01105  466525517360
01106  652143642560
01107  265146446060
01110  234346234260           BCD 5CLOCK APPEARS TO THE RIGHT.
01111  214747252151
01112  626063466063
01113  302560513127
01114  306333606060
```

```
01115  0766 00 0 01361         WPRA
01116  0760 00 0 00140         SLF
01117  0766 00 0 01361  END    WPRA
01120  0760 00 0 01361         SPRA 1          EXTRA SPACE
01121  0074 00 4 06501         TSX SPLAT+1,4
01122  0 00017 0 00006         PZE 6,,15
01123  545454601147            BCD 6*** 9PACC  PASS COMPLETE  9PACC ***
01124  212323606047
01125  216262602346
01126  444743256325
01127  606011472123
01130  236054545460
01131  0766 00 0 01361         WPRA
01132  0760 00 0 01362         SPRA 2          SKIP TO ONE

01133  0760 00 0 00166         SWT 6
01134  0020 00 0 01136         TRA *+2
01135  0020 00 0 00040         TRA HEY         REPEAT PROGRAM.

01136  0762 00 0 01321         RCDA            LOAD
01137  0540 00 0 01142         RCHA *+3           CARDS
01140  0544 00 0 00000         LCHA 0               BUTTON
01141  0021 00 0 00001         TTR 1
01142 -1 00003 0 00000         IOCT 0,,3

                                   SET UP ECHO PROGRAMME

01143  0762 00 0 01361  SPLOK  RPRA
01144 -0500 00 0 01635         CAL KK
01145  0602 00 0 06574         SLW SPLAT+60
01146  0020 00 0 06501         TRA SPLAT+1

01147  0766 00 0 01361  DOPE   WPRA
01150  0074 00 4 06500         TSX SPLAT,4
01151  0 00012 0 00011         PZE 9,,10
01152  314343252721            BCD 6ILLEGAL KEY ENTRY      TRY ONE OF TH
01153  436042257060
01154  254563517060
01155  606060606063
01156  517060464525
01157  604626606330
01160  256225604645            BCD 3ESE ON S, 1 AND 2.
01161  606273600160
01162  214524600233
01163  0766 00 0 01361         WPRA

01164  0074 00 4 06500         TSX SPLAT,4
01165  0 00031 0 00005         PZE 5,,25
01166  330001604431            BCD 5.01 MIN   .1 MIN   .01 HOUR
01167  456060603301
01170  604431456060
01171  603300016030
01172  466451606060

01173  0074 00 4 06500         TSX SPLAT,4
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01174  0 00023 0 00006         PZE 6,,19
01175  600700110060            BCD 6 7090   000        010       001
01176  606000000060
01177  606060606060
01200  600001006060
01201  606060606000
01202  000160606060

01203  0074 00 4 06500         TSX SPLAT,4
01204  0 00023 0 00006         PZE 6,,19
01205  600700116060            BCD 6 709    100        110       101
01206  606001000060
01207  606060606060
01210  600101006060
01211  606060606001
01212  000160606060
01213  0000 00 0 00566         HTR ME+1

                                   TEST FOR PANEL

01214  0762 00 0 01361  PANEL  RPRA
01215  0760 00 0 01366         SPRA 6         PULSE SENSE ENTRY HUB
01216  0760 00 0 01360         SPTA
01217  0020 00 0 01221         TRA *+2
01220  0020 00 4 00001         TRA 1,4        OK
01221  0060 00 0 01216         TCOA *-3       KEEP TRYING
01222  0074 00 4 06500         TSX SPLAT,4
01223  0000 01 0 00006         HTR 6,,1
01224  474325216225            BCD 4PLEASE PUT IN PRINTER BO
01225  604764636031
01226  456047513145
01227  632551602246
01230  215124602646            BCD 2ARD FOR 9PAC
01231  516011472123

01232  0000 00 0 00030         HTR 24         WRONG PRINTER BOARD.


                                   MANUAL ENTERY PROGRAMME

01233  0420 00 0 01234         HPR BUNG
01234  0074 00 4 01546  BUNG   TSX RESET,4
01235  0420 00 0 01234         HPR BUNG       ENTER BCD WORD IN KEYS
01236  0760 00 0 00004         ENK
01237 -0600 00 0 01250         STQ BANG
01240 -0600 00 0 01262         STQ BONG
01241  0766 00 0 01361         WPRA
01242  0760 00 0 01365         SPRA 5         RESET

01243  0074 00 4 06501         TSX SPLAT+1,4
01244  0000 01 0 00014         HTR 12,,1
01245  704664603021            BCD 3YOU HAVE ASKED ..
01246  652560216242
01247  252460333360
01250  000000000000     BANG   BCD 6000000 BE READ IN TO CLOCK-IT
01251  602225605125
```

```
01252  212460314560
01253  634660234346
01254  234240316360
01255  606060606060
01256  623021434360           BCD 3SHALL BE DONE.
01257  222560244645
01260  253360606060

01261  0074 00 4 01271        TSX DIRTY,4
01262  000000000000     BONG  BCD 1000000   WORD FROM KEYS
01263  0000 00 0 01266        HTR *+3        ERR IN RI
01264  0074 00 4 01457        TSX HECK,4
01265  0420 00 0 01262        HPR BONG       8-3, 8-4 ECHOS.


01266  0760 00 0 00161        SWT 1
01267  0000 00 0 01235        HTR BUNG+1     SET AND WAIT.
01270  0020 00 0 01261        TRA BONG-1     CONTINUE

                                  SUBROUTINE TO READ-IN TO CLOCK
                                  AND THEN READ BACK TO CHECK.

01271  0766 00 0 01361  DIRTY  WPRA
01272  0760 00 0 01365        SPRA 5         RESET
01273  0634 00 4 01350        SXA FEET,4
01274 -0500 00 4 00001        CAL 1,4        WORD TO READ IN
01275  0602 00 0 01303        SLW SOX        PLACE IN IMAGE
01276  0602 00 0 01342        SLW BARE+4
01277  0762 00 0 01361        RPRA
01300  0760 00 0 01363        SPRA 3         READ IN

01301  0074 00 4 01144        TSX SPLOK+1,4
01302  0000 01 0 00005        HTR 5,,1
01303  000000000000     SOX   BCD 5000000 TO READ IN TO CLOCK.
01304  606346605125
01305  212460314560
01306  634660234346
01307  234233606060

01310  0760 00 0 00162        SWT 2
01311  0020 00 0 01314        TRA *+3        CHECK
01312  0534 00 4 01350        LXA FEET,4     SKIP
01313  0020 00 4 00005        TRA 5,4          ERR CHECK

01314  0762 00 0 01361        RPRA
01315  0760 00 0 01364        SPRA 4         READ OUT
01316  0074 00 4 01144        TSX SPLOK+1,4
01317  0000 12 0 00005        HTR 5,,10
01320  512521246022           BCD 4READ BACK FROM CLOCK TO
01321  212342602651
01322  464460234346
01323  234260634660
01324  233025234233           BCD 1CHECK.

01325 -0500 00 0 01456        CAL ECHO       WORD FROM CLOCK
01326 -0340 00 0 01303        LAS SOX        CHECK
```

```
01327  0020 00 0 01331         TRA *+2
01330  0020 00 0 01350         TRA FEET        OK
01331  0602 00 0 01336         SLW BARE        ERR WORD TO IMAGE

01332  0074 00 4 01143         TSX SPLOK,4
01333  0000 12 0 00010         HTR 8,,10
01334  512521246022            BCD 2READ BACK...
01335  212342333333
01336  000000000000     BARE   BCD 1000000
01337  606230466443            BCD 3 SHOULD HAVE BEEN
01340  246030216525
01341  602225254560
01342  000000000000            BCD 2000000.
01343  336060606060
01344  0766 00 0 01361         WPRA
01345  0760 00 0 01362         SPRA 2          SKIP TO ONE
01346  0534 00 4 01350         LXA FEET,4
01347  0020 00 4 00002         TRA 2,4         ERROR RETURN


01350  0774 00 4 00000  FEET   AXT 0,4
01351  0020 00 4 00003         TRA 3,4         EXIT

01352  0540 00 0 01426  STRIP  RCHA IPR        PRINT DIGITS
01353  0774 00 2 00006         AXT 6,2
01354  0600 00 2 01455         STZ COL6+1,2    CLEAR ECHO IMAGE

01355  2 00001 2 01354         TIX *-1,2,1

01356  0544 00 0 01432         LCHA GO-2       GET + AND - ECHO
01357  0774 00 1 00004         AXT 4,1
01360 -0754 00 0 00000         PXD 0,0         CLEAR ACCUMULATOR
01361 -0501 00 1 01645         ORA 84E+4,1
01362  2 00001 1 01361         TIX *-1,1,1
01363 -0320 00 0 01455         ANA 6COLS       6 COLS ONLY
01364  0100 00 0 01366         TZE *+2
01365  0760 00 0 00141         SLN 1           ERR SHOULD NOT GET +/- ECHO.
01366  0774 00 2 00011         AXT 9,2         SET UP FOR TRANSLATION


01367  0544 00 2 01445         LCHA GO+9,2     SYNCHRONIZE, MAN.

01370  0774 00 1 00006         AXT 6,1         6 COLS
01371  0560 00 0 01645         LDQ E           9 ROW ECHO, ETC.
01372 -0754 00 0 00000         PXD 0,0         CLEAR ACCUMULATOR
01373 -0763 00 0 00001         LGL 1           1 COL.
01374  0760 00 0 00001         LBT
01375  0020 00 0 01400         TRA *+3         SKIP FOR NO BIT
01376 -0500 00 2 01424         CAL NINE+9,2    BCD CHARACTER FOR THIS ROW
01377  0602 00 1 01455         SLW COL6+1,1    ECHO IMAGE
01400  2 00001 1 01372         TIX *-6,1,1     NEXT COL
01401  2 00001 2 01367         TIX *-10,2,1    NEXT ROW

01402  0774 00 1 00006         AXT 6,1         MAKE ECHO WORD
01403 -0754 00 0 00000         PXD 0,0         CLEAR ACCUMULATOR
01404  0767 00 0 00006         ALS 6           MOVE IT ON OVER
```

```
01405 -0501 00 1 01455         ORA COL6+1,1   LITTLE DAWG.
01406  2 00001 1 01404         TIX *-2,1,1
01407  0602 00 0 01456         SLW ECHO


01410 -0500 00 0 01636         CAL KK+1       RESTORE
01411  0602 00 0 06574         SLW SPLAT+60       SPLAT
01412  0020 00 0 06575         TRA SPLAT+61   EXIT

01413  000000000011     NINE   BCD 1000009
01414  000000000010            BCD 1000008
01415  000000000007            BCD 1000007
01416  000000000006            BCD 1000006
01417  000000000005            BCD 1000005
01420  000000000004            BCD 1000004
01421  000000000003            BCD 1000003
01422  000000000002            BCD 1000002
01423  000000000001            BCD 1000001

01424  000001000000     CARY   BCD 1001000
01425  000001000001            BCD 1001001

01426 -0000 22 0 06636  IPR    IOCP 9RL,,18
01427 -0000 02 0 01641         IOCP 84E,,2
01430 -0000 02 0 06660         IOCP ORL,,2
01431 -1 00002 0 01643         IOCT 83E,,2
01432 -0000 02 0 06662         IOCP 11RL,,2
01433 -1 00002 0 01645         IOCT E,,2      9 ROW ECHO

01434  1 00000 0 01445  GO     TCH COL1-2     GET 12RL COMMAND
01435 -1 00002 0 01645         IOCT E,,2      7 ROW
01436 -1 00002 0 01645         IOCT E,,2      6 ROW
01437 -1 00002 0 01645         IOCT E,,2      5 ROW
01440 -1 00002 0 01645         IOCT E,,2      4 ROW
01441 -1 00002 0 01645         IOCT E,,2      3 ROW
01442 -1 00002 0 01645         IOCT E,,2      2 ROW
01443 -1 00002 0 01645         IOCT E,,2      1 ROW
01444  0000 00 0 00000         IOCD           ROW
01445 -0000 02 0 06664         IOCP 12RL,,2   WRITE 12 ROW, THEN
01446 -1 00002 0 01645         IOCT E,,2      GET 8 ROW-ECHO

01447  0 00000 0 00000  COL1   PZE 0
01450  0 00000 0 00000  COL2   PZE 0
01451  0 00000 0 00000  COL3   PZE 0
01452  0 00000 0 00000  COL4   PZE 0
01453  0 00000 0 00000  COL5   PZE 0
01454  0 00000 0 00000  COL6   PZE 0

01455 -370000000000     6COLS  OCT 770000000000
01456  0 00000 0 00000  ECHO   PZE 0
01457 -0760 00 0 00141  HECK   SLT 1
01460  0020 00 4 00002         TRA 2,4

01461  0634 00 4 01512         SXA HECK1,4
01462  0535 00 4 01512         LAC HECK1,4
01463  0754 00 4 00000         PXA ,4
```

```
01464  0074 00 4 06671         TSX PX,4
01465  0761 00 0 00000         NOP
01466  0761 00 0 00000         NOP
01467 -0763 00 0 00002         LGL 2
01470  0760 00 0 00006         COM
01471 -0763 00 0 00042         LGL 34
01472  0602 00 0 01507         SLW *+13

01473  0074 00 4 06500         TSX SPLAT,4
01474  0000 01 0 00013         HTR 11,,1      CONTROL WORD
01475  512523253165            BCD 4RECEIVED 8-4, 8-3 ECHOS
01476  252460104004
01477  736010400360
01500  252330466260
01501  265146446063            BCD 4FROM THE CLOCK. PROGRAM
01502  302560234346
01503  234233604751
01504  462751214460
01505  212424512562            BCD 2ADDRESS ...
01506  626033333360
01507  000000000000            BCD 1000000

01510  0766 00 0 01361         WPRA
01511  0760 00 0 01362         SPRA 2         SKIP TO ONE
01512  0774 00 4 00000  HECK1  AXT 0,4
01513  0020 00 4 00001         TRA 1,4


*         PROGRAMME SEQUENCE AND CONTROL MONITOR.


01514  0760 00 0 00140  CLEAR  SLF            LIGHTS OUT
01515  0760 00 0 00161         SWT 1
01516  0020 00 0 01522         TRA *+4        NOT REPEATED
01517 -0754 00 4 00000         PXD ,4         TEST REPEATED OR
01520  0402 00 0 01647         SUB MONIT      WILL BE REPEATED
01521  0100 00 0 01547         TZE RESET+1    IF ZERO, PROGRAMME
                                              SEQUENCE OK.



01522  0600 00 0 06725         STZ FREE
01523 -0634 00 4 06725         SXD FREE,4     SAVE ADDRESS
01524  0500 00 4 77777         CLA -1,4       PRECEEDING TEST ADDRESS
01525  0737 00 4 00000         PAC ,4
01526 -0754 00 4 00000         PXD ,4         COMPLEMENT
01527  0402 00 0 01647         SUB MONIT      SHOULD ZERO
01530 -0534 00 4 06725         LXD FREE,4     RESTORE XRC
01531  0100 00 0 01547         TZE RESET+1    OK IF ZERO.



01532  0760 00 0 00004         ENK            CHECK FOR MANUAL TRANSFER
01533  0131 00 0 00000         XCA
01534  0737 00 4 00000         PAC ,4         COMPLEMENT KEYS ADDRESS
01535  0765 00 0 00025         LRS 21         CHECK TRA ONLY
```

```
01536  0402 00 0 01640         SUB K41        SUB 0200
01537 -0100 00 0 01544         TNZ *+5        SEQUENCE SHOT IF NOT ZERO.
01540 -0754 00 4 00000         PXD ,4         OK, CHECK ADDRESS
01541  0402 00 0 06725         SUB FREE
01542 -0534 00 4 06725         LXD FREE,4     RESTORE
01543  0100 00 0 01547         TZE RESET+1    OK IF ZERO

01544 -0534 00 4 06725         LXD FREE,4     PROGRAM OUT OF SEQUENCE
01545  0021 00 0 01566         TTR SPACE


01546  0760 00 0 00140  RESET  SLF            LIGHTS OUT
01547 -0634 00 4 01647         SXD MONIT,4    MONITOR
01550 -0535 00 4 01647         LDC MONIT,4
01551  1 00001 4 01552         TXI *+1,4,1
01552  0634 00 4 01565         SXA EXIT,4     FOR RETURN
01553 -0754 00 0 00000         PXD 0,0        CLEAR ACCUMULATOR
01554  0765 00 0 00043         LRS 35
01555  0140 00 0 01556         TOV *+1
01556  0161 00 0 01557         TQO *+1        OUT
01557  0760 00 0 00005         IOT            OUT-DAMMED SPOT.
01560  0761 00 0 00000         NOP
01561  0760 00 0 00012         DCT
01562  0761 00 0 00000         NOP
01563  0044 00 0 00000         PAI
01564  0774 00 7 00000         AXT ,7
01565  0020 00 0 00000  EXIT   TRA **


01566 -0634 00 4 01650  SPACE  SXD BIN,4
01567 -0535 00 4 01650         LDC BIN,4
01570  0754 00 4 00000         PXA ,4
01571  0074 00 4 06671         TSX PX,4
01572  0761 00 0 00000         NOP
01573  0761 00 0 00000         NOP
01574 -0600 00 0 01612         STQ POT
01575 -0535 00 4 01647         LDC MONIT,4
01576  0754 00 4 00000         PXA ,4
01577  0074 00 4 06671         TSX PX,4
01600  0761 00 0 00000         NOP
01601  0761 00 0 00000         NOP
01602 -0600 00 0 01615         STQ PAT

01603  0074 00 4 06500         TSX SPLAT,4
01604  0000 01 0 00011         HTR 9,,1
01605  444645316346            BCD 5MONITOR. PROGRAMME SKIP TO..
01606  513360475146
01607  275121444425
01610  606242314760
01611  634633336060
01612  000000000000     POT    BCD 3000000, RETURN TO..
01613  736051256364
01614  514560634633
01615  000000000000     PAT    BCD 1000000
01616  0634 00 2 01623         SXA *+5,2      SAVE.
01617 -0534 00 4 01647         LXD MONIT,4
```

```
01620  0500 00 4 77777         CLA -1,4       RESET
01621  0737 00 2 00000         PAC ,2          MONITOR
01622 -0634 00 2 01647         SXD MONIT,2
01623  0774 00 2 00000         AXT ,2         RESTORE XRB
01624  0020 00 4 00000         TRA ,4         RETURN

01625  0774 00 1 04625  START  AXT SPLAT-2-WOW,1
01626  0500 00 0 01637         CLA CATCH
01627  0601 00 1 06500  BURMA  STO SPLAT,1
01630  2 00001 1 01627         TIX BURMA,1,1
01631  0774 00 1 71040         AXT 32767-PR,1 FILL-ER UP
01632  0601 00 1 00000  SHAVE  STO ,1
01633  2 00001 1 01632         TIX SHAVE,1,1
01634  0020 00 0 00030         TRA 24         COMMENCE

01635  0020 00 0 01352  KK     TRA STRIP
01636  0540 00 0 06624         RCHA SPLAT+84

01637  0074 00 4 01566  CATCH  TSX SPACE,4
01640 +000000000200     K41    OCT 200

                01641  84E    BSS 2
                01643  83E    BSS 2
                01645  E      BSS 2
                01647  MONIT  BSS 1
                01650  BIN    BSS 1
                01651  WOW    BSS 1
```

INDEXABLE BCD PRINT SUBROUTINE.

*THIS SUBROUTINE USES THREE SYMBOLS, THEY ARE...

SPLAT, THE FIRST WORD OF THE ROUTINE

CI, USED FOR CARD IMAGE, 26 LOCATION

SUBET, THE CONTENTS OF XRC ARE STORED
IN THE ADDRESS OF SUBET.

*CONDTION OF THE ACC, MQ, AND ACC OVERFLOW
*TRIGGER IS NOT GUARANTEED ON EXIT FROM THIS ROUTINE.

THE PRINTER ON CHANNEL A IS USED
YOU MAY ENTER SPLAT+1 IF YOU HAVE
ALREADY GIVEN WRIT SELECT.

THE RCHA INSTRUCTION IS AT SPLAT+60.

THERE IS NO CHANNEL DELAY IN THE
SUBROUTINE, THEREFORE TAKE CARE NOT
TO USE CI UNTIL AFTER 12 ROW-RIGTH
HAS BEEN WRITTEN. FOR THIS REASON,
YOU MUST GIVE WRS FOR EACH ENTRY
OR ENTER AT SPLAT.

```
                 06500          ORG 3392
06500  0766 00 0 01361  SPLAT   WPRA           GET GOING
06501  0634 00 1 06575          SXA SPLAT+61,1
06502  0634 00 2 06576          SXA SPLAT+62,2
06503  0634 00 4 06666          SXA SUBET,4    SAVE ORGINAL XRC.
06504 -0520 00 4 00001          NZT 1,4        IF CONTROL WORD ZERO.

*5
06505  0020 00 4 00002          TRA 2,4        RETURN

06506 -0500 00 4 00001          CAL 1,4        GET NON-ZERO WORD
06507  0602 00 0 06625          SLW SPLAT+85   SAVE CONTROL WORD
06510 -0734 00 1 00000          PDX 0,1        TYPE WHEEL NO.
06511 -3 00000 1 06601          TXL SPLAT+65,1,0 IF DECR. ZERO, GET
                                               NEW CONTROL WORD

*10
06512 -0634 00 4 06514          SXD *+2,4      GET EXIT ADDRESS
06513  0737 00 2 00000          PAC 0,2        BY ADDING TWOS COMP.
06514  1 00000 2 06515          TXI *+1,2,0    OF N TO XRC.
06515  0634 00 2 06577          SXA SPLAT+63,2 EXIT VALUE.

                                     SET BIT INDEX TO STARTING WHEEL

06516  0634 00 1 06521          SXA *+3,1      FOR SHIFTING

*15
```

```
06517  0774 00 3 00001         AXT 1,3       1 TO XRA AND XRB
06520 -0500 00 0 06622         CAL SPLAT+82  BIT INDEX TO P
06521 -0765 00 1 00000         LGR 0,1       SHIFT TO STARTING POINT
06522 -0100 00 0 06525         TNZ *+3       IF ACC IS ZERO, SET FOR
06523 -0600 00 0 06623         STQ SPLAT+83  RIGHT ROW, AND MAKE

*20
06524  1 00001 2 06526         TXI *+2,2,1   XRB A DUECE
06525  0602 00 0 06623         SLW SPLAT+83  OTHERWISE, LEFT ROW.
06526  0774 00 1 00032         AXT 26,1
06527  0600 00 1 06666         STZ CI+26,1   CLEAR CARD IMAGE
06530  2 00001 1 06527         TIX *-1,1,1


                                   FORM CARD IMAGE.

*25
06531  2 00001 4 06532         TIX *+1,4,1   ADDRESS OF FIRST WORD.
06532  0774 00 1 00006         AXT 6,1       CHARACTER COUNT.
06533  0560 00 4 00001         LDQ 1,4       GET THE WORD.
                                             SOME PEOPLE NEVER
                                             DO, YOU KNOW

06534  0634 00 1 06566         SXA SPLAT+54,1 SAVE CHARACTER COUNT.
06535 -0754 00 0 00000         PXD           CLEAR ACC

*30
06536 -0763 00 0 00002         LGL 2         ZONE
06537  0767 00 0 00001         ALS 1         TIMES 2
06540  0734 00 1 00000         PAX 0,1
06541  0634 00 1 06555         SXA SPLAT+45,1 FOR FUTURE REFERENCE.
06542  0760 00 0 00000         CLM

*35
06543 -0763 00 0 00004         LGL 4         DIGIT
06544  0767 00 0 00001         ALS 1         TIMES 2
06545  0602 00 0 06634         SLW CI        TEMP0
06546 -0500 00 0 06623         CAL SPLAT+83  BIT INDEX
06547 -0520 00 0 06634         NZT CI        IS DIGIT ZERO.

*40
06550  3 00000 1 06620         TXH SPLAT+80,1,0 IS ZERO ZONE TOO.
06551  0534 00 1 06634         LXA CI,1      OK, PROCEED
06552  3 00030 1 06560         TXH SPLAT+48,1,24 CHECK FOR ILLEGAL
06553  3 00024 1 06616         TXH SPLAT+78,1,20 SPECIAL CHARACTER.
06554 -0602 60 2 06634         ORS* SPLAT+92,2 XRB PICKS LEFT OR RIGHT.

*45
06555  0774 00 1 00000         AXT 0,1       ZONE AGAIN.
06556 -3 00000 1 06560         TXL *+2,1,0   NOTHING FOR ZERO ZONE
06557 -0602 60 2 06632         ORS* SPLAT+90,2 PLACE ZONE BIT.

                                    COLUMN SET.

06560  0771 00 0 00001         ARS 1         SET BIT INDEX TO
06561 -0100 00 0 06565         TNZ *+4       NEXT COLUMN, IF ANY.
```

```
*50
06562  3 00001 2 06574         TXH SPLAT+60,2,1 IF BX ZERO,+XRB 1, STOP

06563 -0500 00 0 06622         CAL SPLAT+82  IF NOT, SET TO RIGHT
06564  1 00001 2 06565         TXI *+1,2,1   ROW AND PROCEED.
06565  0602 00 0 06623         SLW SPLAT+83  BX READY FOR NEXT COLUMN.
06566  0774 00 1 00000         AXT 0,1       MORE CHARACTERS.

*55
06567  2 00001 1 06534         TIX SPLAT+28,1,1 NEXT COLUMN
06570  0534 00 1 06625         LXA SPLAT+85,1 MORE WORDS MAYBE.
06571 -2 00001 1 06574         TNX *+3,1,1    IF NOT, STOP.
06572  0634 00 1 06625         SXA SPLAT+85,1 YUMMY, GO GET EM.
06573  1 00000 0 06531         TXI SPLAT+25

                                   FIFTEEN MEN ON A DEAD MANS CHEST.

*60
06574  0540 00 0 06624         RCHA SPLAT+84  LET HER RIP
06575  0774 00 1 00000         AXT 0,1
06576  0774 00 2 00000         AXT 0,2
06577  0774 00 4 00000         AXT 0,4
06600  0020 00 4 00002         TRA 2,4         EXIT


                                    GET NEW CONTROL WORD FROM SOMPLACE


*65
06601  0634 00 4 06577         SXA SPLAT+63,4 FOR EXIT
06602  0534 00 1 06575         LXA SPLAT+61,1 RESTORE XRA
06603 -0520 60 0 06625         NZT* SPLAT+85 IF CONTROL WORD ZERO
06604  0020 00 0 06575         TRA SPLAT+61  RETURN.
06605 -0500 00 0 06625         CAL SPLAT+85  OLD CONTROL WORD

*70
06606  0625 00 0 06607         STT *+1       BRING OUT INDEX
06607 -0634 00 0 06611         SXD *+2,0     REGISTER, IF ONE IS TAGED.
06610  0737 00 4 00000         PAC 0,4
06611  1 00000 4 06612         TXI *+1,4,0   GET EFFECTIVE ADDRESS.
06612 -0500 00 4 00000         CAL 0,4       NEW CONTROL WORD.

*75
06613 -0734 00 1 00000         PDX 0,1       TYPE WHEEL ID.
06614  0602 00 0 06625         SLW SPLAT+85
06615  1 00001 4 06516         TXI SPLAT+14,4,1 PROCEED

                                   YOUR AN OLD SMOOOTHY.

06616 -0602 60 2 06630         ORS* SPLAT+88,2 PUT EIGTH IN, TAKE
06617  2 00020 1 06554         TIX SPLAT+44,1,16 16 OUTM, - GOOD BUSINESS

*80
06620 -3 00004 1 06557         TXL SPLAT+47,1,4 IF NOT BLANK, SET ZONE.
06621  0020 00 0 06560         TRA SPLAT+48    BLANK.
```

```
06622 -0 00000 0 00000         MZE              FOR BIT INDEX.
06623  0000 00 0 00000         HTR              DYNAMIC BIT INDEX.
06624  0000 30 0 06636         IOCD CI+2,,24    BUFFER COMMAND

*85
06625  0000 00 0 00000         HTR              SPECIAL SALON FOR
                                                THE CONTROL WORD
06626  0000 00 0 06641         HTR CI+5
06627  0000 00 0 06640         HTR CI+4         BROW ADDRESSES
06630  0000 00 1 06667         HTR CI+27,1
06631  0000 00 1 06666         HTR CI+26,1      ZONE ROW ADDRESSES

*90
06632  0000 00 1 06661         HTR CI+21,1
06633  0000 00 1 06660         HTR CI+20,1      DIGIG ROW ADDRESSES

                 06634  CI     BSS 26
                 06666  SUBET  BSS 1

                                      TO WRITE PUNCH, USE TSX CRNCH,4.

06667  0766 00 0 01341  CRNCH  WPUA
06670  0020 00 0 06501         TRA SPLAT+1



*TRANSFORM THE CONTENTS OF ACC 1-35 TO OCTAL IN BCD FORMAT.
*A SIGN CHARACTER FOR MINUX, AND THE Q AND P BITS
*ARE STORED IN THE ADDRESS OF X+1. IF THERE ARE 6
*CHARACTERS OR LESS, RETURN IS MADE TO X+3, OTHER
*WISE, TO X+2. TRANSFORMED WORDS IN MQ AND ACC.
*THIS SUBROUTINE STORES XRC IN SUBET, WHICH MUST BE
*SUPPLIED BY THE PROGRAM. NO BLANKS ARE INSERTED


06671  0634 00 1 06721  PX     SXA PX+24,1
06672  0634 00 2 06722         SXA PX+25,2
06673  0634 00 4 06666         SXA SUBET,4      SAVE XRC
06674  0601 00 0 06725         STO FREE
06675  0771 00 0 00043         ARS 35           P AND Q

*5
06676  0621 00 4 00001         STA 1,4          P AND Q TO X+1
06677  0560 00 0 06725         LDQ FREE
06700 -0754 00 0 00000         PXD 0,0          CLEAR ACCUMULATOR
06701 -0763 00 0 00001         LGL 1
06702  0767 00 0 00013         ALS 11           SIGN IF MINUS

*10
06703 -0602 00 4 00001         ORS 1,4          SIGN TO X+1
06704 -0765 00 0 00001         LGR 1            DROP SIGN
06705  0774 00 3 00006         AXT 6,3
06706 -0754 00 0 00000         PXD 0,0          CLEAR ACCUMULATOR
06707  0767 00 0 00003         ALS 3            ZONE
```

```
*15
06710 -0763 00 0 00003         LGL 3           DIGIT
06711  2 00001 1 06707         TIX *-2,1,1     6 TIMES.
06712  0602 00 0 06726         SLW FREE+1
06713 -0754 00 0 00000         PXD 0,0         CLEAR ACCUMULATOR
06714  0767 00 0 00003         ALS 3           ZONE

*20
06715 -0763 00 0 00003         LGL 3           DIGIT
06716  2 00001 2 06714         TIX *-2,2,1     6 TIMES
06717 -0130 00 0 00000         XCL             SECOND WORD TO MQ,
06720 -0500 00 0 06726         CAL FREE+1      FIRST TO ACC
06721  0774 00 1 00000         AXT 0,1

*25
06722  0774 00 2 00000         AXT 0,2
06723  0100 00 4 00003         TZE 3,4         X+3 FOR 1 WORD.
06724  0020 00 4 00002         TRA 2,4         X+2 FOR 2 WORDS.

                06725  FREE    BSS 10

                                    CONSTANTS AND STUFF

                06636  9RL     EQU CI+2
                06660  ORL     EQU CI+2+18
                06662  11RL    EQU ORL+2
                06664  12RL    EQU 11RL+2
06737 +000000000000     PR      DEC 0

                01625           END START
```