DC11

ON-LINE

MD-11-DZDCB-B

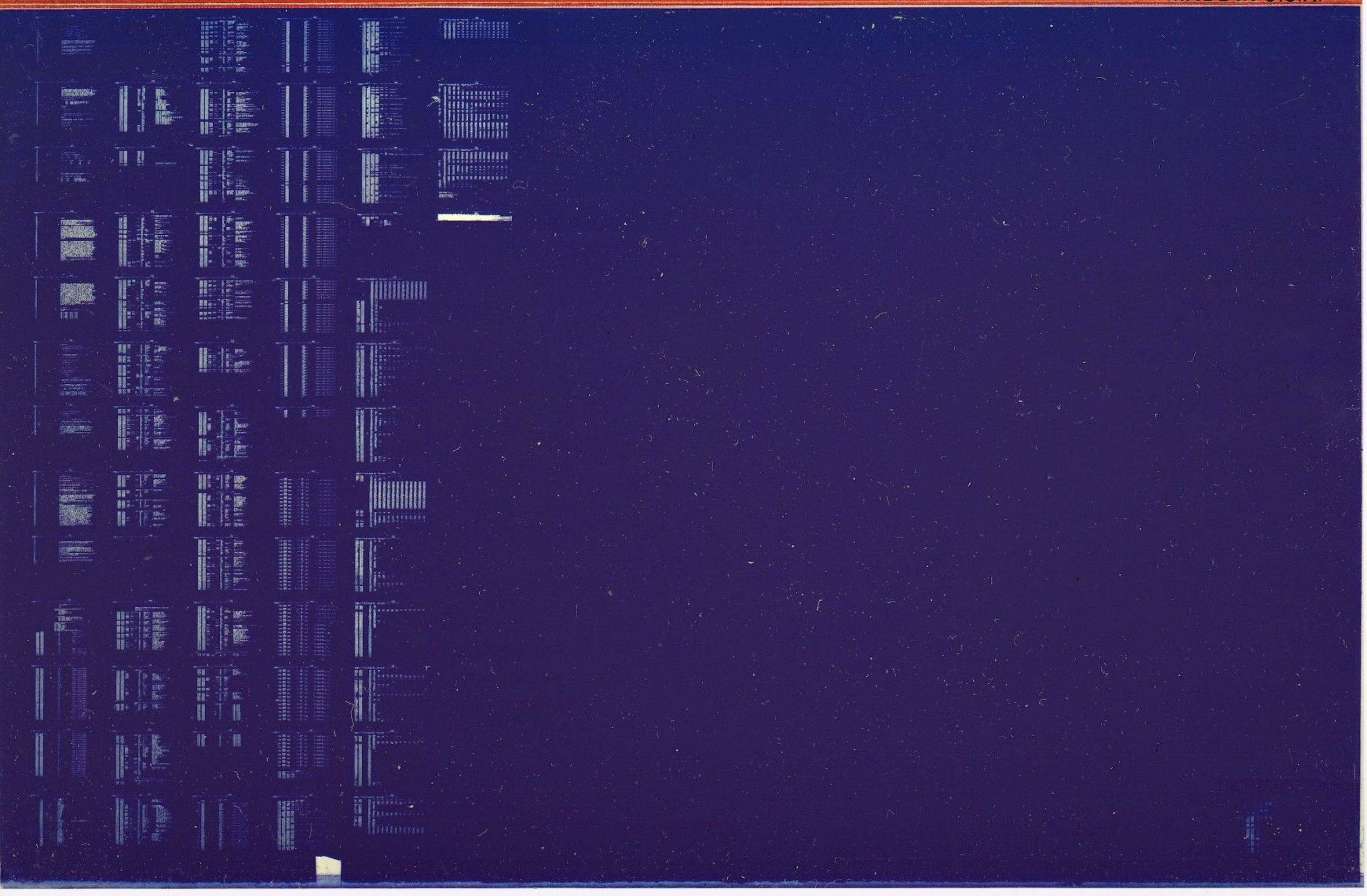
EP-DZDCB-B-DL-A

FICHE 1 OF 1

NOV 1976

digital

MADE IN U.S.A.



.REM \

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZDCB-B-D

PRODUCT NAME: DC11 ON LINE TESTS

DATE: APRIL 1976

MAINTAINER: DIAGNOSTIC GROUP

AUTHOR: JOHN ADAMS

1. ABSTRACT

TWO SEPARATE DIAGNOSTIC PROGRAMS ARE PROVIDED FOR THE DC-11 (ASYNCRONOUS MODEM INTERFACE). MAINDEC-11-D9AA (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 ON LINE TESTS.

THE AVAILABLE TESTS ARE:

PRG0	SINGLE CHARACTER LINE MODE DATA TEST
PRG1	BINARY COUNT LINE MODE DATA TEST
PRG2	MESSAGE TRANSMIT ONLY W/W/O PARITY
PRG3	RECEIVE DATA TEST

2. REQUIREMENTS

2.1 EQUIPMENT

A. PDP 11/20 SYSTEM

B. DC11(S)

C. SUITABLE TERMINAL DEVICE (ASR 33, 37, DATA POINT, ETC)

D. MODEM TYPE 103 OR 202 OR EQUIVILENT

2.2 STORAGE

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

3. OPERATING PROCEDURE:

3.1 LOADING PROCEDURE

THE ABSOLUTE LOADER IS USED TO LOAD THE PROGRAM.

3.2 DC-11 PARAMETER SELECTION

THE SELECTABLE DC-11 PARAMETERS ARE:

SW4 UP/DWN — TRANSMIT 1/2 STOP BITS

SW3-2 — SPEED SELECT

SW3	SW2	DC11AA	DC11AB	DC11AC
0	0	110	110	110
0	1	134.5	300	150
1	0	150	1200	600
1	1	300	1500	1800

SW1-0 — CHARACTER LENGTH

SW1	SW0	CHAR LENGTH
0	0	8
0	1	7
1	0	6
1	1	5

WHEN A TERMINAL IS INVOLVED DC-11 PARAMETERS SHOULD BE SET ACCORDING TO TERMINAL SPECIFICATIONS.

3.3 PDP-11 STANDARD OPERATING PARAMETERS

SW15	1 OR UP	HALT ON ERROR
SW14	1 OR UP	SCOPE LOOP (NOT USED)
SW13	1 OR UP	INHIBIT ERROR PRINTOUT
SW12	1 OR UP	INHIBIT TRACE TRAP (NOT USED)
SW11	1 OR UP	INHIBIT ITERATION (NOT USED)

3.4 GENERAL

THERE ARE THREE CONFIGURATIONS USING DC11/MODEM PAIRS WHICH MAY BE SELECTED BY PRG0 AND PRG1. THESE CONFIGURATIONS ARE SELECTED BY THE USER WHEN REQUESTED BY THE PROGRAM DURING THE LINE CONNECTION ROUTINE.
THE FOLLOWING PROCEEDURES SHOULD BE FOLLOWED TO SELECT ANY OF THE THREE SELECTABLE CONFIGURATIONS:

CONFIGURATION 0: THIS CONFIGURATION TRANSMITS DATA FROM THE DC11 CONNECTED TO THE LINE THAT WAS CALLED TO THE MODEM THAT CALLED (THE CALLER). THIS CONFIGURATION MAY BE USED TO TRANSMIT DATA TO A TERMINAL DEVICE. NOTE NO DATA CHECKING IS PERFORMED BY THE PROGRAM,HOWEVER,DATA MAY BE VISUALLY CHECKED AT THE TERMINAL DEVICE. TO INITIATE PROGRAM ACTION CALL THE MODEM CONNECTED TO A DC11 FROM A MODEM CONNECTED TO THE TERMINAL DEVICE. WHEN THE PHONE RINGS AT THE PDP11 THE PROGRAM WILL REQUEST THE CONFIGURATION. SET SR0-1=00 AND PRESS CONTINUE. WHEN THE 'HANDSHAKING' IS COMPLETED THE PROGRAM WILL REQUEST DC11 PARAMETERS LOAD THE PARAMETERS AS REQUESTED AND PRESS CONTINUE. THE PROGRAM WILL TYPE 'LINE CONNECTION MADE' AND BEGIN DATA TRANSMISSION
SEE FIGURE 5-3 IN THE DC11 MAINTENANCE MANUAL FOR CONFIGURATION DIAGRAM.

CONFIGURATION 1: THIS CONFIGURATION TRANSMITS DATA FROM THE DC11 CONNECTED TO THE LINE THAT WAS CALLED TO THE DC11 CONNECTED TO THE LINE THAT CALLED (THE CALLER). TO INITIATATE PROGRAM ACTION ,ALL THE DC11 YOU WISH TO TRANSMIT ON FROM THE LINE CONNECTED TO THE DC11 RECEIVER YOU WISH TO RECEIVE THE DATA ON. WHEN THE PHONE RINGS AT THE PDP11 THE PROGRAM WILL REQUEST THE CONFIGURATION AND MODEM TYPE. SET SR0-1=01 & SR2=0 IF A 103 (OR EQUIV.) AND SR2=1 IF A 202 (OR EQUIV.) PRESS CONTINUE. THE PROGRAM WILL REQUEST THE LINE NUMBER THAT YOU CALLED FROM. ENTER THIS INTO THE SR AND PRESS CONTINUE. WHEN THE CARRIER IS HEARD IN THE HEADSET PRESS THE DATA BUTTON ON THE DATA SET. YOU HAVE APPROXIMATLY 10 SECONDS IN WHICH TO DO THIS. WHEN THE 'HANDSHAKING' IS COMPLETED THE PROGRAM WILL REQUEST DC11 PARAMETERS. LOAD THE PARAMETERS AS REQUESTED AND PRESS CONTINUE. THE PROGRAM WILL TYPE 'LINE CONNECTION MADE' AND BEGIN DATA TRANSMISSION. WHEN 100. CHARACTERS HAVE BEEN PROCESSED (TRANSMITTED/RECEIVED AND CHECKED) THE BELL WILL RING AT THE TTY, AND ANOTHER 100. CHARACTER BLOCK WILL BE PROCESSED.
SEE FIGURE 5-4 IN THE DC11 MAINTENANCE MANUAL FOR CONFIGURATION DIAGRAM. NOTE, C11#X REFERS TO THE 'CALLED' DC11, AND DC1#Y REFERS TO THE CALLING DC11.

CONFIGURATION 2: THIS CONFIGURATION TRANSMITS DATA FROM BOTH
THE CALLED TRANSMITTER AND THE TRANSMITTER CONNECTED TO THE
LINE THAT WAS CALLING,I.E. IN ADDITION TO THE DATA TRANSMITTED
AS IN CONFIGURATION 1 DATA IS ALSO TRANSMITTED IN THE REVERSE
DIRECTION. TO INITIATE PROGRAM ACTION CALL THE DC11 YOU WISH
TO TRANSMIT ON FROM THE DC11 YOU WISH TO RECEIVE/TRANSMIT ON.
WHEN THE PHONE RINGS AT THE PDP11 THE PROGRAM WILL REQUEST
THE CONFIGURATION AND MODEM TYPE. SET SR0-1 =10 AND SR2=0. NOTE:
********DO NOT USE MODEM TYPE 202 (OR EQUIV) USING CONFIG #2****
THE PROGRAM WILL REQUEST THE LINE YOU CALLED FROM.ENTER THE LINE
NUMBER INTO THE SR AND PRESS CONTINUE. WHEN THE CARRIER IS
HEARD IN THE HEADSET PRESS THE DATA BUTTON ON THE DATA SET.
NOTE YOU HAVE APPROXIMATLY 10 SECONDS IN WHICH TO DO THIS.
WHEN THE 'HANDSHAKING IS COMPLETED THE PROGRAM WILL REQUEST
TWO SETS OF DC11 PARAMETERS. THE CHARACTER LENGTH OF BOTH SETS
MUST BE THE SAME AND THE SPEED OF THE SECOND SET MUST BE GREATER
THAN THE SPEED OF THE FIRST. WHEN THE PARAMETERS HAVE BEEN LOAD-
ED THE PROGRAM WILL TYPE 'LINE CONNECTION MADE' AND BEGIN TWO
WAY DATA TRANSMISSION. WHEN 100. CHARACTERS HAVE BEEN RECEIVED
AND CHECKED THE BELL WILL RING AT THE TTY, AND ANOTHER BLOCK
OF 100. CHARACTERS WILL BE PROCESSED.
SEE FIGURE 5-5 IN THE DC11 MAINTENANCE MANUAL FOR CONFIGURATION
DIAGRAM. NOTE, DC11#X REFERS TO THE 'CALLED' DC11, AND DC11#Y RE-
FERS TO THE 'CALLING' DC11.

3.5 LINE NUMBERS

LINE NUMBER REFERS TO THE ADDRESSES TO WHICH THE DC11
RESPONDS.

LINE 0	77400X	LINE 10	77410X
LINE 1	77401X	LINE 11	77411X
LINE 2	77402X	LINE 12	77412X
LINE 3	77403X	LINE 13	77413X
LINE 4	77404X	LINE 14	77414X
LINE 5	77405X	LINE 15	77415X
LINE 6	77406X	LINE 16	77416X
LINE 7	77407X	LINE 17	77417X

4. USE PROCEDURE

4.1 PRG0 SINGLE CHARACTER LINE MODE DATA TEST

A. LOAD ADDRESS = 000200 (RESTART LOAD ADDR. = 000200)

B. SWITCH REGISTER

1. SR 0-2 = 0

C. THE PROGRAM WILL NOW REQUEST THE DATA. LOAD DATA INTO SR 0-7 AND PRESS CONTINUE.

D. MAKE LINE CONNECTION. SEE SECT 3.4

4.2 PRG1 - BINARY COUNT LINE MODE DATA TEST

A. LOAD ADDRESS = 000200

B. SWITCH REGISTER

1. SR 0-2 = 1

C. MAKE LINE CONNECTION SEE SECT 3.4

4.3 PRG2 - SPECIAL MESSAGE XMIT ONLY

A. LOAD ADDRESS = 000200

B. SWITCH REGISTER

1. SR 0-2 = 2

2 SR 3-6 = LINE NUMBER (SEE SECT 3.5)

C. DEPRESS START - THE PROGRAM WILL IDENTIFY ITSELF AND TYPE INSTRUCTIONS TO SELECT DESIRED DC-11 PARAMETERS

(SEE SECT 3.2)

D. SET IN PARAMETERS IF IT IS DESIRED TO TRANSMIT DATA WITH PARITY RAISE SR6. ALSO RAISE SR5 TO TRANSMIT ODD PARITY AND LOWER TO TRANSMIT EVEN PARITY.

SR6 UP/DWN ENABLE/DISABLE PARITY
SR5 UP/DWN TRANSMIT ODD/EVEN PARITY
PRESS CONTINUE

E. WHEN 'MAKE LINE CONNECTION ' IS TYPED CALL THE DC11 YOU WISH TO TRANSMIT ON FROM THE TERMINAL MODEM.
WHEN THE 'HANDSHAKING' IS COMPLETED THE MESSAGE
'THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK
0:123456789' WILL BE TRANSMITTED. TO TERMINATE HANG UP.

279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307

4.4 PRG3 - RECEIVE TRANSMIT MESSAGE TEST

A. LOAD ADDRESS = 000200

B. SWITCH REGISTER

1. SR 0-2 = 3

2. SR 3-6 = LINE NUMBER (SEE SECT 3.5)

C. DEPRESS START - THE PROGRAM WILL IDENTIFY ITSELF AND TYPE INSTRUCTIONS TO SELECT DESIRED OPTIONS.

D. SET IN OPTIONS AND PRESS CONTINUE.

E. WHEN 'MAKE LINE CONNECTION' IS TYPED CALL THE DC11 YOU WISH TO TRANSMIT ON. WHEN THE 'HANDSHAKING' IS COMPLETED THE DC11 WILL TRANSMIT A CRLF TO THE TERMINAL DEVICE. AT THIS TIME YOU MAY BEGIN TO SEND DATA FROM THE DEVICE TO THE DC11 WHERE IT WILL BE ECHOED BACK TO THE TERMINAL. TYPE CONTROL C (↑C) TO SIGNAL START OF MESSAGE. THEN TYPE MESSAGE AND ↑C TO SIGNAL END OF MESSAGE.
F. IF NO ECHO IS DESIRED (ON A CHARACTER BASIS FOR EXAMPLE WHEN USING A TERMINAL THAT PRODUCES ITS OWN LOCAL COPY) RAISE SR7.

5. PROGRAM DESCRIPTIONS

5.1 PRG0 - SINGLE CHARACTER LINE MODE DATA TEST

PRG0 TRANSMITS USER SPECIFIED DATA AND A CARRIAGE RETURN/LINE FEED EVERY 72ND CHARACTER.

5.2 PRG1 - BINARY COUNT PATTERN LINE MODE DATA TEST

PRG1 TRANSMITS A BINARY COUNT PATTERN. THIS PROGRAM IS THE SAME AS PRG0 EXCEPT FOR THE DATA TRANSMITTED.

5.3 PRG2 - SPECIAL MESSAGE TRANSMIT ONLY

PRG2 TRANSMITS THE MESSAGE
THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 0123456789.
NO DATA ERROR CHECKING IS PERFORMED BY THE PROGRAM.

5.4 PRG3 - RECEIVE/TRANSMIT MESSAGE TEST

PRG3 - RECEIVES DATA FROM A TERMINAL AND READS THE RECEIVED MESSAGE BACK, AND TYPES THE MESSAGE ON THE PDP-11 TTY WHEN THE MESSAGE IS TERMINATED. CHARACTERS MAY BE ECHOED BACK (IF REQUIRED) ON A CHARACTER BASIS THEREBY CREATING LOCAL COPY AS THE MESSAGE IS TYPED. CONTROL C (↑C) IS USED BY THE PROGRAM TO SIGNAL THE START AND END OF THE MESSAGE.
TRANSMISSION MAY BEGIN AT THE TERMINAL WHEN A CR/LF IS RECEIVED AT THE TERMINAL. THIS PROGRAM IS RESTRICTED TO USE BY ONLY FULL DUPLEX MODEMS.

6.0 ERRORS
THERE ARE TWO TYPES OF ERRORS WHICH ARE DETECTED BY THESE TESTS LINE FAILURE AND DATA ERRORS.
LINE FAILURES ARE DETECTED AND REPORTED BY ALL TESTS, AND DATA ERRORS ARE DETECTED ONLY IN PRG 0 &1 WHEN USING CONFIGURATIONS 1 OR 2. DATA ERRORS IN THE OTHER TESTS MAY BE DETECTED BY VISUAL INSPECTION OF THE DATA AT THE TERMINAL.
LINE FAILURES ARE REPORTED BY TYPING THE PC,THE RECEIVER CONTROL STATUS REGISTER ADDRESS, AND ITS CONTENTS. SEE THE PROGRAM LISTING FOR A DETAILED DESCRIPTION OF THE ERROR.
THE MOST FREQUENTLY ENCOUNTERED ERROR WILL PROBABLY BE THE LOSS OF CARRIER. THIS ERROR WILL BE REPORTED IF AFTER A LINE CONNECTION IS MADE THE CARRIER IS LOST, EITHER BY 'HANGING UP' OR A 'GLITCH' ON THE LINE CAUSING THE CARRIER TO MOMENTARILY DROP. IN EITHER INSTANCE THE PROGRAM DISCONNECTS THE DC11 FROM THE MODEM (BY CLEARING DATA TERMINAL READY) AND THE LINE WILL HAVE TO BE RECONNECTED TO RESUME TESTING.
IF IT IS PHYSICALLY IMPOSSIBLE TO GET TO THE DATA BUTTON WITHIN THE TIME ALLOTTED (APPROX 10 SECONDS) TO MAKE THE LINE CONNECTION, THIS TIME MAY BE INCREASED BY PUTTING A LARGER NUMBER INTO THE DELAY. PATCH THE LARGER NUMBER INTO THE ADDRESS FOLLOWING THE DELAY EMT (BETWEEN RINTBG AND RINTBH).FOR EXAMPLE PATCHING IN 72460 WILL ALLOW APPROXIMATELY 30 SECONDS IN WHICH TO RESPOND.

```
                        DATA ERRORS ARE REPORTED BY TYPING THE PC, THE RECEIVER CONTROL
                        REGISTER ADDRESS OF THE LINE THAT FAILED,WHAT THE DATA SHOULD
                        HAVE BEEN,WHAT THE DATA WAS,AND THE CHARACTER NUMBER.

                        PC=XXXXXX 174010 DATA ERR. S/B 301 WAS 321 CHAR NO 23

                        THIS TYPEOUT INDICATES A DATA ERROR ON LINE 1
                        IF CONFIGURATION 2 IS SELECTED TWO ERROR TYPOUTS MAY OCCUR
                        FOR A SINGLE ERROR DEPENDING ON WHERE THE ERROR OCCURED. CON-
                        FIGURATION 2 COMPARES THE DATA RECEIVED AT THE CALLED DC11
                        WITH THE DATA TRANSMITTED BY THE CALLED DC11, AND ALSO THE DATA
                        RECEIVED AT THE CALLING DC11 (CALLER) WITH THE DATA TRANSMITTED
                        BY THE CALLED DC11.
                        IF FOR EXAMPLE A DATA ERROR OCURRED AT THE RECEIVER OF THE CALLING
                        DC11 CAUSING IT TO TRANSMIT INCORRECT DATA TO THE CALLED DC11 TWO
                        TYPEOUTS WILL OCCUR AS SHOWN BELOW:

                        PC=XXXXXX 174010 DATA ERR. S/B 301 WAS 321 CHAR NO 23
                        PC=XXXXXX 174000 DATA ERR. S/B 301 WAS 321 CHAR NO 23

                        THESE TYPEOUTS SHOW THAT THE RECEIVER ON LINE 0 WAS THE CAUSE
                        OF THE ERROR AND THE RECEIVER ON LINE 1 RECEIVED THE CORRECT
                        INCORRECT DATA.

                        \
```

```
  391                                   .TITLE  MAINDEC-11-DZDCB-B DC11 ON LINE TEST
                                        .NLIST  MC,MD,SEQ
                                        .LIST   ME
                                        .ABS

                                ;THIS TEST CHECKS THE DC11 USING MODEMS AND REVISES D9BB
                                ;REFER ALSO TO TEST D9AB (DC11 OFF LINE TESTS)
                                ;STARTING PROCEEDURE
                                ;       LOAD ADDRESS 200
                                ;       LOAD PROGRAM # INTO SR0-2
                                ;       STACK POINTER IS AT 1000
                                ;       PRESS START

                                ;AVAILABLE PROGRAMS
                                ;       PRG0- SINGLE CHARACTER LINE MODE DATA TEST.
                                ;       PRG1- SPECIAL BINARY COUNT LINE MODE DATA TEST.
                                ;       PRG2- SPECIAL MESSAGE XMIT ONLY W/W/O PARITY
                                ;       PRG3- RECEIVE DATA TEST
                                ;       PRG4- DATA ECHO TEST (USES FACILITY AT MAYNARD)

                                ;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- LOOP PROGRAM.
                                ;SR9- SELECT ROUTINE.
                                ;SR8- DISABLE STALL MODE AND RUN FULL SPEED.
                                ;SR6 THROUGH SR0 - NUMBER OF ROUTINE TO BE SELECTED.
  000000                                .=0
  000000  000002                      .+2                     ;UNASSIGNED TRAP
  000002  000030                      HALT
  000004  000006            MACHER:   .+2                     ;SP OVERFLOW, BUS ERROR TRAP
  000006  000000                      HALT
  000010  000012                      .+2                     ;RESERVED INSTRUCTION TRAP
  000012  000000                      HALT
  000014  000016                      .+2                     ;TRACE TRAP
  000016  000000                      HALT
  000020  000022                      .+2                     ;TRAP TO CALL IOX
  000022  000000                      HALT
  000024  000026                      .+2                     ;POWER FAIL TRAP
  000026  000000                      HALT
  000030  002116                      EMTINT                  ;EMT TRAP
  000032  000340                      PRTY7
  000034  000036                      .+2
  000036  000000                      HALT
  000040  000042                      .+2
  000042  000000                      HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  000044  000046                      .+2
  000046  000000                      HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  000050  000052                      .+2
  000052  000000                      HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  000054  000056                      .+2
  000056  000000                      HALT                    ;TRAPPED TO PREVIOUS ADDRESS.
  000060  000062                      .+2
```

```
000062  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000064  000066          .+2
000066  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000070  000072          .+2
000072  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000074  000076          .+2
000076  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000100  000102          .+2
000102  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000104  000106          .+2
000106  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000110  000112          .+2
000112  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000114  000116          .+2
000116  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000120  000122          .+2
000122  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000124  000126          .+2
000126  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000130  000132          .+2
000132  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000134  000136          .+2
000136  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000140  000142          .+2
000142  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000144  000146          .+2
000146  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000150  000152          .+2
000152  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000154  000156          .+2
000156  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000160  000162          .+2
000162  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000164  000166          .+2
000166  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000170  000172          .+2
000172  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000174  000176          .+2
000176  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000200  000202          .+2
000202  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000204  000206          .+2
000206  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000210  000212          .+2
000212  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000214  000216          .+2
000216  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000220  000222          .+2
000222  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000224  000226          .+2
000226  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000230  000232          .+2
000232  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000234  000236          .+2
000236  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS.
000240  000242          .+2
```

```
000242  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000244  000246                  .+2
000246  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000250  000252                  .+2
000252  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000254  000256                  .+2
000256  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000260  000262                  .+2
000262  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000264  000266                  .+2
000266  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000270  000272                  .+2
000272  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000274  000276                  .+2
000276  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000300  000302                  .+2
000302  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000304  000306                  .+2
000306  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000310  000312                  .+2
000312  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000314  000316                  .+2
000316  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000320  000322                  .+2
000322  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000324  000326                  .+2
000326  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000330  000332                  .+2
000332  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000334  000336                  .+2
000336  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000340  000342                  .+2
000342  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000344  000346                  .+2
000346  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000350  000352                  .+2
000352  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000354  000356                  .+2
000356  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000360  000362                  .+2
000362  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000364  000366                  .+2
000366  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000370  000372                  .+2
000372  000000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
000374  001376                  .+2
000376  001000                  HALT                ;TRAPPED TO PREVIOUS ADDRESS.
```

```
                                ;EQUATE STATEMENTS
177570                                  SR=177570
177776                                  CC=177776
177776                                  PSW=177776
001000                                  STKPTR=1000
000000                                  OPEN=0
100000                                  MANUAL=BIT15
100000                                  BIT15=100000
040000                                  BIT14=40000
020000                                  BIT13=20000
010000                                  BIT12=10000
004000                                  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                                  SAVREG=EMT+11
104012                                  RSTREG=EMT+12
104013                                  ERROR1=EMT+13
104014                                  ERRTX=EMT+14
104015                                  ERRRX=EMT+15
104016                                  DELAY=EMT+16
000007                                  BELL=007
000000                                  N=0
000000                                  A=0
000000                                  B=0
```

```
                000200
                        .=200
000200  000167  001636          START   JMP     START           ;GO TO START OF PROGRAM.
                001000
                        .=1000
001000  174000          RXCSR:  174000                          ;RECEIVER CSR
001002  174002          RXBUF:  174002                          ;RECEIVER BUFFER
001004  174004          TXCSR:  174004                          ;TRANSMITTER CSR
001006  174006          TXBUF:  174006                          ;TRANSMITTER BUFFER
001010  000000          RXVTR:  OPEN                            ;RECEIVER VECTOR
001012  000240          RXLVL:  PRTY5                           ;RECEIVER PRIORITY  EVEL
001014  000000          TXVTR:  OPEN                            ;TRANSMITTER VECTOR
001016  000240          TXLVL:  PRTY5                           ;TRANSMITTER PRIORITY LEVEL
001020  177560          TKS:    177560                          ;LSR CSR
001022  177562          TKB:    177562                          ;LSR BUFFER
001024  177564          TPS:    177564                          ;LSP CSR
001026  177566          TPB:    177566                          ;   BUFFER
001030  000060          TKVTR:  60                              ;L_  INTERRUPT VECTOR
001032  000200          TKLVL:  PRTY4                           ;LSR PRIORITY LEVEL
001034  000064          TPVTR:  64                              ;LSP INTERRUPT VECTOR
001036  000200          TPLVL:  PRTY4                           ;LSP PRIORITY LEVEL
001040  000000          PRGNUM: OPEN                            ;CONTAINS CURRENT PROGRAM#
001042  000000          PRGID:  OPEN                            ;CONTAINS PROGRAM INDICATORS
001044  005712          PRGTAB: PRG0                            ;PRG0 START ADDRESS
001046  006026                  PRG1                            ;PRG1 START ADDRESS
001050  006130                  PRG2                            ;PRG2 START ADDRESS
001052  006226                  PRG3                            ;PRG3 START ADDRESS
001054  006706                  PRG4                            ;PRG4 STARTING ADDRESS
001056  000004          PRGLIM: 4
001060  002230          EMTTAB: TYP                             ;POINTER TO TYPEOUT ROUTINE
001062  002452                  TYPS                            ;POINTER TO CHAINED MESSAGES ROUTINE
001064  000000                  OPEN                            ;POINTER TO RANDOM STALL ROUTINE
001066  001554                  ERR                             ;POINTER TO ERROR ROUTINE
001070  001454                  DTCHK                           ;POINTER TO DATA CHECK ROUTINE
001072  001430                  CHLT                            ;COMMON HALT
001074  002250                  STRVRV                          ;POINTER TO ROUTINE TO SET RCVR VECTOR AND PRIORITY
001076  002300                  STXMTV                          ;POINTER TO ROUTINE TO SET XMIT VECTOR AND PRIORITY
001100  001442                  EHLT                            ;POINTER TO ERROR HALT ROUTINE.
001102  002150                  SAVRG                           ;POINTER TO SAVE REGISTERS ROUTINE
001104  002210                  RSTRG                           ;POINTER TO RESTORE REGISTERS ROUTINE
001106  001576                  ERR1                            ;POINTER TO ERROR ROUTINE
001110  001710                  TXERR                           ;POINTER TO XMIT ERROR ROUTINE
001112  001732                  RXERR                           ;POINTER TO RCVR ERROR ROUTINE
001114  002522                  DLY                             ;POINTER TO DELAY ROUTINE
001116  000000          PARBIT: OPEN
001120  000000          COUNT:  OPEN
001122  000000          SAVE:   OPEN
001124  000000          LINE:   OPEN
001126  000000          ENDR4:  OPEN
001130  000000          SPC1:   OPEN
001132  000000          CONFIG: OPEN
001134  000000          NUMBER: OPEN
```

```
001136  000000          RECDAT: OPEN
001140  000000          XMTDAT: OPEN
001142  000000          CARMSK: OPEN
001144  000000          CTRD:   OPEN
001146  000000          TXCSRT: OPEN
001150  000000          RXCSRT: OPEN
001152  000000          TEMP:   OPEN
001154  000000          SRT:    OPEN
001156  000000          INBUF   OPEN
001160  000000          BUFFP:  OPEN
001162  177777          CALLER: -1
001164  000000          CALLED: OPEN
001166  000000          OTBUFP: OPEN                ;CONTAINS ADDRESS FROM WHERE NEXT TRAN-
                                                    ;SMITTED CHAR. (IN OUTBUF) IS TO COME
001170  000000          TBUFFP: OPEN
001172  000000          MODEM:  OPEN                ;CONTAINS MODEM TYPE 0=103,4=202
```

```
001174  000000                          OPEN            ;CONTAINS ADDRESS FROM WHERE NEXT TRANS-
                                                        ;MITTED CHAR. (CALLER'S LINE) IS TO COME
        001400                          .=1400
001400  104000                  INCPRG: TYPE            ;TYPE INCORRECT PROGRAM SELECTED.
001402  011763                          AINPRG
001404  104005                          CHALT                   ;COMMON HALT.
001406  000207                          RTS     %7              ;EXIT.
001410  104000                  SETSR:  TYPE                    ;TYPE SELECT OPTION MESSAGE.
001412  011766                          ASETSR
001414  104005                          CHALT                   ;COMMON HALT.
001416  000207                          RTS     %7              ;EXIT.
001420  104000                  PRGEND: TYPE                    ;TYPE PROGRAM END.
001422  012150                          APGEND
001424  104005                          CHALT                   ;COMMON HALT.
001426  000207                          RTS     %7              ;EXIT.
                                ;COMMON HALT ROUTINE
001430  011600                  CHLT:   MOV     @%6,%0          ;DEVELOP ADDRESS OF CALLER.
001432  162700  000002                  SUB     #2,%0
001436  000000                          HALT                    ;HALT. ADDRESS OF CALL INSTRUCTION
001440  000002                          RTI                     ;IN DATA LIGHTS.
                                ;CONDITIONAL ERROR HALT ROUTINE.
001442  005767  176122          EHLT:   TST     SR              ;CHECK FOR HALT ON ERROR.
001446  100001                          BPL     EHLTA           ;BRANCH IF NO HALT DESIRED.
001450  000000                          HALT                    ;HALT.
001452  000002                  EHLTA:  RTI                     ;IN DATA LIGHTS.
                                ;DATA CHECK ROUTINE.
001454  046767  177462  177456  DTCHK:  BIC     CARMSK,XMTDAT   ;CLEAR UN TRANSMITTED BITS
001462  126767  177450  177450          CMPB    RECDAT,XMTDAT   ;COMPARE TRANSMITTED AND RECEIVED
001470  001430                          BEQ     DTCHKA          ;CHARS. BRANCH IF SAME.
001472  004567  001164                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
001476  001136                          RECDAT                  ;SOURCE ADDR.
001500  011714                          CHAS                    ;DESTINATION ADDR.
001502  000003                          3                       ;#OF DIGITS TO CONVERT.
001504  004567  001152                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
001510  001140                          XMTDAT                  ;SOURCE ADDR.
001512  011702                          CSB                     ;DESTINATION ADDR.
001514  000003                          3                       ;#OF DIGITS TO CONVERT.
001516  004567  001140                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
001522  001000                          RXCSR                   ;SOURCE ADDR.
001524  010776                          CSRADD                  ;DESTINATION ADDR.
001526  000006                          6                       ;#OF DIGITS TO CONVERT.
001530  104013                          ERROR1
001532  010776                          CSRADD
001534  004567  001644                  JSR     5,BDCNV         ;CONVERT
001540  001144                          CTRD                    ;CHAR #
001542  011732                          CRNUM                   ;TO DECIMAL
001544  000004                          4                       ;4 BITS
001546  104013                          ERROR1
001550  011661                          CERDAT
001552  000002                  DTCHKA: RTI                     ; EXIT.
001554  012767  177777  000104  ERR:    MOV     #-1,ERRB        ;SET UP ONE MESSAGE CALL.
001562  012767  000240  000100          MOV     #240,ERRB+2
001570  005067  000112                  CLR     ERRE
001574  000413                          BR      ERRA
001576  011667  000064          ERR1:   MOV     @%6,ERRB        ;DEVELOP ADDT'L MESSAGE ADDR.
001602  017767  000060  000056          MOV     @ERRB,ERRB      ;STORE AT ERRB.
```

```
001610  012767  177777  000052          MOV     #-1,ERRB+2
001616  012767  000002  000062          MOV     #2,ERRE
001624  032767  020000  175736  ERRA:   BIT     #BIT13,SR       ;INHIBIT ERROR PRINT?
001632  001020                          BNE     ERRC            ;BRANCH TO INHIBIT PRINT.
001634  011667  000044                  MOV     @%6,ERRD        ;DEVELOP CALLING ADDR.
001640  162767  000002  000036          SUB     #2,ERRD
001646  004567  001010                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
001652  001704                          ERRD                    ;SOURCE ADDR.
001654  011054                          APC                     ;DESTINATION ADDR.
001656  000006                          6                       ;#OF DIGITS TO CONVERT.
001660  104011                          SAVREG
001662  104001                          TYPES                   ;TYPE:
001664  011047                          EMD                     ;ERROR HEADER,
001666  000000          ERRB:           OPEN                    ;ADDT'L ERROR MESSAGE IF ANY.
001670  177777                          -1
001672  104012                          RSTREG
001674  104010          ERRC:           EHALT                   ;GO ERR HALT IF DESIRED.
001676  066716  000004                  ADD     ERRE,@%6
001702  000002                          RTI                     ;EXIT.
001704  000000          ERRD:           OPEN
001706  000000          ERRE:           OPEN

001710                  TXERR:
001710  004567  000746                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
001714  001146                          TXCSRT                  ;SOURCE ADDR.
001716  011077                          ATXWAS                  ;DESTINATION ADDR.
001720  000006                          6                       ;#OF DIGITS TO CONVERT.
001722  012767  011065  000076          MOV     #ATXCSR,CRXTXB
001730  000410                          BR      CRXTX
001732                  RXERR:
001732  004567  000724                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
001736  001150                          RXCSRT                  ;SOURCE ADDR.
001740  011120                          ARXWAS                  ;DESTINATION ADDR.
001742  000006                          6                       ;#OF DIGITS TO CONVERT.
001744  012767  011106  000054          MOV     #ARXCSR,CRXTXB
001752  011667  000046          CRXTX:  MOV     @%6,CRXTXA      ;DEVELOP ADDR OF ADDTT'L ERROR MESSAGE.
001756  017767  000042  000040          MOV     @CRXTXA,CRXTXA
001764  032767  020000  175576          BIT     #BIT13,SR       ;INHIBIT PRINT?
001772  001017                          BNE     CRXTXC          ;BRANCH TO INHIBIT PRINT.
001774  011667  177704                  MOV     @%6,ERRD        ;DEVELOP CALLING ADDR.
002000  162767  000002  177676          SUB     #2,ERRD
002006  004567  000650                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
002012  001704                          ERRD                    ;SOURCE ADDR.
002014  011054                          APC                     ;DESTINATION ADDR.
002016  000006                          6                       ;#OF DIGITS TO CONVERT.
002020  104001                          TYPES                   ;TYPE ERROR MESSAGE.
002022  011047                          EMD                     ;ERR HEADER
002024  000000          CRXTXA: OPEN                            ;ADDT'L ERR MESSAGE
002026  000000          CRXTXB: OPEN                            ;TXCSR OR RXCSR CONTENTS.
002030  177777                          -1
002032  104010          CRXTXC: EHALT                           ;GO HALT IF DESIRED.
002034  062716  000002                  ADD     #2,@%6
002040  000002                          RTI                     ;EXIT.

002042  012706  001000          START:  MOV     #STKPTR,%6      ;SET BOTTOM OF SP STACK.
002046  005067  175724                  CLR     PSW
```

```
002052  012767  000006  175724          MOV     #6,MACHER
002060  016700  175504                  MOV     SR,%0           ;(SR) TO R0
002064  042700  177770                  BIC     #^177770,%0     ;LIMIT (SR) TO BITS 2-0
002070  010067  176744                  MOV     %0,PRGNUM               ;SAVE PROGRAM #
002074  020067  176756                  CMP     %0,PRGLIM               ;COMPARE (SR) TO PROGRAM LIMIT
002100  101403                          BLOS    CRTA            ;VALID PROGRAM NUMBER?
002102  004767  177272                  JSR     %7,INCPRG       ;NO. INCORRECT PROGRAM SELECTED.
002106  000755                          BR      START           ;START OVER.
002110  006300                  CRTA:   ASL     %0              ;ROX2
002112  000170  001044                  JMP     @PRGTAB(0)      ;GO TO SELECTED PROGRAM.

                                ;EMT TRAP INTERPRETER
002116  011646                  EMTINT: MOV     @%6,-(6)        ;GET SAVED PC.
002120  162716  000002                  SUB     #2,@%6          ;DECREMENT PC BY 2.
002124  017616  000000                  MOV     @(6),@%6
002130  006116                  EMTA:   ROL     @%6             ;EMT ARG X 2.
002132  042716  177001                  BIC     #177001,@%6     ;REMOVE 7 MSB.
002136  062716  001060                  ADD     #EMTTAB,@%6     ;FORM EMT RTN ADDR.
002142  017616  000000                  MOV     @(6),@%6
002146  000136                          JMP     @(6)+           ;GO TO EMT ROUTINE.

                                ;SAVE REGS 0 TO 4 SUBROUTINE.
002150  012667  000030          SAVRG:  MOV     (6)+,SVRPC      ;S.     'C AND PSW.
002154  012667  000026                  MOV     (6)+,SVRPSW
002160  010446                          MOV     %4,-(6)         ;SAVE REGS C - 4
002162  010346                          MOV     %3,-(6)         ;IN STACK.
002164  010246                          MOV     %2,-(6)
002166  010146                          MOV     %1,-(6)
002170  010046                          MOV     %0,-(6)
002172  016746  000010                  MOV     SVRPSW,-(6)     ;RESTORE PC AND PSW.
002176  016746  000002                  MOV     SVRPC,-(6)
002202  000002                          RTI                     ;EXIT.
002204  000000                  SVRPC:  OPEN
002206  000000                  SVRPSW: OPEN
                                ;RESTORE REGS 0 TO 4 SUBROUTINE.
002210  012667  000030          RSTRG:  MOV     (6)+,RSTPC      ;SAVE PC AND PSW.
002214  012667  000026                  MOV     (6)+,RSTPSW
002220  012600                          MOV     (6)+,%0         ;RESTORE REGS 0 - 4
002222  012601                          MOV     (6)+,%1         ;FROM STACK.
002224  012602                          MOV     (6)+,%2
002226  012603                          MOV     (6)+,%3
002230  012604                          MOV     (6)+,%4
002232  016746  000010                  MOV     RSTPSW,-(6)     ;RESTORE PC AND PSW.
002236  016746  000002                  MOV     RSTPC,-(6)
002242  000002                          RTI                     ;EXIT
002244  000000                  RSTPC:  OPEN
002246  000000                  RSTPSW: OPEN
                                ;ROUTINE TO SET RECEIVER INTERRUPT VECTOR AND PRIORITY
002250  017667  000000  000012  STRVRV: MOV     @(6),STPRA+2    ;MOVE VECTOR ADDR TO STPR' 2
002256  062716  000002                  ADD     #2,@%6          ;SET UP EXIT
002262  016701  176522                  MOV     RXVTR,%1
002266  012721  000000          STPRA:  MOV     #OPEN,(1)+      ;SET VECTOR ADDRESS
002272  016721  176514                  MOV     RXLVL,(1)+      ;SET PRIORITY
002276  000002                          RTI                     ;EX'
                                ;ROUTINE TO SET TRANSMITTER '' LRUPT VECTOR AND PRIORITY.
002300  017667  000000  000012  S'XMTV: MOV     @(6),STPPA+2    ;MOVE VECTOR ADDR TO STPPA+2
```

```
002306  062716  000002                  ADD     #2,@%6          ;SET UP EXIT
002312  016701  176476                  MOV     TXVTR,%1
002316  012721  000000          STPPA:  MOV     #OPEN,(1)+      ;SET VECTOR ADDRESS.
002322  016721  176470                  MOV     TXLVL,(1)+      ;SET PRIORITY
002326  000002                          RTI                     ;EXIT.

                                ;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.
002330  010067  000164          TYP:    MOV     %0 ,SAVR0               ;SAVE R0
002334  011600                  TYPAA:  MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS.
002336  062716  000002                  ADD     #2,@%6          ;SET UP EXIT.
002342  011000                          MOV     @%0,%0          ;ADDRESS OF MESSAGE TO R0.
002344  112067  000100          TYPA:   MOVB    (0)+,TYPDAT     ;GET CHARACTER
002350  122767  000100  000072          CMPB    #100,TYPDAT     ;CHECK FOR"@"CHARACTER
002356  001003                          BNE     TYPC            ;BRANCH IF NOT"@".
002360  016700  000134                  MOV     SAVR0,%0                ;RESTORE R0
002364  000002                          RTI                     ;TERMINATOR CHAR. DONE. EXIT.
002366  122767  000045  000054  TYPC:   CMPB    #45,TYPDAT      ;CHECK FOR"%".
002374  001412                          BEQ     TYPF            ;BRANCH IF"%"
002376  004767  000002                  JSR     %7,TYPD         ;TYPE CHAR IN TYPDAT
002402  000760                          BR      TYPA
002404  116777  000040  176414  TYPD:   MOVB    TYPDAT,@TPB     ;OUTPUT CHARACTER TO PRINTER
002412  105777  176406                  TSTB    @TPS            ;WAIT FOR DONE FLAG.
002416  100375                          BPL     .-4
002420  000207                          RTS     %7              ;EXIT
002422  112767  000015  000020  TYPF:   MOVB    #15,TYPDAT      ;MOVE CARRIAGE RETURN CODE TO TYPDAT
002430  004767  177750                  JSR     %7,TYPD         ;GO TYPE CHAR.
002434  112767  000012  000006  TYPG:   MOVB    #12,TYPDAT      ;MOVE LF CODE TO TYPDAT.
002442  004767  177736                  JSR     %7,TYPD         ;GO TYPE CHAR.
002446  000736                          BR      TYPA
002450  000000          TYPDAT: OPEN
                                ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER
002452  010067  000042          TYPS:   MOV     %0,SAVR0
002456  011600                  TYPSAA: MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
002460  062716  000002                  ADD     #2,@%6          ;UPDATE TO NEXT MESSAGE ADDRESS
002464  011067  000024                  MOV     @%0,TYPSB       ;ADDRESS OF MESSAGE TO TYPSB
002470  022767  177777  000016          CMP     #-1,TYPSB       ;CHECK FOR TERMINATOR
002476  001003                          BNE     TYPSA           ;BRANCH IF NOT TERMINATOR.
002500  016700  000014                  MOV     SAVR0,%0                ;RESTORE R0
002504  000002                          RTI                     ;TERMINATOR, EXIT
002506  016700  000006          TYPSA:  MOV     SAVR0,%0
002512  104000                          TYPE                    ;CALL ON TYP SUB TO TYPE MESSAGE
002514  000000          TYPSB:  OPEN                            ;ADDRESS OF MESSAGE GOES HERE
002516  000757                          BR      TYPSAA          ;GO PROCESS NEXT MESSAGE
002520  000000          SAVR0:  OPEN
```

```
                                        ;SUBROUTINE TO DELAY A SPECIFIED NUMBER OF MILLISECONDS
002522  011667  000034          DLY:    MOV     @%6,DLCNT       ;GET DELAY COUNT ADDRESS.
002526  062716  000002                  ADD     #2,@%6          ;SET UP EXIT ADDRESS
002532  017746  000024                  MOV     @DLCNT,-(6)     ;DELAY COUNT TO STACK
002536  001407                          BEQ     DLYC
002540  012746  00022?          DLYA:   MOV     #226,-(6)       ;1 MSEC COUNT TO STACK
002544  005316                DLYB:   DEC     @%6             ;DECREMENT 1 MSEC COUNT
002546  001376                          BNE     DLYB            ;BRANCH IF NOT 0.
002550  005726                          POPSP                   ;ZERO. UNCOVER MSECS. COUNT.
002552  005316                          DEC     @%6             ;DECREMENT IT
002554  00:371                          BNE     DLYA            ;BR IF NOT DONE DELAYING
002556  005726                DLYC:   POPSP                   ;DONE
002560  000002                          RTI                     ;EXIT.
002562  000000                DLCNT:  OPEN                    ;CONTAINS MILLISECONDS COUNT ADDRESS.


                                        ;SUBROUTINE TO INITIALIZE BINARY COUNT PATTERNS
002564  012700  177777          INBIN:  MOV     #-1,%0          ;SET ALL VARIABLES
002570  010067  000012                  MOV     %0,RIND         ;TO MINUS 1
002574  010067  000010                  MOV     %0,PTO
002600  010067  000006                  MOV     %0,PT1
002604  000207                          RTS     7               ;EXIT
002606  000000                RIND:   OPEN
002610  000000                PTO:    OPEN
002612  000000                PT1:    OPEN


                                        ;SPECIAL BINARY COUNT PATTERN SUBROUTINE. EXITS WITH BIN CHAR IN R0
002614  016767  177770  177770  GTBIN:  MOV     PTO,PT1         ;PREVIOUS BIN CHAR TO PT1
002622  005167  177764                  COM     PT1
002626  005167  177754                  COM     RIND
002632  001002                          BNE     .+6
002634  005267  177752                  INC     PT1
002640  042767  177400  177744        BIC     #177400,PT1     ;MASK TO 8 BITS
002646  016767  177740  177734        MOV     PT1,PTO         ;SAVE BIN CHAR IN PTO
002654  016701  177732                  MOV     PT1,%1          ;BIN CHAR TO R1.
002660  000207                          RTS     :7              ;EXIT.


                                        ;OCTAL TO ASCII CONVERT ROUTINE
002662  104011                OACNV:  SAVREG                  ;SAVE REGS.
002664  013500                        MOV     @(5)+,%0        ;GET OCTAL VALUE.
002666  012501                        MOV     (5)+,%1         ;GET DESTINATION ADDR.
002670  012502                        MOV     (5)+,%2         ;GET CONVERT COUNT.
002672  060201                        ADD     %2,%1           ;DEVELOP ADDR TO STORE 1ST CHAR.
002674  010003                OACNVA: MOV     %0,%3
002676  042703  177770                BIC     #177770,%3      ;ISOLATE LEAST SIGNIFICANT DIGIT.
002702  062703  000060                ADD     #60,%3          ;CONVERT DIGIT TO ASCII.
002706  110341                        MOVB    %3,-(1)         ;STORE ASCII CHARACTER.
002710  042700  000007                BIC     #7,%0
002714  006000                        ROR     %0
002716  006000                        ROR     %0
002720  006000                        ROR     %0
002722  005302                        DEC     %2              ;DONE ALL DIGITS?
002724  001363                        BNE     OACNVA          ;BRANCH IF NOT DONE.
002726  104012                        RSTREG                  ;RESTORE REGS.
```

```
        002730  000205                          RTS     %5              ;DONE. EXIT.
```

```
                                        ;SUBROUTINE TO GENERATE PARITY ON DATA FOR 5,6,7,8 LEVEL CODE.
                                        ;PARITY BIT IS THE MSB OF THE CHARACTER PARITY CAN BE EITHER
                                        ;EVEN OR ODD
                                        ;GENERATES ODD/EVEN PARITY.

002732  032777  001000  176040  GENPAR: BIT     #BIT9,@RXCSR    ;TEST LSB CHAR LENGTH
002740  001034                  BNE     ISSOR7          ;CHAR IS 5 OR 7 IF SET
002742  032777  002000  176030          BIT     #BIT10,@RXCSR   ;TEST MSB CHAR LENGTH
002750  001014                  BNE     SIX             ;CHAR LENGTH IS 6 IF SET
002752  012767  000200  176136  EIGHT:  MOV     #BIT7,PARBIT    ;PLACE PARITY BIT IN PROPER POSITION
002760  012767  000007  176132          MOV     #7,COUNT        ;SET UP ROTATE COUNTER=7
002766  042701  177600                  BIC     #177600,%1      ;MASK OFF UNUSED BITS
002772  012767  177400  176142          MOV     #177400,CARMSK
003000  000450                  BR      DOIT

                                        ;GO AND GENERATE PARITY FOR 8
                                        ;LEVEL CODE
003002  012767  000040  176106  SIX:    MOV     #BIT5,PARBIT    ;PLACE PARITY BIT IN PROPER POSITION
003010  012767  000005  176102          MOV     #5,COUNT        ;SET UP ROTATE COUNTER=5
003016  042701  177740                  BIC     #177740,%1      ;MASK OFF UNUSED BITS
003022  012767  177000  176112          MOV     #177000,CARMSK
003030  000434                  BR      DOIT

                                        ;GO AND GENERATE PARITY FOR
                                        ;6 LEVEL CODE
003032  032777  002000  175740  ISSOR7: BIT     #BIT10,@RXCSR   ;TEST MSB OF CHAR LENGTH
003040  001014                  BNE     FIVE            ;CHAR LENGTH=5 IF SET
003042  012767  000100  176046  SEVEN:  MOV     #BIT6,PARBIT    ;PLACE PARITY BIT IN PROPER POSITION
003050  012767  000006  176042          MOV     #6,COUNT        ;SET UP ROTATE COUNTER=6
003056  042701  177700                  BIC     #177700,%1      ;MASK OFF UNUSED BITS
003062  012767  177600  176052          MOV     #177600,CARMSK
003070  000414                  BR      DOIT

                                        ;GO AND GENERATE PARITY FOR 7
                                        ;LEVEL CODE.
003072  012767  000020  176016  FIVE:   MOV     #BIT4,PARBIT    ;PLACE PARITY BIT IN PROPER POSITION
003100  012767  000004  176012          MOV     #4,COUNT        ;SET UP ROTATE COUNTER=4
003106  042701  177760                  BIC     #177760,%1      ;MASK OFF UNUSED BITS
003112  012767  177740  176022          MOV     #177740,CARMSK
003120  000400                  BR      DOIT

                                        ;GO AND GENERATE PARITY FOR
                                        ;5 LEVEL CODE
003122  010167  175774          DOIT:   MOV     %1,SAVE         ;SAVE DATA
003126  006001                  AGAIN:  ROR     %1              ;ROTATE DATA
003130  103415                  BCS     ADD1            ;IF CARRY SET ADD IN PARBIT
003132  005367  175762          RTN:    DEC     COUNT           ;DECREMENT COUNTER
003136  001373                  BNE     AGAIN           ;NOT DONE DO IT AGAIN
003140  032767  000040  176006          BIT     #BIT5,SRT       ;DONE EVEN OR ODD PARITY?
003146  001403                  BEQ     DONE            ;IF EVEN FINISHED
003150  066767  175742  175744          ADD     PARBIT,SAVE     ;IF ODD ADD IN ANOTHER 1
003156  016701  175740          DONE:   MOV     SAVE,%1         ;PLACE DATA + PAR    BACK IN R1
003162  000207                  RTS     7               ;AND EXIT
003164  066767  175726  175730  ADD1:   ADD     PARBIT,SAVE     ;ADD PARBIT TO DATA
003172  000757                  BR      RTN             ;RETURN TO COUNTER
```

```
                                        ;SUBROUTINE TO SELECT LINE AND LOAD VECTOR ASSIGNMENT
003174  104000                  LINSEL: TYPE
003176  013216                          LDLINE
003200  000000                          HALT
003202  016701  174362                  MOV     SR,%1           ;LOAD R1
003206  042701  177407                  BIC     #177407,%1      ;MASK OFF ALL BUT LINE BITS
003212  010167  175734                  MOV     %1,TEMP         ;SAVE LINE #
003216  012702  000770                  MOV     #770,%2         ;LOAD IN MASK
003222  012703  001000                  MOV     #RXCSR,%3       ;LOAD ADDRESS OF REGISTERS
003226  012704  000004                  MOV     #4,%4           ;SET UP COUNTER
003232  040213                          BIC     %2,(3)          ;MASK OFF LINE BITS
003234  050123                          BIS     %1,(3)+         ;LOAD IN LINE BITS.
003236  005304                          DEC     %4
003240  001374                          BNE     .-6
003242  006201                          ASR     %1              ;POSITION SELECTED LINE
003244  006201                          ASR     %1
003246  016101  007276                  MOV     VECTAB(1),%1    ;GET LINE VECTOR ADDRESS
003252  010123                          MOV     %1,(3)+         ;LOAD INTO PROG. RXVTR
003254  022121                          CMP     (1)+,(1)+       ;ADD +4 TO RXVTR TO = TXVTR
003256  005723                          TST     (3)+            ;POINT TO PROG TXVTR
003260  010113                          MOV     %1,(3)          ;LOAD INTO PROG TXVTR
003262  022767  000004  175550          CMP     #4,PRGNUM       ;RUNNING PROGRAM # 4
003270  001001                          BNE     .+4
003272  000205                          RTS     5               ;RETURN TO PROG 4
003274  006267  175652                  ASR     TEMP            ;POSITION
003300  006267  175646                  ASR     TEMP            ;LINE
003304  006267  175642                  ASR     TEMP            ;NUMBER
003310  004567  177346                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
003314  001152                          TEMP                    ;SOURCE ADDR.
003316  012754                          TLINE                   ;DESTINATION ADDR.
003320  000002                          2                       ;#OF DIGITS TO CONVERT.
003322  104000                          TYPE                    ;TYPE LINE # THAT
003324  012744                          ALINE                   ;WAS CALLED
003326  000205                          RTS     5

                                        ;SUBROUTINE TO LOAD BINARY COUNT PATTERN INTO OUTPUT
                                        ;BUFFER
003330  105067  175600          INFIL:  CLRB    NUMBER          ;INITIALIZE BINARY COUNT
003334  012500                  FILL:   MOV     (5)+,%0         ;GET ADDRESS
003336  012567  175602                  MOV     (5)+,CTRD       ;GET COUNT
003342  116720  175566          FILLA:  MOVB    NUMBER,(0)+     ;LOAD ADDRESS WITH BINARY COUNT
003346  105267  175562                  INCB    NUMBER          ;INC. BINARY COUNT
003352  005367  175566                  DEC     CTRD            ;DEC. COUNT
003356  001371                          BNE     FILLA
003360  000205                          RTS     5               ;EXIT
```

```
                                        ;SUBROUTINE TO MOVE A VARIABLE NUMBER OF BYTES.
003362  104011                  BMOVE:  SAVREG                  ;SAVE REGS.
003364  012501                          MOV     (5)+,%1         ;GET"FROM"ADDRESS
003366  012502                          MOV     (5)+,%2         ;GET"TO"ADDRESS
003370  012503                          MOV     (5)+,%3         ;GET COUNT
003372  112122                  BMOVA:  MOVB    (1)+,(2)+       ;MOVE BYTE
003374  005303                          DEC     %3              ;DECREMENT COUNT
003376  001375                          BNE     BMOVA           ;BRANCH IF NOT DONE.
003400  104012                          RSTREG                  ;RESTORE REGS.
003402  000205                          RTS     %5              ;DONE EXIT
                                        ;BINARY TO DECIMAL ASCII CONVERT SUBROUTINE.
003404  104011                  BDCNV:  SAVREG                  ;SAVE REGS.
003406  012700  003562                  MOV     #DEC"_,%0       ;SET UP ADDR TO STORE DECIMAL ASCII IN R0
003412  013501                          MOV     @(5)+,R1        ;BINARY VALUE TO R1.
003414  012767  000052                  MOV     (5)+,BDCNVC     ;DESTINATION ADDR TO BDCNVC.
003420  012567  000050                  MOV     (5)+,BDCNVD     ;COUNT TO BDCNVD.
003424  012702  003550                  MOV     #ADTENP,%2      ;ADDR OF TEN POWER STRING TO R2.
003430  012767  000005  000104          MOV     #5,CNVCTR       ;SET UP FOR 5 POWER CONVERSIONS.
003436  012267  000104          BDCNVA: MOV     (2)+,TENPWR     ;MOVE POWER OF TEN VALUE TO TENPWR.
003442  004767  000034                  JSR     %7,SUBTEN       ;PERFORM CONVERSION
003446  005367  000070                  DEC     CNVCTR          ;DONE 5 CONVERSIONS?
003452  001371                          BNE     BDCNVA          ;BRANCH IF NOT YET 5.
003454  166700  000014                  SUB     BDCNVD,%0       ;SET UP ADDR TO MOVE DECIMAL
003460  010067  000004                  MOV     %0,BDCNVB       ;DATA FROM.
003464  004567  177672                  JSR     %5,BMOVE        ;MOVE DECIMAL DATA TO DESTINATION.
003470  000000          BDCNVB: OPEN                            ;SRC ADDR.
003472  000000          BDCNVC: OPEN                            ;DEST ADDR.
003474  000000          BDCNVD: OPEN                            ;COUNT.
003476  104012                  RSTREG                          ;RESTORE REGS.
003500  000205                  RTS     %5                      ;YES, EXIT.
003502  005067  000036  SUBTEN: CLR     DIGIT                   ;CLEAR DIGIT
003506  166701  000034  SUBTNA: SUB     TENPWR,%1               ;SUBTRACT TEN POWER FROM BINARY VALUE.
003512  103403                  BCS     SUBTNB                  ;BRANCH IF UNSUCCESSFUL SUBTRACTION.
003514  005267  000024                  INC     DIGIT
003520  000772                  BR      SUBTNA
003522  066701  000020  SUBTNB: ADD     TENPWR,%1               RESTORE SUBTRACTED VALUE.
003526  062767  000060  000010          ADD     #60,DIGIT       ;CONVERT (DIGIT) TO ASCII
003534  116720  000004                  MOVB    DIGIT,(0)+      ;MOVE ASCII CHAR TO DECVAL FIELD.
003540  000207                  RTS     %7                      ;EXIT.
003542  000000          CNVCTR: OPEN
003544  000000          DIGIT:  OPEN
003546  000000          TENPWR: OPEN
003550  023420          ADTENP: 10000.
003552  001750                  1000.
003554  000144                  100.
003556  000012                  10.
003560  000001                  1
003562    040     040     040   DECVAL: .BYTE   040,040,040,040,040,040
003565    040     040     040
                                        ;SUBROUTINE TO SET STOP CODE,SPEED, AND CHARACTER LENGTH PARAMETERS SET
                                        ;IN SR INTO TACSR AND RXCSR.
003570  10_.00                  SETPAR: TYPE                    ;TYPE: SELECT PARAMETERS.
003572  011406                          SELPAR
003574  000000                          HALT                            ;WAIT FOR USER.
003576  016767  173766  175350          MOV     SR,SRT
```

```
003604                                  STPARB:
003604  004567  177052                          JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
003610  001154                                  SRT                     ;SOURCE ADDR.
003612  012204                                  APARM                   ;DESTINATION ADDR.
003614  000003                                  3                       ;#OF DIGITS TO CONVERT.
003616  104000                                  TYPE
003620  012166                                  PARMTS
003622  016703  175152                  STPARC: MOV     RXCSR,%3        ;GET RXCSR ADDRESS
003626  016704  175152                          MOV     TXCSR,%4        ;GET TXCSR ADDRESS
003632  042713  003030                          BIC     #3030,(3)       ;CLEAR RXCSR PARAMETERS
003636  042714  000430                          BIC     #430,(4)        ;CLEAR TXCSR PARAMETERS
003642  032767  000020  175304                  BIT     #BIT4,SRT               ;SEE IF SR BIT 4 IS SET.
003650  001402                                  BEQ     TBIT3                   ;BRANCH IF NOT SET.
003652  052714  000400                          BIS     #BIT8,(4                ;SET. SET STOP CODE TO A 1.
003656  032767  000010  175270          TBIT3:  BIT     #BIT3,SRT               ;SEE IF SR BIT 3 IS SET.
003664  001404                                  BEQ     TBIT2                   ;BRANCH IF NOT SET.
003666  052714  000020                          BIS     #BIT4,(4)               ;SET BIT4 IN TXCSR AND RXCSR
003672  052713  000020                          BIS     #BIT4,(3)               ;(MSB OF SPEED SELECT BITS.)
003676  032767  000004  175250          TBIT2:  BIT     #BIT2,SRT               ;SEE IF SR BIT 2 IS SET.
003704  001404                                  BEQ     TBIT1                   ;BRANCH IF NOT SET.
003706  052714  000010                          BIS     #BIT3,(4)               ;SET BIT3 IN TXCSR AND RXCSR
003712  052713  000010                          BIS     #BIT3,(3)               ;(LSB OF SPEED SELECT BITS).
003716  012767  177400  175216          TBIT1:  MOV     #177400,CARMSK          ;SET CHARACTER MASK TO 8 BITS.
003724  032767  000002  175222                  BIT     #BIT1,SRT               ;SEE IF SR BIT 1 IS SET.
003732  001425                                  BEQ     STPARA                  ;BRANCH IF NOT SET.
003734  012767  177700  175200                  MOV     #177700,CARMSK          ;CHANGE CHAR MASK TO 6 BITS.
003742  052713  002000                          BIS     #BIT10,(3)              ;SET RXCSR BIT 10(MSB OF CHAR LENGTH BITS.
003746  052764  002000  177774                  BIS     #BIT10,-4(4)
003754  032767  000001  175172                  BIT     #BIT0,SRT               ;SEE IF SR BIT0 IS SET.
003762  001410                                  BEQ     PAREX                   ;BRANCH IF NOT SET.
003764  012767  177740  175150                  MOV     #177740,CARMSK          ;CHANGE CHAR MASK TO 5 BITS.
003772  052713  001000          TBIT0:  BIS     #BIT9,(3)               ;SET RXCSR BIT9 (LSB OF CHAR LENGTH BITS).
003776  052764  001000  177774                  BIS     #BIT9,-4(4)
004004  000207                  PAREX:  RTS     %7                      ;EXIT.
004006  032767  000001  175140  STPARA: BIT     #BIT0,SRT               ;SEE IF SR BIT0 IS SET.
004014  001773                                  BEQ     STPARA-2                ;BRANCH IF NOT SET.
004016  012767  177600  175116                  MOV     #177600,CARMSK          ;CHANGE CHAR MASK TO 7 BITS.
004024  000762                                  BR      TBIT0
004026  104000                  STTSPD: TYPE                    ;TYPE MESSAGE TO SET
004030  012713                          SETSPD                  ;TRANSMITTER SPEED
004032  104005                          CHALT                   ;WAIT FOR USER
004034  016767  173530  175112                  MOV     SR,SRT          ;GET SPEED
004042  042767  177747  175104                  BIC     #177747,SRT     ;MASK OFF UNUSED BITS
004050  004567  176606                          JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
004054  001154                                  SRT                     ;SOURCE ADDR.
004056  012204                                  APARM                   ;DESTINATION ADDR.
004060  000003                                  3                       ;#OF DIGITS TO CONVERT.
004062  104000                                  TYPE
004064  012166                                  PARMTS
004066  056777  175062  174710                  BIS     SRT,@TXCSR      ;LOAD SPEED BITS
004074  000207                                  RTS     7               ;EXIT
```

```
                                        ;SUBROUTINE TO MAKE LINE CONNECTION.
004076  017767  174676  175044  LINCON: MOV     @RXCSR,RXCSRT
004104  017767  174674  175034          MOV     @TXCSR,TXCSRT
004112  032767  000002  175026          BIT     #BIT1,TXCSRT    ;IS CLEAR TO SEND UP?
004120  001057                          BNE     LINEUP          ;YES CONNECTION IS MADE.

004122  042777  000101  174650  LINCA:  BIC     #101,@RXCSR     ;CLEAR IE BIT AND DTR
004130  042777  000001  174646          BIC     #1,@TXCSR       ;CLEAR REQUEST TO SEND
004136  005777  174640                  TST     @RXBUF          ;CLEAR DONE FLAG
004142  104000                          TYPE                    ;TYPE
004144  011603                          MAKCON                  ;'MAKE LINE CONNECTION'

004146  017767  174626  174774  LINCB:  MOV     @RXCSR,RXCSRT
004154  032767  020000  174766          BIT     #BIT13,RXCSRT   ;DID YOU RING
004162  001771                          BEQ     LINCB           ;GO WAIT FOR RING

004164  052777  000001  174606  LINCD:  BIS     #BIT0,@RXCSR    ;SET DATA TERMINAL READY
004172  052777  000001  174604          BIS     #BIT0,@TXCSR    ;SET REQUEST TO SEND
004200  104016                          DELAY                   ;WAIT 10 SECONDS FOR
004202  023420                          10000.                  ;CLEAR TO SEND

004204  017767  174570  174736  LINCE:  MOV     @RXCSR,RXCSRT
004212  005777  174564                  TST     @RXBUF          ;CLEAR DONE
004216  017767  174562  174722          MOV     @TXCSR,TXCSRT   ;GET TXCSR CONTENTS
004224  032767  000002  174714          BIT     #BIT1,TXCSRT    ;IS CLEAR TO SEND UP?
004232  001003                          BNE     LINCF           ;YES.  GO TO LINCF
004234  104014                          ERRTX                   ;NO.  PRINT ERROR MESSAGE
004236  012323                          LINCHM                  ;'CLEAR TO SEND NOT SET'
004240  000730                          BR      LINCA           ;START OVER AGAIN

004242  017767  174532  174700  LINCF:  MOV     @RXCSR,RXCSRT   ;CLEAR ALL FLAGS
004250  005777  174526                  TST     @RXBUF          ;AND DONE

004254  104000                  LINCH:  TYPE                    ;TYPE MESSAGE
004256  012373                          LINMAD                  ;CONNECTION IS MADE'
004260  000205                  LINEUP: RTS     5               ;EXIT LINE CONNECTION ROUTINE WITH
                                ;LINE CONNECTED AND THE INTERRUPTS TURNED OFF


                                        ;SUBROUTINE TO OVERLAY (CRLF) IN DATA PATTERN (EVERY 72.NO CHAR)
004262  012701  013254          OVRLAY: MOV     #OUTBUF,R1      ;GET OUTBUF ADDRESS
004266  012702  000016                  MOV     #14.,R2         ;GET COUNTER
004272  012711  105215          OVRLYA: MOV     #105215,(R1)    ;INSERT CR&LF
004276  062701  000110                  ADD     #72.,R1         ;ADD OFFSET
004302  005302                          DEC     R2              ;DONE?
004304  001372                          BNE     OVRLYA
004306  000207                          RTS     PC              ;EXIT


                                        ;SUBROUTINE TO FORM ASCII VALUE OF DC11 ADDRESS
004310  013567  174610          ADRS:   MOV     @(5)+,LINE      ;GET LINE ADDRESS
004314  004567  176342                  JSR     R5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
004320  001124                          LINE                    ;SOURCE ADDR.
004322  010776                          CSRADD                  ;DESTINATION ADDR.
004324  000006                          6                       ;#OF DIGITS TO CONVERT.
```

```
004326  000205                          RTS     5               ;EXIT



004330  000240                  RISR:   NOP
004332  010067  174566                  MOV     %0,LINE
004336  006300                          ASL     %0
004340  016067  007376  174432          MOV     RCSR(0),RXCSR   ;GET ADDRESS OF INTERRUPTING DC11'S RCSR
004346  017767  174426  174574          MOV     @RXCSR,RXCSRT   ;GET CSR CONTENTS
004354  100570                          BMI     DCERR           ;GO TO DC11 ERROR ROUTINE
004356  105767  174566                  TSTB    RXCSRT          ;TEST DONE
004362  001002                          BNE     RISRA
004364  104003                          ERROR                   ;FALSE INTERRUPT
004366  000002                          RTI                     ;EXIT
004370  020067  174570          RISRA:  CMP     %0,CALLED       ;DID CALLED LINE INTERRUPT?
004374  001020                          BNE     RISRB           ;BRANCH IF CALLER INTERRUPTED
004376  005767  174570                  TST     MODEM           ;CHECK MODEM TYPE
004402  001403                          BEQ     RISRAA          ;BRANCH IF 103
004404  005770  007476                  TST     @RBUF(0)        ;READ CALLED LINES DATA
004410  000002                          RTI
004412  117077  007476  174536  RISRAA: MOVB    @RBUF(0),@INBUFP;STORE CHARACTER IN INPUT BUFFER
004420  005267  174532                  INC     INBUFP          ;INCREMENT POINTER
004424  022767  015370  174524          CMP     #INBUF+100.,INBUFP;HAVE 100. CHARACTERS BEEN RECEIVED?
004432  001430                          BEQ     RISRC           ;GO CHECK DATA IF YES
004434  000002                          RTI                     ;EXIT IF NO
004436  117077  007476  174514  RISRB:  MOVB    @RBUF(0),@BUFFP ;STORE CHARACTER IN INTERMEDIATE DATA BUFFER
004444  005267  174510                  INC     BUFFP           ;INCREMENT POINTER
004450  022767  013432  174502          CMP     #BUFF+10.,BUFFP ;HAVE 10 CHARACTERS BEEN RECEIVED
004456  002401                          BLT     .+4
004460  000002                          RTI                     ;EXIT
004462  022767  000002  174442          CMP     #2,CONFIG       ;RUNNING CONFIGURATION 2?
004470  001405                          BEQ     RISRBB
004472  022767  013564  174460          CMP     #BUFF+100.,BUFFP;HAVE 100. CHARACTERS BEEN RECEIVED?
004500  001405                          BEQ     RISRC           ;GO CHECK DATA IF YES,OTHERWISE
004502  000002                          RTI                     ;EXIT
004504  052770  000100  007576  RISRBB: BIS     #BIT6,@TCSR(0)  ;START CALLERS TRANSMITTER
004512  000002                          RTI                     ;EXIT

                                ;CHECK DATA CONFIGURATION #1
004514  000240                  RISRC:  NOP
004516  012767  000001  174420          MOV     #1,CTRD         ;INITIALIZE CHARACTER COUNT
004524  012702  013420                  MOV     #BUFF,%2        ;POINT R2 TO CALLERS RECEIVED DATA BUFFER
004530  012703  013254                  MOV     #OUTBUF,%3      ;R3 = FIRST ADDRESS OF OUTPUT DATA BUFFER
004534  010267  174420                  MOV     %2,BUFFP        ;RESTORE CALLERS RCVD DATA BUFFER PTR
004540  022767  000001  174364          CMP     #1,CONFIG       ;CHECK CONFIGURATION
004546  001015                          BNE     RISRD
004550  112367  174364          RISRCA: MOVB    (3)+,XMTDAT     ;GET TRANSMITTED CHARACTER
004554  112267  174356                  MOVB    (2)+,RECDAT     ;GET RECEIVED CHARACTER
004560  104004                          DATCHK                  ;CHECK DATA
004562  005267  174356                  INC     CTRD            ;INCREMENT CHARACTER COUNT
004566  022767  000101  174350          CMP     #101,CTRD       ;HAS ALL DATA BEEN CHECKED
004574  001365                          BNE     RISRCA
004576  000167  000100                  JMP     FINISH

                                ;CHECK DATA CONFIGURATION #2
004602  000240                  RISRD:  NOP
```

```
004604  012704  015224                  MOV     #INBUF,%4       ;POINT R4 TO CALLED LINES RECEIVER
004610  010467  174342                  MOV     %4,INBUFP       ;DATA BUFFER & INIT. POINTER
004614  012767  013420  174346          MOV     #BUFF,TBUFFP
004622  016701  174336          RISRDA: MOV     CALLED,%1
004626  016167  007376  174144          MOV     RCSR(1),RXCSR
004634  112367  174300                  MOVB    (3)+,XMTDAT
004640  112267  174272                  MOVB    (2)+,RECDAT     ;COMPARE TRANSMITTED DATA WITH DATA
004644  104004                          DATCHK                  ;RECEIVED BY CALLED LINE
004646  016701  174310                  MOV     CALLER,%1
004652  016167  007376  174120          MOV     RCSR(1),RXCSR
004660  112467  174252                  MOVB    (4)+,RECDAT     ;COMPARE TRANSMITTED DATA WITH DATA
004664  104004                          DATCHK                  ;RECEIVED BY CALLER
004666  005267  174252                  INC     CTRD
004672  022767  000101  174244          CMP     #101,CTRD
004700  001350                          BNE     RISRDA

004702  000240          FINISH: NOP
004704  016701  174254                  MOV     CALLED,%1
004710  004567  176420                  JSR     5,FILL
004714  013254                          OUTBUF
004716  000144                          100.
004720  104000                          TYPE
004722  011761                          ENDPAS
004724  052771  000100  007576          BIS     #BIT6,@TCSR(1)
004732  000240                          NOP
004734  000002                          RTI
                        ;ERROR SERVICE ROUTINE
004736  032767  040000  174204  DCERR:  BIT     #BIT14,RXCSRT   ;TEST OVERRUN
004744  001404                          BEQ     RISRE
004746  104015                          ERRRX
004750  010776                          CSRADD
004752  005770  007476                  TST     @RBUF(0)        ;READ BUFFER

004756  032767  010000  174164  RISRE:  BIT     #BIT12,RXCSRT   ;TEST CARRIER TRANSITION
004764  001413                          BEQ     RISRF
004766  032767  000004  174154          BIT     #BIT2,RXCSRT    ;TEST CARRIER
004774  001007                          BNE     RISRF
004776  004767  000512                  JSR     7,DISCON        ;DISCONNECT LINE
005002  104015                          ERRRX                   ;ERROR! LOST CARRIER
005004  010776                          CSRADD
005006  005770  007476                  TST     @RBUF(0)        ;READ BUFFER (CLEARS DONE)
005012  000002                          RTI

005014  012767  013254  174144  RISRF:  MOV     #OUTBUF,OTBUFP  ;SET OUTPUT BUFFER POINTER
005022  012767  015224  174126          MOV     #INBUF,INBUFP   ;SET INPUT BUFFER POINTER
005030  012767  013420  174122          MOV     #BUFF,BUFFP     ;SET INTERMEDIATE BUFFER POINTER
005036  012767  013420  174124          MOV     #BUFF,TBUFFP    ;SET POINTER FOR CONFIG #2 TRANSMITTER
005044  032767  020000  174076          BIT     #BIT13,RXCSRT   ;CHECK RING INDICATOR
005052  001001                          BNE     .+4             ;BRANCH IF RING
005054  000002                          RTI
005056  004567  175600                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
005062  001124                          LINE                    ;SOURCE ADDR.
005064  012754                          TLINE                   ;DESTINATION ADDR.
005066  000002                          2                       ;#OF DIGITS TO CONVERT.
005070  104000                          TYPE
005072  012744                          ALINE
```

```
005074  010067  174064                    MOV     %0,CALLED
005100  000000                            HALT
005102  116767  172462  174062            MOVB    SR,MODEM        ;GET MODEM TYPE
005110  042767  177773  174054            BIC     #177773,MODEM   ;0=103,4-202
005116  116767  172446  174006            MOVB    SR,CONFIG
005124  042767  177774  174000            BIC     #177774,CONFIG
005132  001044                            BNE     RISRFC          ;GO TO SERVICE FOR CONFIG 1 OR 2
005134  004767  000376                    JSR     7,CONN          ;CONNECT LINE IF CONFIGURATION 0
005140  104000                            TYPE                    ;TYPE MESSAGE TO PRESS DATA
005142  013155                            BUTTON                  ;BUTTON ON DATA PHONE
005144  104016                            DCLAY                   ;WAIT FOR CARRIER
005146  023420                            10000.                  ;10 SECONDS
005150  005770  007476                    TST     @RBUF(0)        ;READ BUFFER TO CLEAR DONE
005154  005770  007376                    TST     @RCSR(0)        ;CLEAR ERROR FLAGS
005160  032770  000002  007576            BIT     #BIT1,@TCSR(0)  ;TEST FOR CLEAR TO SEND
005166  001004                            BNE     RISRFB
005170  104003                            ERROR                   ;ERROR! DID NOT RECEIVE CLEAR TO SEND
                                                                    ;WITHIN TIME ALLOTTED (10 SEC.)
005172  004767  000316                    JSR     7,DISCON        ;DISCONNECT LINE
005176  000002                            RTI                     ;AND EXIT

005200  016067  007576  173576  RISRFB:   MOV     TCSR(0),TXCSR   ;GET CALLED LINES TXCSR ADDRESS
005206  004767  176356                    JSR     7,SETPAR        ;LOAD USER PARAMETERS
005212  104000                            TYPE                    ;TYPE 'LINE CONNECTION
005214  012373                            LINMAD                  ;MADE'
005216  004567  175440                    JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
005222  001132                            CONFIG                  ;SOURCE ADDR.
005224  012443                            TCONFIG                 ;DESTINATION ADDR.
005226  000002                            2                       ;#OF DIGITS TO CONVERT.
005230  104000                            TYPE
005232  012422                            ACONFIG
005234  052770  000100  007576            BIS     #BIT6,@TCSR(0)
005242  000002                            RTI                     ;AND EXIT

                                ;HERE IF CONFIGURATION 1 OR 2
005244  104000                RISRFC:   TYPE                    ;ASK USER WHICH LINE HE IS
005246  013053                            WRU                     ;DIALING ON
005250  000000                            HALT
005252  016701  172312                    MOV     SR,%1           ;GET LINE #
005256  042701  177740                    BIC     #177740,%1      ;MASK UNUSED BITS
005262  010167  173636                    MOV     %1,LINE
005266  004567  175370                    JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
005272  001124                            LINE                    ;SOURCE ADDR.
005274  013152                            URA                     ;DESTINATION ADDR.
005276  000002                            2                       ;#OF DIGITS TO CONVERT.
005300  104000                            TYPE                    ;REPORT LINE # ON TTY
005302  013122                            UR
005304  006301                            ASL     %1
005306  010167  173650                    MOV     %1,CALLER       ;SAVE CALLERS LINE #
005312  004767  000220                    JSR     7,CONN          ;CONNECT CALLED LINE
005316  052771  000001  007376            BIS     #BIT0,@RCSR(1)  ;SET DTR ON CALLERS LINE
005324  104000                            TYPE                    ;TYPE MESSAGE TO PRESS DATA
005326  013155                            BUTTON                  ;ON DATA PHONE
005330  104016                            DELAY                   ;WAIT 10 SECONDS FOR CLEAR TO SEN
005332  023420                            10000.                  ;SET AT CALLED LINE
005334  027071  007476  007476            CMP     @RBUF(0),@RBUF(1)       ;READ BUFFERS
```

```
005342  027071  007376  007376          CMP     @RCSR(0),@RCSR(1);READ CSRS TO CLEAR ERROR FLAGS
005350  032770  000002  007576          BIT     #BIT1,@TCSR(0)  ;TEST FOR CLEAR TO SEND AT CALLED LINE
005356  001012                          BNE     RISRFF
005360  104003                          ERROR                   ;ERROR! CLEAR TO SEND NOT SET AT CALLED LINE
005362  004767  000126          RISRFD: JSR     7,DISCON        ;DISCONNECT
005366  042771  000001  007376          BIC     #BIT0,@RCSR(1)  ;LINE
005374  042771  000001  007576          BIC     #BIT0,@TCSR(1)
005402  000002                          RTI                     ;AND EXIT

005404  022767  000002  173520  RISRFF: CMP     #2,CONFIG
005412  001414                          BEQ     RISRFG
005414  022771  000004  007376          CMP     #BIT2,@RCSR(1)  ;CHECK CARRIER AT CALLERS LINE
005422  001003                          BNE     RISRFE
005424  104003                          ERROR                   ;ERROR! NO CARRIER AT CALLERS LINE
005426  000167  177730                  JMP     RISRFD          ;GO DISCONNECT LINES

005432  016167  007376  173340  RISRFE: MOV     RCSR(1),RXCSR
005440  000167  177534                  JMP     RISRFB          ;GO GET PAREMETERS AND ENABLE
                                                                ;CALLED TRANSMITTER AND EXIT

                                ;HERE IF CONFIGURATION 2
005444  032771  000002  007576  RISRFG: BIT     #BIT1,@TCSR(1)  ;TEST CALLERS CLEAR TO SEND
005452  001003                          BNE     RISRFH
005454  104003                          ERROR                   ;ERROR! NO CTS AT CALLERS LINE
005456  000167  177700                  JMP     RISRFD          ;GO DISCONNECT LINE AND EXIT
005462  016067  007376  173310  RISRFH: MOV     RCSR(0),RXCSR
005470  016167  007576  173306          MOV     TCSR(1),TXCSR
005476  004767  176066                  JSR     7,SETPAR        ;GO GET PARAMETERS FOR CALLERS
                                                                ;TRANSMITTER AND CALLED RECEIVER
005502  016167  007376  173270          MOV     RCSR(1),RXCSR
005510  000167  177464                  JMP     RISRFB

                                ;SUBROUTINE TO DISCONNECT LINE R0 HAS LINE #

005514  042770  000001  007376  DISCON: BIC     #BIT0,@RCSR(0)
005522  042770  000001  007576          BIC     #BIT0,@TCSR(0)
005530  005770  007376                  TST     @RCSR(0)
005534  000207                          RTS     7

                                ;SUBROUTINE TO CONNECT LINE R0 HAS LINE #
005536  052770  000001  007376  CONN:   BIS     #BIT0,@RCSR(0)  ;SET DATA TERMINAL READY
005544  052770  000001  007576          BIS     #BIT0,@TCSR(0)  ;SET REQUEST TO SEND
005552  000207                          RTS     7
```

```
                                ;**********

005554  000240                  TISR:   NOP
005556  006300                          ASL     %0              ;RC HAS LINE #
005560  105770  007576                  TSTB    @TCSR(0)        ;CHECK FOR DONE
005564  100402                          BMI     TISRA           ;BRANCH IF DONE
005566  104003                          ERROR                   ;ERROR! FALSE INTERRUPT
005570  000002                  TISRAA: RTI                     ;EXIT
005572  020067  173364          TISRA:  CMP     %0,CALLER       ;DID CALLER INTERRUPT
005576  001015                          BNE     TISRC
005600  117770  173364  007676          MOVB    @TBUFFF,@TBUF(0)        ;TRANSMIT
005606  005267  173356                  INC     TBUFFP          ;STEP POINTER
005612  022767  013564  173350          CMP     #BUFF+100.,TBUFFP
005620  001003                          BNE     .+10
005622  042770  000100  007576          BIC     #BIT6,@TCSR(0)
005630  000002                          RTI
005632  117770  173330  007676  TISRC:  MOVB    @OTBUFP,@TBUF(0)        ;TRANSMIT THE NEXT CHARACTER
005640  005267  173322                  INC     OTBUFP          ;STEP POINTER TO NEXT CHAR.
005644  005767  173362                  TST     CONFIG          ;HAS CONFIGURATION 0 SELECTED
005650  001010                          BNE     TISRB           ;BRANCH IF CONFIG #1 OR #2
005652  022767  015224  173306          CMP     #OUTBUF+1000.,OTBUFP;HAVE 1000. CHARS. BEEN SENT
005660  001343                          BNE     TISRAA          ;EXIT IF NOT
005662  012767  013254  173276  TISRBB: MOV     #OUTBUF,OTBUFP  ;RESET POINTER
005670  000002                          RTI                     ;AND EXIT

005672  022767  013420  173266  TISRB:  CMP     #OUTBUF+100.,OTBUFP;HAVE 100. CHARS. BEEN SENT
005700  001333                          BNE     TISRAA          ;EXIT IF NOT
005702  042770  000100  007576          BIC     #BIT6,@TCSR(0)  ;DISABLE TRANSMITTER INTERRUPT
005710  000764                          BR      TISRBB          ;RESET POINTER AND EXIT
```

```
                                        ;PRG0 - SINGLE CHARACTER LINE MODE TEST.
                                        ;**********
005712  000240                  PRG0:   NOP                     ;BEGIN PRG0
005714  104000                          TYPE                    ;TYPE
005716  011127                          PGTIT                   ;PROGRAM TITLE
005720  104000                          TYPE
005722  011543                          SELCAR
005724  000000                          HALT
005726  116701  171636                  MOVB    SR,%1           ;GET USER SPECIFIED  DATA
005732  010167  005316                  MOV     %1,OUTBUF       ;AND
005736  004567  175420                  JSR     5,BMOVE         ;LOAD
005742  013254                          OUTBUF                  ;INTO
005744  013255                          OUTBUF+1                ;OUTPUT
005746  001747                          999.                    ;BUFFER
005750  004767  176306                  JSR     7,OVRLAY        ;OVER LAY CR,LF'S IN DATA
005754  004767  001166                  JSR     7,LDPRI         ;LOAD PRIORITY LEVEL IN VECTOR+2
005760  004767  001242                  JSR     7,LDTVEC        ;LOAD TRANSMITTER VECTORS
005764  004767  001202                  JSR     7,LDVECS        ;LOAD RECEIVER VECTORS
005770  012767  000340  172000          MOV     #PRTY7,PSW      ;SET PROCESSOR PRIORITY=7
005776  012702  000100                  MOV     #BIT6,%2        ;SET IE
006002  012701  174000                  MOV     #174000,%1      ;BIT IN
006006  004567  001116                  JSR     5,MOVIT         ;ALL RECEIVERS
006012  104000                          TYPE                    ;TYPE
006014  011603                          MAKCON                  ;'MAKE LINE CONNECTION'
006016  005067  171754                  CLR     PSW             ;SET PROCESSOR PRIORITY=0
006022  000001              PRG0A:      WAIT                    ;WAIT
006024  000776                          BR      PRG0A           ;HERE

                                        ;**********
                                        ;PRG1 - SPECIAL BINARY COUNT PATTERN LINE MODE TEST.
                                        ;**********
006026  104000                  PRG1:   TYPE                    ;TYPE PROGRAM TITLE.
006030  011173                          P1TIT
006032  012767  105215  005214          MOV     #105215,OUTBUF  ;LOAD CRLF
006040  004567  175264                  JSR     5,INFIL         ;LOAD OUTPUT
006044  013256                          OUTBUF+2                ;WITH BINARY
006046  001750                          1000.                   ;COUNT PATTERN
006050  012767  000100  173056          MOV     #100,NUMBER
006056  004767  001164                  JSR     7,LDPRI         ;LOAD PRIORITY LEVEL IN VECTOR +2
006062  004767  001140                  JSR     7,LDTVEC        ;LOAD TRANSMITTER VECTORS
006066  004767  001100                  JSR     7,LDVECS        ;LOAD RECEIVER VECTORS
006072  012767  000340  171676          MOV     #PRTY7,PSW      ;SET PROCESSOR PRIORITY=7
006100  012702  000100                  MOV     #BIT6,%2        ;GET IE BIT
006104  012701  174000                  MOV     #174000,%1      ;GET FIRST CSR ADDRESS
006110  004567  001014                  JSR     5,MOVIT         ;AND MOVE IT
006114  104000                          TYPE                    ;TYPE
006116  011603                          MAKCON                  ;'MAKE LINE CONNECTION'
006120  005067  171652                  CLR     PSW             ;SET PROCESSOR PRIORITY=0
006124  000001              PRG1C:      WAIT                    ;WAIT
006126  000776                          BR      PRG1C           ;HERE
                                        ;PRG2-SPECIAL MESSAGE TRANSMIT ONLY THIS PROGRAM TRANSMITS
                                        ;THE MESSAGE 'A QUICK BROWN FOX JUMPED OVER THE LAZY DOGS
                                        ;BACK  1234567890.'

006130  104000                  PRG2:   TYPE                    ;TYPE PROGRAM
006132  011242                          P2TIT                   ;TITLE
```

```
006134  004567  175034                          JSR     5,LINSEL
006140  004767  175424                  PRG2AA: JSR     7,SETPAR        ;GO SET PARAMETERS
006144  052777  000001  172632                  BIS     #BIT0,@TXCSR    ;SET REQUEST TO SEND
006152  004567  175720                  PRG2A:  JSR     5,LINCON        ;GO MAKE LINE CONNECTION
006156  012702  012574                  PRG2B:  MOV     #PRG2M,%2       ;GET ADDRESS OF MESSAGE
006162  112201                          PRG2C:  MOVB    (2)+,%1         ;GET FIRST CHARACTER
006164  020127  000045                          CMP     %1,#'%          ;TERMINATOR CHARACTER
006170  001772                                  BEQ     PRG2B           ;RESEND MESSAGE
006172  032767  000100  172754                  BIT     #BIT6,SRT       ;PARITY ENABLED
006200  001402                                  BEQ     .+6
006202  004767  174524                          JSR     7,GENPAR        ;GENERATE PARITY
006206  004567  175664                          JSR     5,LINCON        ;CHECK LINE CONNECTION
006212  010177  172570                          MOV     %1,@TXBUF       ;LOAD BUFFER
006216  105777  172562                  PRG2D:  TSTB    @TXCSR          ;AND WAIT FOR CHARACTER
006222  100375                                  BPL     .-4             ;TO BE TRANSMITTED
006224  000756                                  BR      PRG2C           ;GET NEXT CHARACTER.

                                        ;PRG3-PROGRAM TO RECEIVE A MESSAGE.

006226  104000                  PRG3:   TYPE                            ;TYPE PROGRAM
006230  011310                          P3TIT                           ;TITLE
006232  004567  174736                  JSR     5,LINSEL
006236  004767  175336                  JSR     7,SETPAR                ;GET PARAMETERS
006242  004767  175560                  JSR     7,STTSPD                ;GET TRANSMITTER SPEED
006246  012706  000776                  MOV     #STKPTR-2,%6            ;REPOSITION STACK POINTER
006252  052777  000001  172524          BIS     #BIT0,@TXCSR            ;SET REQUEST TO SEND
006260  004567  175612                  JSR     5,LINCON                ;MAKE LINE CONNECTION
006264  104006                          STRXV                           ;SET RECEIVER INTERUPT
006266  006320                          RINT3                           ;TO THIS ADDRESS
006270  104007                          STTXV                           ;SET TRANSMITTER INTERRUPT
006272  006456                          TINT3                           ;TO THIS ADDRESS
006274  012767  006566  171562          MOV     #TPINT,64               ;LOAD TELEPRINTER VECTOR
006302  012767  000200  171556          MOV     #PRTY4,66               ;AND PRIORITY
006310  004567  000310          PRG3B:  JSR     5,INIT3                 ;INITIALIZE PROGRAM
006314  000001                          WAIT                            ;DO
006316  000776                          BR      .-2                     ;NOTHING
006320  017767  172454  172622  RINT3:  MOV     @RXCSR,RXCSRT           ;GET RXCSR DATA
006326  100436                          BMI     RINT3C                  ;BRANCH IF ERROR
006330  105767  172614                  TSTB    RXCSRT                  ;TEST
006334  100042                          BPL     RINT3D
006336  005703                          TST     %3                      ;IS THIS THE FIRST
006340  100443                          BMI     RINT3E                  ;CHARACTER BRANCH IF YES.
006342  117711  172434                  MOVB    @RXBUF,(1)              ;GET DATA
006346  105767  171216                  TSTB    SR                      ;ECHO OPTION SELECTED
006352  100405                          BMI     RINT3A
006354  105777  172424                  TSTB    @TXCSR
006360  100375                          BPL     .-4
006362  111177  172420                  MOVB    (1),@TXBUF              ;ECHO CHARACTER
006366  122103                  RINT3A: CMPB    (1)+,%3                 ;LAST CHARACTER RECEIVED
006370  001401                          BEQ     .+4
006372  000002                          RTI                             ;EXIT
006374  042777  000100  172376          BIC     #BIT6,@TXCSR            ;DISABLE RECEIVER
006402  012701  013254                  MOV     #OUTBUF,%1              ;INITIALIZE BUFFER POINTER
006406  052777  000100  172370          BIS     #BIT6,@TXCSR            ;ENABLE TRANSMITTER
006414  052777  000100  172402          BIS     #BIT6,@TPS              ; ENABLE TELEPRINTER
```

```
006422  000002                  RINT3B: RTI                     ;EXIT
006424  104015                  RINT3C: ERRRX                   ;TYPE ERROR MESSAGE
006426  012675                          LFAIL                   ;
006430  042777  000100  172342          BIC     #BIT6,@RXCSR    ;DISABLE RECEIVER
006436  000167  000154                  JMP     TPINTA          ;RESTART PROGRAM
006442  104015                  RINT3D: ERRRX                   ;TYPE
006444  011006                          RINTM                   ;ERROR MESSAGE
006446  000002                          RTI                     ;EXIT
006450  017703  172326          RINT3E: MOV     @RXBUF,%3
006454  000002                  RINT3F: RTI
006456  017767  172322  172462  TINT3:  MOV     @TXCSR,TXCSRT   ;GET TXCSR DATA
006464  105767  172456                  TSTB    TXCSRT          ;TEST
006470  100005                          BPL     TINT3B
006472  111177  172310                  MOVB    (1),@TXBUF      ;TRANSMIT CHARACTER
006476  122103                          CMPB    (1)+,%3         ;ALL CHARACTERS TRANSMITTED
006500  001422                          BEQ     TINT3C
006502  000002                          RTI                     ;RETURN TO MAIN PROGRAM

006504  017767  172314  172440  TINT3B: MOV     @TPS,TEMP       ;SAVE TELEPRINTEP STATUS
006512  005077  172306                  CLR     @TPS            ;DISABLE INTERRUPT
006516  105777  172302                  TSTB    @TPS            ;WAIT FOR
006522  100375                          BPL     .-4             ;TELEPRINTER TO FINISH
006524  104014                          ERRTX                   ;TYPE
006526  011027                          TINTM                   ;ERROR MESSAGE
006530  105777  172270                  TSTB    @TPS            ;WAIT FOR TELEPRINTER
006534  100375                          BPL     .-4             ;TO FINISH
006536  016777  172410  172260          MOV     TEMP,@TPS       ;RESTORE TELEPRINTER STATUS
006544  000002                          RTI                     ;EXIT
006546  042777  000100  172230  TINT3C: BIC     #BIT6,@TXCSR    ;DISABLE INTERRUPT
006554  032777  000100  172242          BIT     #BIT6,@TPS      ;IS TTY ACTIVE
006562  001415                          BEQ     TPINTA
006564  000002                          RTI
006566  111277  172234          TPINT:  MOVB    (2),@TPB        ;TYPE CHARACTER
006572  122203                          CMPB    (2)+,%3         ;WAS THIS THE LAST CHAR.
006574  001401                          BEQ     .+4
006576  000002                          RTI
006600  042777  000100  172216          BIC     #BIT6,@TPS      ;DISABLE INTERRUPT
006606  032777  000100  172170          BIT     #BIT6,@TXCSR    ;IS TRANSMITTER ACTIVE
006614  001002                          BNE     .+6
006616  012716  006246          TPINTA: MOV     #PRG3A,(6)
006622  000002                          RTI                     ;EXIT
006624  012701  013254          INIT3:  MOV     #OUTBUF,%1      ;GET BUFFER ADDRESS WHERE
006630  010102                          MOV     %1,%2           ;RECEIVED DATA IS TO BE STORED
006632  052703  100000                  BIS     #BIT15,%3       ;SET BIT 15
006636  012767  105215  004410          MOV     #105215,OUTBUF  ;LOAD CRLF IN FIRST 2 ADDRESSES
006644  105777  172134                  TSTB    @TXCSR          ;WAIT FOR
006650  100375                          BPL     .-4             ;TRANSMITTER
006652  112177  172130                  MOVB    (1)+,@TXBUF     ;
006656  105777  172122                  TSTB    @TXCSR          ;SEND
006662  100375                          BPL     .-4             ;CRLF
006664  112177  172116                  MOVB    (1)+,@TXBUF     ;
006670  105777  172110                  TSTB    @TXCSR
006674  100375                          BPL     .-4
006676  052777  000100  172074          BIS     #BIT6,@RXCSR    ;ENABLE RECEIVER INTERRUPT
006704  000205                          RTS     5               ;EXIT INITIALIZATION ROUTINE
```

```
006706  104000                  PRG4:   TYPE
006710  011337                          P4TIT
006712  004567  174256                  JSR     5,LINSEL
006716  000005                          RESET
006720  004767  174644                  JSR     7,SETPAR
006724  052777  000001  172046          BIS     #BIT0,@RXCSR    ;SET DATA TERMINAL READY AND REQUEST
006732  052777  000001  172044          BIS     #BIT0,@TXCSR    ;ON USER SELECTED LINE
006740  104000                  PRG4A:  TYPE                    ;TYPE MESSAGE TO MAKE
006742  011603                          MAKCON                  ;LINE CONNECTION
006744  000000                          HALT                    ;WAIT FOR USER TO MAKE LINE CONNECTION
006746  005777  172026                  TST     @RXCSR          ;READ RXCSR TO CLEAR ERROR FLAGS
006752  005777  172024                  TST     @RXBUF          ;READ BUFFER
006756  032777  000002  172020          BIT     #BIT1,@TXCSR    ;TEST FOR CLEAR TO SEND
006764  001003                          BNE     PRG4B
006766  104000                  PRG4AA: TYPE                    ;TYPE ERROR MESSAGE
006770  012323                          LINCHM
006772  000762                          BR      PRG4A           ;AND TRY AGAIN
006774  104000                  PRG4B:  TYPE
006776  012373                          LINMAD
007000  005067  000122                  CLR     ERRCNT
007004  012702  012574          PRG4BB: MOV     #PRG2M,%2       ;GET BASE ADDRESS OF DATA TO BE TRANSMITTED
007010  112201                  PRG4C:  MOVB    (2)+,%1         ;GET A CHARACTER
007012  020127  000045                  CMP     %1,#'%          ;WAS IT THE TERMINATOR?
007016  001440                          BEQ     PRG4E
007020  032767  000100  172126          BIT     #BIT6,$RT       ;WAS PARITY OPTION SELECTED?
007026  001402                          BEQ     .+6             ;BRANCH IF NO PARITY DESIRED
007030  004767  173676                  JSR     7,GENPAR        ;GENERATE PARITY ON CHAR. IN R1
007034  032777  000002  171742          BIT     #BIT1,@TXCSR    ;CHECK CLEAR TO SEND
007042  001751                          BEQ     PRG4AA          ;TYPE ERROR MSG. IF NOT SET
007044  010177  171736                  MOV     %1,@TXBUF       ;TRANSMIT THE CHARACTER
007050  005777  171724                  TST     @RXCSR          ;ANY ERROR FLAGS?
007054  100001                          BPL     .+4             ;BRANCH IF NO ERROR FLAGS
007056  104003                          ERROR                   ;ERROR! SOME ERROR FLAG IS SET
007060  105777  171714                  TSTB    @RXCSR          ;WAIT FOR THE RECEIVER TO RECEIVE
007064  100375                          BPL     .-4             ;THE TRANSMITTED CHARACTER
007066  117703  171710                  MOVB    @RXBUF,%3       ;SAVE IT IN R3
007072  046701  172044                  BIC     CARMSK,%1       ;CLEAR NON- TRANSMITTED BITS
007076  120103                          CMPB    %1,%3           ;WAS RECEIVED & TRANSMITTED DATA THE SAME
007100  001403                          BEQ     PRG4D
007102  104003                          ERROR                   ;ERROR! DATA ERROR
007104  005267  000016                  INC     ERRCNT
007110  105777  171670          PRG4D:  TSTB    @TXCSR          ;WAIT FOR TRANSMITTER TO FINISH
007114  100375                          BPL     .-4
007116  000734                          BR      PRG4C
007120  104000                  PRG4E:  TYPE
007122  011761                          ENDPAS
007124  000727                          BR      PRG4BB
007126  000000                  ERRCNT: OPEN

                                ;THIS ROUTINE MOVES THE CONTENTS OF R2 TO THE ADDRESS SPECIFIED
                                ;BY R1
007130  012703  000010          MOVIT:  MOV     #10,%3          ;GET OFFSET
007134  012767  000006  170642          MOV     #6,4            ;SET UP ERROR TRAP ADDRESS
007142  012767  000002  170636          MOV     #2,6            ;TO RETURN
```

```
007150  012700  000041                MOV     #33.,%0         ;GET COUNTER
007154  010211          MOVITA:       MOV     %2,(1)  ;MOVE THE DATA
007156  060301                        ADD     %3,%1           ;ADD OFFSET
007160  005300                        DEC     %0              ;ALL DATA MOVED?
007162  001374                        BNE     MOVITA          ;NO.  RETURN
007164  005067  170616                CLR     6               ;RESTORE ERROR TRAP ADDRESS
007170  000205                        RTS     5               ;RETURN

                        ;SUBROUTINE TO LOAD ALL VECTORS
007172  012701  007776  LDVECS:       MOV     #RISR0,%1
007176  016702  000074                MOV     VECTAB,%2
007202  012703  000010  LDVECA:       MOV     #10,%3
007206  012704  000040                MOV     #32.,%4
007212  010112  LDVECB:               MOV     %1,(2)          ;LOAD VECTOR
007214  060301                        ADD     %3,%1
007216  060302                        ADD     %3,%2
007220  005304                        DEC     %4
007222  001373                        BNE     LDVECB
007224  000207                        RTS     7

007226  012701  010376  LDTVEC:       MOV     #TISR0,%1
007232  016702  000040                MOV     VECTAB,%2
007236  062702  000004                ADD     #4,%2
007242  000167  177734                JMP     LDVECA

                        ;POUTINE TO LOAD PRIORITY LEVEL 7 IN VECTOR +2
007246  016701  000024  LDPRI:        MOV     VECTAB,%1       ;GET BASE VECTOR
007252  005721                        TST     (1)+            ;ADD 2
007254  012702  000340                MOV     #340,%2         ;GET LEVEL 7
007260  012703  000100                MOV     #64.,%3         ;LOAD COUNTER
007264  010211  LDPRIA:               MOV     %2,(1)          ;LOAD VECTOR +2
007266  022121                        CMP     (1)+,(1)+       ;POINT TO NEXT VECTOR
007270  005303                        DEC     %3              ;DECREMENT COUNTER
007272  001374                        BNE     LDPRIA
007274  000207                        RTS     7

                        ;VECTOR ASSIGNMENT TABLE
007276  000300  VECTAB:  300                     ;LINE 0 VECTOR
007300  000310          310                     ;LINE 1 VECTOR
007302  000320          320                     ;LINE 2 VECTOR
007304  000330          330                     ;LINE 3 VECTOR
007306  000340          340                     ;LINE 4 VECTOR
007310  000350          350                     ;LINE 5 VECTOR
007312  000360          360                     ;LINE 6 VECTOR
007314  000370          370                     ;LINE 7 VECTOR
007316  000400          400                     ;LINE 10 VECTOR
007320  000410          410                     ;LINE 11 VECTOR
007322  000420          420                     ;LINE 12 VECTOR
007324  000430          430                     ;LINE 13 VECTOR
007326  000440          440                     ;LINE 14 VECTOR
007330  000450          450                     ;LINE 15 VECTOR
007332  000460          460                     ;LINE 16 VECTOR
007334  000470          470                     ;LINE 17 VECTOR
007336  000500          500                     ;LINE 20 VECTOR
007340  000510          510                     ;LINE 21 VECTOR
```

```
007342  000520                  520             ;LINE 22 VECTOR
007344  000530                  530             ;LINE 23 VECTOR
007346  000540                  540             ;LINE 24 VECTOR
007350  000550                  550             ;LINE 25 VECTOR
007352  000560                  560             ;LINE 26 VECTOR
007354  000570                  570             ;LINE 27 VECTOR
007356  000600                  600             ;LINE 30 VECTOR
007360  000610                  610             ;LINE 31 VECTOR
007362  000620                  620             ;LINE 32 VECTOR
007364  000630                  630             ;LINE 33 VECTOR
007366  000640                  640             ;LINE 34 VECTOR
007370  000650                  650             ;LINE 35 VECTOR
007372  000660                  660             ;LINE 36 VECTOR
007374  000670                  670             ;LINE 37 VECTOR
```

```
                                ;DC11 REGISTER ADDRESSES
        000000                          N=0
        000000                          A=0
007376                          RCSR:
007376  174000                          174000+0                ;ADDRESS OF RECEIVER LINE # 0
        000010                          N=N+10
        000001                          A=A+1
007400  174010                          174000+10               ,ADDRESS OF RECEIVER LINE # 1
        000020                          N=N+10
        000002                          A=A+1
007402  174020                          174000+20               ;ADDRESS OF RECEIVER LINE # 2
        000030                          N=N+10
        000003                          A=A+1
007404  174030                          174000+30               ;ADDRESS OF RECEIVER LINE # 3
        000040                          N=N+10
        000004                          A=A+1
007406  174040                          174000+40               ;ADDRESS OF RECEIVER LINE # 4
        000050                          N=N+10
        000005                          A=A+1
007410  174050                          174000+50               ;ADDRESS OF RECEIVER LINE # 5
        000060                          N=N+10
        000006                          A=A+1
007412  174060                          174000+60               ;ADDRESS OF RECEIVER LINE # 6
        000070                          N=N+10
        000007                          A=A+1
007414  174070                          174000+70               ;ADDRESS OF RECEIVER LINE # 7
        000100                          N=N+10
        000010                          A=A+1
007416  174100                          174000+100              ,ADDRESS OF RECEIVER LINE # 10
        000110                          N=N+10
        000011                          A=A+1
007420  174110                          174000+110              ;ADDRESS OF RECEIVER LINE # 11
        000120                          N=N+10
        000012                          A=A+1
007422  174120                          174000+120              ;ADDRESS OF RECEIVER LINE # 12
        000130                          N=N+10
        000013                          A=A+1
007424  174130                          174000+130              ;ADDRESS OF RECEIVER LINE # 13
        000140                          N=N+10
        000014                          A=A+1
007426  174140                          174000+140              ;ADDRESS OF RECEIVER LINE # 14
        000150                          N=N+10
        000015                          A=A+1
007430  174150                          174000+150              ;ADDRESS OF RECEIVER LINE # 15
        000160                          N=N+10
        000016                          A=A+1
007432  174160                          174000+160              ;ADDRESS OF RECEIVER LINE # 16
        000170                          N=N+10
        000017                          A=A+1
007434  174170                          174000+170              ;ADDRESS OF RECEIVER LINE # 17
        000200                          N=N+10
        000020                          A=A+1
007436  174200                          174000+200              ;ADDRESS OF RECEIVER LINE # 20
        000210                          N=N+10
        000021                          A=A+1
```

```
007440  174210                  174000+210          ;ADDRESS OF RECEIVER LINE # 21
        000220                  N=N+10
        000022                  A=A+1
007442  174220                  174000+220          ;ADDRESS OF RECEIVER LINE # 22
        000230                  N=N+10
        000023                  A=A+1
007444  174230                  174000+230          ;ADDRESS OF RECEIVER LINE # 23
        000240                  N=N+10
        000024                  A=A+1
007446  174240                  174000+240          ;ADDRESS OF RECEIVER LINE # 24
        000250                  N=N+10
        000025                  A=A+1
007450  174250                  174000+250          ;ADDRESS OF RECEIVER LINE # 25
        000260                  N=N+10
        000026                  A=A+1
007452  174260                  174000+260          ;ADDRESS OF RECEIVER LINE # 26
        000270                  N=N+10
        000027                  A=A+1
007454  174270                  174000+270          ;ADDRESS OF RECEIVER LINE # 27
        000300                  N=N+10
        000030                  A=A+1
007456  174300                  174000+300          ;ADDRESS OF RECEIVER LINE # 30
        000310                  N=N+10
        000031                  A=A+1
007460  174310                  174000+310          ;ADDRESS OF RECEIVER LINE # 31
        000320                  N=N+10
        000032                  A=A+1
007462  174320                  174000+320          ;ADDRESS OF RECEIVER LINE # 32
        000330                  N=N+10
        000033                  A=A+1
007464  174330                  174000+330          ;ADDRESS OF RECEIVER LINE # 33
        000340                  N=N+10
        000034                  A=A+1
007466  174340                  174000+340          ;ADDRESS OF RECEIVER LINE # 34
        000350                  N=N+10
        000035                  A=A+1
007470  174350                  174000+350          ;ADDRESS OF RECEIVER LINE # 35
        000360                  N=N+10
        000036                  A=A+1
007472  174360                  174000+360          ;ADDRESS OF RECEIVER LINE # 36
        000370                  N=N+10
        000037                  A=A+1
007474  174370                  174000+370          ;ADDRESS OF RECEIVER LINE # 37
        000400                  N=N+10
        000040                  A=A+1

        000000                  N=0
        000000                  A=0
007476                  RBUF:
007476  174002                  174002+0            ;ADDRESS OF RECEIVER BUFFER LINE # 0
        000010                  N=N+10
        000001                  A=A+1
007500  174012                  174002+10           ;ADDRESS OF RECEIVER BUFFER LINE # 1
        000020                  N=N+10
        000002                  A=A+1
007502  174022                  174002+20           ;ADDRESS OF RECEIVER BUFFER LINE # 2
```

```
                000030                  N=N+10
                000003                  A=A+1
007504          174032                  174002+30               ;ADDRESS OF RECEIVER BUFFER LINE # 3
                000040                  N=N+10
                000004                  A=A+1
007506          174042                  174002+40               ;ADDRESS OF RECEIVER BUFFER LINE # 4
                000050                  N=N+10
                000005                  A=A+1
007510          174052                  174002+50               ;ADDRESS OF RECEIVER BUFFER LINE # 5
                000060                  N=N+10
                000006                  A=A+1
007512          174062                  174002+60               ;ADDRESS OF RECEIVER BUFFER LINE # 6
                000070                  N=N+10
                000007                  A=A+1
007514          174072                  174002+70               ;ADDRESS OF RECEIVER BUFFER LINE # 7
                000100                  N=N+10
                000010                  A=A+1
007516          174102                  174002+100              ;ADDRESS OF RECEIVER BUFFER LINE # 10
                000110                  N=N+10
                000011                  A=A+1
007520          174112                  174002+110              ;ADDRESS OF RECEIVER BUFFER LINE # 11
                000120                  N=N+10
                000012                  A=A+1
007522          174122                  174002+120              ;ADDRESS OF RECEIVER BUFFER LINE # 12
                000130                  N=N+10
                000013                  A=A+1
007524          174132                  174002+130              ;ADDRESS OF RECEIVER BUFFER LINE # 13
                000140                  N=N+10
                000014                  A=A+1
007526          174142                  174002+140              ;ADDRESS OF RECEIVER BUFFER LINE # 14
                000150                  N=N+10
                000015                  A=A+1
007530          174152                  174002+150              ;ADDRESS OF RECEIVER BUFFER LINE # 15
                000160                  N=N+10
                000016                  A=A+1
007532          174162                  174002+160              ;ADDRESS OF RECEIVER BUFFER LINE # 16
                000170                  N=N+10
                000017                  A=A+1
007534          174172                  174002+170              ;ADDRESS OF RECEIVER BUFFER LINE # 17
                000200                  N=N+10
                000020                  A=A+1
007536          174202                  174002+200              ;ADDRESS OF RECEIVER BUFFER LINE # 20
                000210                  N=N+10
                000021                  A=A+1
007540          174212                  174002+210              ;ADDRESS OF RECEIVER BUFFER LINE # 21
                000220                  N=N+10
                000022                  A=A+1
007542          174222                  174002+220              ;ADDRESS OF RECEIVER BUFFER LINE # 22
                000230                  N=N+10
                000023                  A=A+1
007544          174232                  174002+230              ;ADDRESS OF RECEIVER BUFFER LINE # 23
                000240                  N=N+10
                000024                  A=A+1
007546          174242                  174002+240              ;ADDRESS OF RECEIVER BUFFER LINE # 24
                000250                  N=N+10
                000025                  A=A+1
```

```
007550  174252                  174002+250          ;ADDRESS OF RECEIVER BUFFER LINE # 25
        000260                  N=N+10
        000026                  A=A+1
007552  174262                  174002+270          ;ADDRESS OF RECEIVER BUFFER LINE # 26
        000270                  N=N+10
        000027                  A=A+1
007554  174272                  174002+270          ;ADDRESS OF RECEIVER BUFFER LINE # 27
        000300                  N=N+10
        000030                  A=A+1
007556  174302                  174002+300          ;ADDRESS OF RECEIVER BUFFER LINE # 30
        000310                  N=N+10
        000031                  A=A+1
007560  174312                  174002+310          ;ADDRESS OF RECEIVER BUFFER LINE # 31
        000320                  N=N+10
        000032                  A=A+1
007562  174322                  174002+320          ;ADDRESS OF RECEIVER BUFFER LINE # 32
        000330                  N=N+10
        000033                  A=A+1
007564  174332                  174002+330          ;ADDRESS OF RECEIVER BUFFER LINE # 33
        000340                  N=N+10
        000034                  A=A+1
007566  174342                  174002+340          ;ADDRESS OF RECEIVER BUFFER LINE # 34
        000350                  N=N+10
        000035                  A=A+1
007570  174352                  174002+350          ;ADDRESS OF RECEIVER BUFFER LINE # 35
        000360                  N=N+10
        000036                  A=A+1
007572  174362                  174002+360          ;ADDRESS OF RECEIVER BUFFER LINE # 36
        000370                  N=N+10
        000037                  A=A+1
007574  174372                  174002+370          ;ADDRESS OF RECEIVER BUFFER LINE # 37
        000400                  N=N+10
        000040                  A=A+1

        000000                  N=0
        000000                  A=0
007576                  TCSR:
007576  174004                  174004+0            ;ADDRESS OF TRANSMITTER CSR LINE # 0
        000010                  N=N+10
        000001                  A=A+1
007600  174014                  174004+10           ;ADDRESS OF TRANSMITTER CSR LINE # 1
        000020                  N=N+10
        000002                  A=A+1
007602  174024                  174004+20           ;ADDRESS OF TRANSMITTER CSR LINE # 2
        000030                  N=N+10
        000003                  A=A+1
007604  174034                  174004+30           ;ADDRESS OF TRANSMITTER CSR LINE # 3
        000040                  N=N+10
        000004                  A=A+1
007606  174044                  174004+40           ;ADDRESS OF TRANSMITTER CSR LINE # 4
        000050                  N=N+10
        000005                  A=A+1
007610  174054                  174004+50           ;ADDRESS OF TRANSMITTER CSR LINE # 5
        000060                  N=N+10
        000006                  A=A+1
007612  174064                  174004+60           ;ADDRESS OF TRANSMITTER CSR LINE # 6
```

```
                000070                  N=N+10
                000007                  A=A+1
007614          174074                  174004+70               ;ADDRESS OF TRANSMITTER CSR LINE # 7
                000100                  N=N+10
                000010                  A=A+1
007616          174104                  174004+100              ;ADDRESS of TRANSMITTER CSR LINE # 10
                000110                  N=N+10
                000011                  A=A+1
007620          174114                  174004+110              ;ADDRESS OF TRANSMITTER CSR LINE # 11
                000120                  N=N+10
                000012                  A=A+1
007622          174124                  174004+120              ;ADDRESS OF TRANSMITTER CSR LINE # 12
                000130                  N=N+10
                000013                  A=A+1
007624          174134                  174004+130              ;ADDRESS OF TRANSMITTER CSR LINE # 13
                000140                  N=N+10
                000014                  A=A+1
007626          174144                  174004+140              ;ADDRESS OF TRANSMITTER CSR LINE # 14
                000150                  N=N+10
                000015                  A=A+1
007630          174154                  174004+150              ;ADDRESS OF TRANSMITTER CSR LINE # 15
                000160                  N=N+10
                000016                  A=A+1
007632          174164                  174004+160              ;ADDRESS OF TRANSMITTER CSR LINE # 16
                000170                  N=N+10
                000017                  A=A+1
007634          174174                  174004+170              ;ADDRESS OF TRANSMITTER CSR LINE # 17
                000200                  N=N+10
                000020                  A=A+1
007636          174204                  174004+200              ;ADDRESS OF TRANSMITTER CSR LINE # 20
                000210                  N=N+10
                000021                  A=A+1
007640          174214                  174004+210              ;ADDRESS OF TRANSMITTER CSR LINE # 21
                000220                  N=N+10
                000022                  A=A+1
007642          174224                  174004+220              ;ADDRESS OF TRANSMITTER CSR LINE # 22
                000230                  N=N+10
                000023                  A=A+1
007644          174234                  174004+230              ;ADDRESS OF TRANSMITTER CSR LINE # 23
                000240                  N=N+10
                000024                  A=A+1
007646          174244                  174004+240              ;ADDRESS OF TRANSMITTER CSR LINE # 24
                000250                  N=N+10
                000025                  A=A+1
007650          174254                  174004+250              ;ADDRESS OF TRANSMITTER CSR LINE # 25
                000260                  N=N+10
                000026                  A=A+1
007652          174264                  174004+260              ;ADDRESS OF TRANSMITTER CSR LINE # 26
                000270                  N=N+10
                000027                  A=A+1
007654          174274                  174004+270              ;ADDRESS OF TRANSMITTER CSR LINE # 27
                000300                  N=N+10
                000030                  A=A+1
007656          174304                  174004+300              ;ADDRESS OF TRANSMITTER CSR LINE # 30
                000310                  N=N+10
                000031                  A=A+1
```

```
007660  174314                          174004+310          ;ADDRESS OF TRANSMITTER CSR LINE # 31
        000320                          N=N+10
        000032                          A=A+1
007662  174324                          174004+320          ;ADDRESS OF TRANSMITTER CSR LINE # 32
        000330                          N=N+10
        000033                          A=A+1
007664  174334                          174004+330          ;ADDRESS OF TRANSMITTER CSR LINE # 33
        000340                          N=N+10
        000034                          A=A+1
007666  174344                          174004+340          ;ADDRESS OF TRANSMITTER CSR LINE # 34
        000350                          N=N+10
        000035                          A=A+1
007670  174354                          174004+350          ;ADDRESS OF TRANSMITTER CSR LINE # 35
        000360                          N=N+10
        000036                          A=A+1
007672  174364                          174004+360          ;ADDRESS OF TRANSMITTER CSR LINE # 36
        000370                          N=N+10
        000037                          A=A+1
007674  174374                          174004+370          ;ADDRESS OF TRANSMITTER CSR LINE # 37
        000400                          N=N+10
        000040                          A=A+1

        000000                          N=0
        000000                          A=0
007676                          TBUF:
007676  174006                          174006+0            ;ADDRESS OF TRANSMIT BUFFER LINE # 0
        000010                          N=N+10
        000001                          A=A+1
007700  174016                          174006+10           ;ADDRESS OF TRANSMIT BUFFER LINE # 1
        000020                          N=N+10
        000002                          A=A+1
007702  174026                          174006+20           ;ADDRESS OF TRANSMIT BUFFER LINE # 2
        000030                          N=N+10
        000003                          A=A+1
007704  174036                          174006+30           ;ADDRESS OF TRANSMIT BUFFER LINE # 3
        000040                          N=N+10
        000004                          A=A+1
007706  174046                          174006+40           ;ADDRESS OF TRANSMIT BUFFER LINE # 4
        000050                          N=N+10
        000005                          A=A+1
007710  174056                          174006+50           ;ADDRESS OF TRANSMIT BUFFER LINE # 5
        000060                          N=N+10
        000006                          A=A+1
007712  174066                          174006+60           ;ADDRESS OF TRANSMIT BUFFER LINE # 6
        000070                          N=N+10
        000007                          A=A+1
007714  174076                          174006+70           ;ADDRESS OF TRANSMIT BUFFER LINE # 7
        000100                          N=N+10
        000010                          A=A+1
007716  174106                          174006+100          ;ADDRESS OF TRANSMIT BUFFER LINE # 10
        000110                          N=N+10
        000011                          A=A+1
007720  174116                          174006+110          ;ADDRESS OF TRANSMIT BUFFER LINE # 11
        000120                          N=N+10
        000012                          A=A+1
007722  174126                          174006+120          ;ADDRESS OF TRANSMIT BUFFER LINE # 12
```

```
                000130                  N=N+10
                000013                  A=A+1
007724          174136                  174006+130          ;ADDRESS OF TRANSMIT BUFFER LINE # 13
                000140                  N=N+10
                000014                  A=A+1
007726          174146                  174006+140          ;ADDRESS OF TRANSMIT BUFFER LINE # 14
                000150                  N=N+10
                000015                  A=A+1
007730          174156                  174006+150          ;ADDRESS OF TRANSMIT BUFFER LINE # 15
                000160                  N=N+10
                000016                  A=A+1
007732          174166                  174006+160          ;ADDRESS OF TRANSMIT BUFFER LINE # 16
                000170                  N=N+10
                000017                  A=A+1
007734          174176                  174006+170          ;ADDRESS OF TRANSMIT BUFFER LINE # 17
                000200                  N=N+10
                000020                  A=A+1
007736          174206                  174006+200          ;ADDRESS OF TRANSMIT BUFFER LINE # 20
                000210                  N=N+10
                000021                  A=A+1
007740          174216                  174006+210          ;ADDRESS OF TRANSMIT BUFFER LINE # 21
                000220                  N=N+10
                000022                  A=A+1
007742          174226                  174006+220          ;ADDRESS OF TRANSMIT BUFFER LINE # 22
                000230                  N=N+10
                000023                  A=A+1
007744          174236                  174006+230          ;ADDRESS OF TRANSMIT BUFFER LINE # 23
                000240                  N=N+10
                000024                  A=A+1
007746          174246                  174006+240          ;ADDRESS OF TRANSMIT BUFFER LINE # 24
                000250                  N=N+10
                000025                  A=A+1
007750          174256                  174006+250          ;ADDRESS OF TRANSMIT BUFFER LINE # 25
                000260                  N=N+10
                000026                  A=A+1
007752          174266                  174006+260          ;ADDRESS OF TRANSMIT BUFFER LINE # 26
                000270                  N=N+10
                000027                  A=A+1
007754          174276                  174006+270          ;ADDRESS OF TRANSMIT BUFFER LINE # 27
                000300                  N=N+10
                000030                  A=A+1
007756          174306                  174006+300          ;ADDRESS OF TRANSMIT BUFFER LINE # 30
                000310                  N=N+10
                000031                  A=A+1
007760          174316                  174006+310          ;ADDRESS OF TRANSMIT BUFFER LINE # 31
                000320                  N=N+10
                000032                  A=A+1
007762          174326                  174006+320          ;ADDRESS OF TRANSMIT BUFFER LINE # 32
                000330                  N=N+10
                000033                  A=A+1
007764          174336                  174006+330          ;ADDRESS OF TRANSMIT BUFFER LINE # 33
                000340                  N=N+10
                000034                  A=A+1
007766          174346                  174006+340          ;ADDRESS OF TRANSMIT BUFFER LINE # 34
                000350                  N=N+10
                000035                  A=A+1
```

```
DC....0  174356                  174006+350          ;ADDRESS OF TRANSMIT BUFFER LINE # 35
         000360                  N=N+10
         000036                  A=A+1
DC....2  174366                  174006+360          ;ADDRESS OF TRANSMIT BUFFER LINE # 36
         000370                  N=N+10
         000037                  A=A+1
DC....4  174376                  174006+370          ;ADDRESS OF TRANSMIT BUFFER LINE # 37
         000400                  N=N+10
         000040                  A=A+1
```

```
                    000000
007776  012700  000000          RISR0:  N=0
                                        MOV     #0,%0
010002  000167  174322                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000001
010006  012700  000001          RISR1:  N=N+1
                                        MOV     #1,%0
010012  000167  174312                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000002
010016  012700  000002          RISR2:  N=N+1
                                        MOV     #2,%0
010022  000167  174302                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000003
010026  012700  000003          RISR3:  N=N+1
                                        MOV     #3,%0
010032  000167  174272                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000004
010036  012700  000004          RISR4:  N=N+1
                                        MOV     #4,%0
010042  000167  174262                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000005
010046  012700  000005          RISR5:  N=N+1
                                        MOV     #5,%0
010052  000167  174252                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000006
010056  012700  000006          RISR6:  N=N+1
                                        MOV     #6,%0
010062  000167  174242                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000007
010066  012700  000007          RISR7:  N=N+1
                                        MOV     #7,%0
010072  000167  174232                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000010
010076  012700  000010          RISR10: N=N+1
                                        MOV     #10,%0
010102  000167  174222                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000011
010106  012700  000011          RISR11: N=N+1
                                        MOV     #11,%0
010112  000167  174212                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000012
010116  012700  000012          RISR12: N=N+1
                                        MOV     #12,%0
010122  000167  174202                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000013
010126  012700  000013          RISR13: N=N+1
                                        MOV     #13,%0
010132  000167  174172                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000014
010136  012700  000014          RISR14: N=N+1
                                        MOV     #14,%0
010142  000167  174162                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000015              N=N+1
```

```
                    000024
010236  012700  000024          RISR24: MOV     #24,%0
010242  000167  174062                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000025
010246  012700  000025          RISR25: MOV     #25,%0
010252  000167  174052                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000026
010256  012700  000026          RISR26: MOV     #26,%0
010262  000167  174042                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000027
010266  012700  000027          RISR27: MOV     #27,%0
010272  000167  174032                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000030
010276  012700  000030          RISR30: MOV     #30,%0
010302  000167  174022                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000031
010306  012700  000031          RISR31: MOV     #31,%0
010312  000167  174012                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000032
010316  012700  000032          RISR32: MOV     #32,%0
010322  000167  174002                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

                    000033
```

```
010326  012700  000033          RISR33: MOV     #33,%0
010332  000167  173772                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

        000034                          N=N+1
010336  012700  000034          RISR34: MOV     #34,%0
010342  000167  173762                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

        000035                          N=N+1
010346  012700  000035          RISR35: MOV     #35,%0
010352  000167  173752                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

        000036                          N=N+1
010356  012700  000036          RISR36: MOV     #36,%0
010362  000167  173742                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

        000037                          N=N+1
010366  012700  000037          RISR37: MOV     #37,%0
010372  000167  173732                  JMP     RISR            ;GO TO COMMON INTERRUPT SERVICE ROUTINE

        000040                          N=N+1
        000000                          N=0
010376  012700  000000          TISR0:  MOV     #0,%0           ;PUT LINE # IN R0
010402  000167  175146                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

        000001                          N=N+1
010406  012700  000001          TISR1:  MOV     #1,%0           ;PUT LINE # IN R0
010412  000167  175136                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

        000002                          N=N+1
010416  012700  000002          TISR2:  MOV     #2,%0           ;PUT LINE # IN R0
010422  000167  175126                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

        000003                          N=N+1
010426  012700  000003          TISR3:  MOV     #3,%0           ;PUT LINE # IN R0
010432  000167  175116                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

        000004                          N=N+1
010436  012700  000004          TISR4:  MOV     #4,%0           ;PUT LINE # IN R0
010442  000167  175106                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

        000005                          N=N+1
010446  012700  000005          TISR5:  MOV     #5,%0           ;PUT LINE # IN R0
010452  000167  175076                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

        000006                          N=N+1
010456  012700  000006          TISR6:  MOV     #6,%0           ;PUT LINE # IN R0
010462  000167  175066                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

        000007                          N=N+1
010466  012700  000007          TISR7:  MOV     #7,%0           ;PUT LINE # IN R0
010472  000167  175056                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

        000010                          N=N+1
010476  012700  000010          TISR10: MOV     #10,%0          ;PUT LINE # IN R0
010502  000167  175046                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE
```

```
                000011                          N=N+1
010506  012700  000011          TISR11: MOV     #11,%0          ;PUT LINE # IN R0
010512  000167  175036                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000012                          N=N+1
010516  012700  000012          TISR12: MOV     #12,%0          ;PUT LINE # IN R0
010522  000167  175026                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000013                          N=N+1
010526  012700  000013          TISR13: MOV     #13,%0          ;PUT LINE # IN R0
010532  000167  175016                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000014                          N=N+1
010536  012700  000014          TISR14: MOV     #14,%0          ;PUT LINE # IN R0
010542  000167  175006                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000015                          N=N+1
010546  012700  000015          TISR15: MOV     #15,%0          ;PUT LINE # IN R0
010552  000167  174776                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000016                          N=N+1
010556  012700  000016          TISR16: MOV     #16,%0          ;PUT LINE # IN R0
010562  000167  174766                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000017                          N=N+1
010566  012700  000017          TISR17: MOV     #17,%0          ;PUT LINE # IN R0
010572  000167  174756                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000020                          N=N+1
010576  012700  000020          TISR20: MOV     #20,%0          ;PUT LINE # IN R0
010602  000167  174746                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000021                          N=N+1
010606  012700  000021          TISR21: MOV     #21,%0          ;PUT LINE # IN R0
010612  000167  174736                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000022                          N=N+1
010616  012700  000022          TISR22: MOV     #22,%0          ;PUT LINE # IN R0
010622  000167  174726                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000023                          N=N+1
010626  012700  000023          TISR23: MOV     #23,%0          ;PUT LINE # IN R0
010632  000167  174716                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000024                          N=N+1
010636  012700  000024          TISR24: MOV     #24,%0          ;PUT LINE # IN R0
010642  000167  174706                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000025                          N=N+1
010646  012700  000025          TISR25: MOV     #25,%0          ;PUT LINE # IN R0
010652  000167  174676                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000026                          N=N+1
010656  012700  000026          TISR26: MOV     #26,%0          ;PUT LINE # IN R0
010662  000167  174666                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE
```

```
                000027                                  N=N+1
010666  012700  000027          TISR27: MOV     #27,%0          ;PUT LINE # IN R0
010672  000167  174656                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000030                                  N=N+1
010676  012700  000030          TISR30: MOV     #30,%0          ;PUT LINE # IN R0
010702  000167  174646                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000031                                  N=N+1
010706  012700  000031          TISR31: MOV     #31,%0          ;PUT LINE # IN R0
010712  000167  174636                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000032                                  N=N+1
010716  012700  000032          TISR32: MOV     #32,%0          ;PUT LINE # IN R0
010722  000167  174626                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000033                                  N=N+1
010726  012700  000033          TISR33: MOV     #33,%0          ;PUT LINE # IN R0
010732  000167  174616                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000034                                  N=N+1
010736  012700  000034          TISR34: MOV     #34,%0          ;PUT LINE # IN R0
010742  000167  174606                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000035                                  N=N+1
010746  012700  000035          TISR35: MOV     #35,%0          ;PUT LINE # IN R0
010752  000167  174576                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000036                                  N=N+1
010756  012700  000036          TISR36: MOV     #36,%0          ;PUT LINE # IN R0
010762  000167  174566                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000037                                  N=N+1
010766  012700  000037          TISR37: MOV     #37,%0          ;PUT LINE # IN R0
010772  000167  174556                  JMP     TISR            ;GO TO COMMON INTERRUPT SERVICE

                000040                                  N=N+1


                                        ;MESSAGES
010776  020045  020040  020040  CSRADD: .ASCII  '%      @'
011004  040040
011006  043045  046101  042523  RINTM:  .ASCII  '%FALSE INT. RCVR@'
011014  044440  052116  020056
011022  041522  051125     100
011027     045  040506  051514  TINTM:  .ASCII  '%FALSE INT XMIT@'
011034  020105  047111  020124
011042  046530  052111     100
```

```
                                        ;ASCII MESSAGES
011047    045  041520  020075  EMO:    .ASCII  '%PC= '
011054  020040  020040  020040  APC:    .ASCII  '       @'
011062  020040    100
011065    040  052040  041530  ATXCSR: .ASCII  '  TXCSR = '
011072  051123  036440    040
011077    040  020040  020040  ATXWAS: .ASCII  '      @'
011104  040040
011106  020040  054122  051503  ARXCSR: .ASCII  '  RXCSR = '
011114  020122  020075
011120  020040  020040  020040  ARXWAS: .ASCII  '      @'
011126    100
011127    045  050045  043522  POTIT:  .ASCII  '%%PRO - SINGLE CHAR LINE MODE TEST@'
011134  020060  020055  044523
011142  043516  042514  041440
011150  040510  020122  044514
011156  042516  046440  042117
011164  020105  042524  052123
011172    100
011173    045  050045  043522  P1TIT:  .ASCII  '%%PRG1 - SPEC BIN COUNT LINE MODE TEST@'
011200  020061  020055  050123
011206  041505  041040  047111
011214  041440  052517  052116
011222  046040  047111  020105
011230  047515  042504  052040
011236  051505  040124
011242  022445  051120  031107  P2TIT:  .ASCII  '%%PRG2-SPECIAL MESSAGE LINE MODE TEST@'
011250  051455  042520  044503
011256  046101  046440  051505
011264  040523  042507  046040
011272  047111  020105  047515
011300  042504  052040  051505
011306  040124
011310  022445  042522  042503  P3TIT:  .ASCII  '%%RECEIVE MESSAGE TEST@'
011316  053111  020105  042515
011324  051523  043501  020105
011332  042524  052123    100
011337    045  040504  040524  P4TIT:  .ASCII  '%DATA ECHO TEST USING MAYNARD FACILITY@'
011344  042440  044103  020117
011352  042524  052123  052440
011360  044523  043516  046440
011366  054501  040516  042122
011374  043040  041501  046111
011402  052111  040131
011406  051445  052105  050040  SELPAR: .ASCII  '%SET PARAMETERS IN SR AS FOLLOWS:'
011414  051101  046501  052105
011422  051105  020123  047111
011430  051440  020122  051501
011436  043040  046117  047514
011444  051527    072
011447    045  051123  020064          .ASCII  '%SR4 = STOP CODE%SR3 AND 2 = SPEED'
011454  020075  052123  050117
011462  041440  042117  022505
011470  051123  020063  047101
011476  020104  020062  020075
```

```
011504  050123  042505     104
011511     045  051123  020061          .ASCII  '%SR1 AND 0 = CHAR LENGTH%@'
011516  047101  020104  020060
011524  020075  044103  051101
011532  046040  047105  052107
011540  022510     100
011543     045  042523  020124  SELCAR: .ASCII  '%SET TEST CHAR CODE IN SR7-SR0.@'
011550  042524  052123  041440
011556  040510  020122  047503
011564  042504  044440  020116
011572  051123  026467  051123
011600  027060     100
011603     045  040515  042513  MAKCON: .ASCII  '%MAKE LINE CONNECTION.@'
011610  046040  047111  020105
011616  047503  047116  041505
011624  044524  047117  040056
011632  051040  020130  047111  RXIDNS: .ASCII  ' RX INT. DONE NOT SET.@'
011640  027124  042040  047117
011646  020105  047516  020124
011654  042523  027124     100
011661     040  040504  040524  CERDAT: .ASCII  ' DATA ERR.  S/B: '
011666  042440  051122  020056
011674  051440  041057  020072
011702  020040  020040  053440  CSB:    .ASCII  '     WAS: '
011710  051501  020072
011714  020040  020040  041440  CWAS:   .ASCII  '     CHAR NO. '
011722  040510  020122  047516
011730  020056
011732  020040  020040     100  CRNUM:  .ASCII  '    @'
011737     040  020040  020040  CALDAT: .ASCII  '     =CALLED DATA@'
011744  041475  046101  042514
011752  020104  040504  040524
011760     100
011761     007                  ENDPAS: .BYTE   007
011762     100                          .ASCII  '@'
011763     045  040077          AINPRG: .ASCII  '%?@'
011766  051445  052105  042040  ASETSR: .ASCII  '%SET DESIRED SR OPTIONS. NORMAL OPERATION '
011774  051505  051111  042105
012002  051440  020122  050117
012010  044524  047117  027123
012016  047040  051117  040515
012024  020114  050117  051105
012032  052101  047511  020116
012040  051511  053440  052111          .ASCII  'IS WITH SR = 000000@'
012046  020110  051123  036440
012054  030040  030060  030060
012062  040060
012064  047040  020117  054124  NTXINT: .ASCII  ' NO TX INT. TXCNT: '
012072  044440  052116  020056
012100  054124  047103  035124
012106     040
012107     040  020040  020040  ATXCNT: .ASCII  '      @'
012114  040040
012116  047040  020117  054122  NRXINT: .ASCII  ' NO RX INT. RXCNT: '
012124  044440  052116  020056
012132  054122  047103  035124
```

```
012140     040
012141     040  020040  020040  ARXCNT: .ASCII  '      @'
012146  040040
012150  050045  047522  051107  APGEND: .ASCII  '%PROGRAM END.@'
012156  046501  042440  042116
012164  040056
012166  050045  051101  046501  PARMTS: .ASCII  '%PARAMETERS = '
012174  052123  051105  020123
012202  020075
012204  020040  040040          APARM:  .ASCII  '   @'
012210  051040  044530  052116  LINCBM: .ASCII  ' RXINT NOT RING.@'
012216  047040  052117  051040
012224  047111  027107     100
012231     122  047111  020107  LINCCM: .ASCII  'RING STILL SET AFTER RXCSR READ.@'
012236  052123  046111  020114
012244  042523  020124  043101
012252  042524  020122  054122
012260  051503  020122  042522
012266  042101  040056
012272  041440  051101  044522  LINCGM: .ASCII  ' CARRIER DETECT NOT SET.@'
012300  051105  042040  052105
012306  041505  020124  047516
012314  020124  042523  027124
012322     100
012323     040  046103  040505  LINCHM: .ASCII  ' CLEAR TO SEND NOT SET.@'
012330  020122  047524  051440
012336  047105  020104  047516
012344  020124  042523  027124
012352     100
012353     045  047514  020114  LOL:    .ASCII  '%LOL TIMED OUT.@'
012360  044524  042515  020104
012366  052517  027124     100
012373     045  044514  042516  LINMAD: .ASCII  '%LINE CONNECTION MADE.@'
012400  041440  047117  042516
012406  052103  047511  020116
012414  040515  042504  040056
012422  041445  047117  044506  ACONFIG:        .ASCII  '%CONFIGURATION # '
012430  052507  040522  044524
012436  047117  021440     040
012443     040  020040     100  TCONFIG:        .ASCII  '   @'
012447     040  054122  047111  LINCFM: .ASCII  ' RXINT NOT CARRIER TRAN.@'
012454  020124  047516  020124
012462  040503  051122  042511
012470  020122  051124  047101
012476  040056
012500  051045  044530  052116  RINGIN: .ASCII  '%RXINT RING DATA TERMINAL READY.@'
012506  051040  047111  020107
012514  040504  040524  052040
012522  051105  044515  040516
012530  020114  042522  042101
012536  027131     100
012541     120  051101  052111  PARERR: .ASCII  'PARITY ERROR RXCNT= '
012546  020131  051105  047522
012554  020122  054122  047103
012562  036524     040
012565     040  020040  020040  BRXCNT: .ASCII  '      @'
```

```
012572  040040
                                                .EVEN
012574     015     012                  PRG2M:  .BYTE   015,012
012576  044124  020105  052521                 .ASCII  'THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 0123456789.%'
012604  041511  020113  051102
012612  053517  020116  047506
012620  020130  052512  050115
012626  042105  047440  042524
012634  020122  044124  020105
012642  040514  054532  042040
012650  043517  020123  040502
012656  045503  030040  031061
012664  032063  033065  034067
012672  027071     045
012675     045  044514  042516  LFAIL:  .ASCII  '%LINE FAILED%@'
012702  043040  044501  042514
012710  022504     100
012713     045  051123  027463  SETSPD: .ASCII  '%SR3/4=TRANSMITTER SPEED@'
012720  036464  051124  047101
012726  046523  052111  042524
012734  020122  050123  042505
012742  040104
012744  046045  047111  020105  ALINE:  .ASCII  '%LINE # '
012752  020043
012754  020040  053440  051501  TLINE:  .ASCII  '   WAS CALLED'
012762  041440  046101  042514
012770     104
012771     045  047514  042101  CNFIGM: .ASCII  '%LOAD CONFIGURATION IN SR 0-1 & MODEM TYPE IN SR2@'
012776  041440  047117  044506
013004  052507  040522  044524
013012  047117  044440  020116
013020  051123  030040  030455
013026  023040  046440  042117
013034  046505  052040  050131
013042  020105  047111  051440
013050  031122     100
013053     045  047514  042101  WRU:    .ASCII  '%LOAD SR0-4=TO LINE YOU ARE DIALING ON@'
013060  051440  030122  032055
013066  052075  020117  044514
013074  042516  054440  052517
013102  040440  042522  042040
013110  040511  044514  043516
013116  047440  040116
013122  054445  052517  041440  UR:     .ASCII  '%YOU CALLED FROM LINE # '
013130  046101  042514  020104
013136  051106  046517  046040
013144  047111  020105  020043
013152  020040     100          UPA:    .ASCII  '  @'
013155     045  051120  US:505  BUTTON: .ASCII  '%PRESS DATA BUTTON ON DATA PHONE@'
013162  020123  040504  044524
013170  041040  052125  047524
013176  020116  047117  042040
013204  052101  020101  044120
013212  047117  040105
013216  046045  040517  020104  LDLINE: .ASCII  '%LOAD LINE NO. (#) IN SR 3-7@'
013224  044514  042516  047040
```

```
013232  027117  024040  024470
013240  044440  020116  051123
013246  031440  033455     100
        013254
013254  000000                    OUTBUF: OPEN
        015224                            .=OUTBUF+1000.
015224  000000                    INBUF:  OPEN
        017174                            .=INBUF+1000.
        013420                            BUFF=OUTBUF+100.
017174  000001                    DEND:   .END
```

```
A     = 000040          601# 1748# 1750  1752# 1753  1755# 1756  1758# 1759  1761# 1762  1764# 1765
                       1767# 1768  1770# 1771  1773# 1774  1776# 1777  1779# 1780  1782# 1783  1785#
                       1786  1788# 1789  1791# 1792  1794# 1795  1797# 1798  1800# 1801  1803# 1804
                       1806# 1807  1809# 1810  1812# 1813  1815# 1816  1818# 1819  1821# 1822  1824#
                       1825  1827# 1828  1830# 1831  1833# 1834  1836# 1837  1839# 1840  1842# 1843
                       1845# 1848# 1650  1852# 1853  1855# 1856  1858# 1859  1861# 1862  1864# 1865
                       1867# 1868  1870# 1871  1873# 1874  1876# 1877  1879# 1880  1882# 1883  1885#
                       1886  1888# 1889  1891# 1892  1894# 1895  1897# 1898  1900# 1901  1903# 1904
                       1906# 1907  1909# 1910  1912# 1913  1915# 1916  1918# 1919  1921# 1922  1924#
                       1945  1927# 1928  1930# 1931  1933# 1934  1936# 1937  1939# 1940  1942# 1943
                       1945# 1948# 1950  1952# 1953  1955# 1956  1958# 1959  1961# 1962  1964# 1965
                       1967# 1968  1970# 1971  1973# 1974  1976# 1977  1979# 1980  1982# 1983  1985#
                       1986  1988# 1989  1991# 1992  1994# 1995  1997# 1998  2000# 2001  2003# 2004
                       2006# 2007  2009# 2010  2012# 2013  2015# 2016  2018# 2019  2021# 2022  2024#
                       2025  2027# 2028  2030# 2031  2033# 2034  2036# 2037  2039# 2040  2042# 2043
                       2045# 2048# 2050  2052# 2053  2055# 2056  2058# 2059  2061# 2062  2064# 2065
                       2067# 2068  2070# 2071  2073# 2074  2076# 2077  2079# 2080  2082# 2083  2085#
                       2086  2088# 2089  2091# 2092  2094# 2095  2097# 2098  2100# 2101  2103# 2104
                       2106# 2107  2109# 2110  2112# 2113  2115# 2116  2118# 2119  2121# 2122  2124#
                       2125  2127# 2128  2130# 2131  2133# 2134  2136# 2137  2139# 2140  2142# 2143
                       2145#
ACUNFI  012422         1349  2567#
ADD     003164          988   990#
ADRS    004310         1202#
ADTEMP  003550         1061  1087#
AGAIN   003126          987#  990
AINPRG  011763          683  2510#
ALINE   012744         1031  1318  2609#
APARM   012204         1103  1145  2540#
APC     011054          743   778  2422#
APGEND  012150          691  2534#
ARXCNT  012141         2532#
ARXCSR  011106          769  2428#
ARXWAS  011120          767  2430#
ASETSR  011766          687  2511#
ATXCNT  012107         2526#
ATXCSR  011065          762  2424#
ATXWAS  011077          760  2426#
B     = 000000          602#
BDCNV   003404          722  1056#
BDCNVA  003436         1063# 1066
BDCNVB  003470         1068# 1070#
BDCNVC  003472         1059# 1071#
BDCNVD  003474         1060# 1067  1072#
BELL  = 000007          599#
BIT0  = 000001          573# 1128  1134  1167  1168  1369  1380  1381  1409  1410  1415  1416  1508
                       1532  1624  1625
BIT1  = 000002          572# 1123  1154  1175  1333  1376  1396  1631  1646
BIT10 = 002000          563#  953   972  1126  1127
BIT11 = 004000          562#
BIT12 = 010000          561# 1296
BIT13 = 020000          560#  737   772  1164  1310
BIT14 = 040000          559# 1290
BIT15 = 100000          557   558# 1605
BIT2  = 000004          571# 1118  1298  1386
BIT3  = 000010          570# 1114  1120  1121
```

```
BIT4   = 000020   569#   980   1111   1116   1117
BIT5   = 000040   568#   966   991
BIT6   = 000100   567#   974   1242   1286   1350   1434   1447   1470   149?   1514   1558   1560   1561
                 1565   1590   1591   1598   1599   1615   1643
BIT7   = 000200   566#   960
BIT8   = 000400   565#   1113
BIT9   = 001000   564#   956   1131   1132
BMOVA    003372  1050#  1052
BMOV_    003362  1046#  1069   1461
BRXCNT   012565  2536#
BUFF   = 013420  1234   1239   1248   1265   1308   1309   1432   2651#
BUFFP    001160   672#  1232*  1233*  1234   1239   1250*  1308*
BUTTON   013155  1328   1371   2635#
CALDAT   011737  2504#
CALLED   001164   674#  1221   1266   1280   1319*
CALLER   001162   673#  1271   1367*  1428
CARMSK   001142   665#   705    963*   969*   977*   983*  1122*  1125*  1130*  1136*  1655
CC     = 177776   553#
CERDAT   011661   727   2495#
CHALT  = 104005   589#   684    688    692   1140
CHLT     001430   644    695#
CNFIGM   012771  2614#
CNVCTR   003542  1062*  1065*  1084#
CONFIG   001132   660#  1237   1251   1323*  1324*  1345   1384   1438
CONN     005536  1326   1368   1415#
COUNT    001120   655#   961*   967*   975*   981*   989*
CRNUM    011732   724   2503#
CRTA     002110   796    799#
CRXTX    001752   763    770#
CRXTXA   002024   770*   771*   782#
CRXTXB   002026   762*   769*   783#
CRXTXC   002032   773    785#
CSR      011702   714   2498#
CSRADD   010776   718    721   1205   1293   1302   2411#
CTRD     001144   666#   723   1038*  1041*  1247*  1256*  1257   1275*  1276
CWRS     011714   710   2500#
DATCHK=  104004   588#  1255   1270   1274
DCERR    004736  1216  1290#
DECVAL   003562  1057  1092#
DELAY  = 104016   598#  1169   1329   1372
DEMO     017174  2652#
DIGIT    003544  1075*  1078*  1081*  1082   1085#
DISCON   005514  1300   1337   1379   1409#
DLCNT    002562   892*   894    904#
DLY      002522   653    892#
DLYA     002540   896#   901
DLYB     002544   897#   898
DLYC     002556   895    902#
DOIT     003122   964    970    978    984    986#
DONE     003156   992    994#
DTCHK    001454   643    705#
DTCHKA   001552   707    728#
EHALT  = 104010   592#   751    785
EHLT     001442   647    700#
EHLTA    001452   701    703#
EIGHT    002752   960#
```

```
EMTA    002130            806#
EMTINT  002116            434     803#
EMTTAB  000060            639#    808
EMT     011047            747     781     2421#
ERRORS  011761            1385    1664    2508#
ERRPC   001126            658#
ERR     001554            642     729#
ERRA    001624            732     737#
ERRB    001666            729*    730*    733*    734*    735*    748#
ERRC    001674            738     751#
ERRCNT  007126            1638*   1659*   1666#
ERRD    001704            739*    740*    742     754#    774*    775*    777
ERRE    001706            731*    736*    752     755#
ERROR = 104003            587#    1219    1335    1378    1388    1398    1426    1651    1658
ERROR1= 104013            595#    720     726
ERRRX = 104015            597#    1292    1301    1563    1567
ERRTX = 104014            596#    1177    1584
ERR1    001576            650     733#
FILL    003334            1037#   1281
FILLA   003342            1039#   1042
FINISH  004702            1259    1279#
FIVE    003072            973     980#
GENPAR  002732            956#    1516    1645
GTBIN   002614            919#
INBIN   002564            908#
INBUF   015224            1229    1263    1307    2649#   2650
INBUFP  001156            671#    1227*   1228*   1229    1264*   1307*
INCPRC  001400            662#    797
INFIL   003330            1036#   1484
INIT3   006624            1540    1603#
ISSOR7  003032            957     972#
LDLINE  013216            1001    2641#
LDPRI   007246            1466    1488    1699#
LDPRIA  007264            1703#   1706
LDTVEC  007226            1467    1489    1693#
LDVECA  007202            1684#   1696
LDVECB  007212            1686#   1690
LDVECS  007172            1468    1490    1682#
LFAIL   012675            1564    2601#
LINCA   004122            1157#   1179
LINCB   004146            1163#   1165
LINCBM  012210            2541#
LINCCM  012231            2544#
LINCD   004164            1167#
LINCE   004204            1172#
LINCF   004242            1176    1181#
LINCFM  012447            2571#
LINCGM  012272            2550#
LINCH   004254            1194#
LINCHM  012323            1178    1634    2555#
LINCON  004076            1152#   1509    1517    1533
LINE    001124            657#    1202*   1204    1212*   1314    1359*   1361
LINEUP  004260            1155    1186#
LINMAD  012373            1185    1343    1637    2563#
LINSEL  003174            1000#   1506    1528    1621
LOL     012353            2560#
```

DZDCB8.PFC CROSS REFERENCE TABLE -- USER SYMBOLS

```
PARMTS  012166           1106    1148    2537#
POPSP =  005726            574#    899     902
POPSP2=  022626            575#
PRGEND  001420             690#
PRGID   001042             632#
PRGLIM  001056             638#    795
PRGNUM  001040             631#    794*   1020
PRGTAB  001044             633#    800
PRG0    005712             633    1453#
PRG0A   006022            1476#   1477
PRG1    006026             634    1481#
PRG1C   006124            1498#   1499
PRG2    006130             635    1504#
PRG2A   006152            1509#
PRG2AA  006140            1507#
PRG2B   006156            1510#   1513
PRG2C   006162            1511#   1521
PRG2D   006216            1519#
PRG2M   012574            1510    1639    2589#
PRG3    006226             636    1526#
PRG3A   006246            1531#   1601
PRG3B   006310            1540#
PRG4    006706             637    1619#
PRG4A   006740            1626#   1635
PRG4AA  006766            1633#   1647
PRG4B   006774            1632    1636#
PRG4BB  007004            1639#   1665
PRG4C   007010            1640#   1662
PRG4D   007110            1657    1660#
PRG4E   007120            1642    1663#
PRTY0 =  000000            583#
PRTY1 =  000040            582#
PRTY2 =  000100            581#
PRTY3 =  000140            580#
PRTY4 =  000200            579#    628     630     1539
PRTY5 =  000240            578#    620     622
PRTY6 =  000300            577#
PRTY7 =  000340            435     576#   1469    1491
PSW   =  177776            554#    790*   1469*   1475*   1491*   1497*
PT0     002610             910*    914#    919     925#
PT1     002612             911*    915#    919*    920*    923*    924*    925     926
PUTIT   011127            1455    2432#
P1TIT   011173            1482    2439#
P2TIT   011242            1505    2446#
P3TIT   011310            1527    2453#
P4TIT   011337            1620    2457#
RBUF    007476            1225    1227    1232    1294    1303    1331    1374    1849#
RCSR    007376            1214    1267    1272    1332    1369*   1375    1380*   1386    1391    1400    1404    1409*   1411
                          1415*   1749#
RECDAT  001136             663#    706     709    1254*   1269*   1273*
RING    002606             909#    913#    921#
RINGIN  012500            2576#
RINTM   011006            1568    2413#
RINT3   006320            1535    1543#
RINT3A  006366            1551    1555#
RINT3E  006422            1562#
```

```
RINT3C  006424          1544    1563#
RINT3D  006442          1546    1567#
RINT3E  006460          1548    1570#
RINT3F  006454          1571#
RISR    004330          1211#   2152    2156    2160    2164    2168    2172    2176    2180    2184    2188    2192    2196
                        2200    2204    2208    2212    2216    2220    2224    2228    2232    2236    2240    2244    2248
                        2252    2256    2260    2264    2268    2272    2276
RISRA   004370          1218    1221#
RISRAA  004412          1224    1227#
RISRB   004436          1222    1232#
RISRBB  004504          1238    1242#
RISRC   004514          1230    1240    1246#
RISRCA  004550          1253#   1258
RISRD   004602          1252    1262#
RISRDA  004622          1266#   1277
RISRE   004756          1291    1296#
RISRF   005014          1297    1299    1306#
RISRFB  005200          1334    1340#   1392    1405
RISRFC  005244          1325    1354#
RISRFD  005362          1379#   1389    1399
RISRFE  005432          1387    1391#
RISRFF  005404          1377    1384#
RISRFG  005444          1385    1396#
RISRFH  005462          1397    1400#
RISRO   007776          1682    2151#
RISR1   010006          2155#
RISR10  010076          2183#
RISR11  010106          2187#
RISR12  010116          2191#
RISR13  010126          2195#
RISR14  010136          2199#
RISR15  010146          2203#
RISR16  010156          2207#
RISR17  010166          2211#
RISR2   010016          2159#
RISR20  010176          2215#
RISR21  010206          2219#
RISR22  010216          2223#
RISR23  010226          2227#
RISR24  010236          2231#
RISR25  010246          2235#
RISR26  010256          2239#
RISR27  010266          2243#
RISR3   010026          2163#
RISR30  010276          2247#
RISR31  010306          2251#
RISR32  010316          2255#
RISR33  010326          2259#
RISR34  010336          2263#
RISR35  010346          2267#
RISR36  010356          2271#
RISR37  010366          2275#
RISR4   010036          2167#
RISR5   010046          2171#
RISR6   010056          2175#
RISR7   010066          2179#
```

```
RSTPC   002244            826*   834    836*
RSTPSW  002246            827*   833    837*
RSTREG= 104012            594*   750    946    1053   1073
RSTRG   002210            649    826*
RTN     003132            989*   997
RXBUF   001002            616*  1159   1173   1182   1549   1570   1630   1654
RXCSR   001000            615*   717    956    958    972   1007   1107   1152  1157*  1163  1167*  1172  1181
                         1214*  1215   1267*  1272*  1391*  1400*  1404*  1543  1558*  1565*  1615*  1624*  1629
                         1649   1652
RXCSRT  001150            668*   766   1152*  1163*  1164   1172*  1181*  1215*  1217   1290   1296   1298  1310
                         1543*  1545
RXERR   001732            652    764*
RXIDNS  011632           2491*
RXLVL   001012            620*   843
RXVTR   001010            619*   841
SAVE    001122            656*   986*   993*   994    996*
SAVREG= 104011            593*   745    931    1046   1056
SAVRG   002150            649    813*
SAVRO   002520            854*   861    878*   884    886    890*
SELCAR  011543           1457   2481*
SELPAR  011406           1097   2464*
SETPAR  003570           1096*  1341   1402   1507   1529   1623
SETSPD  012713           1139   2604*
SETSR   001410            686*
SEVEN   003042            974*
SIX     003002            959    966*
SR    = 177570            552*   700    737    772    792   1003   1099  1141  1321   1323   1357  1459  1550
SRT     001154            670*   991   1099*  1102   1111   1114   1118  1123  1128   1134  1141*  1142* 1144
                         1149   1514   1643
SRT1    001130            659*
STALL = 104002            586*
START   002042            613    789*    798
STKPTR= 001000            555*   789    1531
STPARA  004006           1124   1134*   1135
STPARB  003604           1100*
STPARC  003622           1107*
STPPA   002316            846*   849*
STPRA   002266            839*   842*
STRVRV  002250            645    839*
STRXV = 104006            590*  1534
STTSPD  004026           1138*  1530
STTXV = 104007            591*  1536
STXMTV  002300            646    846*
SUBTEN  003502           1064   1075*
SUBTNA  003506           1076*  1079
SUBTNB  003522           1077   1080*
SVRPC   002204            813*   821    823*
SVRPSW  002206            814*   820    824*
TBIT0   003772           1131*  1137
TBIT1   003716           1119   1122*
TBIT2   003676           1115   1118*
TBIT3   003656           1112   1114*
TBUF    007676           1430*  1436*  2049*
TBUFFP  001170            677*  1265*  1309*  1430   1431*  1432
TCONFI  012443           1346   2570*
TCSR    007576           1242*  1286*  1333   1340   1350*  1376  1381*  1396  1401  1410*  1416*  1424  1434*
```

```
                        1447*   1949#
TEMP    001152           669#   1005*   1023*   1024*   1025*   1027    1580*   1588
TEMPWR  003546          1063*   1076    1080    1086#
TIN"M   011027          1585    2416#
TINT3   006456          1537    1572#
TINT3B  006504          1574    1580#
TINT3C  006546          1577    1590#
TISR    005554          1422#   2281    2285    2289    2293    2297    2301    2305    2309    2313    2317    2321    2325
                        2329    2333    2337    2341    2345    2349    2353    2357    2361    2365    2369    2373    2377
                        2381    2385    2389    2393    2397    2401    2405
TISRA   005572          1425    1428#
TISRAA  005570          1427#   1441    1446
TISRB   005672          1439    1445#
TISRBB  005662          1442#   1448
TISRC   005632          1429    1436#
TISR0   010376          1693    2280#
TISR1   010406          2284#
TISR10  010476          2312#
TISR11  010506          2316#
TISR12  010516          2320#
TISR13  010526          2324#
TISR14  010536          2328#
TISR15  010546          2332#
TISR16  010556          2336#
TISR17  010566          2340#
TISR2   010416          2288#
TISR20  010576          2344#
TISR21  010606          2348#
TISR22  010616          2352#
TISR23  010626          2356#
TISR24  010636          2360#
TISR25  010646          2364#
TISR26  010656          2368#
TISR27  010666          2372#
TISR3   010426          2292#
TISR30  010676          2376#
TISR31  010706          2380#
TISR32  010716          2384#
TISR33  010726          2388#
TISR34  010736          2392#
TISR35  010746          2396#
TISR36  010756          2400#
TISR37  010766          2404#
TISR4   010436          2296#
TISR5   010446          2300#
TISR6   010456          2304#
TISR7   010466          2308#
TKB     001022           624#
TKLVL   001032           628#
TKS     001020           623#
TKVTR   001030           627#
TLINE   012754          1028    1315    2611#
TPB     001026           626#    867*   1594*
TPINT   006566          1538    1594#
TPINTA  006616          1566    1592    1601#
TPLVL   001036           630#
```

```
TPS     001024            625#    868    1561*   1580    1581*   1582    1586    1588*   1591    1598*
TPVTR   001034            629#
TXBUF   001006            618#   1518*   1554*   1575*   1609*   1612*   1648*
TXCSR   001004            617#   1108    1149*   1153    1158*   1168*   1174    1340*   1401*   1508*   1519    1532*   1552
                         1560*   1572    1590*   1599    1607    1610    1613    1625*   1631    1646    1660
TXCSRT  001146            667#    759    1153*   1154    1174*   1175    1572*   1573
TXERR   001710            651     757#
TXLVL   001016            622#    850
TXVTR   001014            621#    848
TYP     002230            639     854#
TYPA    002344            858#    866     875
TYPAA   002334            855#
TYPC    002366            860     863#
TYPD    002404            865     867#    872     874
TYPDAT  002450            858*    859     863     867     871*    873*    876#
TYPE  = 104000            584#    682     686     690     887    1000    1030    1096    1105    1138    1147    1160    1184
                         1284    1317    1327    1342    1348    1354    1364    1370    1454    1456    1473    1481    1495
                         1504    1526    1619    1626    1633    1636    1663
TYPES = 104001            585#    746     780
TYPF    002422            864     871#
TYPG    002434            873#
TYPS    002452            640     878#
TYPSA   002506            883     886#
TYPSAA  002456            879#    889
TYPSB   002514            881*    882     888#
UR      013122           1365    2630#
URA     013152           1362    2634#
VECTAB  007276           1015    1683    1694    1699    1711#
WRU     013053           1355    2623#
XMTDAT  001140            664#    705*    706     713    1253*   1268*
.     = 017174            421#    422     424     426     428     430     432     436     438     440     442     444     446
                          448     450     452     454     456     458     460     462     464     466     468     470     472
                          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     546     548     612#
                          614#    681#    869     922    1012    1021    1235    1311    1433    1515    1520    1542    1553
                         1556    1583    1587    1596    1600    1608    1611    1614    1644    1650    1653    1661    2646#
                         2648#   2650#
```

CNVOA	604#	708	712	716	741	757	764	776	1026	1100	1143	1203	1313	1344	1360
ISR	605#	2151	2155	2159	2163	2167	2171	2175	2179	2183	2187	2191	2195	2199	2203
	2207	2211	2215	2219	2223	2227	2231	2235	2239	2243	2247	2251	2255	2259	2263
	2267	2271	2275												
ISRT	606#	2280	2284	2288	2292	2296	2300	2304	2308	2312	2316	2320	2324	2328	2332
	2336	2340	2344	2348	2352	2356	2360	2364	2368	2372	2376	2380	2384	2388	2392
	2396	2400	2404												
RBUFF	608#	1850	1853	1856	1859	1862	1865	1868	1871	1874	1877	1880	1883	1886	1889
	1892	1895	1898	1901	1904	1907	1910	1913	1916	1919	1922	1925	1928	1931	1934
	1937	1940	1943												
RRCV	607#	1750	1753	1756	1759	1762	1765	1768	1771	1774	1777	1780	1783	1786	1789
	1792	1795	1798	1801	1804	1807	1810	1813	1816	1819	1822	1825	1828	1831	1834
	1837	1840	1843												
TBUFF	610#	2050	2053	2056	2059	2062	2065	2068	2071	2074	2077	2080	2083	2086	2089
	2092	2095	2098	2101	2104	2107	2110	2113	2116	2119	2122	2125	2128	2131	2134
	2137	2140	2143												
TXMT	609#	1950	1953	1956	1959	1962	1965	1968	1971	1974	1977	1980	1983	1986	1989
	1992	1995	1998	2001	2004	2007	2010	2013	2016	2019	2022	2025	2028	2031	2034
	2037	2040	2043												

```
            1272  1280  1306  1307  1308  1309  1319  1340  1357  1359  1367  1391  1400  1401  1404
            1442  1460  1469  1470  1471  1483  1487  1491  1492  1493  1510  1518  1531  1538  1539
            1543  1559  1570  1572  1580  1588  1601  1603  1604  1606  1639  1648  1670  1671  1672
            1673  1674  1682  1683  1684  1685  1686  1693  1694  1699  1701  1702  1703  2151  2155
            2159  2163  2167  2171  2175  2179  2183  2187  2191  2195  2199  2203  2207  2211  2215
            2219  2223  2227  2231  2235  2239  2243  2247  2251  2255  2259  2263  2267  2271  2275
            2280  2284  2288  2292  2296  2300  2304  2308  2312  2316  2320  2324  2328  2332  2336
            2340  2344  2348  2352  2356  2360  2364  2368  2372  2376  2380  2384  2388  2392  2396
            2400  2404
MOVB         858   867   871   873   939  1039  1050  1082  1227  1232  1253  1254  1268  1269  1273
            1321  1323  1430  1436  1459  1511  1549  1554  1575  1594  1609  1612  1640  1654
NOP         1211  1246  1262  1279  1287  1422  1453
RESET       1622
ROL          806
ROR          941   942   943   987
RTI          698   703   728   753   787   822   835   844   851   862   885   903  1220  1226  1231
            1236  1241  1243  1288  1304  1312  1338  1351  1382  1427  1435  1443  1557  1562  1569
            1571  1578  1589  1593  1597  1602
RTS          685   689   693   870   912   927   947   995  1022  1032  1043  1054  1074  1083  1133
            1150  1186  1197  1207  1412  1417  1616  1679  1691  1707
SUB          696   740   775   804  1067  1076
TST          700  1018  1159  1173  1182  1223  1225  1294  1303  1331  1332  1411  1438  1547  1629
            1630  1649  1700
TSTB         868  1217  1424  1519  1545  1550  1552  1573  1582  1586  1607  1610  1613  1652  1660
WAIT        1476  1498  1541
.ABS         394
.ASCII      2411  2413  2416  2421  2422  2424  2426  2428  2430  2432  2439  2446  2453  2457  2464
            2470  2476  2481  2487  2491  2495  2498  2500  2503  2504  2509  2510  2511  2518  2522
            2526  2528  2532  2534  2537  2540  2541  2544  2550  2555  2560  2563  2567  2570  2571
            2576  2582  2586  2590  2601  2604  2609  2611  2614  2623  2630  2634  2635  2641
.BYTE       1092  2508  2589
.END        2652
.EVEN       2588  2646
.LIST        393
.MACR        604   605   606   607   608   609   610
.NLIST       392
.REM           1
.REPT        438  1749  1849  1949  2049  2151  2280
.TITLE       391


ERRORS DETECTED:  0
DEFAULT GLOBALS GENERATED:  0

@DZDCBB,DZDCBB.SEQ/CRF/SOL=DZDCBB.PFC
RUN-TIME:  7 :4 3 SECONDS
RUN-TIME RATIO: 118/26=4.4
CORE USED:  10K  (19 PAGES)
```