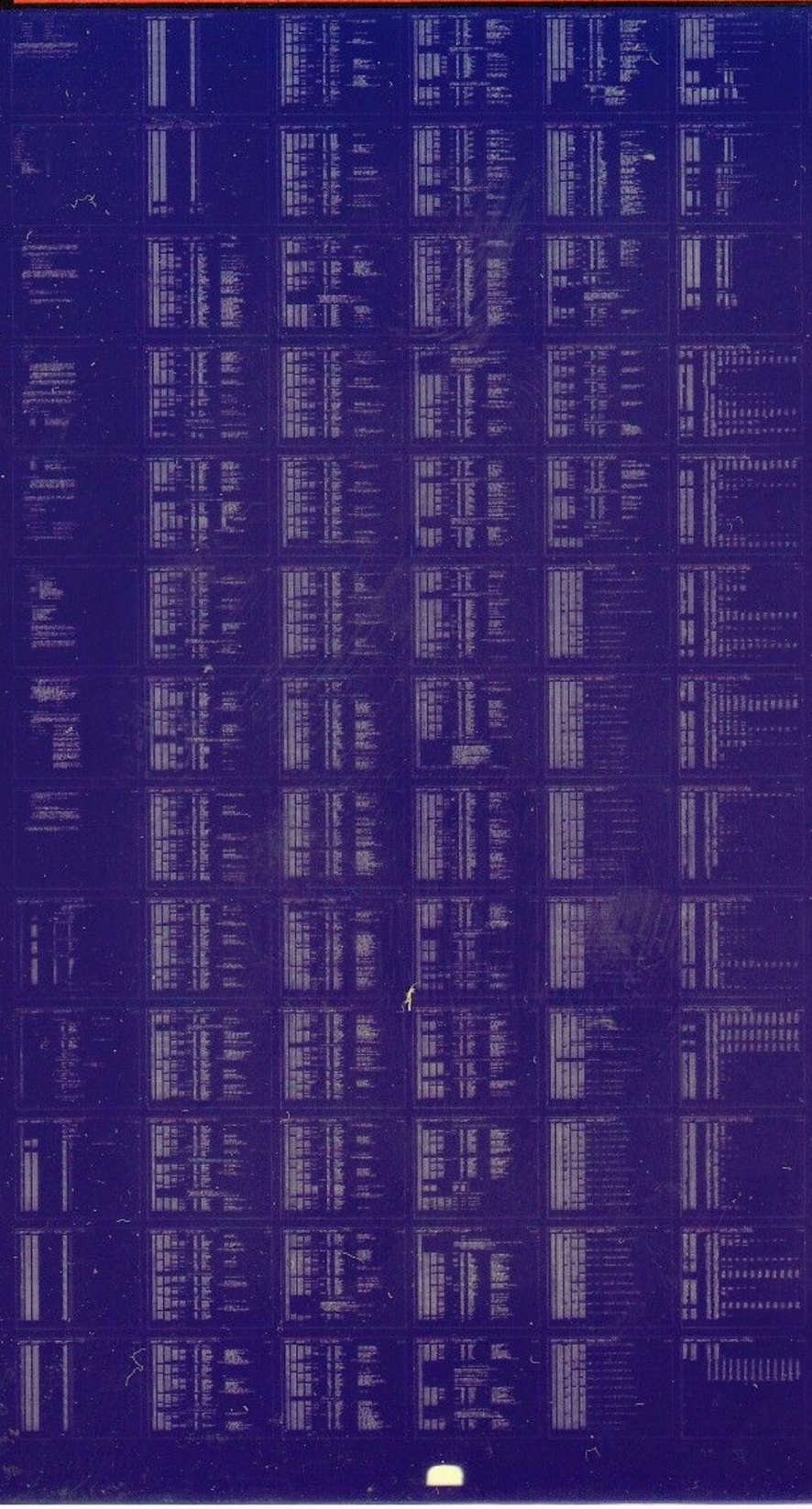
CMR11

CMR11 HOST EXERCISER AH-F914A-MC
CZCMJAO FICHE 1 OF 1



I D E N T I F I C A T I O N

PROGRAM CODE:	AC-F912A-MC
PROGRAM NAME:	CZCMJA0 CMR11 HOST EXERCISER
DATE CREATED:	30-MAY-79
MODIFIED:	14-JAN-80
MAINTAINER:	SPECIAL SYSTEMS KANATA
AUTHOR:	DAVID G. WIENS

TABLE OF CONTENTS

SEQ 0002

1. GENERAL

THIS PROGRAM IS TO BE USED TO TEST THE COMPACT MICRO REMOTE (CMR-11) HOST HARDWARE AND TO BASICALLY CHECK COMMUNICATIONS BETWEEN THE HOST HARDWARE ON THE UNIBUS AND THE REMOTE HARDWARE.

THE PROGRAM IS DIVIDED INTO THREE PARTS, PLUS A FOURTH MULTIPURPOSE 'MAINTENANCE'' ROUTINE:

- HOST LOGIC TEST
- PORT LOOP-BACK TEST
- CMR-11 EXERCISE ROUTINE
- 'MAINTENANCE'' ROUTINE

THE HOST LOGIC TEST IS INTENDED TO BE RUN WITH ALL REMOTE COMMUNICATION DISABLED OR DISCONNECTED AS IS THE PORT LOOP-BACK TEST. THE CMR-11 EXERCISE ROUTINE, HOWEVER, CAN BE RUN WITHOUT CHANGING ANY OF THE HARDWARE FROM ITS ''INSTALLED'' CONDITION. FOR THE DETAILS OF EACH TEST, SEE THE ACOMPANYING TEXT.

2. REQUIREMENTS

HARDWARE:

PDP-11 OR LSI-11
CMR-11 HOST MODULE ON THE UNIBUS (Q-BUS)
CONSOLE TERMINAL ON LINE.

OTHER:

THE PROCESSOR MAINDECS AND CONSOLE TERMINAL TESTS MUST HAVE BEEN RUN SUCCESSFULLY BEFORE RUNNING THIS PROGRAM.

3. RESTRICTIONS

(NONE)

4. CAUTIONS

IT IS NOT ADVISABLE TO RUN THE LOGIC TEST OR THE PORT LOOP-BACK TEST ON AN ''ON-LINE'' SYSTEM WITH THE REMOTES ATTACHED AS ''ON-LINE'' DEVICES MAY BE AFFECTED. THE CMR-11 EXERCISE ROUTINE, HOWEVER, MAY BE RUN UNDER THESE CONDITIONS.

COMMUNICATION PORTIONS OF THESE TESTS FROM HOST TO REMOTE AND REMOTE TO HOST MAY TAKE A CONSIDERABLE LENGTH OF TIME IF THE PORT BAUD RATES ARE SET LOW (300 BAUD).

CAUTION MUST BE EXERCISED WHEN USING THE ''MAINTENANCE'' ROUTINE SO THAT FUNCTIONS ARE NOT STARTED WHICH WILL COMPROMISE ANY ''ON-LINE'' SITUATIONS.

5. ASSUMPTIONS

5.1 IN THE PORT LOOP-BACK TEST, IT IS ASSUMED THAT WHEN THE OPERATOR TYPES <CR> INDICATING ''READY'', HE HAS LOOPED A PORT FROM OUTPUT TO INPUT PHYSICALLY, AND HAS SELECTED THAT PORT TO BE TESTED.

5.2 IT IS ASSUMED, IN THE CMR-11 EXERCISE ROUTINE, THAT THERE ARE REMOTES ATTACHED (AT LEAST ONE) AND THAT THEY ARE ''REGULAR''. IF THIS IS NOT THE CASE, THE ROUTINE WILL BE IDLE.

6. OPTIONS / CONTROLS

6.1 SWITCHABLE OPTIONS (COMBINABLE)

SWR =	MEANS
100000	DON'T HALT AFTER ERRORS
040000	DON'T PRINT ERRORS
020000	LOOP ON ERRONEOUS ROUTINE
004000	INHIBIT PROGRAM ITERATIONS
002000	DON'T PRINT END OF PASS

6.2 CONTROL CHARACTERS

CNTRL-C	RESTART TEST SELECTOR
CNTRL-T	'' '' ''
CNTRL-S	SHOW ''SWR'' OPTIONS
CNTRL-P	PROCEED
CNTRL-O	ENTER ''MAINTENANCE'' DEBUG ROUTINE
CNTRL-F	SHOW CONSOLE FILL COUNT

6.3 NON-SWR PROCESSORS

ON PROCESSORS WITH NO PHYSICAL SWITCH REGISTER THE OPTIONS CAN BE EXAMINED OR CHANGED BY THE USE OF ''CNTRL-S'' AND AT THE TIME OF AN ERROR HALT. THE PRINTOUT: SWR = XXXXXX : WILL SHOW THE OPTIONS AND THE OPERATOR CAN LEAVE THEM (<CR>) OR CHANGE THEM (YYYYYY<CR>), THEN PROCEED (CNTRL-P)

7. LOADING

THE PROGRAM IS SUPPLIED IN .ABS FORMAT AND IS LOADED BY MEANS OF THE ABSOLUTE LOADER OR THE ''LOAD'' COMMAND OF THE DIAGNOSTIC MONITOR XXDP.

8. STARTING / RESTARTING

STARTING ADDRESS :	200
RESTARTING ADDRESS :	204

9. TEST DESCRIPTION

9.1 START UP:

INTERFACE ADDRESS:	TYPE <CR> IF IT 164000 TYPE XXXXXX<CR> IF ITS XXXXXX
INTERFACE VECTOR:	TYPE <CR> IF ITS 170 TYPE XXX<CR> IF ITS XXX
INTERFACE PRIORITY:	TYPE <CR> IF ITS 4 TYPE X<CR> IF ITS X

IF THE PROCESSOR HAS NO SWITCH REGISTER, THE SWITCH OPTIONS WILL NOW BE SHOWN AND MAY BE CHANGED (AS IN #6).

9.2 TEST SELECTOR:

SELECT TEST (4 = HELP):

(HELP MESSAGE READS:)

SELECT ONE OF THE FOLLOWING:

CR OR 1 = LOGIC TEST
2 = PORT LOOP-BACK TEST
3 = CMR-11 EXERCISE
4 = THIS HELP INFO
CNTRL-C = TEST SELECT
CNTRL-S = SWITCH OPTION SELECT
CNTRL-F = CONSOLE FILL COUNT SELECT
CNTRL-O = DEBUG ROUTINE WHICH ALLOWS LOADING SCPD AND STARTING FUNCTIONS AND EXAMINING THE RESULT.
CNTRL-P = PROCEED FROM SW MONITOR

9.3 LOGIC TEST:

THE FOLLOWING TESTS ARE PERFORMED:

- TEST OF THE PWR-UP SEQUENCE
- TEST THE SCPD ADDRESS REG.
- TEST THE SCPD MEMORY
- TEST ALL OF THE CSR
- TEST INTERRUPT
- TEST PROGRAM INIT.
- CHECK SCPD ACCESS KEYS
- SIMPLE FUNCTIONS TEST

9.4 PORT LOOP-BACK TEST

THE PORT LOOP-BACK TEST USES THE PORT LOOP MAINTENANCE FUNCTION OF THE HOST FIRMWARE. THE TEST WILL RUN WITH ONE PORT OR WITH ALL PORTS SELECTED:

PORT # (<CR> = ALL):

THE OPERATOR MUST ENSURE THAT THE PORT(S) BEING TESTED IS(ARE) LOOPED FROM XMTR TO RCVR.

9.5 CMR-11 HOST-REMOTE EXERCISE

THIS ROUTINE STARTS A BACKGROUND SCAN AND WAITS FOR THE END OF A SCAN OF ALL REMOTES ON ALL PORTS ("THRU"). DURING THIS WAIT, IF ANY ALARMS OCCUR THE BELL ON THE CONSOLE WILL RING (4 TIMES PER ALARM).

AT THE COMPLETION OF THE SCAN, THE PROGRAM SHOWS THE PORT CONFIGURATION STATUS AS FOLLOWS:

```
PORT # 0      0     1     2     3      ...
PORT # 1    100   101   102   103      ...
ETC.
```

SHOWING EACH PORT ONLY IF THERE ARE REMOTES ON THE PORT WHICH ARE ''REGULAR''

FOLLOWING THIS PRINTOUT, THE ''DIAGNOSTIC'' FUNCTION IS ATTEMPTED ON EACH REMOTE PRESENT.

DURING THE REMAINDER OF THE EXERCISE, ALL REMOTES WILL BE EXERCISED WITH THE ''DIAGNOSTIC'' FUNCTION AND ALL ALARMS WILL BE INDICATED (BY BELLS) AND ANY CHANGES OF REMOTE STATUS WILL BE REPORTED:

```
*** REMOTE STATUS CHANGE ***
REMOTE #X
                         REGULAR
                        /
REMOTE STATUS NOW-  IRREGULAR
                        \
                         YYYY
```

9.6 ''MAINTENANCE'' DEBUG ROUTINE

CAUTION SHOULD BE EXERCISED WHEN USING THIS ROUTINE SEE SECT. 4.

THIS ROUTINE OPERATES LIKE A SIMPLE ''ODT''. HOWEVER, IT ALLOWS EXAMINING AND/OR DEPOSITING ONLY IN THE CMR-11 SCRATCHPAD MEMORY. FOLLOWING ARE THE OPERATING CHARACTERS:

XXXX/	(SLASH)	OPEN AND DISPLAY CONTENTS OF THE SCPD ADDR ''XXXX''
<CR>	(RETURN)	CLOSE THE CURRENT ADDRESS.
<LF>	(LINE FEED)	CLOSE THE CURRENT ADDR. AND OPEN THE NEXT SEQUENTIAL ONE.
XXXX<CR>		DEPOSIT ''XXXX'' IN THE CURRENTLY OPEN ADDRESS AND CLOSE IT.
XXXX<LF>		DEPOSIT ''XXXX'' IN THE CURRENTLY OPEN ADDRESS, CLOSE IT AND OPEN THE NEXT SEQUENTIAL ONE.
G		SET ''STFUN'' OR ''MAIN'' TO START THE CURRENTLY LOADED FUNCTION
P		PROCEED OUT OF THE 'DE-BUG' ROUTINE AND RETURN TO THE SPOT WHICH WAS LEFT WHEN CNTRL-O WAS TYPED. (ANY PROMPTS WILL BE RE-ASKED).
(CSR ADDR)/		ALLOWS EXAMINATION OF THE HOST CSR REGISTER ONLY. NO OTHER UNIBUS ADDRESSES MAY BE EXAMINED IN THIS FASHION.

9.7 END OF PASS

AT THE END OF EACH PASS OF ANY OF THE THREE TESTS, AN "END PASS" MESSAGE IS PRINTED UNLESS INHIBITED BY SWITCH OPTION BIT 10.
THE PRINTOUT IS IN THE FOLLOWING FORM:

END PASS # X ERR. CNT. = Y

WHERE:

X = THE PASS NUMBER IN DECIMAL
Y = THE TOTAL NUMBER OF ERRORS SINCE START (DECIMAL).

IF THE NUMBER OF ERRORS BECOMES LARGER THAN 64K, THEN "** OVERFLOW **" WILL BE PRINTED INSTEAD.
IF SWITCH OPTION BIT 11 = 0, THIS MESSAGE WILL BE PRINTED ONLY AFTER 10 (OCTAL) PASSES THROUGH WHICHEVER TEST IS RUNNING. OTHERWISE, IT IS PRINTED EVERY PASS.

10. ERRORS

FOR THE MOST PART, ERROR PRINTOUTS ARE SELF-EXPLANATORY. THE ERROR NUMBERS AND ADDRESSES CAN BE USED FOR REFERENCE TO THE PROGRAM LISTING FOR FURTHER DETAILS.

```
                                .TITLE  CZCMJAO CMR-11 HOST EXERCISER
                                .SBTTL SYMBOLIC DEFINITIONS
                                .NLIST  TTM
                                .LIST   ME

                            ;INTERNAL DEFINITIONS:

177776                      PS      =       177776
177570                      HWSWR   =       177570
026346                      SSWR    =       SWREG

                            ;REGISTER DEFINITIONS:

000000                      R0      =       %0
000001                      R1      =       %1
000002                      R2      =       %2
000003                      R3      =       %3
000004                      R4      =       %4
000005                      R5      =       %5
000006                      SP      =       %6
000007                      PC      =       %7

                            ;BUS REQUEST DEFINITIONS:

000340                      P7      =       340
000300                      P6      =       300
000240                      P5      =       240
000200                      P4      =       200
000140                      P3      =       140
000100                      P2      =       100
000040                      P1      =       40
000000                      P0      =       0

                            ;BIT DEFINITIONS:

100000                      B15     =       100000
040000                      B14     =       40000
020000                      B13     =       20000
010000                      B12     =       10000
004000                      B11     =       4000
002000                      B10     =       2000
001000                      B09     =       1000
000400                      B08     =       400
000200                      B07     =       200
000100                      B06     =       100
000040                      B05     =       40
000020                      B04     =       20
000010                      B03     =       10
000004                      B02     =       4
000002                      B01     =       2
000001                      B00     =       1
002000                      ISP     =       BEGIN           ;INITIAL STACK POINTER


                                .SBTTL MACRO DEFINITIONS
```

```
000001                  N       =       1               ;INITIAL ERROR NUMBER
                        ;ERROR MACROS

                                .MACRO  ERROR   P,MSG
                                                        ;******* ERROR P *******
                                BIT     #B14,@SR
                                BNE     .+20
                                MOV     #MSG,R0
                                MOV     #P,ERRNUM
                                JSR     PC,ERR
                        N       =       N+1
                                .ENDM

                                .MACRO  DATERR  P,MSG
                                                        ;******* ERROR P *******
                                BIT     #B14,@SR
                                BNE     .+20
                                MOV     #MSG,R0
                                MOV     #P,ERRNUM
                                JSR     PC,DERR
                        N       =       N+1
                                .ENDM

                                .MACRO  HLT
                                JSR     PC,SWHLT
                                .ENDM

                        ;PRINT MACRO (MSG ADDR IN R0)

                                .MACRO  PNTM    A
                                MOV     #A,R0           ;PRINT MESSAGE
                                JSR     PC,TYPOUT               ;POINTED TO BY A
                                .ENDM

                        ;SCOPE LOOP MACRO

                                .MACRO  SCOPE   X
                                JSR     R5,SCPRTN
                                X
                                .ENDM

                        ;INTER-PDP-11 COMPATABLE MOVE TO PS

                                .MACRO  MTPS    SRC,?LLL
                                MOV     SRC,-(SP)
                                MOV     #LLL,-(SP)
                                RTI
                        LLL:
                                .ENDM


                        ;REGISTER SAVE AND RESTORE MACROS

                                .MACRO  REGSAV
```

```
                                        JSR     R5,REGSAV
                                        .ENDM

                                        .MACRO  REGRES
                                        JSR     R5,REGRES
                                        .ENDM

                                        .SBTTL  TRAP CATCHERS
                                        .ENABLE ABS
000000                                  .       =       0
000000  000002                          .WORD   .+2
000002  000000                          .WORD   0
000004  015466                          .WORD   DVATST                  ;TRAP BAD DEVICE ADDRESSES
000006  000340                          .WORD   340
000176                                  .REPT   126.
                                        .WORD   .+2
                                        .WORD   0
                                        .ENDR
000010  000012                          .WORD   .+2
000012  000000                          .WORD   0
000014  000016                          .WORD   .+2
000016  000000                          .WORD   0
000020  000022                          .WORD   .+2
000022  000000                          .WORD   0
000024  000026                          .WORD   .+2
000026  000000                          .WORD   0
000030  000032                          .WORD   .+2
000032  000000                          .WORD   0
000034  000036                          .WORD   .+2
000036  000000                          .WORD   0
000040  000042                          .WORD   .+2
000042  000000                          .WORD   0
000044  000046                          .WORD   .+2
000046  000000                          .WORD   0
000050  000052                          .WORD   .+2
000052  000000                          .WORD   0
000054  000056                          .WORD   .+2
000056  000000                          .WORD   0
000060  000062                          .WORD   .+2
000062  000000                          .WORD   0
000064  000066                          .WORD   .+2
000066  000000                          .WORD   0
000070  000072                          .WORD   .+2
000072  000000                          .WORD   0
000074  000076                          .WORD   .+2
000076  000000                          .WORD   0
000100  000102                          .WORD   .+2
000102  000000                          .WORD   0
000104  000106                          .WORD   .+2
000106  000000                          .WORD   0
000110  000112                          .WORD   .+2
000112  000000                          .WORD   0
000114  000116                          .WORD   .+2
000116  000000                          .WORD   0
000120  000122                          .WORD   .+2
000122  000000                          .WORD   0
```

```
  169  000124  000126                    .WORD   .+2
  170  000126  000000                    .WORD   0
  171  000130  000132                    .WORD   .+2
  172  000132  000000                    .WORD   0
  173  000134  000136                    .WORD   .+2
  174  000136  000000                    .WORD   0
  175  000140  000142                    .WORD   .+2
  176  000142  000000                    .WORD   0
  177  000144  000146                    .WORD   .+2
  178  000146  000000                    .WORD   0
  179  000150  000152                    .WORD   .+2
  180  000152  000000                    .WORD   0
  181  000154  000156                    .WORD   .+2
  182  000156  000000                    .WORD   0
  183  000160  000162                    .WORD   .+2
  184  000162  000000                    .WORD   0
  185  000164  000166                    .WORD   .+2
  186  000166  000000                    .WORD   0
  187  000170  000172                    .WORD   .+2
  188  000172  000000                    .WORD   0
  189  000174  000176                    .WORD   .+2
  190  000176  000000                    .WORD   0
  191  000200  000202                    .WORD   .+
  192  000202  000000                    .WORD   0
  193  000204  000206                    .WORD   .+2
  194  000206  000000                    .WORD   0
  195  000210  000212                    .WORD   .+2
  196  000212  000000                    .WORD   0
  197  000214  000216                    .WORD   .+2
  198  000216  000000                    .WORD   0
  199  000220  000222                    .WORD   .+2
  200  000222  000000                    .WORD   0
  201  000224  000226                    .WORD   .+2
  202  000226  000000                    .WORD   0
  203  000230  000232                    .WORD   .+2
  204  000232  000000                    .WORD   0
  205  000234  000236                    .WORD   .+2
  206  000236  000000                    .WORD   0
  207  000240  000242                    .WORD   .+2
  208  000242  000000                    .WORD   0
  209  000244  000246                    .WORD   .+2
  210  000246  000000                    .WORD   0
  211  000250  000252                    .WORD   .+2
  212  000252  000000                    .WORD   0
  213  000254  000256                    .WORD   .+2
  214  000256  000000                    .WORD   0
  215  000260  000262                    .WORD   .+2
  216  000262  000000                    .WORD   0
  217  000264  000266                    .WORD   .+2
  218  000266  000000                    .WORD   0
  219  000270  000272                    .WORD   .+2
  220  000272  000000                    .WORD   0
  221  000274  000276                    .WORD   .+2
  222  000276  000000                    .WORD   0
  223  000300  000302                    .WORD   .+2
  224  000302  000000                    .WORD   0
```

```
                                N 1
  225  000304  000306                    .WORD   .+2
  226  000306  000000                    .WORD   0
  227  000310  000312                    .WORD   .+2
  228  000312  000000                    .WORD   0
  229  000314  000316                    .WORD   .+2
  230  000316  000000                    .WORD   0
  231  000320  000322                    .WORD   .+2
  232  000322  000000                    .WORD   0
  233  000324  000326                    .WORD   .+2
  234  000326  000000                    .WORD   0
  235  000330  000332                    .WORD   .+2
  236  000332  000000                    .WORD   0
  237  000334  000336                    .WORD   .+2
  238  000336  000000                    .WORD   0
  239  000340  000342                    .WORD   .+2
  240  000342  000000                    .WORD   0
  241  000344  000346                    .WORD   .+2
  242  000346  000000                    .WORD   0
  243  000350  000352                    .WORD   .+2
  244  000352  000000                    .WORD   0
  245  000354  000356                    .WORD   .+2
  246  000356  000000                    .WORD   0
  247  000360  000362                    .WORD   .+2
  248  000362  000000                    .WORD   0
  249  000364  000366                    .WORD   .+2
  250  000366  000000                    .WORD   0
  251  000370  000372                    .WORD   .+2
  252  000372  000000                    .WORD   0
  253  000374  000376                    .WORD   .+2
  254  000376  000000                    .WORD   0
  255  000400  000402                    .WORD   .+2
  256  000402  000000                    .WORD   0
  257  000404  000406                    .WORD   .+2
  258  000406  000000                    .WORD   0
  259  000410  000412                    .WORD   .+2
  260  000412  000000                    .WORD   0
  261  000414  000416                    .WORD   .+2
  262  000416  000000                    .WORD   0
  263  000420  000422                    .WORD   .+2
  264  000422  000000                    .WORD   0
  265  000424  000426                    .WORD   .+2
  266  000426  000000                    .WORD   0
  267  000430  000432                    .WORD   .+2
  268  000432  000000                    .WORD   0
  269  000434  000436                    .WORD   .+2
  270  000436  000000                    .WORD   0
  271  000440  000442                    .WORD   .+2
  272  000442  000000                    .WORD   0
  273  000444  000446                    .WORD   .+2
  274  000446  000000                    .WORD   0
  275  000450  000452                    .WORD   .+2
  276  000452  000000                    .WORD   0
  277  000454  000456                    .WORD   .+2
  278  000456  000000                    .WORD   0
  279  000460  000462                    .WORD   .+2
  280  000462  000000                    .WORD   0
```

```
281  000464  000466                    .WORD   .+2
282  000466  000000                    .WORD   0
283  000470  000472                    .WORD   .+2
284  000472  000000                    .WORD   0
285  000474  000476                    .WORD   .+2
286  000476  000000                    .WORD   0
287  000500  000502                    .WORD   .+2
288  000502  000000                    .WORD   0
289  000504  000506                    .WORD   .+2
290  000506  000000                    .WORD   0
291  000510  000512                    .WORD   .+2
292  000512  000000                    .WORD   0
293  000514  000516                    .WORD   .+2
294  000516  000000                    .WORD   0
295  000520  000522                    .WORD   .+2
296  000522  000000                    .WORD   0
297  000524  000526                    .WORD   .+2
298  000526  000000                    .WORD   0
299  000530  000532                    .WORD   .+2
300  000532  000000                    .WORD   0
301  000534  000536                    .WORD   .+2
302  000536  000000                    .WORD   0
303  000540  000542                    .WORD   .+2
304  000542  000000                    .WORD   0
305  000544  000546                    .WORD   .+2
306  000546  000000                    .WORD   0
307  000550  000552                    .WORD   .+2
308  000552  000000                    .WORD   0
309  000554  000556                    .WORD   .+2
310  000556  000000                    .WORD   0
311  000560  000562                    .WORD   .+2
312  000562  000000                    .WORD   0
313  000564  000566                    .WORD   .+2
314  000566  000000                    .WORD   0
315  000570  000572                    .WORD   .+2
316  000572  000000                    .WORD   0
317  000574  000576                    .WORD   .+2
318  000576  000000                    .WORD   0
319  000600  000602                    .WORD   .+2
320  000602  000000                    .WORD   0
321  000604  000606                    .WORD   .+2
322  000606  000000                    .WORD   0
323  000610  000612                    .WORD   .+2
324  000612  000000                    .WORD   0
325  000614  000616                    .WORD   .+2
326  000616  000000                    .WORD   0
327  000620  000622                    .WORD   .+2
328  000622  000000                    .WORD   0
329  000624  000626                    .WORD   .+2
330  000626  000000                    .WORD   0
331  000630  000632                    .WORD   .+2
332  000632  000000                    .WORD   0
333  000634  000636                    .WORD   .+2
334  000636  000000                    .WORD   0
335  000640  000642                    .WORD   .+2
336  000642  000000                    .WORD   0
```

```
000644  000646                      .WORD   .+2
000646  000000                      .WORD   0
000650  000652                      .WORD   .+2
000652  000000                      .WORD   0
000654  000656                      .WORD   .+2
000656  000000                      .WORD   0
000660  000662                      .WORD   .+2
000662  000000                      .WORD   0
000664  000666                      .WORD   .+2
000666  000000                      .WORD   0
000670  000672                      .WORD   .+2
000672  000000                      .WORD   0
000674  000676                      .WORD   .+2
000676  000000                      .WORD   0
000700  000702                      .WORD   .+2
000702  000000                      .WORD   0
000704  000706                      .WORD   .+2
000706  000000                      .WORD   0
000710  000712                      .WORD   .+2
000712  000000                      .WORD   0
000714  000716                      .WORD   .+2
000716  000000                      .WORD   0
000720  000722                      .WORD   .+2
000722  000000                      .WORD   0
000724  000726                      .WORD   .+2
000726  000000                      .WORD   0
000730  000732                      .WORD   .+2
000732  000000                      .WORD   0
000734  000736                      .WORD   .+2
000736  000000                      .WORD   0
000740  000742                      .WORD   .+2
000742  000000                      .WORD   0
000744  000746                      .WORD   .+2
000746  000000                      .WORD   0
000750  000752                      .WORD   .+2
000752  000000                      .WORD   0
000754  000756                      .WORD   .+2
000756  000000                      .WORD   0
000760  000762                      .WORD   .+2
000762  000000                      .WORD   0
000764  000766                      .WORD   .+2
000766  000000                      .WORD   0
000770  000772                      .WORD   .+2
000772  000000                      .WORD   0
000774  000776                      .WORD   .+2
000776  000000                      .WORD   0

                                    .SBTTL  SYMBOLIC LISTING

        000200                      .       =       200
000200  000167  001574              JMP     BEGIN
000204  012706  002000              MOV     #ISP,SP
000210  000005                      RESET
000212  000167  002242              JMP     RESTRT

        002000                      .       =       2000
```

```
     002000  012706  002000          BEGIN:  MOV     #ISP,SP                 ;INITIALIZE THE STACK
     002004  000005                          RESET                           ;CLEAR THE WORLD
     002006                                  MTPS    #P7                     ;STOP INTERRUPTS
     002006  012746  000340                  MOV     #P7,-(SP)
     002012  012746  002020                  MOV     #64$,-(SP)
     002016  000002                          RTI
     002020                          64$:
     002020  005067  024254                  CLR     DEVER
     002024  105067  024220                  CLRB    LSIFLG                  ;PREPARE TO CHECK FOR LSI-11
     002030  012737  015440  000004          MOV     #LSTST,@#4
     002036  012737  000340  000006          MOV     #P7,@#6
     002044  005737  177776                  TST     @#177776                ;CHECK FOR PSW &SET FLAG
     002050  005067  024274                  CLR     SWRFLG
     002054  012737  015450  000004          MOV     #SRTST,@#4              ;SET UP TO TRAP IF NO SWR.
     002062  012737  000340  000006          MOV     #P7,@#6
     002070  012767  177570  024246          MOV     #HWSWR,SR               ;SET UP TO CHECK IF ANY HD SWR
     002076  005777  024242                  TST     @SR                     ;SEE IF IT'S THERE
     002102                                  PNTM    TSTHDR
     002102  012700  017770                  MOV     #TSTHDR,R0              ;PRINT MESSAGE
     002106  004767  014320                  JSR     PC,TYPOUT               ;POINTED TO BY TSTHDR
     002112                          PROMT:  PNTM    FRAD                    ;ASK FOR 1ST UNIBUS ADDR OF CMR-11
     002112  012700  020344                  MOV     #FRAD,R0                ;PRINT MESSAGE
     002116  004767  014310                  JSR     PC,TYPOUT               ;POINTED TO BY FRAD
     002122  016767  024240  015216          MOV     DEVADR,KBBUF            ;LOAD DEFAULT ADDRESS
     002130  012767  002112  024160          MOV     #PROMT,PCONT            ;LOAD RETURN ADDRESS
     002136  004767  014332                  JSR     PC,INPKB                ;GET KBD INPUT
     002142  016767  015200  024216          MOV     KBBUF,DEVADR            ;REPLACE CMR-11 BASE ADDR

     002150  026727  015172  164000          CMP     KBBUF,#164000           ;IS IT WITHIN LIMIT?
     002156  103006                          BHIS    PRMT1                   ;YES, TEST IT
     002160                                  PNTM    AGAIN                   ;NO, ERROR & ASK AGAIN
     002160  012700  020371                  MOV     #AGAIN,R0               ;PRINT MESSAGE
     002164  004767  014242                  JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
     002170  000167  177716                  JMP     PROMT
     002174  012737  015466  000004  PRMT1:  MOV     #DVATST,@#4
     002202  005777  024160                  TST     @DEVADR                 ;IS IT A GOOD ADDR?
     002206  012737  015644  000004          MOV     #HDER,@#4               ;SET UP FOR FURTHER TRAPS
     002214  005037  000006                  CLR     @#6                     ;ALLOW CLOCK TO FUNCTION
     002220                          PRMT2:  PNTM    DVECT                   ;YES, ASK FOR DEVICE VECTOR
     002220  012700  020424                  MOV     #DVECT,R0               ;PRINT MESSAGE
     002224  004767  014202                  JSR     PC,TYPOUT               ;POINTED TO BY DVECT
     002230  016767  024130  015110          MOV     VECTOR,KBBUF            ;LOAD DEFAULT VECTOR
     002236  012767  002220  024052          MOV     #PRMT2,PCONT            ;LOAD RETURN ADDRESS
     002244  004767  014224                  JSR     PC,INPKB                ;GET KBD INPUT
     002250  016767  015072  024106          MOV     KBBUF,VECTOR            ;REPLACE CMR-11 VECTOR
     002256  026727  015064  000776          CMP     KBBUF,#776              ;IS IT WITHIN LIMITS?
     002264  101406                          BLOS    PRMT3                   ;YES, GET PRIORITY
     002266                                  PNTM    AGAIN                   ;NO, ERROR AND ASK AGAIN
     002266  012700  020371                  MOV     #AGAIN,R0               ;PRINT MESSAGE
     002272  004767  014134                  JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
     002276  000167  177716                  JMP     PRMT2
     002302                          PRMT3:  PNTM    DVPRIO                  ;ASK FOR CMR-11 PRIORITY
     002302  012700  020450                  MOV     #DVPRIO,R0              ;PRINT MESSAGE
     002306  004767  014120                  JSR     PC,TYPOUT               ;POINTED TO BY DVPRIO
     002312  016767  024052  015026          MOV     FKPRIO,KBBUF            ;LOAD DEFAULT PRIORITY
```

```
 449  002320  012767  002302  023770          MOV     #PRMT3,PCONT            ;LOAD RETURN ADDRESS
 450  002326  004767  014142                  JSR     PC,INPKB                ;GET KBD INPUT
 451  002332  026727  015010  000007          CMP     KBBUF,#7                ;IS IT WITHIN LIMITS?
 452  002340  003406                          BLE     PRMT4                   ;LOW ENOUGH, OKAY
 453  002342                                  PNTM    AGAIN                   ;NO, ERROR AND ASK AGAIN
 454  002342  012700  020371                  MOV     #AGAIN,R0               ;PRINT MESSAGE
 455  002346  004767  014060                  JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
 456  002352  000167  177724                  JMP     PRMT3
 457  002356  026727  014764  000004  PRMT4:  CMP     KBBUF,#4                ;HIGH ENOUGH?
 458  002364  002006                          BGE     PRMT5                   ;YES, OKAY
 459  002366                                  PNTM    AGAIN                   ;NO, ERROR & ASK AGAIN
 460  002366  012700  020371                  MOV     #AGAIN,R0               ;PRINT MESSAGE
 461  002372  004767  014034                  JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
 462  002376  000167  177700                  JMP     PRMT3
 463  002402  006367  014740  PRMT5:  ASL     KBBUF
 464  002406  006367  014734                  ASL     KBBUF
 465  002412  006367  014730                  ASL     KBBUF
 466  002416  006367  014724                  ASL     KBBUF
 467  002422  006367  014720                  ASL     KBBUF                   ;SHIFT IT INTO PLACE
 468  002426  016767  014714  023670          MOV     KBBUF,PRIO              ;LOAD NEW PRIORITY
 469  002434  004767  013140                  JSR     PC,DEVGEN               ;GENERATE CMR-11 ADDRESSES
 470
 471                          ;CLEAR OUT ALL TABLES FOR START-UP
 472
 473  002440  005067  022540                  CLR     EXTBL1
 474  002444  005067  022734                  CLR     EXTBL2
 475  002450  005067  023130                  CLR     EXTBL3
 476  002454  005067  023324                  CLR     EXTBL4
 477  002460  012737  015644  000004  RESTRT: MOV     #HDER,@#4               ;RESET TRAPS
 478
 479  002466  012737  002532  000100          MOV     #CLKINT,@#100           ;SET CLOCK VECTOR
 480  002474  012737  000340  000102          MOV     #340,@#102
 481  002502                                  MTPS    #P7                     ;RAISE C.P. PRIORITY
 482  002502  012746  000340                  MOV     #P7,-(SP)
 483  002506  012746  002514                  MOV     #64$,-(SP)
 484  002512  000002                          RTI
 485  002514                          64$:
 486
 487  002514  005767  023630                  TST     SWRFLG                  ;NON-SWR-PROCESSOR?
 488  002520  001402                          BEQ     1$
 489  002522  004767  013446                  JSR     PC,SWDMP                ;YES, DUMP SWITCH LOCATION
 490  002526  000167  000002          1$:     JMP     BCONT
 491
 492
 493                          ;LINE CLOCK SERVICE ROUTINE.
 494                          ;  SIMPLY RETURN. CLOCK NOT USED.
 495
 496  002532  000002          CLKINT: RTI                                     ;RETURN FROM CLOCK INTERRUPT
 497
 498                                  .SBTTL SUPERVISOR DISPATCH
 499
 500
 501  002534  000005          BCONT:  RESET                                   ;ALWAYS DO RESET UPON ARRIVAL
 502  002536  105067  023513          CLRB    SAFE                            ;CLEAR "FILL CNT SAFETY FLAG"
 503  002542  105067  023503          CLRB    DBFLG                           ;CLEAR "DEBUG" FLAG
 504  002546                          PNTM    TSTSEL                          ;PRINT "SELECT TEST (<CR>=HELP)"
```

```
                                                MOV     #TSTSEL,R0              ;PRINT MESSAGE
                                                JSR     PC,TYPOUT               ;POINTED TO BY TSTSEL
                                                MOV     #1,KBBUF                ;DEFAULT LOGIC TEST
                                                MOV     #BCONT,PCONT            ;LOAD RETURN ADDRESS
                                                JSR     PC,INPKB                ;GET KBD INPUT
                                                CLR     PCONT
                                                CMP     KBBUF,#1                ;CHECK IT FOR "1"
                                                BEQ     LOGTST                  ;IF CLR, DO LOGIC TESTS
                                                CMP     KBBUF,#2                ;CHECK IT FOR "2"
                                                BNE     BCNT2
                                                JMP     PORTLP                  ;IF "2" DO PORT LOOP TEST
                                        BCNT2:  CMP     KBBUF,#3                ;CHECK IT FOR "3"
                                                BNE     TSTRSK                  ;IF NOT, GIVE HELP
                                                JMP     CMREXC                  ;IF "3" DO EXERCISE.

                                        TSTRSK: PNTM    HELPM                   ;PRINT HELPFUL INFO
                                                MOV     #HELPM,R0               ;PRINT MESSAGE
                                                JSR     PC,TYPOUT               ;POINTED TO BY HELPM
                                                JMP     BCONT                   ;AND RE-ASK


                                                .SBTTL  HOST LOGIC TEST


                                        ;CHECK POWER UP OF THE HOST MICRO FIRMWARE.

                                        LOGTST: CLR     VERFLG                  ;CLEAR VERSION PRINT FLAG
                                                MOV     #10,ITER                ;SET ITERATION COUNT
                                                CLR     PASCNT                  ;CLEAR PASS COUNT
                                                CLRB    OFLOF                   ;CLEAR "OVERFLOW" FLAG
                                                CLR     ERRCNT                  ;CLEAR ERROR COUNT
                                                PNTM    LGKTSM                  ;PRINT "LOGIC TEST"
                                                MOV     #LGKTSM,R0              ;PRINT MESSAGE
                                                JSR     PC,TYPOUT               ;POINTED TO BY LGKTSM
                                        STO:    RESET                           ;INIT
                                                MOV     #0,CNTR                 ;SET UP TIMER
                                        MOVB:   MOVB    MOVB,MOVB               ;MOVB    GIVE THE MICRO TIME
                                                MOVB    MOVB,MOVB               ;MOVB          TO GET GOING.
                                                MOVB    MOVB,MOVB               ;MOVB
                                                MOVB    MOVB,MOVB               ;MOVB
                                                MOVB    MOVB,MOVB               ;MOVB
                                                MOVB    MOVB,MOVB               ;MOVB
                                                BIT     #B10,@CSR               ;IS "PWRUP" SET?
                                                BNE     ST1                     ;IF YES, OKAY
                                                ERROR   \N,NOGO         ;ERROR:HOST U.P. FAILED TO START.
                                                                                ;******* ERROR 1 *******

                                                BIT     #B14,@SR
                                                BNE     .+20
                                                MOV     #NOGO,R0
                                                MOV     #1,ERRNUM
                                                JSR     PC,ERR
                                        N       =       N+1
                                                SCOPE   STO
                                                JSR     R5,SCPRTN
                                                STO
                                        ST1:    MOV     #102000,GOOD            ;NOW WATCH FOR INTR
```

```
                                        MOV     @CSR,BAD
                                        BIC     #75777,BAD
                                        CMP     GOOD,BAD
                                        BEQ     ST2                     ;INTR & PWRUP SET; OKAY
                                        DEC     CNTR                    ;WAIT A BIT
                                        BNE     ST1
                                        DATERR  \N,NOTUP        ;ERROR:PWR UP SEQ NOT COMPLETED(BAD CSR)
                                                                        ;******* ERROR 2 *******
                                        BIT     #B14,@SR
                                        BNE     .+20
                                        MOV     #NOTUP,R0
                                        MOV     #2,ERRNUM
                                        JSR     PC,DERR
                                N       =       N+1
                                        SCOPE   ST0
                                        JSR     R5,SCPRTN
                                        ST0
                                ST2:    MOV     @CSR,BAD                ;NOW CHK CSR FOR 0'S
                                        BIC     #102000,BAD             ;EXCEPT PWRUP & INTR
                                        CLR     GOOD
                                        CMP     GOOD,BAD
                                        BEQ     ST3                     ;CSR = 0'S, O.K.
                                        DATERR  \N,CSRRST       ;ERROR:CSR NOT RESET
                                                                        ;******* ERROR 3 *******
                                        BIT     #B14,@SR
                                        BNE     .+20
                                        MOV     #CSRRST,R0
                                        MOV     #3,ERRNUM
                                        JSR     PC,DERR
                                N       =       N+1
                                        SCOPE   ST0
                                        JSR     R5,SCPRTN
                                        ST0
                                ST3:    MOV     #20,CLK                 ;COUNTER FOR VERSION ITEMS
                                        MOV     #1000,@SPAR             ;ADDR RESULT SCPD
                                        MOV     #VERSP,R1               ;POINT AT MEM SPACE
                                ST4:    MOVB    @SPDR,(R1)+             ;STORE VERSION INFO
                                        DEC     CLK                     ;DONE?
                                        BLT     ST6
                                        INC     @SPAR                   ;NO, KEEP GOING
                                        BR      ST4


                                ;SPAR REGISTER TEST:
                                ;DO A SLIDING BIT (0) TEST ON THE SCPD ADDRESS REGISTER
                                ;WHILE IGNORING SPAR BIT 08 (UNUSED).

                                ST6:    CLR     @SPAR                   ;TEST CLEAR OF SPAR
                                        CLR     GOOD
                                        MOV     @SPAR,BAD               ;SPAR CLEAR?
                                        BEQ     ST60                    ;YES, OK
                                        DATERR  \N,SPRCLR       ;ERROR:CAN'T CLEAR SPAR
                                                                        ;******* ERROR 4 *******
                                        BIT     #B14,@SR
                                        BNE     .+20
                                        MOV     #SPRCLR,R0
```

```
 617  003310  012767  000004  012546          MOV     #4,ERRNUM
 618  003316  004767  012460                  JSR     PC,DERR
 619          000005                  N       =       N+1
 620  003322                                  SCOPE   ST6
 621  003322  004567  012200                  JSR     R5,SCPRTN
 622  003326  003254                          ST6
 623  003330  012767  177777  022756  ST60:   MOV     #-1,PAT                 ;SET UP FOR SLIDING 0 TEST
 624  003336  012767  000001  022744          MOV     #B00,MASK               ;SET BIT MASK
 625  003344  016767  022744  012514  ST61:   MOV     PAT,GOOD
 626  003352  042767  176000  012506          BIC     #176000,GOOD
 627  003360  016777  012502  022752          MOV     GOOD,@SPAR              ;LOAD PATTERN
 628  003366  017767  022746  012474          MOV     @SPAR,BAD               ;AND READ IT BACK
 629  003374  042767  000400  012466          BIC     #B08,BAD
 630  003402  042767  000400  012456          BIC     #B08,GOOD               ;IGNORE BIT 08
 631  003410  026767  012452  012452          CMP     GOOD,BAD                ;SPAR DATA O.K. ?
 632  003416  001416                          BEQ     ST62                    ;IF YES  NEXT PATTERN
 633  003420                                  DATERR  \N,SPRDAT       ;ERROR:BAD BITS IN SPAR
 634                                                                  ;******* ERROR 5 *******
 635  003420  032777  040000  022716          BIT     #B14,@SR
 636  003426  001007                          BNE     .+20
 637  003430  012700  022732                  MOV     #SPRDAT,R0
 638  003434  012767  000005  012422          MOV     #5,ERRNUM
 639  003442  004767  012334                  JSR     PC,DERR
 640          000006                  N       =       N+1
 641  003446                                  SCOPE   ST61
 642  003446  004567  012054                  JSR     R5,SCPRTN
 643  003452  003344                          ST61
 644  003454  032767  001000  022632  ST62:   BIT     #B09,PAT                ;DONE WHOLE REG?
 645  003462  001414                          BEQ     ST7                     ;IF YES, NEXT RTN
 646  003464  012767  177777  022622          MOV     #-1,PAT                 ;RE-LOAD ALL 1'S
 647  003472  046767  022612  022614          BIC     MASK,PAT                ;NO, PREPARE FOR NEXT BIT
 648  003500  006367  022604                  ASL     MASK                    ;ROTATE MASK
 649  003504  004767  012432                  JSR     PC,MONIT
 650  003510  000167  177630                  JMP     ST61                    ;AND CONTINUE
 651
 652                                  ;SCRATCH PAD MEMORY TEST
 653                                  ; (1) UP COUNT IN REQ SCPD WHILE FILLING RES SCPD WITH 377'S
 654                                  ; (2) UP COUNT IN RES SCPD WHILE FILLING REQ SCPD WITH 377'S
 655
 656  003514  005077  022620          ST7:    CLR     @SPAR                   ;ADDRESS 0
 657  003520  005067  022636                  CLR     WORD
 658  003524  016777  022632  022610  ST70:   MOV     WORD,@SPDR              ;LOAD REQUEST SCRATCH PAD
 659  003532  052777  001000  022600          BIS     #B09,@SPAR
 660  003540  012777  000377  022574          MOV     #377,@SPDR
 661  003546  042777  001000  022564          BIC     #B09,@SPAR
 662  003554  027727  022560  000377          CMP     @SPAR,#377              ;DONE.
 663  003562  103005                          BHIS    ST71
 664  003564  005277  022550                  INC     @SPAR
 665  003570  105267  022566                  INCB    WORD
 666  003574  000753                          BR      ST70
 667  003576  005077  022536          ST71:   CLR     @SPAR                   ;NOW...CHECK IT
 668  003602  005067  022554                  CLR     WORD
 669  003606  016767  022550  012252  ST80:   MOV     WORD,GOOD
 670  003614  017767  022522  012246          MOV     @SPDR,BAD
 671  003622  026767  012240  012240          CMP     GOOD,BAD
 672  003630  001432                          BEQ     ST81                    ;O.K, CONTINUE
```

```
673  003632                                    DATERR  \N,ISATE        ;ERROR:REQ SCPD ADR TEST ERROR
674                                                                    ;******* ERROR 6 *******
675  003632  032777  040000  022504            BIT     #B14,@SR
676  003640  001007                            BNE     .+20
677  003642  012700  022761                    MOV     #ISATE,R0
678  003646  012767  000006  012210            MOV     #6,ERRNUM
679  003654  004767  012122                    JSR     PC,DERR
680          000007                    N       =       N+1
681  003660  032777  040000  022456            BIT     #B14,@SR        ;PRINT ALLOWED?
682  003666  001010                            BNE     ST80S           ;NO, SKIP IT
683  003670                                    PNTM    SCPAD
684  003670  012700  021560                    MOV     #SCPAD,R0       ;PRINT MESSAGE
685  003674  004767  012532                    JSR     PC,TYPOUT       ;POINTED TO BY SCPAD
686  003700  017700  022434                    MOV     @SPAR,R0        ;PRINT SCPD ADDRESS OF ERROR
687  003704  004767  013464                    JSR     PC,OCTPNT
688  003710                            ST80S:  SCOPE   ST80
689  003710  004567  011612                    JSR     R5,SCPRTN
690  003714  003606                            ST80
691  003716  027727  022416  000377    ST81:   CMP     @SPAR,#377
692  003724  103005                            BHIS    ST82
693  003726  005277  022406                    INC     @SPAR
694  003732  105267  022424                    INCB    WORD
695  003736  000723                            BR      ST80
696  003740  012777  001000  022372    ST82:   MOV     #1000,@SPAR
697  003746  012767  000377  012112            MOV     #377,GOOD
698  003754  017767  022362  012106    ST90:   MOV     @SPDR,BAD
699  003762  026767  012100  012100            CMP     GOOD,BAD        ;RES SCPD ALL 1'S?
700  003770  001432                            BEQ     ST91            ;YES, O.K.
701  003772                                    DATERR  \N,OSDTE        ;ERROR:RESULT SCPD DATA TEST ERROR
702                                                                    ;******* ERROR 7 *******
703  003772  032777  040000  022344            BIT     #B14,@SR
704  004000  001007                            BNE     .+20
705  004002  012700  023012                    MOV     #OSDTE,R0
706  004006  012767  000007  012050            MOV     #7,ERRNUM
707  004014  004767  011762                    JSR     PC,DERR
708          000010                    N       =       N+1
709  004020  032777  040000  022316            BIT     #B14,@SR        ;PRINT ALLOWED?
710  004026  001010                            BNE     ST90S           ;NO, SKIP IT
711  004030                                    PNTM    SCPAD
712  004030  012700  021560                    MOV     #SCPAD,R0       ;PRINT MESSAGE
713  004034  004767  012372                    JSR     PC,TYPOUT       ;POINTED TO BY SCPAD
714  004040  017700  022274                    MOV     @SPAR,R0        ;PRINT SCPD ADDRESS OF ERROR
715  004044  004767  013324                    JSR     PC,OCTPNT
716  004050                            ST90S:  SCOPE   ST90
717  004050  004567  011452                    JSR     R5,SCPRTN
718  004054  003754                            ST90
719  004056  027727  022256  001377    ST91:   CMP     @SPAR,#1377     ;ALL DONE?
720  004064  001403                            BEQ     ST10            ;IF YES, REVERSE IN & OUT
721  004066  005277  022246                    INC     @SPAR
722  004072  000730                            BR      ST90
723
724  004074  012777  001000  022236    ST10:   MOV     #B09,@SPAR      ;DO IT AGAIN WITH A SWITCH
725  004102  005067  022254                    CLR     WORD
726  004106  016777  022250  022226    ST100:  MOV     WORD,@SPDR      ;COUNT DOWN UNTIL HALF-WAY
727  004114  042777  001000  022216            BIC     #B09,@SPAR
728  004122  012777  000377  022212            MOV     #377,@SPDR      ;AND LOAD REQ SCPD WITH 1'S
```

```
729  004130  052777  001000  022202          BIS     #B09,@SPAR
730  004136  027727  022176  001377          CMP     @SPAR,#1377             ;DONE?
731  004144  103005                          BHIS    ST101                   ;YES
732  004146  005277  022166                  INC     @SPAR                   ;NO, KEEP GOING DOWN
733  004152  105267  022204                  INCB    WORD
734  004156  000753                          BR      ST100
735  004160  012777  001000  022152  ST101:  MOV     #B09,@SPAR              ;NOW, ...CHECK IT
736  004166  005067  022170                  CLR     WORD
737  004172  016767  022164  011666  ST110:  MOV     WORD,GOOD
738  004200  017767  022136  011662          MOV     @SPDR,BAD
739  004206  026767  011654  011654          CMP     GOOD,BAD
740  004214  001432                          BEQ     ST111                   ;OUT ADDR OK?
741  004216                                  DATERR  \N,OSATE        ;ERROR:RESULT SCPD ADR TEST ERROR
742                                                                  ;******* ERROR 10 *******
743  004216  032777  040000  022120          BIT     #B14,@SR
744  004224  001007                          BNE     .+20
745  004226  012700  023047                  MOV     #OSATE,R0
746  004232  012767  000010  011624          MOV     #10,ERRNUM
747  004240  004767  011536                  JSR     PC,DERR
748          000011          N       =       N+1
749  004244  032777  040000  022072          BIT     #B14,@SR                ;PRINT ALLOWED?
750  004252  001010                          BNE     ST110S                  ;NO, SKIP IT
751  004254                                  PNTM    SCPAD
752  004254  012700  021560                  MOV     #SCPAD,R0               ;PRINT MESSAGE
753  004260  004767  012146                  JSR     PC,TYPOUT               ;POINTED TO BY SCPAD
754  004264  017700  022050                  MOV     @SPAR,R0                ;PRINT SCPD ADR OF ERROR
755  004270  004767  013100                  JSR     PC,OCTPNT
756  004274                          ST110S: SCOPE   ST110
757  004274  004567  011226                  JSR     R5,SCPRTN
758  004300  004172                          ST110
759  004302  027727  022032  001377  ST111:  CMP     @SPAR,#1377
760  004310  103005                          BHIS    ST112
761  004312  005277  022022                  INC     @SPAR
762  004316  105267  022040                  INCB    WORD
763  004322  000723                          BR      ST110
764  004324  012767  000377  011534  ST112:  MOV     #377,GOOD               ;NOW CHECK REQ SCPD
765  004332  005077  022002                  CLR     @SPAR
766  004336  017767  022000  011524  ST120:  MOV     @SPDR,BAD
767  004344  026767  011516  011516          CMP     GOOD,BAD                ;ALL 1'S?
768  004352  001432                          BEQ     ST121                   ;YES, CHECK THE REST
769  004354                                  DATERR  \N,ISDTE        ;ERROR:REQ SCPD DATA TEST ERR
770                                                                  ;******* ERROR 11 *******
771  004354  032777  040000  021762          BIT     #B14,@SR
772  004362  001007                          BNE     .+20
773  004364  012700  023103                  MOV     #ISDTE,R0
774  004370  012767  000011  011466          MOV     #11,ERRNUM
775  004376  004767  011400                  JSR     PC,DERR
776          000012          N       =       N+1
777  004402  032777  040000  021734          BIT     #B14,@SR                ;PRINT ALLOWED?
778  004410  001010                          BNE     ST120S                  ;NO, SKIP IT
779  004412                                  PNTM    SCPAD
780  004412  012700  021560                  MOV     #SCPAD,R0               ;PRINT MESSAGE
781  004416  004767  012010                  JSR     PC,TYPOUT               ;POINTED TO BY SCPAD
782  004422  017700  021712                  MOV     @SPAR,R0                ;PRINT SCPD ADR OF ERROR
783  004426  004767  012742                  JSR     PC,OCTPNT
784  004432                          ST120S: SCOPE   ST120
```

```
004432  004567  011070                   JSR     R5,SCPRTN
004436  004336                           ST120
004440  027727  021674  000377  ST121:   CMP     @SPAR,#377              ;DONE REQ SCPD?
004446  001403                           BEQ     ST13                    ;YES, CHECK CLR SC. PAD
004450  005277  021664                   INC     @SPAR
004454  000730                           BR      ST120                   ;NO, KEEP CHECKING

                                ;CHECK CLEARING ALL SCRATCHPAD LOCATIONS
                                ; FILL THE ENTIRE SCPD WITH A CONSTANT (NORMALLY '0')
                                ; AND THE CHECK IT.

004456  005077  021656          ST13:    CLR     @SPAR                   ;START AT 0
004462  012777  000000  021652  ST130:   MOV     #0,@SPDR                ;THIS LOC (#0) CAN BE CHANGED
004470  027727  021644  000377           CMP     @SPAR,#377              ; TO ANYTHING AND THIS RTN
004476  001403                           BEQ     ST131A                  ; CAN BE USED FOR ANY DATA
004500  005277  021634                   INC     @SPAR                   ; FILL-UP & TEST
004504  000766                           BR      ST130
004506  012777  001000  021624  ST131A:  MOV     #B09,@SPAR              ;ADDR RES. SCPD
004514  012777  000000  021620  ST131B:  MOV     #0,@SPDR                ;THIS "#0" MUST ALSO BE CHANGED
004522  027727  021612  001377           CMP     @SPAR,#1377
004530  001403                           BEQ     ST131                   ;FILL UP WHOLE RES. SCPD
004532  005277  021602                   INC     @SPAR
004536  000766                           BR      ST131B
004540  005077  021574          ST131:   CLR     @SPAR                   ;NOW CHECK IT
004544  012767  000000  011314           MOV     #0,GOOD                 ;THIS LOC (#0) MUST BE CHANGED
004552  017767  021564  011310  ST132:   MOV     @SPDR,BAD               ; TO CORRESPOND TO ST130
004560  026767  011302  011302           CMP     GOOD,BAD                ; IN ORDER TO CHECK THE
004566  001432                           BEQ     ST133                   ; CORRECT DATA FILL-UP
004570                                   DATERR  \N,RQSPCL       ;ERROR:REQ. SCPD NOT ALL 0'S
                                                                 ;******* ERROR 12 *******
004570  032777  040000  021546           BIT     #B14,@SR
004576  001007                           BNE     .+20
004600  012700  023135                   MOV     #RQSPCL,R0
004604  012767  000012  011252           MOV     #12,ERRNUM
004612  004767  011164                   JSR     PC,DERR
        000013                  N        =       N+1
004616  032777  040000  021520           BIT     #B14,@SR                ;PRINT ALLOWED?
004624  001010                           BNE     ST132S                  ;NO, SKIP IT
004626                                   PNTM    SCPAD
004626  012700  021560                   MOV     #SCPAD,R0               ;PRINT MESSAGE
004632  004767  011574                   JSR     PC,TYPOUT               ;POINTED TO BY SCPAD
004636  017700  021476                   MOV     @SPAR,R0                ;PRINT SCPD ADR OF ERROR
004642  004767  012526                   JSR     PC,OCTPNT
004646                          ST132S:  SCOPE   ST13
004646  004567  010654                   JSR     R5,SCPRTN
004652  004456                           ST13
004654  027727  021460  000377  ST133:   CMP     @SPAR,#377              ;DONE CHECKING REQ. SCPD?
004662  001404                           BEQ     ST134                   ;YES, CHECK RES. SCPD
004664  005277  021450                   INC     @SPAR                   ;NO, FINISH UP
004670  000167  177656                   JMP     ST132
004674  012777  001000  021436  ST134:   MOV     #1000,@SPAR             ;NOW CHECK RES. SCPD
004702  012767  000000  011156           MOV     #0,GOOD                 ;THIS "#0" ALSO MUST BE CHANGED
004710  017767  021426  011152  ST135:   MOV     @SPDR,BAD
004716  026767  011144  011144           CMP     GOOD,BAD                ;RES SCPD ALL 0'S?
004724  001432                           BEQ     ST136
004726                                   DATERR  \N,RSSPCL       ;ERROR:RES. SCPD NOT ALL 0'S
```

```
                                                                ;******* ERROR 13 *******
005726  032777  040000  021410          BIT     #B14,@SR
005734  001007                          BNE     .+20
005736  012700  023165                  MOV     #RSSPCL,R0
005742  012767  000013  011114          MOV     #13,ERRNUM
005750  004767  011026                  JSR     PC,DERR
        000014                  N       =       N+1
005754  032777  040000  021362          BIT     #B14,@SR                ;PRINT ALLOWED?
005762  001010                          BNE     ST135S                  ;NO, SKIP IT
005764                                  PNTM    SCPAD
005764  012700  021560                  MOV     #SCPAD,R0               ;PRINT MESSAGE
005770  004767  011436                  JSR     PC,TYPOUT               ;POINTED TO BY SCPAD
005774  017700  021340                  MOV     @SPAR,R0                ;PRINT SCPD ADDR OF ERROR
005000  004767  012370                  JSR     PC,OCTPNT
005004                          ST135S: SCOPE   ST13
005004  004567  010516                  JSR     R5,SCPRTN
005010  004456                          ST13
005012  027727  021322  001377  ST136:  CMP     @SPAR,#1377             ;DONE RES. SCPD?
005020  001403                          BEQ     ST14                    ;YES, NEXT ROUTINE
005022  005277  021312                  INC     @SPAR
005026  000730                          BR      ST135

                        ;TEST "CLR TOP BYTE"
                        ;  SETTING "CLRTPB" SHOULD RESULT IN ALL BITS OF THE
                        ;  HIGH BYTE OF THE CSR BEING CLEARED. (LOW BYTE ALREADY = 0)

005030  012777  000020  021240  ST14:   MOV     #B04,@CSR               ;SET "CLRTPB"
005036  005067  011024                  CLR     GOOD                    ;ALL CSR SHOULD BE 0
005042  017767  021230  011020          MOV     @CSR,BAD
005050  026767  011012  011012          CMP     GOOD,BAD                ;ALL CLEAR?
005056  001416                          BEQ     ST15
005060                                  DATERR  \N,CLTBER       ;ERROR:CLR TPB FAILED
                                                                ;******* ERROR 14 *******
005060  032777  040000  021256          BIT     #B14,@SR
005066  001007                          BNE     .+20
005070  012700  023215                  MOV     #CLTBER,R0
005074  012767  000014  010762          MOV     #14,ERRNUM
005102  004767  010674                  JSR     PC,DERR
        000015                  N       =       N+1
005106                                  SCOPE   ST14
005106  004567  010414                  JSR     R5,SCPRTN
005112  005030                          ST14

                        ;NOW  H A N G  AND CHECK CSR
                        ;   "HANG" BY USING THE CMR-11 'DIE' FUNCTION
                        ;   THEN CHECK THAT THE CSR WAS RIGHT
                        ; FOR THE 'DIE' FUNC. THEN CHECK ALL R/W BITS OF THE CSR

005114  005077  021220  ST15:   CLR     @SPAR                   ;ADDR REQ. SCPD
005120  012777  000213  021214          MOV     #213,@SPDR              ;LOAD MAINT FUNC SUBF #3
005126  005277  021206                  INC     @SPAR
005132  012777  000001  021202          MOV     #1,@SPDR                ;DATA LEN. = 1
005140  005277  021174                  INC     @SPAR
005144  012777  000001  021170          MOV     #1,@SPDR                ;ONE REQUEST
005152  012777  000200  021116          MOV     #200,@CSR               ;SET 'MAIN'SHD CAUSE U.P. HANG
005160  012767  007777  021106          MOV     #7777,CNTR              ;WAIT FOR THE MICRO
```

```
  897  005166  005777  021104          1$:     TST     @CSR                    ;MICRO DONE?
  898  005172  100403                          BMI     2$                      ;NO, WAIT A BIT
  899  005174  005367  021074                  DEC     CNTR
  900  005200  001372                          BNE     1$
  901  005202  012767  137600  010656  2$:     MOV     #137600,GOOD
  902  005210  017767  021062  010652          MOV     @CSR,BAD                ;READ CSR REGISTER
  903  005216  026767  010644  010644          CMP     GOOD,BAD                ;DID IT HANG CORRECTLY?
  904  005224  001432                          BEQ     ST16                    ;YES, GOOD
  905  005226  012767  000000  021040          MOV     #0,CNTR
  906  005234                                  DATERR  \N,DIERR        ;ERROR:CSR NOT RIGHT FOR 'DIE''
  907                                                                  ;******* ERROR 15 *******
  908  005234  032777  040000  021102          BIT     #B14,@SR
  909  005242  001007                          BNE     .+20
  910  005244  012700  023257                  MOV     #DIERR,R0
  911  005250  012767  000015  010606          MOV     #15,ERRNUM
  912  005256  004767  010520                  JSR     PC,DERR
  913          000016                  N       =       N+1
  914  005262  012777  000002  021006          MOV     #2,@CSR                 ;PROGRAM INIT
  915  005270  005367  021000          ST150:  DEC     CNTR                    ;WAIT FOR INIT
  916  005274  001375                          BNE     ST150
  917  005276  012777  000020  020772          MOV     #B04,@CSR               ;CLR TOP BYTE
  918  005304                                  SCOPE   ST15
  919  005304  004567  010216                  JSR     R5,SCPRTN
  920  005310  005114                          ST15
  921
  922                                  ;CHECK CSR WITH MICRO HUNG
  923
  924  005312  012767  137755  010546  ST16:   MOV     #137755,GOOD            ;CHECK R/W BITS OF CSR
  925  005320  012777  000355  020750          MOV     #355,@CSR
  926  005326  017767  020744  010534          MOV     @CSR,BAD
  927  005334  026767  010526  010526          CMP     GOOD,BAD                ;DO THEY SET?
  928  005342  001416                          BEQ     ST160                   ;YES, TRY CLEARING THEM
  929  005344                                  DATERR  \N,CSRWE        ;ERROR:BAD BITS IN CSR WHILE HUNG
  930                                                                  ;******* ERROR 16 *******
  931  005344  032777  040000  020772          BIT     #B14,@SR
  932  005352  001007                          BNE     .+20
  933  005354  012700  023312                  MOV     #CSRWE,R0
  934  005360  012767  000016  010476          MOV     #16,ERRNUM
  935  005366  004767  010410                  JSR     PC,DERR
  936          000017                  N       =       N+1
  937  005372                                  SCOPE   ST16
  938  005372  004567  010130                  JSR     R5,SCPRTN
  939  005376  005312                          ST16
  940  005400  012767  137400  010460  ST160:  MOV     #137400,GOOD            ;NOW, SEE IF THEY CLEAR
  941  005406  012777  000000  020662          MOV     #0,@CSR
  942  005414  017767  020656  010446          MOV     @CSR,BAD
  943  005422  026767  010440  010440          CMP     GOOD,BAD                ;DID THEY CLR?
  944  005430  001416                          BEQ     ST161                   ;YES, NEXT
  945  005432                                  DATERR  \N,CSRCE        ;ERROR:CAN'T CLR LOW CSR WHILE HUNG
  946                                                                  ;******* ERROR 17 *******
  947  005432  032777  040000  020704          BIT     #B14,@SR
  948  005440  001007                          BNE     .+20
  949  005442  012700  023344                  MOV     #CSRCE,R0
  950  005446  012767  000017  010410          MOV     #17,ERRNUM
  951  005454  004767  010322                  JSR     PC,DERR
  952          000020                  N       =       N+1
```

```
 953  005460                                    SCOPE   ST160
 954  005460  004567  010042                    JSR     R5,SCPRTN
 955  005464  005400                            ST160
 956  005466  012777  000200  020602  ST161:    MOV     #200,@CSR           ;CHECK ACCESS KEYS TO SCPD
 957  005474  012777  000200  020636            MOV     #200,@SPAR          ;WITH MAIN SET
 958  005502  017767  020634  020652            MOV     @SPDR,WORD          ;READ AN REQ SCPD WORD
 959  005510  005167  020646                    COM     WORD                ;COMPLEMENT IT
 960  005514  042767  177400  020640            BIC     #177400,WORD        ;FORGET TOP BYTE
 961  005522  016777  020634  020612            MOV     WORD,@SPDR          ;WRITE COMPL. BACK
 962  005530  027767  020606  020624            CMP     @SPDR,WORD          ;READ IT BACK AGAIN
 963  005536  001016                            BNE     ST162               ;IT SHOULDN'T BE THE SAME
 964  005540                                    ERROR   \N,SPAVME       ;ERROR:ACCESSED REQ SCPD WITH 'MAIN' SET
 965                                                                        ;******* ERROR 20 *******
 966  005540  032777  040000  020576            BIT     #B14,@SR
 967  005546  001007                            BNE     .+20
 968  005550  012700  023403                    MOV     #SPAVME,R0
 969  005554  012767  000020  010302            MOV     #20,ERRNUM
 970  005562  004767  010130                    JSR     PC,ERR
 971          000021                    N       =       N+1
 972  005566                                    SCOPE   ST161
 973  005566  004567  007734                    JSR     R5,SCPRTN
 974  005572  005466                            ST161
 975  005574  012777  000001  020474  ST162:    MOV     #1,@CSR             ;TRY AGAIN WITH ''ST FUN'' SET
 976  005602  012777  000200  020530            MOV     #200,@SPAR
 977  005610  017767  020526  020544            MOV     @SPDR,WORD          ;READ A REQ SCPD WORD
 978  005616  005167  020540                    COM     WORD                ;COMPLEMENT IT
 979  005622  042767  177400  020532            BIC     #177400,WORD        ;FORGET TOP BYTE
 980  005630  016777  020526  020504            MOV     WORD,@SPDR          ;WRITE IT BACK
 981  005636  026777  020520  020476            CMP     WORD,@SPDR          ;READ IT BACK AGAIN
 982  005644  001016                            BNE     ST17                ;IT SHOULDN'T BE THE SAME
 983  005646                                    ERROR   \N,SPAVFE       ;ERROR:ACCESSED REQ SCPD WITH ''STFUN'' SET
 984                                                                        ;******* ERROR 21 *******
 985  005646  032777  040000  020470            BIT     #B14,@SR
 986  005654  001007                            BNE     .+20
 987  005656  012700  023447                    MOV     #SPAVFE,R0
 988  005662  012767  000021  010174            MOV     #21,ERRNUM
 989  005670  004767  010022                    JSR     PC,ERR
 990          000022                    N       =       N+1
 991  005674                                    SCOPE   ST162
 992  005674  004567  007626                    JSR     R5,SCPRTN
 993  005700  005574                            ST162
 994
 995                                    ;TEST INTERRUPT WITH MICRO HUNG
 996
 997  005702  012777  006014  020454  ST17:     MOV     #ERINT,@VECTOR      ;SET UP VECTOR FOR ERROR
 998  005710                                    MTPS    #0                  ;ALLOW INTERRUPTS
 999  005710  012746  000000                    MOV     #0,-(SP)
1000  005714  012746  005722                    MOV     #64$,-(SP)
1001  005720  000002                            RTI
1002  005722                            64$:
1003  005722  000240                            NOP                         ;IF ONE OCCURS NOW, IT
1004  005724  000240                            NOP                         ;  IS ERRONEOUS.
1005  005726  012777  006056  020430  ST170:    MOV     #GDINT,@VECTOR      ;SET VECTOR FOR GOOD INTERRUPT
1006  005734  012777  000100  020334            MOV     #100,@CSR           ;SET INTR ENABLE
1007  005742  000240                            NOP                         ;IF ONE DOES NOT OCCUR NOW,
1008  005744  000240                            NOP                         ;  THERE IS AN ERROR
```

```
1009  005746                                    ERROR   \N,NOINTR       ;ERROR:HOST CAN'T INTERRUPT UNIBUS
1010                                                                      ;******* ERROR 22 *******
1011  005746  032777  040000  020370            BIT     #B14,@SR
1012  005754  001007                            BNE     .+20
1013  005756  012700  023514                    MOV     #NOINTR,R0
1014  005762  012767  000022  010074            MOV     #22,ERRNUM
1015  005770  004767  007722                    JSR     PC,ERR
1016          000023                    N       =       N+1
1017  005774  042777  000100  020274            BIC     #100,@CSR               ;CLEAR INTR ENAB
1018  006002                                    SCOPE   ST170
1019  006002  004567  007520                    JSR     R5,SCPRTN
1020  006006  005726                            ST170
1021  006010  000167  000054          ST170R:   JMP     INTCNT                  ;CONTINUE
1022  006014  022626                    ERINT:  CMP     (SP)+,(SP)+             ;POP-POP STACK
1023  006016                                    ERROR   \N,ERINTR       ;ERROR:ERRONEOUS HOST INTERRUPT
1024                                                                      ;******* ERROR 23 *******
1025  006016  032777  040000  020320            BIT     #B14,@SR
1026  006024  001007                            BNE     .+20
1027  006026  012700  023552                    MOV     #ERINTR,R0
1028  006032  012767  000023  010024            MOV     #23,ERRNUM
1029  006040  004767  007652                    JSR     PC,ERR
1030          000024                    N       =       N+1
1031  006044                                    SCOPE   ST17
1032  006044  004567  007456                    JSR     R5,SCPRTN
1033  006050  005702                            ST17
1034  006052  000167  177650                    JMP     ST170                   ;CONTINUE
1035  006056  012716  006010          GDINT:    MOV     #ST170R,(SP)            ;CHANGE RETURN ADDRESS
1036  006062  005077  020210                    CLR     @CSR                    ;CLEAR INTR ENAB
1037  006066  000002                            RTI                             ;CONTINUE
1038  006070  012777  006134  020266  INTCNT:   MOV     #ERINT1,@VECTOR         ;SET UP FOR 2ND ERR INTR
1039  006076  042777  000100  020172            BIC     #100,@CSR               ;CLEAR INTER ENAB
1040  006104                                    MTPS    PRIO                    ;SET C.P AT DEVICE PRIORITY
1041  006104  016746  020214                    MOV     PRIO,-(SP)
1042  006110  012746  006116                    MOV     #64$,-(SP)
1043  006114  000002                            RTI
1044  006116                            64$:
1045  006116  012777  000100  020152            MOV     #100,@CSR               ;SET INTR ENAB
1046  006124  000240                            NOP                             ;NO INTERRUPT SHOULD OCCUR
1047  006126  000240                            NOP                             ; THIS TIME.
1048  006130  000167  000046          INTCNR:   JMP     ST18                    ;O.K. CONTINUE
1049  006134  022626                    ERINT1: CMP     (SP)+,(SP)+             ;POP-POP STACK
1050  006136  005077  020134                    CLR     @CSR                    ;CLEAR INTR ENAB
1051  006142                                    ERROR   \N,WPODI        ;ERROR:WRONG PRIORITY;DEVICE IS HIGHER
1052                                                                      ;******* ERROR 24 *******
1053  006142  032777  040000  020174            BIT     #B14,@SR
1054  006150  001007                            BNE     .+20
1055  006152  012700  023605                    MOV     #WPODI,R0
1056  006156  012767  000024  007700            MOV     #24,ERRNUM
1057  006164  004767  007526                    JSR     PC,ERR
1058          000024                    N       =       N+1
1059  006170                                    SCOPE   INTCNT
1060  006170  004567  007332                    JSR     R5,SCPRTN
1061  006174  006070                            INTCNT
1062  006176  000167  000000                    JMP     ST18
1063
1064                                    ;NOW CHECK PROGRAM INIT.
```

```
1065
1066
1067  006202  012777  000002  020066  ST18:   MOV     #2,@CSR                 ;DO HOST ''INIT''
1068  006210  016767  177774  177772  MOV:    MOV     MOV,MOV                 ;WAIT A LITTLE
1069  006216  016767  177766  177764          MOV     MOV,MOV
1070  006224  016767  177760  177756          MOV     MOV,MOV
1071  006232  016767  177752  177750          MOV     MOV,MOV
1072  006240  016767  177744  177742          MOV     MOV,MOV
1073  006246  016767  177736  177734          MOV     MOV,MOV
1074  006254  012767  002000  007604          MOV     #2000,GOOD              ;ONLY PWR-UP SHOULD BE SET
1075  006262  017767  020010  007600          MOV     @CSR,BAD                ;READ CSR
1076  006270  026767  007572  007572          CMP     GOOD,BAD                ;CSR CORRECT AFTER INIT?
1077  006276  001416                          BEQ     ST180                   ;YES, CONTINUE
1078  006300                                  DATERR  \N,HITER        ;ERROR:PROGRAM INIT FAILED
1079                                                                  ;******* ERROR 25 *******
1080  006300  032777  040000  020036          BIT     #B14,@SR
1081  006306  001007                          BNE     .+20
1082  006310  012700  023646                  MOV     #HITER,R0
1083  006314  012767  000025  007542          MOV     #25,ERRNUM
1084  006322  004767  007454                  JSR     PC,DERR
1085          000026                  N       =       N+1
1086  006326                                  SCOPE   ST18
1087  006326  004567  007174                  JSR     R5,SCPRTN
1088  006332  006202                          ST18
1089  006334  032777  100000  017734  ST180:  BIT     #B15,@CSR               ;WAIT FOR PWR-UP COMPL
1090  006342  001774                          BEQ     ST180
1091  006344  012777  001000  017766          MOV     #1000,@SPAR             ;NOW READY TO READ VERSION
1092  006352  012701  026204                  MOV     #VERSP,R1               ;POINT AT ORIGINAL VERSION
1093  006356  012702  026226                  MOV     #VERSUN,R2              ;AND SAVE THIS VERSION
1094  006362  117712  017754          ST181:  MOVB    @SPDR,(R2)
1095  006366  001016                          BNE     ST182
1096  006370                                  ERROR   \N,VISF         ;ERROR:MICRO DIDN'T STORE VERSION STUFF
1097                                                                  ;******* ERROR 26 *******
1098  006370  032777  040000  017746          BIT     #B14,@SR
1099  006376  001007                          BNE     .+20
1100  006400  012700  023706                  MOV     #VISF,R0
1101  006404  012767  000026  007452          MOV     #26,ERRNUM
1102  006412  004767  007300                  JSR     PC,ERR
1103          000027                  N       =       N+1
1104  006416                                  SCOPE   ST180
1105  006416  004567  007104                  JSR     R5,SCPRTN
1106  006422  006334                          ST180
1107  006424  111167  007436          ST182:  MOVB    (R1),GOOD               ;NOW COMPARE VERSION WITH ORIG.
1108  006430  111267  007434                  MOVB    (R2),BAD
1109  006434  042767  177400  007424          BIC     #177400,GOOD            ;CLR TOP BYTE
1110  006442  042767  177400  007420          BIC     #177400,BAD
1111  006450  026767  007412  007412          CMP     GOOD,BAD                ;SAME AS FIRST TIME?
1112  006456  001416                          BEQ     ST183
1113  006460                                  DATERR  \N,VIDER        ;ERROR:2ND VERSION NOT SAME AS 1ST
1114                                                                  ;******* ERROR 27 *******
1115  006460  032777  040000  017656          BIT     #B14,@SR
1116  006466  001007                          BNE     .+20
1117  006470  012700  023746                  MOV     #VIDER,R0
1118  006474  012767  000027  007362          MOV     #27,ERRNUM
1119  006502  004767  007274                  JSR     PC,DERR
1120          000030                  N       =       N+1
```

```
1121  006506                                    SCOPE   ST182
1122  006506  004567  007014                    JSR     R5,SCPRTN
1123  006512  006424                            ST182
1124  006514  122122                  ST183:    CMPB    (R1)+,(R2)+         ;UPDATE POINTERS
1125  006516  027727  017616  001020            CMP     @SPAR,#1020         ;DONE?
1126  006524  001403                            BEQ     ST19
1127  006526  005277  017606                    INC     @SPAR               ;NEXT WORD
1128  006532  000713                            BR      ST181
1129
1130
1131                                    ;CHECK ACCESS TO RESULT SCPD WITH INTERRUPT CLEAR
1132
1133
1134  006534  012777  000020  017534  ST19:     MOV     #20,@CSR            ;CLEAR TOP BYTE OF CSR
1135  006542  012777  001200  017570            MOV     #1200,@SPAR         ;ADDRESS RESULT SCPD
1136  006550  017767  017566  017604            MOV     @SPDR,WORD          ;READ A WORD FROM IT
1137  006556  005167  017600                    COM     WORD                ;COMPLEMENT IT
1138  006562  042767  177400  017572            BIC     #177400,WORD        ;IGNORE TOP 8 BITS
1139  006570  016777  017566  017544            MOV     WORD,@SPDR          ;AND WRITE IT BACK
1140  006576  026777  017560  017536            CMP     WORD,@SPDR          ;NOW READ IT BACK
1141  006604  001016                            BNE     ST20                ;IT SHOULDN'T BE THE SAME
1142  006606                                    ERROR   \N,SPAVIC   ;ERROR:RES. SCR. PAD ACCESSED WITH INTR CLR
1143                                                                        ;******* ERROR 30 *******
1144  006606  032777  040000  017530            BIT     #B14,@SR
1145  006614  001007                            BNE     .+20
1146  006616  012700  024015                    MOV     #SPAVIC,R0
1147  006622  012767  000030  007234            MOV     #30,ERRNUM
1148  006630  004767  007062                    JSR     PC,ERR
1149          000031                  N         =       N+1
1150  006634                                    SCOPE   ST19
1151  006634  004567  006666                    JSR     R5,SCPRTN
1152  006640  006534                            ST19
1153
1154
1155
1156                                    ;NOW CHECK SOME SIMPLE FUNCTIONALITY
1157                                    ;   ENSURE THAT STARTING A 'MAINT' FUNCTION GIVES
1158                                    ;   THE CORRECT ERROR STATUS.
1159                                    ;   ENSURE THAT STARTING THE 'MAINT' FUNCTION WITH 'MAIN'
1160                                    ;   WORKS PROPERLY AND GET PORT BAUD RATES.
1161
1162  006642  012767  000000  017424  ST20:     MOV     #0,CNTR
1163  006650  012777  000020  017420            MOV     #20,@CSR            ;CLEAR TOP BYTE
1164  006656  005077  017456                    CLR     @SPAR               ;ADDRESS REQ SCPD
1165  006662  012777  000210  017452            MOV     #210,@SPDR          ;LOAD 'MAIN' FUNCTION
1166  006670  005277  017444                    INC     @SPAR               ;   TO EXAMINE HOST
1167  006674  012777  000004  017440            MOV     #4,@SPDR            ;   MEMORY LOCATIONS
1168  006702  005277  017432                    INC     @SPAR
1169  006706  012777  000001  017426            MOV     #1,@SPDR            ;ONE REQUEST
1170  006714  005277  017420                    INC     @SPAR
1171  006720  012777  000002  017414            MOV     #2,@SPDR            ;# OF BYTES TO READ = 2
1172  006726  005277  017406                    INC     @SPAR
1173  006732  012777  000377  017402            MOV     #377,@SPDR          ;START ADDR = DFFF (H)
1174  006740  005277  017374                    INC     @SPAR
1175  006744  012777  000337  017370            MOV     #337,@SPDR
1176  006752  012777  000001  017316  ST200:    MOV     #1,@CSR             ;SET 'ST FUN' ON 'MAINT' FUNC
```

```
1177  006760  012767  140000  007100          MOV     #B14+B15,GOOD           ;CHECK FOR FUNCOM & INTR
1178  006766  017767  017304  007074  ST201:  MOV     @CSR,BAD
1179  006774  026767  007066  007066          CMP     GOOD,BAD                ;''FUNCOM'' AND ''INTR'' SET?
1180  007002  001421                          BEQ     ST202
1181  007004  005367  017264                  DEC     CNTR                    ;IF NOT, WAIT A BIT
1182  007010  001366                          BNE     ST201
1183  007012                                  DATERR  \N,STESTF       ;ERROR:STATUS WRONG WITH ''STFUN'' ON 'MAIN''
1184                                                                  ;******* ERROR 31 *******
1185  007012  032777  040000  017324          BIT     #B14,@SR
1186  007020  001007                          BNE     .+20
1187  007022  012700  024060                  MOV     #STESTF,R0
1188  007026  012767  000031  007030          MOV     #31,ERRNUM
1189  007034  004767  006742                  JSR     PC,DERR
1190          000032                  N       =       N+1
1191  007040                                  SCOPE   ST20
1192  007040  004567  006462                  JSR     R5,SCPRTN
1193  007044  006642                          ST20
1194  007046  012777  001000  017264  ST202:  MOV     #1000,@SPAR             ;ADDRESS RESULT SCPD
1195  007054  012767  000210  007004          MOV     #210,GOOD               ;CHECK ON FUNCTION
1196  007062  017767  017254  007000          MOV     @SPDR,BAD
1197  007070  026767  006772  006772          CMP     GOOD,BAD                ;FUNCTION CORRECT?
1198  007076  001416                          BEQ     ST203
1199  007100                                  DATERR  \N,RSPESF       ;ERROR:RESULT FUNC. CODE WRONG ON MAIN
1200                                                                  ;******* ERROR 32 *******
1201  007100  032777  040000  017236          BIT     #B14,@SR
1202  007106  001007                          BNE     .+20
1203  007110  012700  024111                  MOV     #RSPESF,R0
1204  007114  012767  000032  006742          MOV     #32,ERRNUM
1205  007122  004767  006654                  JSR     PC,DERR
1206          000033                  N       =       N+1
1207  007126                                  SCOPE   ST20
1208  007126  004567  006374                  JSR     R5,SCPRTN
1209  007132  006642                          ST20
1210  007134  012777  001002  017176  ST203:  MOV     #1002,@SPAR             ;NOW ADDRESS ''USOF''
1211  007142  012767  000377  006716          MOV     #377,GOOD               ;SHOULD SHOW ''TOTAL FAILURE'' CODE
1212  007150  017767  017166  006712          MOV     @SPDR,BAD
1213  007156  026767  006704  006704          CMP     GOOD,BAD                ;USOF O.K.?
1214  007164  001416                          BEQ     ST204
1215  007166                                  DATERR  \N,USOFE1       ;ERROR:''STFUN'' ON 'MAIN'' GAVE BAD USOF
1216                                                                  ;******* ERROR 33 *******
1217  007166  032777  040000  017150          BIT     #B14,@SR
1218  007174  001007                          BNE     .+20
1219  007176  012700  024152                  MOV     #USOFE1,R0
1220  007202  012767  000033  006654          MOV     #33,ERRNUM
1221  007210  004767  006566                  JSR     PC,DERR
1222          000034                  N       =       N+1
1223  007214                                  SCOPE   ST20
1224  007214  004567  006306                  JSR     R5,SCPRTN
1225  007220  006642                          ST20
1226  007222  012767  000000  017044  ST204:  MOV     #0,CNTR
1227  007230  012777  000020  017040          MOV     #20,@CSR                ;SET ''CLRTPB''
1228  007236  012777  000200  017032          MOV     #200,@CSR               ;SET 'MAIN'' WITH SAME FUN LOADED
1229  007244  012767  140000  006610          MOV     #B14+B15,GOOD           ;CHECK FOR 'FUNCOM' & ''INTR''
1230  007252  017767  017020  006610  ST205:  MOV     @CSR,BAD
1231  007260  026767  006602  006602          CMP     GOOD,BAD                ;FUN COMPLETE?
1232  007266  001421                          BEQ     ST206
```

```
1233  007270  005367  017000                DEC     CNTR                    ;WAIT A BIT
1234  007274  001366                      BNE     ST205
1235  007276                               DATERR  \N,STEMF        ;ERROR:STATUS WRONG ON 'MAIN'' FUNC
1236                                                                 ;******* ERROR 34 *******
1237  007276  032777  040000  017040      BIT     #B14,@SR
1238  007304  001007                      BNE     .+20
1239  007306  012700  024213              MOV     #STEMF,R0
1240  007312  012767  000034  006544      MOV     #34,ERRNUM
1241  007320  004767  006456              JSR     PC,DERR
1242          000035                  N   =       N+1
1243  007324                               SCOPE   ST204
1244  007324  004567  006176              JSR     R5,SCPRTN
1245  007330  007222                      ST204
1246  007332  012777  001002  017000  ST206:  MOV     #1002,@SPAR             ;POINT AT 'USOF''
1247  007340  012767  000001  006520      MOV     #1,GOOD                 ;SHOULD SHOW SUCCESS
1248  007346  017767  016770  006514      MOV     @SPDR,BAD
1249  007354  026767  006506  006506      CMP     GOOD,BAD                ;USOF O.K.?
1250  007362  001416                      BEQ     ST207
1251  007364                               DATERR  \N,USOFE2        ;ERROR:BAD 'USOF'' ON 'MAIN'' FUNCTION
1252                                                                 ;******* ERROR 35 *******
1253  007364  032777  040000  016752      BIT     #B14,@SR
1254  007372  001007                      BNE     .+20
1255  007374  012700  024244              MOV     #USOFE2,R0
1256  007400  012767  000035  006456      MOV     #35,ERRNUM
1257  007406  004767  006370              JSR     PC,DERR
1258          000036                  N   =       N+1
1259  007412                               SCOPE   ST204
1260  007412  004567  006110              JSR     R5,SCPRTN
1261  007416  007222                      ST204
1262  007420  012777  001001  016712  ST207:  MOV     #1001,@SPAR             ;POINT AT DATA LENGTH
1263  007426  012767  000003  006432      MOV     #3,GOOD                 ;SHOULD BE 3
1264  007434  017767  016702  006426      MOV     @SPDR,BAD
1265  007442  026767  006420  006420      CMP     GOOD,BAD                ;WAS IT 3?
1266  007450  001416                      BEQ     ST21
1267  007452                               DATERR  \N,DATLER        ;ERROR:'MAIN'' FUNC GAVE BAD DATA LEN.
1268                                                                 ;******* ERROR 36 *******
1269  007452  032777  040000  016664      BIT     #B14,@SR
1270  007460  001007                      BNE     .+20
1271  007462  012700  024301              MOV     #DATLER,R0
1272  007466  012767  000036  006370      MOV     #36,ERRNUM
1273  007474  004767  006302              JSR     PC,DERR
1274          000037                  N   =       N+1
1275  007500                               SCOPE   ST204
1276  007500  004567  006022              JSR     R5,SCPRTN
1277  007504  007222                      ST204
1278  007506  012700  026266  ST21:   MOV     #BAUD,R0                ;POINT AT BAUD TABLE
1279  007512  012777  001003  016620      MOV     #1003,@SPAR             ;GET RESULTS OF EXAMINE
1280  007520  117720  016616              MOVB    @SPDR,(R0)+
1281  007524  005277  016610              INC     @SPAR
1282  007530  117710  016606              MOVB    @SPDR,(R0)              ;STORE BAUD RATES
1283
1284                                   ;CHECK RESULTS OF STARTING A REGULAR FUNCTION WITH 'MAIN'
1285                                   ;  TRY DOING AN ''ACTIVATE REMOTE'' FIRST USING 'MAIN', THEN 'STFUN''
1286
1287
1288  007534  012777  000020  016534  ST22:   MOV     #20,@CSR                ;CLEAR TOP BYTE OF CSR
```

```
1289  007542  012777  000000  016570          MOV     #0,@SPAR
1290  007550  012777  000060  016564          MOV     #60,@SPDR           ;LOAD ''ACTIVATE REMOTE'' FUNC
1291  007556  005277  016556                  INC     @SPAR
1292  007562  012777  000002  016552          MOV     #2,@SPDR            ;DATA LEN. = 2
1293  007570  005277  016544                  INC     @SPAR
1294  007574  012777  000001  016540          MOV     #1,@SPDR            ;ONE REQUEST
1295  007602  005277  016532                  INC     @SPAR
1296  007606  012777  000001  016526          MOV     #1,@SPDR            ;REMOTE #1
1297  007614  012777  000200  016454  ST220:  MOV     #200,@CSR           ;SET 'MAIN''
1298  007622  032777  040000  016446  ST221:  BIT     #B14,@CSR           ;FUNC. COMPL?
1299  007630  001774                  BEQ     ST221               ;NO, WAIT
1300  007632  012777  001000  016500          MOV     #1000,@SPAR         ;ADDRESS RESULT
1301  007640  017767  016476  006222          MOV     @SPDR,BAD           ;READ RESULT FUNC. CODE
1302  007646  012767  000060  006212          MOV     #60,GOOD
1303  007654  026767  006206  006206          CMP     GOOD,BAD            ;O.K.?
1304  007662  001416                  BEQ     ST222
1305  007664                          DATERR  \N,RSPEMF       ;ERROR:RES. FUNC. CODE WRONG FOR 'MAIN''
1306                                                          ;******* ERROR 37 *******
1307  007664  032777  040000  016452          BIT     #B14,@SR
1308  007672  001007                  BNE     .+20
1309  007674  012700  024341                  MOV     #RSPEMF,R0
1310  007700  012767  000037  006156          MOV     #37,ERRNUM
1311  007706  004767  006070                  JSR     PC,DERR
1312          000040                  N       =       N+1
1313  007712                          SCOPE   ST22
1314  007712  004567  005610                  JSR     R5,SCPRTN
1315  007716  007534                  ST22
1316  007720  012777  001002  016412  ST222:  MOV     #1002,@SPAR         ;ADDR 'USOF''
1317  007726  012767  000377  006132          MOV     #377,GOOD           ;SHOULD  SHOW TOTAL FAILURE
1318  007734  017767  016402  006126          MOV     @SPDR,BAD
1319  007742  026767  006120  006120          CMP     GOOD,BAD            ;USOF O.K.?
1320  007750  001416                  BEQ     ST223
1321  007752                          DATERR  \N,USOFE3       ;ERROR:'MAIN'' ON REG FUNC GAVE WRONG USOF
1322                                                          ;******* ERROR 40 *******
1323  007752  032777  040000  016364          BIT     #B14,@SR
1324  007760  001007                  BNE     .+20
1325  007762  012700  024403                  MOV     #USOFE3,R0
1326  007766  012767  000040  006070          MOV     #40,ERRNUM
1327  007774  004767  006002                  JSR     PC,DERR
1328          000041                  N       =       N+1
1329  010000                          SCOPE   ST22
1330  010000  004567  005522                  JSR     R5,SCPRTN
1331  010004  007534                  ST22
1332  010006  012777  000020  016262  ST223:  MOV     #20,@CSR            ;CLR TOP BYTE
1333  010014  012777  000001  016254          MOV     #1,@CSR             ;SET 'STFUN''
1334  010022  032777  040000  016246  ST224:  BIT     #B14,@CSR           ;FUNCOM SET?
1335  010030  001774                  BEQ     ST224               ;WAIT
1336  010032  012777  001002  016300          MOV     #1002,@SPAR         ;ADDRESS USOF
1337  010040  012767  000364  006020          MOV     #364,GOOD           ;SHOULD SHOW REM. ERROR
1338  010046  017767  016270  006014          MOV     @SPDR,BAD
1339  010054  026767  006006  006006          CMP     GOOD,BAD            ;USOF O.K.?
1340  010062  001416                  BEQ     ST23
1341  010064                          DATERR  \N,USOFE4       ;ERROR:WRONG USOF ON REGULAR FUNCTION
1342                                                          ;******* ERROR 41 *******
1343  010064  032777  040000  016252          BIT     #B14,@SR
1344  010072  001007                  BNE     .+20
```

```
1345  010074  012700  024446                MOV     #USOFE4,R0
1346  010100  012767  000041  005756        MOV     #41,ERRNUM
1347  010106  004767  005670                JSR     PC,DERR
1348          000042            N           =       N+1
1349  010112                                SCOPE   ST223
1350  010112  004567  005410                JSR     R5,SCPRTN
1351  010116  010006                        ST223
1352
1353                                    ;END OF LOGIC TEST. PRINT END OF PASS AND VERSION STUFF
1354
1355
1356  010120  005767  016234        ST23:   TST     VERFLG          ;IS FLAG SET?
1357  010124  001402                        BEQ     ST23A           ;NO
1358  010126  000167  000350                JMP     ST24            ;YES, JUST PRINT 'END PASS''
1359  010132  012767  177777  016220  ST23A: MOV     #-1,VERFLG      ;NO, SET FLAG
1360  010140  012701  026226                MOV     #VERSUN,R1      ;GET VERSION DATA
1361  010144  012702  026266                MOV     #BAUD,R2        ;AND BAUD RATES
1362  010150                                PNTM    VERSM           ;PRINT 'VERSION ''
1363  010150  012700  021601                MOV     #VERSM,R0       ;PRINT MESSAGE
1364  010154  004767  006252                JSR     PC,TYPOUT       ;POINTED TO BY VERSM
1365  010160  012767  000021  016106        MOV     #21,CNTR
1366  010166  112100            ST230:      MOVB    (R1)+,R0        ;DUMP ALL VERSION INFO
1367  010170  004767  007504                JSR     PC,TTO
1368  010174  005367  016074                DEC     CNTR
1369  010200  001372                        BNE     ST230
1370  010202                                PNTM    BAUDM           ;PRINT 'BAUD RATES:''
1371  010202  012700  021634                MOV     #BAUDM,R0       ;PRINT MESSAGE
1372  010206  004767  006220                JSR     PC,TYPOUT       ;POINTED TO BY BAUDM
1373  010212                                PNTM    PORT0M          ;PRINT 'PORT 0 = ''
1374  010212  012700  021652                MOV     #PORT0M,R0      ;PRINT MESSAGE
1375  010216  004767  006210                JSR     PC,TYPOUT       ;POINTED TO BY PORT0M
1376  010222  111267  016134                MOVB    (R2),WORD
1377  010226  042767  177770  016126        BIC     #177770,WORD    ;SORT OUT CORRECT BAUD RATE
1378  010234  012703  025022                MOV     #BDRTBL,R3      ;R3 POINTS AT TABLE OF RATES
1379  010240  006367  016116                ASL     WORD            ;DOUBLE OFFSET
1380  010244  066703  016112                ADD     WORD,R3         ;USE CORRECT OFFSET
1381  010250  011300                        MOV     (R3),R0         ;GET BAUD
1382  010252  004767  006154                JSR     PC,TYPOUT
1383  010256                                PNTM    PORT1M          ;NOW PRINT 'PORT 1 = ''
1384  010256  012700  021666                MOV     #PORT1M,R0      ;PRINT MESSAGE
1385  010262  004767  006144                JSR     PC,TYPOUT       ;POINTED TO BY PORT1M
1386  010266  112267  016070                MOVB    (R2)+,WORD      ;GET NEXT BAUD RATE CODE
1387  010272  042767  177617  016062        BIC     #177617,WORD    ;SORT OUT CORRECT PART
1388  010300  006267  016056                ASR     WORD
1389  010304  006267  016052                ASR     WORD
1390  010310  006267  016046                ASR     WORD            ;PUT IT IN L.S. BIT PLACES
1391  010314  006267  016042                ASR     WORD
1392  010320  012703  025022                MOV     #BDRTBL,R3
1393  010324  006367  016032                ASL     WORD            ;DOUBLE OFFSET
1394  010330  066703  016026                ADD     WORD,R3         ;USE IT AS TABLE OFFSET
1395  010334  011300                        MOV     (R3),R0
1396  010336  004767  006070                JSR     PC,TYPOUT       ;PRINT RATE FOR PORT 1
1397  010342                                PNTM    PORT2M          ;PRINT 'PORT 2 = ''
1398  010342  012700  021702                MOV     #PORT2M,R0      ;PRINT MESSAGE
1399  010346  004767  006060                JSR     PC,TYPOUT       ;POINTED TO BY PORT2M
1400  010352  111267  016004                MOVB    (R2),WORD       ;GET BAUD RATE CODE
```

```
1401  010356  042767  177770  015776          BIC     #177770,WORD        ;SORT OUT CORRECT PART
1402  010364  012703  025022                  MOV     #BDRTBL,R3
1403  010370  006367  015766                  ASL     WORD                ;DOUBLE OFFSET
1404  010374  066703  015762                  ADD     WORD,R3             ;USE IT AS TABLE OFFSET
1405  010400  011300                          MOV     (R3),R0
1406  010402  004767  006024                  JSR     PC,TYPOUT           ;PRINT BAUD RATE FOR PORT 2
1407  010406                                  PNTM    PORT3M              ;PRINT 'PORT 3 = ''
1408  010406  012700  021716                  MOV     #PORT3M,R0          ;PRINT MESSAGE
1409  010412  004767  006014                  JSR     PC,TYPOUT           ;POINTED TO BY PORT3M
1410  010416  111267  015740                  MOVB    (R2),WORD
1411  010422  042767  177617  015732          BIC     #177617,WORD        ;GET CORRECT PART.
1412  010430  006267  015726                  ASR     WORD
1413  010434  006267  015722                  ASR     WORD
1414  010440  006267  015716                  ASR     WORD
1415  010444  006267  015712                  ASR     WORD
1416  010450  012703  025022                  MOV     #BDRTBL,R3
1417  010454  006367  015702                  ASL     WORD                ;DOUBLE OFFSET
1418  010460  066703  015676                  ADD     WORD,R3             ;USE IT AS TABLE OFFSET
1419  010464  011300                          MOV     (R3),R0
1420  010466  004767  005740                  JSR     PC,TYPOUT           ;PRINT RATE FOR PORT 3
1421  010472  004767  007060                  JSR     PC,NULLS            ;NULLS AFTER PRINTOUT
1422  010476  000167  000016                  JMP     ST25
1423
1424  010502  005367  015576          ST24:   DEC     ITER                ;UPDATE ITERATION
1425  010506  001404                          BEQ     ST25                ;DONE 10?
1426  010510  032777  004000  015626          BIT     #B11,@SR            ;SINGLE ITERATION?
1427  010516  001415                          BEQ     ST26
1428  010520  012767  000010  015556  ST25:   MOV     #10,ITER
1429  010526  005267  015560                  INC     PASCNT              ;UPDATE PASS COUNT
1430  010532  032777  002000  015604          BIT     #B10,@SR            ;END PASS INHIBIT?
1431  010540  001004                          BNE     ST26
1432  010542  004767  000014                  JSR     PC,ENPRTN           ;PRINT END PASS INFO
1433  010546  004767  007004                  JSR     PC,NULLS            ;NULLS AFTER PRINTOUT
1434  010552  004767  005364          ST26:   JSR     PC,MONIT            ;CHECK FOR CONTROL CHARACTERS
1435  010556  000167  172132                  JMP     ST0                 ;START OVER
1436
1437
1438  010562                          ENPRTN: PNTM    ENDPS               ;PRINT 'END PASS # ''
1439  010562  012700  021732                  MOV     #ENDPS,R0           ;PRINT MESSAGE
1440  010566  004767  005640                  JSR     PC,TYPOUT           ;POINTED TO BY ENDPS
1441  010572  016700  015514                  MOV     PASCNT,R0           ;GET PASS COUNT
1442  010576  004767  006676                  JSR     PC,DECPNT           ;PRINT IT IN DECIMAL
1443  010602                                  PNTM    ERCTM               ;PRINT 'ERROR COUNT = ''
1444  010602  012700  021747                  MOV     #ERCTM,R0           ;PRINT MESSAGE
1445  010606  004767  005620                  JSR     PC,TYPOUT           ;POINTED TO BY ERCTM
1446  010612  105767  015436                  TSTB    OFLOF               ;CHECK FOR ERROR CNT OVERFLOW
1447  010616  001405                          BEQ     EN01                ;IT DID'T, PRINT COUNT
1448  010620                                  PNTM    OVFLM               ;IT DID, PRINT ''**OVERFLOW**''
1449  010620  012700  021765                  MOV     #OVFLM,R0           ;PRINT MESSAGE
1450  010624  004767  005602                  JSR     PC,TYPOUT           ;POINTED TO BY OVFLM
1451  010630  000404                          BR      ENRET
1452  010632  016700  015444          EN01:   MOV     ERRCNT,R0           ;GET ERROR COUNT
1453  010636  004767  006636                  JSR     PC,DECPNT           ;PRINT IT IN DECIMAL
1454  010642  000207                  ENRET:  RTS     PC
1455
1456                                          .SBTTL  PORT LOOP-BACK TEST
```

```
                                        ;ASK FOR PORT # TO BE TESTED (<CR> = ALL PORTS)

010644  012767  000000  015422  PORTLP: MOV     #0,CNTR                 ;BETTER CHECK FOR PWR-UP COMPL
010652  027727  015420  102000  PRLC:   CMP     @CSR,#102000            ;POWER UP COMPLETE?
010660  001420                          BEQ     POK                     ;YES, CARRY ON
010662  005367  015406                  DEC     CNTR                    ;NO, WAIT A BIT
010666  001371                          BNE     PRLC
010670                                  ERROR   \N,NOGO         ;ERROR:HOST MICRO FAILED TO START
                                                                        ;******* ERROR 42 *******
010670  032777  040000  015446          BIT     #B14,@SR
010676  001007                          BNE     .+20
010700  012700  022552                  MOV     #NOGO,R0
010704  012767  000042  005152          MOV     #42,ERRNUM
010712  004767  005000                  JSR     PC,ERR
        000043                  N       =       N+1
010716                                  HLT                             ;RUN LOGIC TEST.
010716  004767  004564                  JSR     PC,SWHLT
010722  012767  000010  015354  POK:    MOV     #10,ITER                ;LOAD ITERATION COUNT
010730  005067  015330                  CLR     ALLFLG                  ;CLEAR "ALL" FLAG
010734  005067  015352                  CLR     PASCNT                  ;CLEAR PASS COUNT
010740  005067  015336                  CLR     ERRCNT                  ;CLEAR ERROR COUNT
010744  105067  015304                  CLRB    OFLOF                   ;CLR OVERFLOW FLAG
010750                                  PNTM    PLTM                    ;PRINT "PORT LOOP-BACK TEST"
010750  012700  022002                  MOV     #PLTM,R0                ;PRINT MESSAGE
010754  004767  005452                  JSR     PC,TYPOUT               ;POINTED TO BY PLTM
010760                          PST0:   PNTM    PORTN                   ;PRINT "PORT # (<CR>=ALL) "
010760  012700  022030                  MOV     #PORTN,R0               ;PRINT MESSAGE
010764  004767  005442                  JSR     PC,TYPOUT               ;POINTED TO BY PORTN
010770  012767  000004  006350          MOV     #4,KBBUF                ;DEFAULT IS "ALL"
010776  012767  010760  015312          MOV     #PST0,PCONT             ;LOAD RETURN ADDRESS
011004  004767  005464                  JSR     PC,INPKB                ;GET KBD INPUT
011010  005067  015302                  CLR     PCONT
011014  026727  006326  000004          CMP     KBBUF,#4                ;WAS IT DEFAULT (OR 4)?
011022  001007                          BNE     PST1                    ;NO
011024  012767  177777  015232          MOV     #-1,ALLFLG              ;YES, SET "ALL" FLAG
011032  005067  015264                  CLR     PORT                    ; START WITH PORT 0
011036  000167  000034                  JMP     PST2A

011042  101004                  PST1:   BHI     PSTE                    ;WAS IT HIGHER THAN 4?
011044  005067  015214                  CLR     ALLFLG                  ;NO, MUST BE A PORT #
011050  000167  000014                  JMP     PST2
011054                          PSTE:   PNTM    AGAIN                   ;WRONG!, TRY AGAIN
011054  012700  020371                  MOV     #AGAIN,R0               ;PRINT MESSAGE
011060  004767  005346                  JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
011064  000167  177670                  JMP     PST0
011070  016767  006252  015224  PST2:   MOV     KBBUF,PORT              ;SAVE PORT #
011076  012777  000020  015172  PST2A:  MOV     #20,@CSR                ;CLR TOP BYTE
011104  005077  015230                  CLR     @SPAR                   ;ADDRESS REQ. SCR. PAD
011110  012777  000212  015224          MOV     #212,@SPDR              ;LOAD MAINT FUNC.
011116  005277  015216                  INC     @SPAR                   ;TO DO PORT LOOP-BACK
011122  012777  000023  015212          MOV     #23,@SPDR               ;DATA LEN. = 23
011130  005277  015204                  INC     @SPAR
011134  012777  000001  015200          MOV     #1,@SPDR                ;ONE REQUEST
```

```
 1513  011142  005277  015172                    INC     @SPAR
 1514  011146  016777  015150  015166            MOV     PORT,@SPDR          ;LOAD PORT # (XMTR)
 1515  011154  005277  015160                    INC     @SPAR
 1516  011160  016777  015136  015154            MOV     PORT,@SPDR          ;LOAD PORT # (RCVR)
 1517  011166  012767  000020  015100            MOV     #20,CNTR            ;CHARACTER COUNTER
 1518  011174  012701  025144                    MOV     #DATBL,R1           ;LOOP DATA FROM 'DATBL''
 1519  011200  005277  015134          PST3:     INC     @SPAR
 1520  011204  012177  015132                    MOV     (R1)+,@SPDR         ;LOAD DATA BYTE
 1521  011210  005367  015060                    DEC     CNTR                ;LOADED ALL?
 1522  011214  001371                            BNE     PST3                ;NO, KEEP LOADING
 1523  011216                          PSTS:     PNTM    TYPCR               ;PRINT 'TYPE <CR> WHEN READY''
 1524  011216  012700  022062                    MOV     #TYPCR,R0           ;PRINT MESSAGE
 1525  011222  004767  005204                    JSR     PC,TYPOUT           ;POINTED TO BY TYPCR
 1526  011226  012767  011216  015062  PST4:     MOV     #PSTS,PCONT         ;INDICATE PROMPT PENDING
 1527  011234  012767  001236  006104            MOV     #1236,KBBUF         ;LOAD ANY DEFAULT VALUE
 1528  011242  004767  005226                    JSR     PC,INPKB            ;GET KEYBOARD INPUT
 1529  011246  005067  015044                    CLR     PCONT
 1530  011252  026727  006070  001236            CMP     KBBUF,#1236         ;<CR> ONLY TYPED?
 1531  011260  001356                            BNE     PSTS                ;IF NOT, KEEP LOOKING FOR IT
 1532
 1533                          ;START MAINTENANCE FUNCTION
 1534
 1535  011262  012777  000020  015006  PST5:     MOV     #20,@CSR            ;CLR    TOP BYTE
 1536  011270  012777  000200  015000            MOV     #200,@CSR           ;SET 'MAIN''
 1537  011276  005777  014774          PST6:     TST     @CSR                ;LOOK FOR INTERRUPT BIT
 1538  011302  100403                            BMI     PST60
 1539  011304  004767  004632                    JSR     PC,MONIT            ;AND WATCH FOR CNTRL CHARS.
 1540  011310  000772                            BR      PST6
 1541  011312  012777  001002  015020  PST60:    MOV     #1002,@SPAR         ;NOW CHECK USOF
 1542  011320  027727  015016  000001            CMP     @SPDR,#1            ;DONE SUCCESSFULLY?
 1543  011326  001004                            BNE     PST7                ;NO, CHECK ERROR TYPE
 1544  011330  004767  004606                    JSR     PC,MONIT
 1545  011334  000167  000430                    JMP     ENDCHK              ;YES, DONE A PASS
 1546  011340  027727  014776  000375  PST7:     CMP     @SPDR,#375          ;FUNCTION FAIL?
 1547  011346  103434                            BLO     PST8
 1548  011350                                    ERROR   \N,PLFFE    ;ERROR:TOTAL FAILURE OF 'MAIN'' FUNCTION
 1549                                                                ;******* ERROR 43 *******
 1550  011350  032777  040000  014766            BIT     #B14,@SR
 1551  011356  001007                            BNE     .+20
 1552  011360  012700  024503                    MOV     #PLFFE,R0
 1553  011364  012767  000043  004472            MOV     #43,ERRNUM
 1554  011372  004767  004320                    JSR     PC,ERR
 1555          000044                    N       =       N+1
 1556  011376  032777  040000  014740            BIT     #B14,@SR            ;PRINT ALLOWED?
 1557  011404  001010                            BNE     PST7S               ;NO, SKIP IT
 1558  011406                                    PNTM    PORTMS              ;PRINT 'PORT # ''
 1559  011406  012700  022331                    MOV     #PORTMS,R0          ;PRINT MESSAGE
 1560  011412  004767  005014                    JSR     PC,TYPOUT           ;POINTED TO BY PORTMS
 1561  011416  016700  014700                    MOV     PORT,R0
 1562  011422  004767  005746                    JSR     PC,OCTPNT
 1563  011426                          PST7S:    SCOPE   PST5
 1564  011426  004567  004074                    JSR     R5,SCPRTN
 1565  011432  011262                            PST5
 1566  011434  000167  000330                    JMP     ENDCHK
 1567  011440  027727  014676  000374  PST8:     CMP     @SPDR,#374          ;XMTR HUNG UP?
 1568  011446  103434                            BLO     PST80
```

```
1569  011450                                        ERROR   \N,PLTXTO       ;ERROR:XMTR TIMEOUT ERROR
1570                                                                          ;******* ERROR 44 *******
1571  011450  032777  040000  014666                BIT     #B14,@SR
1572  011456  001007                                BNE     .+20
1573  011460  012700  024546                        MOV     #PLTXTO,R0
1574  011464  012767  000044  004372                MOV     #44,ERRNUM
1575  011472  004767  004220                        JSR     PC,ERR
1576           000045                        N      =       N+1
1577  011476  032777  040000  014640                BIT     #B14,@SR                ;PRINT ALLOWED?
1578  011504  001010                                BNE     PST8S                   ;NO, SKIP IT
1579  011506                                        PNTM    PORTMS                  ;PRINT 'PORT # ''
1580  011506  012700  022331                        MOV     #PORTMS,R0              ;PRINT MESSAGE
1581  011512  004767  004714                        JSR     PC,TYPOUT               ;POINTED TO BY PORTMS
1582  011516  016700  014600                        MOV     PORT,R0
1583  011522  004767  005646                        JSR     PC,OCTPNT
1584  011526                                PST8S:  SCOPE   PST5
1585  011526  004567  003774                        JSR     R5,SCPRTN
1586  011532  011262                                PST5
1587  011534  000167  000230                        JMP     ENDCHK
1588  011540  027727  014576  000373        PST80:  CMP     @SPDR,#373              ;RCVR HUNG UP?
1589  011546  103434                                BLO     PST9
1590  011550                                        ERROR   \N,PLRCTO       ;ERROR;RCVR TIMEOUT ERROR
1591                                                                          ;******* ERROR 45 *******
1592  011550  032777  040000  014566                BIT     #B14,@SR
1593  011556  001007                                BNE     .+20
1594  011560  012700  024574                        MOV     #PLRCTO,R0
1595  011564  012767  000045  004272                MOV     #45,ERRNUM
1596  011572  004767  004120                        JSR     PC,ERR
1597           000046                        N      =       N+1
1598  011576  032777  040000  014540                BIT     #B14,@SR                ;PRINT ALLOWED?
1599  011604  001010                                BNE     PST80S                  ;NO, SKIP IT
1600  011606                                        PNTM    PORTMS                  ;PRINT 'PORT # ''
1601  011606  012700  022331                        MOV     #PORTMS,R0              ;PRINT MESSAGE
1602  011612  004767  004614                        JSR     PC,TYPOUT               ;POINTED TO BY PORTMS
1603  011616  016700  014500                        MOV     PORT,R0
1604  011622  004767  005546                        JSR     PC,OCTPNT
1605  011626                                PST80S: SCOPE   PST5
1606  011626  004567  003674                        JSR     R5,SCPRTN
1607  011632  011262                                PST5
1608  011634  000167  000130                        JMP     ENDCHK
1609  011640  012777  001001  014472        PST9:   MOV     #1001,@SPAR             ;ADDRESS DATA TO FIND BAD WORD
1610  011646  067777  014470  014464                ADD     @SPDR,@SPAR
1611  011654  017767  014462  004206                MOV     @SPDR,BAD               ;GET BAD WORD
1612  011662  042777  001000  014450                BIC     #B09,@SPAR
1613  011670  062777  000002  014442                ADD     #2,@SPAR
1614  011676  017767  014440  004162                MOV     @SPDR,GOOD              ;GET GOOD WORD
1615  011704                                        DATERR  \N,PLDERR       ;ERROR:LOOP TEST DETECTED DATA ERROR
1616                                                                          ;******* ERROR 46 *******
1617  011704  032777  040000  014432                BIT     #B14,@SR
1618  011712  001007                                BNE     .+20
1619  011714  012700  024622                        MOV     #PLDERR,R0
1620  011720  012767  000046  004136                MOV     #46,ERRNUM
1621  011726  004767  004050                        JSR     PC,DERR
1622           000047                        N      =       N+1
1623  011732  032777  040000  014404                BIT     #B14,@SR                ;PRINT ALLOWED?
1624  011740  001010                                BNE     PST9S
```

```
011742                                   PNTM    PORTMS          ;PRINT 'PORT # ''
011742  012700  022331                   MOV     #PORTMS,R0      ;PRINT MESSAGE
011746  004767  004460                   JSR     PC,TYPOUT       ;POINTED TO BY PORTMS
011752  016700  014344                   MOV     PORT,R0
011756  004767  005412                   JSR     PC,OCTPNT       ;PRINT #
011762                           PST9S:  SCOPE   PST5
011762  004567  003540                   JSR     R5,SCPRTN
011766  011262                           PST5


011770  052777  000020  014300   ENDCHK: BIS     #B04,@CSR       ;CLR TOP BYTE
011776  005767  014262                   TST     ALLFLG          ;DOING ALL PORTS?
012002  001441                           BEQ     PNTEND          ;NO, DONE A PASS
012004  026727  014312  000003           CMP     PORT,#3         ;YES, DONE ALL?
012012  103416                           BLO     END0            ;NO, KEEP GOING
012014  005067  014302                   CLR     PORT            ;CLEAR PORT #
012020  012777  000003  014312           MOV     #3,@SPAR        ;  IN REQ. SCPD
012026  016777  014270  014306           MOV     PORT,@SPDR
012034  005277  014300                   INC     @SPAR
012040  016777  014256  014274           MOV     PORT,@SPDR
012046  000417                           BR      PNTEND
012050  005267  014246           END0:   INC     PORT            ;NEXT PORT
012054  012777  000003  014256           MOV     #3,@SPAR        ;PREPARE TO LOAD NEXT PORT #
012062  016777  014234  014252           MOV     PORT,@SPDR
012070  005277  014244                   INC     @SPAR
012074  016777  014222  014240           MOV     PORT,@SPDR
012102  000167  177154                   JMP     PST5

012106  005367  014172           PNTEND: DEC     ITER            ;UPDATE ITERATION COUNT
012112  001404                           BEQ     PNT0
012114  032777  004000  014222           BIT     #B11,@SR        ;SW 11 =, INH ITERATION
012122  001415                           BEQ     PNTRTN
012124  012767  000010  014152   PNT0:   MOV     #10,ITER        ;RELOAD ITERATION COUNT
012132  005267  014154           PNT1:   INC     PASCNT          ;UPDATE PASS COUNT
012136  032777  002000  014200           BIT     #B10,@SR        ;SW 10 = INH END PASS PRINT
012144  001004                           BNE     PNTRTN
012146  004767  176410                   JSR     PC,ENPRTN       ;PRINT END PASS
012152  004767  005400                   JSR     PC,NULLS        ;PRINT NULLS
012156  004767  003760           PNTRTN: JSR     PC,MONIT
012162  000167  177074                   JMP     PST5

                                         .SBTTL  HOST-REMOTE EXERCISE


                                 ;START BACKGROUND SCAN, WAIT FOR ''THRU''
                                 ;REPORT ALARMS  WHILE WAITING.
                                 ;WHEN ''THRU'' SETS, DO A ''PORT CONFIGURATION STATUS'' REPORT
                                 ;AND THEN RUN ''DIAGNOSTIC'' FUNCTION ON ALL
                                 ;   AVAILABLE REMOTES
                                 ;      REPORT ALL CHANGES OF REMOTE STATUS


012166                           CMREXC: MTPS    #340            ;INTERRUPT OFF
012166  012746  000340                   MOV     #340,-(SP)
012172  012746  012200                   MOV     #64$,-(SP)
012176  000002                           RTI
```

```
1681  012200                          64$:
1682  012200  005067  014106                CLR     PASCNT                  ;CLEAR PASS COUNTER
1683  012204  012767  000010  014072        MOV     #10,ITER                ;LOAD ITERATION COUNT
1684  012212  105067  014036                CLRB    OFLOF                   ;CLR FLAGS & COUNTERS
1685  012216  005067  014060                CLR     ERRCNT
1686  012222  012767  000000  014044        MOV     #0,CNTR                 ;SET UP TO TIME POWER UP
1687  012230  027727  014042  102000  CELP: CMP     @CSR,#102000            ;PWR-UP & INTR SET?
1688  012236  001420                        BEQ     EXS1                    ;YES, CONTINUE
1689  012240  005367  014030                DEC     CNTR                    ;NO, WAIT A BIT
1690  012244  001371                        BNE     CELP
1691  012246                                ERROR   \N,NOGO         ;ERROR:HOST MICRO WON'T START
1692                                                                ;******* ERROR 47 *******
1693  012246  032777  040000  014070        BIT     #B14,@SR
1694  012254  001007                        BNE     .+20
1695  012256  012700  022552                MOV     #NOGO,R0
1696  012262  012767  000047  003574        MOV     #47,ERRNUM
1697  012270  004767  003422                JSR     PC,ERR
1698          000050                N       =       N+1
1699  012274                                HLT                             ;RUN LOGIC TEST
1700  012274  004767  003206                JSR     PC,SWHLT
1701  012300  005067  013764          EXS1: CLR     CHNGFL                  ;CLEAR STATUS CHANGE FLAG
1702  012304  005077  013766                CLR     @CSR                    ;START OFF CLEAR
1703  012310  012777  000020  013760        MOV     #20,@CSR                ;CLEAR TOP BYTE
1704  012316  012777  000044  013752        MOV     #44,@CSR                ;ENABLE BKG SCAN & THRU INTR
1705  012324                                PNTM    EXCM                    ;PRINT ''CMR-11 EXERCISE ROUTINE''
1706  012324  012700  022112                MOV     #EXCM,R0                ;PRINT MESSAGE
1707  012330  004767  004076                JSR     PC,TYPOUT               ;POINTED TO BY EXCM
1708  012334  105067  013720                CLRB    ONCE
1709  012340  105067  013715                CLRB    THRUF
1710  012344  005067  014002                CLR     TALLY
1711  012350  005067  012630                CLR     EXTBL1                  ;CLEAR TABLES
1712  012354  005067  013024                CLR     EXTBL2
1713  012360  005067  013220                CLR     EXTBL3
1714  012364  005067  013414                CLR     EXTBL4
1715
1716                                ;EXERCISER MAIN LOOP
1717
1718  012370  004767  000554          EXS2: JSR     PC,SCALM                ;GO SCAN ALARMS
1719  012374  004767  003542                JSR     PC,MONIT                ;CHECK FOR CNTRL CHARS.
1720  012400  032777  040000  013670        BIT     #B14,@CSR               ;IS FUN COMPL SET?
1721  012406  001410                        BEQ     EXS2B                   ;NO.
1722  012410  052777  000020  013660        BIS     #20,@CSR                ;CLR TOP BYTE
1723  012416  005767  013646                TST     CHNGFL                  ;CHANGE FLAG SET?
1724  012422  001022                        BNE     EXS3                    ;IF YES, DO PCS
1725  012424  004767  003512                JSR     PC,MONIT                ;CHECK FOR CNTRL CHARS
1726  012430  105767  013625          EXS2B: TSTB   THRUF                   ;IS 'THRU' SET?
1727  012434  001015                        BNE     EXS3                    ;IF YES, DO PORT CONFIG
1728  012436  105767  013616                TSTB    ONCE                    ;DONE PORT CONFIG ONCE?
1729  012442  001752                        BEQ     EXS2                    ;NO. WAIT FOR THRU
1730  012444  005767  013702                TST     TALLY                   ;YES, ANY REMOTES?
1731  012450  001747                        BEQ     EXS2                    ;NO, WAIT FOR CHANGE OR THRU
1732  012452  005767  013612                TST     CHNGFL                  ;YES, ANY CHANGES PENDING?
1733  012456  001004                        BNE     EXS3                    ;YES, NEW PORT CONFIG
1734  012460  004767  000222                JSR     PC,DIAGFU               ;NO, GO DO DIAG FUNC ON AVAIL REMOTES
1735  012464  000167  000400                JMP     SKPD2                   ;THEN PRINT END PASS STUFF
1736  012470  004767  000072          EXS3: JSR     PC,PRTCNF               ;DO A PORT CONFIG FUNC.
```

```
1737  012474  005067  013570              CLR     CHNGFL          ;CLR CHANGE FLAG
1738  012500  112777  000074  013570      MOVB    #74,@CSR        ;ENAB BKG SCN,CHGST,THRU INTR
1739  012506  005767  013640              TST     TALLY           ;ANY REMOTES?
1740  012512  001406                      BEQ     EXS3A           ;NO. IDLE
1741  012514  105767  013540              TSTB    ONCE            ;ALREADY DONE REPORT?
1742  012520  001014                      BNE     EXS3B           ;YES, SKIP IT THIS TIME
1743  012522  004767  001314              JSR     PC,REPORT       ;REPORT ALL REGULAR REMOTES
1744  012526  000411                      BR      EXS3B
1745  012530  105067  013524      EXS3A:  CLRB    ONCE            ;NO REMOTES. WAIT FOR THRU
1746  012534                              PNTM    NOREM           ;PRINT 'NO REMOTES..WAITING'
1747  012534  012700  022223              MOV     #NOREM,R0       ;PRINT MESSAGE
1748  012540  004767  003666              JSR     PC,TYPOUT       ;POINTED TO BY NOREM
1749  012544  105067  013511              CLRB    THRUF           ;CLEAR THRU FLAG
1750  012550  000707                      BR      EXS2
1751  012552  105067  013503      EXS3B:  CLRB    THRUF           ;CLEAR THRU FLAG
1752  012556  112767  177777  013474      MOVB    #-1,ONCE        ;SET 'ONCE' FLAG
1753  012564  000701                      BR      EXS2
1754
1755                              ;PORT CONFIGURATION STATUS SUBROUTINE
1756                              ;PERFORMS A P.C.S. ON ALL 4 PORTS AND SAVES THE
1757                              ;REMOTE #'S IN TABLES
1758
1759  012566  005067  013476      PRTCNF: CLR     CHNGFL          ;CLEAR 'CHANGE FLAG'
1760  012572  005067  013554              CLR     TALLY           ;CLEAR REMOTE TALLY
1761  012576  012767  025204  013550      MOV     #EXTBL1,TBLAD   ;SET UP TO CONFIG PORT 0
1762  012604  012767  000000  013506      MOV     #0,PORN
1763  012612  004767  000722              JSR     PC,PORCNF       ;DO PORT CONFIG ON PORT 0
1764  012616  012767  025404  013530      MOV     #EXTBL2,TBLAD
1765  012624  012767  000001  013466      MOV     #1,PORN
1766  012632  004767  000702              JSR     PC,PORCNF       ;DO PORT CONFIG ON PORT 1
1767  012636  012767  025604  013510      MOV     #EXTBL3,TBLAD
1768  012644  012767  000002  013446      MOV     #2,PORN
1769  012652  004767  000662              JSR     PC,PORCNF       ;DO PORT CONFIG ON PORT 2
1770  012656  012767  026004  013470      MOV     #EXTBL4,TBLAD
1771  012664  012767  000003  013426      MOV     #3,PORN
1772  012672  004767  000642              JSR     PC,PORCNF       ;DO PORT CONFIG ON PORT 3
1773  012676  005767  013366              TST     CHNGFL          ;ANY CHANGES PENDING?
1774  012702  001331                      BNE     PRTCNF          ;IF SO, DO IT ALL OVER
1775  012704  000207                      RTS     PC
1776
1777
1778                              ;SUBROUTINE TO DO THE DIAGNOSTIC FUNCTION ON
1779                              ;ALL REMOTES WHICH ARE ON LINE AND REGULAR
1780
1781  012706  012701  025204      DIAGFU: MOV     #EXTBL1,R1      ;GET TABLE FOR PORT 0
1782  012712  012167  013356              MOV     (R1)+,CNTR      ;GET # OF REMOTES ON PORT
1783  012716  001002                      BNE     SKP1            ;NONE, NEXT PORT
1784  012720  000167  000016              JMP     SKP2
1785  012724  012167  013400      SKP1:   MOV     (R1)+,REMNO     ;GET 1ST REMOTE #
1786  012730  004767  001376              JSR     PC,DIAGNF       ;DO DIAGNOSTIC FUNC. ON REM.
1787  012734  005367  013334              DEC     CNTR            ;DO ALL REMOTES ON THIS PORT
1788  012740  001371                      BNE     SKP1
1789
1790  012742  012701  025404      SKP2:   MOV     #EXTBL2,R1      ;GET TABLE FOR PORT 1
1791  012746  012167  013322              MOV     (R1)+,CNTR      ;1ST ENTRY IS # OF REMOTES
1792  012752  001002                      BNE     SKP3
```

```
1793  012754  000167  000016                JMP     SKP4                    ;IF NONE, NEXT PORT
1794  012760  012167  013344        SKP3:   MOV     (R1)+,REMNO             ;GET REMOTE NO.
1795  012764  004767  001342                JSR     PC,DIAGNF               ;DO DIAGNOSTIC FUNCTION ON REM.
1796  012770  005367  013300                DEC     CNTR
1797  012774  001371                        BNE     SKP3
1798  012776  012701  025604        SKP4:   MOV     #EXTBL3,R1              ;GET TABLE FOR PORT 2
1799  013002  012167  013266                MOV     (R1)+,CNTR              ;1ST ENTRY IS # OF REMOTES
1800  013006  001002                        BNE     SKP5
1801  013010  000167  000016                JMP     SKP6                    ;IF NONE, NEXT PORT
1802  013014  012167  013310        SKP5:   MOV     (R1)+,REMNO             ;GET REMOTE #
1803  013020  004767  001306                JSR     PC,DIAGNF               ;DO DIAGNOSTIC FUNC. ON REMOTE
1804  013024  005367  013244                DEC     CNTR
1805  013030  001371                        BNE     SKP5
1806  013032  012701  026004        SKP6:   MOV     #EXTBL4,R1              ;GET TABLE FOR PORT 3
1807  013036  012167  013232                MOV     (R1)+,CNTR              ;1ST ENTRY IS # OF REMOTES
1808  013042  001002                        BNE     SKP7
1809  013044  000167  000016                JMP     SKP8                    ;IF NONE, DONE!
1810  013050  012167  013254        SKP7:   MOV     (R1)+,REMNO             ;GET REMOTE #
1811  013054  004767  001252                JSR     PC,DIAGNF               ;DO DIAGNOSTIC FUNCTION ON REM.
1812  013060  005367  013210                DEC     CNTR                    ;FINISH ALL REMOTES ON THIS PORT
1813  013064  001371                        BNE     SKP7
1814  013066  000207        SKP8:   RTS     PC                              ;RETURN
1815
1816
1817  013070  005367  013210        SKPD2:  DEC     ITER                    ;UPDATE ITERATION COUNT
1818  013074  001404                        BEQ     SKPX0                   ;IF 0, END PASS.
1819  013076  032777  004000  013240        BIT     #B11,@SR                ;SW 11 = 1  == INH ITER.
1820  013104  001415                        BEQ     SKPX1
1821  013106  012767  000010  013170 SKPX0: MOV     #10,ITER                ;RELOAD ITERATION COUNT
1822  013114  005267  013172                INC     PASCNT                  ;UPDATE PASS COUNT
1823  013120  032777  002000  013216        BIT     #B10,@SR                ;SW 10 = INH END PASS PRINT
1824  013126  001004                        BNE     SKPX1
1825  013130  004767  175426                JSR     PC,ENPRTN               ;PRINT END PASS STUFF
1826  013134  004767  004416                JSR     PC,NULLS
1827  013140  004767  002776        SKPX1:  JSR     PC,MONIT
1828  013144  000167  177220                JMP     EXS2                    ;KEEP GOING
1829
1830                                ;SUBROUTINE TO CHECK FOR ALARMS AND CHANGES OF REMOTE STATE.
1831                                ;  IF ALARM... RING 4 BELLS
1832                                ;  IF CHANGE OF REMOTE STATE...SET A FLAG
1833
1834
1835  013150  032777  010000  013120 SCALM:  BIT     #B12,@CSR               ;ALARMS?
1836  013156  001415                        BEQ     SCA1                    ;NO, CHECK FOR CHG ST.
1837  013160  012700  000007                MOV     #7,R0                   ;ALARM! RING TTY BELLS
1838  013164  004767  004510                JSR     PC,TTO
1839  013170  004767  004504                JSR     PC,TTO
1840  013174  004767  004500                JSR     PC,TTO
1841  013200  004767  004474                JSR     PC,TTO
1842  013204  052777  000020  013064        BIS     #B04,@CSR               ;CLR ALARM
1843  013212  000240        SCA1:   NOP
1844  013214  000240                NOP
1845  013216  000240                NOP
1846  013220  032777  020000  013050        BIT     #B13,@CSR               ;CHANGE OF STATE?
1847  013226  001531                        BEQ     SCA3                    ;NO, CHECK THRU
1848  013230  012777  001000  013102        MOV     #1000,@SPAR             ;SEE IF THIS IS A SYS ERR
```

```
1849  013236  027727  013100  000310          CMP     @SPDR,#310              ; OR REMOTE CHANGE
1850  013244  001415                          BEQ     SCA2                    ;REMOTE CHANGE IS O.K.
1851  013246                                  ERROR   \N,SYSER        ;ERROR:HOST SYS ERROR. RUN LOGIC TEST.
1852                                                                  ;******* ERROR 50 *******
1853  013246  032777  040000  013070          BIT     #B14,@SR
1854  013254  001007                          BNE     .+20
1855  013256  012700  024662                  MOV     #SYSER,R0
1856  013262  012767  000050  002574          MOV     #50,ERRNUM
1857  013270  004767  002422                  JSR     PC,ERR
1858           000051                  N       =       N+1
1859  013274                                  HLT
1860  013274  004767  002206                  JSR     PC,SWHLT
1861  013300                          SCA2:   PNTM    REMCHG                  ;PRINT 'REMOTE STATUS CHANGE''
1862  013300  012700  022400                  MOV     #REMCHG,R0              ;PRINT MESSAGE
1863  013304  004767  003122                  JSR     PC,TYPOUT               ;POINTED TO BY REMCHG
1864  013310                                  PNTM    REMSG                   ;PRINT 'REMOTE # ''
1865  013310  012700  022342                  MOV     #REMSG,R0               ;PRINT MESSAGE
1866  013314  004767  003112                  JSR     PC,TYPOUT               ;POINTED TO BY REMSG
1867  013320  012777  001003  013012          MOV     #1003,@SPAR
1868  013326  017700  013010                  MOV     @SPDR,R0                ;GET THE REMOTE NUMBER
1869  013332  004767  004036                  JSR     PC,OCTPNT               ;PRINT IT
1870  013336                                  PNTM    REMSTM                  ;PRINT 'REMOTE STATUS NOW ''
1871  013336  012700  022436                  MOV     #REMSTM,R0              ;PRINT MESSAGE
1872  013342  004767  003064                  JSR     PC,TYPOUT               ;POINTED TO BY REMSTM
1873  013346  005277  012766                  INC     @SPAR
1874  013352  032777  000040  012762          BIT     #B05,@SPDR              ;NOW REGULAR?
1875  013360  001405                          BEQ     SCA2A                   ;NO
1876  013362                                  PNTM    REGMG                   ;YES, PRINT 'REGULAR''
1877  013362  012700  022462                  MOV     #REGMG,R0               ;PRINT MESSAGE
1878  013366  004767  003040                  JSR     PC,TYPOUT               ;POINTED TO BY REGMG
1879  013372  000416                          BR      SCA2C
1880  013374  032777  000100  012740  SCA2A:  BIT     #B06,@SPDR              ;IRREGULAR?
1881  013402  001405                          BEQ     SCA2B
1882  013404                                  PNTM    IRRGMG                  ;YES, PRINT ''IRREGULAR''
1883  013404  012700  022473                  MOV     #IRRGMG,R0              ;PRINT MESSAGE
1884  013410  004767  003016                  JSR     PC,TYPOUT               ;POINTED TO BY IRRGMG
1885  013414  000410                          BR      SCA2D
1886  013416  017700  012720          SCA2B:  MOV     @SPDR,R0                ;OTHERWISE, JUST PRINT THE STATUS
1887  013422  004767  003746                  JSR     PC,OCTPNT
1888  013426  000410                          BR      SCA2E                   ;AND LEAVE THE TALLY ALONE
1889  013430  005267  012716          SCA2C:  INC     TALLY                   ;UPDATE TALLY FOR ADDED REMOTE
1890  013434  000405                          BR      SCA2E
1891  013436  005767  012710          SCA2D:  TST     TALLY                   ;IS TALLY ALREADY =0?
1892  013442  001402                          BEQ     SCA2E                   ;YES, FORGET IT
1893  013444  005367  012702                  DEC     TALLY                   ;NO, MAKE IT ONE LESS
1894  013450  005767  012676          SCA2E:  TST     TALLY                   ;IS TALLY NOW 0?
1895  013454  001006                          BNE     SCA2F                   ;NO, O.K.
1896  013456  105067  012576                  CLRB    ONCE                    ;YES, HAVE TO START OVER
1897  013462                                  PNTM    ALROFF                  ;PRINT ''ALL REMOTES ARE NOW IRREGULAR
1898  013462  012700  022506                  MOV     #ALROFF,R0              ;PRINT MESSAGE
1899  013466  004767  002740                  JSR     PC,TYPOUT               ;POINTED TO BY ALROFF
1900  013472  012767  177777  012570  SCA2F:  MOV     #-1,CHNGFL              ;SET CHANGE FLAG
1901  013500  052777  000020  012570          BIS     #20,@CSR                ;CLEAR TOP BYTE
1902  013506  000167  177500                  JMP     SCA1                    ;GO SEE IF ANY MORE CHANGES.
1903  013512  032777  004000  012556  SCA3:  BIT     #B11,@CSR               ;IS THRU SET?
1904  013520  001406                          BEQ     SCART                   ;NO, LEAVE
```

```
1905  013522  112767  177777  012531          MOVB    #-1,THRUF               ;YES, SET THE ''THRUF'' FLAG
1906  013530  052777  000020  012540          BIS     #20,@CSR                ;CLEAR TOP BYTE
1907  013536  000207                  SCART:  RTS     PC
1908
1909                                  ;SUBROUTINE TO PERFORM ''PORT CONFIGURATION STATUS'' ON A GIVEN
1910                                  ;PORT AND STORE THE RESULTS IN A GIVEN TABLE. ALSO
1911                                  ;STORED IS THE STATUS OF EACH REMOTE
1912                                  ;FOR EACH REGULAR REMOTE FOUND, A TALLY IS INCREMENTED
1913
1914                                  ;TABLES ARE IN THE FOLLOWING FORMAT:
1915
1916                                  ;       [  # OF ENTRIES  ]
1917                                  ;       [REM STAT][REM # ]
1918                                  ;       [     ''     ][  ''   ]
1919
1920  013540  016701  012610          PORCNF: MOV     TBLAD,R1                ;TABLE ADDR GIVEN BY CALLER
1921  013544  052777  000020  012524          BIS     #B04,@CSR               ;CLR TOP BYTE OF CSR
1922  013552  005077  012562                  CLR     @SPAR                   ;ADDR REQ. SCPD
1923  013556  012777  000140  012556          MOV     #140,@SPDR              ;LOAD PORT CONF. ST. FUNC.
1924  013564  005277  012550                  INC     @SPAR
1925  013570  012777  000002  012544          MOV     #2,@SPDR                ;DATA LEN. = 2
1926  013576  005277  012536                  INC     @SPAR
1927  013602  012777  000001  012532          MOV     #1,@SPDR                ; ONE REQUEST
1928  013610  005277  012524                  INC     @SPAR
1929  013614  016777  012500  012520          MOV     PORN,@SPDR              ;PORT # GIVEN BY CALLER
1930  013622  004767  177322                  JSR     PC,SCALM                ;CLEAR ALARMS & CHANGES
1931  013626  052777  000001  012442          BIS     #B00,@CSR               ;START FUNCTION
1932  013634  032777  040000  012434  PORO:   BIT     #B14,@CSR               ;FUNCTION COMPLETE?
1933  013642  001003                          BNE     PORO0                   ;NO, WAIT
1934  013644  004767  177300                  JSR     PC,SCALM                ;SCAN ALARMS AGAIN
1935  013650  000771                          BR      PORO
1936  013652  004767  002264          PORO0:  JSR     PC,MONIT
1937  013656  012777  001000  012454          MOV     #1000,@SPAR             ;ADDR RESULT SCPD
1938  013664  027727  012452  000140          CMP     @SPDR,#140              ;THIS RESULT FROM PORT CONFIG?
1939  013672  001415                          BEQ     POR1
1940  013674                                  ERROR   \N,SYSER        ;ERROR:HOST SYS ERROR, RUN LOGIC TEST
1941                                                                  ;******* ERROR 51 *******
1942  013674  032777  040000  012442          BIT     #B14,@SR
1943  013702  001007                          BNE     .+20
1944  013704  012700  024662                  MOV     #SYSER,R0
1945  013710  012767  000051  002146          MOV     #51,ERRNUM
1946  013716  004767  001774                  JSR     PC,ERR
1947          000052                  N       =       N+1
1948  013722                                  HLT
1949  013722  004767  001560                  JSR     PC,SWHLT
1950  013726  005277  012406          POR1:   INC     @SPAR                   ;GET # OF REMOTES
1951  013732  017700  012404                  MOV     @SPDR,R0
1952  013736  006200                          ASR     R0                      ;DIVIDE BY 4
1953  013740  006200                          ASR     R0
1954  013742  010021                          MOV     R0,(R1)+                ;SAVE AS # OF ENTRIES
1955  013744  001002                          BNE     PORLD                   ;IF MORE THAN 0, LOAD THEM
1956  013746  000167  000042                  JMP     PORXT                   ;IF NONE, EXIT
1957  013752  010067  012316          PORLD:  MOV     R0,CNTR                 ;GET # OF ENTRIES
1958  013756  012777  001003  012354          MOV     #1003,@SPAR
1959  013764  117721  012352          PORCN:  MOVB    @SPDR,(R1)+             ;LOAD REMOTE #
1960  013770  005277  012344                  INC     @SPAR
```

```
1961  013774  117721  012342                  MOVB    @SPDR,(R1)+          ;LOAD REM. STATUS
1962  014000  062777  000003  012332          ADD     #3,@SPAR
1963  014006  005367  012262                  DEC     CNTR                 ;GOT THEM ALL?
1964  014012  001364                          BNE     PORCN                ;NO, GET THE REST
1965  014014  005767  012300          PORXT:  TST     PORN                 ;PORT 0?
1966  014020  001002                          BNE     1$                   ;NO, NEVER MIND
1967  014022  005067  012324                  CLR     TALLY                ;YES, CLEAR TALLY
1968  014026  060067  012320          1$:     ADD     R0,TALLY             ;UPDATE TALLY
1969  014032  052777  000020  012236          BIS     #B04,@CSR            ;CLR TOP BYTE
1970  014040  000207                          RTS     PC                   ;AND RETURN
1971
1972                                          ;SUBROUTINE TO REPORT THE STATUS OF EACH PORT WHICH HAS ANY
1973                                          ;REMOTES ATTACHED AND REGULAR.
1974
1975  014042  012767  000012  012236  REPORT: MOV     #12,LINLEN           ;ALLOW 11(DEC) REM'S PER LINE.
1976  014050  012701  025204                  MOV     #EXTBL1,R1           ;GET PORT TABLE
1977  014054  012167  012214                  MOV     (R1)+,CNTR           ;GET # OF REMOTES
1978  014060  001405                          BEQ     REP0                 ;NONE HERE, NEXT PORT
1979  014062  012767  000000  012230          MOV     #0,PORN              ;LOAD PORT NO.
1980  014070  004767  000076                  JSR     PC,PRNREM            ;GO PRINT REMOTES ON THIS PORT
1981  014074  012701  025404          REP0:   MOV     #EXTBL2,R1
1982  014100  012167  012170                  MOV     (R1)+,CNTR           ;GET # OF REMOTES
1983  014104  001405                          BEQ     REP1                 ;NONE HERE, NEXT PORT
1984  014106  012767  000001  012204          MOV     #1,PORN
1985  014114  004767  000052                  JSR     PC,PRNREM            ;GO PRINT REMOTES ON THIS PORT
1986  014120  012701  025604          REP1:   MOV     #EXTBL3,R1
1987  014124  012167  012144                  MOV     (R1)+,CNTR           ;GET # OF REMOTES
1988  014130  001405                          BEQ     REP2                 ;NONE HERE, NEXT PORT
1989  014132  012767  000002  012160          MOV     #2,PORN
1990  014140  004767  000026                  JSR     PC,PRNREM            ;GO PRINT REMOTES ON THIS PORT
1991  014144  012701  026004          REP2:   MOV     #EXTBL4,R1
1992  014150  012167  012120                  MOV     (R1)+,CNTR           ;GET # OF REMOTES
1993  014154  001405                          BEQ     REP3                 ;NONE WE'RE DONE
1994  014156  012767  000003  012134          MOV     #3,PORN
1995  014164  004767  000002                  JSR     PC,PRNREM            ;GO PRINT REMOTES ON THIS PORT
1996  014170  000207                  REP3:   RTS     PC                   ;RETURN WHEN DONE
1997
1998                                          ;SUBROUTINE TO DO THE PRINTING PART OF PORT CONFIGURATION REPORT.
1999                                          ;R1 POINTS AT FIRST REMOTE #
2000                                          ;PORN = PORT #
2001                                          ;CNTR = # OF REMOTES ON THIS PORT
2002
2003
2004  014172                          PRNREM: PNTM    PORTMS               ;PRINT 'PORT # ''
2005  014172  012700  022331                  MOV     #PORTMS,R0           ;PRINT MESSAGE
2006  014176  004767  002230                  JSR     PC,TYPOUT            ;POINTED TC BY PORTMS
2007  014202  016700  012112                  MOV     PORN,R0              ;GET PORT #
2008  014206  004767  003162                  JSR     PC,OCTPNT            ;PRINT IT
2009  014212  012100                  PREM0:  MOV     (R1)+,R0             ;GET REMOTE #
2010  014214  042700  177400                  BIC     #177400,R0           ;CLR HIGH BYTE
2011  014220  004767  003176                  JSR     PC,OCTJSP            ;PRINT IT
2012  014224  004767  001712                  JSR     PC,MONIT             ;CHECK FOR CNTRL CHARS
2013  014230  005367  012040                  DEC     CNTR
2014  014234  001426                          BEQ     PREML                ;EXIT IF ALL DONE
2015  014236  005367  012044                  DEC     LINLEN               ;FILLED A LINE?
2016  014242  001363                          BNE     PREM0
```

```
 2017  014244  012767  000012  012034          MOV     #12,LINLEN              ;YES, RESTORE LINLEN
 2018  014252  012700  000015                  MOV     #15,R0
 2019  014256  004767  003416                  JSR     PC,TTO                  ;CARRIAGE RETURN
 2020  014262  012767  000010  012002          MOV     #10,CLK                 ;SPACE PAST PORT #
 2021  014270  012700  000040                  MOV     #40,R0
 2022  014274  004767  003400          PREM1:  JSR     PC,TTO
 2023  014300  005367  011766                  DEC     CLK
 2024  014304  001373                          BNE     PREM1
 2025  014306  000167  177700                  JMP     PREM0
 2026  014312  012700  000015          PREML:  MOV     #15,R0                  ;ANOTHER <CR>
 2027  014316  004767  003356                  JSR     PC,TTO
 2028  014322  012767  000012  011756          MOV     #12,LINLEN
 2029  014330  000207                          RTS     PC                      ;AND RETURN
 2030
 2031                                  ;SUBROUTINE TO DO DIAGNOSTIC FUNCTION ON A GIVEN REMOTE
 2032                                  ;ENTER WITH REMOTE # IN 'REMNO'
 2033
 2034
 2035  014332  012767  000020  011732  DIAGNF: MOV     #20,CLK                 ;SET UP TO LOAD REQUEST
 2036  014340  012702  025144                  MOV     #DATBL,R2
 2037  014344  005077  011770                  CLR     @SPAR                   ;ADDRESS REQ SCR PAD
 2038  014350  012777  000100  011764          MOV     #100,@SPDR              ;LOAD 'DIAG' FUNC
 2039  014356  005277  011756                  INC     @SPAR
 2040  014362  012777  000022  011752          MOV     #22,@SPDR               ;DATA LEN. = 22
 2041  014370  005277  011744                  INC     @SPAR
 2042  014374  012777  000001  011740          MOV     #1,@SPDR                ;ONE REQUEST
 2043  014402  005277  011732                  INC     @SPAR
 2044  014406  016777  011716  011726          MOV     REMNO,@SPDR             ;LOAD REMOTE #
 2045  014414  005277  011720          DIAG0:  INC     @SPAR
 2046  014420  012277  011716                  MOV     (R2)+,@SPDR             ;LOAD DATA PATTERN
 2047  014424  005367  011642                  DEC     CLK
 2048  014430  001371                          BNE     DIAG0
 2049  014432  004767  176512          DIAG00: JSR     PC,SCALM                ;CLEAR ALARMS ETC.
 2050  014436  052777  000020  011632          BIS     #B04,@CSR               ;CLR TOP BYTE
 2051  014444  052777  000001  011624          BIS     #B00,@CSR               ;SET START FUNC.
 2052  014452  032777  040000  011616  DIAG1:  BIT     #B14,@CSR               ;FUN COMPL?
 2053  014460  001003                          BNE     DIAG10
 2054  014462  004767  176462                  JSR     PC,SCALM                ;NO, WAIT FOR IT
 2055  014466  000771                          BR      DIAG1
 2056  014470  012777  001000  011642  DIAG10: MOV     #1000,@SPAR             ;ADDRESS RESULT SCR. PAD
 2057  014476  012767  000100  001362          MOV     #100,GOOD               ;RIGHT FUNCTION?
 2058  014504  017767  011632  001356          MOV     @SPDR,BAD
 2059  014512  026767  001350  001350          CMP     GOOD,BAD
 2060  014520  001416                          BEQ     DIAG2
 2061  014522                                  DATERR  \N,DIAGF        ;ERROR:DIAG FUNC GAVE WRONG FUNC CODE
 2062                                                                  ;******* ERROR 52 *******
 2063  014522  032777  040000  011614          BIT     #B14,@SR
 2064  014530  001007                          BNE     .+20
 2065  014532  012700  024723                  MOV     #DIAGF,R0
 2066  014536  012767  000052  001320          MOV     #52,ERRNUM
 2067  014544  004767  001232                  JSR     PC,DERR
 2068          000053                  N       =       N+1
 2069  014550                                  SCOPE   DIAG00
 2070  014550  004567  000752                  JSR     R5,SCPRTN
 2071  014554  014432                          DIAG00
 2072  014556  062777  000002  011554  DIAG2:  ADD     #2,@SPAR                ;CHECK FUNCTION STATUS
```

```
2073  014564  012767  000001  001274          MOV     #1,GOOD                 ;SHD SHOW SUCCESS
2074  014572  017767  011544  001270          MOV     @SPDR,BAD
2075  014600  026767  001262  001262          CMP     GOOD,BAD
2076  014606  001460                          BEQ     DIAG4                   ;O.K.
2077  014610                                  DATERR  \N,DIAGUF       ;ERROR:USOF WRONG ON 'DIAG'' FUNC
2078                                                                  ;******* ERROR 53 *******
2079  014610  032777  040000  011526          BIT     #B14,@SR
2080  014616  001007                          BNE     .+20
2081  014620  012700  024766                  MOV     #DIAGUF,R0
2082  014624  012767  000053  001232          MOV     #53,ERRNUM
2083  014632  004767  001144                  JSR     PC,DERR
2084          000054                  N       =       N+1
2085  014636  032777  040000  011500          BIT     #B14,@SR                ;PRINT ALLOWED?
2086  014644  001036                          BNE     DIAG3S                  ;NO, SKIP IT
2087  014646                                  PNTM    REMSG                   ;PRINT 'REMOTE # ''
2088  014646  012700  022342                  MOV     #REMSG,R0               ;PRINT MESSAGE
2089  014652  004767  001554                  JSR     PC,TYPOUT               ;POINTED TO BY REMSG
2090  014656  005277  011456                  INC     @SPAR
2091  014662  017700  011454                  MOV     @SPDR,R0                ;GET REM. NO.
2092  014666  004767  002502                  JSR     PC,OCTPNT               ;PRINT IT
2093  014672                                  PNTM    STATEM                  ;PRINT 'STATE ''
2094  014672  012700  022355                  MOV     #STATEM,R0              ;PRINT MESSAGE
2095  014676  004767  001530                  JSR     PC,TYPOUT               ;POINTED TO BY STATEM
2096  014702  005277  011432                  INC     @SPAR
2097  014706  017700  011430                  MOV     @SPDR,R0                ;GET STAE OF REMOTE
2098  014712  004767  002456                  JSR     PC,OCTPNT
2099  014716                                  PNTM    USORM                   ;PRINT 'USOR = ''
2100  014716  012700  022367                  MOV     #USORM,R0               ;PRINT MESSAGE
2101  014722  004767  001504                  JSR     PC,TYPOUT               ;POINTED TO BY USORM
2102  014726  005277  011406                  INC     @SPAR
2103  014732  017700  011404                  MOV     @SPDR,R0
2104  014736  004767  002432                  JSR     PC,OCTPNT
2105  014742                          DIAG3S: SCOPE   DIAG00
2106  014742  004567  000560                  JSR     R5,SCPRTN
2107  014746  014432                          DIAG00
2108  014750  052777  000020  011320  DIAG4:  BIS     #B04,@CSR               ;CLEAR TOP BYTE WHEN DONE
2109  014756  000207                          RTS     PC
2110
2111                                          .SBTTL  MAINTENANCE ROUTINE
2112
2113
2114                                  ;THIS ROUTINE WORKS LIKE ODT BASICALLY BUT
2115                                  ;ONLY ON THE CMR-11 SCRATCHPAD MEMORY.
2116                                  ;THE REQUEST SCR. PAD MAY BE LOADED/READ
2117                                  ;TYPING 'G'' CAUSES EXECUTION OF THE FUNCTION
2118                                  ;LOADED. COMPLETION OF THE FUNCTION CAUSES
2119                                  ;THE FIRST LOCATION OF THE RESULT SCR. PAD
2120                                  ; TO BE PRINTED.
2121                                  ;THE CMR-11 CSR MAY BE EXAMINED BY TYPING
2122                                  ; IT'S BUS ADDRESS FOLLOWED BY SLASH (/)
2123                                  ; EXIT IS ACHIEVED BY TYPING CNTRL-C
2124                                  ;OR 'P'' TO PROCEED TO THE POINT AT WHICH THE
2125                                  ;MAIN PROGRAM WAS INTERRUPTED.
2126
2127  014760  112767  177777  011263  ODTPR:  MOVB    #-1,DBFLG               ;SET DEBUG FLAG
2128  014766  017767  011304  011342          MOV     @CSR,SAVEC              ;SAVE CSR FOR LOOKING AT
```

```
2129  014774                                    PNTM    DBAID           ;PRINT ''CMR-11 DEBUG AID''
2130  014774  012700  020507                    MOV     #DBAID,R0       ;PRINT MESSAGE
2131  015000  004767  001426                    JSR     PC,TYPOUT       ;POINTED TO BY DBAID
2132  015004  005067  011252            $0$:    CLR     ADDR
2133  015010  016767  011246  002330    $1$:    MOV     ADDR,KBBUF      ;GET ADDRESS
2134  015016  004767  001452                    JSR     PC,INPKB        ; FROM KEYBOARD
2135  015022  016767  002320  011232            MOV     KBBUF,ADDR
2136  015030  026727  011226  001777            CMP     ADDR,#1777      ;WITHIN LIMIT?
2137  015036  101423                            BLOS    $2$             ;YES, O.K.
2138  015040  026767  011216  011230            CMP     ADDR,CSR        ;IS IT THE CSR?
2139  015046  001012                            BNE     $10$            ;NO
2140  015050  017700  011222                    MOV     @CSR,R0
2141  015054  004767  002342                    JSR     PC,OCTJSP       ;YES, SHOW CONTENTS OF CSR
2142  015060  012700  000015                    MOV     #15,R0
2143  015064  004767  002610                    JSR     PC,TTO
2144  015070  000167  177710                    JMP     $0$
2145  015074                            $10$:   PNTM    AGAIN
2146  015074  012700  020371                    MOV     #AGAIN,R0       ;PRINT MESSAGE
2147  015100  004767  001326                    JSR     PC,TYPOUT       ;POINTED TO BY AGAIN
2148  015104  000741                            BR      $1$
2149  015106  105767  011144            $2$:    TSTB    SLFL            ;SLASH HIT?
2150  015112  001042                            BNE     $11$            ;YES DUMP DATA
2151  015114  105767  011132                    TSTB    GOFLG           ;''G'' TYPED?
2152  015120  001462                            BEQ     $20$            ;NO
2153  015122  052777  000020  011146  $2A$:    BIS     #B04,@CSR       ;INSURE TOP BYTE CLEAR
2154  015130  005077  011204                    CLR     @SPAR           ;ADDRESS FUNC. CODE
2155  015134  027727  011202  000151            CMP     @SPDR,#151      ;IS FUNC NOT MAINT?
2156  015142  101404                            BLOS    $3$             ;IT'S NOT MAINT. DO IT
2157  015144  052777  000200  011124            BIS     #B07,@CSR       ;IT IS MAINT, SET 'MAIN'
2158  015152  000403                            BR      $4$
2159  015154  052777  000001  011114  $3$:     BIS     #B00,@CSR       ;SET 'STFUN''
2160  015162  032777  100000  011106  $4$:     BIT     #B15,@CSR       ;IS THERE AN INTR?
2161  015170  001003                            BNE     $5$             ;YES, SEE WHAT IT IS
2162  015172  004767  000744                    JSR     PC,MONIT
2163  015176  000771                            BR      $4$
2164  015200  012767  001000  011054  $5$:     MOV     #1000,ADDR      ;ADDRESS RESULT
2165  015206  012700  000015                    MOV     #15,R0
2166  015212  004767  002462                    JSR     PC,TTO          ;DO <CR>
2167  015216  000430                            BR      $21$
2168  015220  016777  011036  011112  $11$:    MOV     ADDR,@SPAR      ;LOAD ''ADDRESS''
2169  015226  017700  011110                    MOV     @SPDR,R0        ;GET ''CONTENTS''
2170  015232  004767  002164                    JSR     PC,OCTJSP       ;AND PRINT IT
2171  015236                                    PNTM    TWOSP           ;SPACE AND PROMPT (:)
2172  015236  012700  020636                    MOV     #TWOSP,R0       ;PRINT MESSAGE
2173  015242  004767  001164                    JSR     PC,TYPOUT       ;POINTED TO BY TWOSP
2174  015246  017767  011070  002072            MOV     @SPDR,KBBUF
2175  015254  004767  001214                    JSR     PC,INPKB        ;GET KBD INPUT
2176  015260  016777  002062  011054            MOV     KBBUF,@SPDR     ;LOAD ANY NEW INPUT
2177  015266  105767  010761            $20$:   TSTB    INCF            ;LINE FEED?
2178  015272  001421                            BEQ     $13$
2179  015274  005267  010762                    INC     ADDR            ;IF YES, INCREMENT ADDRESS
2180  015300  016700  010756            $21$:   MOV     ADDR,R0
2181  015304  020027  001777                    CMP     R0,#1777        ;VALID ADDRESS?
2182  015310  101402                            BLOS    $22$            ;YES, O.K.
2183  015312  000167  177556                    JMP     $10$            ;NO GOOD. GET A NEW ONE!
2184  015316  004767  002052            $22$:   JSR     PC,OCTPNT       ;PRINT NEW ADDRESS
```

```
2185  015322  012700  000057          MOV     #'/,R0                  ;PRINT A SLASH
2186  015326  004767  002346          JSR     PC,TTO
2187  015332  000167  177662          JMP     $11$                    ;GO PRINT CONTENTS
2188  015336  105767  010714  $13$:   TSTB    SLFL                    ;SLASH TYPED?
2189  015342  001402                  BEQ     $23$                    ;NO, CHECK IF IT'S 'P''
2190  015344  000167  177650          JMP     $11$                    ;YES, SHOW CONTENTS
2191  015350  105767  010703  $23$:   TSTB    CONFLG                  ;'P'' TYPED?
2192  015354  001004                  BNE     $25$                    ;NO, MUST BE <CR>
2193  015356  105767  010670          TSTB    GOFLG                   ;'G' TYPED?
2194  015362  001257                  BNE     $2A$                    ;YES, START FUNCTION
2195  015364  000611                  BR      $1$
2196  015366  105067  010657  $25$:   CLRB    DBFLG                   ;CLEAR DEBUG FLAG
2197  015372  005767  010720          TST     PCONT                   ;ANY PROMPTS PENDING?
2198  015376  001402                  BEQ     $24$                    ;NO, JUST RETURN TO CALLER
2199  015400  016716  010712          MOV     PCONT,(SP)              ;YES, RETYPE PROMPT.
2200  015404  000207  $24$:   RTS     PC                              ;UNOFFICIAL RETURN
2201
2202                          .SBTTL  UTILITY ROUTINES
2203
2204                  ;ROUTINES TO SAVE AND RESTORE GENERAL REGISTERS
2205                  ; CALLED BY JSR R5,REGSAV .
2206                  ; AND       JSR R5,REGRES
2207
2208
2209  015406  010446  REGSAV: MOV     R4,-(SP)
2210  015410  010346          MOV     R3,-(SP)
2211  015412  010246          MOV     R2,-(SP)
2212  015414  010146          MOV     R1,-(SP)
2213  015416  010046          MOV     R0,-(SP)
2214  015420  000115          JMP     @R5
2215
2216  015422  030026  REGRES: BIT     R0,(SP)+                ;THROW AWAY OLD R5 VALUE
2217  015424  012600          MOV     (SP)+,R0
2218  015426  012601          MOV     (SP)+,R1
2219  015430  012602          MOV     (SP)+,R2
2220  015432  012603          MOV     (SP)+,R3
2221  015434  012604          MOV     (SP)+,R4
2222  015436  000205          RTS     R5
2223
2224                  ;ROUTINE TO SET LSI-11 FLAG (SOFTWARE)
2225
2226  015440  112767  177777  010602  LSTST:  MOVB    #-1,LSIFLG              ;SET LSI-11 SOFTWARE FLAG
2227  015446  000002          RTI                             ;RETURN
2228
2229                  ;ROUTINE TO SET SOFTWARE SWITCH REGISTER FLAG
2230
2231  015450  012767  026346  010666  SRTST:  MOV     #SSWR,SR                ;NO HARDWARE SWR, USE
2232  015456  012767  177777  010664          MOV     #-1,SWRFLG              ;  MEMORY LOCATION
2233  015464  000002          RTI                             ;  AND SET FLAG
2234
2235                  ;ROUTINE TO PRINT ILLEGAL DEVICE ADDRESS
2236
2237  015466  012706  002000  DVATST: MOV     #ISP,SP                 ;FIX THE STACK
2238  015472                          PNTM    INVLAD                  ;PRINT NON-EXST ADDR MSG
2239  015472  012700  020534          MOV     #INVLAD,R0              ;PRINT MESSAGE
2240  015476  004767  000730          JSR     PC,TYPOUT               ;POINTED TO BY INVLAD
```

```
2241  015502  000167  164404                  JMP     PROMT                   ;GO GET CORRECT ADDRESS
2242
2243                                          ;ROUTINE TO REPLACE HALT WITH CALL TO SW MONITOR
2244                                          ;ON NON SWR PROCESSORS (CALLED BY MACRO 'HLT')
2245
2246  015506  005767  010636          SWHLT:  TST     SWRFLG                  ;ANY HARDWARE SWR?
2247  015512  001403                          BEQ     1$                      ;IF YES, GO HALT
2248  015514  004767  000454                  JSR     PC,SWDMP                ;IF NO, DUMP SWITCHES
2249  015520  000207                          RTS     PC                      ;CONTINUE
2250  015522  000000                  1$:     HALT                            ;REAL HALT
2251  015524  000207                          RTS     PC                      ;CONTINUE
2252
2253
2254                                          ;ROUTINE USED FOR LOOPING ON ERROR ROUTINE (CALLED BY MACRO 'SCOPE')
2255  015526  004767  000410          SCPRTN: JSR     PC,MONIT                ;CHECK FOR ^S, OR ^C
2256  015532  005777  010606                  TST     @SR                     ;IS SW 15 SET?
2257  015536  100402                          BMI     SBAK                    ;YES, DON'T HALT
2258  015540                                  HLT                             ;COMMON ERROR HALT
2259  015540  004767  177742                  JSR     PC,SWHLT
2260  015544  012500                  SBAK:   MOV     (R5)+,R0                ;GET DIRECTION FOR SCOPE LOOP
2261  015546  032777  020000  010570          BIT     #B13,@SR                ;SW 13 SET?
2262  015554  001402                          BEQ     SCONT                   ;NO, DON'T LOOP
2263  015556  012605                          MOV     (SP)+,R5                ;YES, RESTORE R5
2264  015560  000110                          JMP     (R0)                    ;AND LOOP
2265  015562  005267  010514          SCONT:  INC     ERRCNT                  ;UPDATE ERR CNT IF 'FALL THRU'
2266  015566  001003                          BNE     SCORTN                  ;WATCH FOR ERRCNT OFLO
2267  015570  112767  177777  010456          MOVB    #-1,OFLOF               ;SET OVERFLO FLAG.
2268  015576  000205                  SCORTN: RTS     R5                      ;AND RETURN
2269
2270
2271                                          ;ROUTINE TO GENERATE CSC DEVICE ADDRESSES FROM 'DEVADR'
2272
2273  015600  016700  010562          DEVGEN: MOV     DEVADR,R0               ;GET DEVICE CSR ADDRESS
2274  015604  010067  010466                  MOV     R0,CSR                  ;GENERATE CSR
2275  015610  062700  000002                  ADD     #2,R0
2276  015614  010067  010520                  MOV     R0,SPAR                 ;GENERATE SPAR
2277  015620  062700  000002                  ADD     #2,R0
2278  015624  010067  010512                  MOV     R0,SPDR                 ;GENERATE SPDR
2279  015630  016700  010530                  MOV     VECTOR,R0
2280  015634  012760  000340  000002          MOV     #340,2(R0)
2281  015642  000207                          RTS     PC                      ;RETURN
2282
2283
2284                                          ;ROUTINE TO CATCH ERROR TRAPS TO LOC 4
2285  015644  011667  010506          HDER:   MOV     (SP),TEMP               ;SAVE STACK FOR ADDR OF TRAP
2286  015650  012706  002000                  MOV     #ISP,SP                 ;RENEW STACK BEFORE USING
2287  015654                                  PNTM    TRP4                    ;PRINT 'TRAPPED TO 4 FROM LOC ''
2288  015654  012700  020600                  MOV     #TRP4,R0                ;PRINT MESSAGE
2289  015660  004767  000546                  JSR     PC,TYPOUT               ;POINTED TO BY TRP4
2290  015664  162767  000002  010464          SUB     #2,TEMP
2291  015672  016700  010460                  MOV     TEMP,R0
2292  015676  004767  001472                  JSR     PC,OCTPNT               ;PRINT SOURCE OF TRAP
2293  015702  004767  001650                  JSR     PC,NULLS
2294  015706  012706  002000                  MOV     #ISP,SP                 ;REFRESH STACK POINTER
2295  015712  000167  164542                  JMP     RESTRT
2296
```

```
2297
2298                                    ;ERROR ROUTINES: REGULAR ERRORS AND DATA ERRORS.
2299
2300
2301  015716  011667  000140            ERR:    MOV     (SP),ERRAD          ;GET ADDRESS OF ERROR CALL
2302  015722  162767  000026  000132            SUB     #26,ERRAD           ;CORRECT IT
2303  015730  010046                    ERR1:   MOV     R0,-(SP)            ;STACK ERROR MSG ADDR
2304  015732                                    PNTM    ERRM                ;PRINT "**ERROR "
2305  015732  012700  016072                    MOV     #ERRM,R0            ;PRINT MESSAGE
2306  015736  004767  000470                    JSR     PC,TYPOUT           ;POINTED TO BY ERRM
2307  015742  016700  000116                    MOV     ERRNUM,R0
2308  015746  004767  001422                    JSR     PC,OCTPNT           ;PRINT ERROR NO. (P)
2309  015752                                    PNTM    WDAT                ;PRINT " AT LOC. "
2310  015752  012700  016105                    MOV     #WDAT,R0            ;PRINT MESSAGE
2311  015756  004767  000450                    JSR     PC,TYPOUT           ;POINTED TO BY WDAT
2312  015762  016700  000074                    MOV     ERRAD,R0
2313  015766  004767  001402                    JSR     PC,OCTPNT           ;PRINT ADDRESS OF ERROR
2314  015772  012600                            MOV     (SP)+,R0            ;GET ADDR OF ERROR MSG
2315  015774  004767  000432                    JSR     PC,TYPOUT           ;PRINT ERR MSG
2316  016000  000207                            RTS     PC                  ;RETURN
2317
2318
2319  016002  011667  000054            DERR:   MOV     (SP),ERRAD          ;GET ADDRESS OF ERROR CALL
2320  016006  162767  000026  000046            SUB     #26,ERRAD           ;CORRECT IT
2321  016014  004767  177710                    JSR     PC,ERR1             ;PRINT REG. ERROR MSG
2322  016020                                    PNTM    WDSDB               ;PRINT "SHOULD BE "
2323  016020  012700  016117                    MOV     #WDSDB,R0           ;PRINT MESSAGE
2324  016024  004767  000402                    JSR     PC,TYPOUT           ;POINTED TO BY WDSDB
2325  016030  016700  000032                    MOV     GOOD,R0
2326  016034  004767  001334                    JSR     PC,OCTPNT           ;PRINT GOOD DATA
2327  016040                                    PNTM    WDWAS               ;PRINT ", WAS "
2328  016040  012700  016133                    MOV     #WDWAS,R0           ;PRINT MESSAGE
2329  016044  004767  000362                    JSR     PC,TYPOUT           ;POINTED TO BY WDWAS
2330  016050  016700  000014                    MOV     BAD,R0
2331  016054  004767  001314                    JSR     PC,OCTPNT           ;PRINT BAD DATA
2332  016060  000207                            RTS     PC                  ;RETURN
2333
2334
2335                                    ;RELATED STORAGE:
2336
2337  016062  000000                    ERRAD:  .WORD   0
2338  016064  000000                    ERRNUM: .WORD   0
2339  016066  000000                    GOOD:   .WORD   0
2340  016070  000000                    BAD:    .WORD   0
2341
2342                                    ;ASSOCIATED ASCII  (ONLY SOME OF IT)
2343
2344
2345  016072  023046  025052  051105    ERRM:   .ASCII  /&&**ERROR @/
2346  016100  047522  020122     100
2347  016105     040  052101  046040    WDAT:   .ASCII  / AT LOC. @/
2348  016112  041517  020056     100
2349  016117     046  044123  052517    WDSDB:  .ASCII  /&SHOULD BE @/
2350  016124  042114  041040  020105
2351  016132     100
2352  016133     054  053440  051501    WDWAS:  .ASCII  /, WAS @/
```

```
2353  016140  040040
2354
2355                            .EVEN
2356
2357                            .SBTTL  ''SWITCH'' MONITOR ROUTINE
2358
2359                    ;ENTER AT MONIT FROM EVERY SUB-TEST TO SEE IF CNTRL-S OR CNTRL-C WAS TYPED
2360                    ;ENTER AT SWDMP FROM ERROR HALTS IF SW 15 = 0
2361                    ;ALSO MONITORS THE FOLLOWING CONTROL FUNCTIONS:
2362                    ;       CNTRL-P CONTINUE (PROCEED)
2363                    ;       CNTRL-O GO TO CMR-11 DEBUG ROUTINE
2364
2365  016142  005000                MONIT:  CLR     R0
2366  016144  105777  010224              TSTB    @KBS            ;CHECK KEYBOARD FLAG
2367  016150  100402                      BMI     MONIC           ;IF SET, CHECK WHAT CHAR.
2368  016152  000167  000220              JMP     EX4             ;OTHERWISE, EXIT
2369  016156  017700  010210      MONIC:  MOV     @KBD,R0
2370  016162  042700  177600      MONCH:  BIC     #177600,R0      ;TRIM OFF PARITY BIT
2371  016166  020027  000023              CMP     R0,#23          ;WAS IT ^S?
2372  016172  001056                      BNE     EX1             ;NO, EXIT
2373  016174                        SWDMP:  PNTM    SWRMSG          ;PRINT ''SWR = ''
2374  016174  012700  020642              MOV     #SWRMSG,R0      ;PRINT MESSAGE
2375  016200  004767  000226              JSR     PC,TYPOUT       ;POINTED TO BY SWRMSG
2376  016204  017700  010134              MOV     @SR,R0          ;GET CONTENTS OF SR
2377  016210  004767  001160              JSR     PC,OCTPNT       ;PRINT IT
2378  016214                              PNTM    TWOSP           ;SPACE AND PROMPT (:)
2379  016214  012700  020636              MOV     #TWOSP,R0       ;PRINT MESSAGE
2380  016220  004767  000206              JSR     PC,TYPOUT       ;POINTED TO BY TWOSP
2381  016224  017767  010114  001114      MOV     @SR,KBBUF       ;LOAD OLD SWITCHES
2382  016232  012767  016174  010056      MOV     #SWDMP,PCONT    ;LOAD RETURN ADDRESS
2383  016240  004767  000230              JSR     PC,INPKB        ;GET KBD INPUT
2384  016244  005067  010046              CLR     PCONT
2385  016250  016777  001072  010066      MOV     KBBUF,@SR       ;LOAD NEW SWITCHES
2386  016256                        CCRTN:  PNTM    TYPCTP          ;PRINT ''CNTRL-P TO CONTINUE''
2387  016256  012700  020652              MOV     #TYPCTP,R0      ;PRINT MESSAGE
2388  016262  004767  000144              JSR     PC,TYPOUT       ;POINTED TO BY TYPCTP
2389  016266  105777  010102      CONTW1: TSTB    @KBS
2390  016272  100375                      BPL     CONTW1
2391  016274  017700  010072              MOV     @KBD,R0
2392  016300  042700  177600              BIC     #177600,R0      ;TRIM OFF PARITY BIT
2393  016304  020027  000023              CMP     R0,#23          ;^S?
2394  016310  001731                      BEQ     SWDMP           ;YES, GET SWR AGAIN
2395  016312  020027  000020              CMP     R0,#20          ;^P?
2396  016316  001363                      BNE     CONTW1          ;NO, KEEP LOOKING
2397  016320  012700  000015              MOV     #15,R0          ;RETURN LINE
2398  016324  004767  001350              JSR     PC,TTO
2399  016330  020027  000024      EX1:    CMP     R0,#24          ;WAS A ^T TYPED?
2400  016334  001004                      BNE     EX2             ;NO, EXIT
2401  016336  012706  002000              MOV     #ISP,SP         ;YES,  RENEW STACK
2402  016342  000167  164166              JMP     BCONT           ;BACK TO DISPATCHER
2403  016346  020027  000017      EX2:    CMP     R0,#17          ;WAS CNTRL-O TYPED?
2404  016352  001002                      BNE     EX3             ;NO
2405  016354  000167  176400              JMP     ODTPR           ;AND GO TO DEBUG ROUTINE
2406
2407  016360  020027  000003      EX3:    CMP     R0,#3           ;WAS CNTRL-C TYPED?
2408  016364  001004                      BNE     EX4             ;NO.
```

```
2409  016366  012706  002000          MOV     #ISP,SP                 ;YES, REFRESH STACK
2410  016372  000167  164136          JMP     BCONT                   ;AND RESTART
2411  016376  020027  000006  EX4:    CMP     R0,#6                   ;WAS IT ^F?
2412  016402  001012                  BNE     EX5                     ;NO, EXIT
2413  016404  105767  007641          TSTB    DEBFLG                  ;IS DEBUG FLAG SET?
2414  016410  001007                  BNE     EX5                     ;YES, JUST RETURN
2415  016412  105767  007637          TSTB    SAFE                    ;ALREADY IN FILL RTN?
2416  016416  001004                  BNE     EX5                     ;YES, JUST RETURN
2417  016420  005067  007672          CLR     PCONT                   ;CLEAR PROMPT CARRIER
2418  016424  004767  000316          JSR     PC,KBRET                ;SNEAK INTO FILL COUNT ROUTINE
2419  016430  000207          EX5:    RTS     PC
2420
2421
2422
2423                                  .SBTTL  MESSAGE PRINT ROUTINE
2424
2425                          ;MESSAGE TYPOUT ROUTINE (CALLED BY MACRO PNTM A)
2426                          ;MESSAGES ARE IN THE FORMAT:
2427                          ;   MESG:     .ASCII     /&MESSAGE&@/
2428                          ;
2429                          ;WHERE: & IS TRANSLATED INTO CR. AND LF.
2430                          ;
2431                          ;USES THE SUBROUTINE ''TTO''
2432                          ;WHICH PRINTS CR. & LF. UPON SEEING A CR. CODE.
2433                          ;AND    @ IS MESSAGE TERMINATOR
2434                          ;
2435                          ;ENTER WITH ADDRESS OF MESSAGE IN R0
2436
2437  016432  010046          TYPOUT: MOV     R0,-(SP)                ;STACK ADDRESS OF MESSAGE
2438  016434  117600  000000  TPOFCH: MOVB    @(SP),R0                ;FETCH ASCII BYTE
2439  016440  022700  000100          CMP     #100,R0                 ;IS IT @ (TERMINATOR)?
2440  016444  001411                  BEQ     TPOUTX                  ;YES-EXIT
2441  016446  022700  000046          CMP     #46,R0                  ;IS IT CRLF FLAG?
2442  016452  001002                  BNE     TPCONT                  ;NO-TYPE CHARACTER
2443  016454  012700  000015          MOV     #15,R0                  ;YES, CHANGE DATA TO CR
2444  016460  004767  001214  TPCONT: JSR     PC,TTO                  ;TYPE IT
2445  016464  005216                  INC     (SP)                    ;MOVE POINTER TO NEXT BYTE
2446  016466  000762                  BR      TPOFCH                  ;FETCH NEXT CHARACTER
2447  016470  005726          TPOUTX: TST     (SP)+                   ;POP STACK TO REACH RETURN VECTOR
2448  016472  000207                  RTS     PC
2449
2450
2451                                  .SBTTL  KEYBOARD INPUT ROUTINE
2452
2453
2454                          ;KEYBOARD INPUT ROUTINE CALLED BY JSR   PC,INPKB
2455                          ;ENTERED WITH OLD CONTENTS IN KBBUF
2456                          ;IF JUST CR TYPED, EXIT WITH SAME CONTENTS IN KBBUF
2457                          ;IF NEW NUMBER TYPED, EXIT WITH NEW CONTENTS IN KBBUF
2458  016474  005067  000644  INPKB:  CLR     NOKEFL                  ;CLEAR NO NUMBER FLAG
2459  016500  010146                  MOV     R1,-(SP)                ;STACK OLD R1
2460  016502  016746  000640          MOV     KBBUF,-(SP)             ;STACK ''OLD CONTENTS''
2461  016506  005067  000634          CLR     KBBUF                   ;CLEAR INPUT BUFFER
2462  016512  004767  000216  GETCHR: JSR     PC,KBRD                 ;FETCH A CHARACTER IN R0
2463  016516  004767  001156          JSR     PC,TTO                  ;ECHO IT
2464  016522  020027  000012          CMP     R0,#12                  ;WAS IT A CR OR LF?
```

```
2465  016526  001002                    BNE     1$              ;NO
2466  016530  000167  000154            JMP     NRTRN           ;YES, RETURN WITH PROPER KBBUF
2467  016534  010001            1$:     MOV     R0,R1           ;SET UP TO CHECK FOR A NUMBER
2468  016536  042701  177407            BIC     #177407,R1      ;MASK ALL BUT # CODE
2469  016542  020127  000060            CMP     R1,#60          ;IS IT A # FROM 0-7?
2470  016546  001441                    BEQ     3$              ;YES, PACK IT
2471  016550  020027  000177            CMP     R0,#177         ;WAS IT A DELETE/RUBOUT?
2472  016554  001024                    BNE     2$              ;NO, MUST BE GARBAGE
2473  016556  012700  000057            MOV     #57,R0          ;YES, BUT PRINT '\'
2474  016562  004767  001112            JSR     PC,TTO
2475  016566  000241                    CLC                     ;CLEAR THE C-BIT
2476  016570  006067  000552            ROR     KBBUF           ;DELETE LAST DIGIT
2477  016574  000241                    CLC
2478  016576  006067  000544            ROR     KBBUF           ;  THAT WAS STUFFED
2479  016602  000241                    CLC
2480  016604  006067  000536            ROR     KBBUF           ;  INTO KBBUF
2481  016610  005767  000532            TST     KBBUF           ;HAVE WE DELETED EVERYTHING?
2482  016614  001002                    BNE     11$             ;NO
2483  016616  005067  000522            CLR     NOKEFL          ;YES, BACK TO NO NUMBER INPUT
2484  016622  000167  177664    11$:    JMP     GETCHR          ;GO FOR MORE INPUT
2485  016626  012700  000207    2$:     MOV     #207,R0         ;ECHO 'BELL' FOR ERRONEOUS INPUT
2486  016632  004767  001042            JSR     PC,TTO
2487  016636  012700  000077            MOV     #77,R0          ;THEN '?'
2488  016642  004767  001032            JSR     PC,TTO
2489  016646  000167  177640            JMP     GETCHR          ;AND GET ANOTHER CHARACTER
2490  016652  012767  177777  000464    MOV     #-1,NOKEFL      ;GOT A DIGIT. SET FLAG
2491  016660  042700  177770    3$:     BIC     #177770,R0      ;GET THE DIGIT PART OF THE CHARACTER
2492  016664  006367  000456            ASL     KBBUF           ;SHIFT KBBUF BUFFER
2493  016670  006367  000452            ASL     KBBUF           ;  TO ACCEPT THE
2494  016674  006367  000446            ASL     KBBUF           ;  NEW DIGIT.
2495  016700  050067  000442            BIS     R0,KBBUF        ;ADD THE NEW DIGIT
2496  016704  000167  177602            JMP     GETCHR          ;GO FOR MORE INPUT
2497
2498  016710  005767  000430    NRTRN:  TST     NOKEFL          ;WAS THERE NEW DATA?
2499  016714  001004                    BNE     NEK             ;YES, GO BACK WITH IT
2500  016716  012667  000424            MOV     (SP)+,KBBUF     ;NO, RETRIEVE OLD DATA
2501  016722  012601                    MOV     (SP)+,R1        ;RESTORE R1
2502  016724  000207                    RTS     PC              ;AND RETURN
2503  016726  005726            NEK:    TST     (SP)+           ;DUMP OLD DATA
2504  016730  012601                    MOV     (SP)+,R1        ;RESTORE R1
2505  016732  000207                    RTS     PC              ;AND RETURN
2506
2507
2508                            ;KEYBOARD READ ROUTINE
2509                            ;CHECKS FOR THE FOLLOWING SPECIAL CHARACTERS:
2510                            ;       CNTRL-C         RESTART PROG.
2511                            ;       CNTRL-F         CHANGE/SHOW FILL COUNT
2512                            ;       CNTRL-O         ENTER 'DE-BUG' ROUTINE
2513                            ;                       UNLESS ALREADY THERE
2514                            ;                       OR UNLESS IN INITIAL DIALOGUE.
2515                            ; IF IN 'DE-BUG' ROUTINE:
2516                            ;       <CR>            CLOSE LOCATION
2517                            ;       <LF>            CLOSE LOC. AND OPEN NEXT
2518                            ;       '/'             OPEN LOCATION
2519                            ;       'G'             SET START FUNC OR MAINT
2520                            ;       'P'             RETURN AND CONTINUE
```

```
2521
2522  016734  105777  007434        KBRD:   TSTB    @KBS            ;WAIT FOR INPUT FROM CONSOLE
2523  016740  100375                        BPL     KBRD
2524  016742  017700  007424                MOV     @KBD,R0         ;PUT THE CHAR INTO R0
2525  016746  105067  007301        KBRET:  CLRB    INCF            ;CLEAR FLAGS
2526  016752  105067  007274                CLRB    GOFLG
2527  016756  105067  007274                CLRB    SLFL
2528  016762  105067  007271                CLRB    CONFLG
2529  016766  042700  177600                BIC     #177600,R0      ;TRIM PARITY
2530  016772  020027  000003                CMP     R0,#3           ;WAS ^C TYPED?
2531  016776  001004                        BNE     1$              ;YES, RESTART PROGRAM
2532  017000  012706  002000                MOV     #ISP,SP
2533  017004  000167  163524                JMP     BCONT
2534  017010  105767  007235        1$:     TSTB    DBFLG           ;DON'T ALLOW ^F IN 'DEBUG'
2535  017014  001060                        BNE     4$
2536  017016  020027  000006                CMP     R0,#6           ;WAS CNTRL-F TYPED?
2537  017022  001055                        BNE     4$              ;NO
2538  017024  105767  007225        2$:     TSTB    SAFE            ;ALREADY IN FILL CNT RTN?
2539  017030  001401                        BEQ     20$             ;NO, SAFE TO ENTER
2540  017032  000543                        BR      KRTN            ;YES, IGNORE CHARACTER
2541  017034                        20$:    PNTM    FILMSG          ;PRINT 'FILL COUNT = '
2542  017034  012700  017354                MOV     #FILMSG,R0      ;PRINT MESSAGE
2543  017040  004767  177366                JSR     PC,TYPOUT       ;POINTED TO BY FILMSG
2544  017044  112767  177777  007203        MOVB    #-1,SAFE        ;SET FLAG
2545  017052  016700  000272                MOV     FILL,R0
2546  017056  004767  000312                JSR     PC,OCTPNT       ;SHOW FILL COUNT
2547  017062                                PNTM    TWOSP           ;SPACE AND PROMPT
2548  017062  012700  020636                MOV     #TWOSP,R0       ;PRINT MESSAGE
2549  017066  004767  177340                JSR     PC,TYPOUT       ;POINTED TO BY TWOSP
2550  017072  016767  000252  000246        MOV     FILL,KBBUF
2551  017100  004767  177370                JSR     PC,INPKB        ;GET NEW COUNT
2552  017104  026727  000236  000500        CMP     KBBUF,#500      ;TOO BIG?
2553  017112  101406                        BLOS    3$
2554  017114                                PNTM    AGAIN           ;NO GOOD. GET IT AGAIN
2555  017114  012700  020371                MOV     #AGAIN,R0       ;PRINT MESSAGE
2556  017120  004767  177706                JSR     PC,TYPOUT       ;POINTED TO BY AGAIN
2557  017124  000167  177704                JMP     20$
2558  017130  016767  000212  000212  3$:   MOV     KBBUF,FILL      ;LOAD NEW COUNT
2559  017136  005767  007154                TST     PCONT           ;RETURNING TO A PROMPT?
2560  017142  001477                        BEQ     KRTN            ;NO, CLEAN RETURN
2561  017144  062706  000006                ADD     #6,SP           ;YES, BREAK UP WITH INPKB
2562  017150  016716  007142                MOV     PCONT,(SP)      ;MODIFY RETURN ADDR
2563  017154  000472                        BR      KRTN
2564  017156  105767  007067        4$:     TSTB    DBFLG           ;IS 'DEBUG' FLAG SET?
2565  017162  001021                        BNE     6$              ;YES, CHECK FOR OTHER FLAGS
2566  017164  020027  000017                CMP     R0,#17          ;CNTRL-O TYPED?
2567  017170  001064                        BNE     KRTN            ;NO, EXIT
2568  017172  005767  007120                TST     PCONT           ;TEST IF ODT IS ALLOWED
2569  017176  001404                        BEQ     5$              ;YES, IF PCONT = 0 OR
2570  017200  026727  007112  002356        CMP     PCONT,#PRMT4    ;  IF GREATER THAN PRIORITY
2571  017206  103407                        BLO     6$              ;  PROMPT.
2572  017210  105767  007041        5$:     TSTB    SAFE            ;ALSO, NOT WHILE IN FILL
2573  017214  001052                        BNE     KRTN            ;  COUNT ROUTINE.
2574  017216  062706  000006                ADD     #6,SP           ;BREAK ALL TIES WITH 'INPKB'
2575  017222  000167  175532                JMP     ODTPR           ;A-O.K. GO TO DEBUG-AID
2576  017226  020027  000012        6$:     CMP     R0,#12          ;CHECK FOR L.F.
```

```
2577  017232  001007                        BNE     7$                      ;NOT A LINE FEED.
2578  017234  012700  000015                MOV     #15,R0                  ;CHANGE L.F. TO  C.R.
2579  017240  112767  177777  007005        MOVB    #-1,INCF                ;IT WAS, SET INCR FLAG
2580  017246  000167  000070                JMP     KRTN                    ;AND LEAVE
2581  017252  020027  000057        7$:     CMP     R0,#'/                  ;WAS IT A SLASH?
2582  017256  001007                        BNE     8$                      ;NO.
2583  017260  112767  177777  006770        MOVB    #-1,SLFL                ;YES, SET SLASH FLAG
2584  017266  004767  000406                JSR     PC,TTO                  ;ECHO THE SLASH
2585  017272  012716  016710                MOV     #NRTRN,(SP)             ;AND EXIT.
2586  017276  020027  000107        8$:     CMP     R0,#'G                  ;WAS 'G' TYPED?
2587  017302  001007                        BNE     9$                      ;NO.
2588  017304  112767  177777  006740        MOVB    #-1,GOFLG               ;YES, SET 'GO' FLAG
2589  017312  004767  000362                JSR     PC,TTO                  ;ECHO THE 'G'
2590  017316  012716  016710                MOV     #NRTRN,(SP)
2591  017322  020027  000120        9$:     CMP     R0,#'P                  ;WAS 'P' TYPED?
2592  017326  001005                        BNE     KRTN                    ;NO, EXIT
2593  017330  112767  177777  006721        MOVB    #-1,CONFLG              ;YES, SET 'CONTINUE' FLAG
2594  017336  012716  016710                MOV     #NRTRN,(SP)
2595  017342  000207                KRTN:   RTS     PC
2596
2597
2598                                ;ASSOCIATED VARIABLE STORAGE:
2599
2600  017344  000000                NOKEFL: .WORD   0
2601  017346  000000                KBBUF:  .WORD   0
2602  017350  000010                FILL:   .WORD   10
2603  017352  000000                FLCNT:  .WORD   0
2604  017354  043046  046111  020114FILMSG: .ASCII  /&FILL COUNT = @/
2605  017362  047503  047125  020124
2606  017370  020075     100
2607          017374                        .EVEN
2608
2609                                        .SBTTL BINARY TO ASCII CONVERSION ROUTINES
2610
2611                                ;CONVERTS BINARY TO BINARY, BINARY TO
2612                                ;OCTAL, AND BINARY TO DECIMAL; EITHER
2613                                ;UNJUSTIFIED WITH LEADING ZERO'S SUPPRESSED
2614                                ;OR RIGHT JUSTIFIED WITH LEADING 0'S
2615                                ;SUPPRESSED
2616
2617
2618                                ;REGILAR BIN-OCTAL UNJUSTIFIED:
2619
2620  017374                        OCTPNT: REGSAV
2621  017374  004567  176006                JSR     R5,REGSAV
2622  017400  005067  000360                CLR     RJFLG                   ;CLEAR RIGHT JUSTIFY FLAG
2623  017404  012701  000010                MOV     #10,R1                  ;SET RADIX FOR OCTAL
2624  017410  004767  000156                JSR     PC,NUMPNT               ;CONVERT & PRINT
2625  017414                                REGRES
2626  017414  004567  176002                JSR     R5,REGRES
2627  017420  000207                        RTS     PC                      ;RETURN
2628
2629                                ;BIN-OCTAL JUSTIFIED:
2630
2631  017422                        OCTJSP: REGSAV
2632  017422  004567  175760                JSR     R5,REGSAV
```

```
2633  017426  012767  177777  000330          MOV     #-1,RJFLG               ;SET RIGHT JUSTIFY FLAG
2634  017434  012701  000010                  MOV     #10,R1                  ;SET RADIX FOR OCTAL
2635  017440  004767  000126                  JSR     PC,NUMPNT               ;CONVERT & PRINT
2636  017444                                  REGRES
2637  017444  004567  175752                  JSR     R5,REGRES
2638  017450  000207                          RTS     PC
2639
2640                                  ;BIN-BIN
2641
2642  017452                          BINPNT: REGSAV
2643  017452  004567  175730                  JSR     R5,REGSAV
2644  017456  005067  000302                  CLR     RJFLG                   ;CLEAR RIGHT JUSTIFY FLAG
2645  017462  012701  000002                  MOV     #2,R1                   ;SET RADIX FOR BINARY
2646  017466  004767  000100                  JSR     PC,NUMPNT               ;CONVERT & PRINT
2647  017472                                  REGRES
2648  017472  004567  175724                  JSR     R5,REGRES
2649  017476  000207                          RTS     PC
2650
2651                                  ;BIN-DECIMAL UNJUSTIFIED:
2652
2653  017500                          DECPNT: REGSAV
2654  017500  004567  175702                  JSR     R5,REGSAV
2655  017504  005067  000254                  CLR     RJFLG                   ;CLEAR RIGHT JUSTIFY FLAG
2656  017510  012701  000012                  MOV     #12,R1                  ;SET RADIX FOR DECIMAL
2657  017514  004767  000052                  JSR     PC,NUMPNT               ;CONVERT & PRINT
2658  017520                                  REGRES
2659  017520  004567  175676                  JSR     R5,REGRES
2660  017524  000207                          RTS     PC
2661
2662                                  ;BIN-DECIMAL JUSTIFIED (6 PLACES)
2663
2664  017526                          DECJSP: REGSAV
2665  017526  004567  175654                  JSR     R5,REGSAV
2666  017532  012767  177777  000224          MOV     #-1,RJFLG               ;SET RIGHT JUSTIFY FLAG
2667  017540  012701  000012                  MOV     #12,R1                  ;SET RADIX FOR DECIMAL
2668  017544  004767  000022                  JSR     PC,NUMPNT               ;CONVERT & PRINT
2669  017550                                  REGRES
2670  017550  004567  175646                  JSR     R5,REGRES
2671  017554  000207                          RTS     PC
2672
2673
2674  017556  005000                  NULLS:  CLR     R0
2675  017560  004767  000114                  JSR     PC,TTO
2676  017564  004767  000110                  JSR     PC,TTO
2677  017570  000207                  NULOUT: RTS     PC
2678
2679                                  ;UNSIGNED CONVERT-PRINT ROUTINE (BIN - ASCII)
2680
2681  017572  010167  000170          NUMPNT: MOV     R1,RADIX                ;SAVE RADIX
2682  017576  005002                          CLR     R2                      ;CLEAR TAB COUNTER
2683  017600  005001                  DIVSET: CLR     R1                      ;CLEAR WORK REGISTER
2684  017602  020067  000160          DIVID:  CMP     R0,RADIX                ;IS NUMBER BELOW RADIX?
2685  017606  103404                          BLO     GETDG                   ;IF YES, STORE DIGIT
2686  017610  166700  000152                  SUB     RADIX,R0                ;ELSE, KEEP SUBTRACTING
2687  017614  005201                          INC     R1                      ;AND KEEP COUNT
2688  017616  000771                          BR      DIVID
```

```
2689  017620  010046          GETDG:  MOV     R0,-(SP)                ;STACK REMAINDER
2690  017622  010100                  MOV     R1,R0
2691  017624  001403                  BEQ     PNTEXT                  ;PRINT IF HIGHEST ORDER STACKED
2692  017626  005202                  INC     R2                      ;ELSE COUNT DIGITS FOR R. JUSTIFY
2693  017630  004767  177744          JSR     PC,DIVSET
2694
2695  017634  012703  000006  PNTEXT: MOV     #6,R3                   ;GET DIGIT COUNT CONSTANT
2696  017640  160203                  SUB     R2,R3                   ;HAVE WE PRODUCED 6 DIGITS?
2697  017642  003413                  BLE     PNT                     ;YES, JUSTIFICATION UNNECESSARY
2698  017644  005767  000114          TST     RJFLG                   ;IS THE JUSTIFY FLAG SET?
2699  017650  001410                  BEQ     PNT                     ;NO-DON'T JUSTIFY
2700  017652  012700  000040  JUST:   MOV     #40,R0                  ;YES, PRINT LEADING SPACES
2701  017656  004767  000016          JSR     PC,TTO
2702  017662  005303                  DEC     R3
2703  017664  001372                  BNE     JUST
2704  017666  005067  000072          CLR     RJFLG                   ;CLEAR JUSTIFY FLG WHEN DONE
2705  017672  012600          PNT:    MOV     (SP)+,R0                ;GET REST OF DIGITS OFF STACK
2706  017674  052700  000060          BIS     #'0,R0                  ;MAKE THEM ASCII
2707                                  ;TYPE OUT ROUTINE
2708                                  ;PRINTS A CHARACTER WHICH IS IN R0
2709                                  ;IF THE CHARACTER IS ''CR.'', ALSO PRINT A 'LF.'.
2710
2711
2712  017700  010077  006474  TTO:    MOV     R0,@TTB                 ;PRINT CONTENTS OF R0
2713  017704  105777  006472  TTOLP:  TSTB    @TTS                    ;WAIT TILL PRINT DONE
2714  017710  100375                  BPL     TTOLP
2715  017712  022700  000015          CMP     #15,R0                  ;WAS IT A CR?
2716  017716  001401                  BEQ     TTOLF                   ;YES, ECHO A LF AS WELL
2717  017720  000207                  RTS     PC                      ;NO, JUST RETURN
2718  017722  012700  000012  TTOLF:  MOV     #12,R0
2719  017726  004767  177746          JSR     PC,TTO                  ;ECHO A LINE FEED
2720  017732  016767  177412  177412  MOV     FILL,FLCNT              ;PRINT NULLS FOR FILL
2721  017740  012700  000000          MOV     #0,R0
2722  017744  004767  177730  1$:     JSR     PC,TTO
2723  017750  005367  177376          DEC     FLCNT
2724  017754  003373                  BGT     1$
2725  017756  012700  000012          MOV     #12,R0                  ;THEN RESTORE R0
2726  017762  000207                  RTS     PC                      ;AND LEAVE
2727
2728
2729                                  ;ASSOCIATED VARIABLE STORAGE:
2730
2731  017764  000000          RJFLG:  .WORD   0
2732  017766  000000          RADIX:  .WORD   0
2733
2734                                  .SBTTL CONSTANTS, VARIABLES & ACSII
2735
2736
2737                                  ;ASCII MESSAGES:
2738
2739  017770  041446  041532  045115  TSTHDR: .ASCII  /@CZCMJA0 CMR-11 HOST EXERCISER   14-JAN-80/
2740  017776  030101  041440  051115
2741  020004  030455  020061  047510
2742  020012  052123  042440  042530
2743  020020  041522  051511  051105
2744  020026  020040  030440  026464
```

```
2745  020034  040512  026516  030070
2746  020042  023046  020040  020040          .ASCII  /&&      *** CAUTION ***/
2747  020050  020040  025052  020052
2748  020056  040503  052125  047511
2749  020064  020116  025052     052
2750  020071     046  044124  051511          .ASCII  /&THIS PROGRAM IS CAPABLE OF ALTERING THE STATE/
2751  020076  050040  047522  051107
2752  020104  046501  044440  020123
2753  020112  040503  040520  046102
2754  020120  020105  043117  040440
2755  020126  052114  051105  047111
2756  020134  020107  044124  020105
2757  020142  052123  052101     105
2758  020147     046  043117  040440          .ASCII  /&OF ANY FIELD EQUIPMENT ATTACHED TO ANY OF THE/
2759  020154  054516  043040  042511
2760  020162  042114  042440  052521
2761  020170  050111  042515  052116
2762  020176  040440  052124  041501
2763  020204  042510  020104  047524
2764  020212  040440  054516  047440
2765  020220  020106  044124     105
2766  020225     046  042522  047515          .ASCII  /&REMOTES ON THIS CMR-11./
2767  020232  042524  020123  047117
2768  020240  052040  044510  020123
2769  020246  046503  026522  030461
2770  020254     056
2771  020255     046  042046  020117          .ASCII  /&&DO NOT PROCEED IF FIELD HARDWARE IS STILL ON-LINE!&&@/
2772  020262  047516  020124  051120
2773  020270  041517  042505  020104
2774  020276  043111  043040  042511
2775  020304  042114  044040  051101
2776  020312  053504  051101  020105
2777  020320  051511  051440  044524
2778  020326  046114  047440  026516
2779  020334  044514  042516  023041
2780  020342  040046
2781  020344  044446  052116  051105  FRAD:   .ASCII  /&INTERFACE ADDRESS: @/
2782  020352  040506  042503  040440
2783  020360  042104  042522  051523
2784  020366  020072     100
2785  020371     046  044124  052101  AGAIN:  .ASCII  /&THAT WON'T DO. TRY AGAIN&@/
2786  020376  053440  047117  052047
2787  020404  042040  027117  052040
2788  020412  054522  040440  040507
2789  020420  047111  040046
2790  020424  044446  052116  051105  DVECT:  .ASCII  /&INTERFACE VECTOR: @/
2791  020432  040506  042503  053040
2792  020440  041505  047524  035122
2793  020446  040040
2794  020450  044446  052116  051105  DVPRIO: .ASCII  /&INTERFACE PRIORITY (4 TO 7): @/
2795  020456  040506  042503  050040
2796  020464  044522  051117  052111
2797  020472  020131  032050  052040
2798  020500  020117  024467  020072
2799  020506     100
2800  020507     046  046503  026522  DBAID:  .ASCII  /&CMR-11 DE-BUG AID&&@/
```

```
2801  020514  030461  042040  026505
2802  020522  052502  020107  044501
2803  020530  023104  040046
2804  020534  044446  053116  046101  INVLAD: .ASCII  /&INVALID ADDRESS...(IT'S NOT THERE)@/
2805  020542  042111  040440  042104
2806  020550  042522  051523  027056
2807  020556  024056  052111  051447
2808  020564  047040  052117  052040
2809  020572  042510  042522  040051
2810  020600  023046  051124  050101  TRP4:   .ASCII  /&&TRAPPED TO 4 FROM LOCATION @/
2811  020606  042520  020104  047524
2812  020614  032040  043040  047522
2813  020622  020115  047514  040503
2814  020630  044524  047117  040040
2815  020636  020040  040072          TWOSP:  .ASCII  /  :@/
2816  020642  051446  051127  036440  SWRMSG: .ASCII  /&SWR = @/
2817  020650  040040
2818  020652  052046  050131  020105  TYPCTP: .ASCII  /&TYPE CNTRL-P TO CONTINUE@/
2819  020660  047103  051124  026514
2820  020666  020120  047524  041440
2821  020674  047117  044524  052516
2822  020702  040105
2823  020704  051446  046105  041505  TSTSEL: .ASCII  /&SELECT TEST (4=HELP) @/
2824  020712  020124  042524  052123
2825  020720  024040  036464  042510
2826  020726  050114  020051     100
2827  020733     046  042523  042514  HELPM:  .ASCII  /&SELECT ONE OF THE FOLLOWING:&/
2828  020740  052103  047440  042516
2829  020746  047440  020106  044124
2830  020754  020105  047506  046114
2831  020762  053517  047111  035107
2832  020770     046
2833  020771     046  051103  047440          .ASCII  /&CR OR 1 = LOGIC TEST/
2834  020776  020122  020061  020075
2835  021004  047514  044507  020103
2836  021012  042524  052123
2837  021016  020046  020040  020040          .ASCII  /&      2 = PORT LOOP-BACK TEST/
2838  021024  031040  036440  050040
2839  021032  051117  020124  047514
2840  021040  050117  041055  041501
2841  021046  020113  042524  052123
2842  021054  020046  020040  020040          .ASCII  /&      3 = CMR-11 EXERCISER/
2843  021062  031440  036440  041440
2844  021070  051115  030455  020061
2845  021076  054105  051105  044503
2846  021104  042523     122
2847  021107     046  020040  020040          .ASCII  /&      4 = THIS HELP INFO./
2848  021114  020040  020064  020075
2849  021122  044124  051511  044040
2850  021130  046105  020120  047111
2851  021136  047506     056
2852  021141     046  047103  051124          .ASCII  /&CNTRL-C = TEST SELECT/
2853  021146  026514  020103  020075
2854  021154  042524  052123  051440
2855  021162  046105  041505     124
2856  021167     046  047103  051124          .ASCII  /&CNTRL-S = SWITCH OPTION SELECT/
```

```
 2857  021174  026514  020123  020075
 2858  021202  053523  052111  044103
 2859  021210  047440  052120  047511
 2860  021216  020116  042523  042514
 2861  021224  052103
 2862  021226  041446  052116  046122          .ASCII  /&CNTRL-F = CONSOLE FILL COUNT SELECT/
 2863  021234  043055  036440  041440
 2864  021242  047117  047523  042514
 2865  021250  043040  046111  020114
 2866  021256  047503  047125  020124
 2867  021264  042523  042514  052103
 2868  021272  041446  052116  046122          .ASCII  /&CNTRL-O = DEBUG ROUTINE WHICH ALLOWS/
 2869  021300  047455  036440  042040
 2870  021306  041105  043525  051040
 2871  021314  052517  044524  042516
 2872  021322  053440  044510  044103
 2873  021330  040440  046114  053517
 2874  021336     123
 2875  021337     046  020040  020040          .ASCII  /&          LOADING SCR. PAD AND STARTING/
 2876  021344  020040  020040  020040
 2877  021352  047514  042101  047111
 2878  021360  020107  041523  027122
 2879  021366  050040  042101  040440
 2880  021374  042116  051440  040524
 2881  021402  052122  047111     107
 2882  021407     046  020040  020040          .ASCII  /&          FUNCTIONS AND EXAMINING THE/
 2883  021414  020040  020040  020040
 2884  021422  052506  041516  044524
 2885  021430  047117  020123  047101
 2886  021436  020104  054105  046501
 2887  021444  047111  047111  020107
 2888  021452  044124     105
 2889  021455     046  020040  020040          .ASCII  /&          RESULTS/
 2890  021462  020040  020040  020040
 2891  021470  042522  052523  052114
 2892  021476     123
 2893  021477     046  047103  051124          .ASCII  /&CNTRL-P = PROCEED FROM SW. MONITOR@/
 2894  021504  026514  020120  020075
 2895  021512  051120  041517  042505
 2896  021520  020104  051106  046517
 2897  021526  051440  027127  046440
 2898  021534  047117  052111  051117
 2899  021542     100
 2900  021543     046  047514  044507  LGKTSM: .ASCII  /&LOGIC TEST&@/
 2901  021550  020103  042524  052123
 2902  021556  040046
 2903  021560  051446  051103  050056  SCPAD:  .ASCII  /&SCR.PAD ADDR = @/
 2904  021566  042101  040440  042104
 2905  021574  020122  020075     100
 2906  021601     046  044046  051517  VERSM:  .ASCII  /&&HOST FIRMWARE VERSION : @/
 2907  021606  020124  044506  046522
 2908  021614  040527  042522  053040
 2909  021622  051105  044523  047117
 2910  021630  035040  040040
 2911  021634  023046  040502  042125  BAUDM:  .ASCII  /&&BAUD RATES:@/
 2912  021642  051040  052101  051505
```

```
 2913  021650  040072
 2914  021652  050046  051117  020124  PORT0M: .ASCII  /&PORT #0 = @/
 2915  021660  030043  036440  040040
 2916  021666  050046  051117  020124  PORT1M: .ASCII  /&PORT #1 = @/
 2917  021674  030443  036440  040040
 2918  021702  050046  051117  020124  PORT2M: .ASCII  /&PORT #2 = @/
 2919  021710  031043  036440  040040
 2920  021716  050046  051117  020124  PORT3M: .ASCII  /&PORT #3 = @/
 2921  021724  031443  036440  040040
 2922  021732  042446  042116  050040  ENDPS:  .ASCII  /&END PASS # @/
 2923  021740  051501  020123  020043
 2924  021746     100
 2925  021747     040  042440  051122  ERCTM:  .ASCII  /  ERR. CNT = @/
 2926  021754  020056  047103  020124
 2927  021762  020075     100
 2928  021765     052  047452  042526  OVFLM:  .ASCII  /**OVERFLOW**@/
 2929  021772  043122  047514  025127
 2930  022000  040052
 2931  022002  050046  051117  020124  PLTM:   .ASCII  /&PORT LOOP-BACK TEST&@/
 2932  022010  047514  050117  041055
 2933  022016  041501  020113  042524
 2934  022024  052123  040046
 2935  022030  052046  050131  020105  PORTN:  .ASCII  /&TYPE PORT # (<CR>=ALL): @/
 2936  022036  047520  052122  021440
 2937  022044  024040  041474  037122
 2938  022052  040475  046114  035051
 2939  022060  040040
 2940  022062  052046  050131  020105  TYPCR:  .ASCII  /&TYPE <CR> WHEN READY: @/
 2941  022070  041474  037122  053440
 2942  022076  042510  020116  042522
 2943  022104  042101  035131  040040
 2944  022112  041446  051115  030455  EXCM:   .ASCII  /&CMR-11 EXERCISE ROUTINE&/
 2945  022120  020061  054105  051105
 2946  022126  044503  042523  051040
 2947  022134  052517  044524  042516
 2948  022142     046
 2949  022143     046  043450  053111          .ASCII  /&(GIVE ME A FEW MINUTES ALONE WITH THE REMOTES)@/
 2950  022150  020105  042515  040440
 2951  022156  043040  053505  046440
 2952  022164  047111  052125  051505
 2953  022172  040440  047514  042516
 2954  022200  053440  052111  020110
 2955  022206  044124  020105  042522
 2956  022214  047515  042524  024523
 2957  022222     100
 2958  022223     046  025052  020052  NOREM:  .ASCII  /&*** NO REMOTES ON HOST ***&/
 2959  022230  047516  051040  046505
 2960  022236  052117  051505  047440
 2961  022244  020116  047510  052123
 2962  022252  025040  025052     046
 2963  022257     046  020050  020111          .ASCII  /&( I WILL KEEP LOOKING FOR ANY CHANGES )&@/
 2964  022264  044527  046114  045440
 2965  022272  042505  020120  047514
 2966  022300  045517  047111  020107
 2967  022306  047506  020122  047101
 2968  022314  020131  044103  047101
```

```
2969  022322  042507  020123  023051
2970  022330     100
2971  022331     046  047520  052122  PORTMS: .ASCII  /&PORT # @/
2972  022336  021440  040040
2973  022342  051046  046505  052117  REMSG:  .ASCII  /&REMOTE # @/
2974  022350  020105  020043     100
2975  022355     046  052123  052101  STATEM: .ASCII  /&STATE = @/
2976  022362  020105  020075     100
2977  022367     046  051525  051117  USORM:  .ASCII  /&USOR = @/
2978  022374  036440  040040
2979  022400  025046  025052  051040  REMCHG: .ASCII  /&*** REMOTE STATUS CHANGE ***@/
2980  022406  046505  052117  020105
2981  022414  052123  052101  051525
2982  022422  041440  040510  043516
2983  022430  020105  025052  040052
2984  022436  051046  046505  052117  REMSTM: .ASCII  /&REMOTE STATUS NOW @/
2985  022444  020105  052123  052101
2986  022452  051525  047040  053517
2987  022460  040040
2988  022462  051040  043505  046125  REGMG:  .ASCII  / REGULAR@/
2989  022470  051101     100
2990  022473     040  051111  042522  IRRGMG: .ASCII  / IRREGULAR@/
2991  022500  052507  040514  040122
2992  022506  025046  025052  040440  ALROFF: .ASCII  /&*** ALL REMOTES NOW IRREGULAR ***&@/
2993  022514  046114  051040  046505
2994  022522  052117  051505  047040
2995  022530  053517  044440  051122
2996  022536  043505  046125  051101
2997  022544  025040  025052  040046
2998
2999                          ;ERROR MESSAGES
3000
3001  022552  044040  051517  020124  NOGO:   .ASCII  / HOST MICRO FAILED TO START.@/
3002  022560  044515  051103  020117
3003  022566  040506  046111  042105
3004  022574  052040  020117  052123
3005  022602  051101  027124     100
3006  022607     040  053520  026522  NOTUP:  .ASCII  / PWR-UP SEQUENCE NOT COMPLETE.(BAD CSR).@/
3007  022614  050125  051440  050505
3008  022622  042525  041516  020105
3009  022630  047516  020124  047503
3010  022636  050115  042514  042524
3011  022644  024056  040502  020104
3012  022652  051503  024522  040056
3013  022660  041440  051123  051040  CSRRST: .ASCII  / CSR REG. NOT RESET.@/
3014  022666  043505  020056  047516
3015  022674  020124  042522  042523
3016  022702  027124     100
3017  022705     040  040503  023516  SPRCLR: .ASCII  / CAN'T CLR SPAR REG.@/
3018  022712  020124  046103  020122
3019  022720  050123  051101  051040
3020  022726  043505  040056
3021  022732  041040  042101  042040  SPRDAT: .ASCII  / BAD DATA IN SPAR REG.@/
3022  022740  052101  020101  047111
3023  022746  051440  040520  020122
3024  022754  042522  027107     100
```

```
3025  022761    040  042522  020121  ISATE:  .ASCII  / REQ SCPD ADR TST ERROR.@/
3026  022766 041523  042120  040440
3027  022774 051104  052040  052123
3028  023002 042440  051122  051117
3029  023010 040056
3030  023012 051040  051505  046125  OSDTE:  .ASCII  / RESULT SCPD DATA TST ERROR.@/
3031  023020 020124  041523  042120
3032  023026 042040  052101  020101
3033  023034 051524  020124  051105
3034  023042 047522  027122    100
3035  023047    040  042522  052523  OSATE:  .ASCII  / RESULT SCPD ADR TST ERROR.@/
3036  023054 052114  051440  050103
3037  023062 020104  042101  020122
3038  023070 051524  020124  051105
3039  023076 047522  027122    100
3040  023103    040  042522  020121  ISDTE:  .ASCII  / REQ SCPD DATA TST ERROR.@/
3041  023110 041523  042120  042040
3042  023116 052101  020101  051524
3043  023124 020124  051105  047522
3044  023132 027122    100
3045  023135    040  042522  027121  RQSPCL: .ASCII  / REQ. SCPD NOT ALL 0'S.@/
3046  023142 051440  050103  020104
3047  023150 047516  020124  046101
3048  023156 020114  023460  027123
3049  023164    100
3050  023165    040  042522  027123  RSSPCL: .ASCII  / RES. SCPD NOT ALL 0'S.@/
3051  023172 051440  050103  020104
3052  023200 047516  020124  046101
3053  023206 020114  023460  027123
3054  023214    100
3055  023215    040  041442  051114  CLTBER: .ASCII  / ''CLRTPB'' FAILED TO CLR TOP BYTE.@/
3056  023222 050124  021102  043040
3057  023230 044501  042514  020104
3058  023236 047524  041440  051114
3059  023244 052040  050117  041040
3060  023252 052131  027105    100
3061  023257    040  051127  047117  DIERR:  .ASCII  / WRONG CSR FOR 'DIE'' FUNC.@/
3062  023264 020107  051503  020122
3063  023272 047506  020122  042042
3064  023300 042511  020042  052506
3065  023306 041516  040056
3066  023312 041040  042101  041440  CSRWE:  .ASCII  / BAD CSR BITS WHILE HUNG.@/
3067  023320 051123  041040  052111
3068  023326 020123  044127  046111
3069  023334 020105  052510  043516
3070  023342 040056
3071  023344 041440  047101  052047  CSRCE:  .ASCII  / CAN'T CLR LOW CSR WHILE HUNG.@/
3072  023352 041440  051114  046040
3073  023360 053517  041440  051123
3074  023366 053440  044510  042514
3075  023374 044040  047125  027107
3076  023402    100
3077  023403    040  041501  042503  SPAVME: .ASCII  / ACCESSED REQ SCPD WITH 'MAIN'' SET.@/
3078  023410 051523  042105  051040
3079  023416 050505  051440  050103
3080  023424 020104  044527  044124
```

```
3081  023432  021040  040515  047111
3082  023440  020042  042523  027124
3083  023446     100
3084  023447     040  041501  042503  SPAVFE: .ASCII  / ACCESSED REQ SCPD WITH ''STFUN'' SET.@/
3085  023454  051523  042105  051040
3086  023462  050505  051440  050103
3087  023470  020104  044527  044124
3088  023476  021040  052123  052506
3089  023504  021116  051440  052105
3090  023512  040056
3091  023514  044040  051517  020124  NOINTR: .ASCII  / HOST CAN'T INTERRUPT UNIBUS.@/
3092  023522  040503  023516  020124
3093  023530  047111  042524  051122
3094  023536  050125  020124  047125
3095  023544  041111  051525  040056
3096  023552  042440  051122  047117  ERINTR: .ASCII  / ERRONEOUS HOST INTERRUPT.@/
3097  023560  047505  051525  044040
3098  023566  051517  020124  047111
3099  023574  042524  051122  050125
3100  023602  027124     100
3101  023605     040  051127  047117  WPODI:  .ASCII  / WRONG PRIORITY. DEV. IS HIGHER.@/
3102  023612  020107  051120  047511
3103  023620  044522  054524  020056
3104  023626  042504  027126  044440
3105  023634  020123  044510  044107
3106  023642  051105  040056
3107  023646  050040  047522  020107  HITER:  .ASCII  / PROG INIT. FAILED TO INIT CSR.@/
3108  023654  047111  052111  020056
3109  023662  040506  046111  042105
3110  023670  052040  020117  047111
3111  023676  052111  041440  051123
3112  023704  040056
3113  023706  046440  041511  047522  VISF:   .ASCII  / MICRO DIDN'T STORE VERSION NO.@/
3114  023714  042040  042111  023516
3115  023722  020124  052123  051117
3116  023730  020105  042526  051522
3117  023736  047511  020116  047516
3118  023744  040056
3119  023746  031040  042116  053040  VIDER:  .ASCII  / 2ND VERSION INFO DIFFERS FROM PWR-UP.@/
3120  023754  051105  044523  047117
3121  023762  044440  043116  020117
3122  023770  044504  043106  051105
3123  023776  020123  051106  046517
3124  024004  050040  051127  052455
3125  024012  027120     100
3126  024015     040  041501  042503  SPAVIC: .ASCII  / ACCESSED RES. SCPD WITH INTR CLR.@/
3127  024022  051523  042105  051040
3128  024030  051505  020056  041523
3129  024036  042120  053440  052111
3130  024044  020110  047111  051124
3131  024052  041440  051114  040056
3132  024060  053440  047522  043516  STESTF: .ASCII  / WRONG CSR WITH ''STFUN''.@/
3133  024066  041440  051123  053440
3134  024074  052111  020110  051442
3135  024102  043124  047125  027042
3136  024110     100
```

```
3137  024111     040  046442  044501  RSPESF: .ASCII  / 'MAIN'' RESULT FUNC. CODE WRONG.@/
3138  024116  021116  051040  051505
3139  024124  046125  020124  052506
3140  024132  041516  020056  047503
3141  024140  042504  053440  047522
3142  024146  043516  040056
3143  024152  041040  042101  052440  USOFE1: .ASCII  / BAD USOF FROM ''STFUN'' ON MAINT.@/
3144  024160  047523  020106  051106
3145  024166  046517  021040  052123
3146  024174  052506  021116  047440
3147  024202  020116  040515  047111
3148  024210  027124     100
3149  024213     040  051127  047117  STEMF:  .ASCII  / WRONG CSR WITH 'MAINT''.@/
3150  024220  020107  051503  020122
3151  024226  044527  044124  021040
3152  024234  040515  047111  021124
3153  024242  040056
3154  024244  041040  042101  052440  USOFE2: .ASCII  / BAD USOF FROM 'MAINT'' FUNC.@/
3155  024252  047523  020106  051106
3156  024260  046517  021040  040515
3157  024266  047111  021124  043040
3158  024274  047125  027103     100
3159  024301     040  046442  044501  DATLER: .ASCII  / 'MAIN'' FUNC GAVE BAD DATA LEN.@/
3160  024306  021116  043040  047125
3161  024314  020103  040507  042526
3162  024322  041040  042101  042040
3163  024330  052101  020101  042514
3164  024336  027116     100
3165  024341     040  042522  027123  RSPEMF: .ASCII  / RES. FUNC CODE WRONG FOR 'MAIN''.@/
3166  024346  043040  047125  020103
3167  024354  047503  042504  053440
3168  024362  047522  043516  043040
3169  024370  051117  021040  040515
3170  024376  047111  027042     100
3171  024403     040  040502  020104  USOFE3: .ASCII  / BAD USOF FROM 'MAIN'' ON REG FUNC.@/
3172  024410  051525  043117  043040
3173  024416  047522  020115  046442
3174  024424  044501  021116  047440
3175  024432  020116  042522  020107
3176  024440  052506  041516  040056
3177  024446  053440  047522  043516  USOFE4: .ASCII  / WRONG USOF ON REGULAR FUNC.@/
3178  024454  052440  047523  020106
3179  024462  047117  051040  043505
3180  024470  046125  051101  043040
3181  024476  047125  027103     100
3182  024503     040  047524  040524  PLFFE:  .ASCII  / TOTAL FAILURE ON 'MAIN'' FUNCTION.@/
3183  024510  020114  040506  046111
3184  024516  051125  020105  047117
3185  024524  021040  040515  047111
3186  024532  020042  052506  041516
3187  024540  044524  047117  040056
3188  024546  050040  051117  020124  PLTXTO: .ASCII  / PORT XMTR TIMED OUT.@/
3189  024554  046530  051124  052040
3190  024562  046511  042105  047440
3191  024570  052125  040056
3192  024574  050040  051117  020124  PLRCTO: .ASCII  / PORT RCVR TIMED OUT.@/
```

```
3193  024602  041522  051126  052040
3194  024610  046511  042105  047440
3195  024616  052125  040056
3196  024622  050040  051117  026524  PLDERR: .ASCII  / PORT-LOOP DETECTED DATA ERROR.@/
3197  024630  047514  050117  042040
3198  024636  052105  041505  042524
3199  024644  020104  040504  040524
3200  024652  042440  051122  051117
3201  024660  040056
3202  024662  044040  051517  020124  SYSER:  .ASCII  / HOST SYS ERROR. RUN LOGIC TEST.@/
3203  024670  054523  020123  051105
3204  024676  047522  027122  051040
3205  024704  047125  046040  043517
3206  024712  041511  052040  051505
3207  024720  027124     100
3208  024723     040  042042  040511  DIAGF:  .ASCII  / 'DIAG'' FUNC GAVE WRONG FUNC CODE.@/
3209  024730  021107  043040  047125
3210  024736  020103  040507  042526
3211  024744  053440  047522  043516
3212  024752  043040  047125  020103
3213  024760  047503  042504  040056
3214  024766  052440  047523  020106  DIAGUF: .ASCII  / USOF WRONG ON 'DIAG'' FUNC.@/
3215  024774  051127  047117  020107
3216  025002  047117  021040  044504
3217  025010  043501  020042  052506
3218  025016  041516  040056
3219
3220                                  .EVEN
3221
3222                                  ;TABLE STORAGE
3223
3224
3225                                  ;TABLE OF BAUD RATE MESSAGE POINTERS
3226
3227  025022  025042                  BDRTBL: .WORD   BD1
3228  025024  025047                          .WORD   BD2
3229  025026  025054                          .WORD   BD3
3230  025030  025062                          .WORD   BD4
3231  025032  025070                          .WORD   BD5
3232  025034  025076                          .WORD   BD6
3233  025036  025104                          .WORD   BD7
3234  025040  025122                          .WORD   BD8
3235
3236                                  ;TABLE OF ASCII STORAGE FOR BAUD RATES
3237
3238  025042  031440  030060     100  BD1:    .ASCII  / 300@/
3239  025047     040  030066  040060  BD2:    .ASCII  / 600@/
3240  025054  030440  030062  040060  BD3:    .ASCII  / 1200@/
3241  025062  031040  030064  040060  BD4:    .ASCII  / 2400@/
3242  025070  032040  030070  040060  BD5:    .ASCII  / 4800@/
3243  025076  034440  030066  040060  BD6:    .ASCII  / 9600@/
3244  025104  021040  044510  044107  BD7:    .ASCII  / 'HIGH'' SPEED@/
3245  025112  020042  050123  042505
3246  025120  040104
3247  025122  021040  050123  041505  BD8:    .ASCII  / 'SPECIAL'' SPEED@/
3248  025130  040511  021114  051440
```

```
3249  025136  042520  0421(      100
3250          025144                      .EVEN
3251
3252
3253
3254  025144  000001                      DATBL:  .WORD   001
3255  025146  000003                              .WORD   003
3256  025150  000007                              .WORD   007
3257  025152  000017                              .WORD   017
3258  025154  000037                              .WORD   037
3259  025156  000077                              .WORD   077
3260  025160  000177                              .WORD   177
3261  025162  000377                              .WORD   377
3262  025164  000376                              .WORD   376
3263  025166  000374                              .WORD   374
3264  025170  000370                              .WORD   370
3265  025172  000360                              .WORD   360
3266  025174  000340                              .WORD   340
3267  025176  000300                              .WORD   300
3268  025200  000200                              .WORD   200
3269  025202  000000                              .WORD   000
3270
3271
3272                                      ;PORT CONFIGURATION STATUS TABLES.
3273
3274  025204  000100                      EXTBL1: .BLKW   64.
3275  025404  000100                      EXTBL2: .BLKW   64.
3276  025604  000100                      EXTBL3: .BLKW   64.
3277  026004  000100                      EXTBL4: .BLKW   64.
3278
3279                                      ;TABLE FOR ORIGINAL (PWR-UP) VERSION DATA
3280
3281  026204  000011                      VERSP:  .BLKW   9.
3282
3283                                      ;TABLE FOR 2ND VERSION DATA
3284
3285  026226  000011                      VERSUN: .BLKW   9.
3286
3287                                      ;SOFTWARE FLAG BYTES
3288
3289  026250     000                      [illegible]FLG: .BYTE   0
3290  026251     000                      [illegible]FLG: .BYTE   0
3291  026252     000                      GOFLG:  .BYTE   0
3292  026253     000                      INCF:   .BYTE   0
3293  026254     000                      OFLOF:  .BYTE   0
3294  026255     000                      SAFE:   .BYTE   0
3295  026256     000                      SLFL:   .BYTE   0
3296  026257     000                      CONFLG: .BYTE   0
3297  026260     000                      ONCE:   .BYTE   0
3298  026261     000                      THRUF:  .BYTE   0
3299                                              .EVEN
3300
3301                                      ;VARIABLES:
3302
3303  026262  000000                      ADDR:   .WORD   0
3304  026264  000000                      ALLFLG: .WORD   0
```

```
3305  026266  000000          BAUD:    .WORD   0
3306  026270  000000          CHNGFL:  .WORD   0
3307  026272  000000          CLK:     .WORD   0
3308  026274  000000          CNTR:    .WORD   0
3309  026276  000000          CSR:     .WORD   0
3310  026300  000000          DEVER:   .WORD   0
3311  026302  000000          ERRCNT:  .WORD   0
3312  026304  000000          ITER:    .WORD   0
3313  026306  000000          LINLEN:  .WORD   0
3314  026310  000000          MASK:    .WORD   0
3315  026312  000000          PASCNT:  .WORD   0
3316  026314  000000          PAT:     .WORD   0
3317  026316  000000          PCONT:   .WORD   0
3318  026320  000000          PORN:    .WORD   0
3319  026322  000000          PORT:    .WORD   0
3320  026324  000000          PRIO:    .WORD   0
3321  026326  000000          REMFLG:  .WORD   0
3322  026330  000000          REMNO:   .WORD   0
3323  026332  000000          REMTN:   .WORD   0
3324  026334  000000          REMST:   .WORD   0
3325  026336  000000          SAVEC:   .WORD   0
3326  026340  000000          SPAR:    .WORD   0
3327  026342  000000          SPDR:    .WORD   0
3328  026344  000000          SR:      .WORD   0
3329  026346  000000          SWREG:   .WORD   0
3330  026350  000000          SWRFLG:  .WORD   0
3331  026352  000000          TALLY:   .WORD   0
3332  026354  000000          TBLAD:   .WORD   0
3333  026356  000000          TEMP:    .WORD   0
3334  026360  000000          VERFLG:  .WORD   0
3335  026362  000000          WORD:    .WORD   0
3336
3337
3338                          ;CONSTANTS:
3339
3340  026364  000170          VECTOR:  .WORD   170
3341  026366  164000          DEVADR:  .WORD   164000
3342  026370  000004          FKPRIO:  .WORD   4
3343  026372  177562          KBD:     .WORD   177562
3344  026374  177560          KBS:     .WORD   177560
3345  026376  177546          LCS:     .WORD   177546
3346  026400  177566          TTB:     .WORD   177566
3347  026402  177564          TTS:     .WORD   177564
3348
3349          000001                   .END
```

```
ADDR    026262          2132* 2133  2135* 2136  2138  2164* 2168  2179* 2180  3303#
AGAIN   020371           425   442   454   460  1502  2146  2555  2785#
ALLFLG  026264          1478* 1494* 1499* 1636  3304#
ALROFF  002506          1898  2992#
BAD     016070           561*  562*  563   578*  579*  581   610*  628*  629*  631   670*  671   698*
                         699   738*  739   766*  767   810*  811   837*  838   869*  870   902*  903
                         926*  927   942*  943  1075* 1076  1108* 1110* 1111  1178* 1179  1196* 1197
                        1212* 1213  1230* 1231  1248* 1249  1264* 1265  1301* 1303  1318* 1319  1338*
                        1339  1611* 2058* 2059  2074* 2075  2330  2340#
BAUD    026266          1278  1361  3305#
BAUDM   021634          1371  2911#
BCNT2   002626           514   516#
BCONT   002534           490   501#  508   523  2402  2410  2533
BDRTBL  025022          1378  1392  1402  1416  3227#
BD1     025042          3227  3238#
BD2     025047          3228  3239#
BD3     025054          3229  3240#
BD4     025062          3230  3241#
BD5     025070          3231  3242#
BD6     025076          3232  3243#
BD7     025104          3233  3244#
BD8     025122          3234  3247#
BEGIN   002000            52   387   394#
BINPNT  017452          2642#
B00   = 000001            51#  624  1931  2051  2159
B01   = 000002            50#
B02   = 000004            49#
B03   = 000010            48#
B04   = 000020            47#  867   917  1635  1842  1921  1969  2050  2108  2153
B05   = 000040            46# 1874
B06   = 000100            45# 1880
B07   = 000200            44# 2157
B08   = 000400            43#  629   630
B09   = 001000            42#  644   659  661   724   727   729   735   802   1612
B10   = 002000            41#  547  1430 1659  1823
B11   = 004000            40# 1426  1655 1819  1903
B12   = 010000            39# 1835
B13   = 020000            38# 1846  2261
B14   = 040000            37#  551   569  585   614   635   675   681   703   709   743   749   771
                         777   815   821  842   848   874   908   931   947   966   985  1011  1025
                        1053  1080  1098 1115  1144  1177  1185  1201  1217  1229  1237  1253  1269
                        1298  1307  1323 1334  1343  1469  1550  1556  1571  1577  1592  1598  1617
                        1623  1693  1720 1853  1932  1942  2052  2063  2079  2085
B15   = 100000            36#  1089  1177  1229  2160
CCRTN   016256          2386#
CELP    012230          1687# 1690
CHNGFL  026270          1701* 1723  1732  1737* 1759* 1773  1900* 3306#
CLK     026272           594*  598* 2020* 2023* 2035* 2047* 3307#
CLKINT  002532           479   496#
CLTBER  023215           876  3055#
CMREXC  012166           518  1677#
CNTR    026274           540*  565*  896*  899*  905*  915*  1162* 1181* 1226* 1233* 1365* 1368* 1462*
                        1465* 1517* 1521* 1686* 1689* 1782* 1787* 1791* 1796* 1799* 1804* 1807* 1812*
                        1957* 1963* 1977* 1982* 1987* 1992* 2013* 3308#
CONFLG  026257          2191  2528* 2593* 3296#
CONTW1  016266          2389# 2390  2396
```

```
CSR     026276  547  561  578  867* 869  895* 897  902  914* 917* 925* 926  941*
                942  956* 975* 1006* 1017* 1036* 1039* 1045* 1050* 1067* 1075 1089 1134*
                1163* 1176* 1178 1227* 1228* 1230 1288* 1297* 1298 1332* 1333* 1334 1463
                1506* 1535* 1536* 1537 1635* 1687 1702* 1703* 1704* 1720 1722* 1738* 1835
                1842* 1846 1901* 1903 1906* 1921* 1931* 1932 1969* 2050* 2051* 2052 2108*
                2128 2138 2140 2153* 2157* 2159* 2160 2274* 3309#
CSRCE   023344  949  3071#
CSRRST  022660  587  3013#
CSRWE   023312  933  3066#
DATBL   025144  1518 2036 3254#
DATLER  024301  1271 3159#
DBAID   020507  2130 2800#
DBFLG   026251  503* 2127* 2196* 2413 2534 2564 3290#
DECJSP  017526  2664#
DECPNT  017500  1442 1453 2653#
DERR    016002  573  589  618  639  679  707  747  775  819  846  878  912  935
                951  1084 1119 1189 1205 1221 1241 1257 1273 1311 1327 1347 1621
                2067 2083 2319#
DEVADR  026366  417  420* 429  2273 3341#
DEVER   026300  401* 3310#
DEVGEN  015600  469  2273#
DIAGF   024723  2065 3208#
DIAGFU  012706  1734 1781#
DIAGNF  014332  1786 1795 1803 1811 2035#
DIAGUF  024766  2081 3214#
DIAG0   014414  2045# 2048
DIAG00  014432  2049# 2071 2107
DIAG1   014452  2052# 2055
DIAG10  014470  2053 2056#
DIAG2   014556  2060 2072#
DIAG3S  014742  2086 2105#
DIAG4   014750  2076 2108#
DIERR   023257  910  3061#
DIVID   017602  2684# 2688
DIVSET  017600  2683# 2693
DVATST  015466  125  428  2237#
DVECT   020424  433  2790#
DVPRIO  020450  446  2794#
ENDCHK  011770  1545 1566 1587 1608 1635#
ENDPS   021732  1439 2922#
END0    012050  1639 1646#
ENPRTN  010562  1432 1438# 1661 1825
ENRET   010642  1451 1454#
EN01    010632  1447 1452#
ERCTM   021747  1444 2925#
ERINT   006014  997  1022#
ERINTR  023552  1027 3096#
ERINT1  006134  1038 1049#
ERR     015716  555  970  989  1015 1029 1057 1102 1148 1473 1554 1575 1596 1697
                1857 1946 2301#
ERRAD   016062  2301* 2302* 2312 2319* 2320* 2337#
ERRCNT  026302  535* 1452 1480* 1685* 2265* 3311#
ERRM    016072  2305 2345#
ERRNUM  016064  554* 572* 588* 617* 638* 678* 706* 746* 774* 818* 845* 877* 911*
                934* 950* 969* 988* 1014* 1028* 1056* 1083* 1101* 1118* 1147* 1188* 1204*
                1220* 1240* 1256* 1272* 1310* 1326* 1346* 1472* 1553* 1574* 1595* 1620* 1696*
```

```
                    1856*  1945*  2066*  2082*  2307   2338#
ERR1     015730     2303#  2321
EXCM     022112     1706   2944#
EXS1     012300     1688   1701#
EXS2     012370     1718#  1729   1731   1750   1753   1828
EXS2B    012430     1721   1726#
EXS3     012470     1724   1727   1733   1736#
EXS3A    012530     1740   1745#
EXS3B    012552     1742   1744   1751#
EXTBL1   025204      473*  1711*  1761   1781   1976   3274#
EXTBL2   025404      474*  1712*  1764   1790   1981   3275#
EXTBL3   025604      475*  1713*  1767   1798   1986   3276#
EXTBL4   026004      476*  1714*  1770   1806   1991   3277#
EX1      016330     2372   2399#
EX2      016346     2400   2403#
EX3      016360     2404   2407#
EX4      016376     2368   2408   2411#
EX5      016430     2412   2414   2416   2419#
FILL     017350     2545   2550   2558*  2602#  2720
FILMSG   017354     2542   2604#
FKPRIO   026370      448   3342#
FLCNT    017352     2603#  2720*  2723*
FRAD     020344      415   2781#
GDINT    006056     1005   1035#
GETCHR   016512     2462#  2484   2489   2496
GETDG    017620     2685   2689#
GOFLG    026252     2151   2193   2526*  2588*  3291#
GOOD     016066      560*   563    580*   581    609*   625*   626*   627    630*   631    669*   671    697*
                     699    737*   739    764*   767    809*   811    836*   838    868*   870    901*   903
                     924*   927    940*   943   1074*  1076   1107*  1109*  1111   1177*  1179   1195*  1197
                    1211*  1213   1229*  1231   1247*  1249   1263*  1265   1302*  1303   1317*  1319   1337*
                    1339   1614*  2057*  2059   2073*  2075   2325   2339#
HDER     015644      430    477    2285#
HELPM    020733      521   2827#
HITER    023646     1082   3107#
HWSWR =  177570       9#    409
INCF     026253     2177   2525*  2579*  3292#
INPKB    016474      419    437    450    509    1490   1528   2134   2175   2383   2458#  2551
INTCNR   006130     1048#
INTCNT   006070     1021   1038#  1061
INVLAD   020534     2239   2804#
IRRGMG   022473     1883   2990#
ISATE    022761      677   3025#
ISDTE    023103      773   3040#
ISP   =  002000       52#   388    394    2237   2286   2294   2401   2409   2532
ITER     026304      532*  1424*  1428*  1477*  1653*  1657*  1683*  1817*  1821*  3312#
JUST     017652     2700#  2703
KBBUF    017346      417*   420    422    435*   438    439    448*   451    457    463*   464*   465*   466*
                     467*   468    507*   511    513    516   1488*  1492   1505   1527*  1530   2133*  2135
                    2174*  2176   2381*  2385   2460   2461*  2476*  2478*  2480*  2481   2492*  2493*  2494*
                    2495*  2500*  2550*  2552   2558   2601#
KBD      026372     2369   2391   2524   3343#
KBRD     016734     2462   2522#  2523
KBRET    016746     2418   2525#
KBS      026374     2366   2389   2522   3344#
KRTN     017342     2540   2560   2563   2567   2573   2580   2592   2595#
```

```
LCS     026376  3345#
LGKTSM  021543   537  2900#
LINLEN  026306  1975*  2015*  2017*  2028*  3313#
LOGTST  002656   512   531#
LSIFLG  026250   402*  2226*  3289#
LSTST   015440   403  2226#
MASK    026310   624*   647   648*  3314#
MONCH   016162  2370#
MONIC   016156  2367  2369#
MONIT   016142   649  1434  1539  1544  1663  1719  1725  1827  1936  2012  2162  2255  2365#
MOV     006210  1068#*  1069*  1070*  1071*  1072*  1073*
MOVB    002724   541#*   542*   543*   544*   545*   546*
N     = 000054    59#   549   556#   567   574#   583   590#   612   619#   633   640#   673   680#
              701   708#   741   748#   769   776#   813   820#   840   847#   872   879#   906
              913#   929   936#   945   952#   964   971#   983   990#  1009  1016#  1023  1030#
             1051  1058#  1078  1085#  1096  1103#  1113  1120#  1142  1149#  1183  1190#  1199
             1206#  1215  1222#  1235  1242#  1251  1258#  1267  1274#  1305  1312#  1321  1328#
             1341  1348#  1467  1474#  1548  1555#  1569  1576#  1590  1597#  1615  1622#  1691
             1698#  1851  1858#  1940  1947#  2061  2068#  2077  2084#
NEK     016726  2499  2503#
NOGO    022552   553  1471  1695  3001#
NOINTR  023514  1013  3091#
NOKEFL  017344  2458*  2483*  2490*  2498  2600#
NOREM   022223  1747  2958#
NOTUP   022607   571  3006#
NRTRN   016710  2466  2498#  2585  2590  2594
NULLS   017556  1421  1433  1662  1826  2293  2674#
NULOUT  017570  2677#
NUMPNT  017572  2624  2635  2646  2657  2668  2681#
OCTJSP  017422  2011  2141  2170  2631#
OCTPNT  017374   687   715   755   783   827   854  1562  1583  1604  1629  1869  1887  2008
             2092  2098  2104  2184  2292  2308  2313  2326  2331  2377  2546  2620#
ODTPR   014760  2127#  2405  2575
OFLOF   026254   534*  1446  1481*  1684*  2267*  3293#
ONCE    026260  1708*  1728  1741  1745*  1752*  1896*  3297#
OSATE   023047   745  3035#
OSDTE   023012   705  3030#
OVFLM   021765  1449  2928#
PASCNT  026312   533*  1429*  1441  1479*  1658*  1682*  1822*  3315#
PAT     026314   623*   625   644   646*   647*  3316#
PCONT   026316   418*   436*   449*   508*   510*  1489*  1491*  1526*  1529*  2197  2199  2382*  2384*
             2417*  2559  2562  2568  2570  3317#
PLDERR  024622  1619  3196#
PLFFE   024503  1552  3182#
PLRCTO  024574  1594  3192#
PLTM    022002  1483  2931#
PLTXTO  024546  1573  3188#
PNT     017672  2697  2699  2705#
PNTEND  012106  1637  1645  1653#
PNTEXT  017634  2691  2695#
PNTRTN  012156  1656  1660  1663#
PNTO    012124  1654  1657#
PNT1    012132  1658#
POK     010722  1464  1477#
PORCN   013764  1959#  1964
PORCNF  013540  1763  1766  1769  1772  1920#
```

```
PORLD   013752          1955    1957#
PORN    026320          1762*   1765*   1768*   1771*   1929    1965    1979*   1984*   1989*   1994*   2007    3318#
PORT    026322          1495*   1505*   1514    1516    1561    1582    1603    1628    1638    1640*   1642    1644    1646*
                        1648    1650    3319#
PORTLP  010644           515    1462#
PORTMS  022331          1559    1580    1601    1626    2005    2971#
PORTN   022030          1486    2935#
PORTOM  021652          1374    2914#
PORT1M  021666          1384    2916#
PORT2M  021702          1398    2918#
PORT3M  021716          1408    2920#
PORXT   014014          1956    1965#
PUR0    013634          1932#   1935
POR00   013652          1933    1936#
POR1    013726          1939    1950#
PREML   014312          2014    2026#
PREM0   014212          2009#   2016    2025
PREM1   014274          2022#   2024
PRIO    026324           468*   1041    3320#
PRLC    010652          1463#   1466
PRMT1   002174           423     428#
PRMT2   002220           432#    436     444
PRMT3   002302           440     445#    449     456     462
PRMT4   002356           452     457#    2570
PRMT5   002402           458     463#
PRNREM  014172          1980    1985    1990    1995    2004#
PROMT   002112           414#    418     427    2241
PRTCNF  012566          1736    1759#   1774
PS      = 177776           8#
PSTE    011054          1498    1501#
PSTS    011216          1523#   1526    1531
PST0    010760          1485#   1489    1504
PST1    011042          1493    1498#
PST2    011070          1500    1505#
PST2A   011076          1496    1506#
PST3    011200          1519#   1522
PST4    011226          1526#
PST5    011262          1535#   1565    1586    1607    1632    1651    1664
PST6    011276          1537#   1540
PST60   011312          1538    1541#
PST7    011340          1543    1546#
PST7S   011426          1557    1563#
PST8    011440          1547    1567#
PST8S   011526          1578    1584#
PST80   011540          1568    1588#
PST80S  011626          1599    1605#
PST9    011640          1589    1609#
PST9S   011762          1624    1630#
P0      = 000000           32#
P1      = 000040           31#
P2      = 000100           30#
P3      = 000140           29#
P4      = 000200           28#
P5      = 000240           27#
P6      = 000300           26#
P7      = 000340           25#     397     404     408     482
```

```
RADIX   017766          2681* 2684  2686  2732#
REGMG   022462          1877  2988#
REGRES  015422          2216# 2626  2637  2648  2659  2670
REGSAV  015406          2209# 2621  2632  2643  2654  2665
REMCHG  022400          1862  2979#
REMFLG  026326          3321#
REMNO   026330          1785* 1794* 1802* 1810* 2044  3322#
REMSG   022342          1865  2088  2973#
REMST   026334          3324#
REMSTM  022436          1871  2984#
REMTN   026332          3323#
REPORT  014042          1743  1975#
REPO    014074          1978  1981#
REP1    014120          1983  1986#
REP2    014144          1988  1991#
REP3    014170          1993  1996#
RESTRT  002460           390   477# 2295
RJFLG   017764          2622* 2633* 2644* 2655* 2666* 2698  2704* 2731#
RQSPCL  023135           817  3045#
RSPEMF  024341          1309  3165#
RSPESF  024111          1203  3137#
RSSPCL  023165           844  3050#
SAFE    026255           502* 2415  2538  2544* 2572  3294#
SAVEC   026336          2128* 3325#
SBAK    015544          2257  2260#
SCALM   013150          1718  1835# 1930  1934  2049  2054
SCART   013536          1904  1907#
SCA1    013212          1836  1843# 1902
SCA2    013300          1850  1861#
SCA2A   013374          1875  1880#
SCA2B   013416          1881  1886#
SCA2C   013430          1879  1889#
SCA2D   013436          1885  1891#
SCA2E   013450          1888  1890  1892  1894#
SCA2F   013472          1895  1900#
SCA3    013512          1847  1903#
SCONT   015562          2262  2265#
SCORTN  015576          2266  2268#
SCPAD   021560           684   712  752   780   824   851  2903#
SCPRTN  015526           558   576  592   621   642   689  717   757   785   829   856   881   919
                         938   954  973   992  1019  1032 1060  1087  1105  1122  1151  1192  1208
                        1224  1244 1260  1276  1314  1330 1350  1564  1585  1606  1631  2070  2106
                        2255#
SKPD2   013070          1735  1817#
SKPX0   013106          1818  1821#
SKPX1   013140          1820  1824  1827#
SKP1    012724          1783  1785# 1788
SKP2    012742          1784  1790#
SKP3    012760          1792  1794# 1797
SKP4    012776          1793  1798#
SKP5    013014          1800  1802# 1805
SKP6    013032          1801  1806#
SKP7    013050          1808  1810# 1813
SKP8    013066          1809  1814#
SLFL    026256          2149  2188  2527* 2583* 3295#
SPAR    026340           595* 600*  608*  610   627*  628  656*  659*  661*  662  664*  667*  686
```

```
                    691   693*  696*  714   719   721*  724*  727*  729*  730   732*  735*  754
                    759   761*  765*  782   787   789*  796*  798   800*  802*  804   806*  808*
                    826   831   833*  835*  853   858   860*  889*  891*  893*  957*  976*  1091*
                   1125  1127*  1135* 1164* 1166* 1168* 1170* 1172* 1174* 1194* 1210* 1246* 1262*
                   1279* 1281*  1289* 1291* 1293* 1295* 1300* 1316* 1336* 1507* 1509* 1511* 1513*
                   1515* 1519*  1541* 1609* 1610* 1612* 1613* 1641* 1643* 1647* 1649* 1848* 1867*
                   1873* 1922*  1924* 1926* 1928* 1937* 1950* 1958* 1960* 1962* 2037* 2039* 2041*
                   2043* 2045*  2056* 2072* 2090* 2096* 2102* 2154* 2168* 2276* 3326#
SPAVFE  023447      987  3084#
SPAVIC  024015     1146  3126#
SPAVME  023403      968  3077#
SPDR    026342      597   658*  660*  670   698   726*  728*  738   766   797*  803*  810   837
                    890*  892*  894*  958   961*  962   977   980*  981   1094  1136  1139* 1140
                   1165* 1167*  1169* 1171* 1173* 1175* 1196  1212  1248  1264  1280  1282  1290*
                   1292* 1294*  1296* 1301  1318  1338  1508* 1510* 1512* 1514* 1516* 1520* 1542
                   1546  1567   1588  1610  1611  1614  1642* 1644* 1648* 1650* 1849  1868  1874
                   1880  1886   1923* 1925* 1927* 1929* 1938  1951  1959  1961  2038* 2040* 2042*
                   2044* 2046*  2058  2074  2091  2097  2103  2155  2169  2174  2176* 2278* 3327#
SPRCLR  022705      616  3017#
SPRDAT  022732      637  3021#
SR      026344      409*  410   551   569   585   614   635   675   681   703   709   743   749
                    771   777   815   821   842   848   874   908   931   947   966   985   1011
                   1025  1053   1080  1098  1115  1144  1185  1201  1217  1237  1253  1269  1307
                   1323  1343   1426  1430  1469  1550  1556  1571  1577  1592  1598  1617  1623
                   1655  1659   1693  1819  1823  1853  1942  2063  2079  2085  2231* 2256  2261
                   2376  2381   2385* 3328#
SRTST   015450      407  2231#
SSWR  = 026346       10#  2231
STATEM  022355     2094  2975#
STEMF   024213     1239  3149#
STESTF  024060     1187  3132#
ST0     002714      539#  559   577   593   1435
ST1     003034      548   560#  566
ST10    004074      720   724#
ST100   004106      726#  734
ST101   004160      731   735#
ST110   004172      737#  758   763
ST110S  004274      750   756#
ST111   004302      740   759#
ST112   004324      760   764#
ST120   004336      766#  786   790
ST120S  004432      778   784#
ST121   004440      768   787#
ST13    004456      788   796#  830   857
ST130   004462      797#  801
ST131   004540      805   808#
ST131A  004506      799   802#
ST131B  004514      803#  807
ST132   004552      810#  834
ST132S  004646      822   8[illegible]3#
ST133   004654      812   831#
ST134   004674      832   835#
ST135   004710      837#  861
ST135S  005004      849   855#
ST136   005012      839   858#
ST14    005030      859   867#  882
```

ST15	005114	871	889#	920			
ST150	005270	915#	916				
ST16	005312	904	924#	939			
ST160	005400	928	940#	955			
ST161	005466	944	956#	974			
ST162	005574	963	975#	993			
ST17	005702	982	997#	1033			
ST170	005726	1005#	1020	1034			
ST170R	006010	1021#	1035				
ST18	006202	1048	1062	1067#	1088		
ST180	006334	1077	1089#	1090	1106		
ST181	006362	1094#	1128				
ST182	006424	1095	1107#	1123			
ST183	006514	1112	1124#				
ST19	006534	1126	1134#	1152			
ST2	003130	564	578#				
ST20	006642	1141	1162#	1193	1209	1225	
ST200	006752	1176#					
ST201	006766	1178#	1182				
ST202	007046	1180	1194#				
ST203	007134	1198	1210#				
ST204	007222	1214	1226#	1245	1261	1277	
ST205	007252	1230#	1234				
ST206	007332	1232	1246#				
ST207	007420	1250	1262#				
ST21	007506	1266	1278#				
ST22	007534	1288#	1315	1331			
ST220	007614	1297#					
ST221	007622	1298#	1299				
ST222	007720	1304	1316#				
ST223	010006	1320	1332#	1351			
ST224	010022	1334#	1335				
ST23	010120	1340	1356#				
ST23A	010132	1357	1359#				
ST230	010166	1366#	1369				
ST24	010502	1358	1424#				
ST25	010520	1422	1425	1428#			
ST26	010552	1427	1431	1434#			
ST3	003214	582	594#				
ST4	003234	597#	601				
ST6	003254	599	608#	622			
ST60	003330	611	623#				
ST61	003344	625#	643	650			
ST62	003454	632	644#				
ST7	003514	645	656#				
ST70	003524	658#	666				
ST71	003576	663	667#				
ST80	003606	669#	690	695			
ST80S	003710	682	688#				
ST81	003716	672	691#				
ST82	003740	692	696#				
ST90	003754	698#	718	722			
ST90S	004050	710	716#				
ST91	004056	700	719#				
SWDMP	016174	489	2248	2373#	2382	2394	
SWHLT	015506	1476	1700	1860	1949	2246#	2259

```
SWREG   026346   10  3329#
SWRFLG  026350  406*   487  2232*  2246  3330#
SWRMSG  020642 2374  2816#
SYSER   024662 1855  1944  3202#
TALLY   026352 1710* 1730  1739  1760* 1889* 1891  1893* 1894  1967* 1968* 3331#
TBLAD   026354 1761* 1764* 1767* 1770* 1920  3332#
TEMP    026356 2285* 2290* 2291  3333#
THRUF   026261 1709* 1726  1749* 1751* 1905* 3298#
TPCONT  016460 2442  2444#
TPOFCH  016434 2438# 2446
TPOUTX  016470 2440  2447#
TRP4    020600 2288  2810#
TSTHDR  017770  412  2739#
TSTRSK  002642  517   520#
TSTSEL  020704  505  2823#
TTB     026400 2712* 3346#
TTO     017700 1367  1838  1839  1840  1841  2019  2022  2027  2143  2166  2186  2398  2444
               2463  2474  2486  2488  2584  2589  2675  2676  2701  2712# 2719  2722
TTOLF   017722 2716  2718#
TTOLP   017704 2713# 2714
TTS     026402 2713  3347#
TWOSP   020636 2172  2379  2548  2815#
TYPCR   022062 1524  2940#
TYPCTP  020652 2387  2818#
TYPOUT  016432  413   416   426   434   443   447   455   461   506   522   538   685   713
                753   781   825   852  1364  1372  1375  1382  1385  1396  1399  1406  1409
               1420  1440  1445  1450  1484  1487  1503  1525  1560  1581  1602  1627  1707
               1748  1863  1866  1872  1878  1884  1899  2006  2089  2095  2101  2131  2147
               2173  2240  2289  2306  2311  2315  2324  2329  2375  2380  2388  2437# 2543
               2549  2556
USOFE1  024152 1219  3143#
USOFE2  024244 1255  3154#
USOFE3  024403 1325  3171#
USOFE4  024446 1345  3177#
USORM   022367 2100  2977#
VECTOR  026364  435   438*  997*  1005* 1038* 2279  3340#
VERFLG  026360  531*  1356  1359* 3334#
VERSM   021601 1363  2906#
VERSP   026204  596  1092  3281#
VERSUN  026226 1093  1360  3285#
VIDER   023746 1117  3119#
VISF    023706 1100  3113#
WDAT    016105 2310  2347#
WDSDB   016117 2323  2349#
WDWAS   016133 2328  2352#
WORD    026362  657*  658   665*  668*  669   694*  725*  726   733*  736*  737   762*  958*
                959*  960*  961   962   977*  978*  979*  980   981  1136* 1137* 1138* 1139
               1140  1376* 1377* 1379* 1380  1386* 1387* 1388* 1389* 1390* 1391* 1393* 1394
               1400* 1401* 1403* 1404  1410* 1411* 1412* 1413* 1414* 1415* 1417* 1418  3335#
WPODI   023605 1055  3101#
$0$     015004 2132# 2144
$1$     015010 2133# 2148  2195
$10$    015074 2139  2145# 2183
$11$    015220 2150  2168# 2187  2190
$13$    015336 2178  2188#
$2A$    015122 2153# 2194
```

```
$2$     015106          2137    2149#
$20$    015266          2152    2177#
$21$    015300          2167    2180#
$22$    015316          2182    2184#
$23$    015350          2189    2191#
$24$    015404          2198    2200#
$25$    015366          2192    2196#
$3$     015154          2156    2159#
$4$     015162          2158    2160#   2163
$5$     015200          2161    2164#
.     = 026404           122#    123     131     133     135     137     139     141     143     145     147     149     151
                         153     155     157     159     161     163     165     167     169     171     173     175     177
                         179     181     183     185     187     189     191     193     195     197     199     201     203
                         205     207     209     211     213     215     217     219     221     223     225     227     229
                         231     233     235     237     239     241     243     245     247     249     251     253     255
                         257     259     261     263     265     267     269     271     273     275     277     279     281
                         283     285     287     289     291     293     295     297     299     301     303     305     307
                         309     311     313     315     317     319     321     323     325     327     329     331     333
                         335     337     339     341     343     345     347     349     351     353     355     357     359
                         361     363     365     367     369     371     373     375     377     379     381     386#    392#
                         552     570     586     615     636     676     704     744     772     816     843     875     909
                         932     948     967     986     1012    1026    1054    1081    1099    1116    1145    1186    1202
                        1218    1238    1254    1270    1308    1324    1344    1470    1551    1572    1593    1618    1694
                        1854    1943    2064    2080    2607#   3250#   3274#   3275#   3276#   3277#   3281#   3285#
```

```
DATERR    72#   567   583   612   633   673   701   741   769   813   840   872   906   929   945
         1078  1113  1183  1199  1215  1235  1251  1267  1305  1321  1341  1615  2061  2077
ERROR     62#   549   964   983  1009  1023  1051  1096  1142  1467  1548  1569  1590  1691  1851
         1940
HLT       82#  1475  1699  1859  1948  2258
MTPS     102#   396   481   998  1040  1677
PNTM      88#   411   414   424   432   441   445   453   459   504   520   536   683   711   751
          779   823   850  1362  1370  1373  1383  1397  1407  1438  1443  1448  1482  1485  1501
         1523  1558  1579  1600  1625  1705  1746  1861  1864  1870  1876  1882  1897  2004  2087
         2093  2099  2129  2145  2171  2238  2287  2304  2309  2322  2327  2373  2378  2386  2541
         2547  2554
REGRES   116#  2625  2636  2647  2658  2669
REGSAV   112#  2620  2631  2642  2653  2664
SCOPE     95#   557   575   591   620   641   688   716   756   784   828   855   880   918   937
          953   972   991  1018  1031  1059  1086  1104  1121  1150  1191  1207  1223  1243  1259
         1275  1313  1329  1349  1563  1584  1605  1630  2069  2105

. ABS.  026404     000


 ERRORS DETECTED:  0

 CZCMJA.BIN,CZCMJA.LST/CRF/SOL/NL:TOC=CZCMJA.P11
 RUN-TIME: 9 20 3 SECONDS
 RUN-TIME RATIO: 71/34=2.1
 CORE USED:  10K  (19 PAGES)
```