DC11

OFF-LINE DIAG TEST

MD-11-DZDCA-A

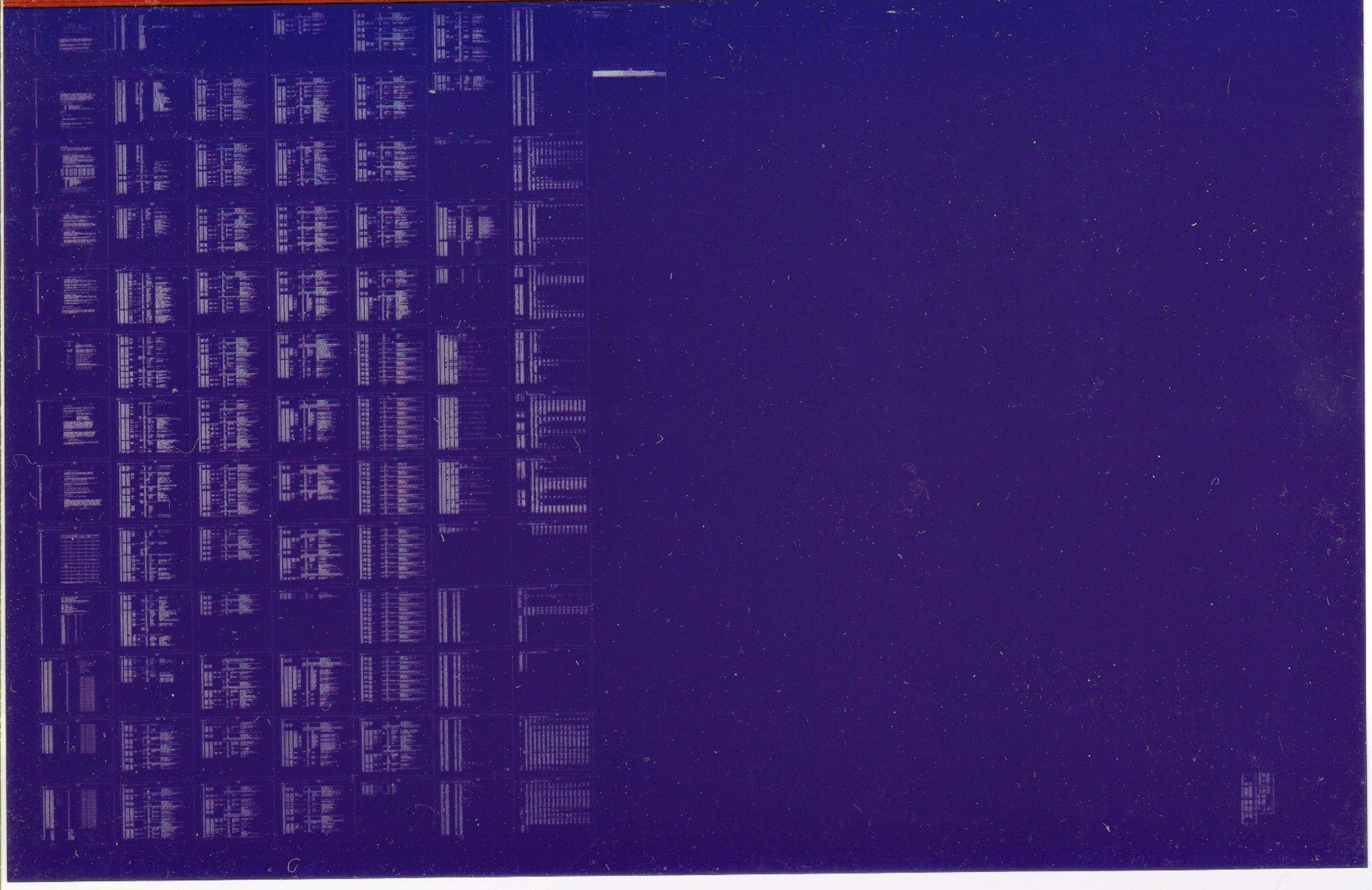
EP-DZDCA-A-DL-A

FICHE 1 OF 1

NOV 1976

digital

MADE IN USA



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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZDCA-A
PRODUCT NAME: DC11 OFF LINE DIAGNOSTIC TEST
DATE: APRIL 21,1976
MAINTAINER: DIAGNOSTIC GROUP

1. ABSTRACT

TWO SEPARATE DIAGNOSTIC PROGRAMS ARE PROVIDED FOR THE DC-11 (ASYNCRONOUS MODEM INTERFACE), MAINDEC-11-DZDCAA (DC-11 OFF LINE TESTS) AND MAINDEC-11-DZDCBA (DC-11 ON LINE TESTS). THE OFF LINE TESTS TEST ALL DC11 LOGIC AND MAY BE USED TO INDIVIDUALLY TEST UP TO 32 DC-11'S. THE OFF LINE TESTS DO NOT REQUIRE THE USE OF A MODEM, HOWEVER A SPECIAL JUMPER CONNECTOR IS REQUIRED. THE ON LINE TESTS ARE ESSENTIALLY DATA RELIABILITY TESTS RE-QUIRING THE USE OF MODEMS AND A SUITABLE TERMINAL DEVICE.

THIS DOCUMENT DESCRIBES THE OFF LINE TESTS.

THE AVAILABLE TESTS ARE:

PRG0	INPUT/OUTPUT LOGIC TESTS
PRG1	TRANSMITTER SCOPE LOOP
PRG2	RECEIVER SCOPE LOOP
PRG3	SINGLE CHARACTER MAINT. MODE DATA TEST
PRG4	SPECIAL BINARY COUNT MAINTENANCE MODE DATA TEST

2. REQUIREMENTS

2.1 EQUIPMENT

A. PDP 11/20 SYSTEM

B. DC11

C. SPECIAL JUMPER CONNECTOR (SEE DC11 MAINTENANCE MANUAL FOR DETAILED DESCRIPTION)

2.2 STORAGE

THIS PROGRAM USES ALL OF CORE (4K) EXCEPT THAT AREA RESERVED FOR THE BOOTSTRAP AND ABSOLUTE LOADERS.

3. LOADING PROCEDURE

THE ABSOLUTE LOADER IS USED TO LOAD THE PROGRAM.

4. USE PROCEDURE
BEFORE STARTING ANY OF THE SELECTABLE PROGRAMS MAKE SURE THAT THE TTY IS IN REMOTE MODE; AND THAT THE PROGRAM SELECTED IS A LEGAL PROGRAM,IE. SR 0-2=0-4,OTHERWISE PROGRAM OPERATION IS UNSPECIFIED. RELOAD PROGRAM AND START OVER.

4.1 PRGO INPUT/OUTPUT LOGIC TESTS

A. LOAD ADDRESS = 000200 (RESTART LOAD ADDR. = 000200)
LOAD SR 0-2 = 0, AND PRESS START SWITCH.
THE DIAGNOSTIC WILL IDENTIFY THE PROGAM YOU SELECTED.
'PRGO-INPUT-OUTPUT LOGIC TESTS. DISCONNECT DC11 FROM MODEM AND CONNECT JUMPER TO CABLE'
DISCONNECT THE DC11 FROM THE MODEM AND INSERT THE JUMPER CONNECTOR IN THE MODEM END OF THE CABLE,AND PRESS CONTINUE.
NOTE, IF THE CABLE IS LEFT CONNECTED TO THE MODEM THE FOLLOWING TESTS WILL FAIL:
AT5,AT34-AT42,AT44,AND AT144

B. THE PROGRAM WILL NOW REQUEST THE LINE # (A) YOU WISH TO TEST. LOAD THE LINE # AS REQUESTED AND PRESS CONTINUE.
LINE NUMBER REFERS TO THE ADDRESSES TO WHICH THE DC11 RESPONDS.

LINE 0	77400X	LINE 10	77410X	LINE 20	77420X	LINE 30	77430X
LINE 1	77401X	LINE 11	77411X	LINE 21	77421X	LINE 31	77431X
LINE 2	77402X	LINE 12	77412X	LINE 22	77422X	LINE 32	77432X
LINE 3	77403X	LINE 13	77413X	LINE 23	77423X	LINE 33	77433X
LINE 4	77404X	LINE 14	77414X	LINE 24	77424X	LINE 34	77434X
LINE 5	77405X	LINE 15	77415X	LINE 25	77425X	LINE 35	77435X
LINE 6	77406X	LINE 16	77416X	LINE 26	77426X	LINE 26	77436X
LINE 7	77407X	LINE 17	77417X	LINE 27	77427X	LINE 27	77437X

C. THE PROGRAM WILL TYPE OUT INSTRUCTIONS TO SET IN THE DESIRED SR OPTIONS. PRESS CONTINUE WHEN THE OPTIONS ARE IN THE SR.
THE AVAILABLE OPTIONS ARE:

SR 0-6	ROUTINE TO BE RUN (IF ENABLED BY SR9)
SR8	DISABLE STALL MODE
SR9	LOOP SELECTED ROUTINE
SR10	HALT AT END OF PROGRAM
SR11	INHIBIT ITERATION
SR13	INHIBIT PRINTOUT
SR14	SCOPE
SR15	HALT ON ERROR.

D. THE PROGRAM WILL NOW BEGIN TESTING THE DC11 YOU SELECTED.

E. REFER TO SECTION 5.1.2 FOR ERROR DESCRIPTION

F. AFTER ONE COMPLETE PASS PRGEND WILL BE TYPED OUT

E01

4.2 PRG1 - TRANSMITTER SCOPE LOOP

A. LOAD ADDRESS = 000200
LOAD SR 0-2 = 1, AND PRESS START SWITCH.
THE DIAGNOSYIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND REQUEST THE LINE # YOU WISH TO TEST. LOAD THE LINE # AS REQUESTED AND PRESS CONTINUE.

B.
THE PROGRAM WILL REQUEST THE DC11 LINE PARAMETERS. LOAD THE PARAMETERS AS REQUESTED AND PRESS CONTINUE.

C. THE PROGRAM WILL REQUEST A CHARACTER CODE, AND A DELAY TIME. THE CHARACTER CODE IS THE DATA THE DC11 WILL TRANSMIT AND THE DELAY IS THE TIME ELAPSED BETWEEN SUCCESSIVE TRANSMISSIONS OF ONE CHARACTER. PRESS CONTINUE WHEN THIS IS DONE.

D. THE PROGAM WILL RUN WITHOUT ERROR OR END TYPEOUTS.

4.3 PRG2 - RECEIVER SCOPE LOOP

A. LOAD ADDRESS = 000200
LOAD SR 0-2 = 2, AND PRESS START.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND REQUEST THE LINE # YOU WISH TO TEST. LOAD THE LINE # AS REQUESTED AND PRESS CONTINUE.

B. THE PROGRAM WILL REQUEST THE DC11 LINE PARAMETERS. LOAD THE PARAMETERS AS REQUESTED AND PRESS CONTINUE.

C. THE PROGRAM WILL REQUEST A TEST CHARACTER CODE, AND A DELAY TIME. THE CHARACTER CODE IS THE DATA THAT THE DC11 WILL BE TRANSMITTINGAND THE DELAY IS THE ELAPSED TIME BETWEEN SUCCESSIVE CHARACTERS. PRESS CONTINUE WHEN THIS IS DONE.

D. THE PROGRAM WILL NOW RUN WITHOUT ERROR OR END TYPEOUTS.

4.4 PRG3 - SINGLE CHARACTER MAINT MODE DATA TEST

A. LOAD ADDRESS = 000200
LOAD SR 0-2 = 3, AND PRESS START.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND REQUEST THE LINE # YOU WISH TO TEST. LOAD THE LINE # AS REQUESTED AND PRESS CONTINUE.

B. THE PROGRAM WILL REQUEST THE DC11 LINE PARAMETERS. LOAD THE PARAMETERS AS REQUESTED AND PRESS CONTINUE.

C. THE PROGRAM WILL REQUEST A TEST CHARACTER. LOAD THE TEST CHARACTER AND PRESS CONTINUE.

D. THE PROGRAM WILL NOW RUN CONTINUOSLY REPORTING ANY DATA FAILURES.

4.5 PRG4 - SPECIAL BINARY COUNT MAINT. MODE DATA TEST

A. LOAD ADDRESS = 000200
LOAD SR 0-2 = 4, AND PRESS START.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND REQUEST THE LINE # YOU WISH TO TEST. LOAD THE LINE # AS REQUESTED AND PRESS CONTINUE.

B. THE PROGRAM WILL NOW REQUEST THE DC11 LINE PARAMETERS. LOAD THE PARAMETERS AS REQUESTED AND PRESS CONTINUE.

C. THE PROGRAM WILL BEGIN TESTING THE LINE YOU SELECTED.
AND REPORT ANY DATA ERRORS.

5. PROGRAM DESCRIPTIONS

5.1 PRG0 - INPUT/OUTPUT LOGIC TESTS

THE INPUT/OUTPUT LOGIC TESTS CONSIST OF 103(8) ROUTINES WHICH MAY BE RUN IN SEQUENTIAL ORDER OR INDIVIDUALLY LOOPED (SEE SECT 4.1, C FOR SWITCH SETTINGS). THE JUMPER CONNECTOR MUST BE INSERTED BEFORE STARTING.

5.1.1 ROUTINE DESCRIPTIONS

ROUTINE	TESTS
AT0-AT3	ADDRESSABILITY OF CSRs & DBRS
AT4-AT42	DIDDLES ALL BITS IN THE CSRS AND CHECKS THAT THEY CAN BE READ/WRITTEN PROPERLY.
AT43-AT44	PROPER OPERATION OF RESET INSTRUCTION
AT45-AT51	PROPER OPERATION OF READY BIT
AT52-AT63	PROPER OPERATION OF CHAR LENGTH, SPEED CONTROL AND STOP CODE BITS.
AT64	PROPER OPERATION OF DATA OVERFLOW BIT
AT65-AT74	PROPER OPERATION OF INTERRUPTS
AT75	DATA OVERFLOW CLEARS DONE
AT76	ERROR CAUSES INTERRUPT
AT77	PROPER OPERATION OF PARITY BIT
AT100-AT137	DATA TESTS THESE TESTS TEST ALL POSSIBLE COMBINATIONS OF CHARACTER LENGTH SPEED AND STOP CODES USING MAINT. MODE.
AT140	DATA TEST HIGH SPEED 'JUMPER)
AT141	PROPER OPERATION OF BREAK BIT

5.1.2 ERROR DESCRIPTION

IF A ROUTINE FAILS AND THE INHIBIT PRINTOUT SWITCH IS NOT ENABLED (SR13) A PRINTOUT RESULTS. THE PRINTOUT FORMAT IS:

P(PROG#) T(ROUTINE#) PC=(PC OF ERROR CALL) AND AN ADDITIONAL/MESSAGE (IF APPLICABLE)

```
P00 T005 PC=XXXX        INDICATING THAT TXCSR BIT 1
                        WAS SET (SHOULD'VE BEEN CLEAR)

P00 T122 PC=XXXX        DATA ERR S/B:---WAS---
                        INDICATING A DATA ERROR
                        WHEN DC11 PARAMETERS
                        WERE SET AT CHAR LENGTH=6
                        SPEED=00, AND STOP CODE=1
```

TO RESUME TESTING PRESS CONTINUE. IF ROUTINES 65 OR 71 FAIL DUE TO A BAD TRAP VECTOR, I.E. THE VECTOR PROVIDED BY THE INTERRUPTING DC11 IS INCORRECT THE PROGRAM WILL HALT AND DISPLAY THE VECTOR+2 THAT WAS PROVIDED BY THE INTERRUPTING DC11. TO RECOVER FROM THIS TYPE OF ERROR IT WILL BE NECESSARY TO PUT INTO THE INCORRECT VECTOR ADDRESS THE ADDRESS TO RUN THE ROUTINE. I.E. ADDRESS ATAA AND AXAA FOR ROUTINES 65 AND 71 RESPECTIVELY.

5.1.3 JUMPER CONNECTOR

THE JUMPER CONNECTOR TESTS THOSE F/F'S, GATES (RING INDICATOR, CARRIER TRANSITION, CLEAR TO SEND, AND SUPERVISORY RECEIVE DATA) WHICH CANNOT BE TESTED UNLESS A DATA SET IS ACTUALLY CONNECTED TO THE DC11. IN ADDITION TO TESTING DC11 LOGIC THE JUMPER ALSO TESTS CABLE WIRING TO/FROM THE DC11/DATA SET. THE FOLLOWING TESTS WILL FAIL IF THE CABLE IS NOT INSALLED IN THE DC11:

```
AT5,AT34-AT42,AT44
AT140 WILL LOOP CONTINUOSLY
```

IF THE JUMPER IS REMOVED FROM THE END OF THE CABLE AND THE CABLE IS LEFT CONNECTED TO THE DC11 THE ABOVE TESTS WILL FAIL WITH THE PROBABLE EXCEPTIONS OF AT35 AND AT36.

5.2 PRG1-TRANSMITTER SCOPE LOOP

THE PURPOSE OF PRG1 IS TO ALLOW SCOPING OF TRANSMITTER FUNCTIONS IN A RUN CONDITION USING USER SPECIFIED DC11 PARMATERS AND DATA. NO ERROR PRINTOUTS ARE PROVIDED.

5.3 PRG2-RECEIVER SCOPE LOOP

THE PURPOSE OF PRG2 IS TO ALLOW SCOPING OF RECEIVER FUNCTIONS IN A RUN CONDITION USING USER SPECIFIED DC11 PARAMETERS AND DATA. NO ERROR PRINTOUTS ARE PROVIDED.

5.4 PRG3-SINGLE CHARACTER MAINT MODE DATA TEST

PRG3 TRANSMITS, RECEIVES AND CHECKS RECEIVED DATA USING USER SPECIFIED DC11, DC11 PARAMETERS, AND DATA.

5.4.1 ERROR PRINTOUTS

SELF EXPLANITORY ERROR PRINTOUTS ARE PROVIDED.

5.5 PRG4-SPECIAL BINARY COUNT MAINT MODE DATA TEST

PRG4 IS THE SAME AS PRG3 ROUTINE 77 AND 100 EXCEPT THAT THE USER SPECIFIES DC11 RUNNING PARAMETERS.

5.5.1 ERROR PRINTOUTS

SELF EXPLANATORY PRINTOUTS ARE PROVIDED.

6.0 POWER FAIL

A POWER FAIL ROUTINE IS INCLUDED IN THE PROGRAM. WHEN THE POWER FAILS THE PROGRAM WILL AUTOMATICALLY RESTART USING THE PRESENT SR OPTIONS AND THE LINE PREVIOUSLY SELECTED. NOTE: THE POWER MAY FAIL WHEN THE PROGRAM IS EXECUTING A 'RESET' INSTRUCTION, IN THIS CASE OPERATOR INTERVENTION IS NEEDED TO PRESS CONTINUE. AN ERROR TYPEOUT RESULTS AND WILL TYPE THE PROGRAM #, THE ROUTINE THAT WAS RUNNING AT THE TIME THE POWER FAILED (PROGRAM 0 ONLY), AND THE PC OF THE POWER FAIL ERROR CALL.

P(PRG#) T(ROUTINE #) PC = (ADDRESS OF ERROR CALL)

```

                                DC11 DATA

********************************************************************
  LINE #  *  UNIT# * RXCSR ADRS. *   FREQS.    * TELEPHONE  *  REMARKS
(CUST ID) *(DEC ID)* RX VECTOR   *  AVAILABLE  *  NUMBER    *
********************************************************************
          *        *             *             *            *
          *        *             *             *            *
          *        *             *             *            *
********************************************************************
          *        *             *             *            *
          *        *             *             *            *
          *        *             *             *            *
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          *        *             *             *            *
          *        *             *             *            *
          *        *             *             *            *
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          *        *             *             *            *
          *        *             *             *            *
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          *        *             *             *            *
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          *        *             *             *            *
          *        *             *             *            *
          *        *             *             *            *
********************************************************************
          *        *             *             *            *
          *        *             *             *            *
          *        *             *             *            *
********************************************************************%
;DC11 DIAGNOSTIC PROGRAM (OFF LINE TESTS)
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```
                        ;COPYRIGHT 197., DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
                        ;PRG0- INPUT-OUTPUT LOGIC TESTS
                        ;PRG1- TRANSMITTER SCOPE LOOP
                        ;PRG2- RECEIVER SCOPE LOOP
                        ;PRG3- SINGLE CHARACTER MAINTENANCE MODE DATA TEST
                        ;PRG4- SPECIAL BINARY COUNT MAINTENANCE MODE DATA TEST
                        ;STANDARD SR SWITCH OPTIONS (SWITCH SET TO A 1 )
                        ;
                        ;SR15- HALT ON ERROR
                        ;SR14- SCOPE.
                        ;SR13- INHIBIT PRINTOUT
                        ;SR12- INHIBIT TRACE
                        ;SR11- INHIBIT ITERATION.
                        ;SR10- HALT  AT END OF PROGRAM
                        ;SR9- SELECT ROUTINE.
                        ;SR8- DISABLE STALL MODE AND RUN FULL SPEED.
                        ;SR6 THROUGH SR0 - NUMBER OF ROUTINE TO BE SELECTED.
                        ;DATA TEST PARAMETERS

                        ;        CHAR LENGTH     SPEED   STOP CODE
                        ;NOTE0       9             00        2
                        ;NOTE1       7             00        2
                        ;NOTE2       6             00        2
                        ;NOTE3       5             00        2
                        ;NOTE4       8             01        2
                        ;NOTE5       7             01        2
                        ;NOTE6       6             01        2
                        ;NOTE7       5             01        2
                        ;NOTE10      8             10        2
                        ;NOTE11      7             10        2
                        ;NOTE12      6             10        2
                        ;NOTE13      5             10        2
                        ;NOTE14      8             11        2
                        ;NOTE15      7             11        2
                        ;NOTE16      6             11        2
                        ;NOTE17      5             11        2
                        ;NOTE20      8             00        1
                        ;NOTE21      7             00        1
                        ;NOTE22      6             00        1
                        ;NOTE23      5             00        1
                        ;NOTE24      8             01        1
                        ;NOTE25      7             01        1
                        ;NOTE26      6             01        1
                        ;NOTE27      5             01        1
                        ;NOTE30      8             10        1
                        ;NOTE31      7             10        1
                        ;NOTE32      6             10        1
                        ;NOTE33      5             10        1
                        ;NOTE34      8             11        1
                        ;NOTE35      7             11        1
                        ;NOTE36      6             11        1
                        ;NOTE37      5             11        1
```

```
  459            000000                          .=0
  460  000000    000002                          .+2                     ;UNASSIGNED TRAP
  461  000002    000000                          HALT
  462  000004    000006                MACHER:   .+2                     ;SP OVERFLOW, BUS ERROR TRAP
  463  000006    000000                          HALT
  464  000010    000012                          .+2                     ;RESERVED INSTRUCTION TRAP
  465  000012    000000                          HALT
  466  000014    000016                          .+2                     ;TRACE TRAP
  467  000016    000000                          HALT
  468  000020    000022                          .+2                     ;TRAP TO CALL IOX
  469  000022    000002                          2
  470  000024    000026                          .+2                     ;POWER FAIL TRAP
  471  000026    000000                          HALT
  472  000030    002105                          EMTINT                  ;EMT TRAP
  473  000032    000340                          PRTY7
  474  000034    000036                          .+2
  475  000036    000000                          HALT
  476  000040    000042                          .+2
  477  000042    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  478  000044    000046                          .+2
  479  000046    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  480  000050    000052                          .+2
  481  000052    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  482  000054    000056                          .+2
  483  000056    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  484  000060    000062                          .+2
  485  000062    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  486  000064    000066                          .+2
  487  000066    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  488  000070    000072                          .+2
  489  000072    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  490  000074    000076                          .+2
  491  000076    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  492  000100    000102                          .+2
  493  000102    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  494  000104    000106                          .+2
  495  000106    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  496  000110    000112                          .+2
  497  000112    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  498  000114    000116                          .+2
  499  000116    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  500  000120    000122                          .+2
  501  000122    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  502  000124    000126                          .+2
  503  000126    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  504  000130    000132                          .+2
  505  000132    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  506  000134    000136                          .+2
  507  000136    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  508  000140    000142                          .+2
  509  000142    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  510  000144    000146                          .+2
  511  000146    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  512  000150    000152                          .+2
  513  000152    000000                          HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  514  000154    000156                          .+2
```

```
   515  000156  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   516  000160  000162                    .+2
   517  000162  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   518  000164  000166                    .+2
   519  000166  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   520  000170  000172                    .+2
   521  000172  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   522  000174  000176                    .+2
   523  000176  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   524  000200  000202                    .+2
   525  000202  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   526  000204  000206                    .+2
   527  000206  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   528  000210  000212                    .+2
   529  000212  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   530  000214  000216                    .+2
   531  000216  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   532  000220  000222                    .+2
   533  000222  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS
   534  000224  000226                    .+2
   535  000226  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   536  000230  000232                    .+2
   537  000232  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   538  000234  000236                    .+2
   539  000236  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   540  000240  000242                    .+2
   541  000242  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   542  000244  000246                    .+2
   543  000246  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   544  000250  000252                    .+2
   545  000252  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
```

```
546
547  000254  000256                    .+2
548  000256  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
549  000260  000262                    .+2
550  000262  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
551  000264  000266                    .+2
552  000266  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
553  000270  000272                    .+2
554  000272  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
555  000274  000276                    .+2
556  000276  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
557  000300  000302                    .+2
558  000302  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
559  000304  000306                    .+2
560  000306  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
561  000310  000312                    .+2
562  000312  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
563  000314  000316                    .+2
564  000316  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
565  000320  000322                    .+2
566  000322  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
567  000324  000326                    .+2
568  000326  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
569  000330  000332                    .+2
570  000332  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
571  000334  000336                    .+2
572  000336  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
573  000340  000342                    .+2
574  000342  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
575  000344  000346                    .+2
576  000346  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
577  000350  000352                    .+2
578  000352  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
579  000354  000356                    .+2
580  000356  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
581  000360  000362                    .+2
582  000362  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
583  000364  000366                    .+2
584  000366  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
585  000370  000372                    .+2
586  000372  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
587  000374  000376                    .+2
588  000376  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
589
590
591             177570          ;EQUATE STATEMENTS
592             177776                  SR=177570
593             177776                  CC=177776
594             001076                  PSW=177776
595             000240                  SPBOT=1076
596             000000                  NOP=240
597             100000                  OPEN=0
598             100000                  MANUAL=BIT15
599             040000                  BIT15=100000
600             020000                  BIT14=40000
601             010000                  BIT13=20000
                                        BIT12=10000
```

```
                000400          BIT11=4000
                002000          BIT10=2000
                001000          BIT9=1000
                000400          BIT8=400
                000200          BIT7=200
                000100          BIT6=100
                000040          BIT5=40
                000020          BIT4=20
                000010          BIT3=10
                000004          BIT2=4
                000002          BIT1=2
                000001          BIT0=1
                005726          POPSP=5726              ;POP THE STACK. SAME AS TST (6)+
                022626          POPSP2=022626           ;POP STACK TWICE. SAME AS CMP (6)+,(6)+
                000340          PRTY7=340               ;PRIORITY LEVEL DEFINITIONS
                000300          PRTY6=300
                000240          PRTY5=240
                000200          PRTY4=200
                000140          PRTY3=140
                000100          PRTY2=100
                000040          PRTY1=40
                000000          PRTY0=0
                104000          TYPE=EMT+0
                104001          TYPES=EMT+1
                104002          STALL=EMT+2
                104003          ERROR=EMT+3
                104004          DATCHK=EMT+4
                104005          CHALT=EMT+5
                104006          STRXV=EMT+6
                104007          STTXV=EMT+7
                104010          EHALT=EMT+10
                104011          SRESET=EMT+11
                104012          SCOPE=EMT+12
                104013          SAVREG=EMT+13
                104014          RSTREG=EMT+14
                104015          ERROR1=EMT+15
                104016          DELAY=EMT+16
                000007          BELL=007
                177777          ATLAST=-1
```

```
                    000200
000200  000167  001356                    JMP     START           ;GO TO START OF PROGRAM.
                    001100
001100  174000                  RXCSR:    174000                  ;RECEIVER CSR
001102  174002                  RXBUF:    174002                  ;RECEIVER BUFFER
001104  174004                  TXCSR:    174004                  ;TRANSMITTER CSR
001106  174006                  TXBUF:    174006                  ;TRANSMITTER BUFFER
001110  000000                  RXVTR:    OPEN                    ;RECEIVER VECTOR
001112  000240                  RXLVL:    PRTY5                   ;RECEIVER PRIORITY LEVEL
001114  000304                  TXVTR:    304                     ;TRANSMITTER VECTOR
001116  000240                  TXLVL:    PRTY5                   ;TRANSMITTER PRIORITY LEVEL
001120  177560                  TKS:      177560                  ;LSR CSR
001122  177562                  TKB:      177562                  ;LSR BUFFER
001124  177564                  TPS:      177564                  ;LSP CSR
001126  177566                  TPB:      177566                  ;LSP BUFFER
001130  000060                  TKVTR:    60                      ;LSR INTERRUPT VECTOR
001132  000200                  TKLVL:    PRTY4                   ;LSR PRIORITY LEVEL
001134  000064                  TPVTR:    64                      ;LSP INTERRUPT VECTOR
001136  000200                  TPLVL:    PRTY4                   ;LSP PRIORITY LEVEL
001140  000000                  PRGNUM:   OPEN                    ;CONTAINS CURRENT PROGRAM#
001142  000000                  KSTART:   OPEN                    ;CURRENT PROGRM START ADDRESS.
001144  000000                  CURTST:   OPEN                    ;CONTAINS ADDR OF CURRENT TEST.
001146  000000                  RTNNO:    OPEN                    ;CONTAINS CURRENT TEST #.
001150  000000                  NXTST:    OPEN                    ;CONTAINS ADDR OF NEXT TEST.
001152  000000                  ICTR:     OPEN                    ;CONTAINS CURRENT ITERATION COUNT
001154  000000                  SCOPTR:   OPEN                    ;CONTAINS CURRENT SCOPE POINTER.
001156  003654                  PRGTAB:   PRG0                    ;PRG0 START ADDRESS
001160  014342                            PRG1                    ;PRG1 START ADDRESS
001162  014406                            PRG2                    ;PRG2 START ADDRESS
001164  014502                            PRG3                    ;PRG3 START ADDRESS
001166  014540                            PRG4                    ;PRG4 START ADDRESS
001170  002410                  EMTTAB:   TYP                     ;POINTER TO TYPEOUT ROUTINE
001172  002532                            TYPS                    ;POINTER TO CHAINED MESSAGES ROUTINE
001174  002664                            STAL                    ;POINTER TO RANDOM STALL ROUTINE
001176  001406                            ERR                     ;POINTER TO ERROR ROUTINE
001200  001344                            DTCHK
001202  000000                            OPEN
001204  002240                            STLSRV
001206  002270                            STLSPV
001210  001332                            EHLT                    ;POINTER TO ERROR HALT ROUTINE.
001212  002320                            SRSETT
001214  001752                            CHAINN
001216  002140                            SAVRG
001220  002200                            RSTRG
001222  001430                            ERR1
001224  002616                            DLY
```

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                                                RCNT:   OPEN
                                                CRBUF:  OPEN
                                                CRBUFA: OPEN
                                                CARMSK: OPEN
                                                CHR1:   OPEN
                                                CHR2:   OPEN
                                                CHR3:   OPEN
                                                ERCTR:  OPEN
                                                CTRA:   OPEN
                                                CTRB:   OPEN
                                                CTRC:   OPEN
                                                CTRD:   OPEN
                                                TXCSRT: OPEN
                                                RXCSRT: OPEN
                                                RXBUFT: OPEN
                                                TEMP:   OPEN
                                                SRT:    OPEN
                                                STLMSK: 177740
001272  104000                          SETSR:  TYPE                    ;TYPE SELECT OPTION MESSAGE.
001274  016353                                  ASETSR
001276  000000                                  HALT                    ;COMMON HALT.
001300  000207                                  RTS     %7              ;EXIT.
001302  104000                          INCRTN: TYPE                    ;TYPE INCORRECT ROUTINE SELECTED.
001304  016451                                  AINCRT
001306  000000                                  HALT                    ;COMMON HALT.
001310  000207                                  RTS     %7              ;EXIT.
001312  104000                          PRGEND: TYPE                    ;TYPE PROGRAM END.
001314  016506                                  APGEND
001316  032767  002000  176244                  BIT     #BIT10,SR       ;TEST END OF PROGRAM HALT OPTION
001324  001401                                  BEQ     .+4             ;BRANCH IF NOT SELECTED
001326  000000                                  HALT
001330  000207                                  RTS     %7              ;EXIT.

                                        ;CONDITIONAL ERROR HALT ROUTINE.
001332  005767  176232                  EHLT:   TST     SR              ;CHECK FOR HALT ON ERROR.
001336  100001                                  BPL     EHLTA           ;BRANCH IF NO HALT DESIRED.
001340  000000                                  HALT                    ;HALT.
001342  000002                          EHLTA:  RTI                     ;IN DATA LIGHTS.

                                        ;DATA CHECK ROUTINE.
001344  026767  177660  177660          DTCHK:  CMP     CRBUF,CRBUFA    ;COMPARE EXPECTED AND RECEIVED
001352  001414                                  BEQ     DTCHKA          ;CHARS. BRANCH IF SAME.
001354  004567  001652                          JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
001360  001230                                  CRBUF                   ;SOURCE ADDR.
001362  016344                                  AWAS                    ;DESTINATION ADDR.
001364  000003                                  3                       ;#OF DIGITS TO CONVERT.
001366  004567  001640                          JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
001372  001232                                  CRBUFA                  ;SOURCE ADDR.
001374  016332                                  AASB                    ;DESTINATION ADDR.
001376  000003                                  3                       ;#OF DIGITS TO CONVERT.
001400  104015                                  ERROR1
001402  016311                                  ERDAT
001404  000002                          DTCHKA: RTI                     ; EXIT.
```

```
   747  001406  012767  177777  000126  ERR:    MOV     #-1,ERRB        ;SET UP ONE MESSAGE CALL.
   748  001414  012767  000240  000122          MOV     #240,ERRB+2
   749  001422  005067  000132                  CLR     ERRE
   750  001426  000413                          BR      ERRA
   751  001430  011667  000106          ERR1:   MOV     @%6,ERRB        ;DEVELOP ADDT'L MESSAGE ADDR.
   752  001434  017767  000102  000100          MOV     @ERRB,ERRB      ;STORE AT ERRB.
   753  001442  012767  177777  000074          MOV     #-1,ERRB+2
   754  001450  012767  000002  000102          MOV     #2,ERRE
   755  001456  032767  020000  176104  ERRA:   BIT     #BIT13,SR       ;INHIBIT ERROR PRINT?
   756  001464  001030                          BNE     ERRC            ;BRANCH TO INHIBIT PRINT.
   757  001466  011667  000064                  MOV     @%6,ERRD        ;DEVELOP CALLING ADDR.
   758  001472  162767  000002  000056          SUB     #2,ERRD
   759  001500  004567  001526                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
   760  001504  001556                          ERRD                    ;SOURCE ADDR.
   761  001506  015220                          APC                     ;DESTINATION ADDR.
   762  001510  000006                          6                       ;#OF DIGITS TO CONVERT.
   763  001512  004567  001514                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
   764  001516  001140                          PRGNUM                  ;SOURCE ADDR.
   765  001520  015203                          APNUMB                  ;DESTINATION ADDR.
   766  001522  000002                          2                       ;#OF DIGITS TO CONVERT.
   767  001524  004567  001502                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
   768  001530  001146                          RTNNO                   ;SOURCE ADDR.
   769  001532  015211                          RTNUMB                  ;DESTINATION ADDR.
   770  001534  000003                          3                       ;#OF DIGITS TO CONVERT.
   771  001536  104001                          TYPES                   ;TYPE:
   772  001540  015200                          EMD                     ;ERROR HEADER,
   773  001542  000000          ERRB:   OPEN                            ;ADDT'L ERROR MESSAGE IF ANY.
   774  001544  177777                          -1
   775  001546  104010          ERRC:   EHALT                           ;GO ERR HALT IF DESIRED.
   776  001550  066716  000004                  ADD     ERRE,@%6
   777  001554  000002                          RTI                     ;EXIT.
   778  001556  000000          ERRD:   OPEN
   779  001560  000000          ERRE:   OPEN
```

```
 780
 781  001562  012706  001076          START:  MOV     #SPBOT,%6       ;SET BOTTOM OF SP STACK.
 782  001566  005067  176204                  CLR     PSW
 783  001572  012767  000006  176204          MOV     #6,MACHER
 784  001600  005067  177342                  CLR     RTNNO
 785  001604  016700  175760                  MOV     SR,%0           ;(SR) TO R0
 786  001610  042700  177770                  BIC     #177770,%0      ;LIMIT (SR) TO BITS 3-0
 787  001614  010067  177320                  MOV     %0,PRGNUM       ;SAVE PROGRAM #
 788  001620  006300                          ASL     %0
 789  001622  012767  003576  176174          MOV     #PFAIL,24
 790  001630  012767  000340  176170          MOV     #PRTY7,26
 791  001636  000170  001156                  JMP     @PRGTAB(0)      ;GO TO SELECTED PROGRAM.
 792  001642  016767  177274  177300  GETRDY: MOV     KSTART,NXTST    ;ADDR OF 1ST ROUTINE TO NXTST
 793  001650  012767  000006  176126  GTRDYX: MOV     #6,MACHER       ;RESET MACHER TRAP.
 794  001656  005067  176114                  CLR     PSW
 795  001662  012706  001076                  MOV     #SPBOT,%6       ;SET BOTTOM OF STACK.
 796  001666  104011                          RESET                   ;ISSUE RESET.
 797  001670  004767  000142          GTRDYA: JSR     %7,FORWD        ;ROLL FORWARD TO "NEXT" ROUTINE.
 798  001674  032767  001000  175666  GTRDYB: BIT     #BIT9,SR        ;CHECK SELECT ROUTINE SWITCH
 799  001702  001003                          BNE     GTRDYC          ;BRANCH IF SELECT ROUTINE SWITCH IS SET.
 800  001704  000177  177234                  JMP     @CURTST         ;GO RUN CURRENT ROUTINE.
 801  001710  000437                          BR      CHNB            ;NO GO. MANUAL RTN BYPASSED.
 802  001712  016700  175652          GTRDYC: MOV     SR,%0           ;(SR) TO R0
 803  001716  042700  177600                  BIC     #177600,%0      ;MASK UNDESIRED BITS
 804  001722  126700  177220                  CMPB    RTNNO,%0        ;COMPARE RTNNO TO (R0)
 805  001726  001002                          BNE     GTRDYD          ;BRANCH IF ROUTINE NOT FOUND YET.
 806  001730  000177  177210                  JMP     @CURTST         ;GO RUN ROUTINE.
 807  001734  022767  177777  177206  GTRDYD: CMP     #-1,NXTST       ;NO. CHECK FOR LAST ROUTINE.
 808  001742  001352                          BNE     GTRDYA          ;BRANCH IF NOT LAST ROUTINE.
 809  001744  004767  177332                  JSR     %7,INCRTN       ;YES. INCORRECT ROUTINE SELECTED.
 810  001750  000734                          BR      GETRDY          ;START OVER.
 811  001752  032767  040000  175610  CHAINN: BIT     #BIT14,SR       ;CHECK FOR SCOPE OPTION.
 812  001760  001403                          BEQ     CHNA            ;BRANCH IF SCOPE SW NOT SET.
 813  001762  016716  177166          CHNAB:  MOV     SCOPTR,@%6      ;SET UP TO RETURN TO ROUTINE.
 814  001766  000002                          RTI                     ;RETURN TO ROUTINE.
 815  001770  032767  004000  175572  CHNA:   BIT     #BIT11,SR       ;TEST INHIBIT ITERATION SWITCH
 816  001776  001003                          BNE     CHNAA           ;BRANCH IF INHIBIT ITERATION SW SET.
 817  002000  005367  177146                  DEC     ICTR            ;DECREMENT ITERATION COUNT.
 818  002004  001366                          BNE     CHNAB           ;BRANCH IF COUNT NOT 0.
 819  002006  022626                  CHNAA:  POPSP2                  ;POP STACK TWICE
 820
 821  002010  032767  001000  175552  CHNB:   BIT     #BIT9,SR        ;CHECK SELECT ROUTINE SWITCH
 822  002016  001311                          BNE     GETRDY          ;BRANCH IF SELECT RTN SW SET
 823  002020  022767  177777  177122          CMP     #-1,NXTST       ;LAST TEST?
 824  002026  001310                          BNE     GTRDYX          ;BRANCH IF NOT LAST TEST.
 825  002030  004767  177256                  JSR     %7,PRGEND       ;PROGRAM END.
 826  002034  000702                          BR      GETRDY
 827  002036  016705  177106          FORWD:  MOV     NXTST,%5        ;ADDR OF NEXT ROUTINE TO R5.
 828  002042  012567  177100                  MOV     (5)+,RTNNO      ;GET NEXT ROUTINE NUMBER.
 829  002046  012567  177076                  MOV     (5)+,NXTST      ;GET ADDR OF NEXT "NEXT" ROUTINE.
 830  002052  012567  177074                  MOV     (5)+,ICTR       ;GET ITERATION COUNT.
 831  002056  012567  177072                  MOV     (5)+,SCOPTR     ;GET SCOPE LOOP ENTRY POINTER.
 832  002062  010567  177056          FORWDA: MOV     %5,CURTST       ;ADDR OF NOW CURRENT TEST TO CURTST.
 833  002066  000207                          RTS     %7              ;EXIT FORWD SUBROUTINE.
 834  002070  012767  177777  177056  FORWDB: MOV     #-1,SCOPTR      ;FORCE "NO SCOPE"
 835  002076  012767  000001  177046          MOV     #1,ICTR         ;FORCE I COUNT OF 1
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  836  002104  000766                        BR      FORWDA
  837  002106  011646                EMTINT: MOV     @%6,-(6)        ;GET SAVED PC.
  838  002110  162716  000002                SUB     #2,@%6          ;DECREMENT PC BY 2.
  839  002114  017616  000000                MOV     @(6),@%6
  840  002120  006316                EMTA:   ASL     @%6             ;EMT ARG X 2.
  841  002122  042716  177001                BIC     #177001,@%6     ;REMOVE 7 MSB.
  842  002126  062716  001170                ADD     #EMTTAB,@%6     ;FORM EMT RTN ADDR.
  843  002132  017616  000000                MOV     @(6),@%6
  844  002136  000136                        JMP     @(6)+           ;GO TO EMT ROUTINE.
  845
  846                                ;SAVE REGS 0 TO 4 SUBROUTINE.
  847  002140  012667  000030        SAVRG:  MOV     (6)+,SVRPC      ;SAVE PC AND PSW.
  848  002144  012667  000026                MOV     (6)+,SVRPSW
  849  002150  010446                        MOV     %4,-(6)         ;SAVE REGS 0 - 4
  850  002152  010346                        MOV     %3,-(6)         ;IN STACK.
  851  002154  010246                        MOV     %2,-(6)
  852  002156  010146                        MOV     %1,-(6)
  853  002160  010046                        MOV     %0,-(6)
  854  002162  016746  000010                MOV     SVRPSW,-(6)     ;RESTORE PC AND PSW.
  855  002166  016746  000002                MOV     SVRPC,-(6)
  856  002172  000002                        RTI                     ;EXIT.
  857  002174  000000                SVRPC:  OPEN
  858  002176  000000                SVRPSW: OPEN
  859                                ;RESTORE REGS 0 TO 4 SUBROUTINE.
  860  002200  012667  000030        RSTRG:  MOV     (6)+,RSTPC      ;SAVE PC AND PSW.
  861  002204  012667  000026                MOV     (6)+,RSTPSW
  862  002210  012600                        MOV     (6)+,%0         ;RESTORE REGS 0 - 4
  863  002212  012601                        MOV     (6)+,%1         ;FROM STACK.
  864  002214  012602                        MOV     (6)+,%2
  865  002216  012603                        MOV     (6)+,%3
  866  002220  012604                        MOV     (6)+,%4
  867
  868  002222  016746  000010                MOV     RSTPSW,-(6)     ;RESTORE PC AND PSW.
  869  002226  016746  000002                MOV     RSTPC,-(6)
  870  002232  000002                        RTI                     ;EXIT
  871  002234  000000                RSTPC:  OPEN
  872  002236  000000                RSTPSW: OPEN
  873                                ;ROUTINE TO SET RECEIVER INTERRUPT VECTOR AND PRIORITY
  874  002240  017667  000000 000012 STLSRV: MOV     @(6),STPRA+2    ;MOVE VECTOR ADDR TO STPRA+2
  875  002246  062716  000002                ADD     #2,@%6          ;SET UP EXIT
  876  002252  016701  176632                MOV     RXVTR,%1
  877  002256  012721  000000        STPRA:  MOV     #OPEN,(1)+      ;SET VECTOR ADDRESS
  878  002262  016721  176624                MOV     RXLVL,(1)+      ;SET PRIORITY
  879  002266  000002                        RTI                     ;EXIT
  880                                ;ROUTINE TO SET TRANSMITTER INTERRUPT VECTOR AND PRIORITY.
  881  002270  017667  000000 000012 STLSPV: MOV     @(6),STPPA+2    ;MOVE VECTOR ADDR TO STPPA+2
  882  002276  062716  000002                ADD     #2,@%6          ;SET UP EXIT
  883  002302  016701  176606                MOV     TXVTR,%1
  884  002306  012721  000000        STPPA:  MOV     #OPEN,(1)+      ;SET VECTOR ADDRESS.
  885  002312  016721  176600                MOV     TXLVL,(1)+      ;SET PRIORITY
  886  002316  000002                        RTI                     ;EXIT.
  887                                ;ROUTINE TO ISSUE RESET.
  888  002320  012700  052525        SRSETT: MOV     #52525,%0               ;DATA TO R0.
  889  002324  005100                        COM     %0              ;COMPLEMENT (R0).
  890  002326  010067  177770                MOV     %0,SRSETT+2     ;(R0) TO SRSETT+2.
  891  002332  000005                        RESET                   ;ISSUE RESET. (R0) IS
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                                        RTI                     ;DISPLAYED. EXIT.

                                ;RANDOM NUMBER GENERATOR. ROUTINE EXITS WITH NUMBER IN REGISTER 0.
002336  016700  000042          RNGEN:  MOV     RP1,%0
002342  006100                          ROL     %0
002344  006100                          ROL     %0
002346  066700  000034                  ADD     RP2,%0
002352  010067  000026                  MOV     %0,RP1
002356  006100                          ROL     %0
002360  006100                          ROL     %0
002362  066700  000020                  ADD     RP2,%0
002366  006100                          ROL     %0
002370  006100                          ROL     %0
002372  010067  000010                  MOV     %0,RP2
002376  016700  000002                  MOV     RP1,%0
002402  000207                          RTS     %7              ;EXIT. NUMBER IN R0
002404  001233                  RP1:    1233
002406  007622                  RP2:    7622
                                ;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.
002410  011600                  TYP:    MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS.
002412  062716  000002                  ADD     #2,@%6          ;SET UP EXIT.
002416  011000                          MOV     @%0,%0          ;ADDRESS OF MESSAGE TO R0.
002420  112067  000104          TYPA:   MOVB    (0)+,TYPDAT     ;GET CHARACTER
002424  122767  000100  000076          CMPB    #100,TYPDAT     ;CHECK FOR"@"CHARACTER
002432  001001                          BNE     TYPC            ;BRANCH IF NOT"@".
002434  000002                          RTI                     ;TERMINATOR CHAR. DONE. EXIT.
002436  122767  000045  000064  TYPC:   CMPB    #45,TYPDAT      ;CHECK FOR"%".
002444  001416                          BEQ     TYPF            ;BRANCH IF"%"
002446  122767  000043  000054          CMPB    #43,TYPDAT      ;NOT"%".CHECK FOR"#".
002454  001417                          BEQ     TYPG            ;BRANCH IF "#"
002456  004767  000002                  JSR     %7,TYPD         ;TYPE CHAR IN TYPDAT
002462  000756                          BR      TYPA
002464  116777  000040  176434  TYPD:   MOVB    TYPDAT,@TPB     ;OUTPUT CHARACTER TO PRINTER
002472  105777  176426                  TSTB    @TPS            ;WAIT FOR DONE FLAG.
002476  100375                          BPL     .-4
002500  000207                          RTS     %7              ;EXIT
002502  112767  000015  000020  TYPF:   MOVB    #15,TYPDAT      ;MOVE CARRIAGE RETURN CODE TO TYPDAT
002510  004767  177750                  JSR     %7,TYPD         ;GO TYPE CHAR.
002514  112767  000012  000006  TYPG:   MOVB    #12,TYPDAT      ;MOVE LF CODE TO TYPDAT.
002522  004767  177736                  JSR     %7,TYPD         ;GO TYPE CHAR.
002526  000734                          BR      TYPA
002530  000000                  TYPDAT: OPEN
                                ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER
002532  011600                  TYPS:   MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
002534  062716  000002                  ADD     #2,@%6          ;UPDATE TO NEXT MESSAGE ADDRESS
002540  011067  000014                  MOV     @%0,TYPSB       ;ADDRESS OF MESSAGE TO TYPSB
002544  022767  177777  000006          CMP     #-1,TYPSB       ;CHECK FOR TERMINATOR
002552  001001                          BNE     TYPSA           ;BRANCH IF NOT TERMINATOR.
002554  000002                          RTI                     ;TERMINATOR, EXIT
002556  104000                  TYPSA:  TYPE                    ;CALL ON TYP SUB TO TYPE MESSAGE
002560  000000                  TYPSB:  OPEN                    ;ADDRESS OF MESSAGE GOES HERE
002562  000763                          BR      TYPS            ;GO PROCESS NEXT MESSAGE

002564  012701  000300          OVRLAY: MOV     #300,%1         ;GET DC11 VECTOR BASE ADDRESS
002570  012702  000302                  MOV     #302,%2         ;GET NEXT ADDRESS
002574  010221                  OVRLYA: MOV     %2,(1)+         ;LOAD VECTOR WITH ADDRESS OF NEXT ADDRESS
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  948  002576  005021                        CLR     (1)+            ;PUT A HALT IN THE NEXT ADDRESS
  949  002600  020267  176174                CMP     %2,1000         ;ALL VECTORS BEEN LOADED
  950  002604  001403                        BEQ     OVRLYB
  951  002606  062702  000004                ADD     #4,%2           ;GET NEXT VECTOR ADDRESS
  952  002612  000770                        BR      OVRLYA
  953  002614  000207              OVRLYB:   RTS     7               ;EXIT
  954
  955                                        ;SUBROUTINE TO DELAY A SPECIFIED NUMBER OF MILLISECONDS
  956  002616  011667  000040      DLY:      MOV     @%6,DLCNT       ;GET DELAY COUNT ADDRESS.
  957  002622  062716  000002                ADD     #2,@%6          ;SET UP EXIT ADDRESS
  958  002626  017746  000030                MOV     @DLCNT,-(6)     ;DELAY COUNT TO STACK
  959  002632  001411                        BEQ     DLYC
  960  002634  005067  175136                CLR     PSW             ;SET PRIORITY 0
  961  002640  012746  000554      DLYA:     MOV     #554.,-(6)      ;1 MSEC COUNT TO STACK
  962  002644  005316              DLYB:     DEC     @%6             ;DECREMENT 1 MSEC COUNT
  963  002646  001376                        BNE     DLYB            ;BRANCH IF NOT 0.
  964  002650  005726                        POPSP                   ;ZERO. UNCOVER MSECS. COUNT.
  965  002652  005316                        DEC     @%6             ;DECREMENT IT
  966  002654  001371                        BNE     DLYA            ;BR IF NOT DONE DELAYING
  967  002656  005726              DLYC:     POPSP                   ;DONE
  968  002660  000002                        R..                     ;EXIT.
  969  002662  000000              DLCNT:    OPEN                    ;CONTAINS MILLISECONDS COUNT ADDRESS.
  970                                        ;SUBROUTINE TO STALL A RANDOM NUMBER OF MILLISECONDS. MAXIMUM STALL
  971                                        ;DETERMINED BY CONTENTS OF LOC STLMSK.
  972  002664  004767  177446      STAL:     JSR     %7,RNGEN        ;GO GET RANDOM NUMBER.
  973  002670  046700  176374                BIC     STLMSK,%0       ;# IN R0. APPLY STALL MASK.
  974  002674  001404                        BEQ     STALB           ;BRANCH IF RESULT IS 0.
  975  002676  010067  000002                MOV     %0,STALA
  976  002702  104016                        DELAY                   ;DELAY
  977  002704  000000              STALA:    OPEN                    ;DELAY COUNT
  978  002706  000002              STALB:    RTI                     ;DONE. EXIT.
  979                                        ;SUBROUTINE TO GENERATE RANDOM CHARACTER COUNT
  980  002710  004767  177[illegible]  GRCNT:  JSR     %7,RNGEN        ;GET RANDOM NUMBER
  981  002714  046700  000010                BIC     RCMSK,%0        ;APPLY MASK
  982  002720  001773                        BEQ     GRCNT           ;TRY AGAIN IF RESULT 0
  983  002722  010067  000034                MOV     %0,RNCNT        ;COUNT TO RNCNT
  984  002726  000207                        RTS     %7              ;EXIT.
  985  002730  000000              RCMSK:    OPEN                    ;RANDOM CHARACTER MASK.
  986  002732  000000              RNCNT:    OPEN                    ;RANDOM CHARACTER COUNT.
  987                                        ;SUBROUTINE TO SELECT LINE AND
  988  002734  104000              LINSEL:   TYPE
  989  002736  016730                        LDLINE
  990  002740  000000                        HALT
  991  002742  016701  174622                MOV     SR,%1
  992  002746  042701  177407                BIC     #177407,%1
  993  002752  010167  176306                MOV     %1,TEMP
  994  002756  012702  000770                MOV     #770,%2
  995  002762  012703  001100                MOV     #RXCSR,%3
  996  002766  012704  000004                MOV     #4,%4
  997  002772  040213                        BIC     %2,(3)
  998  002774  050123                        BIS     %1,(3)+
  999  002776  005304                        DEC     %4
 1000  003000  001374                        BNE     .-6
 1001  003002  006201                        ASR     %1              ;POSITION SELECTED LINE
 1002  003004  006201                        ASR     %1              ;
 1003  003006  016101  015100                MOV     VECTAB(1),%1    ;GET LINE VECTOR ADDRESS
```

```
 1004  003012  010167  176072                 MOV     %1,RXVTR        ;LOAD INTO PROGRAM RXVTR
 1005  003016  022121                         CMP     (1)+,(1)+       ;ADD +4
 1006  003020  010167  176070                 MOV     %1,TXVTR        ;LOAD INTO PROGRAM TXVTR
 1007  003024  006267  176234                 ASR     TEMP
 1008  003030  006267  176230                 ASR     TEMP
 1009  003034  006267  176224                 ASR     TEMP
 1010  003040  004567  000166                 JSR     5,OACNV         ;TYPE LINE #
 1011  003044  001264                         TEMP
 1012  003046  017001                         SELINE
 1013  003050  000002                         2
 1014  003052  104000                         TYPE
 1015  003054  016767                         ALINE
 1016  003056  000205                         RTS     5
 1017                          ;SUBROUTINE TO INITIALIZE BINARY COUNT PATTERNS
 1018  003060  012767  177777  000014  INBIN: MOV     #-1,RIND        ;SET ALL VARIABLES
 1019  003066  004567  000222                 JSR     %5,BMOVE        ;TO MINUS 1.
 1020  003072  003102                         RIND
 1021  003074  003103                         RIND+1
 1022  003076  000013                         11.
 1023  003100  000207                         RTS     %7              ;EXIT
 1024  003102  000000                 RIND:   OPEN
 1025  003104  000000                 PTO:    OPEN
 1026  003106  000000                 PT1:    OPEN
 1027  003110  000000                 PIND:   OPEN
 1028  003112  000000                 PTOP:   OPEN
 1029  003114  000000                 PT1P:   OPEN
 1030                          ;SPECIAL BINARY COUNT PATTERN SUBROUTINE. EXITS WITH BIN CHAR IN RO
 1031  003116  016767  177762  177762 GTBIN:  MOV     PTO,PT1         ;PREVIOUS BIN CHAR TO PT1
 1032  003124  005167  177756                 COM     PT1
 1033  003130  005167  177746                 COM     RIND
 1034  003134  001002                         BNE     .+6
 1035  003136  005267  177744                 INC     PT1
 1036  003142  042767  177400  177736         BIC     #177400,PT1     ;MASK TO 8 BITS
 1037  003150  016767  177732  177726         MOV     PT1,PTO         ;SAVE BIN CHAR IN PTO
 1038  003156  016700  177724                 MOV     PT1,%0          ;BIN CHAR TO RO.
 1039  003162  000207                         RTS     %7              ;EXIT.
 1040  003164  016767  177722  177722 GTBINP: MOV     PTOP,PT1P       ;PREVIOUS BIN CHAR TO PT1P
 1041  003172  005167  177716                 COM     PT1P
 1042  003176  005167  177706                 COM     PIND
 1043  003202  001002                         BNE     .+6
 1044  003204  005267  177704                 INC     PT1P
 1045  003210  042767  177400  177676         BIC     #177400,PT1P    ;MASK TO 8 BITS.
 1046  003216  016767  177672  177666         MOV     PT1P,PTOP       ;SAVE BIN CHAR IN PTOP.
 1047  003224  016701  177664                 MOV     PT1P,%1         ;BIN CHAR TO R1.
 1048  003230  000207                         RTS     %7              ;EXIT.
 1049                          ;OCTAL TO ASCII CONVERT ROUTINE
 1050  003232  013567  000054         OACNV:  MOV     @(5)+,OACNVX    ;GET OCTAL VALUE.
 1051  003236  012501                         MOV     (5)+,%1         ;GET DESTINATION ADDR.
 1052  003240  012502                         MOV     (5)+,%2         ;GET CONVERT COUNT.
 1053  003242  060201                         ADD     %2,%1           ;DEVELOP ADDR TO STORE 1ST CHAR.
 1054  003244  016703  000042         OACNVA: MOV     OACNVX,%3
 1055  003250  042703  177770                 BIC     #177770,%3      ;ISOLATE LEAST SIGNIFICANT DIGIT.
 1056  003254  062703  000060                 ADD     #60,%3          ;CONVERT DIGIT TO ASCII.
 1057  003260  110341                         MOVB    %3,-(1)         ;STORE ASCII CHARACTER.
 1058  003262  042767  000007  000022         BI      #7,OACNVX
 1059  003270  006067  000016                 ROR     OACNVX
```

```
1060  003274  006067  000012                  ROR     OACNVX
1061  003300  006067  000006                  ROR     OACNVX
1062  003304  005302                          DEC     %2              ;DONE ALL DIGITS?
1063  003306  001357                          BNE     OACNVA          ;BRANCH IF NOT DONE.
1064  003310  000205                          RTS     %5              ;DONE. EXIT.
1065  003312  000000              OACNVX: OPEN
1066                                ;SUBROUTINE TO MOVE A VARIABLE NUMBER OF BYTES.
1067  003314  104013              BMOVE:  SAVREG                  ;SAVE REGS.
1068  003316  012501                      MOV     (5)+,%1         ;GET"FROM"ADDRESS
1069  003320  012502                      MOV     (5)+,%2         ;GET"TO"ADDRESS
1070  003322  012503                      MOV     (5)+,%3         ;GET COUNT
1071  003324  112122              BMOVA:  MOVB    (1)+,(2)+       ;MOVE BYTE
1072  003326  005303                      DEC     %3              ;DECREMENT COUNT
1073  003330  001375                      BNE     BMOVA           ;BRANCH IF NOT DONE.
1074  003332  104014                      RSTREG                  ;RESTORE REGS.
1075  003334  000205                      RTS     %5              ;DONE EXIT
1076                                ;BINARY TO DECIMAL ASCII CONVERT SUBROUTINE.
1077  003336  012700  003456      BDCNV:  MOV     #DECVAL,%0      ;SET UP ADDR TO STORE DECIMAL ASCII IN R0
1078  003342  013501                      MOV     @(5)+,%1        ;BINARY VALUE TO R1.
1079  003344  012702  003444              MOV     #ADTENP,%2      ;ADDR OF TEN POWER STRING TO R2.
1080  003350  012767  000005  000060      MOV     #5,CNVCTR       ;SET UP FOR 5 POWER CONVERSIONS.
1081  003356  012267  000060      BDCNVA: MOV     (2)+,TENPWR     ;MOVE POWER OF TEN VALUE TO TENPWR.
1082  003362  004767  000010              JSR     %7,SUBTEN       ;PERFORM CONVERSION
1083  003366  005367  000044              DEC     CNVCTR          ;DONE 5 CONVERSIONS?
1084  003372  001371                      BNE     BDCNVA          ;BRANCH IF NOT YET 5.
1085  003374  000205                      RTS     %5              ;YES, EXIT.
1086  003376  005067  000036      SUBTEN: CLR     DIGIT           ;CLEAR DIGIT
1087  003402  166701  000034      SUBTNA: SUB     TENPWR,%1       ;SUBTRACT TEN POWER FROM BINARY VALUE.
1088  003406  103403                      BCS     SUBTNB          ;BRANCH IF UNSUCCESSFUL SUBTRACTION.
1089  003410  005267  000024              INC     DIGIT
1090  003414  000772                      BR      SUBTNA
1091  003416  066701  000020      SUBTNB: ADD     TENPWR,%1       ;RESTORE SUBTRACTED VALUE.
1092  003422  062767  000060  000010      ADD     #60,DIGIT       ;CONVERT (DIGIT) TO ASCII
1093  003430  116720  000004              MOVB    DIGIT,(0)+      ;MOVE ASCII CHAR TO DECVAL FIELD.
1094  003434  000207                      RTS     %7              ;EXIT.
1095  003436  000000              CNVCTR: OPEN
1096  003440  000000              DIGIT:  OPEN
1097  003442  000000              TENPWR: OPEN
1098  003444  023420              ADTENP: 10000.
1099  003446  001750                      1000.
1100  003450  000144                      100.
1101  003452  000012                      10.
1102  003454  000001                      1
1103  003456     040     040     040  DECVAL: .BYTE   040,040,040,040,040,040
1104  003461     040     040     040
1105  003464  012567  175576          DATTST: MOV     (5)+,SRT                ;GET PARAMETERS
1106  003470  004767  011216                  JSR     7,STPARB        ;LOAD PARAMETERS
1107  003474  042777  000001  175376          BIC     #BIT0,@RXCSR    ;CLEAR DATA TERM. READY
1108  003502  052777  000004  175374          BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT
1109  003510  012767  000144  175530          MOV     #100.,CTRA      ;GET CHARACTER COUNT
1110  003516  105777  175362          DATAA:  TSTB    @TXCSR          ;WAIT FOR
1111  003522  100375                          BPL     .-4             ;READY FLAG
1112  003524  004767  177434                  JSR     7,GTBINP        ;GET CHARACTER
1113  003530  110167  175476                  MOVB    %1,CRBUFA       ;MOVE CHARACTER
1114  003534  046767  175474  175470          BIC     CARMSK,CRBUFA   ;MASK OFF NON TRANSMITTED BITS
1115  003542  110177  175340                  MOVB    %1,@TXBUF       ;TRANSMIT CHARACTER
```

```
1116  003546  105777  175326                  TSTB    @RXCSR          ;WAIT FOR
1117  003552  100375                          BPL     .-4             ;DONE FLAG
1118  003554  117767  175322  175446          MOVB    @RXBUF,CRBUF    ;GET RECEIVED CHARACTER
1119  003562  104004                          DATCHK                  ;CHK DATA
1120  003564  005367  175456                  DEC     CTRA            ;DECREMENT CHARACTER COUNT
1121  003570  001352                          BNE     DATAA
1122  003572  005726                          TST     (6)+            ;POP STACK
1123  003574  104012                          SCOPE
1124
1125  003576  012767  003606  174220  PFAIL:  MOV     #PWRUP,24
1126  003604  000000                          HALT
1127
1128  003606  000005                  PWRUP:  RESET
1129  003610  012706  001076                  MOV     #SPBOT,%6
1130  003614  104003                          ERROR
1131  003616  016700  175316          RESTART:MOV     PRGNUM,%0       ;GET PROGRAM NUMBER
1132  003622  006300                          ASL     %0
1133  003624  012767  003576  174172          MOV     #PFAIL,24       ;RELOAD POWER FAIL VECTOR
1134  003632  004767  011054                  JSR     7,STPARB        ;RELOAD LINE PARAMETERS
1135  003636  000170  003642                  JMP     @RSTART(0)      ;GO RESTART SELECTED PROGRAM
1136
1137  003642  003700                  RSTART: PRG0A                   ;PROGRAM 0 RESTART ADDRESS
1138  003644  014364                          PRG1A                   ;PROGRAM 1 RESTART ADDRESS
1139  003646  014430                          PRG2A                   ;PROGRAM 2 RESTART ADDRESS
1140  003650  014524                          PRG3A                   ;PROGRAM 3 RESTART ADDRESS
1141  003652  014560                          PRG4A                   ;PROGRAM 4 RESTART ADDRESS
```

```
1142
1143                                        ;PRG0 - INPUT-OUTPUT LOGIC TESTS
1144  003654  012767  003704  175260  PRG0:   MOV     #AT0 KSTART
1145  003662  104000                          TYPE                    ;TYPE TITLE AND INSTRUCTIONS
1146  003664  015231                          POTIT
1147  003666  000000                          HALT
1148  003670  004567  177040                  JSR     5,LINSEL        ;GO GET LINE # FROM USER
1149  003674  004767  175372                  JSR     7,SETSR
1150  003700  000167  175736          PRG0A:  JMP     GETRDY          ;GET STARTED.
1151          177777                          TX=-1
1152                                        ;*****************************************************************
1153  003704  000000                  AT0:    0                       ;TEST NUMBER 0                          *
1154  003706  003736                          AT1                     ;ADDRESS OF NEXT TEST                   *
1155  003710  001750                          1000.                   ;TEST ITERATION COUNT                   *
1156  003712  003714                          AAA                     ;SCOPE ENTRY POINT                      *
1157                                        ;*****************************************************************
1158                                        ;TEST ABILITY TO REFERENCE RECEIVER CSR WITHOUT TRAPPING
1159  003714  012767  003730  174062  AAA:    MOV     #AAE,MACHER     ;SET UP MACHINE ERROR TRAP.
1160  003722  005777  175152                  TST     @RXCSR          ;REFERENCE RXCSR
1161  003726  104012                  AAB:    SCOPE                   ;OK IF NO TRAP. SCOPE
1162  003730  022626                  AAE:    POPSP2
1163  003732  104003                          ERROR                   ;TRAPPED WHEN REFERENCING RXCSR.
1164  003734  000774                          BR      AAB
1165                                        ;*****************************************************************
1166  003736  000001                  AT1:    1                       ;TEST NUMBER 1                          *
1167  003740  003770                          AT2                     ;ADDRESS OF NEXT TEST                   *
1168  003742  001750                          1000.                   ;TEST ITERATION COUNT                   *
1169  003744  003746                          ABA                     ;SCOPE ENTRY POINT                      *
1170                                        ;*****************************************************************
1171                                        ;TEST ABILITY TO REFERENCE RECEIVER BUFFER WITHOUT TRAPPING
1172  003746  012767  003762  174030  ABA:    MOV     #ABE,MACHER     ;SET UP MACHINE ERROR TRAP.
1173  003754  005777  175122                  TST     @RXBUF          ;REFERENCE RXBUF
1174  003760  104012                  ABB:    SCOPE                   ;OK IF NO TRAP SCOPE
1175  003762  022626                  ABE:    POPSP2
1176  003764  104003                          ERROR                   ;TRAPPED WHEN REFERENCING RXBUF
1177  003766  000774                          BR      ABB
1178
1179                                        ;*****************************************************************
1180  003770  000002                  AT2:    2                       ;TEST NUMBER 2                          *
1181  003772  004022                          AT3                     ;ADDRESS OF NEXT TEST                   *
1182  003774  001750                          1000.                   ;TEST ITERATION COUNT                   *
1183  003776  004000                          ACA                     ;SCOPE ENTRY POINT                      *
1184          000000                          TX=TX+1
1185                                        ;*****************************************************************
1186                                        ;TEST ABILITY TO REFERENCE TRANSMITTER CSR WITHOUT TRAPPING.
1187  004000  012767  004014  173776  ACA:    MOV     #ACE,MACHER     ;SET UP MACHINE ERROR TRAP.
1188  004006  005777  175072                  TST     @TXCSR          ;REFERENCE TXCSR
1189  004012  104012                  ACB:    SCOPE                   ;SCOPE
1190  004014  022626                  ACE:    POPSP2
1191  004016  104003                          ERROR                   ;TRAPPED WHEN REFERENCING TXCSR
1192  004020  000774                          BR      ACB
1193
```

```
1194
1195                                    ;*****************************************************************
1196  004022  000003                    AT3:    3                       ;TEST NUMBER 3                  *
1197  004024  004054                            AT4                     ;ADDRESS OF NEXT TEST           *
1198  004026  001750                            1000.                   ;TEST ITERATION COUNT           *
1199  004030  004032                            ADA                     ;SCOPE ENTRY POINT              *
1200                                    ;*****************************************************************
1201                                    ;TEST ABILITY TO REFERENCE TRANSMITTER BUFFER WITHOUT TRAPPING
1202  004032  012767  004046  173744    ADA:    MOV     #ADE,MACHER     ;SET UP MACHINE ERROR TRAP.
1203  004040  005[illegible]  175042            TST     @TXBUF          ;REFERENCE TX BUF.
1204  004044  104[illegible]                   ADB:    SCOPE           ;SCOPE
1205  004046  022626                           ADE:    POPSP2
1206  004050  104003                                   ERROR           ;TRAPPED WHEN REFERENCING TXBUF
1207  004052  000774                                   BR      ADB
1208
1209                                    ;*****************************************************************
1210  004054  000004                    AT4:    4                       ;TEST NUMBER 4                  *
1211  004056  004154                            AT5                     ;ADDRESS OF NEXT TEST           *
1212  004060  000144                            100.                    ;TEST ITERATION COUNT           *
1213  004062  004064                            AEA                     ;SCOPE ENTRY POINT              *
1214                                    ;*****************************************************************
1215                                    ;TEST THAT TXCSR BIT0 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1216  004064  032777  000001  175012    AEA:    BIT     #BIT0,@TXCSR    ;SEE IF TXCSR BIT0 IS CLEAR.
1217  004072  001402                            BEQ     AEB             ;BRANCH IF BIT IS CLEAR.
1218  004074  104003                            ERROR                   ;RESET DID NOT CLEAR TXCSR BIT0
1219  004076  000421                            BR      AED
1220  004100  052777  000001  174776    AEB:    BIS     #BIT0,@TXCSR    ;SET TXCSR BIT0.
1221  004106  032777  000001  174770            BIT     #BIT0,@TXCSR    ;SEE IF BIT IS SET.
1222  004114  001002                            BNE     AEC             ;BRANCH IF BIT IS SET.
1223  004116  104003                            ERROR                   ;TXCSR BIT0 FAILED TO SET.
1224  004120  000410                            BR      AED
1225  004122  042777  000001  174754    AEC:    BIC     #BIT0,@TXCSR    ;CLEAR TXCSR BIT0
1226  004130  032777  000001  174746            BIT     #BIT0,@TXCSR    ;SEE IF BIT IS CLEAR.
1227  004136  001401                            BEQ     AED
1228  004140  104003                            ERROR                   ;TXCSR BIT0 FAILED TO CLEAR.
1229  004142  052777  000001  174734    AED:    BIS     #BIT0,@TXCSR    ;SET TXCSR BIT0.
1230  004150  104011                            SRESET                  ;ISSUE RESET TO CLEAR BIT.
1231  004152  104012                            SCOPE                   ;SCOPE
1232                                    ;*****************************************************************
1233  004154  000005                    AT5:    5                       ;TEST NUMBER 5                  *
1234  004156  004252                            AT6                     ;ADDRESS OF NEXT TEST           *
1235  004160  000144                            100.                    ;TEST ITERATION COUNT           *
1236  004162  004164                            AFA                     ;SCOPE ENTRY POINT              *
1237                                    ;*****************************************************************
1238                                    ;TEST THAT TXCSR BIT1 (CLEAR TO SEND) CAN BE SET, AND CLEARED
1239  004164  042777  000001  174706    AFA:    BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1240  004172  032777  000002  174704            BIT     #BIT1,@TXCSR    ;SEE IF TXCSR BIT1 IS CLEAR.
1241  004200  001402                            BEQ     AFB             ;BRANCH IF BIT IS CLEAR.
1242  004202  104003                            ERROR                   ;TXCSR BIT1 IS NOT CLEAR.
1243  004204  000421                            BR      AFD             ;EXIT TEST
1244  004206  052777  000001  174664    AFB:    BIS     #BIT0,@RXCSR    ;SET DATA TERM. RDY. (SETS CTS VIA JUMPER)
1245  004214  032777  000002  174662            BIT     #BIT1,@TXCSR    ;IS CLEAR TO SEND SET?
1246  004222  001002                            BNE     AFC             ;BRANCH IF SET
1247  004224  104003                            ERROR                   ;CTS NOT BEING SET VIA DTR
1248  004226  000410                            BR      AFD             ;EXIT TEST
1249  004230  042777  000001  174642    AFC:    BIC     #BIT0,@RXCSR    ;CLEAR DATA TERM. RDY.
```

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 1250  004236  032777  000002  174640          B.T     #BIT1,@TXCSR    ;IS CTS CLEAR?
 1251  004244  001401                          BEQ     AFD
 1252  004246  104003                          ERROR                   ;CTS FAILED TO CLEAR VIA DTR
 1253  004250  104012                  AFD:    SCOPE                   ;SCOPE
```

```
1254
1255                                    ;*****************************************************************
1256  004252  000006                    AT6:    6                       ;TEST NUMBER 6                  *
1257  004254  004352                            AT7                     ;ADDRESS OF NEXT TEST           *
1258  004256  000144                            100.                    ;TEST ITERATION COUNT           *
1259  004260  004262                            AGA                     ;SCOPE ENTRY POINT              *
1260                                    ;*****************************************************************
1261                                    ;TEST THAT TXCSR BIT2 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1262  004262  032777  000004  174614    AGA:    BIT     #BIT2,@TXCSR    ;SEE IF TXCSR BIT2 IS CLEAR.
1263  004270  001402                            BEQ     AGB             ;BRANCH IF BIT IS CLEAR.
1264  004272  104003                            ERROR                   ;RESET DID NOT CLEAR TXCSR BIT2
1265  004274  000421                            BR      AGD
1266  004276  052777  000004  174600    AGB:    BIS     #BIT2,@TXCSR    ;SET TXCSR BIT2.
1267  004304  032777  000004  174572            BIT     #BIT2,@TXCSR    ;SEE IF BIT IS SET.
1268  004312  001002                            BNE     AGC             ;BRANCH IF BIT IS SET.
1269  004314  104003                            ERROR                   ;TXCSR BIT2 FAILED TO SET.
1270  004316  000410                            BR      AGD
1271  004320  042777  000004  174556    AGC:    BIC     #BIT2,@TXCSR    ;CLEAR TXCSR BIT2
1272  004326  032777  000004  174550            BIT     #BIT2,@TXCSR    ;SEE IF BIT IS CLEAR.
1273  004334  001401                            BEQ     AGD
1274  004336  104003                            ERROR                   ;TXCSR BIT2 FAILED TO CLEAR.
1275  004340  052777  000004  174536    AGD:    BIS     #BIT2,@TXCSR    ;SET TXCSR BIT2.
1276  004346  104011                            SRESET                  ;ISSUE RESET TO CLEAR BIT.
1277  004350  104012                            SCOPE                   ;SCOPE
1278                                    ;*****************************************************************
1279  004352  000007                    AT7:    7                       ;TEST NUMBER 7                  *
1280  004354  004452                            AT10                    ;ADDRESS OF NEXT TEST           *
1281  004356  000144                            100.                    ;TEST ITERATION COUNT           *
1282  004360  004362                            AHA                     ;SCOPE ENTRY POINT              *
1283                                    ;*****************************************************************
1284                                    ;TEST THAT TXCSR BIT3 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1285  004362  032777  000010  174514    AHA:    BIT     #BIT3,@TXCSR    ;SEE IF TXCSR BIT3 IS CLEAR.
1286  004370  001402                            BEQ     AHB             ;BRANCH IF BIT IS CLEAR.
1287  004372  104003                            ERROR                   ;RESET DID NOT CLEAR TXCSR BIT3
1288  004374  000421                            BR      AHD
1289  004376  052777  000010  174500    AHB:    BIS     #BIT3,@TXCSR    ;SET TXCSR BIT3.
1290  004404  032777  000010  174472            BIT     #BIT3,@TXCSR    ;SEE IF BIT IS SET.
1291  004412  001002                            BNE     AHC             ;BRANCH IF BIT IS SET.
1292  004414  104003                            ERROR                   ;TXCSR BIT3 FAILED TO SET.
1293  004416  000410                            BR      AHD
1294  004420  042777  000010  174456    AHC:    BIC     #BIT3,@TXCSR    ;CLEAR TXCSR BIT3
1295  004426  032777  000010  174450            BIT     #BIT3,@TXCSR    ;SEE IF BIT IS CLEAR.
1296  004434  001401                            BEQ     AHD
1297  004436  104003                            ERROR                   ;TXCSR BIT3 FAILED TO CLEAR.
1298  004440  052777  000010  174436    AHD:    BIS     #BIT3,@TXCSR    ;SET TXCSR BIT3.
1299  004446  104011                            SRESET                  ;ISSUE RESET TO CLEAR BIT.
1300  004450  104012                            SCOPE                   ;SCOPE
```

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1301
1302                                    ;*****************************************************************************
1303  004452  000010                    AT10:   10                      ;TEST NUMBER 10                             *
1304  004454  004552                            AT11                    ;ADDRESS OF NEXT TEST                       *
1305  004456  000144                            100.                    ;TEST ITERATION COUNT                       *
1306  004460  004462                            AIA                     ;SCOPE ENTRY POINT                          *
1307                                    ;*****************************************************************************
1308                                    ;TEST THAT TXCSR BIT4 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1309  004462  032777  000020  174414    AIA:    BIT     #BIT4,@TXCSR    ;SEE IF TXCSR BIT4 IS CLEAR.
1310  004470  001402                            BEQ     AIB             ;BRANCH IF BIT IS CLEAR.
1311  004472  104003                            ERROR                   ;RESET DID NOT CLEAR TXCSR BIT4
1312  004474  000421                            BR      AID
1313  004476  052777  000020  174400    AIB:    BIS     #BIT4,@TXCSR    ;SET TXCSR BIT4.
1314  004504  032777  000020  174372            BIT     #BIT4,@TXCSR    ;SEE IF BIT IS SET.
1315  004512  001002                            BNE     AIC             ;BRANCH IF BIT IS SET.
1316  004514  104003                            ERROR                   ;TXCSR BIT4 FAILED TO SET.
1317  004516  000410                            BR      AID
1318  004520  042777  000020  174356    AIC:    BIC     #BIT4,@TXCSR    ;CLEAR TXCSR BIT4
1319  004526  032777  000020  174350            BIT     #BIT4,@TXCSR    ;SEE IF BIT IS CLEAR.
1320  004534  001401                            BEQ     AID
1321  004536  104003                            ERROR                   ;TXCSR BIT4 FAILED TO CLEAR.
1322  004540  052777  000020  174336    AID:    BIS     #BIT4,@TXCSR    ;SET TXCSR BIT4.
1323  004546  104011                            SRESET                  ;ISSUE RESET TO CLEAR BIT.
1324  004550  104012                            SCOPE                   ;SCOPE
1325                                    ;*****************************************************************************
1326  004552  000011                    AT11:   11                      ;TEST NUMBER 11                             *
1327  004554  004660                            AT12                    ;ADDRESS OF NEXT TEST                       *
1328  004556  000144                            100.                    ;TEST ITERATION COUNT                       *
1329  004560  004562                            AJA                     ;SCOPE ENTRY POINT                          *
1330                                    ;*****************************************************************************
1331                                    ;TEST THAT TXCSR BIT6 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1332  004562  012767  000340  173206    AJA:    MOV     #PRIY7,PSW      ;SET PRIORITY 7.
1333  004570  032777  000100  174306            BIT     #BIT6,@TXCSR    ;SEE IF TXCSR BIT6 IS CLEAR.
1334  004576  001402                            BEQ     AJB             ;BRANCH IF BIT IS CLEAR.
1335  004600  104003                            ERROR                   ;RESET DID NOT CLEAR TXCSR BIT6
1336  004602  000421                            BR      AJD
1337  004604  052777  000100  174272    AJB:    BIS     #BIT6,@TXCSR    ;SET TXCSR BIT6.
1338  004612  032777  000100  174264            BIT     #BIT6,@TXCSR    ;SEE IF BIT IS SET.
1339  004620  001002                            BNE     AJC             ;BRANCH IF BIT IS SET.
1340  004622  104003                            ERROR                   ;TXCSR BIT6 FAILED TO SET.
1341  004624  000410                            BR      AJD
1342  004626  042777  000100  174250    AJC:    BIC     #BIT6,@TXCSR    ;CLEAR TXCSR BIT6
1343  004634  032777  000100  174242            BIT     #BIT6,@TXCSR    ;SEE IF BIT IS CLEAR.
1344  004642  001401                            BEQ     AJD
1345  004644  104003                            ERROR                   ;TXCSR BIT6 FAILED TO CLEAR.
1346  004646  052777  000100  174230    AJD:    BIS     #BIT6,@TXCSR    ;SET TXCSR BIT6.
1347  004654  104011                            SRESET                  ;ISSUE RESET TO CLEAR BIT.
1348  004656  104012                            SCOPE                   ;SCOPE
1349
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1350
1351                                    ;*****************************************************************************
1352  004660  000012                    AT12:   12                      ;TEST NUMBER 12                             *
1353  004662  004702                            AT13                    ;ADDRESS OF NEXT TEST                       *
1354  004664  000144                            100.                    ;TEST ITERATION COUNT                       *
1355  004666  004670                            AKA                     ;SCOPE ENTRY POINT                          *
1356                                    ;*****************************************************************************
1357                                    ;TEST THAT TXCSR BIT 7 (READY BIT) IS SET UPON ENTERING ROUTINE AND
1358                                    ;THAT IT CAN BE READ RELIABLY.
1359  004670  105777  174210            AKA:    TSTB    @TXCSR                  ;SEE IF TXCSR BIT 7 IS SET.
1360  004674  100401                            BMI     AKB                     ;BRANCH IF SET.
1361  004676  104003                            ERROR                           ;TXCSR BIT 7 NOT SET.
1362  004700  104012                    AKB:    SCOPE                           ;SCOPE
1363                                    ;*****************************************************************************
1364  004702  000013                    AT13:   13                      ;TEST NUMBER 13                             *
1365  004704  005002                            AT14                    ;ADDRESS OF NEXT TEST                       *
1366  004706  000144                            100.                    ;TEST ITERATION COUNT                       *
1367  004710  004712                            ALA                     ;SCOPE ENTRY POINT                          *
1368                                    ;*****************************************************************************
1369                                    ;TEST THAT TXCSR BIT8 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1370  004712  032777  000400  174164    ALA:    BIT     #BIT8,@TXCSR    ;SEE IF TXCSR BIT8 IS CLEAR.
1371  004720  001402                            BEQ     ALB             ;BRANCH IF BIT IS CLEAR.
1372  004722  104003                            ERROR                   ;RESET DID NOT CLEAR TXCSR BIT8
1373  004724  000421                            BR      ALD
1374  004726  052777  000400  174150    ALB:    BIS     #BIT8,@TXCSR    ;SET TXCSR BIT8.
1375  004734  032777  000400  174142            BIT     #BIT8,@TXCSR    ;SEE IF BIT IS SET.
1376  004742  001002                            BNE     ALC             ;BRANCH IF BIT IS SET.
1377  004744  104003                            ERROR                   ;TXCSR BIT8 FAILED TO SET.
1378  004746  000410                            BR      ALD
1379  004750  042777  000400  174126    ALC:    BIC     #BIT8,@TXCSR    ;CLEAR TXCSR BIT8
1380  004756  032777  000400  174120            BIT     #BIT8,@TXCSR    ;SEE IF BIT IS CLEAR.
1381  004764  001401                            BEQ     ALD
1382  004766  104003                            ERROR                   ;TXCSR BIT8 FAILED TO CLEAR.
1383  004770  052777  000400  174106    ALD:    BIS     #BIT8,@TXCSR    ;SET TXCSR BIT8.
1384  004776  104011                            SRESET                  ;ISSUE RESET TO CLEAR BIT.
1385  005000  104012                            SCOPE                   ;SCOPE
1386
1387
1388                                    ;*****************************************************************************
1389  005002  000014                    AT14:   14                      ;TEST NUMBER 14                             *
1390  005004  005026                            AT15                    ;ADDRESS OF NEXT TEST                       *
1391  005006  000144                            100.                    ;TEST ITERATION COUNT                       *
1392  005010  005012                            AMA                     ;SCOPE ENTRY POINT                          *
1393                                    ;*****************************************************************************
1394                                    ;TEST THAT TXCSR BIT15 IS CLEAR AND CAN BE READ RELIABLY.
1395  005012  032777  100000  174064    AMA:    BIT     #BIT15,@TXCSR   ;SEE IF TXCSR BIT15 IS CLEAR.
1396  005020  001401                            BEQ     AMB             ;BRANCH IF BIT IS CLEAR.
1397  005022  104003                            ERROR                   ;TXCSR BIT15 IS NOT CLEAR.
1398  005024  104012                    AMB:    SCOPE                   ;SCOPE
1399
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1400
1401  005026  000015                    AT15:   15                      ;TEST NUMBER 15                         *
1402  005030  005120                            AT16                    ;ADDRESS OF NEXT TEST                   *
1403  005032  000144                            100.                    ;TEST ITERATION COUNT                   *
1404  005034  005036                            ANA                     ;SCOPE ENTRY POINT                      *
1405                                    ;*************************************************************************
1406                                    ;TEST THAT RXCSR BIT 0 (DATA TERMINAL READY) CAN BE SET, NOT CLEARED BY RESET, AND CLEAR
1407  005036  052777  000001  174034    ANA:    BIS     #BIT0,@RXCSR            ;SET RXCSR BIT 0.
1408  005044  032777  000001  174026            BIT     #BIT0,@RXCSR            ;SEE IF BIT IS SET.
1409  005052  001002                            BNE     ANB                     ;BRANCH IF BIT IS SET.
1410  005054  104003                            ERROR
1411  005056  000417                            BR      AND
1412  005060  104011                    ANB:    SRESET                          ;ISSUE RESET.
1413  005062  032777  000001  174010            BIT     #BIT0,@RXCSR            ;SEE IF BIT IS STILL SET.
1414  005070  001002                            BNE     ANC                     ;BRANCH IF BIT SET.
1415  005072  104003                            ERROR                           ;RESET CLEARED RXCSR BIT 0.
1416  005074  000410                            BR      AND
1417  005076  042777  000001  173774    ANC:    BIC     #BIT0,@RXCSR            ;CLEAR RXCSR BIT 0.
1418  005104  032777  000001  173766            BIT     #BIT0,@RXCSR            ;SEE IF BIT IS CLEAR.
1419  005112  001401                            BEQ     AND                     ;BRANCH IF BIT IS CLEAR.
1420  005114  104003                            ERROR                           ;RXCSR BIT 0 FAILED TO CLEAR.
1421  005116  104012                    AND:    SCOPE                           ;SCOPE
1422                                    ;*************************************************************************
1423  005120  000016                    AT16:   16                              ;TEST NUMBER 16
1424  005122  005220                            AT17                            ;ADDRESS OF NEXT TEST
1425  005124  000144                            100.                            ;TEST ITERATION COUNT
1426  005126  005130                            ANW                             ;SCOPE ENTRY POINT
1427                                    ;*************************************************************************
1428                                    ;TEST THAT RXCSR BIT 1 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT
1429
1430  005130  032777  000002  173742    ANW:    BIT     #BIT1,@RXCSR            ;SEE IF BIT 1 IS CLEAR
1431  005136  001402                            BEQ     ANX                     ;BRANCH IF CLEAR
1432  005140  104003                            ERROR                           ;RESET DID NOT CLEAR RXCSR BIT 1
1433  005142  000421                            BR      ANZ
1434  005144  052777  000002  173726    ANX:    BIS     #BIT1,@RXCSR            ;SET RXCSR BIT1
1435  005152  032777  000002  173720            BIT     #BIT1,@RXCSR            ;SEE IF BIT IS SET
1436  005160  001002                            BNE     ANY                     ;BRANCH IF SET
1437  005162  104003                            ERROR                           ;RXCSR BIT 1 FAILED TO SET
1438  005164  000410                            BR      ANZ
1439  005166  042777  000002  17370-    ANY:    BIC     #BIT1,@RXCSR            ;CLEAR RXCSR BIT 1
1440  005174  032777  000002  173676            BIT     #BIT1,@RXCSR            ;SEE IF BIT IS CLEAR
1441  005202  001401                            BEQ     ANZ
1442  005204  104003                            ERROR                           ;RXCSR BIT 1 FAILED TO CLEAR
1443  005206  052777  000002  173664    ANZ:    BIS     #BIT1,@RXCSR            ;SET RXCSR BIT 1
1444  005214  104011                            SRESET                          ;ISSUE RESET TO CLEAR BIT
1445  005216  104012                            SCOPE                           ;SCOPE
1446
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1447
1448
1449                                    ;*****************************************************************
1450  005220  000017                    AT17:   17                      ;TEST NUMBER 17                 *
1451  005222  005244                            AT20                    ;ADDRESS OF NEXT TEST           *
1452  005224  000144                            100.                    ;TEST ITERATION COUNT           *
1453  005226  005230                            APA                     ;SCOPE ENTRY POINT              *
1454                                    ;*****************************************************************
1455                                    ;TEST THAT RXCSR BIT2 IS CLEAR AND CAN BE READ RELIABLY.
1456  005230  032777  000004  173642    APA:    BIT     #BIT2,@RXCSR    ;SEE IF RXCSR BIT2 IS CLEAR.
1457  005236  001401                            BEQ     APB             ;BRANCH IF BIT IS CLEAR.
1458  005240  104003                            ERROR                   ;RXCSR BIT2 IS NOT CLEAR.
1459  005242  104012                    APB:    SCOPE                   ;SCOPE
1460                                    ;*****************************************************************
1461  005244  000020                    AT20:   20                      ;TEST NUMBER 20                 *
1462  005246  005344                            AT21                    ;ADDRESS OF NEXT TEST           *
1463  005250  000144                            100.                    ;TEST ITERATION COUNT           *
1464  005252  005254                            AQA                     ;SCOPE ENTRY POINT              *
1465                                    ;*****************************************************************
1466                                    ;TEST THAT RXCSR BIT3 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1467  005254  032777  000010  173616    AQA:    BIT     #BIT3,@RXCSR    ;SEE IF RXCSR BIT3 IS CLEAR.
1468  005262  001402                            BEQ     AQB             ;BRANCH IF BIT IS CLEAR.
1469  005264  104003                            ERROR                   ;RESET DID NOT CLEAR RXCSR BIT3
1470  005266  000421                            BR      AQD
1471  005270  052777  000010  173602    AQB:    BIS     #BIT3,@RXCSR    ;SET RXCSR BIT3.
1472  005276  032777  000010  173574            BIT     #BIT3,@RXCSR    ;SEE IF BIT IS SET.
1473  005304  001002                            BNE     AQC             ;BRANCH IF BIT IS SET.
1474  005306  104003                            ERROR                   ;RXCSR BIT3 FAILED TO SET.
1475  005310  000410                            BR      AQD
1476  005312  042777  000010  173560    AQC:    BIC     #BIT3,@RXCSR    ;CLEAR RXCSR BIT3
1477  005320  032777  000010  173552            BIT     #BIT3,@RXCSR    ;SEE IF BIT IS CLEAR.
1478  005326  001401                            BEQ     AQD
1479  005330  104003                            ERROR                   ;RXCSR BIT3 FAILED TO CLEAR.
1480  005332  052777  000010  173540    AQD:    BIS     #BIT3,@RXCSR    ;SET RXCSR BIT3.
1481  005340  104011                            SRESET                  ;ISSUE RESET TO CLEAR BIT.
1482  005342  104012                            SCOPE                   ;SCOPE
1483                                    ;*****************************************************************
1484  005344  000021                    AT21:   21                      ;TEST NUMBER 21                 *
1485  005346  005444                            AT22                    ;ADDRESS OF NEXT TEST           *
1486  005350  000144                            100.                    ;TEST ITERATION COUNT           *
1487  005352  005354                            ARA                     ;SCOPE ENTRY POINT              *
1488                                    ;*****************************************************************
1489                                    ;TEST THAT RXCSR BIT4 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1490  005354  032777  000020  173516    ARA:    BIT     #BIT4,@RXCSR    ;SEE IF RXCSR BIT4 IS CLEAR.
1491  005362  001402                            BEQ     ARB             ;BRANCH IF BIT IS CLEAR.
1492  005364  104003                            ERROR                   ;RESET DID NOT CLEAR RXCSR BIT4
1493  005366  000421                            BR      ARD
1494  005370  052777  000020  173502    ARB:    BIS     #BIT4,@RXCSR    ;SET RXCSR BIT4.
1495  005376  032777  000020  173474            BIT     #BIT4,@RXCSR    ;SEE IF BIT IS SET.
1496  005404  001002                            BNE     ARC             ;BRANCH IF BIT IS SET.
1497  005406  104003                            ERROR                   ;RXCSR BIT4 FAILED TO SET.
1498  005410  000410                            BR      ARD
1499  005412  042777  000020  173460    ARC:    BIC     #BIT4,@RXCSR    ;CLEAR RXCSR BIT4
1500  005420  032777  000020  173452            BIT     #BIT4,@RXCSR    ;SEE IF BIT IS CLEAR.
1501  005426  001401                            BEQ     ARD
1502  005430  104003                            ERROR                   ;RXCSR BIT4 FAILED TO CLEAR.
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1503  005432  052777  000020  173440  ARD:    BIS     #BIT4,@RXCSR    ;SET RXCSR BIT4.
1504  005440  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1505  005442  104012                          SCOPE                   ;SCOPE
1506
1507                                  ;*************************************************************
1508  005444  000022                  AT22:   22                      ;TEST NUMBER 22
1509  005446  005470                          AT23                    ;ADDRESS OF NEXT TEST
1510  005450  000144                          100.                    ;TEST ITERATION COUNT
1511  005452  005454                          ARBA                    ;SCOPE ENTRY POINT
1512                                  ;*************************************************************
1513                                  ;TEST THAT PARITY INDICATOR (BIT5 RXCSR) IS CLEAR
1514                                  ;AND CAN BE READ RELIABLY.
1515
1516  005454  032777  000040  173416  ARBA:   BIT     #BIT5,@RXCSR    ;SEE IF PARITY INDICATOR IS CLEAR
1517  005462  001401                          BEQ     ARBB            ;BRANCH IF CLEAR
1518  005464  104003                          ERROR                   ;IS NOT CLEAR
1519  005466  104012                  ARBB:   SCOPE                   ;SCOPE
1520
1521                                  ;*************************************************************
1522  005470  000023                  AT23:   23                      ;TEST NUMBER 23                 *
1523  005472  005576                          AT24                    ;ADDRESS OF NEXT TEST           *
1524  005474  000144                          100.                    ;TEST ITERATION COUNT           *
1525  005476  005500                          ASA                     ;SCOPE ENTRY POINT              *
1526                                  ;*************************************************************
1527                                  ;TEST THAT RXCSR BIT6 CAN BE SET, CLEARED  AND THAT RESET CLEARS IT.
1528  005500  012767  000340  172270  ASA:    MOV     #PRTY7,PSW      ;SET PRIORITY 7.
1529  005506  032777  000100  173364          BIT     #BIT6,@RXCSR    ;SEE IF RXCSR BIT6 IS CLEAR.
1530  005514  001402                          BEQ     ASB             ;BRANCH IF BIT IS CLEAR.
1531  005516  104003                          ERROR                   ;RESET DID NOT CLEAR RXCSR BIT6
1532  005520  000421                          BR      ASD
1533  005522  052777  000100  173350  ASB:    BIS     #BIT6,@RXCSR    ;SET RXCSR BIT6.
1534  005530  0327 ~  000100  173342          BIT     #BIT6,@RXCSR    ;SEE IF BIT IS SET.
1535  005536  001                             BNE     ASC             ;BRANCH IF BIT IS SET.
1536  005540  104003                          ERROR                   ;RXCSR BIT6 FAILED TO SET.
1537  005542  000410                          BR      ASD
1538  005544  042777  000100  173326  ASC:    BIC     #BIT6,@RXCSR    ;CLEAR RXCSR BIT6
1539  005552  032777  000100  173320          BIT     #BIT6,@RXCSR    ;SEE IF BIT IS CLEAR.
1540  005560  001401                          BEQ     ASD
1541  005562  104003                          ERROR                   ;RXCSR BIT6 FAILED TO CLEAR.
1542  005564  052777  000100  173306  ASD:    BIS     #BIT6,@RXCSR    ;SET RXCSR BIT6.
1543  005572  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1544  005574  104012                          SCOPE                   ;SCOPE
1545                                  ;*************************************************************
1546  005576  000024                  AT24:   24                      ;TEST NUMBER IS 24
1547  005600  005622                          AT25                    ;ADDRESS OF NEXT TEST           *
1548  005602  000144                          100.                    ;TEST ITERATION COUNT           *
1549  005604  005606                          ATA                     ;SCOPE ENTRY POINT              *
1550                                  ;*************************************************************
1551                                  ;TEST THAT RXCSR BIT7 IS CLEAR AND CAN BE READ RELIABLY.
1552  005606  032777  000200  173264  ATA:    BIT     #BIT7,@RXCSR    ;SEE IF RXCSR BIT7 IS CLEAR.
1553  005614  001401                          BEQ     ATB             ;BRANCH IF BIT IS CLEAR.
1554  005616  104003                          ERROR                   ;RXCSR BIT7 IS NOT CLEAR.
1555  005620  104012                  ATB:    SCOPE                   ;SCOPE
1556
1557                                  ;*************************************************************
1558  005622  000025                  AT25:   25                      ;TEST NUMBER 25                 *
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1559  005624  005722                          AT26                    ;ADDRESS OF NEXT TEST                  *
1560  005626  000144                          100.                    ;TEST ITERATION COUNT                  *
1561  005630  005632                          AUA                     ;SCOPE ENTRY POINT                     *
1562                                  ;*****************************************************************
1563                                  ;TEST THAT RXCSR BIT8 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1564  005632  032777  000400  173240  AUA:    BIT     #BIT8,@RXCSR    ;SEE IF RXCSR BIT8 IS CLEAR.
1565  005640  001402                          BEQ     AUB             ;BRANCH IF BIT IS CLEAR.
1566  005642  104003                          ERROR                   ;RESET DID NOT CLEAR RXCSR BIT8
1567  005644  000421                          BR      AUD
1568  005646  052777  000400  173224  AUB:    BIS     #BIT8,@RXCSR    ;SET RXCSR BIT8.
1569  005654  032777  000400  173216          BIT     #BIT8,@RXCSR    ;SEE IF BIT IS SET.
1570  005662  001002                          BNE     AUC             ;BRANCH IF BIT IS SET.
1571  005664  104003                          ERROR                   ;RXCSR BIT8 FAILED TO SET.
1572  005666  000410                          BR      AUD
1573  005670  042777  000400  173202  AUC:    BIC     #BIT8,@RXCSR    ;CLEAR RXCSR BIT8
1574  005676  032777  000400  173174          BIT     #BIT8,@RXCSR    ;SEE IF BIT IS CLEAR.
1575  005704  001401                          BEQ     AUD
1576  005706  104003                          ERROR                   ;RXCSR BIT8 FAILED TO CLEAR.
1577  005710  052777  000400  173162  AUD:    BIS     #BIT8,@RXCSR    ;SET RXCSR BIT8.
1578  005716  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1579  005720  104012                          SCOPE                   ;SCOPE
1580                                  ;*****************************************************************
1581  005722  000026                  AT26:   26                      ;TEST NUMBER 26                        *
1582  005724  006022                          AT27                    ;ADDRESS OF NEXT TEST                  *
1583  005726  000144                          100.                    ;TEST ITERATION COUNT                  *
1584  005730  005732                          AVA                     ;SCOPE ENTRY POINT                     *
1585                                  ;*****************************************************************
1586                                  ;TEST THAT RXCSR BIT9 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1587  005732  032777  001000  173140  AVA:    BIT     #BIT9,@RXCSR    ;SEE IF RXCSR BIT9 IS CLEAR.
1588  005740  001402                          BEQ     AVB             ;BRANCH IF BIT IS CLEAR.
1589  005742  104003                          ERROR                   ;RESET DID NOT CLEAR RXCSR BIT9
1590  005744  000421                          BR      AVD
1591  005746  052777  001000  173124  AVB:    BIS     #BIT9,@RXCSR    ;SET RXCSR BIT9.
1592  005754  032777  001000  173116          BIT     #BIT9,@RXCSR    ;SEE IF BIT IS SET.
1593  005762  001002                          BNE     AVC             ;BRANCH IF BIT IS SET.
1594  005764  104003                          ERROR                   ;RXCSR BIT9 FAILED TO SET.
1595  005766  000410                          BR      AVD
1596  005770  042777  001000  173102  AVC:    BIC     #BIT9,@RXCSR    ;CLEAR RXCSR BIT9
1597  005776  032777  001000  173074          BIT     #BIT9,@RXCSR    ;SEE IF BIT IS CLEAR.
1598  006004  001401                          BEQ     AVD
1599  006006  104003                          ERROR                   ;RXCSR BIT9 FAILED TO CLEAR.
1600  006010  052777  001000  173062  AVD:    BIS     #BIT9,@RXCSR    ;SET RXCSR BIT9.
1601  006016  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1602  006020  104012                          SCOPE                   ;SCOPE
1603                                  ;*****************************************************************
1604  006022  000027                  AT27:   27                      ;TEST NUMBER 27                        *
1605  006024  006122                          AT30                    ;ADDRESS OF NEXT TEST                  *
1606  006026  000144                          100.                    ;TEST ITERATION COUNT                  *
1607  006030  006032                          AWA                     ;SCOPE ENTRY POINT                     *
1608                                  ;*****************************************************************
1609                                  ;TEST THAT RXCSR BIT10 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1610  006032  032777  002000  173040  AWA:    BIT     #BIT10,@RXCSR   ;SEE IF RXCSR BIT10 IS CLEAR.
1611  006040  001402                          BEQ     AWB             ;BRANCH IF BIT IS CLEAR.
1612  006042  104003                          ERROR                   ;RESET DID NOT CLEAR RXCSR BIT10
1613  006044  000421                          BR      AWD
1614  006046  052777  002000  173024  AWB:    BIS     #BIT10,@RXCSR   ;SET RXCSR BIT10.
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1615  006054  032777  002000  173016          BIT     #BIT10,@RXCSR   ;SEE IF BIT IS SET.
1616  006062  001002                          BNE     AWC             ;BRANCH IF BIT IS SET.
1617  006064  104003                          ERROR                   ;RXCSR BIT10 FAILED TO SET.
1618  006066  000410                          BR      AWD
1619  006070  042777  002000  173002  AWC:    BIC     #BIT10,@RXCSR   ;CLEAR RXCSR BIT10
1620  006076  032777  002000  172774          BIT     #BIT10,@RXCSR   ;SEE IF BIT IS CLEAR.
1621  006104  001401                          BEQ     AWD
1622  006106  104003                          ERROR                   ;RXCSR BIT10 FAILED TO CLEAR.
1623  006110  052777  002000  172762  AWD:    BIS     #BIT10,@RXCSR   ;SET RXCSR BIT10.
1624  006116  10-011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1625  006120  104012                          SCOPE                   ;SCOPE
1626                                  ;*****************************************************************
1627  006122  000030                  AT30:   30                      ;TEST NUMBER 30                 *
1628  006124  006146                          AT31                    ;ADDRESS OF NEXT TEST           *
1629  006126  000144                          100.                    ;TEST ITERATION COUNT           *
1630  006130  006132                          AXA                     ;SCOPE ENTRY POINT              *
1631                                  ;*****************************************************************
1632                                  ;TEST THAT RXCSR BIT12 IS CLEAR AND CAN BE READ RELIABLY.
1633  006132  032777  010000  172740  AXA:    BIT     #BIT12,@RXCSR   ;SEE IF RXCSR BIT12 IS CLEAR.
1634  006140  001401                          BEQ     AXB             ;BRANCH IF BIT IS CLEAR.
1635  006142  104003                          ERROR                   ;RXCSR BIT12 IS NOT CLEAR.
1636  006144  104012                  AXB:    SCOPE                   ;SCOPE
1637
1638                                  ;*****************************************************************
1639  006146  000031                  AT31:   31                      ;TEST NUMBER 31                 *
1640  006150  006172                          AT32                    ;ADDRESS OF NEXT TEST           *
1641  006152  000144                          100.                    ;TEST ITERATION COUNT           *
1642  006154  006156                          AYA                     ;SCOPE ENTRY POINT              *
1643                                  ;*****************************************************************
1644                                  ;TEST THAT RXCSR BIT13 IS CLEAR AND CAN BE READ RELIABLY.
1645  006156  032777  020000  172714  AYA:    BIT     #BIT13,@RXCSR   ;SEE IF RXCSR BIT13 IS CLEAR.
1646  006164  001401                          BEQ     AYB             ;BRANCH IF BIT IS CLEAR.
1647  006166  104003                          ERROR                   ;RXCSR BIT13 IS NOT CLEAR.
1648  006170  104012                  AYB:    SCOPE                   ;SCOPE
1649
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 1650
 1651                                   ;*****************************************************************
 1652  006172  000032                   AT32:   32                      ;TEST NUMBER 32                 *
 1653  006174  006216                           AT33                    ;ADDRESS OF NEXT TEST           *
 1654  006176  000144                           100.                    ;TEST ITERATION COUNT           *
 1655  006200  006202                           AZA                     ;SCOPE ENTRY POINT              *
 1656                                   ;*****************************************************************
 1657                                   ;TEST THAT RXCSR BIT14 IS CLEAR AND CAN BE READ RELIABLY.
 1658  006202  032777  040000  172670   AZA:    BIT     #BIT14,@RXCSR   ;SEE IF RXCSR BIT14 IS CLEAR.
 1659  006210  001401                           BEQ     AZB             ;BRANCH IF BIT IS CLEAR.
 1660  006212  104003                           ERROR                   ;RXCSR BIT14 IS NOT CLEAR.
 1661  006214  104012                   AZB:    SCOPE                   ;SCOPE
 1662                                   ;*****************************************************************
 1663  006216  000033                   AT33:   33                      ;TEST NUMBER 33                 *
 1664  006220  006242                           AT34                    ;ADDRESS OF NEXT TEST           *
 1665  006222  000144                           100.                    ;TEST ITERATION COUNT           *
 1666  006224  006226                           AAAA                    ;SCOPE ENTRY POINT              *
 1667                                   ;*****************************************************************
 1668                                   ;TEST THAT RXCSR BIT15 IS CLEAR AND CAN BE READ RELIABLY.
 1669  006226  032777  100000  172644   AAAA:   BIT     #BIT15,@RXCSR   ;SEE IF RXCSR BIT15 IS CLEAR.
 1670  006234  001401                           BEQ     AAAB            ;BRANCH IF BIT IS CLEAR.
 1671  006236  104003                           ERROR                   ;RXCSR BIT15 IS NOT CLEAR.
 1672  006240  104012                   AAAB:   SCOPE                   ;SCOPE
```

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1673
1674                                    ;ALL PREVIOUS TESTS MUST HAVE BEEN RUN SUCCESSFULLY PRIOR
1675                                    ;TO RUNNING THE FOLLOWING TESTS.  ALSO, THE JUMPER CONNECTOR
1676                                    ;MUST BE INSERTED IN THE DC11 CABLE. TO THE MODEM.  COMMENTS
1677                                    ;REFER TO OPERATION WITH JUMPER INSERTED.
1678                                    ;
1679                                    ;*****************************************************************
1680  006242  000034                    AT34:   34                      ;TEST NUMBER 34
1681  006244  006320                            AT35                    ;ADDRESS OF NEXT TEST
1682  006246  000144                            100.                    ;TEST ITERATION COUNT
1683  006250  006252                            AFBA                    ;SCOPE ENTRY POINT
1684                                    ;*****************************************************************
1685                                    ;TEST THAT CARRIER DETECT SETS AND CLEARS WHEN DATA TERMINAL
1686                                    ;READY SETS AND CLEARS.
1687                                    ;
1688  006252  052777  000001  172620    AFBA:   BIS     #BIT0,@RXCSR    ;SET DATA TERMINAL READY
1689  006260  032777  000004  172612            BIT     #BIT2,@RXCSR    ;TEST CARRIER DETECT
1690  006266  001002                            BNE     AFBB            ;SHOULD BE SET
1691  006270  104003                            ERROR                   ;WASN'T
1692  006272  000410                            BR      AFBC
1693  006274  042777  000001  172576    AFBB:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1694  006302  032777  000004  172570            BIT     #BIT2,@RXCSR    ;TEST CARRIER DETECT
1695  006310  001401                            BEQ     AFBC
1696  006312  104003                            ERROR                   ;WAS SET, ERROR
1697  006314  104011                    AFBC:   SRESET
1698  006316  104012                            SCOPE
1699                                    ;*****************************************************************
1700  006320  000035                    AT35:   35                      ;TEST NUMBER 35
1701  006322  006460                            AT36                    ;ADDRESS OF NEXT TEST
1702  006324  000144                            100.                    ;TEST ITERATION COUNT
1703  006326  006330                            AGBA                    ;SCOPE ENTRY POINT
1704                                    ;*****************************************************************
1705                                    ;TEST THAT CARRIER TRANSITION (BIT 14) SETS WHEN CARRIER DETECT
1706                                    ;CHANGES STATE, AND IS CLEARED WHEN RXCSR IS READ.
1707
1708  006330  042777  000001  172542    AGBA:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1709  006336  017767  172536  172714            MOV     @RXCSR,RXCSRT   ;READ RXCSR
1710  006344  032777  040000  172526            BIT     #BIT14,@RXCSR   ;TEST CARRIER TRANSITION
1711  006352  001402                            BEQ     AGBB            ;WAS CLEAR  GO TO AGBB
1712  006354  104003                            ERROR                   ;WASN'T CLEAR
1713  006356  000436                            BR      AGBE            ;GO TO SCOPE
1714  006360  005277  172514            AGBB:   INC     @RXCSR          ;SETTING DATA TERMINAL READY
1715  006364  000004                            IOT                     ;CAUSES CARRIER DETECT TO SET
1716                                                                    ;WHICH CAUSES CARRIER TRANSITION
1717                                                                    ;TO SET.
1718  006366  017767  172506  172664            MOV     @RXCSR,RXCSRT   ;MOVE RXCSR TO TEMPORARY LOCATION
1719  006374  032767  040000  172656            BIT     #BIT14,RXCSRT   ;TEST CARRIER TRANSITION
1720  006402  001002                            BNE     AGBC            ;SHOULD BE SET  GO TO AGBC
1721  006404  104003                            ERROR                   ;WAS CLEAR
1722  006406  000422                            BR      AGBE            ;GO TO SCOPE
1723  006410  032777  040000  172462    AGBC:   BIT     #BIT14,@RXCSR   ;CARRIER TRANSITION BIT SHOULD
1724                                                                    ;HAVE BEEN CLEARED
1725  006416  001402                            BEQ     AGBD            ;IT WAS  GO TO AGBD
1726  006420  104003                            ERROR                   ;IT WASN'T
1727  006422  000414                            BR      AGBE            ;GO TO SCOPE
1728
```

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1729  006424  042777  000001  172446  AGBD:   BIC     #BIT0,@RXCSR    ;CLEARING DATA TERMINAL READY
1730                                                                  ;CAUSES CARRIER DETECT TO CLEAR
1731                                                                  ;BUT CARRIER TRANSITION
1732                                                                  ;WILL NOT SET
1733  006432  017767  172442  172620          MOV     @RXCSR,RXCSRT   ;MOV RXCSR TO TEMPORARY LOCATION
1734  006440  032767  040000  172612          BIT     #BIT14,RXCSRT   ;TEST CARRIER TRANSITION
1735  006446  001402                          BEQ     AGBE            ;SHOULD BE CLEAR
1736  006450  104003                          ERROR                   ;IT WASN'T
1737  006452  000400                          BR      AGBE
1738  006454  104011                  AGBE:   SRESET                  ;ISSUE RESET
1739  006456  104012                          SCOPE                   ;SCOPE
1740                                  ;***************************************************************
1741
1742  006460  000036                  AT36:   36                      ;TEST NUMBER 36
1743  006462  006574                          AT37                    ;ADDRESS OF NEXT TEST
1744  006464  000144                          100.                    ;TEST ITERATION COUNT
1745  006466  006470                          AMBA                    ;SCOPE ENTRY POINT
1746                                  ;***************************************************************
1747                                  ;TEST THAT CARRIER TRANSITION SETTING CAUSES ERROR (BIT 15 RXCSR) TO
1748                                  ;SET AND THAT READING RXCSR CLEARS ERROR.
1749
1750  006470  042777  000001  172402  AMBA:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1751  006476  052777  000001  172374          BIS     #BIT0,@RXCSR    ;SET DATA TERMINAL READY
1752  006504  017767  172370  172546          MOV     @RXCSR,+RXCSRT  ;MOVE RXCSR TO TEMPORARY LOCATION
1753  006512  032767  100000  172540          BIT     #BIT15,RXCSRT   ;TEST ERROR BIT
1754  006520  001002                          BNE     AMBB            ;ERROR BIT SHOULD BE SET
1755  006522  104003                          ERROR
1756  006524  000421                          BR      AMBD
1757  006526  032777  100000  172344  AMBB:   BIT     #BIT15,@RXCSR   ;TEST ERROR BIT
1758  006534  001402                          BEQ     AMBC            ;SHOULD BE CLEAR
1759  006536  104003                          ERROR
1760  006540  000413                          BR      AMBD
1761  006542  042777  000001  172330  AMBC:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1762  006550  017767  172324  172502          MOV     @RXCSR,RXCSRT   ;MOV RXCSR TO TEMPORARY LOCATION
1763  006556  032767  100000  172474          BIT     #BIT15,RXCSRT   ;TEST ERROR BIT
1764  006564  001401                          BEQ     AMBD            ;SHOULD BE CLEAR
1765  006566  104003                          ERROR
1766  006570  104011                  AMBD:   SRESET                  ;ISSUE RESET
1767  006572  104012                          SCOPE                   ;SCOPE
```

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1768                                    ;*****************************************************************
1769  006574  000037                    AT37:   37                      ;TEST NUMBER 37
1770  006576  006666                            AT40                    ;ADDRESS OF NEXT TEST
1771  006600  000144                            100.                    ;TEST ITERATION COUNT
1772  006602  006604                            AJBA                    ;SCOPE ENTRY POINT
1773                                    ;*****************************************************************
1774                                    ;TEST THAT CLEAR TO SEND (BIT1) SET/CLEARS WHEN DATA TERMINAL
1775                                    ;READY SETS/CLEARS.
1776
1777  006604  042777  000001  172266    AJBA:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1778  006612  005277  172266            AJBB:   INC     @TXCSR          ;TEST CLEAR TO SEND
1779  006616  000004                            IOT
1780
1781
1782  006620  052777  000001  172252    AJBB:   BIS     #BIT0,@RXCSR    ;SET DATA TERMINAL READY
1783  006626  032777  000002  172250            BIT     #BIT1,@TXCSR    ;TEST CLEAR TO SEND
1784  006634  001002                            BNE     AJBC            ;BRANCH IF SET
1785  006636  104003                            ERROR                   ;CLEAR TO SEND SHOULD BE SET
1786  006640  000410                            BR      AJBD
1787  006642  042777  000001  172230    AJBC:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1788  006650  032777  000002  172226            BIT     #BIT1,@TXCSR    ;TEST CLEAR TO SEND
1789  006656  001401                            BEQ     AJBD
1790  006660  104003                            ERROR                   ;CLEAR TO SEND SHOULD BE CLEAR
1791  006662  104011                    AJBD:   SRESET                  ;ISSUE RESET
1792  006664  104012                            SCOPE                   ;SCOPE
1793                                    ;*****************************************************************
1794  006666  000040                    AT40:   40                      ;TEST NUMBER 40
1795  006670  007004                            AT41                    ;ADDRESS OF NEXT TEST
1796  006672  000144                            100.                    ;TEST ITERATION COUNT
1797  006674  006676                            AKBA                    ;SCOPE ENTRY POINT
1798                                    ;*****************************************************************
1799                                    ;TEST THAT RING (BIT 13 RXCSR) SETS WHEN REQUEST TO
1800                                    ;SEND SETS AND THEN CLEARS; AND RING CLEARS WHEN RXCSR IS READ.
1801                                    ;AND THAT RESET CLEARS RING.
1802
1803  006676  042777  000001  172200    AKBA:   BIC     #BIT0,@TXCSR    ;CLEAR REQUEST TO SEND
1804  006704  052777  000001  172172    AKBB:   BIS     #BIT0,@TXCSR    ;SET REQUEST TO SEND
1805  006712  042777  000001  172164            BIC     #BIT0,@TXCSR
1806  006720  032777  020000  172152            BIT     #BIT13,@RXCSR   ;TEST RING
1807  006726  001002                            BNE     AKBC
1808  006730  104003                            ERROR                   ;RING SHOULD BE SET
1809  006732  000422                            BR      AKBE
1810  006734  032777  020000  172136    AKBC:   BIT     #BIT13,@RXCSR   ;TEST RING
1811  006742  001402                            BEQ     AKBD
1812  006744  104003                            ERROR                   ;RING SHOULD BE CLEAR
1813  006746  000414                            BR      AKBE
1814  006750  052777  000001  172126    AKBD:   BIS     #BIT0,@TXCSR    ;SET
1815  006756  042777  000001  172120            BIC     #BIT0,@TXCSR    ;RING
1816  006764  000005                            RESET
1817  006766  032777  020000  172104            BIT     #BIT13,@RXCSR   ;TEST RING
1818  006774  001401                            BEQ     AKBE            ;BRANCH IF CLEAR
1819  006776  104003                            ERROR                   ;RING SHOULD BE CLEAR AFTER RESET
1820                                                                    ;BUT WAS SET
1821  007000  104011                    AKBE:   SRESET                  ;ISSUE RESET
1822  007002  104012                            SCOPE                   ;SCOPE
1823                                    ;*****************************************************************
```

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1824  007004  000041                    AT41:   41                      ;TEST NUMBER 41
1825  007006  007112                            AT42                    ;ADDRESS OF NEXT TEST
1826  007010  000144                            100.                    ;TEST ITERATION COUNT
1827  007012  007014                            AOBA                    ;SCOPE ENTRY POINT
1828                                  ;*************************************************************
1829                                  ;TEST THAT ERROR (BIT 15 RXCSR) SETS WHEN RING SETS.
1830
1831  007014  042777  000001  172062  AOBA:   BIC     #BIT0,@TXCSR    ;SET REQUEST TO SEND
1832  007022  032777  100000  172050          BIT     #BIT15,@RXCSR   ;TEST ERROR BIT
1833  007030  001402                          BEQ     AOBB
1834  007032  104002                          ERROR
1835  007034  000424                          BR      AOBD
1836  007036  052777  000001  172040  AOBB:   BIS     #BIT0,@TXCSR    ;SET REQUEST TO SEND
1837  007044  042777  000001  172032          BIC     #BIT0,@TXCSR    ;CLEAR REQUEST TO SEND
1838  007052  032777  100000  172020          BIT     #BIT15,@RXCSR   ;TEST ERROR BIT
1839  007060  001002                          BNE     AOBC
1840  007062  104003                          ERROR
1841  007064  000410                          BR      AOBD
1842  007066  042777  000001  172010  AOBC:   BIC     #BIT0,@TXCSR    ;CLEAR REQUEST TO SEND
1843  007074  032777  100000  171776          BIT     #BIT15,@RXCSR   ;TEST ERROR BIT
1844  007102  001401                          BEQ     AOBD
1845  007104  104003                          ERROR
1846  007106  104011                  AOBD:   SRESET                  ;ISSUE RESET
1847  007110  104012                          SCOPE                   ;SCOPE
```

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 1848
 1849                                   ;*****************************************************************************
 1850  007112  000042                   AT42:   42                      ;TEST NUMBER 42
 1851  007114  007212                           AT43                    ;ADDRESS OF NEXT TEST
 1852  007116  000144                           100.                    ;TEST ITERATION COUNT
 1853  007120  007122                           ALBA                    ;SCOPE ENTRY POINT
 1854                                   ;*****************************************************************************
 1855                                   ;TEST THAT SUPERVISORY RECEIVE DATA (BIT 15 TXCSR) SETS/CLEARS
 1856                                   ;WHEN SUPERVISORY XMIT DATA SETS/CLEARS.
 1857
 1858  007122  042777  000400  171750   ALBA:   BIC     #BIT8,@RXCSR    ;CLEAR SUPERVISOR XMIT DATA
 1859  007130  032777  100000  171746           BIT     #BIT15,@TXCSR   ;TEST SUPERVISORY RECEIVE DATA.
 1860  007136  001402                           BEQ     ALBB
 1861  007140  104003                           ERROR                   ;SHOULD HAVE BEEN CLEAR
 1862  007142  000421                           BR      ALBD
 1863  007144  052777  000400  171726   ALBB:   BIS     #BIT8,@RXCSR    ;SET SUPERVISORY XMIT DATA
 1864  007152  032777  100000  171724           BIT     #BIT15,@TXCSR   ;TEST SUPERVISORY RECEIVE DATA
 1865  007160  001002                           BNE     ALBC
 1866  007162  104003                           ERROR                   ;SHOULD HAVE BEEN SET
 1867  007164  000410                           BR      ALBD
 1868  007166  042777  000400  171704   ALBC:   BIC     #BIT8,@RXCSR    ;CLEAR SUPERVISORY XMIT DATA
 1869  007174  032777  100000  171702           BIT     #BIT15,@TXCSR   ;TEST SUPERVISORY RECEIVE DATA
 1870  007202  001401                           BEQ     ALBD
 1871  007204  104003                           ERROR                   ;SHOULD HAVE BEEN CLEAR
 1872  007206  104011                   ALBD:   SRESET                  ;ISSUE RESET
 1873  007210  104012                           SCOPE                   ;SCOPE
 1874                                   ;*****************************************************************************
 1875  007212  000043                   AT43:   43                      ;TEST NUMBER 43                          *
 1876  007214  007316                           AT44                    ;ADDRESS OF NEXT TEST                    *
 1877  007216  000144                           100.                    ;TEST ITERATION COUNT                    *
 1878  007220  007222                           ABAA                    ;SCOPE ENTRY POINT                       *
 1879                                   ;*****************************************************************************
 1880                                   ;TEST THAT RESET CLEARS ALL TXCSR BITS, AND SETS BIT 7 (READY)
 1881  007222  012767  000340  170546   ABAA:   MOV     #PRTY7,PSW      ;SET PRIORITY 7.
 1882  007230  012777  177777  171646           MOV     #-1,@TXCSR      ;SET ALL POSSIBLE BITS IN TXCSR
 1883  007236  104011                           SRESET                  ;ISSUE RESET TO CLEAR BITS
 1884  007240  022777  000200  171636           CMP     #BIT7,@TXCSR    ;SEE IF ONLY BIT 7 IS SET.
 1885  007246  001422                           BEQ     ABAB            ;BRANCH IF ONLY BIT 7 IS SET
 1886  007250  017767  171630  172000           MOV     @TXCSR,TXCSRT   ;SAVE CONTENTS OF TXCSR
 1887  007256  012767  000200  172000           MOV     #BIT7,TEMP      ;MOVE EXPECTED TXCSR TO TEMP.
 1888  007264  004567  173742                   JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
 1889  007270  001264                           TEMP                    ;SOURCE ADDR.
 1890  007272  015401                           ATXSB                   ;DESTINATION ADDR.
 1891  007274  000006                           6                       ;#OF DIGITS TO CONVERT.
 1892  007276  004567  173730                   JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
 1893  007302  001256                           TXCSRT                  ;SOURCE ADDR.
 1894  007304  015[illegible]                   ATXWAS                  ;DESTINATION ADDR.
 1895  007306  00[illegible]                    6                       ;#OF DIGITS TO CONVERT.
 1896  007310  1[illegible]                     ERROR1                  ;RESET FAILED TO CLEAR ALL BITS EXCEPT
 1897  007312  015366                           ATXCSR                  ;BIT 7 - SEE PRINTOUT
 1898  007314  104012                   ABAB:   SCOPE                   ;SCOPE
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 1899                                   ;*************************************************************************
 1900  007316  000044                   AT44:   44                      ;TEST NUMBER 44                         *
 1901  007320  007472                           AT45                    ;ADDRESS OF NEXT TEST                   *
 1902  007322  000144                           100.                    ;TEST ITERATION COUNT                   *
 1903  007324  007326                           ACAA                    ;SCOPE ENTRY POINT                      *
 1904                                   ;*************************************************************************
 1905                                   ;TEST THAT RESET CLEARS ALL RXCSR BITS EXCEPT BIT 0 (DATA TERMINAL READY)
 1906                                   ;RING, AND THE BREAK BIT.
 1907  007326  012767  000340  170442   ACAA:   MOV     #PRTY7,PSW      ;SET PRIORITY 7
 1908  007334  042777  000001  171536           BIC     #BIT0,@RXCSR    ;CLEAR DATA TERM.READY
 1909  007342  012777  177775  171530           MOV     #177775,@RXCSR  ;SET ALL POSSIBLE BITS IN RXCSR
 1910  007350  052777  000030  171526           BIS     #30,@TXCSR      ;SET MAINT BIT
 1911  007356  005077  171524                   CLR     @TXBUF          ;TRANSMIT A CHAR
 1912  007362  105777  171516                   TSTB    @TXCSR          ;WAIT FOR
 1913  007366  100375                           BPL     .-4             ;TRANSMITTER TO FINISH
 1914  007370  012777  000001  171510           MOV     #1,@TXBUF       ;TRANSMIT ANOTHER CHAR.
 1915  007376  105777  171502                   TSTB    @TXCSR          ;WAIT FOR
 1916  007402  100375                           BPL     .-4             ;TRANSMITTER TO FINISH
 1917  007404  104011                           SRESET                  ;ISSUE RESET TO CLEAR BITS.
 1918  007406  017767  171466  171644           MOV     @RXCSR,RXCSRT   ;MOVE RXCSR CONTENTS TO RXCSRT
 1919  007414  022767  000005  171636           CMP     #5,RXCSRT       ;SEE IF ONLY BIT 0 IS SET
 1920  007422  001417                           BEQ     ACAB            ;BRANCH IF ONLY BIT 0 IS SET.
 1921  007424  012767  000005  171632           MOV     #5,TEMP
 1922  007432  004567  173574                   JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
 1923  007436  001264                           TEMP                    ;SOURCE ADDR.
 1924  007440  015440                           ARXSB                   ;DESTINATION ADDR.
 1925  007442  000006                           6                       ;#OF DIGITS TO CONVERT.
 1926  007444  004567  173562                   JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
 1927  007450  001260                           RXCSRT                  ;SOURCE ADDR.
 1928  007452  015455                           ARXWAS                  ;DESTINATION ADDR.
 1929  007454  000006                           6                       ;#OF DIGITS TO CONVERT.
 1930  007456  104015                           ERROR1                  ;RESET FAILED TO CLEAR ALL BITS EXCEPT
 1931  007460  015425                           ARXCSR                  ;BIT 0. SEE ERROR PRINTOUT.
 1932  007462  042777  000001  171410   ACAB:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERM. READY
 1933  007470  104012                           SCOPE                   ;SCOPE
 1934                                   ;*************************************************************************
 1935  007472  000045                   AT45:   45                      ;TEST NUMBER 45                         *
 1936  007474  007522                           AT46                    ;ADDRESS OF NEXT TEST                   *
 1937  007476  000144                           100.                    ;TEST ITERATION COUNT                   *
 1938  007500  007502                           ADAA                    ;SCOPE ENTRY POINT                      *
 1939                                   ;*************************************************************************
 1940                                   ;TEST THAT LOADING TXBUF (TRANSMITTER BUF) CLEARS TXCSR BIT 7 (READY)
 1941  007502  005077  171400   ADAA:   CLR     @TXBUF          ;LOAD TXBUF
 1942  007506  105777  171372           TSTB    @TXCSR          ;TEST TXCSR BIT (READY BIT)
 1943  007512  100001                   BPL     ADAB            ;BRANCH IF BIT NOT SET.
 1944  007514  104003                   ERROR                   ;ERROR. LOADING TXBUF FAILED TO CLEAR READY.
 1945  007516  104011   ADAB:   SRESET                          ;ISSUE RESET TO SET READY.
 1946  007520  104012                   SCOPE                   ;SCOPE
```

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1947
1948  007522  000046                  AT46:   46                      ;TEST NUMBER 46                         *
1949  007524  007554                          AT47                    ;ADDRESS OF NEXT TEST                   *
1950  007526  000012                          10.                     ;TEST ITERATION COUNT                   *
1951  007530  007532                          AEAA                    ;SCOPE ENTRY POINT                      *
1952                                  ;*************************************************************************
1953                                  ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 1000 MSECS AFTER
1954                                  ;LOADING TXBUF WITH TRANSMIT SPEED SET TO 00 (TXCSR BITS 3 AND 4)
1955  007532  005077  171350          AEAA:   CLR     @TXBUF          ;LOAD TXBUF
1956  007536  104016                          DELAY                   ;DELAY 1000 MSECS APPROX.
1957  007540  001750                          1000.
1958  007542  105777  171336                  TSTB    @TXCSR          ;SEE IF READY BIT IS SET
1959  007546  100401                          BMI     AEAB            ;BRANCH IF READY IS SET
1960  007550  104003                          ERROR                   ;READY NOT SET 200 MSECS AFTER BUFFER
1961                                                                  ;LOAD. TX SPEED = 00.
1962  007552  104012                  AEAB:   SCOPE                   ;SCOPE
1963
1964                                  ;*************************************************************************
1965  007554  000047                  AT47:   47                      ;TEST NUMBER 47                         *
1966  007556  007614                          AT50                    ;ADDRESS OF NEXT TEST                   *
1967  007560  000012                          10.                     ;TEST ITERATION COUNT                   *
1968  007562  007564                          AFAA                    ;SCOPE ENTRY POINT                      *
1969                                  ;*************************************************************************
1970                                  ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 500 MSECS AFTER
1971                                  ;LOADING TXBUF, WITH TRANSMIT SPEED SET TO 01 (TXCSR BITS 3 AND 4).
1972  007564  052777  000010  171312  AFAA:   BIS     #10,@TXCSR      ;SET TX SPEED TO 01.
1973  007572  005077  171310                  CLR     @TXBUF          ;LOAD TXBUF
1974  007576  104016                          DELAY                   ;DELAY 500 MSECS
1975  007600  000764                          500.
1976  007602  105777  171276                  TSTB    @TXCSR          ;SEE IF READY BIT IS SET
1977  007606  100401                          BMI     AFAB            ;BRANCH IF READY IS SET
1978  007610  104003                          ERROR                   ;READY NOT SET 200 MSECS AFTER BUFFER
1979                                                                  ;LOAD. TX SPEED = 01.
1980  007612  104012                  AFAB:   SCOPE                   ;SCOPE.
1981                                  ;*************************************************************************
1982  007614  000050                  AT50:   50                      ;TEST NUMBER 50                         *
1983  007616  007654                          AT51                    ;ADDRESS OF NEXT TEST                   *
1984  007620  000012                          10.                     ;TEST ITERATION COUNT                   *
1985  007622  007624                          AGAA                    ;SCOPE ENTRY POINT                      *
1986                                  ;*************************************************************************
1987                                  ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 400 MSECS AFTER
1988                                  ;LOADING TXBUF, WITH TRANSMIT SPEED SET TO 10 (TXCSR BITS 3 AND 4).
1989  007624  052777  000020  171252  AGAA:   BIS     #20,@TXCSR      ;SET TX SPEED TO 10.
1990  007632  005077  171250                  CLR     @TXBUF          ;LOAD TXBUF
1991  007636  104016                          DELAY                   ;DELAY 400 MSECS
1992  007640  000620                          400.
1993  007642  105777  171236                  TSTB    @TXCSR          ;SEE IF READY BIT IS SET
1994  007646  100401                          BMI     AGAB            ;BRANCH IF READY BIT IS SET
1995  007650  104003                          ERROR                   ;READY NOT SET 200 MSECS AFTER BUFFER
1996                                                                  ;LOAD. TX SPEED = 10.
1997  007652  104012                  AGAB:   SCOPE                   ;SCOPE
```

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1998
1999  007654  000051                    AT51:   51                      ;TEST NUMBER 51                         *
2000  007656  007714                            AT52                    ;ADDRESS OF NEXT TEST                   *
2001  007660  000012                            10.                     ;TEST ITERATION COUNT                   *
2002  007662  007664                            AHAA                    ;SCOPE ENTRY POINT                      *
2003                                  ;*************************************************************************
2004                                  ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 250 MSECS AFTER
2005                                  ;LOADING TXBUF, WITH TRANSMIT SPEED SET TO 11 (TXCSR BITS 3 AND 4).
2006  007664  052777  000030  171212  AHAA:   BIS     #30,@TXCSR      ;SET TX SPEED TO 30.
2007  007672  005077  171210                  CLR     @TXBUF          ;LOAD TXBUF
2008  007676  104016                          DELAY                   ;DELAY 250 MSECS.
2009  007700  000372                          250.
2010  007702  105777  171176                  TSTB    @TXCSR          ;SEE IF READY BIT IS SET.
2011  007706  100401                          BMI     AHAB            ;BRANCH IF READY BIT IS SET.
2012  007710  104003                          ERROR                   ;READY NOT SET 200 MSECS AFTER
2013                                                                  ;BUFFER LOAD. TX SPEED = 11.
2014  007712  104012                  AHAB:   SCOPE                   ;SCOPE
2015
2016                                  ;*************************************************************************
2017  007714  000052                  AT52:   52                      ;TEST NUMBER 52                         *
2018  007716  010132                          AT53                    ;ADDRESS OF NEXT TEST                   *
2019  007720  000144                          100.                    ;TEST ITERATION COUNT                   *
2020  007722  007724                          AIAA                    ;SCOPE ENTRY POINT                      *
2021                                  ;*************************************************************************
2022                                  ;TEST THAT TRANSMIT SPEEDS ARE ARRANGED IN ASCENDING ORDER BY CHECKING THAT TIME
2023                                  ;TO READY BIT (TXCSR BIT 7) DECREASES AS A HIGHER SPEED IS SELECTED.
2024  007724  005067  171316          AIAA:   CLR     CTRA            ;CLEAR CTRA THROUGH CTRD
2025  007730  005067  171314                  CLR     CTRB            ;(USED TO COUNT ELAPSED TIME.)
2026  007734  005067  171312                  CLR     CTRC
2027  007740  005067  171310                  CLR     CTRD
2028  007744  042777  000030  171132          BIC     #30,@TXCSR      ;SELECT TX SPEED 0
2029  007752  004767  000110                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
2030  007756  066767  000146  171262          ADD     AIAST,CTRA      ;ADD ELAPSED TIME TO CTRA.
2031  007764  052777  000010  171112          BIS     #10,@TXCSR      ;SELECT TX SPEED 1
2032  007772  004767  000070                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
2033  007776  066767  000126  171244          ADD     AIAST,CTRB      ;ADD ELAPSED TIME TO CTRB.
2034  010004  042777  000030  171072          BIC     #30,@TXCSR      ;SELECT TX SPEED 2
2035  010012  052777  000020  171064          BIS     #20,@TXCSR
2036  010020  004767  000042                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
2037  010024  066767  000100  171220          ADD     AIAST,CTRC      ;ADD ELAPSED TIME TO CTRC.
2038  010032  052777  000030  171044          BIS     #30,@TXCSR      ;SELECT TX SPEED 3
2039  010040  004767  000022                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
2040  010044  066767  000060  171202          ADD     AIAST,CTRD      ;ADD ELAPSED TIME TO CTRD.
2041  010052  004767  004176                  JSR     %7,CMPT         ;CHECK THAT CTRA THROUGH CTRD CONTAIN
2042  010056  000402                          BR      AIAF            ;DESCENDING VALUES
2043  010060  104015                          ERROR1                  ;TRANSMIT SPEEDS NOT ARRANGED IN
2044  010062  015464                          ETXTIM                  ;ASCENDING ORDER.
2045  010064  104012          AIAF:   SCOPE                           ;SCOPE
2046  010066  005067  000036  AIAS:   CLR     AIAST           ;CLEAR ELAPSED TIME COUNTER.
2047  010072  105777  171006          TSTB    @TXCSR          ;WAIT FOR TX READY.
2048  010076  100375                  BPL     .-4
2049  010100  104016                  DELAY                   ;WAIT 20 MSECS.
2050  010102  000024                  20.
2051  010104  005077  170776                  CLR     @TXBUF          ;LOAD TXBUF.
2052  010110  104016          AIASA:  DELAY                   ;DELAY 1 MSEC.
2053  010112  000001                  1
```

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2054  010114  005267  000010                  INC     AIAST           ;INCREMENT ELAPSED TIME COUNTER.
2055  010120  105777  170760                  TSTB    @TXCSR          ;READY SET?
2056  010124  100371                          BPL     AIASA           ;BRANCH IF READY NOT SET.
2057  010126  000207                          RTS     %7              ;EXIT.
2058  010130  000000                  AIAST:  OPEN
2059                                  ;*****************************************************************************
2060  010132  000053                  AT53:   53                      ;TEST NUMBER 53                            *
2061  010134  010316                          AT54                    ;ADDRESS OF NEXT TEST                      *
2062  010136  000144                          100.                    ;TEST ITERATION COUNT                      *
2063  010140  010142                          AJAA                    ;SCOPE ENTRY POINT                         *
2064                                  ;*****************************************************************************
2065                                  ;TEST FOR CORRECT OPERATION OF STOP CODE BIT (TXCSR BIT 8) BY CHECKING THAT TIME.
2066                                  ;REQUIRED TO COMPLETE TRANSMISSION OF 2 CONSECUTIVE CHARACTERS WITH STOP BIT
2067                                  ;SET TO 0 IS LONGER THAN TIME REQUIRED WITH STOP CODE BIT SET TO A 1.
2068  010142  005067  171100          AJAA:   CLR     CTRA            ;CLEAR CTRA AND CTRB
2069  010146  005067  171076                  CLR     CTRB            ;(ELAPSED TIME COUNTERS).
2070  010152  042777  000400  170724          BIC     #BIT8,@TXCSR    ;SET STOP CODE TO 0 (2 STOP CODES)
2071  010160  004767  000044                  JSR     %7,AJAS         ;OUTPUT CHAR AND TIME
2072  010164  066767  000124  171054          ADD     AJAST,CTRA      ;ADD ELAPSED TIME TO CTRA
2073  010172  052777  000400  170704          BIS     #BIT8,@TXCSR    ;SET STOP CODE TO 1 (1 STOP CODE)
2074  010200  004767  000024                  JSR     %7,AJAS         ;OUTPUT CHARACTER AND TIME.
2075  010204  066767  000104  171036          ADD     AJAST,CTRB      ;ADD ELAPSED TIME TO CTRB
2076  010212  026767  171030  171030          CMP     CTRA,CTRB       ;SEE IF CTRA IS GREATER THAN CTRB
2077  010220  101002                          BHI     AJAB            ;BRANCH IF CTRA IS GREATER.
2078  010222  104015                          ERROR1                  ;ERROR. ELAPSED TIME FOR 2 STOP CODE
2079  010224  015526                          ESTPCD                  ;OPERATION NOT GREATER THAN FOR 1 STOP
2080                                                                  ;CODE.
2081  010226  104012                  AJAB:   SCOPE                   ;SCOPE
2082  010230  005067  000060          AJAS:   CLR     AJAST           ;CLEAR ELAPSED TIME COUNTER AJAST
2083  010234  105777  170644                  TSTB    @TXCSR          ;WAIT FOR TX READY.
2084  010240  100375                          BPL     .-4
2085  010242  104016                          DELAY                   ;WAIT 20 MSECS.
2086  010244  000024                          20.
2087  010246  005077  170634                  CLR     @TXBUF          ;LOAD TXBUF
2088  010252  104016                  AJASA:  DELAY                   ;DELAY 1 MSEC
2089  010254  000001                          1
2090  010256  005267  000032                  INC     AJAST           ;INCREMENT ELAPSED TIME COUNTER
2091  010262  105777  170616                  TSTB    @TXCSR          ;READY SET?
2092  010266  100371                          BPL     AJASA           ;BRANCH IF READY NOT SET.
2093  010270  005077  170612                  CLR     @TXBUF          ;LOAD TXBUF.
2094  010274  104016                  AJASB:  DELAY                   ;DELAY 1 MSEC.
2095  010276  000001                          1
2096  010300  005267  000010                  INC     AJAST           ;INCR ELAPSED TIME COUNTER.
2097  010304  105777  170574                  TSTB    @TXCSR          ;READY SET?
2098  010310  100371                          BPL     AJASB           ;BRANCH IF READY NOT SET.
2099  010312  000207                          RTS     %7              ;EXIT
2100  010314  000000                  AJAST:  OPEN                    ;ELAPSED TIME COUNTER.
```

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2101
2102                                    ;*************************************************************************
2103  010316  000054                    AT54:   54                      ;TEST NUMBER 54                         *
2104  010320  010542                            AT55                    ;ADDRESS OF NEXT TEST                   *
2105  010322  000144                            100.                    ;TEST ITERATION COUNT                   *
2106  010324  010326                            AKAA                    ;SCOPE ENTRY POINT                      *
2107                                    ;*************************************************************************
2108                                    ;TEST FOR CORRECT OPERATION OF CHARACTER LENGTH SELECTION (RXCSR BITS 9 AND 10)
2109                                    ;BY CHECKING THAT TIME REQUIRED FOR OUTPUTTING A CHARACTER IS LONGEST FOR
2110                                    ;8 BIT CODE THAN FOR 7 BIT CODE ETC.
2111  010326  005067  170714            AKAA:   CLR     CTRA            ;CLEAR CTRA THROUGH CTRD.
2112  010332  005067  170712                    CLR     CTRB            ;(ELAPSED TIME COUNTERS).
2113  010336  005067  170710                    CLR     CTRC
2114  010342  005067  170706                    CLR     CTRD
2115  010346  042777  003000  170524            BIC     #3000,@RXCSR    ;SET CHAR LENGTH TO 00 (8 BIT CODE).
2116  010354  004767  000116                    JSR     %7,AKAS         ;OUTPUT CHARACTER AND TIME.
2117  010360  066767  000154  170560            ADD     AKAST,CTRA      ;ADD ELAPSED TIME TO CTRA
2118  010366  042777  003000  170504            BIC     #3000,@RXCSR    ;SET CHAR LENGTH TO 01 (7 BIT CODE).
2119  010374  052777  001000  170476            BIS     #1000,@RXCSR
2120  010402  004767  000070                    JSR     %7,AKAS         ;OUTPUT CHARACTER AND TIME.
2121  010406  066767  000126  170634            ADD     AKAST,CTRB      ;ADD ELAPSED TIME TO CTRB.
2122  010414  042777  003000  170456            BIC     #3000,@RXCSR    ;SET CHAR LENGTH TO 10 (6 BIT CODE)
2123  010422  052777  002000  170450            BIS     #2000,@RXCSR
2124  010430  004767  000042                    JSR     %7,AKAS         ;OUTPUT CHARACTER AND TIME.
2125  010434  066767  000100  170610            ADD     AKAST,CTRC      ;ADD ELAPSED TIME TO CTRC
2126  010442  052777  003000  170430            BIS     #3000,@RXCSR    ;SET CHAR LENGTH TO 11 (5 BIT CODE)
2127  010450  004767  000022                    JSR     %7,AKAS         ;OUTPUT CHACTER AND TIME
2128  010454  066767  000060  170572            ADD     AKAST,CTRD      ;ADD ELAPSED TIME TO CTRD
2129  010462  004767  003566                    JSR     %7,CMPT         ;CHECK THAT CTRA THROUGH CTRD
2130  010466  000402                            BR      AKAB            ;DESCENDING VALUES.
2131  010470  104015                            ERROR1                  ;TX CHARACTER LENGTH NOT ARRANGED
2132  010472  015577                            ETCLGT                  ;IN DESCENDING ORDER.
2133  010474  104012            AKAB:   SCOPE                           ;SCOPE
2134  010476  005067  000036    AKAS:   CLR     AKAST                   ;CLEAR ELAPSED TIME COUNTER AKAST
2135  010502  105777  170376            TSTB    @TXCSR                  ;WAIT FOR TX READY.
2136  010506  100375                    BPL     .-4
2137  010510  104016                    DELAY                           ;WAIT 20 MSECS.
2138  010512  000024                    20.
2139  010514  005077  170366            CLR     @TXBUF                  ;LOAD TXBUF
2140  010520  104016            AKASA:  DELAY                           ;DELAY 1 MSEC
2141  010522  000001                    1
2142  010524  005267  000010            INC     AKAST                   ;INCREMENT ELAPSED TIME COUNTER
2143  010530  105777  170350            TSTB    @TXCSR                  ;READY SET?
2144  010534  100371                    BPL     AKASA                   ;BRANCH IF READY NOT SET
2145  010536  000207                    RTS     %7                      ;EXIT
2146  010540  000000            AKAST:  OPEN                            ;ELAPSED TIME COUNTER
```

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2147
2148                                    ;*****************************************************************
2149  010542  000055                    AT55:   55                      ;TEST NUMBER 55                 *
2150  010544  010616                            AT56                    ;ADDRESS OF NEXT TEST           *
2151  010546  000144                            100.                    ;TEST ITERATION COUNT           *
2152  010550  010552                            ALAA                    ;SCOPE ENTRY POINT              *
2153                                    ;*****************************************************************
2154                                    ;TEST THAT OUTPUTTING A CHARACTER WITH THE MAINTENANCE BIT SET (TXCSR BIT 2)
2155                                    ;RESULTS IN DONE BIT SETTING (RXCSR BIT 7) NO LATER THAN 200 MSECS, AND
2156                                    ;THAT RESET INSTRUCTION CLEARS THE DONE BIT
2157  010552  052777  000004  170324    ALAA:   BIS     #BIT2,@TXCSR    ;SET MAINTENANCE (TXCSR BIT 2)
2158  010560  005077  170322                    CLR     @TXBUF          ;LOAD TXBUF
2159  010564  104016                            DELAY                   ;WAIT 200 MSECS.
2160  010566  000310                            200.
2161  010570  105777  170304                    TSTB    @RXCSR          ;SEE IF DONE BIT IS SET
2162  010574  100402                            BMI     ALAB            ;BRANCH IF DONE BIT IS SET
2163  010576  104003                            ERROR                   ;DONE BIT FAILED TO SET
2164  010600  000405                            BR      ALAC
2165  010602  104011                    ALAB:   SRESET                  ;ISSUE RESET TO CLEAR DONE BIT
2166  010604  105777  170270                    TSTB    @RXCSR          ;SEE IF DONE BIT IS CLEARED
2167  010610  100001                            BPL     ALAC            ;BRANCH IF DONE BIT IS CLEARED
2168  010612  104003                            ERROR                   ;RESET FAILED TO CLEAR DONE BIT
2169  010614  104012                    ALAC:   SCOPE                   ;SCOPE
2170                                    ;*****************************************************************
2171  010616  000056                    AT56:   56                      ;TEST NUMBER 56                 *
2172  010620  010664                            AT57                    ;ADDRESS OF NEXT TEST           *
2173  010622  000144                            100.                    ;TEST ITERATION COUNT           *
2174  010624  010626                            AMAA                    ;SCOPE ENTRY POINT              *
2175                                    ;*****************************************************************
2176                                    ;TEST THAT DONE BIT (RXCSR BIT 7) IS CLEARED BY READING RXBUF.
2177                                    ;DONE SET BY OUTPUTTING CHARACTER WITH MAINTENANCE BIT SET (TXCSR BIT 2)
2178  010626  052777  000004  170250    AMAA:   BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT (TXCSR BIT 2)
2179  010634  005077  170246                    CLR     @TXBUF          ;LOAD TXBUF
2180  010640  105777  170234            AMAB:   TSTB    @RXCSR          ;WAIT FOR DONE BIT TO SET.
2181  010644  100375                            BPL     AMAB
2182  010646  005777  170230                    TST     @RXBUF          ;READ RXBUF TO CLEAR DONE BIT
2183  010652  105777  170222                    TSTB    @RXCSR          ;SEE IF DONE BIT IS CLEAR
2184  010656  100001                            BPL     AMAC            ;BRANCH IF DONE BIT IS CLEAR
2185  010660  104003                            ERROR                   ;READING RXBUF FAILED TO CLEAR DONE BIT
2186  010662  104012                    AMAC:   SCOPE                   ;SCOPE
```

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2187
2188                                    ;*********************************;*************************************
2189  010664  000057                    AT57:   57                      ;TEST NUMBER 57                      *
2190  010666  010752                            AT60                    ;ADDRESS OF NEXT TEST                *
2191  010670  000012                            10.                     ;TEST ITERATION COUNT                *
2192  010672  010674                            ANAA                    ;SCOPE ENTRY POINT                   *
2193                                    ;*************************************************************************
2194                                    ;TEST THAT DONE BIT (RXCSR BIT 7) SETS NO LATER THAN 500 MSECS AFTER OUTPUTTING
2195                                    ;CHARACTER WITH MAINTENANCE BIT SET AND RECEIVE SPEED SET TO 01 (TRANSMIT
2196                                    ;SPEED ALSO SET TO 01
2197  010674  042777  000030  170202    ANAA:   BIC     #30,@TXCSR      ;SET MAINTENANCE BIT AND SET
2198  010702  052777  000014  170174            BIS     #14,@TXCSR      ;TX SPEED=01
2199  010710  042777  000030  170162            BIC     #30,@RXCSR      ;SET RX SPEED =01
2200  010716  052777  000010  170154            BIS     #10,@PXCSR
2201  010724  005077  170156                    CLR     @TXBUF          ;LOAD TXBUF
2202  010730  104016                            DELAY                   ;DELAY 500 MSECS.
2203  010732  000764                            500.
2204  010734  105777  170140                    TSTB    @RXCSR          ;SEE IF DONE BIT IS SET.
2205  010740  100401                            BMI     ANAB            ;BRANCH IF DONE IS SET.
2206  010742  104003                            ERROR                   ;DONE FAILED TO SET WITH RX SPEED=01.
2207  010744  005777  170132            ANAB:   TST     @RXBUF          ;CLEAR DONE BIT IF SET.
2208  010750  104012                            SCOPE                   ;SCOPE
2209
2210                                    ;*************************************************************************
2211  010752  000060                    AT60:   60                      ;TEST NUMBER 60                      *
2212  010754  011040                            AT61                    ;ADDRESS OF NEXT TEST                *
2213  010756  000012                            10.                     ;TEST ITERATION COUNT                *
2214  010760  010762                            AOAA                    ;SCOPE ENTRY POINT                   *
2215                                    ;*************************************************************************
2216                                    ;TEST THAT DONE BIT (RXCSR BIT 7) SETS NO LATER THAN 400 MSECS AFTER OUTPUTING
2217                                    ;CHARACTER WITH MAINTENANCE BIT SET AND RECEIVE SPEED SET TO 10 (TRANSMIT
2218                                    ;SPEED ALSO SET TO 10).
2219  010762  042777  000030  170114    AOAA:   BIC     #30,@TXCSR      ;SET MAINTENANCE BIT AND SET
2220  010770  052777  000024  170106            BIS     #24,@TXCSR      ;TX SPEED=10.
2221  010776  042777  000030  170074            BIC     #30,@RXCSR      ;SET RX SPEED=10.
2222  011004  052777  000020  170066            BIS     #20,@RXCSR
2223  011012  005077  170070                    CLR     @TXBUF          ;LOAD TXBUF
2224  011016  104016                            DELAY                   ;DELAY 400 MSECS
2225  011020  000620                            400.
2226  011022  105777  170052                    TSTB    @RXCSR          ;SEE IF DONE BIT IS SET.
2227  011026  100401                            BMI     AOAB            ;BRANCH IF DONE BIT IS SET.
2228  011030  104003                            ERROR                   ;DONE FAILED TO SET WITH RX SPEED=10.
2229  011032  005777  170014            AOAB:   TST     @RXBUF          ;CLEAR DONE BIT IF SET
2230  011036  104012                            SCOPE                   ;SCOPE
2231                                    ;*************************************************************************
2232  011040  000061                    AT61:   61                      ;TEST NUMBER 61                      *
2233  011042  011112                            AT62                    ;ADDRESS OF NEXT TEST                *
2234  011044  000012                            10.                     ;TEST ITERATION COUNT                *
2235  011046  011050                            APAA                    ;SCOPE ENTRY POINT                   *
2236                                    ;*************************************************************************
2237                                    ;TEST THAT DONE BIT (RXCSR BIT 7) SETS NO LATER THAN 250 MSECS AFTER OUTPUTTING
2238                                    ;CHARACTER WITH MAINTENANCE BIT SET AND RECEIVE SPEED SET11 (TRANSMIT SPEED
2239                                    ;ALSO SET TO 11).
2240  011050  052777  000034  170026    APAA:   BIS     #34,@TXCSR      ;SET MAINT BIT AND TX SPEED=11
2241  011056  052777  000030  170014            BIS     #30,@RXCSR      ;SET RX SPEED=11
2242  011064  005077  170016                    CLR     @TXBUF          ;LOAD TXBUF
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  2243  011070  104016                        DELAY                   ;DELAY 250 MSECS.
  2244  011072  000372                        250.
  2245  011074  105777  170000                TSTB    @RXCSR          ;SEE IF DONE BIT IS SET.
  2246  011100  100401                        BMI     APAB            ;BRANCH IF DONE BIT IS SET.
  2247  011102  104003                        ERROR                   ;DONE FAILED TO SET WITH RX SPEED=11
  2248  011104  005777  167772        APAB:   TST     @RXBUF          ;CLEAR DONE BIT IF SET.
  2249  011110  104012                        SCOPE                   ;SCOPE
```

```
2250
2251                                    ;*******************************************************************
2252  011112  000062                    AT62:   62                      ;TEST NUMBER 62                  *
2253  011114  011414                            AT63                    ;ADDRESS OF NEXT TEST            *
2254  011116  000144                            100                     ;TEST ITERATION COUNT            *
2255  011120  011122                            AQAA                    ;SCOPE ENTRY POINT               *
2256                                    ;*******************************************************************
2257                                    ;TEST THAT RECEIVE SPEEDS ARE ARRANGED IN ASCENDING ORDER BY CHECKING THAT TIME
2258                                    ;ELAPSED TO DONE BIT SETTING (RXCSR BIT 7) DECREASES AS A HIGHER SPEED
2259                                    ;IS SELECTED.  THE TRANSMIT SPEED SELECTED WILL CORRESPOND TO THE SELECTED RECEIVE SPEED
2260  011122  005067  170120            AQAA:   CLR     CTRA            ;CLEAR CTRA THROUGH CTRD
2261  011126  005067  170116                    CLR     CTRB            ;(ELAPSED TIME COUNTERS)
2262  011132  005067  170114                    CLR     CTRC
2263  011136  005067  170112                    CLR     CTRD
2264  011142  042777  000030  167734            BIC     #30,@TXCSR      ;SELECT TX SPEED 00
2265  011150  052777  000004  167726            BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT
2266  011156  042777  000030  167714            BIC     #30,@RXCSR      ;SELECT RX SPEED 00
2267  011164  004767  000154                    JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BIT
2268  011170  066767  000216  170050            ADD     AQAST,CTRA      ;ADD ELAPSED TIME TO CTRA
2269  011176  042777  000030  167700            BIC     #30,@TXCSR      ;SELECT TX SPEED 01
2270  011204  052777  000010  167672            BIS     #10,@TXCSR
2271  011212  042777  000030  167660            BIC     #30,@RXCSR      ;SELECT RX SPEED 01.
2272  011220  052777  000010  167652            BIS     #10,@RXCSR
2273  011226  004767  000112                    JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BIT
2274  011232  066767  000154  170010            ADD     AQAST,CTRB      ;ADD ELAPSED TIME TO CTRB
2275  011240  042777  000030  167636            BIC     #30,@TXCSR      ;SELECT TX SPEED 10
2276  011246  052777  000020  167630            BIS     #20,@TXCSR
2277  011254  042777  000030  167616            BIC     #30,@RXCSR      ;SELECT RX SPEED 10
2278  011262  052777  000020  167610            BIS     #20,@RXCSR
2279  011270  004767  000050                    JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BIT.
2280  011274  066767  000112  167750            ADD     AQAST,CTRC      ;ADD ELAPSED TIME TO CTRC.
2281  011302  052777  000030  167574            BIS     #30,@TXCSR      ;SELECT TX SPEED 11
2282  011310  052777  000030  167562            BIS     #30,@RXCSR      ;SELECT RX SPEED 11
2283  011316  004767  000022                    JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BIT
2284  011322  066767  000064  167724            ADD     AQAST,CTRD      ;ADD ELAPSED TIME TO CTRD.
2285  011330  004767  002720                    JSR     %7,CMPT         ;CHECK THAT CTRA THROUGH CTRD CONTAIN
2286  011334  000402                            BR      AQAB            ;DESCENDING VALUES.
2287  011336  104015                            ERROR1                  ;RECEIVE SPEEDS NOT ARRANGED IN
2288  011340  015650                            ERXTIM                  ;ASCENDING ORDER.
2289  011342  104012            AQAB:           SCOPE                   ;SCOPE
2290  011344  005067  000042    AQAS:   CLR     AQAST                   ;CLEAR ELAPSED TIME COUNTER AQAST
2291  011350  105777  167530            TSTB    @TXCSR                  ;WAIT FOR TX READY.
2292  011354  100375                    BPL     .-4
2293  011356  104016                    DELAY                           ;WAIT 20 MSECS.
2294  011360  000024                    20.
2295  011362  005777  167514            TST     @RXBUF                  ;CLEAR DONE BIT IF SET
2296  011366  005077  167514            CLR     @TXBUF                  ;LOAD TXBUF
2297  011372  104016            AQASA:  DELAY                           ;DELAY 1 MSEC
2298  011374  000001                    1
2299  011376  005267  000010            INC     AQAST                   ;INCREMENT ELAPSED TIME COUNTER
2300  011402  105777  167472            TSTB    @RXCSR                  ;DONE SET?
2301  011406  100371                    BPL     AQASA                   ;BRANCH IF DONE NOT SET
2302  011410  000207                    RTS     %7                      ;EXIT
2303  011412  000000            AQAST:  OPEN                            ;ELAPSED TIME COUNTER
```

```
2304
2305
2306  011414  000063                    ;**********************************************************************
2307  011416  011652                    AT63:   63                      ;TEST NUMBER 63                       *
2308  011420  000144                            AT64                    ;ADDRESS OF NEXT TEST                 *
2309  011422  011424                            100.                    ;TEST ITERATION COUNT                 *
2310                                            ARAA                    ;SCOPE ENTRY POINT                    *
2311                                    ;**********************************************************************
2312                                    ;TEST FOR CORRECT OPERATION OF CHARACTER LENGTH SELECTION DURING RECEIVE
2313                                    ;(RXCSR BITS 9 AND 10) BY CHECKING THAT TIME REQUIRED TO RECEIVE A CHARACTER
2314  011424  005067  167616            ;IS LONGEST FOR 8 BIT CODE THAN FOR 7 BIT CODE ETC.
2315  011430  005067  167614            ARAA    CLR     CTRA            ;CLEAR CTRA THROUGH CTRD
2316  011434  005067  167612                    CLR     CTRB            ;(ELAPSED TIME COUNTERS)
2317  011440  005067  167610                    CLR     CTRC
2318  011444  042777  003000  167426            CLR     CTRD
2319  011452  004767  000116                    BIC     #3000,@RXCSR    ;SET CHAR LENGTH TO 00 (8 BIT CODE)
2320  011456  066767  000166  167562            JSR     %7,ARAS         ;OUTPUT CHAR AND TIME DONE BIT.
2321  011464  042777  003000  167406            ADD     ARAST,CTRA      ;ADD ELAPSED TIME TO CTRA
2322  011472  052777  001000  167400            BIC     #3000,@RXCSR    ;SET CHAR LENGTH TO 01 (7 BIT CODE)
2323  011500  004767  000070                    BIS     #1000,@RXCSR
2324  011504  066767  000140  167536            JSR     %7,ARAS         ;OUTPUT CHAR AND TIME DONE BIT
2325  011512  042777  003000  167360            ADD     ARAST,CTRB      ;ADD ELAPSED TIME TO CTRB
2326  011520  052777  002000  167352            BIC     #3000,@RXCSR    ;SET CHAR LENGTH TO 10 (6 BIT CODE)
2327  011526  004767  000042                    BIS     #2000,@RXCSR
2328  011532  066767  000112  167512            JSR     %7,ARAS         ;OUTPUT CHAR AND TIME DONE BIT
2329  011540  052777  003000  167332            ADD     ARAST,CTRC      ;ADD ELAPSED TIME TO CTRC
2330  011546  004767  000022                    BIS     #3000,@RXCSR    ;SET CHAR LENGTH TO 11 (5 BIT CODE)
2331  011552  066767  000072  167474            JSR     %7,ARAS         ;OUTPUT CHAR AND TIME DONE BIT
2332  011560  004767  002470                    ADD     ARAST,  CTRD    ;ADD ELAPSED TIME TO CTRD
2333  011564  000402                            JSR     %7,CMPT         ;CHECK THAT CTRA THROUGH CTRD
2334  011566  104015                            BR      ARAB            ;CONTAIN DESCENDING VALUES
2335  011570  015712                            ERROR1                  ;RECEIVE CHARACTER LENGTHS NOT ARRANGED
2336  011572  104012                            ERCLGT                  ;IN DESCENDING ORDER
2337  011574  005067  000050            ARAB:   SCOPE                   ;SCOPE
2338  011600  105777  167300            ARAS:   CLR     ARAST           ;CLEAR ELAPSED TIME COUNTER ARAST
2339  011604  100375                            TSTB    @TXCSR          ;WAIT FOR TX READY.
2340  011606  104016                            BPL     .-4
2341  011610  000024                            DELAY                   ;WAIT 20 MSECS.
2342  011612  005777  167264                    20.
2343  011616  052777  000004  167260            TST     @RXBUF          ;CLEAR DONE BIT IF SET
2344  011624  005077  167256                    BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT
2345                                            CLR     @TXBUF          ;LOAD TXBUF
2346  011630  104016                    ARASA:  DELAY                   ;DELAY 1 MSEC.
2347  011632  000001                            1
2348  011634  005267  000010                    INC     ARAST           ;INCREMENT ELAPSED TIME COUNTER
2349  011640  105777  167234                    TSTB    @RXCSR          ;SEE IF DONE DIT IS SET.
2350  011644  100371                            BPL     ARASA           ;BRANCH IF NOT SET
2351  011646  000207                            RTS     %7              ;EXIT
2352  011650  000000                    ARAST:  OPEN                    ;ELAPSED TIME COUNTER
```

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2353
2354                                    ;*****************************************************************
2355  011652  000064                    AT64:   64                      ;TEST NUMBER 64                 *
2356  011654  011766                            AT65                    ;ADDRESS OF NEXT TEST           *
2357  011656  000144                            100.                    ;TEST ITERATION COUNT           *
2358  011660  011662                            ASAA                    ;SCOPE ENTRY POINT              *
2359                                    ;*****************************************************************
2360                                    ;TEST CORRECT OPERATION OF DATA OVERRUN BIT (RXCSR BIT 12)
2361  011662  004767  000060           ASAA:   JSR     %7,ASAS         ;OUTPUT CHARACTER AND WAIT 200 MSECS
2362  011666  004767  000054                   JSR     %7,ASAS         ;OUTPUT CHARACTER AND WAIT 200 MSECS
2363  011672  017767  167202  167360           MOV     @RXCSR,RXCSRT   ;SAVE RXCSR CONTENTS
2364  011700  032767  010000  167352           BIT     #BIT12,RXCSRT   ;SEE IF DATA OVERRUN BIT WAS SET
2365  011706  001002                           BNE     ASAB            ;BRANCH IF BIT WAS SET
2366  011710  104003                           ERROR
2367  011712  000412                           BR      ASAD
2368  011714  005767  167340           ASAB:   TST     RXCSRT          ;SEE IF ERROR BIT WAS SET (RXCSR BIT 15)
2369  011720  100402                           BMI     ASAC
2370  011722  104003                           ERROR                   ;ERROR BIT FAILED TO SET
2371                                                                    ;WHEN DATA OVERRUN SET
2372  011724  000405                           BR      ASAD
2373  011726  032777  010000  167144   ASAC:   BIT     #BIT12,@RXCSR   ;SEE IF DATA OVERRUN WAS
2374                                                                    ;CLEARED WHEN RXCSR WAS READ
2375  011734  001401                           BEQ     ASAD            ;BRANCH IF CLEAR
2376  011736  104003                           ERROR                   ;READING RXCSR FAILED
2377                                                                    ;TO CLEAR DATA OVERRUN
2378  011740  005777  167136           ASAD:   TST     @RXBUF          ;CLEAR DONE BIT (RXCSR BIT 7)
2379  011744  104012                           SCOPE                   ;SCOPE
2380  011746  052777  000004  167130   ASAS:   BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT
2381  011754  005077  167126                   CLR     @TXBUF          ;LOAD TXBUF
2382  011760  104016                           DELAY                   ;DELAY 200 MSECS
2383  011762  000310                           200.
2384  011764  000207                           RTS     %7              ;EXIT
2385
2386                                    ;*****************************************************************
2387  011766  000065                    AT65:   65                      ;TEST NUMBER 65                 *
2388  011770  012040                            AT66                    ;ADDRESS OF NEXT TEST           *
2389  011772  000012                            12                      ;TEST ITERATION COUNT           *
2390  011774  012006                            A?                      ;SCOPE ENTRY POINT              *
2391                                    ;*******  **.     ***************************************************
2392                                    ;TEST THAT TRANSM1      IS ABLE TO INTERRUPT.  IF THE INTERRUPT IS SERVICED,
2393                                    ;IT WILL HAVE OCCURRED AT THE CORRECT VECTOR.
2394  011776  004767  170562                   JSR     7,OVRLAY        ;GO TO OVER LAY ROUTINE
2395  012002  104007                           STTXV                   ;SET TX INTERRUPT SERVICE
2396  012004  012034                           ATAC                    ;TO ATAC
2397  012006  042777  000100  167070   ATAA:   BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPT
2398  012014  005067  165756                   CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2399  012020  052777  000104  167056           BIS     #104,@TXCSR     ;ENABLE TX INTERRUPT
2400  012026  000240                           NOP
2401  012030  104003                           ERROR                   ;READY DID NOT CAUSE AN INTERRUPT
2402  012032  104012                   ATAB:   SCOPE                   ;SCOPE
2403  012034  022[illegible]           ATAC:   POPSP2                  ;HERE IF INTERRUPT IS SERVICED.  POP
2404  012036  000775                           BR      ATAB            ;THE STOCK TWICE
2405
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2406
2407                                    ;*****************************************************************
2408  012040  000066                    AT66:   66                      ;TEST NUMBER 66                 *
2409  012042  012116                            AT67                    ;ADDRESS OF NEXT TEST           *
2410  012044  001750                            1000.                   ;TEST ITERATION COUNT           *
2411  012046  012054                            AUAA                    ;SCOPE ENTRY POINT              *
2412                                    ;*****************************************************************
2413                                    ;TEST THAT READY DOES NOT CAUSE AN INTERRUPT WHEN THE PROCESSOR IS
2414                                    ;AT THE SAME PRIORITY AS THE TRANSMITTER INTERRUPT REQUEST LEVEL
2415  012050  104007                            STTXV                   ;SET TX INTERRUPT SERVICE TO
2416  012052  012106                            AUAC
2417  012054  016767  167036  165714    AUAA:   MOV     TXLVL,PSW       ;SET PROCESSOR PRIORITY SAME AS TX PRIORITY
2418  012062  042777  000100  167014            BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2419  012070  052777  000104  167006            BIS     #104,@TXCSR     ;ENABLE TX INTERRUPTS
2420  012076  000240                            NOP
2421
2422
2423  012100  042777  000100  166776    AUAB:   BIC     #BIT6,@TXCSR    ;OK IF NO INTERRUPT OCCURS.  DISABLE INTERRUPTS
2424  012106  104012            AUAC:   SCOPE                           ;SCOPE
2425  012110  022626                            POPSP2                  ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2426  012112  104003                            ERROR                   ;TX INTERRUPTED WITH PROCESSOR AT SAME
2427  012114  000774                            BR      AUAC            ;PRIORITY AS THE TRANSMITTER
2428
2429                                    ;*****************************************************************
2430  012116  000067                    AT67:   67                      ;TEST NUMBER 67                 *
2431  012120  012202                            AT70                    ;ADDRESS OF NEXT TEST           *
2432  012122  000012                            10.                     ;TEST ITERATION COUNT           *
2433  012124  012132                            AVAA                    ;SCOPE ENTRY POINT              *
2434                                    ;*****************************************************************
2435                                    ;TEST THAT TRANSMITTER INTERRUPTS WHEN PROCESSOR IS AT PRIORITY ONE LEVEL
2436                                    ;LOWER THAN THE TRANSMITTER INTERRUPT PRIORITY.
2437  012126  104007                            STTXV                   ;SET TX INTERRUPT SERVICE TO AVAB
2438  012130  012170                            AVAB
2439  012132  042777  000100  166744    AVAA:   BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2440  012140  016767  166752  165630            MOV     TXLVL,PSW       ;SET PROCESSOR PRIORITY TO ONE LEVEL
2441  012146  162767  000040  165622            SUB     #40,PSW         ;LOWER THAN TX PRIORITY
2442  012154  052777  000104  166722            BIS     #104,@TXCSR     ;ENABLE TX INTERRUPTS
2443  012162  000240                            NOP
2444  012164  104003                            ERROR                   ;TX FAILED TO INTERRUPT
2445  012166  000401                            BR      AVAC
2446  012170  022626            AVAB:   POPSP2                          ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2447  012172  042777  000100  166704    AVAC:   BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2448  012200  104012                    AVAC:   SCOPE                   ;SCOPE
2449
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2450
2451
2452  012202  000070                    AT70:   70                      ;TEST NUMBER 70                         *
2453  012204  012300                            AT71                    ;ADDRESS OF NEXT TEST                   *
2454  012206  000144                            100.                    ;TEST ITERATION COUNT                   *
2455  012210  012212                            AWAA                    ;SCOPE ENTRY POINT                      *
2456                                    ;*************************************************************************
2457                                    ;TEST THAT TRANSMITTER DOES NOT REINTERRUPT AFTER THE INITIAL INTERRUPT HAS
2458                                    ;OCCURRED AND HAS BEEN SERVICED.
2459  012212  104007                    AWAA:   STTXV                   ;SET TX INTERRUPT SERVICE TO AWAC
2460  012214  012252                            AWAC
2461  012216  042777  000100  166660            BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2462  012224  005067  165546                    CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2463  012230  052777  000104  166646            BIS     #104,@TXCSR     ;ENABLE TX INTERRUPTS
2464  012236  000240                            NOP
2465  012240  104003                            ERROR                   ;TRANSMITTER FAILED TO INTERRUPT
2466  012242  042777  000100  166634  AWAB:     BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2467  012250  104012                            SCOPE                   ;SCOPE
2468  012252  012777  012272  166634  AWAC:     MOV     #AWAE,@TXVTR    ;HERE IF INTERRUPT OCCURS. CHANGE EXIT
2469  012260  012716  012266                    MOV     #AWAD,(6        ;POINTER TO AWAD AND EXIT INTERRUPT
2470  012264  000002                            RTI
2471  012266  000240                    AWAD:   NOP                     ;OK IF NO INTERRUPT REOCCURS.
2472  012270  000764                            BR      AWAB
2473  012272  022626                    AWAE:   POPSP2                  ;HERE IF INTERRUPT REOCCURS
2474  012274  104003                            ERROR                   ;TX REINTERRUPTED AFTER RTI
2475  012276  000761                            BR      AWAB
2476
2477                                    ;*************************************************************************
2478  012300  000C71                    AT71:   71                      ;TEST NUMBER 71                         *
2479  012302  012356                            AT72                    ;ADDRESS OF NEXT TEST                   *
2480  012304  000012                            10.                     ;TEST ITERATION COUNT                   *
2481  012306  012324                            AXAA                    ;SCOPE ENTRY POINT                      *
2482                                    ;*************************************************************************
2483                                    ;TEST THAT RECEIVER DONE BIT IS ABLE TO INTERRUPT. IF THE INTERRUPT IS
2484                                    ;SERVICED IT WILL HAVE OCCURRED AT THE CORRECT VECTOR.
2485  012310  004767  170250                    JSR     7,OVRLAY        ;GO TO OVERLAY ROUTINE
2486  012314  104006                            STRXV                   ;SET RX INTERRUPT SERIVCE TO AXAB
2487  012316  012352                            AXAB
2488  012320  004767  001710                    JSR     (7,STRXD        ;SET RX DONE BIT
2489  012324  042777  000100  166546  AXAA:     BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
2490  012332  005067  165440                    CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2491  012336  052777  000100  166534            BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
2492  012344  000240                            NOP
2493  012346  104003                            ERROR                   ;RX FAILED TO INTERRUPT
2494  012350  000401                            BR      AXAC
2495  012352  022626                    AXAB:   POPSP2                  ;HERE IF INTERRUPT OCCURS
2496  012354  104012                    AXAC:   SCOPE                   ;SCOPE
2497
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2498
2499                                    ;*****************************************************************************
2500  012356  000072                    AT72:   72                      ;TEST NUMBER 72                            *
2501  012360  012440                            AT73                    ;ADDRESS OF NEXT TEST                      *
2502  012362  001750                            1000.                   ;TEST ITERATION COUNT                      *
2503  012364  012376                            AYAA                    ;SCOPE ENTRY POINT                         *
2504                                    ;*****************************************************************************
2505                                    ;TEST THAT RECEIVER DONE BIT DOES NOT CAUSE AN INTERRUPT WHEN THE PROCESSOR
2506                                    ;IS AT THE SAME PRIORITY LEVEL AS THE RECEIVER INTERRUPT REQUEST LEVEL
2507  012366  104006                            STRXV                   ;SET RX INTERRUPT SERVICE TO AYAC
2508  012370  012432                            AYAC
2509  012372  004767  001636                   JSR     %7,STRXD        ;SET RX DONE BIT
2510  012376  042777  000100  166474  AYAA:    BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
2511  012404  016767  166502  165364           MOV     RXLVL,PSW       ;SET PROCESSOR PRIORITY SAME AS RECEIVER'S
2512  012412  052777  000100  166460           BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
2513  012420  000240                            NOP
2514  012422  042777  000100  166450  AYAB:    BIC     #BIT6,@RXCSR    ;OK IF NO INTERRUPT. DISABLE RX INTERRUPTS
2515  012430  104012                            SCOPE                   ;SCOPE
2516  012432  022626                    AYAC:   POPSP2                  ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2517  012434  104003                            ERROR                   ;RX INTERRUPTED WITH PROCESOR AT SAME
2518  012436  000771                            BR      AYAB            ;PRIORITY AS THE RECEIVER
2519
2520                                    ;*****************************************************************************
2521  012440  000073                    AT73:   73                      ;TEST NUMBER 73                            *
2522  012442  012530                            AT74                    ;ADDRESS OF NEXT TEST                      *
2523  012444  000012                            10.                     ;TEST ITERATION COUNT                      *
2524  012446  012460                            AZAA                    ;SCOPE ENTRY POINT                         *
2525                                    ;*****************************************************************************
2526                                    ;TEST THAT RECEIVER DONE BIT CAUSES INTERRUPT WHEN PROCESSOR IS AT PRIORITY
2527                                    ;ONE LEVEL LOWER THAN THE RECEIVER'S INTERRUPT REQUEST LEVEL
2528  012450  104006                            STRXV                   ;SET RX INTERRUPT TO AZAB
2529  012452  012516                            AZAB
2530  012454  004767  001554                   JSR     %7,STRXD        ;SET RX DONE BIT
2531  012460  042777  000100  166412  AZAA:    BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
2532  012466  016767  166420  165302           MOV     RXLVL,PSW       ;SET PROCESSOR PRIORITY ONE LEVEL
2533  012474  162767  000040  165274           SUB     #40,PSW         ;LOWER THAN RECEIVER'S PRIORITY
2534  012502  052777  000100  166370           BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
2535  012510  000240                            NOP
2536  012512  104003                            ERROR                   ;RX FAILED TO INTERRUPT WITH PROCESSOR AT
2537  012514  000401                            BR      AZAC            ;PRIORITY ONE LEVEL LOWER THAN RECEIVER'S
2538
2539  012516  022626                    AZAB:   POPSP2                  ;HERE IF INTERRUPT OCCURS
2540  012520  042777  000100  166352  AZAC:    BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
2541  012526  104012                            SCOPE                   ;SCOPE
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2542
2543                                    ;*****************************************************************************
2544  012530  000074                    AT74:   74                      ;TEST NUMBER 74                            *
2545  012532  012626                            AT75                    ;ADDRESS OF NEXT TEST                      *
2546  012534  000144                            100.                    ;TEST ITERATION COUNT                      *
2547  012536  012544                            AABA                    ;SCOPE ENTRY POINT                         *
2548                                    ;*****************************************************************************
2549                                    ;TEST THAT RECEIVER DOES NOT INTERRUPT AFTER THE INITIAL INTERRUPT HAS
2550                                    ;OCCURED AND DONE BIT HAS NOT BEEN CLEARED
2551  012540  004767  001470                   JSR     %7,STRXD        ;SET RX DONE BIT
2552  012544  104006                    AABA:   STRXV                   ;SET RX INTERRUPT SERVICE TO AABC
2553  012546  012600                            AABC
2554  012550  042777  000100  166322           BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
2555  012556  052777  000100  166314           BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
2556  012564  000240                            NOP
2557  012566  104003                            ERROR                   ;RX FAILED TO INTERRUPT
2558  012570  042777  000100  166302  AABB:    BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
2559  012576  104012                            SCOPE                   ;SCOPE
2560  012600  012777  012620  166302  AABC:    MOV     #AABE,@RXVTR    ;HERE IF INTERRUPT OCCURS. CHANGE SERVICE TO
2561  012606  012716  012614                    MOV     #AABD,(6        ;AABE, SET EXIT POINTER TO AABD
2562  012612  000002                            RTI                     ;EXIT INTERRUPT SERVICE
2563  012614  000240                    AABD:   NOP                     ;OK IF NO INTERRUPT REOCCURS
2564  012616  000764                            BR      AABB
2565  012620  022626                    AABE:   POPSP2                  ;HERE IF INTERRUPT REOCCURS
2566  012622  104003                            ERROR                   ;RX REINTERRUPTED AFTER RTI
2567  012624  000761                            BR      AABB
2568
2569                                    ;*****************************************************************************
2570  012626  000075                    AT75:   75                      ;TEST NUMBER 75                            *
2571  012630  012702                            AT76                    ;ADDRESS OF NEXT TEST                      *
2572  012632  000144                            100.                    ;TEST ITERATION COUNT                      *
2573  012634  012636                            ABBA                    ;SCOPE ENTRY POINT                         *
2574                                    ;*****************************************************************************
2575                                    ;TEST THAT DATA OVERRUN (RXCSR BIT 12) CLEARS THE DONE BIT (RXCSR BIT 7)
2576  012636  004767  001372            ABBA:   JSR     %7,STRXD        ;SET RX DONE BIT
2577  012642  005077  166240                    CLR     @TXBUF          ;LOAD TXBUF
2578  012646  104016                            DELAY                   ;WAIT 20 MSECS.
2579  012650  000024                            20.
2580  012652  017767  166222  166400            MOV     @RXCSR,RXCSRT   ;SAVE CONTENT OF RXCSR
2581  012660  105777  166214                    TSTB    @RXCSR          ;SEE IF DONE BIT IS CLEAR
2582  012664  100001                            BPL     ABBB            ;BRANCH IF DONE BIT IS CLEAR
2583  012666  104003                            ERROR
2584  012670  104016                    ABBB:   DELAY                   ;WAIT FOR RX DONE TO SET.
2585  012672  000310                            200.
2586  012674  005777  166202                    TST     @RXBUF          ;CLEAR DONE BIT IF SET
2587  012700  104012                            SCOPE                   ;SCOPE
2588
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2589
2590                                    ;*******************************************************************************
2591  012702  000076                    AT76:   76                      ;TEST NUMBER 76                              *
2592  012704  012760                            AT77                    ;ADDRESS OF NEXT TEST                        *
2593  012706  000144                            100.                    ;TEST ITERATION COUNT                        *
2594  012710  012716                            ACBA                    ;SCOPE ENTRY POINT                           *
2595                                    ;*******************************************************************************
2596                                    ;TEST THAT ERROR BIT (RXCSR BIT 15) IS ABLE TO CAUSE AN INTERRUPT
2597  012712  104006                            STRXV                   ;SET RX INTERRUPT SERVICE TO ACBB.
2598  012714  012754                            ACBB
2599  012716  004767  001312           ACBA:   JSR     %7,STRXD        ;SET RX DONE BIT
2600  012722  004767  001306                   JSR     %7,STRXD        ;SET RX DATA OFLOW
2601  012726  042777  000100  166144           BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
2602  012734  005007  165036                   CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2603  012740  052777  000100  166132           BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
2604  012746  000240                            NOP
2605  012750  104003                            ERROR                   ;RX ERROR BIT FAILED TO CAUSE INTERRUPT
2606  012752  000401                            BR      ACBC
2607  012754  022626                    ACBB:   POPSP2                  ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2608  012756  104012                    ACBC:   SCOPE                   ;SCOPE
2609
2610
2611
2612                                    ;*******************************************************************************
2613  012760  000077                    AT77:   77                      ;TEST NUMBER 77
2614  012762  013142                            AT100                   ;ADDRESS OF NEXT TEST
2615  012764  000144                            100                     ;TEST ITERATION COUNT
2616  012766  013002                            ANBA                    ;SCOPE ENTRY POINT
2617                                    ;*******************************************************************************
2618                                    ;TEST THAT PARITY INDICATOR OPERATES CORRECT.
2619  012770  004567  170064           ANBA:   JSR     5,INBIN         ;INITIALIZE BINARY COUNT PATTERN
2620  012774  052777  000004  166102           BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT
2621  013002  112767  000144  166236   ANBB:   MOVB    #100.,CTRA      ;GET CHARACTER COUNT
2622  013010  112767  000010  166231   ANBC:   MOVB    #8.,CTRA+1      ;GET CHARACTER BIT COUNT
2623  013016  004567  170142                   JSR     5,GTBINP        ;GET A CHARACTER (IN R1)
2624  013022  105777  166056                   TSTB    @TXCSR          ;WAIT FOR
2625  013026  100375                           BPL     .-4             ;TRANSMITTER READY FLAG
2626  013030  010177  166052                   MOV     %1,@TXBUF       ;LOAD TRANSMITTER BUFFER
2627  013034  105777  166040                   TSTB    @RXCSR          ;WAIT FOR
2628  013040  100375                           BPL     .-4             ;RECEIVER READY FLAG
2629  013042  017767  166034  166162           MOV     @RXBUF,CRBUFA   ;GET RECEIVED CHARACTER
2630  013050  005000                           CLR     %0              ;CLEAR WORKING REGISTER
2631  013052  006067  166154           ANBD:   ROR     CRBUFA          ;LOOK AT CHARACTER BITS
2632  013056  103001                           BCC     .+4             ;AND COMPLEMENT R0 WHEN
2633  013060  005100                           COM     %0              ;A 1 IS RECEIVED
2634  013062  105367  166161                   DECB    CTRA+1          ;IF R0=1'S, ODD#1'S RECEIVED
2635  013066  001371                           BNE     ANBD            ;IF R0=0'S, EVEN #1'S RECEIVED
2636  013070  032777  000040  166002           BIT     #BIT5,@RXCSR    ;TEST PARITY INDICATOR
2637  013076  001403                           BEQ     ANBE            ;BRANCH IF INDICATES EVEN
2638  013100  005700                           TST     %0              ;TEST RECEIVED PARITY (IN R0)
2639  013102  001403                           BEQ     ANBF            ;ERROR BRANCH
2640  013104  000412                           BR      ANBG            ;OK BRANCH
2641  013106  005700                   ANBE:   TST     %0              ;TEST RECEIVED PARITY (IN R0)
2642  013110  001410                           BEQ     ANBG            ;OK BRANCH
2643  013112  104003                   ANBF:   ERROR                   ;TYPE PC
2644  013114  004567  170112                   JSR     5,OACNV         ;GO TO OCTAL
```

```
 2645  013120  001232                          CKBUFA                  ;TO ASCII
 2646  013122  016344                          AWAS                    ;ROUTINE AND
 2647  013124  000003                          3                       ;CONVERT DATA
 2648  013126  104015                          ERROR1                  ;TYPE
 2649  013130  016344                          AWAS                    ;DATA
 2650  013132  105367  166110        ANBG:     DECB    CTRA            ;DECREMENT CHARACTER COUNT
 2651  013136  001324                          BNE     ANBC
 2652  013140  104012                          SCOPE
 2653          000077                          X=77
 2654          000000                          Y=0
 2655                          ;*****************************************************************************
 2656  013142  000100        AT100:  100                             ;ROUTINE #100                          *
 2657  013144  013160                          AT101                   ;ADDRESS OF NEXT TEST                  *
 2658  013146  000003                          3.                      ;ITERATION COUNT                       *
 2659  013150  013152                          DAT0                    ;SCOPE ENTRY POINT                     *
 2660          000100                          X=X+1
 2661                          ;*****************************************************************************
 2662  013152  004567  170306        DAT0:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
 2663  013156  000000                          0                       ;SEE NOTE 0 FOR DATA TEST PARAMETERS
 2664          000001                          Y=Y+1
 2665                          ;*****************************************************************************
 2666  013160  000101        AT101:  101                             ;ROUTINE #101                          *
 2667  013162  013176                          AT102                   ;ADDRESS OF NEXT TEST                  *
 2668  013164  000003                          3.                      ;ITERATION COUNT                       *
 2669  013166  013170                          DAT1                    ;SCOPE ENTRY POINT                     *
 2670          000101                          X=X+1
 2671                          ;*****************************************************************************
 2672  013170  004567  170270        DAT1:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
 2673  013174  000001                          1                       ;SEE NOTE 1 FOR DATA TEST PARAMETERS
 2674          000002                          Y=Y+1
 2675                          ;*****************************************************************************
 2676  013176  000102        AT102:  102                             ;ROUTINE #102                          *
 2677  013200  013214                          AT103                   ;ADDRESS OF NEXT TEST                  *
 2678  013202  000003                          3.                      ;ITERATION COUNT                       *
 2679  013204  013206                          DAT2                    ;SCOPE ENTRY POINT                     *
 2680          000102                          X=X+1
 2681                          ;*****************************************************************************
 2682  013206  004567  170252        DAT2:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
 2683  013212  000002                          2                       ;SEE NOTE 2 FOR DATA TEST PARAMETERS
 2684          000003                          Y=Y+1
 2685                          ;*****************************************************************************
 2686  013214  000103        AT103:  103                             ;ROUTINE #103                          *
 2687  013216  013232                          AT104                   ;ADDRESS OF NEXT TEST                  *
 2688  013220  000003                          3.                      ;ITERATION COUNT                       *
 2689  013222  013224                          DAT3                    ;SCOPE ENTRY POINT                     *
 2690          000103                          X=X+1
 2691                          ;*****************************************************************************
 2692  013224  004567  170234        DAT3:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
 2693  013230  000003                          3                       ;SEE NOTE 3 FOR DATA TEST PARAMETERS
 2694          000004                          Y=Y+1
 2695                          ;*****************************************************************************
 2696  013232  000104        AT104:  104                             ;ROUTINE #104                          *
 2697  013234  013250                          AT105                   ;ADDRESS OF NEXT TEST                  *
 2698  013236  000003                          3.                      ;ITERATION COUNT                       *
 2699  013240  013242                          DAT4                    ;SCOPE ENTRY POINT                     *
 2700          000104                          X=X+1
```

```
2701
2702  013242  004567  170216        DAT4:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2703  013246  000004                        4                       ;SEE NOTE 4 FOR DATA TEST PARAMETERS
2704          000005                        Y=Y+1
2705
2706  013250  000105                AT105:  105                     ;ROUTINE #105                   *
2707  013252  013266                        AT106                   ;ADDRESS OF NEXT TEST           *
2708  013254  000003                        3.                      ;ITERATION COUNT                *
2709  013256  013260                        DAT5                    ;SCOPE ENTRY POINT              *
2710          000105                        X=X+1
2711
2712  013260  004567  170200        DAT5:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2713  013264  000005                        5                       ;SEE NOTE 5 FOR DATA TEST PARAMETERS
2714          000006                        Y=Y+1
2715
2716  013266  000106                AT106:  106                     ;ROUTINE #106                   *
2717  013270  013304                        AT107                   ;ADDRESS OF NEXT TEST           *
2718  013272  000003                        3.                      ;ITERATION COUNT                *
2719  013274  013276                        DAT6                    ;SCOPE ENTRY POINT              *
2720          000106                        X=X+1
2721
2722  013276  004567  170162        DAT6:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2723  013302  000006                        6                       ;SEE NOTE 6 FOR DATA TEST PARAMETERS
2724          000007                        Y=Y+1
2725
2726  013304  000107                AT107:  107                     ;ROUTINE #107                   *
2727  013306  013322                        AT110                   ;ADDRESS OF NEXT TEST           *
2728  013310  000003                        3.                      ;ITERATION COUNT                *
2729  013312  013314                        DAT7                    ;SCOPE ENTRY POINT              *
2730          000107                        X=X+1
2731
2732  013314  004567  170144        DAT7:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2733  013320  000007                        7                       ;SEE NOTE 7 FOR DATA TEST PARAMETERS
2734          000010                        Y=Y+1
2735
2736  013322  000110                AT110:  110                     ;ROUTINE #110                   *
2737  013324  013340                        AT111                   ;ADDRESS OF NEXT TEST           *
2738  013326  000003                        3.                      ;ITERATION COUNT                *
2739  013330  013332                        DAT10                   ;SCOPE ENTRY POINT              *
2740          000110                        X=X+1
2741
2742  013332  004567  170126        DAT10:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2743  013336  000010                        10                      ;SEE NOTE 10 FOR DATA TEST PARAMETERS
2744          000011                        Y=Y+1
2745
2746  013340  000111                AT111:  111                     ;ROUTINE #111                   *
2747  013342  013356                        AT112                   ;ADDRESS OF NEXT TEST           *
2748  013344  000003                        3.                      ;ITERATION COUNT                *
2749  013346  013350                        DAT11                   ;SCOPE ENTRY POINT              *
2750          000111                        X=X+1
2751
2752  013350  004567  170110        DAT11:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2753  013354  000011                        11                      ;SEE NOTE 11 FOR DATA TEST PARAMETERS
2754          000012                        Y=Y+1
2755
2756  013356  000112                AT112:  112                     ;ROUTINE #112                   *
```

```
 2757  013360  013374                 AT113                ;ADDRESS OF NEXT TEST                  *
 2758  013362  000003                 3.                   ;ITERATION COUNT                       *
 2759  013364  013366                 DAT12                ;SCOPE ENTRY POINT                     *
 2760          000112                 X=X+1
 2761                  ;*************************************************************************
 2762  013366  004567  170072  DAT12: JSR     5,DATTST      ;LOAD PARAMETERS & RUN TEST
 2763  013372  000012                 12                   ;SEE NOTE 12 FOR DATA TEST PARAMETERS
 2764          000013                 Y=Y+1
 2765                  ;*************************************************************************
 2766  013374  000113  AT113: 113                          ;ROUTINE #113                          *
 2767  013376  013412                 AT114                ;ADDRESS OF NEXT TEST                  *
 2768  013400  000003                 3.                   ;ITERATION COUNT                       *
 2769  013402  013404                 DAT13                ;SCOPE ENTRY POINT                     *
 2770          000113                 X=X+1
 2771                  ;*************************************************************************
 2772  013404  004567  170054  DAT13: JSR     5,DATTST      ;LOAD PARAMETERS & RUN TEST
 2773  013410  000013                 13                   ;SEE NOTE 13 FOR DATA TEST PARAMETERS
 2774          000014                 Y=Y+1
 2775                  ;*************************************************************************
 2776  013412  000114  AT114: 114                          ;ROUTINE #114                          *
 2777  013414  013430                 AT115                ;ADDRESS OF NEXT TEST                  *
 2778  013416  000003                 3.                   ;ITERATION COUNT                       *
 2779  013420  013422                 DAT14                ;SCOPE ENTRY POINT                     *
 2780          000114                 X=X+1
 2781                  ;*************************************************************************
 2782  013422  004567  170036  DAT14: JSR     5,DATTST      ;LOAD PARAMETERS & RUN TEST
 2783  013426  000014                 14                   ;SEE NOTE 14 FOR DATA TEST PARAMETERS
 2784          000015                 Y=Y+1
 2785                  ;*************************************************************************
 2786  013430  000115  AT115: 115                          ;ROUTINE #115                          *
 2787  013432  013446                 AT116                ;ADDRESS OF NEXT TEST                  *
 2788  013434  000003                 3.                   ;ITERATION COUNT                       *
 2789  013436  013440                 DAT15                ;SCOPE ENTRY POINT                     *
 2790          000115                 X=X+1
 2791                  ;*************************************************************************
 2792  013440  004567  170020  DAT15: JSR     5,DATTST      ;LOAD PARAMETERS & RUN TEST
 2793  013444  000015                 15                   ;SEE NOTE 15 FOR DATA TEST PARAMETERS
 2794          000016                 Y=Y+1
 2795                  ;*************************************************************************
 2796  013446  000116  AT116: 116                          ;ROUTINE #116                          *
 2797  013450  013464                 AT117                ;ADDRESS OF NEXT TEST                  *
 2798  013452  000003                 3.                   ;ITERATION COUNT                       *
 2799  013454  013456                 DAT16                ;SCOPE ENTRY POINT                     *
 2800          000116                 X=X+1
 2801                  ;*************************************************************************
 2802  013456  004567  170002  DAT16: JSR     5,DATTST      ;LOAD PARAMETERS & RUN TEST
 2803  013462  000016                 16                   ;SEE NOTE 16 FOR DATA TEST PARAMETERS
 2804          000017                 Y=Y+1
 2805                  ;*************************************************************************
 2806  013464  000117  AT117: 117                          ;ROUTINE #117                          *
 2807  013466  013502                 AT120                ;ADDRESS OF NEXT TEST                  *
 2808  013470  000003                 3.                   ;ITERATION COUNT                       *
 2809  013472  013474                 DAT17                ;SCOPE ENTRY POINT                     *
 2810          000117                 X=X+1
 2811                  ;*************************************************************************
 2812  013474  004567  167764  DAT17: JSR     5,DATTST      ;LOAD PARAMETERS & RUN TEST
```

```
2813  013500  000017                    17                      ;SEE NOTE 17 FOR DATA TEST PARAMETERS
2814          000020                    Y=Y+1
2815                          ;*************************************************************************
2816  013502  000120          AT120:    120                     ;ROUTINE #120                          *
2817  013504  01352C                    AT121                   ;ADDRESS OF NEXT TEST                  *
2818  013506  000003                    3.                      ;ITERATION COUNT                       *
2819  013510  013512                    DAT20                   ;SCOPE ENTRY POINT                     *
2820          000120                    X=X+1
2821                          ;*************************************************************************
2822  013512  004567  167746  DAT20:    JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2823  013516  000020                    20                      ;SEE NOTE 20 FOR DATA TEST PARAMETERS
2824          000021                    Y=Y+1
2825                          ;*************************************************************************
2826  013520  000121          AT121:    121                     ;ROUTINE #121                          *
2827  013522  013536                    AT122                   ;ADDRESS OF NEXT TEST                  *
2828  013524  000003                    3.                      ;ITERATION COUNT                       *
2829  013526  013530                    DAT21                   ;SCOPE ENTRY POINT                     *
2830          000121                    X=X+1
2831                          ;*************************************************************************
2832  013530  004567  167730  DAT21:    JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2833  013534  000021                    21                      ;SEE NOTE 21 FOR DATA TEST PARAMETERS
2834          000022                    Y=Y+1
2835                          ;*************************************************************************
2836  013536  000122          AT122:    122                     ;ROUTINE #122                          *
2837  013540  013554                    AT123                   ;ADDRESS OF NEXT TEST                  *
2838  013542  000003                    3.                      ;ITERATION COUNT                       *
2839  013544  013546                    DAT22                   ;SCOPE ENTRY POINT                     *
2840          000122                    X=X+1
2841                          ;*************************************************************************
2842  013546  004567  167712  DAT22:    JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2843  013552  000022                    22                      ;SEE NOTE 22 FOR DATA TEST PARAMETERS
2844          000023                    Y=Y+1
2845                          ;*************************************************************************
2846  013554  000123          AT123:    123                     ;ROUTINE #123                          *
2847  013556  013572                    AT124                   ;ADDRESS OF NEXT TEST                  *
2848  013560  000003                    3.                      ;ITERATION COUNT                       *
2849  013562  013564                    DAT23                   ;SCOPE ENTRY POINT                     *
2850          000123                    X=X+1
2851                          ;*************************************************************************
2852  013564  004567  167674  DAT23:    JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2853  013570  000023                    23                      ;SEE NOTE 23 FOR DATA TEST PARAMETERS
2854          000024                    Y=Y+1
2855                          ;*************************************************************************
2856  013572  000124          AT124:    124                     ;ROUTINE #124                          *
2857  013574  013610                    AT125                   ;ADDRESS OF NEXT TEST                  *
2858  013576  000003                    3.                      ;ITERATION COUNT                       *
2859  013600  013602                    DAT24                   ;SCOPE ENTRY POINT                     *
2860          000124                    X=X+1
2861                          ;*************************************************************************
2862  013602  004567  167656  DAT24:    JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2863  013606  000024                    24                      ;SEE NOTE 24 FOR DATA TEST PARAMETERS
2864          000025                    Y=Y+1
2865                          ;*************************************************************************
2866  013610  000125          AT125:    125                     ;ROUTINE #125                          *
2867  013612  013626                    AT126                   ;ADDRESS OF NEXT TEST                  *
2868  013614  000003                    3.                      ;ITERATION COUNT                       *
```

```
 2869  013616  013620                  DAT25                   ;SCOPE ENTRY POINT                                      *
 2870          000125                  X=X+1
 2871
 2872  013620  004567  167640  DAT25:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
 2873  013624  000025                  25                      ;SEE NOTE 25 FOR DATA TEST PARAMETERS
 2874          000026                  Y=Y+1
 2875
 2876  013626  000126  AT126:  126                             ;ROUTINE #126                                           *
 2877  013630  013644                  AT127                   ;ADDRESS OF NEXT TEST                                   *
 2878  013632  000003                  3.                      ;ITERATION COUNT                                        *
 2879  013634  013636                  DAT26                   ;SCOPE ENTRY POINT                                      *
 2880          000126                  X=X+1
 2881
 2882  013636  004567  167622  DAT26:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
 2883  013642  000026                  26                      ;SEE NOTE 26 FOR DATA TEST PARAMETERS
 2884          000027                  Y=Y+1
 2885
 2886  013644  000127  AT127:  127                             ;ROUTINE #127                                           *
 2887  013646  013662                  AT130                   ;ADDRESS OF NEXT TEST                                   *
 2888  013650  000003                  3.                      ;ITERATION COUNT                                        *
 2889  013652  013654                  DAT27                   ;SCOPE ENTRY POINT                                      *
 2890          000127                  X=X+1
 2891
 2892  013654  004567  167604  DAT27:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
 2893  013660  000027                  27                      ;SEE NOTE 27 FOR DATA TEST PARAMETERS
 2894          000030                  Y=Y+1
 2895
 2896  013662  000130  AT130:  130                             ;ROUTINE #130                                           *
 2897  013664  013700                  AT131                   ;ADDRESS OF NEXT TEST                                   *
 2898  013666  000003                  3.                      ;ITERATION COUNT                                        *
 2899  013670  013672                  DAT30                   ;SCOPE ENTRY POINT                                      *
 2900          000130                  X=X+1
 2901
 2902  013672  004567  167566  DAT30:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
 2903  013676  000030                  30                      ;SEE NOTE 30 FOR DATA TEST PARAMETERS
 2904          000031                  Y=Y+1
 2905
 2906  013700  000131  AT131:  131                             ;ROUTINE #131                                           *
 2907  013702  013716                  AT132                   ;ADDRESS OF NEXT TEST                                   *
 2908  013704  000003                  3.                      ;ITERATION COUNT                                        *
 2909  013706  013710                  DAT31                   ;SCOPE ENTRY POINT                                      *
 2910          000131                  X=X+1
 2911
 2912  013710  004567  167550  DAT31:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
 2913  013714  000031                  31                      ;SEE NOTE 31 FOR DATA TEST PARAMETERS
 2914          000032                  Y=Y+1
 2915
 2916  013716  000132  AT132:  132                             ;ROUTINE #132                                           *
 2917  013720  013734                  AT133                   ;ADDRESS OF NEXT TEST                                   *
 2918  013722  000003                  3.                      ;ITERATION COUNT                                        *
 2919  013724  013726                  DAT32                   ;SCOPE ENTRY POINT                                      *
 2920          000132                  X=X+1
 2921
 2922  013726  004567  167532  DAT32:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
 2923  013732  000032                  32                      ;SEE NOTE 32 FOR DATA TEST PARAMETERS
 2924          000033                  Y=Y+1
```

```
2925
2926  013734  000133                ;*****************************************************************************
2927  013736  013752                AT133:  133                     ;ROUTINE #133                                *
2928  013740  000003                        AT134                   ;ADDRESS OF NEXT TEST                        *
2929  013742  013744                        3.                      ;ITERATION COUNT                             *
2930           000133                       DAT33                   ;SCOPE ENTRY POINT                           *
2931                                        X=X+1
2932  013744  004567  167514        ;*****************************************************************************
2933  013750  000033                DAT33:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2934           000034                       33                      ;SEE NOTE 33 FOR DATA TEST PARAMETERS
2935                                        Y=Y+1
2936  013752  000134                ;*****************************************************************************
2937  013754  013770                AT134:  134                     ;ROUTINE #134                                *
2938  013756  000003                        AT135                   ;ADDRESS OF NEXT TEST                        *
2939  013760  013762                        3.                      ;ITERATION COUNT                             *
2940           000134                       DAT34                   ;SCOPE ENTRY POINT                           *
2941                                        X=X+1
2942  013762  004567  167476        ;*****************************************************************************
2943  013766  000034                DAT34:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2944           000035                       34                      ;SEE NOTE 34 FOR DATA TEST PARAMETERS
2945                                        Y=Y+1
2946  013770  000135                ;*****************************************************************************
2947  013772  014006                AT135:  135                     ;ROUTINE #135                                *
2948  013774  000003                        AT136                   ;ADDRESS OF NEXT TEST                        *
2949  013776  014000                        3.                      ;ITERATION COUNT                             *
2950           000135                       DAT35                   ;SCOPE ENTRY POINT                           *
2951                                        X=X+1
2952  014000  004567  167460        ;*****************************************************************************
2953  014004  000035                DAT35:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2954           000036                       35                      ;SEE NOTE 35 FOR DATA TEST PARAMETERS
2955                                        Y=Y+1
2956  014006  000136                ;*****************************************************************************
2957  014010  014024                AT136:  136                     ;ROUTINE #136                                *
2958  014012  000003                        AT137                   ;ADDRESS OF NEXT TEST                        *
2959  014014  014016                        3.                      ;ITERATION COUNT                             *
2960           000136                       DAT36                   ;SCOPE ENTRY POINT                           *
2961                                        X=X+1
2962  014016  004567  167442        ;*****************************************************************************
2963  014022  000036                DAT36:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2964           000037                       36                      ;SEE NOTE 36 FOR DATA TEST PARAMETERS
2965                                        Y=Y+1
2966  014024  000137                ;*****************************************************************************
2967  014026  014042                AT137:  137                     ;ROUTINE #137                                *
2968  014030  000003                        AT140                   ;ADDRESS OF NEXT TEST                        *
2969  014032  014034                        3.                      ;ITERATION COUNT                             *
2970           000137                       DAT37                   ;SCOPE ENTRY POINT                           *
2971                                        X=X+1
2972  014034  004567  167424        ;*****************************************************************************
2973  014040  000037                DAT37:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2974           000040                       37                      ;SEE NOTE 37 FOR DATA TEST PARAMETERS
                                            Y=Y+1
```

```
2975
2976  014042  000140                    AT140:  140                     ;TEST NUMBER 140
2977  014044  014156                            AT141                   ;ADDRESS OF NEXT TEST
2978  014046  000012                            10.                     ;TEST ITERATION COUNT
2979  014050  014072                            APBA                    ;SCOPE ENTRY POINT
2980                                    ;*****************************************************************
2981                                    ;DATA TEST USING JUMPER CONNECTOR. TX SPEED = 11, RX SPEED = 11,
2982                                    ;CHAR LENGTH = 11, STOP CODE = 1.  USES SPECIAL BINARY COUNT PATTERN
2983                                    ;FOR DATA.  NO INTERRUPT.
2984
2985  014052  012777  000430  165024            MOV     #430,@TXCSR     ;SET TX SPEED = 11, STOP CODE = 1
2986  014060  012777  003031  165012            MOV     #3031,@RXCSR    ;SET RX SPEED = 11, CHAR. LENGTH = 11
2987  014066  004767  166766                    JSR     7,INBIN         ;INITIALIZE BINARY COUNT PATTERN
2988  014072  012767  001750  165146  APBA:     MOV     #1000.,CTRA     ;SET CHARACTER COUNT TO 1000
2989  014100  105777  165000          APBB:     TSTB    @TXCSR          ;WAIT FOR TX READY
2990  014104  100375                            BPL     .-4
2991  014106  004767  167052                    JSR     7,GTBINP        ;GET BINARY CHARACTER
2992  014112  110167  167114                    MOVB    %1,CRBUFA       ;SAVE CHAR IN CRBUFA AND
2993  014116  042767  177740  165106           BIC     #177740,CRBUFA  ;MASK OFF ALL BUT 5 LSB.
2994  014124  110177  164756                    MOVB    %1,@TXBUF       ;LOAD CHAR.
2995  014130  105777  164744                    TSTB    @RXCSR          ;WAIT FOR RECEIVER
2996  014134  100375                            BPL     .-4             ;TO RECEIVE CHARACTER
2997  014136  117767  164740  165064           MOVB    @RXBUF,CRBUF    ;LOAD RECEIVED DATA INTO CRBUF
2998  014144  104004                            DATCHK                  ;CHECK DATA
2999  014146  005367  165074                    DEC     CTRA            ;TESTED 1000 CHARACTERS
3000  014152  001352                            BNE     APBB            ;BRANCH IF NOT
3001  014154  104012                            SCOPE                   ;YES. SCOPE
3002                                    ;*****************************************************************
3003  014156  000141                    AT141:  141                     ;TEST NUMBER 141
3004  014160  177777                            ATLAST                  ;ADDRESS OF NEXT TEST
3005  014162  000144                            100.                    ;TEST ITERATION COUNT
3006  014164  014166                            AQBA                    ;SCOPE ENTRY POINT
3007                                    ;*****************************************************************
3008                                    ;TEST THAT WHEN RXCSR BIT 1 IS SET THAT THE OUTPUT DATA LINE
3009                                    ;IS PULLED TO A SPACE.
3010
3011  014166  012777  000004  164710  AQBA:     MOV     #BIT2,@TXCSR    ;SET MAINTENANCE BIT IN TXCSR
3012  014174  012777  000002  164676            MOV     #BIT1,@RXCSR
3013  014202  012777  000377  164676            MOV     #377,@TXBUF     ;LOAD BUFFER
3014  014210  105777  164664                    TSTB    @RXCSR          ;WAIT FOR RECEIVER
3015  014214  100375                            BPL     .-4             ;TO RECEIVE CHARACTER
3016  014216  027727  164660  000000           CMP     @RXBUF,#0       ;CHARACTER RECEIVED SHOULD BE 0
3017  014224  001401                            BEQ     .+4
3018  014226  104003                            ERROR                   ;CHARACTER OTHER THAN 0
3019  014230  104011                            SRESET                  ;ISSUE RESET
3020  014232  104012                            SCOPE
3021                                    ;SUBROUTINE TO SET RXCSR DONE BIT.
3022  014234  052777  000004  164642  STRXD:    BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT.
3023  014242  005077  164640                    CLR     @TXBUF          ;LOAD TXBUF.
3024  014246  104016                            DELAY                   ;DELAY 200 MSECS.
3025  014250  000310                            200.
3026  014252  000207                            RTS     %7              ;EXIT.
3027                                    ;SUBROUTINE TO CHECK THAT CTRA THROUGH CTRD CONTAIN DESCENDING VALUES.
3028  014254  026767  164766  164766  CMPT:     CMP     CTRA,CTRB
3029  014262  101424                            BLOS    CMPTA
3030  014264  026767  164756  164760            CMP     CTRA,CTRC
```

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  3031  014272  101420                                BLOS    CMPTA
  3032  014274  026767  164746  164752                CMP     CTRA,CTRD
  3033  014302  101414                                BLOS    CMPTA
  3034  014304  026767  164740  164740                CMP     CTRB,CTRC
  3035  014312  101410                                BLOS    CMPTA
  3036  014314  026767  164730  164732                CMP     CTRB,CTRD
  3037  014322  101404                                BLOS    CMPTA
  3038  014324  026767  164722  164722                CMP     CTRC,CTRD
  3039  014332  101002                                BHI     CMPTB
  3040  014334  062716  000002          CMPTA:        ADD     #2,(SP)
  3041  014340  000207                    CMPTB:      RTS     PC
```

```
                                        ;**********
                                        ;PRG1 - TRANSMITTER SCOPE LOOP
                                        ;**********
014342  104000                  PRG1:   TYPE                            ;TYPE PROGRAM TITLE.
014344  015763                          P1TIT
014346  004567  166362                  JSR     5,LINSEL                ;GO GET LINE # FROM USER
014352  004767  000302                  JSR     %7,SETPAR               ;GO SET PARAMETERS.
014356  104000                          TYPE                            ;TYPE SELECT CHAR AND DELAY.
014360  016215                          SELCAD
014362  000000                          HALT                            ;WAIT FOR USER.
014364  116767  163200  000010  PRG1A:  MOVB    SR,PRG1B                ;DELAY COUNT TO PRG1B.
014372  116777  163173  164506          MOVB    SR+1,@TXBUF             ;LOAD TXBUF.
014400  104016                          DELAY                           ;DELAY # OF MSECS. SET AT SR.
014402  000000                  PRG1B:  OPEN
014404  000767                          BR      PRG1A                   ;REPEAT.
                                        ;**********
                                        ;PRG2 - RECEIVER SCOPE LOOP.
                                        ;**********
014406  104000                  PRG2:   TYPE                            ;TYPE PROGRAM TITLE.
014410  016023                          P2TIT
014412  004567  166316                  JSR     5,LINSEL                ;GO GET LINE # FROM USER
014416  004767  000236                  JSR     %7,SETPAR               ;GO SET PARAMETERS.
014422  104000                          TYPE                            ;TYPE SELECT CHAR AND DELAY.
014424  016215                          SELCAD
014426  000000                          HALT                            ;WAIT FOR USER.
014430  004767  000256          PRG2A:  JSR     7,STPPRB                ;RELOAD PARAMETERS
014434  052777  000004  164442          BIS     #BIT2,@TXCSR            ;SET MAINTENANCE BIT.
014442  116767  163122  00001           MOVB    SR,PRG2B                ;DELAY COUNT TO PRG2B.
014450  116777  163115  164430          MOVB    SR+1,@TXBUF             ;LOAD TXBUF.
014456  104016                          DELAY                           ;DELAY # OF MSECS. SET IN SR.
014460  000000                  PRG2B:  OPEN
014462  017700  164414                  MOV     @RXBUF,%0               ;RXBUF CONTENTS TO R0.
014466  000005                          RESET                           ;DISPLAY CONTENTS OF RXBUF (IN R0),
014470  000005                          RESET                           ;BY ISSUING 5 RESET INSTRUCTIONS
014472  000005                          RESET
014474  000005                          RESET
014476  000005                          RESET
014500  000753                          BR      PRG2A
                                        ;**********
                                        ;PRG3 - SINGLE CHARACTER MAINTENANCE MODE DATA TEST.
                                        ;**********
014502  104000                  PRG3:   TYPE                            ;TYPE PROGRAM TITLE.
014504  016524                          P3TIT
014506  004567  166222                  JSR     5,LINSEL                ;GO GET LINE # FROM USER
014512  004767  000142                  JSR     %7,SETPAR               ;SET PARAMETERS.
014516  104000                          TYPE                            ;TYPE: SELECT CHARACTER.
014520  016670                          SELCAR
014522  000000                          HALT
014524  116767  163040  164500  PRG3A:  MOVB    SR,CRBUFA               ;MOVE DATA CHAR TO CRBUFA.
014532  004767  000040                  JSR     %7,MOUTIN               ;GO OUTPUT, RECEIVE, AND CHECK DATA.
014536  000772                          BR      PRG3A
                                        ;**********
                                        ;PRG4 - SPECIAL BINARY COUNT MAINTENANCE MODE DATA TEST.
                                        ;**********
014540  104000                  PRG4:   TYPE                            ;TYPE PROGRAM TITLE.
```

```
3098  014542  016574                              P4TIT
3099  014544  004567  166164                      JSR     5,LINSEL        GO GET LINE # FROM USER
3100  014550  004767  000104                      JSR     %7,SETPAR       ;SET PARAMETERS.
3101  014554  004767  166300                      JSR     %7,INBIN        ;INITIALIZE BINARY COUNT.
3102  014560  004767  166400            PRG4A:    JSR     %7,GTBINP       ;GET BINARY CHARACTER.
3103  014564  110167  164442                      MOVB    %1,CRBUFA       ;SAVE AT CRBUFA.
3104  014570  004767  000002                      JSR     %7,MOUTIN       ;GO OUTPUT, RECEIVE, AND CHECK DATA.
3105  014574  000771                              BR      PRG4A           ;REPEAT.
3106                                  ;SUBROUTINE TO OUTPUT, RECEIVE, AND CHECK DATA WITH MAINTENANCE BIT SET.
3107  014576  032767  000400  162764  MOUTIN:   BIT     #BIT8,SR        ;SEE IF BIT 8 IS SET.
3108  014604  001001                              BNE     .+4             ;BRANCH IF SET.
3109  014606  104002                              STALL                   ;SET. DO A RANDOM STALL.
3110  014610  105777  164270                      TSTB    @TXCSR          ;WAIT FOR TX READY.
3111  014614  100375                              BPL     .-4
3112  014616  052777  000004  164260              BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT.
3113  014624  016777  164402  164254              MOV     CRBUFA,@TXBUF   ;LOAD TXBUF.
3114  014632  046767  164376  164372              BIC     CARMSK,CRBUFA   ;MASK OFF NON-EXPECTED BITS.
```

```
  3115  014640  105777  164234                TSTB    @RXCSR          ;WAIT FOR RECEIVER DONE BIT.
  3116  014644  100375                        BPL     .-4
  3117  014646  017767  164230  164354        MOV     @RXBUF,CRBUF    ;MOVE CHAR IN RX BUFFER TO CRBUF.
  3118  014654  104004                        DATCHK                  ;COMPARE EXPECTED AND RECEIVED DATA
  3119  014656  000207                        RTS     PC              ;EXIT.
```

```
3120                                        ;
3121                                        ;SUBROUTINE TO SET STOP CODE,SPEED, AND CHARACTER LENGTH PARAMETERS SET
3122                                        ;IN SR INTO TXCSR AND RXCSR.
3123  014660  104000                        SETPAR: TYPE                    ;TYPE: SELECT PARAMETERS.
3124  014662  016060                                SELPAR
3125  014664  000000                                HALT                    ;WAIT FOR USER.
3126  014666  016767  162676  164372                MOV     SR,SRT          ;SR TO SRT.
3127  014674  004567  166332                        JSR     5,DACNV
3128  014700  001266                                SRT
3129  014702  016665                                APARM
3130  014704  000002                                2
3131  014706  104000                                TYPE
3132  014710  016647                                PARMTS
3133  014712  032767  000020  164346  STPARB: BIT     #BIT4,SRT               ;SEE IF SR BIT 4 IS SET.
3134  014720  001403                                BEQ     .+10            ;BRANCH IF NOT SET.
3135  014722  052777  000400  164154                BIS     #BIT8,@TXCSR    ;SET. SET STOP CODE TO A 1.
3136  014730  032767  000010  164330                BIT     #BIT3,SRT       ;SEE IF SR BIT 3 IS SET.
3137  014736  001406                                BEQ     .+16            ;BRANCH IF NOT SET.
3138  014740  052777  000020  164136                BIS     #BIT4,@TXCSR    ;SET BIT4 IN TXCSR AND RXCSR
3139  014746  052777  000020  164124                BIS     #BIT4,@RXCSR    ;(MSB OF SPEED SELECT BITS.)
3140  014754  032767  000004  164304                BIT     #BIT2,SRT       ;SEE IF SR BIT 2 IS SET.
3141  014762  001406                                BEQ     .+16            ;BRANCH IF NOT SET.
3142  014764  052777  000010  164112                BIS     #BIT3,@TXCSR    ;SET BIT3 IN TXCSR AND RXCSR
3143  014772  052777  000010  164100                BIS     #BIT3,@RXCSR    ;(LSB OF SPEED SELECT BITS).
3144  015000  012767  177400  164226                MOV     #177400,CARMSK  ;SET CHARACTER MASK TO 8 BITS.
3145  015006  032767  000002  164252                BIT     #BIT1,SRT       ;SEE IF SR BIT 1 IS SET.
3146  015014  001421                                BEQ     STPARA          ;BRANCH IF NOT SET.
3147  015016  012767  177700  164210                MOV     #177700,CARMSK  ;CHANGE CHAR MASK TO 6 BITS.
3148  015024  052777  002000  164046                BIS     #BIT10,@RXCSR   ;SET RXCSR BIT 10(MSB OF CHAR LENGTH BITS.
3149  015032  032767  000001  164226                BIT     #BIT0,SRT       ;SEE IF SR BIT0 IS SET.
3150  015040  001406                                BEQ     .+16            ;BRANCH IF NOT SET.
3151  015042  012767  177740  164164                MOV     #177740,CARMSK  ;CHANGE CHAR MASK TO 5 BITS.
3152  015050  052777  001000  164022                BIS     #BIT9,@RXCSR    ;SET RXCSR BIT9 (LSB OF CHAR LENGTH BITS).
3153  015056  000207                                RTS     %7              ;EXIT.
3154  015060  032767  000001  164200  STPARA: BIT     #BIT0,SRT               ;SEE IF SR BIT0 IS SET.
3155  015066  001773                                BEQ     STPARA-2        ;BRANCH IF NOT SET.
3156  015070  012767  177600  164136                MOV     #177600,CARMSK  ;CHANGE CHAR MASK TO 7 BITS.
3157  015076  000764                                BR      STPARA-10
3158
3159                                        ;VECTOR ASSIGNMENT TABLE
3160  015100  000300                        VECTAB: 300                     ;LINE 0 VECTOR
3161  015102  000310                                310                     ;LINE 1 VECTOR
3162  015104  000320                                320                     ;LINE 2   "
3163  015106  000330                                330                     ;   "  3   "
3164  015110  000340                                340                     ;   "  4   "
3165  015112  000350                                350                     ;   "  5   "
3166  015114  000360                                360                     ;   "  6   "
3167  015116  000370                                370                     ;   "  7   "
3168  015120  000400                                400                     ;   "  10  "
3169  015122  000410                                410                     ;   "  11  "
3170  015124  000420                                420                     ;   "  12  "
3171  015126  000430                                430                     ;   "  13  "
3172  015130  000440                                440                     ;   "  14  "
3173  015132  000450                                450                     ;   "  15  "
3174  015134  000460                                460                     ;   "  16  "
3175  015136  000470                                470                     ;   "  17  "
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F06


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  3176  015140  000500                          500                    ;  "  20  "
  3177  015142  000510                          510                    ;  "  21  "
  3178  015144  000520                          520                    ;  "  22  "
  3179  015146  000530                          530                    ;  "  23  "
  3180  015150  000540                          540                    ;  "  24  "
  3181  015152  000550                          550                    ;  "  25  "
  3182  015154  000560                          560                    ;  "  26  "
  3183  015156  000570                          570                    ;  "  27  "
  3184  015160  000600                          600                    ;  "  30  "
  3185  015162  000610                          610                    ;  "  31  "
  3186  015164  000620                          620                    ;  "  32  "
  3187  015166  000630                          630                    ;  "  33  "
  3188  015170  000640                          640                    ;  "  34  "
  3189  015172  000650                          650                    ;  "  35  "
  3190  015174  000660                          660                    ;  "  36  "
  3191  015176  000670                          670                    ;  "  37  "
  3192
```

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 3193
 3194                                                ;ASCII MESSAGES
 3195  015200  050045     040          EMO:    .ASCII  '%P '
 3196  015203     040  020040  052040  APNUMB: .ASCII  ' . T '
 3197  015210     040
 3198  015211     040  020040  050040  ATNUMB: .ASCII  '    PC '
 3199  015216  020103
 3200  015220  020040  020040  020040  APC:    .ASCII  '       @'
 3201  015226  020040     100
 3202  015231     045  050045  043522  POTIT:  .ASCII  '%%PRGO - INPUT-OUTPUT LOGIC TESTS. '
 3203  015236  020060  020055  047111
 3204  015244  052520  026524  052517
 3205  015252  050124  052125  046040
 3206  015260  043517  041511  052040
 3207  015266  051505  051524  020056
 3208  015274  044504  041523  047117          .ASCII  'DISCONNECT DC11 FFOM MODEM.%'
 3209  015302  042516  052103  042040
 3210  015310  030503  020061  051106
 3211  015316  046517  046440  042117
 3212  015324  046505  022456
 3213  015330  047101  020104  047503          .ASCII  'AND CONNECT JUMPER TO CABLE.%@'
 3214  015336  047116  041505  020124
 3215  015344  052512  050115  051105
 3216  015352  052040  020117  040503
 3217  015360  046102  027105  040045
 3218  015366  054124  051503  020122  ATXCSR: .ASCII  'TXCSR S/B: '
 3219  015374  027523  035102     040
 3220  015401     040  020040  020040  ATXSB:  .ASCII  '       WAS: '
 3221  015406  020040  053440  051501
 3222  015414  020072
 3223  015416  020040  020040  020040  ATXWAS: .ASCII  '     @'
 3224  015424     100
 3225  015425     122  041530  051123  ARXCSR: .ASCII  'RXCSR S/B: '
 3226  015432  051440  041057  020072
 3227  015440  020040  020040  020040  ARXSB:  .ASCII  '       WAS: '
 3228  015446  020040  040527  035123
 3229  015454     040
 3230  015455     040  020040  020040  ARXWAS: .ASCII  '     @'
 3231  015462  040040
 3232  015464  054124  051440  042520  ETXTIM: .ASCII  'TX SPEEDS NOT IN ASCENDING ORDER.@'
 3233  015472  042105  020123  047516
 3234  015500  020124  047111  040440
 3235  015506  041523  047105  044504
 3236  015514  043516  047440  042122
 3237  015522  051105  040056
 3238  015526  044524  042515  043040  ESTPCD: .ASCII  'TIME FOR 2 STOP CODE OP LESS THAN FOR 1.@'
 3239  015534  051117  031040  051440
 3240  015542  047524  020120  047503
 3241  015550  042504  047440  020120
 3242  015556  042514  051523  052040
 3243  015564  040510  020116  047506
 3244  015572  020122  027061     100
 3245  015577     124  020130  044103  ETCLGT: .ASCII  'TX CHAR LENGTHS NOT IN DESCENDING ORDER.@'
 3246  015604  051101  046040  047135
 3247  015612  052107  051510  047040
 3248  015620  052117  044440  020116
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3249  015626  042504  041523  047105
3250  015634  044504  043516  047440
3251  015642  042122  051105  040056
3252  015650  054122  051440  042520  ERXTIM: .ASCII  'RX SPEEDS NOT IN ASCENDING ORDER.@'
3253  015656  042105  020123  047516
3254  015664  020124  047111  040440
3255  015672  041523  047105  044504
3256  015700  043516  047440  042122
3257  015706  051105  040056
3258  015712  054122  041440  040510  ERCLGT: .ASCII  'RX CHAR LENGTHS NOT IN DESCENDING ORDER.@'
3259  015720  020122  042514  043516
3260  015726  044124  020123  047516
3261  015734  020124  047111  042040
3262  015742  051505  042503  042116
3263  015750  047111  020107  051117
3264  015756  042504  027122     100
3265  015763     045  050045  043522  P1TIT:  .ASCII  '%%PRG1 - TRANSMITTER SCOPE LOOP@'
3266  015770  020061  020055  051124
3267  015776  047101  046523  052111
3268  016004  042524  020122  041523
3269  016012  050117  020105  047514
3270  016020  050117     100
3271  016023     045  050045  043522  P2TIT:  .ASCII  '%%PRG2 - RECEIVER SCOPE LOOP@'
3272  016030  020062  020055  042522
3273  016036  042503  053111  051105
3274  016044  051440  047503  042520
3275  016052  046040  047517  040120
3276  016060  051445  052105  050040  SELPAR: .ASCII  '%SET PARAMETERS IN SR AS FOLLOWS:'
3277  016066  051101  046501  052105
3278  016074  051105  020123  047111
3279  016102  051440  020122  051501
3280  016110  043040  046117  047514
3281  016116  051527     072
3282  016121     045  051123  020064          .ASCII  '%SR4 = STOP CODE%SR3 AND 2 = SPEED'
3283  016126  020075  052123  050117
3284  016134  041440  042117  022505
3285  016142  051123  020063  047101
3286  016150  020104  020062  020075
3287  016156  050123  042505     104
3288  016163     045  051123  020061          .ASCII  '%SR1 AND 0 = CHAR LENGTH%@'
3289  016170  047101  020104  020060
3290  016176  020075  044103  051101
3291  016204  046040  047105  052107
3292  016212  022510     100
3293  016215     045  042523  020124  SELCAD: .ASCII  '%SET TEST CHAR CODE IN SR15-SR8, SET DELAY TIME IN SR7-SR0.@'
3294  016222  042524  052123  041440
3295  016230  040510  020122  047503
3296  016236  042504  044440  020116
3297  016244  051123  032461  051455
3298  016252  034122  020054  042523
3299  016260  020124  042504  040514
3300  016266  020131  044524  042515
3301  016274  044440  020116  051123
3302  016302  026467  051123  027060
3303  016310     100
3304  016311     040  042040  052101  ERDAT:  .ASCII  '  DATA ERR  S/B: '
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  3305  016316  020101  051105  020122
  3306  016324  051440  041057  020072
  3307  016332  020040  020040  053440  AASB:   .ASCII  '     WAS: '
  3308  016340  051501  020072
  3309  016344  020040  040040          AWAS:   .ASCII  '   @'
  3310  016350  037445     100          AINPRG: .ASCII  '%?@'
  3311  016353     045  042523  020124  ASETSR: .ASCII  '%SET DESIRED SR OPTIONS. NORMAL OPERATION '
  3312  016360  042504  044523  042522
  3313  016366  020104  051123  047440
  3314  016374  052120  047511  051516
  3315  016402  020056  047516  046522
  3316  016410  046101  047440  042520
  3317  016416  040522  044524  047117
  3318  016424     040
  3319  016425     111  020123  044527          .ASCII  'IS WITH SR = 000000@'
  3320  016432  044124  051440  020122
  3321  016440  020075  030060  030060
  3322  016446  030060     100
  3323  016451     045  047111  047503  AINCRT: .ASCII  '%INCORRECT ROUTINE SELECTED.@'
  3324  016456  051122  041505  020124
  3325  016464  047522  052125  047111
  3326  016472  020105  042523  042514
  3327  016500  052103  042105  040056
  3328  016506  050045  047522  051107  APCEND: .ASCII  '%PROGRAM END.@'
  3329  016514  046501  042440  042116
  3330  016522  040056
  3331  016524  022445  051120  031507  P3TIT:  .ASCII  '%%PRG3-SINGLE CHAR MAINT MODE DATA TEST@'
  3332  016532  051455  047111  04[illegible]07
  3333  016540  020105  044103  051101
  3334  016546  046440  044501  052116
  3335  016554  046440  042117  020105
  3336  016562  040504  040524  052040
  3337  016570  051505  040124
  3338  016574  022445  051120  032107  P4TIT:  .ASCII  '%%PRG4-SPEC BIN COUNT MAINT MODE DATA TEST@'
  3339  016602  020455  042520  020103
  3340  016610  044502  020116  047503
  3341  016616  047125  020124  040515
  3342  016624  047111  020124  047515
  3343  016632  042504  042040  052101
  3344  016640  020101  042524  052123
  3345  016646     100
  3346  016647     045  040520  040522  PARMTS: .ASCII  '%PARAMETERS = '
  3347  016654  042515  042524  051522
  3348  016662  036440     040
  3349  016665     040  040040          APARM:  .ASCII  '  @'
  3350  016670  051445  052105  052040  SETCAR: .ASCII  '%SET TEST CHAR CODE IN SR7-SR0.@'
  3351  016676  051505  020124  044103
  3352  016704  051101  041440  042117
  3353  016712  020105  047111  051440
  3354  016720  033522  051455  030122
  3355  016726  040056
  3356  016730  046045  040517  020104  LDLINE: .ASCII  '%LOAD LINE NO. (8) INTO SR 3-7@'
  3357  016736  044514  042516  047040
  3358  016744  027117  024040  024470
  3359  016752  044440  052116  02011[illegible]
  3360  016760  051123  031440  033455
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  3361  016766      100
  3362  016770      040  046040  047111  ALINE:  .ASCII  '  LINE NO.'
  3363  016774  020105  047516      056
  3364  017001      040  020040  040527  SELINE: .ASCII  '   WAS SELECTED@'
  3365  017006  020123  042523  042514
  3366  017014  052103  042105      100
  3367  017021  000001                  DEND:   .END
```

DZDCAB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
AAA     003714          1156    1159#
AAAA    006226          1666    1669#
AAAB    006240          1670    1672#
AAB     003726          1161#   1164
AABA    012544          2547    2552#
AABB    012570          2558#   2564    2567
AABC    012600          2553    2560#
AABD    012614          2561    2563#
AABE    012620          2560    2565#
AAE     003730          1159    1162#
AASB    016332           740    3307#
ABA     003746          1169    1172#
ABAA    007222          1878    1881#
ABAB    007314          1885    1898#
ABB     003760          1174#   1177
ABBA    012636          2573    2576#
ABBB    012670          2582    2584#
ABE     003762          1172    1175#
ACA     004000          1183    1187#
ACAA    007326          1903    1907#
ACAB    007462          1920    1932#
ACB     004012          1189#   1192
ACBA    012716          2594    2599#
ACBB    012754          2598    2607#
ACBC    012756          2606    2608#
ACE     004014          1187    1190#
ADA     004032          1199    1202#
ADAA    007502          1938    1941#
ADAB    007516          1943    1945#
ADB     004044          1204#   1207
ADE     004046          1202    1205#
ADTEMP  003444          1079    1098#
AEA     004064          1213    1216#
AEAA    007532          1951    1955#
AEAB    007552          1959    1962#
AEB     004100          1217    1220#
AEC     004122          1222    1225#
AED     004142          1219    1224    1227    1229#
AFA     004164          1236    1239#
AFAA    007564          1968    1972#
AFAB    007612          1977    1980#
AFB     004206          1241    1244#
AFBA    006252          1683    1688#
AFBB    006274          1690    1693#
AFBC    006314          1692    1695    1697#
AFC     004230          1246    1249#
AFD     004250          1243    1248    1251    1253#
AGA     004262          1259    1262#
AGAA    007624          1985    1989#
AGAB    007652          1994    1997#
AGB     004276          1263    1266#
AGBA    006330          1703    1708#
AGBB    006360          1711    1714#
AGBC    006410          1720    1723#
AGBD    006424          1725    1729#
AGBE    006454          1713    1722    1727    1735    1737    1738#
```

DZDCAB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
AGC     004320          1268    1271*
AGD     004340          1265    1270    1273    1275*
AHA     004362          1282    1285*
AHAA    007664          2002    2006*
AHAB    007712          2011    2014*
AHB     004376          1286    1289*
AHC     004420          1291    1294*
AHD     004440          1288    1293    1296    1298*
AIA     004462          1306    1309*
AIAA    007724          2020    2024*
AIAF    010064          2042    2045*
AIAS    010066          2029    2032    2036    2039    2046*
AIASA   010110          2052*   2056
AIAST   010130          2030    2033    2037    2040    2046*   2054*   2058*
AIB     004476          1310    1313*
AIC     004520          1315    1318*
AID     004540          1312    1317    1320    1322*
AINCRT  016451           715    3323*
AINPRG  016350          3310*
AJA     004562          1329    1332*
AJAA    010142          2063    2068*
AJAB    010226          2077    2081*
AJAS    010230          2071    2074    2082*
AJASA   010252          2088*   2092
AJASB   010274          2094*   2098
AJAST   010314          2072    2075    2082*   2090*   2096*   2100*
AJB     004604          1334    1337*
AJBA    006604          1772    1777*
AJBB    006620          1782*
AJBC    006642          1784    1787*
AJBD    006662          1786    1789    1791*
AJC     004626          1339    1342*
AJD     004646          1336    1341    1344    1346*
AKA     004670          1355    1359*
AKAA    010326          2106    2111*
AKAB    010474          2130    2133*
AKAS    010476          2116    2120    2124    2127    2134*
AKASA   010520          2140*   2144
AKAST   010540          2117    2121    2125    2128    2134*   2142*   2146*
AKB     004700          1360    1362*
AKBA    006676          1797    1803*
AKBB    006704          1804*
AKBC    006734          1807    1810*
AKBD    006750          1811    1814*
AKBE    007000          1809    1813    1818    1821*
ALA     004712          1367    1370*
ALAA    010552          2152    2157*
ALAB    010602          2162    2165*
ALAC    010614          2164    2167    2169*
ALB     004726          1371    1374*
ALBA    007122          1853    1858*
ALBB    007144          1860    1863*
ALBC    007166          1865    1868*
ALBD    007206          1862    1867    1870    1872*
ALC     004750          1376    1379*
ALD     004770          1373    1378    1381    1383*
```

DZDCAB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
ALINE   016767          1015    3362#
AMA     005012          1392    1395#
AMAA    010626          2174    2178#
AMAB    010640          2180#   2181
AMAC    010662          2184    2186#
AMB     005024          1396    1398#
AMBA    006470          1745    1750#
AMBB    006526          1754    1757#
AMBC    006542          1758    1761#
AMBD    006570          1756    1760    1764    1766#
ANA     005036          1404    1407#
ANAA    010674          2192    2197#
ANAB    010744          2205    2207#
ANB     005060          1409    1412#
ANBA    012770          2619#
ANBB    013002          2616    2621#
ANBC    013010          2622#   2651
ANBD    013052          2631#   2635
ANBE    013106          2637    2641#
ANBF    013112          2639    2643#
ANBG    013132          2640    2642    2650#
ANC     005076          1414    1417#
AND     005116          1411    1416    1419    1421#
ANW     005130          1426    1430#
ANX     005144          1431    1434#
ANY     005166          1436    1439#
ANZ     005206          1433    1438    1441    1443#
AOAA    010762          2214    2219#
AOAB    011032          2227    2229#
AOBA    007014          1827    1831#
AOBB    007036          1833    1836#
AOBC    007066          1839    1842#
AOBD    007106          1835    1841    1844    1846#
APA     005230          1453    1456#
APAA    011050          2235    2240#
APAB    011104          2246    2248#
APARM   016665          3129    3349#
APB     005242          1457    1459#
APDA    014072          2979    2988#
APDB    014100          2985#   3000
APC     015220           761    3200#
APGEND  016506           719    3328#
APNUMB  015203           765    3196#
AQA     005254          1464    1467#
AQAA    011122          2255    2260#
AQAB    011346          2286    2289#
AQAS    011344          2267    2273    2279    2283    2290#
AQASA   011372          2297#   2301
AQAST   011412          2268    2274    2280    2284    2290*   2299*   2303#
AQB     005270          1468    1471#
AQBA    014166          3006    3011#
AQC     005312          1473    1476#
AQD     005332          1470    1475    1478    1480#
ARA     005354          1487    1490#
ARAA    011424          2309    2314#
ARAB    011572          2333    2336#
```

DZDCAB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
ARAS    011574          2319    2323    2327    2330    2337#
ARASA   011630          2346#   2350
ARAST   011650          2320    2324    2328    2331    2337*   2348*   2352#
ARB     005370          1491    1494#
ARBA    005454          1511    1516#
ARBB    005466          1517    1519#
ARC     005412          1496    1499#
ARD     005432          1493    1498    1501    1503#
ARXCSR  015425          1931    3225#
ARXSB   015440          1924    3227#
ARXWAS  015455          1928    3230#
ASA     005500          1525    1528#
ASAA    011662          2358    2361#
ASAB    011714          2365    2368#
ASAC    011726          2369    2373#
ASAD    011740          2367    2372    2375    2378#
ASAS    011746          2361    2362    2380#
ASB     005522          1530    1533#
ASC     005544          1535    1538#
ASD     005564          1532    1537    1540    1542#
ASETSR  016353           711    3311#
ATA     005606          1549    1552#
ATAA    012006          2390    2397#
ATAB    012032          2402#   2404
ATAC    012034          2396    2403#
ATB     005620          1553    1555#
ATLAST= 177777           710#   3004
ATNUMB  015211           769    3198#
ATXCSR  015366          1897    3218#
ATXSB   015401          1890    3220#
ATXWAS  015416          1894    3223#
AT0     003704          1144    1153#
AT1     003736          1154    1166#
AT10    004452          1280    1303#
AT100   013142          2614    2656#
AT101   013160          2657    2666#
AT102   013176          2667    2676#
AT103   013214          2677    2686#
AT104   013232          2687    2696#
AT105   013250          2697    2706#
AT106   013266          2707    2716#
AT107   013304          2717    2726#
AT11    004552          1304    1326#
AT110   013322          2727    2736#
AT111   013340          2737    2746#
AT112   013356          2747    2756#
AT113   013374          2757    2766#
AT114   013412          2767    2776#
AT115   013430          2777    2786#
AT116   013446          3007    2796#
AT117   013464          3017    2806#
AT12    004660          1327    1352#
AT120   013502          2807    2816#
AT121   013520          2817    2826#
AT122   013536          2827    2836#
AT123   013554          2837    2846#
```

AT124	013572	2947	2856#
AT125	013610	2957	2866#
AT126	013626	2967	2876#
AT127	013644	2977	2886#
AT13	004702	1353	1364#
AT130	013662	2987	2896#
AT131	013700	2997	2906#
AT132	013716	2907	2916#
AT133	013734	2917	2926#
AT134	013752	2927	2936#
AT135	013770	2937	2946#
AT136	014006	2947	2956#
AT137	014024	2957	2966#
AT14	005002	1365	1389#
AT140	014042	2967	2976#
AT141	014156	2977	3003#
AT15	005026	1390	1401#
AT16	005120	1402	1423#
AT17	005220	1424	1450#
AT2	003770	1167	1180#
AT20	005244	1451	1461#
AT21	005344	1462	1484#
AT22	005444	1485	1508#
AT23	005470	1509	1522#
AT24	005576	1523	1546#
AT25	005622	1547	1558#
AT26	005722	1559	1581#
AT27	006022	1582	1604#
AT3	004022	1181	1196#
AT30	006122	1605	1627#
AT31	006146	1628	1639#
AT32	006172	1640	1652#
AT33	006216	1653	1663#
AT34	006242	1664	1680#
AT35	006320	1681	1700#
AT36	006460	1701	1742#
AT37	006574	1743	1769#
AT4	004054	1197	1210#
AT40	006666	1770	1794#
AT41	007004	1795	1824#
AT42	007112	1825	1850#
AT43	007212	1851	1875#
AT44	007316	1876	1900#
AT45	007472	1901	1935#
AT46	007522	1936	1948#
AT47	007554	1949	1965#
AT5	004154	1211	1233#
AT50	007614	1966	1982#
AT51	007654	1983	1999#
AT52	007714	2000	2017#
AT53	010132	2018	2060#
AT54	010316	2061	2103#
AT55	010542	2104	2149#
AT56	010616	2150	2171#
AT57	010664	2172	2189#
AT6	004252	1234	1256#

```
AT60    010752          2190    2211#
AT61    011040          2212    2232#
AT62    011112          2233    2252#
AT63    011414          2253    2306#
AT64    011652          2307    2355#
AT65    011766          2356    2387#
AT66    012040          2388    2408#
AT67    012116          2409    2430#
AT7     004352          1257    1279#
AT70    012202          2431    2452#
AT71    012300          2453    2478#
AT72    012356          2479    2500#
AT73    012440          2501    2521#
AT74    012530          2522    2544#
AT75    012626          2545    2570#
AT76    012702          2571    2591#
AT77    012760          2592    2613#
AUA     005632          1561    1564#
AUAA    012054          2411    2417#
AUAB    012100          2423#
AUAC    012106          2416    2424#   2427
AUB     005646          1565    1568#
AUC     005670          1570    1573#
AUD     005710          1567    1572    1575    1577#
AVA     005732          1584    1587#
AVAA    012132          2433    2439#
AVAB    012170          2438    2446#
AVAC    012172          2445    2447#
AVB     005746          1588    1591#
AVC     005770          1593    1596#
AVD     006010          1590    1595    1598    1600#
AWA     006032          1607    1610#
AWAA    012212          2455    2459#
AWAB    012242          2466#   2472    2475
AWAC    012252          2460    2468#
AWAD    012266          2469    2471#
AWAE    012272          2468    2473#
AWAS    016344           736    2646    2649    3309#
AWB     006046          1611    1614#
AWC     006070          1616    1619#
AWD     006110          1613    1618    1621    1623#
AXA     006132          1630    1633#
AXAA    012324          2481    2489#
AXAB    012352          2487    2495#
AXAC    012354          2494    2496#
AXB     006144          1634    1636#
AYA     006156          1642    1645#
AYAA    012376          2503    2510#
AYAB    012422          2514#   2518
AYAC    012432          2508    2516#
AYB     006170          1646    1648#
AZA     006202          1655    1658#
AZAA    012460          2524    2531#
AZAB    012516          2529    2539#
AZAC    012520          2537    2540#
AZB     006214          1659    1661#
```

```
BDCNV   003336          1077#
BDCNVA  003356          1081#   1084
BELL    = 000007         639#
BIT0    = 000001         613#   1107    1216    1220    1221    1225    1226    1229    1239    1244    1249    1407    1408
                        1413    1417    1418    1688    1693    1708    1729    1750    1751    1761    1777    1782    1787
                        1803    1804    1805    1814    1815    1831    1836    1837    1842    1908    1932    3149    3154
BIT1    = 000002         612#   1240    1245    1250    1430    1434    1435    1439    1440    1443    1783    1788    3012
                        3145
BIT10   = 002000         603#    720    1610    1614    1615    1619    1620    1623    3149
BIT11   = 004000         602#    815
BIT12   = 010000         601#   1633    2364    2373
BIT13   = 020000         600#    755    1645    1806    1810    1817
BIT14   = 040000         599#    811    1658    1710    1719    1723    1734
BIT15   = 100000         597     598#   1395    1669    1753    1757    1763    1832    1838    1843    1859    1864    1869
BIT2    = 000004         611#   1108    1262    1266    1267    1271    1272    1275    1456    1689    1694    2157    2178
                        2265    2343    2380    2620    3011    3022    3069    3112    3140
BIT3    = 000010         610#   1285    1289    1290    1294    1295    1298    1467    1471    1472    1476    1477    1480
                        3136    3142    3143
BIT4    = 000020         609#   1309    1313    1314    1318    1319    1322    1490    1494    1495    1499    1500    1503
                        3133    3138    3139
BIT5    = 000040         608#   1516    2636
BIT6    = 000100         607#   1333    1337    1338    1342    1343    1346    1529    1533    1534    1538    1539    1542
                        2397    2418    2423    2439    2447    2461    2466    2489    2491    2510    2512    2514    2531
                        2534    2540    2554    2555    2558    2601    2603
BIT7    = 000200         606#   1552    1884    1887
BIT8    = 000400         605#   1370    1374    1375    1379    1380    1383    1564    1568    1569    1573    1574    1577
                        1858    1863    1868    2070    2073    3107    3135
BIT9    = 001000         604#    798     821    1587    1591    1592    1546    1597    1600    3152
BMOVA   003324          1071#   1073
BMOVE   003314          1019    1067#
CARMSK  001234          695#    1114    3114    3144*   3147*   3151*   3156*
CC      = 177776         592#
CHAINN  001752           683     811#
CHALT   = 104005         629#
CHNA    001770           812     815#
CHNAA   002006           816     819#
CHNAB   001762           813#    818
CHNB    002010           801     821#
CHR1    001236           696#
CHR2    001240           697#
CHR3    001242           698#
CMPT    014254          2041    2129    2285    2332    3028#
CMPTA   014334          3029    3031    3033    3035    3037    3040#
CMPTB   014340          3039    3041#
CNVCTR  003436          1080*   1083*   1095#
CRBUF   001230           693#    732     735    1118*   2997*   3117*
CRBUFA  001232           694#    732     739    1113*   1114*   2629*   2631*   2645    2992*   2993*   3091*   3103*   3113
                        3114*
CTRA    001246           700#   1109*   1120*   2024*   2030*   2068*   2072*   2076    2111*   2117*   2260*   2268*   2314*
                        2320*   2621*   2622*   2634*   2650*   2988*   2999*   3028    3030    3032
CTRB    001250           701#   2025*   2033*   2069*   2075*   2076    2112*   2121*   2261*   2274*   2315*   2324*   3028
                        3034    3036
CTRC    001252           702#   2026*   2037*   2113*   2125*   2262*   2280*   2316*   2328*   3030    3034    3038
CTRD    001254           703#   2027*   2040*   2114*   2128*   2263*   2284*   2317*   2331*   3032    3036    3038
CURTST  001144           663#    800     806     832*
DATAA   003516          1110#   1121
```

D2DCAB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
DATCHK= 104004          628*   1119   2998   3118
DATTST  003464         1105*   2662   2672   2682   2692   2702   2712   2722   2732   2742   2752   2762   2772
                       2782    2792   2802   2812   2822   2832   2842   2852   2862   2872   2882   2892   2902
                       2912    2922   2932   2942   2952   2962   2972
DATO    013152         2659    2662*
DATI    013170         2669    2672*
DATIO   013332         2739    2742*
DATI1   013350         2749    2752*
DATI2   013366         2759    2762*
DATI3   013404         2769    2772*
DATI4   013422         2779    2782*
DATI5   013440         2789    2792*
DATI6   013456         2799    2802*
DATI7   013474         2809    2812*
DATO2   013206         2679    2682*
DATO20  013512         2819    2822*
DATO21  013530         2829    2832*
DATO22  013546         2839    2842*
DATO23  013564         2849    2852*
DATO24  013602         2859    2862*
DATO25  013620         2869    2872*
DATO26  013636         2879    2882*
DATO27  013654         2889    2892*
DATO3   013224         2689    2692*
DATO30  013672         2899    2902*
DATO31  013710         2909    2912*
DATO32  013726         2919    2922*
DATO33  013744         2929    2932*
DATO34  013762         2939    2942*
DATO35  014000         2949    2952*
DATO36  014016         2959    2962*
DATO37  014034         2969    2972*
DATO4   013242         2699    2702*
DATO5   013260         2709    2712*
DATO6   013276         2719    2722*
DATO7   013314         2729    2732*
DECVAL  003456         1077    1103*
DELAY = 104016          638*    976   1956   1974   1991   2008   2049   2052   2085   2088   2094   2137   2140
                       2159    2207   2224   2243   2293   2297   2340   2346   2382   2578   2584   3024   3055
                       3072
DEND    017021         3367*
DIGIT   003440         1086*  1089*  1092*  1093   1096*
DLCNT   002662          956*   958    969*
DLY     002616          687    956*
DLYA    002640          961*   966
DLYB    002644          962*   963
DLYC    002656          959    967*
DTCHK   001344          677    732*
DTCHKA  001404          733    744*
EHALT = 104010          632*   775
EHLT    001332          681    726*
EHLTA   001342          727    729*
EMTA    002120          840*
EMTINT  002106          472    8??*
EMTTAB  001170          673*   842
EMT     015209          772   3195*
```

```
ERCLGT  015712           2335    3258#
ERCTR   001244            699#
ERDAT   016311            743    3304#
ERR     001406            676     747#
ERRA    001456            750     755#
ERRB    001542            747*    748*    751*    752*    753*    773#
ERRC    001546            756     775#
ERRD    001556            757*    758*    760     778#
ERRE    001560            749*    754*    776     779#
ERROR = 104003            627#   1130    1163    1176    1191    1206    1218    1223    1228    1242    1247    1252    1264
                          1269   1274    1287    1292    1297    1311    1316    1321    1335    1340    1345    1361    1372
                          1377   1382    1397    1410    1415    1420    1432    1437    1442    1458    1469    1474    1479
                          1492   1497    1502    1518    1531    1536    1541    1554    1566    1571    1576    1589    1594
                          1599   1612    1617    1622    1635    1647    1660    1671    1691    1696    1712    1721    1726
                          1736   1755    1759    1765    1785    1790    1808    1812    1819    1834    1840    1845    1861
                          1866   1871    1944    1960    1978    1995    2012    2163    2168    2185    2206    2228    2247
                          2366   2370    2376    2401    2426    2444    2465    2474    2493    2517    2536    2557    2566
                          2583   2605    2643    3018
ERROR1= 104015            637#    742    1896    1930    2043    2078    2131    2287    2334    2648
ERR1    001430            686     751#
ERXTIM  015650           2288    3252#
ESTPCD  015526           2079    3238#
ETCLGT  015577           2132    3245#
ETXTIM  015464           2044    3232#
FORWD   002036            797     827#
FORWDA  002062            832#    836
FORWDB  002070            834#
GETRDY  001642            792#    810     822     826    1150
GRCNT   002710            980#    982
GTBIN   003116           1031#
GTBINP  003164           1040#   1112    2623    2991    3102
GTRDYA  001670            797#    808
GTRDYB  001674            798#
GTRDYC  001712            799     802#
GTRDYD  001734            805     807#
GTRDYX  001650            793#    824
ICTR    001152            666#    817*    830*    835*
INBIN   003060           1018#   2619    2987    3101
INCRTN  001302            714#    809
KSTART  001142            662#    792    1144*
LDLINE  016730            989    3356#
LINSEL  002734            988#   1148    3048    3063    3086    3099
MACHER  000004            462#    783*    793*   1159*   1172*   1187*   1202*
MANUAL= 100000            597#
MOUTIN  014576           3092    3104    3107#
NOP   = 000240            595#
NXTST   001150            665#    792*    807     823     827     829*
OACNV   003232            734     738     759     763     767    1010    1050#   1888    1892    1922    1926    2644    3127
OACNVA  003244           1054#   1063
OACNVX  003312           1050#   1054    1058*   1059*   1060*   1061*   1065#
OPEN  = 000000            596#    649     661     662     663     664     665     666     667     678     692     693     694
                          695     696     697     698     699     700     701     702     703     704     705     706     707
                          708     773     778     779     857     858     871     872     877     884     933     942     969
                          977     985     986    1024    1025    1026    1027    1028    1029    1065    1095    1096    1097
                         2058    2100    2146    2303    2352    3056    3073
OVRLAY  002564            945#   2394    2485
```

DZDCAB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
OVRLYA  002574            947*    952
OVRLYB  002614            950     953*
PARMTS  016647           3132    3346*
PFAIL   003576            789    1125*   1133
PIND    003110           1027*   1042*
POPSP = 005726            614*    964     967
POPSP2= 022626            615*    819    1162    1175    1190    1205    2403    2425    2446    2473    2495    2516    2539
                         2565    2607
PRGEND  001312            718*    825
PRGNUM  001140            661*    764     787*   1131
PRGTAB  001156            668*    791
PRGO    003654            668    1144*
PRGOA   003700           1137    1150*
PRG1    014342            669    3046*
PRG1A   014364           1138    3053*   3057
PRG1B   014402           3053*   3056*
PRG2    014406            670    3061*
PRG2A   014430           1139    3068*   3080
PRG2B   014460           3070*   3073*
PRG3    014502            671    3084*
PRG3A   014524           1140    3091*   3093
PRG4    014540            672    3097*
PRG4A   014560           1141    3102*   3105
PRTY0 = 000000            623*
PRTY1 = 000040            622*
PRTY2 = 000100            621*
PRTY3 = 000140            620*
PRTY4 = 000200            619*    658     660
PRTY5 = 000240            618*    650     652
PRTY6 = 000300            617*
PRTY7 = 000340            473     616*    790    1332    1528    1881    1907
PSW   = 177776            593*    782*    794*    960*   1332*   1528*   1881*   1907*   2398*   2417*   2440*   2441*   2462*
                         2490*   2511*   2532*   2533*   2602*
PTO     003104           1025*   1031    1037*
PTOP    003112           1028*   1040    1046*
PT1     003106           1026*   1031*   1032*   1035*   1036*   1037    1038
PT1P    003114           1029*   1040*   1041*   1044*   1045*   1046    1047
PWRUP   003606           1125    1128*
POTIT   015231           1146    3202*
P1TIT   015763           3047    3265*
P2TIT   016023           3062    3271*
P3TIT   016524           3085    3331*
P4TIT   016574           3098    3338*
RCMSK   002730            981     985*
RCNT    001226            692*
RESTAR  003616           1131*
RIND    003102           1018*   1020    1021    1024*   1033*
RNCNT   002732            983*    986*
RNGEN   002336            895*    972     980
RP1     002404            895     899*    906     908*
RP2     002406            898     902     905*    909*
RSTART  003642           1135    1137*
RSTPC   002234            860*    869     871*
RSTPSW  002236            861*    868     872*
RSTREG= 104014            636*   1074
RSTRG   002200            685     860*
```

DZDCAB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
RTNNO   001146          664*   768    784*   804    828*
RXBUF   001102          646*  1118   1173   2182   2207   2229   2248   2295   2342   2378   2586   2629   2997
                       3016  3074   3117
RXBUFT  001262          706*
RXCSR   001100          645*   995   1107*  1116   1160   1239*  1244*  1249*  1407*  1408   1413   1417*  1418
                       1430  1434*  1435   1439*  1440   1443*  1456   1467   1471*  1472   1476*  1477   1480*
                       1490  1494*  1495   1499*  1500   1503*  1516   1529   1533*  1534   1538*  1539   1542*
                       1552  1564   1568*  1569   1573*  1574   1577*  1587   1591*  1592   1596*  1597   1600*
                       1610  1614*  1615   1619*  1620   1623*  1633   1645   1658   1669   1688*  1689   1693*
                       1694  1708*  1709   1710   1714*  1718   1723   1729*  1733   1751*  1751*  1752   1757
                       1761*  1762   1777*  1782*  1787*  1806   1810   1817   1832   1843   1843   1858*  1863*
                       1868*  1908*  1909*  1918   1932*  2115*  2118*  2119*  2122*  2123*  2126*  2161   2166
                       2180   2183   2199*  2200*  2204   2221*  2222*  2226   2241*  2245   2266*  2271*  2272*
                       2277*  2278*  2282*  2300   2318*  2321*  2322*  2325*  2326*  2329*  2349   2363   2373
                       2489*  2491*  2510*  2512*  2514*  2531*  2534*  2540*  2554*  2555*  2558*  2580   2581
                       2601*  2603*  2627   2636   2986*  2995   3012*  3014   3115   3139*  3143*  3148*  3152*
RXCSRT  001260          705*  1709*  1718*  1719   1733*  1734   1752*  1753   1762*  1763   1918*  1919   1927
                       2363*  2364   2368   2580*
RXLVL   001112          650*   878   2511   2532
RXVTR   001110          649*   876   1004*  2560*
SAVREG= 104013          635*  1067
SAVRG   002140          684    847*
SCOPE = 104012          634*  1123   1161   1174   1189   1204   1231   1253   1277   1300   1324   1348   1362
                       1385  1398   1421   1445   1459   1482   1505   1519   1544   1555   1579   1602   1625
                       1636  1648   1661   1672   1698   1739   1767   1792   1822   1847   1873   1898   1933
                       1946  1962   1980   1997   2014   2045   2081   2133   2169   2186   2208   2230   2249
                       2289  2336   2379   2402   2424   2448   2467   2496   2515   2541   2559   2587   2608
                       2652  3001   3020
SCOPTR  001154          667*   813   831*   834*
SELCAD  016215         3051  3066   3293*
SELCAR  016670         3089  3350*
SELINE  017007         1012  3364*
SELPAR  016063         3124  3276*
SETPAR  014660         3049  3064   3087   3100   3123*
SETSR   001272          710*  1149
SPBOT = 001076          594*   781    795   1129
SR    = 177570          591*   720    726    755    785    798    802    811    815    821    991   3053   3054
                       3070  3071   3091   3107   3126
SRESET= 104011          633*   796   1230   1276   1299   1323   1347   1384   1412   1444   1481   1504   1543
                       1578  1601   1624   1697   1738   1766   1791   1821   1846   1872   1883   1917   1945
                       2165  3019
SRSETT  002320          682    888*   890*
SRT     001266          708*  1105*  3126*  3128   3133   3136   3140   3145   3149   3154
STAL    002664          675    972*
STALA   002704          975*   977*
STALB   002706          974    978*
STALL = 104002          626*  3109
START   001562          643    781*
STLMSK  001270          709*   973
STLSPV  002270          680    881*
STLSRV  002240          679    874*
STPARA  015060         3146  3154*  3155   3157
STPARB  014712         1106  1134   3068   3133*
STPPA   002306          881*   884*
STPRA   002256          874*   877*
STRXD   014234         2488  2509   2530   2551   2576   2599   2600   3022*
```

DZDCAB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
STRXV = 104006          630*  2486  2507  2528  2552  2597
STTXV = 104007          631*  2395  2415  2437  2459
SUBTEN  003376         1082   1086*
SUBTNA  003402         1087*  1090
SUBTNB  003416         1088   1091*
SVRPC   002174          847*   855   857*
SVRPSW  002176          848*   854   858*
TEMP    001264          707*   993*  1007*  1008*  1009*  1011  1887*  1889  1921*  1923
TENPWR  003442         1081*  1087   1091   1097*
TKB     001122          654*
TKLVL   001132          658*
TKS     001120          653*
TKVTR   001130          657*
TPB     001126          656*   924*
TPLVL   001136          660*
TPS     001124          655*   925
TPVTR   001134          659*
TX      = 000000       1151*  1184*
TXBUF   001106          648*  1115*  1203  1911*  1914*  1941*  1955*  1973*  1990*  2007*  2051*  2087*  2093*
                       2139*  2158*  2179*  2201*  2223*  2242*  2295*  2344*  2381*  2577*  2626*  2994*  3013*
                       3023*  3054*  3071*  3113*
TXCSR   001104          647*  1108*  1110   1188   1216   1220*  1221   1225*  1226   1229*  1240   1245   1250
                       1262   1266*  1267   1271*  1272   1275*  1285   1289*  1290   1294*  1295   1298*  1309
                       1313*  1314   1318*  1319   1322*  1333   1337*  1338   1342*  1343   1346*  1359   1370
                       1374*  1375   1379*  1380   1383*  1395   1778*  1783   1788   1803*  1804*  1805*  1814*
                       1815*  1831*  1836*  1837*  1842*  1859   1864   1869   1882*  1884   1886   1910*  1912
                       1915   1942   1958   1972*  1976   1989*  1993   2006*  2010   2028*  2031*  2034*  2035*
                       2038*  2047   2055   2070*  2073*  2083   2091   2097   2135   2143   2157*  2178*  2197*
                       2198*  2219*  2220*  2240*  2264*  2265*  2269*  2270*  2275*  2276*  2281*  2291   2338
                       2343*  2380*  2397*  2399*  2418*  2419*  2423*  2439*  2442*  2447*  2461*  2463*  2466*
                       2620*  2624   2985*  2989   3011*  3022*  3069*  3110   3112*  3135*  3138*  3142*
TXCSRT  001256          704*  1886*  1893
TXLVL   001116          652*   885   2417   2440
TXVTR   001114          651*   883   1006*  2468*
TYP     002410          673    911*
TYPA    002420          914*   923    932
TYPC    002436          916    918*
TYPD    002464          922    924*   929    931
TYPDAT  002530          914*   915    918    920    924   928*   930*   933*
TYPE    = 104000        624*   710    714    718    941   988   1014   1145  3046  3050  3061  3065  3084
                       3088   3097   3123   3131
TYPES = 104001          625*   771
TYPF    002502          919    928*
TYPG    002514          921    930*
TYPS    002532          674    935*   943
TYPSA   002556          939    941*
TYPSB   002560          937*   938    942*
VECTAB  015100         1003   3160*
X       = 000137       2653*  2655   2660*  2665   2670*  2675   2680*  2685   2690*  2695   2700*  2705   2710*
                       2715   2720*  2725   2730*  2735   2740*  2745   2750*  2755   2760*  2765   2770*  2775
                       2780*  2785   2790*  2795   2800*  2805   2810*  2815   2820*  2825   2830*  2835   2840*
                       2845   2850*  2855   2860*  2865   2870*  2875   2880*  2885   2890*  2895   2900*  2905
                       2910*  2915   2920*  2925   2930*  2935   2940*  2945   2950*  2955   2960*  2965   2970*
Y       = 000040       2654*  2655   2664*  2665   2674*  2675   2684*  2685   2694*  2695   2704*  2705   2714*
                       2715   2724*  2725   2734*  2735   2744*  2745   2754*  2755   2764*  2765   2774*  2775
                       2784*  2785   2794*  2795   2804*  2805   2814*  2815   2824*  2825   2834*  2835   2844*
```

DZDCAB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

. = 017021

2845	2854*	2855	2864*	2865	2874*	2875	2884*	2885	2894*	2895	2904*	2905
2914*	2915	2924*	2925	2934*	2935	2944*	2945	2954*	2955	2964*	2965	2974*
459*	460	462	464	466	468	470	474	476	478	480	482	484
486	488	490	492	494	496	498	500	502	504	506	508	510
512	514	516	518	520	522	524	526	528	530	532	534	536
538	540	542	544	547	549	551	553	555	557	559	561	563
565	567	569	571	573	575	577	579	581	583	585	587	642*
644*	721	926	1000	1034	1043	1111	1117	1912	1916	2048	2084	2136
2292	2339	2625	2628	2632	2990	2996	3015	3017	3108	3111	3116	3134
3137	3141	3150										

DIDCAB.P11 CROSS REFERENCE TABLE -- MACRO NAMES

```
COMMEN      1#
ENDCOM      1#
ESCAPE      1#
GETPRI      1#
GETSWR      1#
LINE      780#  1422  1427  1507  1512  1679  1684  1699  1704  1740  1746  1762  1773  1793  1798
         1823   1828  1849  1854  2612  2617  2980  3002  3007
MULT        1#
NEWTST      1#
POP         1#
PUSH        1#
REPORT      1#
SETPRI      1#
SETUP       1#
SKIP        1#
SLASH       1#
STARS       1#
SWRSU       1#
TEST      780#  2655  2665  2675  2685  2695  2705  2715  2725  2735  2745  2755  2765  2775  2785
         2795   2805  2815  2825  2835  2845  2855  2865  2875  2885  2895  2905  2915  2925  2935
         2945   2955  2965
TSTA      780#  2655  2665  2675  2685  2695  2705  2715  2725  2735  2745  2755  2765  2775  2785
         2795   2805  2815  2825  2835  2845  2855  2865  2875  2885  2895  2905  2915  2925  2935
         2945   2955  2965
TSTAA     780#  2655  2665  2675  2685  2695  2705  2715  2725  2735  2745  2755  2765  2775  2785
         2795   2805  2815  2825  2835  2845  2855  2865  2875  2885  2895  2905  2915  2925  2935
         2945   2955  2965
TYPBIN      1#
TYPDEC      1#
TYPNAM      1#
TYPNUM      1#
TYPOCS      1#
TYPOCT      1#
TYPTXT      1#
$$ESCA      1#
$$NEWT      1#
$$SKIP      1#
.EQUAT      1#
.HEADE      1#
.KT11       1#
.SETUP      1#
.SWRHI      1#
.$ACTI      1#
.$APTB      1#
.$APTH      1#
.$APTY      1#
.$ASTA      1#
.$CATC      1#
.$CMTA      1#
.$DB2D      1#
.$DB2O      1#
.$DIV       1#
.$EOP       1#
.$ERRO      1#
.$ERRT      1#
.$MULT      1#
```

```
.$POWE       1#
.$RAND       1#
.$RDDE       1#
.$RDOC       1#
.$READ       1#
.$R2A2       1#
.$SAVE       1#
.$SB2D       1#
.$SB2O       1#
.$SCOP       1#
.$SIZE       1#
.$SUPR       1#
.$TRAP       1#
.$TYPB       1#
.$TYPD       1#
.$TYPE       1#
.$TYPO       1#
.$4OCA       1#
.1170        1#
```

DZDCAB.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

```
ADD      776  842  875  882  898  902  912  936  951  957 1053 1055 1091 1092 2030
        2033 2037 2040 2072 2075 2117 2121 2125 2128 2268 2274 2280 2284 2320 2324
        2328 2331 3040
ASL      788  840 1132
ASR     1001 1002 1007 1008 1009
BCC     2632
BCS     1088
BEQ      721  733  812  919  921  950  959  974  982 1217 1227 1241 1251 1263 1273
        1286 1296 1310 1320 1334 1344 1371 1381 1396 1419 1431 1441 1457 1468 1478
        1491 1501 1517 1530 1540 1553 1565 1575 1588 1598 1611 1621 1634 1646 1659
        1670 1695 1711 1725 1735 1758 1764 1789 1811 1819 1833 1844 1860 1870 1885
        1920 2375 2637 2639 2642 3017 3134 3137 3141 3146 3150 3155
BHI     2077 3039
BIC      786  803  841  973  981  992  997 1036 1045 1055 1058 1107 1114 1225 1239
        1249 1271 1294 1318 1342 1379 1417 1439 1476 1499 1538 1573 1596 1619 1693
        1708 1729 1750 1761 1777 1787 1803 1805 1815 1831 1837 1842 1858 1868 1908
        1932 2028 2034 2070 2115 2118 2122 2197 2199 2219 2221 2264 2266 2269 2271
        2275 2277 2318 2321 2325 2397 2418 2423 2439 2447 2461 2466 2489 2510 2514
        2531 2540 2554 2558 2601 2993 3114
BIS      998 1108 1220 1229 1244 1266 1275 1289 1298 1313 1322 1337 1346 1374 1383
        1407 1434 1443 1471 1480 1494 1503 1533 1542 1568 1577 1591 1600 1614 1623
        1688 1751 1782 1804 1814 1836 1863 1910 1972 1989 2006 2021 2035 2038 2073
        2119 2123 2126 2157 2178 2198 2200 2220 2222 2240 2241 2265 2270 2272 2276
        2278 2281 2282 2322 2326 2329 2343 2380 2399 2419 2442 2463 2491 2512 2534
        2555 2603 2620 3022 3069 3112 3135 3138 3139 3142 3143 3148 3152
BIT      720  755  798  811  815  821 1216 1221 1226 1240 1245 1250 1262 1267 1272
        1285 1290 1295 1309 1314 1319 1333 1338 1343 1370 1375 1380 1395 1408 1413
        1418 1430 1435 1440 1456 1467 1472 1477 1490 1495 1500 1516 1529 1534 1539
        1552 1564 1569 1574 1587 1592 1597 1610 1615 1620 1633 1645 1658 1669 1689
        1694 1710 1719 1723 1734 1753 1757 1763 1783 1788 1806 1810 1817 1832 1838
        1843 1859 1864 1869 2364 2373 2636 3107 3133 3136 3140 3145 3149 3154
BLOS    3029 3031 3033 3035 3037
BMI     1360 1959 1977 1994 2011 2162 2205 2227 2246 2369
BNE      756  799  805  808  816  818  822  824  916  939  963  966 1000 1034 1043
        1063 1073 1084 1121 1222 1246 1268 1291 1315 1339 1376 1409 1414 1436 1473
        1496 1535 1570 1593 1616 1690 1720 1754 1784 1807 1839 1865 2365 2635 2651
        3000 3108
BPL      727  926 1111 1117 1913 1916 1943 2048 2056 2084 2092 2098 2136 2144 2167
        2181 2184 2292 2301 2339 2350 2582 2625 2628 2990 2996 3015 3111 3116
BR       750  801  810  826  835  923  932  943  952 1090 1164 1177 1192 1207 1219
        1224 1243 1248 1265 1270 1288 1293 1312 1317 1336 1341 1373 1378 1411 1416
        1433 1438 1470 1475 1493 1498 1532 1537 1567 1572 1590 1595 1613 1618 1692
        1713 1722 1727 1737 1756 1760 1786 1809 1813 1835 1841 1862 1867 2042 2130
        2164 2286 2333 2367 2372 2404 2427 2445 2472 2475 2494 2518 2537 2564 2567
        2506 2640 3057 3080 3093 3105 3157
CLR      749  782  784  794  948  960 1086 1911 1941 1955 1973 1990 2007 2024 2025
        2026 2027 2046 2051 2068 2069 2082 2087 2093 2111 2112 2113 2114 2134 2139
        2158 2179 2201 2223 2242 2260 2261 2262 2263 2290 2296 2314 2315 2316 2317
        2337 2344 2381 2398 2462 2490 2577 2602 2630 3023
CMP      732  807  823  938  949 1005 1884 1919 2076 3016 3028 3030 3032 3034 3036
        3038
CMPB     804  915  918  920
COM      889 1032 1033 1041 1042 2633
DEC      817  962  965  999 1062 1072 1083 1120 2999
DECB    2634 2650
EMT      624  625  626  627  628  629  630  631  632  633  634  635  636  637  638
```

DZDCAB.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

```
HALT    461  463  465  467  471  475  477  479  481  483  485  487  489  491  493
        495  497  499  501  503  505  507  509  511  513  515  517  519  521  523
        525  527  529  531  533  535  537  539  541  543  545  548  550  552  554
        556  558  560  562  564  566  568  570  572  574  576  578  580  582  584
        586  588  712  716  722  728  990 1126 1147 3052 3067 3090 3125
INC    1025 1044 1089 1714 1778 2054 2090 2096 2142 2299 2348
IOT    1715 1779
JMP     643  791  800  806  844 1135 1150
JSR     734  738  759  763  767  797  809  825  922  929  931  972  980 1010 1019
       1082 1106 1112 1134 1148 1149 1898 1892 1922 1926 2029 2032 2036 2039 2041
       2071 2074 2116 2120 2124 2127 2129 2267 2273 2279 2283 2285 2319 2323 2327
       2330 2332 2361 2362 2394 2485 2488 2509 2530 2551 2576 2599 2600 2619 2623
       2644 2662 2672 2682 2692 2702 2712 2722 2732 2742 2752 2762 2772 2782 2792
       2802 2812 2822 2832 2842 2852 2862 2972 2882 2892 2902 2912 2922 2932 2942
       2952 2962 2972 2987 2991 3048 3049 3063 3064 3068 3086 3087 3092 3099 3100
       3101 3102 3104 3127
MOV     747  748  751  752  753  754  757  781  783  785  787  789  790  792  793
        795  802  813  827  828  829  830  831  832  834  835  837  839  843  847
        848  849  850  851  852  853  854  855  860  861  862  863  864  865  866
        868  869  874  876  877  878  881  883  884  885  888  890  895  899  905
        906  911  913  935  937  945  946  947  956  958  961  975  983  991  993
        994  995  996 1003 1004 1006 1018 1031 1037 1038 1040 1046 1047 1050 1051
       1052 1054 1068 1069 1070 1077 1078 1079 1080 1081 1105 1109 1125 1129 1131
       1133 1144 1159 1172 1187 1202 1332 1528 1709 1718 1733 1752 1762 1881 1882
       1886 1887 1907 1909 1914 1918 1921 2363 2417 2440 2468 2469 2511 2532 2560
       2561 2580 2626 2629 2985 2986 2988 3011 3012 3013 3074 3113 3117 3126 3144
       3147 3151 3156
MOVB    914  924  928  930 1057 1071 1093 1113 1115 1118 2621 2622 2992 2994 2997
       3053 3054 3070 3071 3091 3103
NOP    2400 2420 2443 2464 2471 2492 2513 2535 2556 2563 2604
RESET   891 1128 1816 3075 3076 3077 3078 3079
ROL     896  897  900  901  903  904
ROR    1059 1060 1061 2631
RTI     729  744  777  814  856  870  879  885  892  917  940  968  978 2470 2562
RTS     713  717  723  833  907  927  953  984 1016 1023 1039 1048 1064 1075 1085
       1094 2057 2099 2145 2302 2351 2384 3026 3041 3119 3153
SUB     758  838 1087 2441 2533
TST     726 1122 1160 1173 1188 1203 2182 2207 2229 2248 2295 2342 2368 2378 2586
       2638 2641
TSTB    925 1110 1116 1359 1912 1915 1942 1958 1976 1993 2010 2047 2055 2083 2091
       2097 2135 2143 2161 2166 2180 2183 2204 2226 2245 2291 2300 2338 2349 2581
       2624 2627 2989 2995 3014 3110 3115
.ASCII 3195 3196 3198 3200 3202 3208 3213 3218 3220 3223 3225 3227 3230 3232 3238
       3245 3252 3258 3265 3271 3276 3282 3288 3293 3304 3307 3309 3310 3311 3319
       3323 3328 3331 3338 3346 3349 3350 3356 3362 3364
.BYTE  1103
.ENABL    1
.END   3367
.LIST     1
.MACR   780
.MACRO    1
.NLIST    1
.PEM      1
.REPT  2655
```

```
.MAIN.  MACY11 27.(732)  28-SEP-76  13:35  PAGE 96
DZDCAB.P11      CROSS REFERENCE TABLE -- PERMANENT SYMBOLS


 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

 *DZDCAB,DZDCZB.SEQ/SOL/CRF/PAGNUM/NL:TOC=SYSMAC.SML[400,10661,DZDCAB[400,4571]
 RUN-TIME:  30 43 5 SECONDS
 RUN-TIME RATIO: 314/80=3.9
 CORE USED:  34K  (67 PAGES)
```

Spooler runtime 14 Seconds, 61 KCS, 365 disk reads, 3 disk writes, 92 pages