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.REM    @
.REPT 0
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IDENTIFICATION

PRODUCT CODE: AC-8516H-MC

PRODUCT NAME: CZDLAH0 DL11-E,C/D OFLNE TST

DATE: JULY 1979

MAINTAINER: DIAGNOSTIC ENGINEERING

AUTHOR: ROBERT WHITTON

1. ABSTRACT

TWO SEPARATE DIAGNOSTIC PROGRAMS ARE PROVIDED FOR THE DL11-E (ASYNCRONOUS MODEM INTERFACE), CZDLA (DL11-E OFF LINE

TESTS) AND CZDLB (DL11-E ON LINE TESTS). THE OFF LINE
TEST TESTS ALL DL11-E LOGIC . THE OFF LINE TESTS DO NOT REQUIRE THE
USE OF A MODEM, HOWEVER A SPECIAL JUMPER CONNECTOR H315 IS REQUIRED.
THE ON LINE TESTS ARE ESSENTIALLY DATA RELIABILITY TESTS RE-
QUIRING THE USE OF MODEMS AND A SUITABLE TERMINAL DEVICE.

THE DL11-C AND DL11-D CAN ALSO BE TESTED WITH THIS OFF LINE TEST.
THESE ARE BOTH TESTED IN MAINTENANCE MODE AND ONLY THOSE TESTS
MARKED C,D IN THE TEST NUMBER ARE EXECUTED. IN ORDER TO TEST C AND D
VERSIONS IT IS NECESSARY TO MODIFY THE TABLE AT LOCATION 1300 ACCORDING
TO THE INSTRUCTIONS CONTAINED THERE.

TESTS WHICH ARE NOT EXECUTED FOR DL11C+D CAN BE PERFORMED BY
USING THE SELECT SWITCH OPTION (SR9). TEST 56 IS A DATA TEST WHICH
CAN BE USED FOR CABLE TESTING DL11-D'S. WARNING--A FAILURE IN THIS TEST
MAY OCCUR DUE TO A SPLIT BAUD RATE OF RCVTR/TXVTR.

THIS DOCUMENT DESCRIBES THE OFF LINE TESTS.

THE AVAILABLE TESTS ARE:

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

2. REQUIREMENTS

2.1 EQUIPMENT

A. PDP 11 SYSTEM

B. DL11-E OR DL11-C OR DL11-D

C. SPECIAL JUMPER CONNECTOR H315 (SEE DL11 MAINTENANCE MANUAL
FOR DETAILED DESCRIPTION) IF DL11-E.

2.2 STORAGE

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

3. LOADING PROCEDURE

THE ABSOLUTE LOADER IS USED TO LOAD THE PROGRAM.

4. USE PROCEDURE

THIS PROGRAM HAS BEEN MODIFIED TO RUN WITH OR WITHOUT
A CONSOLE PROCESSOR.
IF A CONSOLE MACHINE IS USED; THEN THE PROGRAM

LOOKS AT THE HARDWARE SWITCH REGISTER.
IF A CONSOLE-LESS MACHINE IS USED;THEN THE PROGRAM
AUTOMATICALLY LOOKS AT THE CONTENTS OF LOCATION
SOFTSR (176) AS A SWITCH REGISTER.

THE PROGRAM WILL PRINT OUT THE PRESENT CONTENTS OF THE SOFT. SWITCH REG.
WHEN THE PROGRAM IS STARTED. IT WILL THEN ASK FOR THE NEW CONTENTS TO
BE INPUT TO THE SOFTWARE SWITCH REGISTER. TYPE CARRIAGE RETURN TO FINISH INPUT.

BEFORE STARTING ANY OF THE SELECTABLE PROGRAMS MAKE SURE
THAT THE TTY IS IN REMOTE MODE; AND THAT THE PROGRAM SELECTED
IS A LEGAL PROGRAM,IE. NO.0-4, OTHERWISE AN ERROR MESSAGE
WILL OCCUR. TERMINATE ALL INPUTS WITH A CARRIAGE RETURN.

A MAP OF DEVICES PRESENT WILL BE TYPED AT RUN TIME. THIS MAP WILL NOT
BE TYPED OUT AGAIN UNLESS THE PROGRAM IS
RESTARTED AT LOCATION 200. A RESTART FROM THIS LOCATION WILL CAUSE
THE MAP OF DEVICES TO BE TYPED OUT AGAIN AND THEN A NORMAL START
WILL OCCUR.

4.1 PRG0 INPUT/OUTPUT LOGIC TESTS

A. LOAD ADDRESS = 000200 (RESTART LOAD ADDR. = 000204)
TYPE PROGRAM NUMBER = 0.
THE DIAGNOSTIC WILL IDENTIFY THE PROGAM YOU SELECTED.
DISCONNECT THE DL11-E FROM THE MODEM AND INSERT THE JUMPER CONNECTOR IN THE MODEM END OF THE CABLE, AND TYPE CARRIAGE RETURN.
NOTE, IF THE CABLE IS LEFT CONNECTED TO THE MODEM THE FOLLOWING TESTS WILL FAIL:
AT22,AT23,AT25,AT30,AT32,AT56

B. THE PROGRAM WILL TYPE OUT INSTRUCTIONS TO SET IN THE DESIRED
SR OPTIONS. TYPE CARRIAGE RETURN WHEN THE OPTIONS ARE IN THE SR.
THE AVAILABLE OPTIONS ARE:

SR 0-6	ROUTINE TO BE RUN (IF ENABLED BY SR9)
SR7	DISABLE STALL MODE
SR9	LOOP SELECTED ROUTINE
SR10	HALT AT END OF CURRENT TEST
SR11	INHIBIT ITERATION
SR12	SELECT LINE NUMBER AND LOCK ON IT
SR13	INHIBIT PRINTOUT
SR14	SCOPE
SR15	HALT ON ERROR.

C. THE PROGRAM WILL NOW REQUEST THE LINE #(IF SR12=1) YOU WISH TO
TEST. TYPE THE LINE # AS REQUESTED, FOLLOWED BY A CARRIAGE RETURN.
LINE NUMBER REFERS TO THE ADDRESSES TO WHICH THE DL11-E RESPONDS.

LINE 00 77561X	LINE 10 77571X	LINE 20 77601X	LINE 30 77611X
LINE 01 77562X	LINE 11 77572X	LINE 21 77602X	LINE 31 77612X
LINE 02 77563X	LINE 12 77573X	LINE 22 77603X	LINE 32 77613X
LINE 03 77564X	LINE 13 77574X	LINE 23 77604X	LINE 33 77614X
LINE 04 77565X	LINE 14 77575X	LINE 24 77605X	LINE 34 77615X
LINE 05 77656X	LINE 15 77576X	LINE 25 77606X	LINE 35 77616X
LINE 06 77567X	LINE 16 77577X	LINE 26 77607X	LINE 36 77617X

LINE 07 77570X LINE 17 77600X LINE 27 77610X

D. THE PROGRAM WILL NOW BEGIN TESTING THE DL11-E OR C/D YOU SELECTED. ALL DL11'S WILL BE TESTED AUTOMATICALLY AND SEQUENTIALLY UNLESS SR12 IS SELECTED.
NOTE: ALL LOGIC TESTS WILL NOT BE RUN AUTOMATICALLY. THERE ARE TWO TESTS WHICH REQUIRE MANUAL INTERVENTION WHICH ARE USED TO TEST THE SPEED SELECTION SWITCHES. THESE ARE TESTS T34,T40. TO EXECUTE THESE TESTS USE SR9 AND SR 0-6 TO SELECT THEM.

E. REFER TO SECTION 5.1.2 FOR ERROR DESCRIPTION

F. AFTER ONE COMPLETE PASS THE BELL WILL RING FOLLOWED BY "END PASS = " WITH THE NUMBER OF PASSES COMPLETED SINCE PROGRAM LAST STARTED AND THE DEVICE ADDRESS UNDER TEST AND ITS TRAP VECTOR.

4.2 PRG1 - TRANSMITTER SCOPE LOOP

A. LOAD ADDRESS = 000200 (RESTART = 000204)
TYPE PROGRAM NUMBER = 1.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND REQUEST THE LINE # YOU WISH TO TEST. TYPE THE LINE # AS REQUESTED, FOLLOWED BY A CARRIAGE RETURN.

B. THE PROGRAM WILL REQUEST A CHARACTER CODE, AND A DELAY TIME. THE CHARACTER CODE IS THE DATA THE DL11-E WILL TRANSMIT AND THE DELAY IS THE TIME ELAPSED BETWEEN SUCCESSIVE TRANSMISSIONS OF ONE CHARACTER.

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

4.3 PRG2 - RECEIVER SCOPE LOOP

A. LOAD ADDRESS = 000200 (RESTART = 000204)
TYPE PROGRAM NUMBER = 2.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND REQUEST THE LINE # YOU WISH TO TEST. TYPE THE LINE # AS REQUESTED, FOLLOWED BY A CARRIAGE RETURN.

B. THE PROGRAM WILL REQUEST A TEST CHARACTER CODE, AND A DELAY TIME. THE CHARACTER CODE IS THE DATA THAT THE DL11-E WILL BE TRANSMITTING AND THE DELAY IS THE ELAPSED TIME BETWEEN SUCCESSIVE CHARACTERS.

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

4.4 PRG3 - SINGLE CHARACTER MAINT MODE DATA TEST

A. LOAD ADDRESS - 000200 (RESTART = 000204)
TYPE PROGRAM NUMBER = 3.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND

REQUEST THE LINE # YOU WISH TO TEST. TYPE THE LINE # AS REQUESTED, FOLLOWED BY A CARRIAGE RETURN.

B. THE PROGRAM WILL REQUEST A TEST CHARACTER. TYPE THE TEST CHARACTER, FOLLOWED BY A CARRIAGE RETURN.

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

4.5 PRG4 - SPECIAL BINARY COUNT MAINT. MODE DATA TEST

A. LOAD ADDRESS = 000200
TYPE PROGRAM NUMBER = 4.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND REQUEST THE LINE # YOU WISH TO TEST. TYPE THE LINE # AS REQUESTED, FOLLOWED BY A CARRIAGE RETURN.

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

5. PROGRAM DESCRIPTIONS

5.1 PRG0 - INPUT/OUTPUT LOGIC TESTS

THE INPUT/OUTPUT LOGIC TESTS CONSIST OF 57(8) ROUTINES WHICH MAY BE RUN IN SEQUENTIAL ORDER OR INDIVIDUALLY LOOPED (SEE SECT 4.1, C FOR SWITCH SETTINGS). THE JUMPER CONNECTOR MUST BE INSERTED BEFORE STARTING IF DL11-E.

5.1.1 ROUTINE DESCRIPTIONS

ROUTINE	TESTS
AT0-AT3	ADDRESSABILITY OF CSRS & DBRS
AT4-AT27	DIDDLES ALL BITS IN THE CSRS AND CHECKS THAT THEY CAN BE READ/WRITTEN PROPERLY.
AT31-AT32	PROPER OPERATION OF RESET INSTRUCTION
AT33	PROPER OPERATION OF READY BIT
AT34	PROPER OPERATION OF TRANSMIT SPEED SELECTION
AT35-AT37	PROPER OPERATION OF DONE BIT
AT40	PROPER OPERATION RECEIVER SPEED SELECT
AT41	PROPER OPERATION OF DATA OVERRUN
AT42-AT52	PROPER OPERATION OF INTERRUPTS
AT53	READING RXCSR DOES NOT CLEAR DONE
AT54	ERROR CAUSES INTERRUPT

AT55 DATA TEST MAINTENANCE MODE

AT56 DATA TEST WITH JUMPER

AT57 PROPER OPERATION OF BREAK BIT

5.1.2 ERROR DESCRIPTION

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

T(ROUTINE#) PC=(PC OF ERROR CALL) RXCSR=(ADDRESS OF DEVICE UNDER TEST) AND AN ADDITIONAL/MESSAGE (IF APPLICABLE)

T005 PC-XXXX RXCSR=XXXX

T122 PC-XXXX RXCSR-XXXX DATA S/B:---WAS:---
INDICATING A DATA ERROR

TO RESUME TESTING PRESS CONTINUE.
IF THE VECTOR PROVIDED BY THE INTERRUPTING DL11-E IS INCORRECT A TRAP TO THE WRONG LOCATION WILL OCCUR AND AN ERROR MESSAGE WILL OCCUR.

5.1.3 JUMPER CONNECTOR

THE JUMPER CONNECTOR TESTS THOSE F/F'S, GATES (RING INDICATOR, CARRIER TRANSITION, CLEAR TO SEND, AND SUPERVISORY RECEIVE DATA) WHICH CANNOT BE TESTED UNLESS A DATA SET IS ACTUALLY CONNECTED TO THE DL11-E. IN ADDITION TO TESTING DL11-E LOGIC THE JUMPER ALSO TESTS CABLE WIRING TO/FROM THE DL11-E/DATA SET. THE FOLLOWING TESTS WILL FAIL IF THE CABLE IS NOT INSALLED IN THE DL11-E:

AT22,AT23,AT25,AT30,A132,AT56

5.2 PRG1-TRANSMITTER SCOPE LOOP

THE PURPOSE OF PRG1 IS TO ALLOW SCOPING OF TRANSMITTER FUNCTIONS IN A RUN CONDITION USING USER SPECIFIED DL11-E PARMATERS AND DATA. NO ERROR PRINTOUTS ARE PROVIDED.

5.3 PRG2-RECEIVER SCOPE LOOP

THE PURPOSE OF PRG2 IS TO ALLOW SCOPING OF RECEIVER FUNCTIONS IN A RUN CONDITION USING USER SPECIFIED DL11-E PARAMETERS AND DATA. NO ERROR PRINTOUTS ARE PROVIDED.

5.4 PRG3-SINGLE CHARACTER MAINT MODE DATA TEST

PRG3 TRANSMITS, RECEIVES AND CHECKS RECEIVED DATA USING USER SPECIFIED DL11-E PARAMETERS, AND DATA.

5.4.1 ERROR PRINTOUTS

SELF EXPLANITORY ERROR PRINTOUTS ARE PROVIDED.

5.5 PRG4-SPECIAL BINARY COUNT MAINT MODE DATA TEST

PRG4 IS THE SAME AS PRG0 ROUTINE 54 EXCEPT THAT
THE USER SPECIFIES DL11-E RUNNING PARAMETERS.

5.5.1 ERROR PRINTOUTS

SELF EXPLANATORY PRINTOUTS ARE PROVIDED.

6.0 POWER FAIL

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

RECOVERED FROM POWER FAILURE.
P(PRG#) T(ROUTINE #) PC = (ADDRESS OF ERROR CALL)

********** ECO HISTORY **********
CHGH1 - NEW STORAGE LOCATIONS FOR REFERENCE IN ^G MODE
CHGH2 - CHANGE START UP FOR ENTERING SOFTWARE SWITCH REGISTER INFO.
CHGH3 - CHECK FOR ^G BETWEEN TESTS.
CHGH4 - NEW EMT LOCATION
CHGH5 - ROUTINE TO CHECK PRINTOUT, UPDATE SOFTWARE SWITCH REG.
CHGH6 - NEW MESSAGES FOR SOFTWARE SWITCH REG ROUTINES.
CHGH7 - NEW EMT ROUTINE TO PRINTOUT A <CR> AND <LF>.
CHGH8 - DELETED HALT AND INSERTED WAIT FOR TTY INPUT
CHGH9 - DELETED HALT AND INSERTED WAIT FOR TTY INPUT
****
.ENDR

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                        .LIST   SEQ,BIN
                        .ENABLE ABS,AMA

                ;DL11-E,C/D DIAGNOSTIC PROGRAM (OFF LINE TESTS)
                ;
                ;PRG0- INPUT-OUTPUT LOGIC TESTS
                ;PRG1- TRANSMITTER SCOPE LOOP
                ;PRG2- RECEIVER SCOPE LOOP
```

SEQ 0008

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                                ;PRG3- SINGLE CHARACTER MAINTENANCE MODE DATA TEST
                                ;PRG4- SPECIAL BINARY COUNT MAINTENANCE MODE DATA TEST
                                ;
                                ;STANDARD SR SWITCH OPTIONS (SWITCH SET TO A 1 )
                                ;
                                ;SR15- HALT ON ERROR
                                ;SR14- SCOPE.
                                ;SR13- INHIBIT PRINTOUT
                                ;SR12- SELECT LINE NUMBER AND LOCK ON IT
                                ;SR11- INHIBIT ITERATION.
                                ;SR10- HALT AT END CURRENT TEST, TEST NO. IN DATA LIGHTS
                                ;SR9- SELECT ROUTINE.
                                ;SR7- DISABLE STALL MODE AND RUN FULL SPEED.
                                ;SR6 THROUGH SR0 - NUMBER OF ROUTINE TO BE SELECTED.
                                ;
                                ;STANDARD CONFIGURATION
                                ;CHARACTER LENGTH 8
                                ;STOP CODE 2
            000000                      .=0
000000      006042                      ERTP                    ;UNASSIGNED TRAP
000002      000000                      0
000004      006042              MACHER: ERTP                    ;SP OVERFLOW, BUS ERROR TRAP
000006      000040                      40
000010      006042                      ERTP                    ;RESERVED INSTRUCTION TRAP
000012      000100                      100
000014      006042                      ERTP                    ;TRACE TRAP
000016      000140                      140
000020      006150                      MAPVEC                  ;TRAP TO MAP VECTOR
000022      000340                      PRTY7
000024      006370                      PFAIL                   ;POWER FAIL TRAP
000026      000340                      PRTY7
000030      003064                      EMTINT                  ;EMT TRAP
000032      000340                      PRTY7
000034      006042                      ERTP
000036      000340                      340
000040      000042                      .+2
000042      000000                      HALT
            000046                      .=46
000046      005446                      LOGIC
            000165                      .REPT   117.
                                        .+2                     ;TRAP TO TRAP REPORTER
                                        4
                                        .ENDR


                                ;EQUATE STATEMENTS
            177776                      PSW=177776
            001176                      SPBOT=1176
            000240                      NOP=240
            000000                      OPEN=0
            100000                      MANUAL=BIT15
            100000                      BIT15=100000
            040000                      BIT14=40000
            020000                      BIT13=20000
            010000                      BIT12=10000
            004000                      BIT11=4000
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                    002000                  BIT10=2000
                    001000                  BIT9=1000
                    000400                  BIT8=400
                    000200                  BIT7=200
                    000100                  BIT6=100
                    000040                  BIT5=40
                    000020                  BIT4=20
                    000010                  BIT3=10
                    000004                  BIT2=4
                    000002                  BIT1=2
                    000001                  BIT0=1
                    005726                  POPSP=5726              ;POP THE STACK. SAME AS TST (6)+
                    022626                  POPSP2=022626           ;POP STACK TWICE. SAME AS CMP (6)+,(6)+
                    000340                  PRTY7=340               ;PRIORITY LEVEL DEFINITIONS
                    000300                  PRTY6=300
                    000240                  PRTY5=240
                    000200                  PRTY4=200
                    000140                  PRTY3=140
                    000100                  PRTY2=100
                    000040                  PRTY1=40
                    000000                  PRTY0=0
                    104000                  TYPE=EMT+0
                    104001                  TYPES=EMT+1
                    104002                  STALL=EMT+2
                    104003                  ERROR=EMT+3
                    104004                  DATCHK=EMT+4
                    104005                  CHALT=EMT+5
                    104006                  STRXV=EMT+6
                    104007                  STTXV=EMT+7
                    104010                  EHALT=EMT+10
                    104011                  SRESET=EMT+11
                    104012                  SCOPE=EMT+12
                    104013                  SAVREG=EMT+13
                    104014                  RSTREG=EMT+14
                    104015                  ERROR1=EMT+15
                    104016                  DELAY=EMT+16
                    104017                  TIMERX=EMT+17
                    104020                  TIMETX=EMT+20
                    104021                  SCRLF=EMT+21            ;CHGH4
                    177777                  ATLAST=-1
                    100000                  CD=100000               ;FLAG FOR C/D TESTS
                                            .LIST   ME
                    000170                  .=170
000170  177570  SPPTR:          177570      ;SWITCH REG POINTER
000172  177570  DISPREG:        177570      ;DISPLAY REGISTER
000174  000000  DISPLAY:        OPEN        ;SOFTWARE DISPLAY REG
```

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                                SWREG:          OPEN            ;SOFTWARE REGISTER
                                        .=200
000200  000137  001656                  JMP     @#STARTZ        ;GO TO START OF PROGRAM.
                                        .=204
000204  000137  006550                  JMP     @#RESTART
                                        .=1200
                                ;
                                ;DEVICE ADDRESS LIST
                                ;LSB BIT0 IS SET TO A 1 BY MAPPER IF DEVICE NOT FOUND
                                ;TO TEST THAT LINE NOT FOUND CLEAR BIT0 IN THAT DEVICE ADDRESS
                                ;IN THIS TABLE AFTER MAPPING DONE
                                ;**********************
001200  175610                  RXCR0:  175610          ;LINE 0 DEVICE ADDRESS (RXCSR)
001202  175620                  RXCR1:  175620          ;LINE 1 DEVICE ADDRESS (RXCSR)
001204  175630                  RXCR2:  175630          ;LINE 2 DEVICE ADDRESS (RXCSR)
001206  175640                  RXCR3:  175640          ;LINE 3 DEVICE ADDRESS (RXCSR)
001210  175650                  RXCR4:  175650          ;LINE 4 DEVICE ADDRESS (RXCSR)
001212  175660                  RXCR5:  175660          ;LINE 5 DEVICE ADDRESS (RXCSR)
001214  175670                  RXCR6:  175670          ;LINE 6 DEVICE ADDRESS (RXCSR)
001216  175700                  RXCR7:  175700          ;LINE 7 DEVICE ADDRESS (RXCSR)
001220  175710                  RXCR10: 175710          ;LINE 10 DEVICE ADDRESS (RXCSR)
001222  175720                  RXCR11: 175720          ;LINE 11 DEVICE ADDRESS (RXCSR)
001224  175730                  RXCR12: 175730          ;LINE 12 DEVICE ADDRESS (RXCSR)
001226  175740                  RXCR13: 175740          ;LINE 13 DEVICE ADDRESS (RXCSR)
001230  175750                  RXCR14: 175750          ;LINE 14 DEVICE ADDRESS (RXCSR)
001232  175760                  RXCR15: 175760          ;LINE 15 DEVICE ADDRESS (RXCSR)
001234  175770                  RXCR16: 175770          ;LINE 16 DEVICE ADDRESS (RXCSR)
001236  176000                  RXCR17: 176000          ;LINE 17 DEVICE ADDRESS (RXCSR)
001240  176010                  RXCR20: 176010          ;LINE 20 DEVICE ADDRESS (RXCSR)
001242  176020                  RXCR21: 176020          ;LINE 21 DEVICE ADDRESS (RXCSR)
001244  176030                  RXCR22: 176030          ;LINE 22 DEVICE ADDRESS (RXCSR)
001246  176040                  RXCR23: 176040          ;LINE 23 DEVICE ADDRESS (RXCSR)
001250  176050                  RXCR24: 176050          ;LINE 24 DEVICE ADDRESS (RXCSR)
001252  176060                  RXCR25: 176060          ;LINE 25 DEVICE ADDRESS (RXCSR)
001254  176070                  RXCR26: 176070          ;LINE 26 DEVICE ADDRESS (RXCSR)
001256  176100                  RXCR27: 176100          ;LINE 27 DEVICE ADDRESS (RXCSR)
001260  176110                  RXCR30: 176110          ;LINE 30 DEVICE ADDRESS (RXCSR)
001262  176120                  RXCR31: 176120          ;LINE 31 DEVICE ADDRESS (RXCSR)
001264  176130                  RXCR32: 176130          ;LINE 32 DEVICE ADDRESS (RXCSR)
001266  176140                  RXCR33: 176140          ;LINE 33 DEVICE ADDRESS (RXCSR)
001270  176150                  RXCR34: 176150          ;LINE 34 DEVICE ADDRESS (RXCSR)
001272  176160                  RXCR35: 176160          ;LINE 35 DEVICE ADDRESS (RXCSR)
001274  176170                  RXCR36: 176170          ;LINE 36 DEVICE ADDRESS (RXCSR)
001276  177777                  XORADD: 177777          ;LINE 37 SPECIAL ADDRESS FOR XOR
001300  177777                  RXEND:  177777          ;LINE XX DEVICE ADDRESS (RXCSR)
                                ;
                                ;CHARACTER LENGTH, PRIORITY, C/D MASK
                                ;INITIALLY SET FOR DL11-E, PRIORITY=4,CHARACTER LENGTH=8
                                ;BIT 15 SET TO A 1 = THAT LINE HAS DL11-C OR DL11-D
                                ;EX: 140377 = DL11C OR DL11D, PRIORITY = 4, CHARACTER LENGTH   8
                                ;BITS 12-14 = PRIORITY LEVEL THAT LINE
                                ;BITS 0-7 = CHARACTER MASK EX. 377=8, 177=7, 77=6, 37=5
                                ;**********************
001302  040377                  CMAS0:  040377          ;LINE 0 CHARACTER MASK, PRIORITY, C/D FLAG
001304  040377                  CMAS1:  040377          ;LINE 1 CHARACTER MASK, PRIORITY, C/D FLAG
001306  040377                  CMAS2:  040377          ;LINE 2 CHARACTER MASK, PRIORITY, C/D FLAG
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   561  001310  040377                CMAS3:  040377          ;LINE 3 CHARACTER MASK, PRIORITY, C/D FLAG
   562  001312  040377                CMAS4:  040377          ;LINE 4 CHARACTER MASK, PRIORITY, C/D FLAG
   563  001314  040377                CMAS5:  040377          ;LINE 5 CHARACTER MASK, PRIORITY, C/D FLAG
   564  001316  040377                CMAS6:  040377          ;LINE 6 CHARACTER MASK, PRIORITY, C/D FLAG
   565  001320  040377                CMAS7:  040377          ;LINE 7 CHARACTER MASK, PRIORITY, C/D FLAG
   566  001322  040377                CMAS10: 040377          ;LINE 10 CHARACTER MASK, PRIORITY, C/D FLAG
   567  001324  040377                CMAS11: 040377          ;LINE 11 CHARACTER MASK, PRIORITY, C/D FLAG
   568  001326  040377                CMAS12: 040377          ;LINE 12 CHARACTER MASK, PRIORITY, C/D FLAG
   569  001330  040377                CMAS13: 040377          ;LINE 13 CHARACTER MASK, PRIORITY, C/D FLAG
   570  001332  040377                CMAS14: 040377          ;LINE 14 CHARACTER MASK, PRIORITY, C/D FLAG
   571  001334  040377                CMAS15. 040377          ;LINE 15 CHARACTER MASK, PRIORITY, C/D FLAG
   572  001336  040377                CMAS16: 040377          ;LINE 16 CHARACTER MASK, PRIORITY, C/D FLAG
   573  001340  040377                CMAS17: 040377          ;LINE 17 CHARACTER MASK, PRIORITY, C/D FLAG
   574  001342  040377                CMAS20: 040377          ;LINE 20 CHARACTER MASK, PRIORITY, C/D FLAG
   575  001344  040377                CMAS21: 040377          ;LINE 21 CHARACTER MASK, PRIORITY, C/D FLAG
   576  001346  040377                CMAS22: 040377          ;LINE 22 CHARACTER MASK, PRIORITY, C/D FLAG
   577  001350  040377                CMAS23: 040377          ;LINE 23 CHARACTER MASK, PRIORITY, C/D FLAG
   578  001352  040377                CMAS24: 040377          ;LINE 24 CHARACTER MASK, PRIORITY, C/D FLAG
   579  001354  040377                CMAS25: 040377          ;LINE 25 CHARACTER MASK, PRIORITY, C/D FLAG
   580  001356  040377                CMAS26: 040377          ;LINE 26 CHARACTER MASK, PRIORITY, C/D FLAG
   581  001360  040377                CMAS27: 040377          ;LINE 27 CHARACTER MASK, PRIORITY, C/D FLAG
   582  001362  040377                CMAS30: 040377          ;LINE 30 CHARACTER MASK, PRIORITY, C/D FLAG
   583  001364  040377                CMAS31: 040377          ;LINE 31 CHARACTER MASK, PRIORITY, C/D FLAG
   584  001366  040377                CMAS32: 040377          ;LINE 32 CHARACTER MASK, PRIORITY, C/D FLAG
   585  001370  040377                CMAS33: 040377          ;LINE 33 CHARACTER MASK, PRIORITY, C/D FLAG
   586  001372  040377                CMAS34: 040377          ;LINE 34 CHARACTER MASK, PRIORITY, C/D FLAG
   587  001374  040377                CMAS35: 040377          ;LINE 35 CHARACTER MASK, PRIORITY, C/D FLAG
   588  001376  040377                CMAS36: 040377          ;LINE 36 CHARACTER MASK, PRIORITY, C/D FLAG
   589  001400  040377                CMAS37: 040377          ;LINE 37 SPECIAL ADDRESS FOR XOR
   590                                ;
   591  001402  000000                UMASK:  0                       ;MASK FOR DEVICE UT
   592  001404  000000                RMASK:  0                       ;MASK FOR CHAR LENGTH FOR DEVICE UT
   593  001406  177740                STLMSK: 177740                  ;MASK FOR MAX RANDOM STALL
   594                                ;
   595  001410  000000                RXCSR:  0                       ;RECEIVER UNDER TEST
   596  001412  000000                RXBUF:  0                       ;RECEIVER BUFFER UNDER TEST
   597  001414  000000                TXCSR:  0                       ;TRANSMITTER CSR UNDER TEST
   598  001416  000000                TXBUF:  0                       ;TRANSMITTER BUFFER UNDER TEST
   599  001420  000000                RXVTR:  0                       ;RECEIVER VECTOR UNDER TEST
   600  001422  000000                RXLVL:  0                       ;RECEIVER PRIORITY LEVEL UT
   601  001424  000000                TXVTR:  0                       ;TRANSMITTER VECTOR UNDER TEST
   602  001426  000000                TXLVL:  0                       ;TRANSMITTER PRIORITY LEVEL UT
   603                                ;**********************
   604                                ;
   605  001430  177560                TKS:    177560                  ;LSR CSR
   606  001432  177562                TKB:    177562                  ;LSR BUFFER
   607  001434  177564                TPS:    177564                  ;LSP CSR
   608  001436  177566                TPB:    177566                  ;LSP BUFFER
   609  001440  000060                TKVTR:  60                      ;LSR INTERRUPT VECTOR
   610  001442  000200                TKLVL:  PRTY4                   ;LSR PRIORITY LEVEL
   611  001444  000064                TPVTR:  64                      ;LSP INTERRUPT VECTOR
   612  001446  000200                TPLVL:  PRTY4                   ;LSP PRIORITY LEVEL
   613  001450  000000                PRGNUM: OPEN                    ;CONTAINS CURRENT PROGRAM#
   614  001452  000000                KSTART: OPEN                    ;CURRENT PROGRAM START ADDRESS.
   615  001454  000000                CURTST: OPEN                    ;CONTAINS ADDR OF CURRENT TEST.
   616  001456  000000                RTNNO:  OPEN                    ;CONTAINS CURRENT TEST #.
```

```
   617  001460  000000                TNNO:   0                       ;CONTAINES EDITED TNUM
   618  001462  000000                NXTST:  OPEN                    ;CONTAINS ADDR OF NEXT TEST.
   619  001464  000000                ICTR:   OPEN                    ;CONTAINS CURRENT ITERATION COUNT
   620  001466  000000                SCOPTR: OPEN                    ;CONTAINS CURRENT SCOPE POINTER.
   621  001470  000000                OLDPS:  0                       ;PS SAVED FROM TRAP TO EMT ROUTINE
   622  001472  000000                FMAP:   0                       ;MAPPING FLAG, 1= MAPPING IN PROGRESS
   623  001474  006602                PRGTAB: PRG0                    ;PRG0 START ADDRESS
   624  001476  014662                        PRG1                    ;PRG1 START ADDRESS
   625  001500  014734                        PRG2                    ;PRG2 START ADDRESS
   626  001502  015032                        PRG3                    ;PRG3 START ADDRESS
   627  001504  015072                        PRG4                    ;PRG4 START ADDRESS
   628  001506  005244                        INCRPG                  ;INCORRECT PROGRAM SELECTED
   629  001510  005244                        INCRPG
   630  001512  005244                        INCRPG
   631  001514  003440                EMTTAB: TYP                     ;POINTER TO TYPEOUT ROUTINE
   632  001516  003562                        TYPS                    ;POINTER TO CHAINED MESSAGES ROUTINE
   633  001520  004072                        STAL                    ;POINTER TO RANDOM STALL ROUTINE
   634  001522  005652                        ERR                     ;POINTER TO ERROR ROUTINE
   635  001524  005560                        DTCHK
   636  001526  000000                        OPEN
   637  001530  003216                        STLSRV
   638  001532  003252                        STLSPV
   639  001534  005516                        EHLT                    ;POINTER TO ERROR HALT ROUTINE.
   640  001536  003306                        SRSETT
   641  001540  002632                        CHAINN
   642  001542  003116                        SAVRG
   643  001544  003156                        RSTRG
   644  001546  005674                        ERR1
   645  001550  004024                        DLY
   646  001552  004142                        TMRX
   647  001554  004152                        TMTX
   648  001556  004212                        $SCRLF
   649                                  ;
   650  001560  000000                CRBUF:  OPEN
   651  001562  000000                CRBUFA: OPEN
   652  001564  000000                CRBUFB: OPEN
   653  001566  000000                CTR0:   OPEN
   654  001570  000000                CTR1:   OPEN
   655  001572  000000                CTR2:   OPEN
   656  001574  000000                CTR3:   OPEN
   657  001576  000000                CTR4:   OPEN
   658  001600  000000                CTR5:   OPEN
   659  001602  000000                CTR6:   OPEN
   660  001604  000000                CTR7:   OPEN
   661  001606  000000                TXCSRT: OPEN
   662  001610  000000                RXCSRT: OPEN
   663  001612  000000                RXBUFT: OPEN
   664  001614  000000                FOUNDV: 0
   665  001616  000000                LINENO: 0
   666  001620  000000                TEMP:   OPEN
   667  001622  000000                TEMP1:  0
   668  001624  000000                TEMP2:  0
   669  001626  000000                COUNT:  0
   670  001630  000000                FTITLE: 0
   671  001632  000000                FNONE:  0
   672  001634  000000                TOPC:   0
```

```
                                FROMPC: 0
                                PASCNT: 0
                                ;**********  CHGH1  **********
                                TIB:    OPEN                    ;TEMPORARY KYBD BUFFER STORAGE
                                TEMPST: OPEN                    ;TEMPORARY WORK LOCATION
                                COUNT1: OPEN                    ;LOOP COUNT FOR TEST
                                FILL:   OPEN                    ;ZERO FILL SWITCH
                                MODE:   OPEN                    ;NUMBER OF DIGITS TO TYPE
                                CNT:    OPEN                    ;ITERATION COUNT
                                ;******************************
                                STARTZ: MOV     #SPBOT,%6       ;SET UP STACK POINTER
                                ;********************
                                CHGH2:  MOV     6,-(SP)         ;SAVE CURRENT VECTOR
                                        MOV     4,-(SP)
                                        MOV     #64$,@#4        ;SET UP LOC. 4 FOR NON-EXIS MEM TRAP
                                        CMP     #-1,@SRPTR      ;REFERENCE HARDWARE SWITCH REGISTER
                                        BEQ     65$             ;IF IT = -1,USE SOFT SW REG
                                        BR      66$             ;THEN USE HARDWARE SW REG
                                64$:    POPSP2                  ;CORRECT THE STACK, NO HDWE SW REG
                                65$:    MOV     #SWREG,SRPTR    ;POINT TO SOFT SW REG
                                        MOV     #DISPLAY,DISPREG ;POINT TO SOFT DISP REG
                                66$:    MOV     (SP)+,@#4       ;RESTORE VECTORS
                                        MOV     (SP)+,@#6       ;SAME AS ABOVE
                                67$:    CMP     #SWREG,SRPTR    ;IS SOFT SWREG SELECTED
                                        BNE     60$             ;IF NOT, BR OVER SOFTWARE OPER
                                        JSR     PC,CNTLU        ;SOFT SW REG INPUT ROUTINE
                                        MOV     TKVTR,R1        ;SET UP TO INSTALL VECTORS
                                        MOV     #TTINTS,(R1)+   ;VECTOR ADDRESS TO LOC 60
                                        MOV     TKLVL,(R1)+     ;PRIORITY TO LOC 62
                                        TST     @TKB            ;CLEAR DONE FLAG
                                        MOV     #100,@TKS       ;SET TTY INTERRUPT ON
                                ;********************
                                60$:    CLR     @#TITLE
                                        MOV     @#4,-(%6)
                                        MOV     #XORA,@#4
                                        TST     @#177060
                                        MOV     (%6)+,@#4
                                        MOV     #174000,@#XORADD
                                        MOV     #-1,@#XORFLG
                                        TYPE
                                        MESS1
                                        JMP     @#START
                                MESS1:  .ASCII  <15><12>'YOU ARE ON AN XOR TESTER@'
                                        .EVEN
                                XORFLG: .WORD   0

                                XORA:   CMP     (%6)+,(%6)+
```

673	001636	000000				
674	001640	000000				
675						
676	001642	000000				
677	001644	000000				
678	001646	000000				
679	001650	000000				
680	001652	000000				
681	001654	000000				
682						
683						
684						
685						
686						
687						
688	001656	012706	001176			
689						
690	001662	013746	000006			
691	001666	013746	000004			
692	001672	012737	001712	000004		
693	001700	022777	177777	176262		
694	001706	001402				
695	001710	000407				
696	001712	022626				
697	001714	012737	000176	000170		
698	001722	012737	000174	000172		
699	001730	012637	000004			
700	001734	012637	000006			
701	001740	022737	000176	000170		
702	001746	001015				
703	001750	004737	015256			
704	001754	013701	001440			
705	001760	012721	015502			
706	001764	013721	001442			
707	001770	005777	177436			
708	001774	012777	000100	177426		
709						
710	002002	005037	001630			
711	002006	013746	000004			
712	002012	012737	002112	000004		
713	002020	005737	177060			
714	002024	012637	000004			
715	002030	012737	174000	001276		
716	002036	012737	177777	002110		
717	002044	104000				
718	002046	002054				
719	002050	000137	002136			
720	002054	005015	047531	020125		
721	002062	051101	020105	047117		
722	002070	040440	020116	047530		
723	002076	020122	042524	052123		
724	002104	051105	100			
725		002110				
726	002110	000000				
727						
728	002112	022626				

```
   729  002114  012637  000004                MOV     (%6)+,@#4
   730  002120  012737  177777  001276        MOV     #-1,@#XORADD
   731  002126  005037  002110                CLR     @#XORFLG
   732  002132  000137  002136                JMP     @#START
   733
   734
   735                                        .MACR   TSTAA   AX,B,C,D,E
   736                                ;*******************************************************************************
   737                                AT'E':  C                       ;TEST NUMBER                                  *
   738                                        AT'D'                   ;ADDRESS OF NEXT TEST                         *
   739                                        B                       ;ITERATION COUNT                              *
   740                                        'AX'A                   ;SCOPE ENTRY POINT                            *
   741                                        X=X+1                   ;                                             *
   742                                ;*******************************************************************************
   743                                        .ENDM
   744                                        .MACR   TSTA    B,AX,Z
   745                                        TSTAA   AX,B,\X+1+Z,\X+2,\X+1
   746                                        .ENDM
   747
   748  002136  012706  001176        START:  MOV     #SPBOT,%6       ;SET BOTTOM OF SP STACK.
   749  002142  012737  006370  000024        MOV     #PFAIL,24
   750  002150  005037  001614                CLR     FOUNDV
   751  002154  005037  001472                CLR     FMAP
   752  002160  004737  003376                JSR     %7,CLRCD        ;CLEAR DEVICE UT PARAMETERS
   753  002164  004737  003614                JSR     %7,OVRLAY       ;OVERLAY TRAP AREA
   754  002170  005737  001630                TST     FTITLE          ;TITLE PRINTED AND MAP MADE
   755  002174  001054                        BNE     START1          ;YES, SKIP OVER THIS
   756  002176  104000                        TYPE
   757  002200  015710                        MTIT
   758  002202  005237  001630                INC     FTITLE
   759  002206  005037  001632                CLR     FNONE           ;CLEAR DEVICE PRESENT FLAG
   760  002212  012737  002252  000004        MOV     #MAPNE,MACHER   ;SET UP NO DEVICE PRESENT RETURN
   761  002220  012704  001200                MOV     #RXCRO,%4       ;SET UP DEVICE POINTER
   762  002224  021437  001300        MAPA:   CMP     (%4),@#RXEND    ;LAST DEVICE
   763  002230  001430                        BEQ     MAPEND          ;YES, EXIT
   764  002232  042714  000001                BIC     #BIT0,(4)       ;CLEAR ODD ADDRESS
   765  002236  005037  177776                CLR     PSW
   766  002242  005774  000000                TST     @(4)            ;TEST DEVICE
   767  002246  000240                        NOP
   768  002250  000404                        BR      MAPOK
   769  002252  052724  000001        MAPNE:  BIS     #BIT0,(4)+      ;NOT LIVING
   770  002256  022626                        POPSP2
   771  002260  000761                        BR      MAPA
   772  002262  012437  001622        MAPOK:  MOV     (4)+,TEMP1      ;SAVE DEVICE ADDRESS FOR TYPING
   773  002266  004537  004624                JSR     %5,OACNV
   774  002272  001622                        TEMP1
   775  002274  016001                        MDEVAD
   776  002276  000006                        6
   777  002300  104000                        TYPE
   778  002302  016001                        MDEVAD
   779  002304  005237  001632                INC     FNONE           ;SET HAVE DEVICE
   780  002310  000745                        BR      MAPA
   781  002312  012737  006042  000004  MAPEND: MOV     #ERTP,MACHER    ;RESET TRAPS
   782  002320  005737  001632                TST     FNONE           ;ANY DEVICES PRESENT
   783  002324  001424                        BEQ     MAPERR          ;NO, ERROR
   784  002326  012701  001200        START1: MOV     #RXCRO,%1
```

```
 785  002332  032711  000001          START2: BIT     #BIT0,(1)       ;IS DEVICE LIVING
 786  002336  001013                          BNE     START3          ;NO, CHECK FOR END
 787  002340  010137  001616                  MOV     %1,LINENO       ;CALCULATE LINE NUMBER UNDER TEST
 788  002344  162737  001200  001616          SUB     #RXCRO,LINENO
 789  002352  006237  001616                  ASR     LINENO
 790  002356  011101                          MOV     (1),%1          ;YES, LOAD AND EXIT
 791  002360  004737  006226                  JSR     %7,FORMAD
 792  002364  000420                          BR      START4
 793  002366  005721                  START3: TST     (1)+
 794  002370  020127  001300                  CMP     %1,#RXEND       ;END OF TABLE
 795  002374  001356                          BNE     START2          ;NO, LOOP
 796  002376  104000                  MAPERR: TYPE
 797  002400  016055                          MNONE
 798  002402  005737  000042                  TST     @#42            ;MONITOR LOAD
 799  002406  001402                          BEQ     .+6             ;NO, CONTINUE
 800  002410  000137  005436                  JMP     PRGXTL          ;YES, EXIT
 801  002414  005037  001630                  CLR     FTITLE
 802  002420  000000                          HALT
 803  002422  000137  002136                  JMP     START
 804  002426  012737  000001  001640  START4: MOV     #1,PASCNT
 805  002434  005037  177776                  CLR     PSW
 806  002440  005037  001456                  CLR     RT%NO
 807  002444  104000                          TYPE                    ;CALL FOR PROGRAM NUMBER.
 808  002446  016021                          PGMSG
 809  002450  004737  003652                  JSR     PC,RDOCT        ;READ IN PROGRAM NUMBER.
 810  002454  012600                          MOV     (SP)+,%0                ;INPUT DATA TO R0
 811  002456  042700  177770                  BIC     #177770,%0      ;LIMIT (SR) TO BITS 3-0
 812  002462  010037  001450                  MOV     %0,PRGNUM       ;SAVE PROGRAM #
 813  002466  006300                          ASL     %0
 814  002470  000170  001474                  JMP     @PRGTAB(0)      ;GO TO SELECTED PROGRAM.
 815                                  ;
 816  002474  013737  001452  001462  GETRDY: MOV     KSTART,NXTST    ;ADDR OF 1ST ROUTINE TO NXTST
 817  002502  012737  006042  000004  GTRDYX: MOV     #ERTP,MACHER    ;RESET MACHER TRAP.
 818  002510  012737  000040  000006          MOV     #40,MACHER+2
 819  002516  005037  001472                  CLR     FMAP
 820  002522  012706  001176                  MOV     #SPBOT,%6       ;SET BOTTOM OF STACK.
 821  002526  104011                          SRESET                  ;ISSUE RESET.
 822  002530  005037  177776                  CLR     PSW
 823  002534  004737  003032          GTRDYA: JSR     %7,FORWD        ;ROLL FORWARD TO "NEXT" ROUTINE.
 824  002540  032777  001000  175422          BIT     #BIT9,@SRPTR    ;CHECK SELECT ROUTINE SWITCH
 825  002546  001011                          BNE     GTRDYC          ;BRANCH IF SELECT ROUTINE SWITCH IS SET.
 826  002550  005737  001402                  TST     UMASK           ;C/D DEVICE
 827  002554  100003                          BPL     GTRDA1          ;NO, CONTINUE
 828  002556  005737  001456                  TST     RTNNO           ;THIS A C/D TEST
 829  002562  100364                          BPL     GTRDYA          ;NO, DO NEXT TEST
 830  002564  000177  176664          GTRDA1: JMP     @CURTST         ;GO RUN CURRENT ROUTINE.
 831  002570  000466                          BR      CHNB            ;NO GO. MANUAL RTN BYPASSED.
 832  002572  017700  175372          GTRDYC: MOV     @SRPTR,%0               ;(SR) TO R0
 833  002576  042700  177600                  BIC     #177600,%0      ;MASK UNDESIRED BITS
 834  002602  123700  001456                  CMPB    RTNNO,%0        ;COMPARE RTNNO TO (R0)
 835  002606  001002                          BNE     GTRDYD          ;BRANCH IF ROUTINE NOT FOUND YET.
 836  002610  000177  176640                  JMP     @CURTST         ;GO RUN ROUTINE.
 837  002614  022737  177777  001462  GTRDYD: CMP     #-1,NXTST       ;NO, CHECK FOR LAST ROUTINE.
 838  002622  001344                          BNE     GTRDYA          ;BRANCH IF NOT LAST ROUTINE.
 839  002624  004737  005234                  JSR     %7,INCRTN       ;YES, INCORRECT ROUTINE SELECTED.
 840  002630  000721                          BR      GETRDY          ;START OVER.
```

```
                                        ;
002632                                  ;CHGH3:
002632  004737  015204          CHAINN: JSR     PC,CKSWR        ;SEE IF A ^G HAS BEEN GIVEN
002636  032777  040000  175324          BIT     #BIT14,@SRPTR   ;CHECK FOR SCOPE OPTION.
002644  001403                          BEQ     CHNA            ;BRANCH IF SCOPE SW NOT SET.
002646  013716  001466          CHNAB:  MOV     SCOPTR,@%6      ;SET UP TO RETURN TO ROUTINE.
002652  000002                          RTI                     ;RETURN TO ROUTINE.
002654  005737  002110          CHNA:   TST     @#XORFLG
002660  100011                          BPL     1$
002662  013746  000004                  MOV     @#4,-(%6)
002666  012737  002774  000004          MOV     #XOR,@#4
002674  005737  177060                  TST     @#177060        ;TEST FOR XOR
002700  012637  000004                  MOV     (%6)+,@#4
002704  032777  004000  175256  1$:     BIT     #BIT11,@SRPTR   ;TEST INHIBIT ITERATION SWITCH
002712  001003                          BNE     CHNAA           ;BRANCH IF INHIBIT ITERATION SW SET.
002714  005337  001464                  DEC     ICTR            ;DECREMENT ITERATION COUNT.
002720  001352                          BNE     CHNAB           ;BRANCH IF COUNT NOT 0.
002722  022626          CHNAA:  POPSP2                          ;POP STACK TWICE
002724  032777  002000  175236          BIT     #BIT10,@SRPTR
002732  001405                          BEQ     CHNB
002734  013700  001456                  MOV     RTNNO,%0
002740  042700  100000                  BIC     #BIT15,%0
002744  000000                          HALT
002746  032777  001000  175214  CHNB:   BIT     #BIT9,@SRPTR    ;CHECK SELECT ROUTINE SWITCH
002754  001247                          BNE     GETRDY          ;BRANCH IF SELECT RTN SW SET
002756  022737  177777  001462          CMP     #-1,NXTST       ;LAST TEST?
002764  001246                          BNE     GTRDYX          ;BRANCH IF NOT LAST TEST.
002766  004737  005256                  JSR     %7,PRGEND       ;PROGRAM END.
002772  000640                          BR      GETRDY
                                        ;
002774  022626          XOR:    CMP     (%6)+,(%6)+
002776  012637  000004                  MOV     (%6)+,@#4
003002  000721                          BR      CHNAB
                                        ;
                                        ;INIT FOR C/D - WITHOUT JUMPER RESET STARTS ASSEMBLING CHARACTER SETTING DONE
                                        ;SET MAINT, DELAY, CLEAR RX DONE
003004  005737  001402          CDINIT: TST     UMASK           ;C-D DEVICE
003010  100007                          BPL     CDINX           ;NO, EXIT
003012  052777  000004  176374          BIS     #BIT2,@TXCSR    ;SET MAINT BIT
003020  104016                          DELAY                   ;WAIT 1.5 SEC
003022  002734                          1500.
003024  005777  176362                  TST     @RXBUF          ;CLEAR RX DONE
003030  000207          CDINX:  RTS     %7
                                        ;
                                        ;
003032  013705  001462          FORWD:  MOV     NXTST,%5        ;ADDR OF NEXT ROUTINE TO R5.
003036  012537  001456                  MOV     (5)+,RTNNO      ;GET NEXT ROUTINE NUMBER.
003042  012537  001462                  MOV     (5)+,NXTST      ;GET ADDR OF NEXT "NEXT" ROUTINE.
003046  012537  001464                  MOV     (5)+,ICTR       ;GET ITERATION COUNT.
003052  012537  001466                  MOV     (5)+,SCOPTR     ;GET SCOPE LOOP ENTRY POINTER.
003056  010537  001454                  MOV     %5,CURTST       ;ADDR OF NOW CURRENT TEST TO CURTST.
003062  000207                          RTS     %7              ;EXIT FORWD SUBROUTINE.
                                        ;
003064  011646          EMTINT: MOV     @%6,-(6)        ;GET SAVED PC.
003066  162716  000002                  SUB     #2,@%6          ;DECREMENT PC BY 2.
003072  017616  000000                  MOV     @(6),@%6
```

```
  897  003076  006316                EMTA:   ASL     @%6             ;EMT ARG X 2.
  898  003100  042716  177001              BIC     #177001,@%6     ;REMOVE 7 MSB.
  899  003104  062716  001514              ADD     #EMTTAB,@%6     ;FORM EMT RTN ADDR.
  900  003110  017616  000000              MOV     @(6),@%6
  901  003114  000136                      JMP     @(6)+           ;GO TO EMT ROUTINE.
  902                                ;
  903                                ;SAVE REGS 0 TO 4 SUBROUTINE.
  904                                ;
  905  003116  012637  003152       SAVRG:  MOV     (6)+,SVRPC      ;SAVE PC AND PSW.
  906  003122  012637  003154              MOV     (6)+,SVRPSW
  907  003126  010446                      MOV     %4,-(6)         ;SAVE REGS 0 - 4
  908  003130  010346                      MOV     %3,-(6)         ;IN STACK.
  909  003132  010246                      MOV     %2,-(6)
  910  003134  010146                      MOV     %1,-(6)
  911  003136  010046                      MOV     %0,-(6)
  912  003140  013746  003154              MOV     SVRPSW,-(6)     ;RESTORE PC AND PSW.
  913  003144  013746  003152              MOV     SVRPC,-(6)
  914  003150  000002                      RTI                     ;EXIT.
  915  003152  000000               SVPPC:  OPEN
  916  003154  000000               SVRPSW: OPEN
  917                                ;
  918                                ;RESTORE REGS 0 TO 4 SUBROUTINE.
  919                                ;
  920  003156  012637  003212       RSTRG:  MOV     (6)+,RSTPC      ;SAVE PC AND PSW.
  921  003162  012637  003214              MOV     (6)+,RSTPSW
  922  003166  012600                      MOV     (6)+,%0         ;RESTORE REGS 0 - 4
  923  003170  012601                      MOV     (6)+,%1         ;FROM STACK.
  924  003172  012602                      MOV     (6)+,%2
  925  003174  012603                      MOV     (6)+,%3
  926  003176  012604                      MOV     (6)+,%4
  927  003200  013746  003214              MOV     RSTPSW,-(6)     ;RESTORE PC AND PSW.
  928  003204  013746  003212              MOV     RSTPC,-(6)
  929  003210  000002                      RTI                     ;EXIT
  930  003212  000000               RSTPC:  OPEN
  931  003214  000000               RSTPSW: OPEN
  932
  933                                ;ROUTINE TO SET RECEIVER INTERRUPT VECTOR AND PRIORITY
  934  003216  004737  006424       STLSRV: JSR     %7,TSTVEC
  935  003222  017637  000000  003242       MOV     @(6),STPRA+2    ;MOVE VECTOR ADDR TO STPRA+2
  936  003230  062716  000002              ADD     #2,@%6          ;SET UP EXIT
  937  003234  013701  001420              MOV     RXVTR,%1
  938  003240  012721  000000       STPRA:  MOV     #OPEN,(1)+      ;SET VECTOR ADDRESS
  939  003244  013721  001422              MOV     RXLVL,(1)+      ;SET PRIORITY
  940  003250  000002                      RTI                     ;EXIT
  941                                ;
  942                                ;ROUTINE TO SET TRANSMITTER INTERRUPT VECTOR AND PRIORITY.
  943  003252  004737  006424       STLSPV: JSR     %7,TSTVEC
  944  003256  017637  000000  003276       MOV     @(6),STPPA+2    ;MOVE VECTOR ADDR TO STPPA+2
  945  003264  062716  000002              ADD     #2,@%6          ;SET UP EXIT
  946  003270  013701  001424              MOV     TXVTR,%1
  947  003274  012721  000000       STPPA:  MOV     #OPEN,(1)+      ;SET VECTOR ADDRESS.
  948  003300  013721  001426              MOV     TXLVL,(1)+      ;SET PRIORITY
  949  003304  000002                      RTI                     ;EXIT.
  950
  951                                ;ROUTINE TO ISSUE RESET.
  952  00330o  012700  052525       SRSETT: MOV     #52525,%0       ;DATA TO R0.
```

```
                                        COM     %0              ;COMPLEMENT (R0).
                                        MOV     %0,SRSETT+2     ;(R0) TO SRSETT+2.
                                        RESET                   ;ISSUE RESET. (R0) IS
                                        RTI                     ;DISPLAYED. EXIT.
                                ;
                                ;RANDOM NUMBER GENERATOR. ROUTINE EXITS WITH NUMBER IN REGISTER 0.
                                RNGEN:  MOV     RP1,%0
                                        ROL     %0
                                        ROL     %0
                                        ADD     RP2,%0
                                        MOV     %0,RP1
                                        ROL     %0
                                        ROL     %0
                                        ADD     RP2,%0
                                        ROL     %0
                                        ROL     %0
                                        MOV     %0,RP2
                                        MOV     RP1,%0
                                        RTS     %7              ;EXIT. NUMBER IN R0
                                RP1:    1233
                                RP2:    7622
                                ;
                                ;CLRCD - CLEAR CURRENT DEVICE PARAMETERS
                                CLRCD:  CLR     TXBUF
                                        CLR     TXCSR
                                        CLR     RXCSR
                                        CLR     RXBUF
                                        CLR     RXVTR
                                        CLR     TXVTR
                                        CLR     RXLVL
                                        CLR     TXLVL
                                        RTS     %7

                                ;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.
                                TYP:    MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS.
                                        ADD     #2,@%6          ;SET UP EXIT.
                                        MOV     @%0,%0          ;ADDRESS OF MESSAGE TO R0.
                                TYPA:   MOVB    (0)+,TYPDAT     ;GET CHARACTER
                                        CMPB    #100,TYPDAT     ;CHECK FOR"@"CHARACTER
                                        BNE     TYPC            ;BRANCH IF NOT"@".
                                        RTI                     ;TERMINATOR CHAR. DONE. EXIT.
                                TYPC:   CMPB    #45,TYPDAT      ;CHECK FOR"%".
                                        BEQ     TYPF            ;BRANCH IF"%"
                                        CMPB    #43,TYPDAT      ;NOT"%".CHECK FOR"#".
                                        BEQ     TYPG            ;BRANCH IF "#"
                                        JSR     %7,TYPD         ;TYPE CHAR IN TYPDAT
                                        BR      TYPA
                                TYPD:   MOVB    TYPDAT,@TPB     ;OUTPUT CHARACTER TO PRINTER
                                        TSTB    @TPS            ;WAIT FOR DONE FLAG.
                                        BPL     .-4
                                        RTS     %7              ;EXIT
                                TYPF:   MOVB    #15,TYPDAT      ;MOVE CARRIAGE RETURN CODE TO TYPDAT
                                        JSR     %7,TYPD         ;GO TYPE CHAR.
                                TYPG:   MOVB    #12,TYPDAT      ;MOVE LF CODE TO TYPDAT.
                                        JSR     %7,TYPD         ;GO TYPE CHAR.
                                        BR      TYPA
```

```
1009  003560  000000                  TYPDAT: OPEN
1010                                  ;
1011                                  ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER
1012  003562  011600                  TYPS:   MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
1013  003564  062716  000002                  ADD     #2,@%6          ;UPDATE TO NEXT MESSAGE ADDRESS
1014  003570  011037  003610                  MOV     @%0,TYPSB       ;ADDRESS OF MESSAGE TO TYPSB
1015  003574  022737  177777  003610          CMP     #-1,TYPSB       ;CHECK FOR TERMINATOR
1016  003602  001001                          BNE     TYPSA           ;BRANCH IF NOT TERMINATOR.
1017  003604  000002                          RTI                     ;TERMINATOR, EXIT
1018  003606  104000                  TYPSA:  TYPE                    ;CALL ON TYP SUB TO TYPE MESSAGE
1019  003610  000000                  TYPSB:  OPEN                    ;ADDRESS OF MESSAGE GOES HERE
1020  003612  000763                          BR      TYPS            ;GO PROCESS NEXT MESSAGE
1021                                  ;
1022                                  ;OVERLAY VECTOR AREA
1023  003614  012701  000300          OVRLAY: MOV     #300,%1         ;GET DL11-E VECTOR BASE ADDRESS
1024  003620  012702  000302                  MOV     #302,%2
1025  003624  012703  000004                  MOV     #4,%3
1026  003630  010221                  OVRLYA: MOV     %2,(1)+         ;LOAD VECTOR WITH IOT ERROR TRAP
1027  003632  010321                          MOV     %3,(1)+
1028  003634  062702  000004                  ADD     #4,%2
1029  003640  020127  001000                  CMP     %1,#1000                ;ALL VECTORS BEEN LOADED
1030  003644  001401                          BEQ     OVRLYB
1031  003646  000770                          BR      OVRLYA
1032  003650  000207                  OVRLYB: RTS     7               ;EXIT
1033
1034                                  ;SUBROUTINE TO READ OCTAL DATA FROM THE TELETYPE PRINTER
1035  003652  011646                  RDOCT:  MOV     (SP),-(SP)      ;MAKE ROOM FOR DATA WORD
1036  003654  010046                          MOV     %0,-(SP)        ;SAVE R0
1037  003656  010146                          MOV     %1,-(SP)        ;SAVE R1
1038  003660  005001                  INDAT:  CLR     %1              ;CLEAR DATA WORD
1039  003662  005037  001626                  CLR     COUNT           ;SET NO. OF DIGITS = 0
1040  003666  105777  175536          RDDAT:  TSTB    @TKS            ;TEST TTY READ STATUS
1041  003672  100375                          BPL     RDDAT           ;WAIT
1042  003674  117746  175532                  MOVB    @TKB,-(SP)      ;PUSH DIGIT ON STACK
1043  003700  042716  177600                  BIC     #177600,(SP)                    ;;**G
1044  003704  105777  175524          ECDAT:  TSTB    @TPS            ;TEST TTY PRINT STATUS
1045  003710  100375                          BPL     ECDAT           ;WAIT
1046  003712  111677  175520                  MOVB    (SP),@TPB       ;ECHO CHARACTER
1047  003716  122716  000015                  CMPB    #15,(SP)        ;IS IT A TERMINATOR?
1048  003722  001432                          BEQ     RETRN           ;BR IF YES
1049  003724  122716  000177                  CMPB    #177,(SP)       ;IS IT A RUBOUT?
1050  003730  001423                          BEQ     RREAD           ;BR IF YES
1051  003732  122716  000060                  CMPB    #60,(SP)        ;IS IT AN OCTAL DIGIT?
1052  003736  003020                          BGT     RREAD           ;BR IF NO
1053  003740  122716  000067                  CMPB    #67,(SP)        ;TEST AGAIN
1054  003744  002415                          BLT     RREAD           ;BR IF NO
1055  003746  005237  001626                  INC     COUNT           ;INC NO. OF DIGITS
1056  003752  022737  000007  001626          CMP     #7,COUNT        ;MORE THAN SIX DIGITS?  ;;**G
1057  003760  003407                          BLE     RREAD           ;BR IF YES
1058  003762  006301                          ASL     %1              ;CLEAR LOWEST THREE BITS
1059  003764  006301                          ASL     %1              ;OF DATA WORD
1060  003766  006301                          ASL     %1
1061  003770  162716  000060                  SUB     #60,(SP)        ;CONVERT TO BINARY
1062  003774  062601                          ADD     (SP)+,%1        ;ADD DIGIT TO DATA WORD
1063  003776  000733                          BR      RDDAT           ;GET NEXT DIGIT
1064  004000  104000                  RREAD:  TYPE                    ;TELL USER ABOUT ILLEGAL  MARK **
```

```
1065  004002  020142                        DIERR
1066  004004  005726                        TST     (SP)+           ;GET RID OF ILLEGAL CHARACTER
1067  004006  000724                        BR      INDAT           ;START SUBROUTINE AGAIN
1068  004010  010166  000010        RETRN:  MOV     %1,10(SP)       ;STORE DATA WORD ON STACK
1069  004014  005726                        TST     (SP)+           ;INC STACK POINTER
1070  004016  012601                        MOV     (SP)+ %1        ;RESTORE R1
1071  004020  012600                        MOV     (SP)+,%0        ;RESTORE R0
1072  004022  000207                        RTS     PC              ;RETURN
1073
1074                                  ;SUBROUTINE TO DELAY A SPECIFIED NUMBER OF MILLISECONDS
1075  004024  011637  004070        DLY:    MOV     @%6,DLCNT       ;GET DELAY COUNT ADDRESS.
1076  004030  062716  000002                ADD     #2,@%6          ;SET UP EXIT ADDRESS
1077  004034  017746  000030                MOV     @DLCNT,-(6)     ;DELAY COUNT TO STACK
1078  004040  001411                        BEQ     DLYC
1079  004042  005037  177776                CLR     PSW             ;SET PRIORITY 0
1080  004046  012746  000226        DLYA:   MOV     #226,-(6)       ;1 MSEC COUNT TO STACK
1081  004052  005316                DLYB:   DEC     @%6             ;DECREMENT 1 MSEC COUNT
1082  004054  001376                        BNE     DLYB            ;BRANCH IF NOT 0.
1083  004056  005726                        POPSP                   ;ZERO. UNCOVER MSECS. COUNT.
1084  004060  005316                        DEC     @%6             ;DECREMENT IT
1085  004062  001371                        BNE     DLYA            ;BR IF NOT DONE DELAYING
1086  004064  005726                DLYC:   POPSP                   ;DONE
1087  004066  000002                        RTI                     ;EXIT.
1088  004070  000000                DLCNT:  OPEN                    ;CONTAINS MILLISECONDS COUNT ADDRESS.
1089                                  ;
1090                                  ;SUBROUTINE TO STALL A RANDOM NUMBER OF MILLISECONDS. MAXIMUM STALL
1091                                  ;DETERMINED BY CONTENTS OF LOC STLMSK.
1092  004072  004737  003324        STAL:   JSR     %7,RNGEN        ;GO GET RANDOM NUMBER.
1093  004076  043700  001406                BIC     STLMSK,%0       ;# IN R0. APPLY STALL MASK.
1094  004102  001404                        BEQ     STALB           ;BRANCH IF RESULT IS 0.
1095  004104  010037  004112                MOV     %0,STALA
1096  004110  104016                        DELAY                   ;DELAY
1097  004112  000000                STALA:  OPEN                    ;DELAY COUNT
1098  004114  000002                STALB:  RTI                     ;DONE. EXIT.
1099                                  ;
1100                                  ;SUBROUTINE TO GENERATE RANDOM CHARACTER COUNT
1101  004116  004737  003324        GRCNT:  JSR     %7,RNGEN        ;GET RANDOM NUMBER
1102  004122  043700  004136                BIC     RCMSK,%0        ;APPLY MASK
1103  004126  001773                        BEQ     GRCNT           ;TRY AGAIN IF RESULT 0
1104  004130  010037  004140                MOV     %0,RNCNT        ;COUNT TO RNCNT
1105  004134  000207                        RTS     %7              ;EXIT.
1106  004136  000000                RCMSK:  OPEN                    ;RANDOM CHARACTER MASK.
1107  004140  000000                RNCNT:  OPEN                    ;RANDOM CHARACTER COUNT.
1108                                  ;
1109                                  ;SUBROUTINE TO SKIP ON FLAG AND TIME OUT IF SKIP FAILS
1110  004142  013737  001410  004210 TMRX:   MOV     RXCSR,SIOT      ;SET UP RXCSR ADDRESS
1111  004150  000403                        BR      TIME1
1112  004152  013737  001414  004210 TMTX:   MOV     TXCSR,SIOT      ;SET UP TXCSR ADDRESS
1113  004160  005037  004206        TIME1:  CLR     TIMER
1114  004164  005237  004206        TIME2:  INC     TIMER
1115  004170  001405                        BEQ     TIMEX           ;BRANCH IF COUNTER OVERFLOW
1116  004172  105777  000012                TSTB    @SIOT
1117  004176  100372                        BPL     TIME2
1118  004200  062716  000002                ADD     #2,@%6          ;SET UP EXIT RETURN
1119  004204  000002                TIMEX:  RTI
1120  004206  000000                TIMER:  0
```

```
1121  004210  000000                    SIOT:   0
1122                                    ;******************
1123
1124                                    ;ROUTINE TO PRINT A CARRIAGE RETURN AND A LINE FEED
1125
1126  004212                            CHGH7:
1127  004212  105777  175216            $SCRLF: TSTB    @TPS            ;IS PRINTER READY
1128  004216  100375                            BPL     $SCRLF          ;TRY AGAIN IS SO
1129  004220  112777  000015  175210            MOVB    #15,@TPB        ;PRINT <CR>
1130  004226  105777  175202            1$:     TSTB    @TPS            ;IS PRINTER BUSY
1131  004232  100375                            BPL     1$              ;TRY AGAIN IF SO
1132  004234  112777  000012  175174            MOVB    #12,@TPB        ;PRINT <LF>
1133  004242  000002                            RTI                     ;RETURN TO INTERRUPT
1134                                    ;******************
1135
1136                                    ;SUBROUTINE TO SELECT LINE
1137  004244  032777  010000  173716    LINSEL: BIT     #BIT12,@SRPTR
1138  004252  001003                            BNE     LINSLX          ;BRANCH IF SET
1139  004254  005037  001614                    CLR     FOUNDV
1140  004260  000205                            RTS     5
1141  004262  004737  003614            LINSLX: JSR     %7,OVRLAY
1142  004266  004737  003376                    JSR     %7,CLRCD
1143  004272  104000                            TYPE
1144  004274  017546                            LDLINE
1145  004276  004737  003652                    JSR     PC,RDOCT
1146  004302  012637  001620                    MOV     (SP)+,TEMP
1147  004306  042737  177740  001620            BIC     #177740,TEMP
1148  004314  013737  001620  001616            MOV     TEMP,LINENO     ;SAVE FOR TYPING
1149  004322  006337  001620                    ASL     TEMP
1150  004326  013701  001620                    MOV     TEMP,%1
1151  004332  016101  001200                    MOV     RXCRO(1),%1     ;GET RXCSR DEVICE ADDRESS
1152  004336  032701  000001                    BIT     #BIT0,%1        ;IS DEVICE THERE
1153  004342  001403                            BEQ     LINB            ;YES
1154  004344  104000            LINA:   TYPE                            ;NO, REPORT
1155  004346  020077                            MNOLIN
1156  004350  000744                            BR      LINSLX
1157  004352  004737  006226            LINB:   JSR     %7,FORMAD
1158  004356  005037  177776                    CLR     PSW
1159  004362  052737  000001  001472            BIS     #BIT0,FMAP      ;SET MAPPING FLAG
1160  004370  042777  000100  175016            BIC     #BIT6,@TXCSR
1161  004376  052777  000100  175010            BIS     #BIT6,@TXCSR
1162  004404  000240                            NOP
1163  004406  000240                            NOP
1164  004410  005737  001420                    TST     RXVTR
1165  004414  001753                            BEQ     LINA
1166  004416  042777  000100  174770            BIC     #BIT6,@TXCSR
1167  004424  012737  000340  177776            MOV     #PRTY7,PSW
1168  004432  004537  004624                    JSR     5,DACNV         ;TYPE LINE #
1169  004436  001616                            LINENO
1170  004440  017605                            SELINE
1171  004442  000002                            2
1172  004444  104000                            TYPE
1173  004446  017574                            ALINE
1174  004450  000205                            RTS     5
1175                                    ;
1176                                    ;SUBROUTINE TO INITIALIZE BINARY COUNT PATTERNS
```

```
 1177  004452  012737  177777  004474  INBIN:  MOV     #-1,RIND        ;SET ALL VARIABLES
 1178  004460  004537  004712                  JSR     %5,BMOVE        ;TO MINUS 1.
 1179  004464  004474                          RIND
 1180  004466  004475                          RIND+1
 1181  004470  000013                          11.
 1182  004472  000207                          RTS     %7              ;EXIT
 1183  004474  000000                  RIND:   OPEN
 1184  004476  000000                  PTO:    OPEN
 1185  004500  000000                  PT1:    OPEN
 1186  004502  000000                  PIND:   OPEN
 1187  004504  000000                  PTOP:   OPEN
 1188  004506  000000                  PT1P:   OPEN
 1189                                  ;
 1190                                  ;SPECIAL BINARY COUNT PATTERN SUBROUTINE. EXITS WITH BIN CHAR IN R0
 1191  004510  013737  004476  004500  GTBIN:  MOV     PTO,PT1         ;PREVIOUS BIN CHAR TO PT1
 1192  004516  005137  004500                  COM     PT1
 1193  004522  005137  004474                  COM     RIND
 1194  004526  001002                          BNE     .+6
 1195  004530  005237  004500                  INC     PT1
 1196  004534  042737  177400  004500          BIC     #177400,PT1     ;MASK TO 8 BITS
 1197  004542  013737  004500  004476          MOV     PT1,PTO         ;SAVE BIN CHAR IN PTO
 1198  004550  013700  004500                  MOV     PT1,%0          ;BIN CHAR TO R0.
 1199  004554  000207                          RTS     %7              ;EXIT.
 1200  004556  013737  004504  004506  GTBINP: MOV     PTOP,PT1P       ;PREVIOUS BIN CHAR TO PT1P
 1201  004564  005137  004506                  COM     PT1P
 1202  004570  005137  004502                  COM     PIND
 1203  004574  001002                          BNE     .+6
 1204  004576  005237  004506                  INC     PT1P
 1205  004602  042737  177400  004506          BIC     #177400,PT1P    ;MASK TO 8 BITS.
 1206  004610  013737  004506  004504          MOV     PT1P,PTOP       ;SAVE BIN CHAR IN PTOP.
 1207  004616  013701  004506                  MOV     PT1P,%1         ;BIN CHAR TO R1.
 1208  004622  000207                          RTS     %7              ;EXIT.
 1209                                  ;
 1210                                  ;OCTAL TO ASCII CONVERT ROUTINE
 1211  004624  104013                  OACNV:  SAVREG
 1212  004626  013537  004710                  MOV     @(5)+,OACNVX    ;GET OCTAL VALUE.
 1213  004632  012501                          MOV     (5)+,%1         ;GET DESTINATION ADDR.
 1214  004634  012502                          MOV     (5)+,%2         ;GET CONVERT COUNT.
 1215  004636  060201                          ADD     %2,%1           ;DEVELOP ADDR TO STORE 1ST CHAR.
 1216  004640  013703  004710          OACNVA: MOV     OACNVX,%3
 1217  004644  042703  177770                  BIC     #177770,%3      ;ISOLATE LEAST SIGNIFICANT DIGIT.
 1218  004650  062703  000060                  ADD     #60,%3          ;CONVERT DIGIT TO ASCII.
 1219  004654  110341                          MOVB    %3,-(1)         ;STORE ASCII CHARACTER.
 1220  004656  042737  000007  004710          BIC     #7,OACNVX
 1221  004664  006037  004710                  ROR     OACNVX
 1222  004670  006037  004710                  ROR     OACNVX
 1223  004674  006037  004710                  ROR     OACNVX
 1224  004700  005302                          DEC     %2              ;DONE ALL DIGITS?
 1225  004702  001356                          BNE     OACNVA          ;BRANCH IF NOT DONE.
 1226  004704  104014                          RSTREG
 1227  004706  000205                          RTS     %5              ;DONE. EXIT.
 1228  004710  000000                  OACNVX: OPEN
 1229
 1230                                  ;SUBROUTINE TO MOVE A VARIABLE NUMBER OF BYTES.
 1231  004712  104013                  BMOVE:  SAVREG                  ;SAVE REGS.
 1232  004714  012501                          MOV     (5)+,%1         ;GET "FROM" ADDRESS
```

```
 1233  004716  012502                          MOV     (5)+,%2         ;GET''TO''ADDRESS
 1234  004720  012503                          MOV     (5)+,%3         ;GET COUNT
 1235  004722  112122                BMOVA:    MOVB    (1)+,(2)+       ;MOVE BYTE
 1236  004724  005303                          DEC     %3              ;DECREMENT COUNT
 1237  004726  001375                          BNE     BMOVA           ;BRANCH IF NOT DONE.
 1238  004730  104014                          RSTREG                  ;RESTORE REGS.
 1239  004732  000205                          RTS     %5              ;DONE EXIT
 1240                                  ;
 1241                                  ;BINARY TO DECIMAL ASCII CONVERT SUBROUTINE.
 1242  004734  104013                BDCNV:    SAVREG
 1243  004736  012700  005112                  MOV     #DECVAL,%0      ;SET UP ADDR TO STORE DECIMAL ASCII IN R0
 1244  004742  013501                          MOV     @(5)+,%1        ;BINARY VALUE TO R1.
 1245  004744  012537  005022                  MOV     (5)+,BDCNVC     ;GET DEST ADDR
 1246  004750  012537  005024                  MOV     (5)+,BDCNVD     ;GET CHAR COUNT
 1247  004754  012702  005100                  MOV     #ADTENP,%2      ;ADDR OF TEN POWER STRING TO R2.
 1248  004760  012737  000005  005072          MOV     #5,CNVCTR       ;SET UP FOR 5 POWER CONVERSIONS.
 1249  004766  012237  005076        BDCNVA:   MOV     (2)+,TENPWR     ;MOVE POWER OF TEN VALUE TO TENPWR.
 1250  004772  004737  005032                  JSR     %7,SUBTEN       ;PERFORM CONVERSION
 1251  004776  005337  005072                  DEC     CNVCTR          ;DONE 5 CONVERSIONS?
 1252  005002  001371                          BNE     BDCNVA          ;BRANCH IF NOT YET 5.
 1253  005004  163700  005024                  SUB     BDCNVD,%0
 1254  005010  010037  005020                  MOV     %0,BDCNVB
 1255  005014  004537  004712                  JSR     %5,BMOVE
 1256  005020  000000                BDCNVB:   0
 1257  005022  000000                BDCNVC:   0
 1258  005024  000000                BDCNVD:   0
 1259  005026  104014                          RSTREG
 1260  005030  000205                          RTS     %5              ;YES, EXIT.
 1261  005032  005037  005074        SUBTEN:   CLR     DIGIT           ;CLEAR DIGIT
 1262  005036  163701  005076        SUBTNA:   SUB     TENPWR,%1       ;SUBTRACT TEN POWER FROM BINARY VALUE.
 1263  005042  103403                          BCS     SUBTNB          ;BRANCH IF UNSUCCESSFUL SUBTRAC ION.
 1264  005044  005237  005074                  INC     DIGIT
 1265  005050  000772                          BR      SUBTNA
 1266  005052  063701  005076        SUBTNB:   ADD     TENPWR,%1       ;RESTORE SUBTRACTED VALUE.
 1267  005056  062737  000060  005074          ADD     #60,DIGIT       ;CONVERT (DIGIT) TO ASCII
 1268  005064  113720  005074                  MOVB    DIGIT,(0)+      ;MOVE ASCII CHAR TO DECVAL FIELD.
 1269  005070  000207                          RTS     %7              ;EXIT.
 1270  005072  000000                CNVCTR:   OPEN
 1271  005074  000000                DIGIT:    OPEN
 1272  005076  000000                TENPWR:   OPEN
 1273  005100  023420                ADTENP:   10000.
 1274  005102  001750                          1000.
 1275  005104  000144                          100.
 1276  005106  000012                          10.
 1277  005110  000001                          1
 1278  005112    040     040     040   DECVAL: .BYTE   040,040,040,040,040,040
 1279  005115    040     040     040
 1280  005120  042777  000002  174262  DATTST: BIC     #BIT1,@RXCSR    ;CLEAR DATA TERM. READY
 1281  005126  052777  000004  174260          BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT
 1282  005134  012737  000144  001566          MOV     #100.,CTR0      ;GET CHARACTER COUNT
 1283  005142  105777  174246        DATAA:    TSTB    @TXCSR          ;WAIT FOR
 1284  005146  100375                          BPL     .-4             ;READY FLAG
 1285  005150  004737  004556                  JSR     7,GTBINP        ;GET CHARACTER
 1286  005154  110137  001562                  MOVB    %1,CRBUFA       ;MOVE CHARACTER
 1287  005160  004737  005530                  JSR     7,MASKIT        ;MASK OFF NON TRANSMITTED BITS
 1288  005164  110177  174226                  MOVB    %1,@TXBUF       ;TRANSMIT CHARACTER
```

```
 1289  005170  105777  174214                 TSTB    @RXCSR          ;WAIT FOR
 1290  005174  100375                         BPL     .-4             ;DONE FLAG
 1291  005176  117737  174210  001560         MOVB    @RXBUF,CRBUF    ;GET RECEIVED CHARACTER
 1292  005204  104004                         DATCHK                  ;CHK DATA
 1293  005206  005337  001566                 DEC     CTRO            ;DECREMENT CHARACTER COUNT
 1294  005212  001353                         BNE     DATAA
 1295  005214  005726                         TST     (6)+            ;POP STACK
 1296  005216  104012                         SCOPE
 1297                                  ;
 1298  005220  104000                 SETSR:  TYPE                    ;TYPE SELECT OPTION MESSAGE.
 1299  005222  016763                         ASETSR
 1300  005224  105777  174200         CHGH8:  TSTB    @TKS            ;SEE IF ANY INPUT
 1301  005230  100375                         BPL     CHGH8           ;WAIT FOR INPUT
 1302  005232  000207                         RTS     %7              ;EXIT.
 1303  005234  104000                 INCRTN: TYPE                    ;TYPE INCORRECT ROUTINE SELECTED.
 1304  005236  017105                         AINCRT
 1305  005240  000000                         HALT                    ;COMMON HALT.
 1306  005242  000207                         RTS     %7              ;EXIT.
 1307  005244  104000                 INCRPG: TYPE
 1308  005246  017226                         AINCPG
 1309  005250  000000                         HALT
 1310  005252  000137  002136                 JMP     START
 1311  005256  005037  001614         PRGEND: CLR     FOUNDV
 1312  005262  032777  020000  172700         BIT     #BIT13,@SRPTR   ;INHIBIT PRINT SET?
 1313  005270  001026                         BNE     PRGEXT          ;BR IF SET
 1314  005272  004537  004734                 JSR     %5,BDCNV
 1315  005276  001640                         PASCNT
 1316  005300  017276                         APCNT
 1317  005302  000006                         6
 1318  005304  004537  004624                 JSR     %5,OACNV        ;CONVERT LINE NUMBER
 1319  005310  001616                         LINENO
 1320  005312  017316                         ACLIN
 1321  005314  000002                         2
 1322  005316  004537  004624                 JSR     %5,OACNV        ;CONVERT RXCSR
 1323  005322  001410                         RXCSR
 1324  005324  017332                         APRXC
 1325  005326  000006                         6
 1326  005330  004537  004624                 JSR     %5,OACNV        ;CONVERT VECTOR
 1327  005334  001420                         RXVTR
 1328  005336  017353                         APVEC
 1329  005340  000004                         4
 1330  005342  104000                         TYPE                    ;TYPE PROGRAM END.
 1331  005344  017261                         APGEND
 1332  005346  032777  010000  172614 PRGEXT: BIT     #BIT12,@SRPTR   ;LOCK ON LINE
 1333  005354  001403                         BEQ     PRGXT1          ;BR IF NOT SET
 1334  005356  005237  001640                 INC     PASCNT
 1335  005362  000425                         BR      PRGXTL
 1336  005364  013737  001616  001620 PRGXT1: MOV     LINENO,TEMP     ;GET LINENO
 1337  005372  006337  001620                 ASL     TEMP
 1338  005376  062737  000002  001620 PRGEC:  ADD     #2,TEMP         ;UPDATE LINE NUMBER
 1339  005404  013701  001620         PRGEA:  MOV     TEMP,%1
 1340  005410  016101  001200                 MOV     RXCRO(1),%1     ;GET RXCSR DEVICE ADDRESS
 1341  005414  022701  177777                 CMP     #177777,%1      ;LAST ONE
 1342  005420  001023                         BNE     PRGEB           ;NO,CONTINUE
 1343  005422  005237  001640                 INC     PASCNT
 1344  005426  005037  001616                 CLR     LINENO
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1345  005432  005037  001620                  CLR     TEMP
1346  005436  013705  000042          PRGXTL: MOV     @#42,%5
1347  005442  001405                          BEQ     CONT
1348  005444  000005                          RESET
1349  005446  004715                  LOGIC:  JSR     7,(5)
1350  005450  000240                          NOP
1351  005452  000240                          NOP
1352  005454  000240                          NOP
1353  005456  032777  010000  172504  CONT:   BIT     #BIT12,@SRPTR   ;LOCK ON LINE
1354  005464  001747                          BEQ     PRGEA           ;BRANCH IF NOT SET
1355  005466  000207                          RTS     7
1356  005470  032701  000001          PRGEB:  BIT     #BIT0,%1        ;DEVICE THERE
1357  005474  001340                          BNE     PRGEC           ;NO
1358  005476  006237  001620                  ASR     TEMP
1359  005502  013737  001620  001616          MOV     TEMP,LINENO
1360  005510  004737  006226                  JSR     %7,FORMAD
1361  005514  000207                          RTS     %7              ;EXIT.
1362                                  ;
1363                                  ;CONDITIONAL ERROR HALT ROUTINE.
1364  005516  005777  172446          EHLT:   TST     @SRPTR          ;CHECK FOR HALT ON ERROR.
1365  005522  100001                          BPL     EHLTA           ;BRANCH IF NO HALT DESIRED.
1366  005524  000000                          HALT                    ;HALT.
1367  005526  000002          EHLTA:  RTI                             ;IN DATA LIGHTS.
1368                                  ;
1369                                  ;MASKIT - MASK DATA ACCORDING TO LINE NUMBER
1370  005530  013737  001402  001404  MASKIT: MOV     UMASK,RMASK     ;GET MASK
1371  005536  042737  177000  001404          BIC     #177000,RMASK   ;REMOVE C/D FLAG+PRIORITY
1372  005544  005137  001404                  COM     RMASK
1373  005550  043737  001404  001562          BIC     RMASK,CRBUFA    ;MASK DESIRED BITS
1374  005556  000207                          RTS     7
1375                                  ;
1376                                  ;DATA CHECK ROUTINE, TEST ERROR BITS
1377  005560  017737  173626  001564  DTCHK:  MOV     @RXBUF,CRBUFB   ;DID ANY ERROR BITS SET
1378  005566  032737  170000  001564          BIT     #170000,CRBUFB
1379  005574  001004                          BNE     DTCHKX          ;YES, TYPE ERROR
1380  005576  023737  001560  001562          CMP     CRBUF,CRBUFA    ;COMPARE EXPECTED AND RECEIVED
1381  005604  001421                          BEQ     DTCHKA          ;CHARS. BRANCH IF SAME.
1382  005606  004537  004624          DTCHKX: JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
1383  005612  001560                          CRBUF                   ;SOURCE ADDR.
1384  005614  016740                          AWAS                    ;DESTINATION ADDR.
1385  005616  000003                          3                       ;#OF DIGITS TO CONVERT.
1386  005620  004537  004624                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
1387  005624  001562                          CRBUFA                  ;SOURCE ADDR.
1388  005626  016727                          AASB                    ;DESTINATION ADDR.
1389  005630  000003                          3                       ;#OF DIGITS TO CONVERT.
1390  005632  004537  004624                  JSR     %5,OACNV
1391  005636  001564                          CRBUFB
1392  005640  016753                          ARXBUF
1393  005642  000006                          6
1394  005644  104015                          ERROR1
1395  005646  016715                          ERDAT
1396  005650  000002          DTCHKA: RTI
1397                                  ;
1398                                  ;ERROR HANDLER
1399  005652  012737  177777  006022  ERR:    MOV     #-1,ERRB        ;SET UP ONE MESSAGE CALL.
1400  005660  012737  000240  006024          MOV     #240,ERRB+2
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 1401  005666  005037  006040                    CLR     ERRE
 1402  005672  000413                            BR      ERRA
 1403  005674  011637  006022          ERR1:     MOV     @%6,ERRB        ;DEVELOP ADDT'L MESSAGE ADDR.
 1404  005700  017737  000116  006022            MOV     @ERRB,ERRB      ;STORE AT ERRB.
 1405  005706  012737  177777  006024            MOV     #-1,ERRB+2
 1406  005714  012737  000002  006040            MOV     #2,ERRE
 1407  005722  032777  020000  172240  ERRA:     BIT     #BIT13,@SRPTR   ;INHIBIT ERROR PRINT?
 1408  005730  001036                            BNE     ERRC            ;BRANCH TO INHIBIT PRINT.
 1409  005732  011637  006036                    MOV     @%6,ERRD        ;DEVELOP CALLING ADDR.
 1410  005736  162737  000002  006036            SUB     #2,ERRD
 1411  005744  013737  001456  001460            MOV     RTNNO,TNNO
 1412  005752  042737  100000  001460            BIC     #BIT15,TNNO
 1413  005760  004537  004624                    JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
 1414  005764  006036                            ERRD                    ;SOURCE ADDR.
 1415  005766  016104                            APC                     ;DESTINATION ADDR.
 1416  005770  000006                            6                       ;#OF DIGITS TO CONVERT.
 1417  005772  004537  004624                    JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
 1418  005776  001410                            RXCSR                   ;SOURCE ADDR.
 1419  006000  016123                            MRXNUM                  ;DESTINATION ADDR.
 1420  006002  000006                            6                       ;#OF DIGITS TO CONVERT.
 1421  006004  004537  004624                    JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
 1422  006010  001456                            RTNNO                   ;SOURCE ADDR.
 1423  006012  016074                            ATNUMB                  ;DESTINATION ADDR.
 1424  006014  000003                            3                       ;#OF DIGITS TO CONVERT.
 1425  006016  104001                            TYPES                   ;TYPE:
 1426  006020  016072                            EMO                     ;ERROR HEADER.
 1427  006022  000000          ERRB:     OPEN                            ;ADDT'L ERROR MESSAGE IF ANY.
 1428  006024  177777                            -1
 1429  006026  104010          ERRC:     EHALT                           ;GO ERR HALT IF DESIRED.
 1430  006030  063716  006040                    ADD     ERRE,@%6
 1431  006034  000002                            RTI                     ;EXIT.
 1432  006036  000000          ERRD:     OPEN
 1433  006040  000000          ERRE:     OPEN
 1434                                    ;
 1435                                    ;ERROR TRAP HANDLER - TYPE TO AND FROM WHERE ERROR TRAP OCCURRED
 1436  006042  013737  177776  001470  ERTP:     MOV     PSW,OLDPS       ;SAVE OLD STATUS
 1437  006050  012737  000340  177776            MOV     #PRTY7,PSW
 1438  006056  006237  001470                    ASR     OLDPS
 1439  006062  006237  001470                    ASR     OLDPS
 1440  006066  006237  001470                    ASR     OLDPS
 1441  006072  042737  177740  001470            BIC     #177740,OLDPS
 1442  006100  013737  001470  001634            MOV     OLDPS,TOPC
 1443  006106  011637  001636                    MOV     @%6,FROMPC      ;GET FROM PC
 1444  006112  004537  004624          ERTPA:    JSR     %5,OACNV
 1445  006116  001634                            TOPC
 1446  006120  020034                            MTO
 1447  006122  000006                            6
 1448  006124  004537  004624                    JSR     %5,OACNV
 1449  006130  001636                            FROMPC
 1450  006132  020066                            MFROM
 1451  006134  000006                            6
 1452  006136  104000                            TYPE
 1453  006140  017767                            MTERR
 1454  006142  000000                            HALT
 1455  006144  000137  002136                    JMP     START
 1456                                    ;
```

```
1457                                    ;MAPVEC - MAP VECTOR OR REPORT ERROR DEPENDING ON FMAP FLAG
1458  006150  011637  001634            MAPVEC: MOV     @%6,TOPC
1459  006154  022626                            POPSP2
1460  006156  011637  001636                    MOV     @%6,FROMPC
1461  006162  162737  000004  001634            SUB     #4,TOPC
1462  006170  005737  001472                    TST     FMAP
1463  006174  001746                            BEQ     ERTPA           ;NOT MAPPING, REPORT ERROR
1464  006176  013737  001634  001424            MOV     TOPC,TXVTR      ;STORE VECTOR
1465  006204  162737  000004  001634            SUB     #4,TOPC
1466  006212  013737  001634  001420            MOV     TOPC,RXVTR
1467  006220  005037  001472                    CLR     FMAP
1468  006224  000002                            RTI
1469                                    ;
1470                                    ;FORMAD-FORM DEVICE AT ADDRESSES
1471  006226  010137  001410            FORMAD: MOV     %1,RXCSR
1472  006232  062701  000002                    ADD     #2,%1
1473  006236  010137  001412                    MOV     %1,RXBUF
1474  006242  062701  000002                    ADD     #2,%1
1475  006246  010137  001414                    MOV     %1,TXCSR
1476  006252  062701  000002                    ADD     #2,%1
1477  006256  010137  001416                    MOV     %1,TXBUF
1478  006262  013737  001616  001620            MOV     LINENO,TEMP     ;GET PRIORITY
1479  006270  006337  001620                    ASL     TEMP
1480  006274  062737  001302  001620            ADD     #CMAS0,TEMP
1481  006302  017737  173312  001622            MOV     @TEMP,TEMP1
1482  006310  013737  001622  001402            MOV     TEMP1,UMASK
1483  006316  000337  001622                    SWAB    TEMP1
1484  006322  006337  001622                    ASL     TEMP1
1485  006326  042737  177437  001622            BIC     #177437,TEMP1
1486  006334  013737  001622  001422            MOV     TEMP1,RXLVL
1487  006342  013737  001622  001426            MOV     TEMP1,TXLVL
1488  006350  000207                            RTS     %7
1489                                    ;
1490                                    ;DOTHIS - SELECTABLE TEST DECISION MAKER
1491                                    ;
1492  006352  032777  001000  171610    DOTHIS: BIT     #BIT9,@SRPTR    ;IS SELECT TEST SWITCH SET
1493  006360  001002                            BNE     GOBACK          ;RETURN TO TEST IF SW SET
1494  006362  000137  002502                    JMP     GTRDYX          ;GO TO NEXT TEST
1495  006366  000207                    GOBACK: RTS     %7
1496                                    ;
1497  006370  012737  006400  000024    PFAIL:  MOV     #PWRUP,24
1498  006376  000000                            HALT
1499  006400  012737  006370  000024    PWRUP:  MOV     #PFAIL,24
1500  006406  000005                            RESET
1501  006410  012706  001176                    MOV     #SPBOT,%6
1502  006414  104000                            TYPE
1503  006416  020263                            MPWRF
1504  006420  104003                            ERROR
1505  006422  000452                            BR      RESTART
1506                                    ;
1507                                    ;DECIDE IF VECTOR TO BE MAPPED AND MAP
1508  006424  022737  000000  001614    TSTVEC: CMP     #0,FOUNDV       ;NEED VECTOR MAPPING
1509  006432  001045                            BNE     TSTVEX          ;NO, EXIT
1510  006434  004737  003614                    JSR     %7,OVRLAY
1511  006440  005037  001420                    CLR     RXVTR
1512  006444  005037  177776                    CLR     PSW
```

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1513  006450  052737  000001  001472          BIS     #BIT0,FMAP      ;SET MAPPING FLAG
1514  006456  042777  000100  172730          BIC     #BIT6,@TXCSR    ;CAUSE INTERRUPT
1515  006464  052777  000100  172722          BIS     #BIT6,@TXCSR
1516  006472  000240                          NOP
1517  006474  000240                          NOP
1518  006476  005737  001420                  TST     RXVTR           ;DID TRAP OCCUR?
1519  006502  001011                          BNE     TSTVA           ;YES, OK
1520  006504  032777  020000  171456          BIT     #BIT13,@SRPTR
1521  006512  001344                          BNE     TSTVEC
1522  006514  104000                          TYPE                    ;NO, ERROR
1523  006516  020145                          INTER
1524  006520  104003                          ERROR
1525  006522  000137  006424                  JMP     TSTVEC
1526  006526  042777  000100  172660  TSTVA:  BIC     #BIT6,@TXCSR
1527  006534  012737  000340  177776          MOV     #PRTY7,PSW      ;RAISE PRIORITY, RETURN
1528  006542  005237  001614                  INC     FOUNDV
1529  006546  000207                  TSTVEX: RTS     %7
1530                                  ;
1531                                  ;RESTART ROUTINE
1532  006550  013700  001450          RESTART:MOV     PRGNUM,%0
1533  006554  006300                          ASL     %0
1534  006556  000170  006562                  JMP     @RSTART(0)      ;GO RESTART SELECTED PROGRAM
1535
1536  006562  006640                  RSTART: PRG0A                   ;PROGRAM 0 RESTART ADDRESS
1537  006564  014706                          PRG1A                   ;PROGRAM 1 RESTART ADDRESS
1538  006566  014760                          PRG2A                   ;PROGRAM 2 RESTART ADDRESS
1539  006570  015056                          PRG3A                   ;PROGRAM 3 RESTART ADDRESS
1540  006572  015106                          PRG4A                   ;PROGRAM 4 RESTART ADDRESS
1541  006574  005244                          INCRPG
1542  006576  005244                          INCRPG
1543  006600  005244                          INCRPG
1544
1545                                  ;
1546                                  ;PRG0 - INPUT-OUTPUT LOGIC TESTS
1547                                  ;
1548  006602  012737  006644  001452  PRG0:   MOV     #AT0,KSTART
1549  006610  005737  000042                  TST     @#42            ;MONITOR LOAD
1550  006614  001007                          BNE     PRG0B           ;YES, START TEST
1551  006616  104000                          TYPE                    ;TYPE TITLE AND INSTRUCTIONS
1552  006620  016134                          POTIT
1553  006622  105777  172602          CHGH9:  TSTB    @TKS            ;SEE IF ANY INPUT
1554  006626  100375                          BPL     CHGH9           ;WAIT FOR INPUT
1555  006630  004737  005220                  JSR     7,SETSR
1556  006634  004537  004244          PRG0B:  JSR     5,LINSEL        ;GO GET LINE # FROM USER
1557  006640  000137  002474          PRG0A:  JMP     GETRDY          ;GET STARTED.
1558          177777                          X=-1
1559  006644                                  TSTA    1000.,AA,CD
1560  006644                                  TSTAA   AA,1000.,\X+1+CD,\X+2,\X+1
1561                                  ;*****************************************************************************
1562  006644  100000                  AT0:    100000                  ;TEST NUMBER                                *
1563  006646  006676                          AT1                     ;ADDRESS OF NEXT TEST                       *
1564  006650  001750                          1000.                   ;ITERATION COUNT                            *
1565  006652  006654                          AAA                     ;SCOPE ENTRY POINT                          *
1566          000000                          X=X+1                   ;                                           *
1567                                  ;*****************************************************************************
1568                                  ;TEST ABILITY TO REFERENCE RECEIVER CSR WITHOUT TRAPPING
```

```
1569  006654  012737  006670  000004  AAA:    MOV     #AAE,MACHER     ;SET UP MACHINE ERROR TRAP.
1570  006662  005077  172522                  CLR     @RXCSR          ;REFERENCE RXCSR
1571  006666  104012                  AAB:    SCOPE                   ;OK IF NO TRAP. SCOPE
1572  006670  022626                  AAE:    POPSP2
1573  006672  104003                          ERROR                   ;TRAPPED WHEN REFERENCING RXCSR.
1574  006674  000774                          BR      AAB
1575  006676                                  TSTA    1000.,AB,CD
1576  006676                                  TSTAA   AB,1000.,\X+1+CD,\X+2,\X+1
1577                                  ;*****************************************************************************
1578  006676  100001                  AT1:    100001                  ;TEST NUMBER                              *
1579  006700  006736                          AT2                     ;ADDRESS OF NEXT TEST                     *
1580  006702  001750                          1000.                   ;ITERATION COUNT                          *
1581  006704  006706                          ABA                     ;SCOPE ENTRY POINT                        *
1582          000001                          X=X+1                   ;                                         *
1583                                  ;*****************************************************************************
1584                                  ;TEST ABILITY TO REFERENCE RECEIVER BUFFER WITHOUT TRAPPING
1585  006706  012737  006730  000004  ABA:    MOV     #ABE,MACHER     ;SET UP MACHINE ERROR TRAP.
1586  006714  005737  002110                  TST     @#XORFLG
1587  006720  100402                          BMI     ABB
1588  006722  005777  172464                  TST     @RXBUF          ;REFERENCE RXBUF
1589  006726  104012                  ABB:    SCOPE                   ;OK IF NO TRAP SCOPE
1590  006730  022626                  ABE:    POPSP2
1591  006732  104003                          ERROR                   ;TRAPPED WHEN REFERENCING RXBUF
1592  006734  000774                          BR      ABB
1593  006736                                  TSTA    1000.,AC,CD
1594  006736                                  TSTAA   AC,1000.,\X+1+CD,\X+2,\X+1
1595                                  ;*****************************************************************************
1596  006736  100002                  AT2:    100002                  ;TEST NUMBER                              *
1597  006740  006770                          AT3                     ;ADDRESS OF NEXT TEST                     *
1598  006742  001750                          1000.                   ;ITERATION COUNT                          *
1599  006744  006746                          ACA                     ;SCOPE ENTRY POINT                        *
1600          000002                          X=X+1                   ;                                         *
1601                                  ;*****************************************************************************
1602                                  ;TEST ABILITY TO REFERENCE TRANSMITTER CSR WITHOUT TRAPPING.
1603  006746  012737  006762  000004  ACA:    MOV     #ACE,MACHER     ;SET UP MACHINE ERROR TRAP.
1604  006754  005777  172434                  TST     @TXCSR          ;REFERENCE TXCSR
1605  006760  104012                  ACB:    SCOPE                   ;SCOPE
1606  006762  022626                  ACE:    POPSP2
1607  006764  104003                          ERROR                   ;TRAPPED WHEN REFERENCING TXCSR
1608  006766  000774                          BR      ACB
1609  006770                                  TSTA    1000.,AD,CD
1610  006770                                  TSTAA   AD,1000.,\X+1+CD,\X+2,\X+1
1611                                  ;*****************************************************************************
1612  006770  100003                  AT3:    100003                  ;TEST NUMBER                              *
1613  006772  007022                          AT4                     ;ADDRESS OF NEXT TEST                     *
1614  006774  001750                          1000.                   ;ITERATION COUNT                          *
1615  006776  007000                          ADA                     ;SCOPE ENTRY POINT                        *
1616          000003                          X=X+1                   ;                                         *
1617                                  ;*****************************************************************************
1618                                  ;TEST ABILITY TO REFERENCE TRANSMITTER BUFFER WITHOUT TRAPPING
1619  007000  012737  007014  000004  ADA:    MOV     #ADE,MACHER     ;SET UP MACHINE ERROR TRAP.
1620  007006  005777  172404                  TST     @TXBUF          ;REFERENCE TX BUF.
1621  007012  104012                  ADB:    SCOPE                   ;SCOPE
1622  007014  022626                  ADE:    POPSP2
1623  007016  104003                          ERROR                   ;TRAPPED WHEN REFERENCING TXBUF
1624  007020  000774                          BR      ADB
```

```
 1625  007022                                  TSTA    10.,AE,CD
 1626  007022                                  TSTAA   AE,10.,\X+1+CD,\X+2,\X+1
 1627                                  ;*****************************************************************************
 1628  007022  100004                 AT4:    100004                  ;TEST NUMBER                              *
 1629  007024  007122                         AT5                     ;ADDRESS OF NEXT TEST                     *
 1630  007026  000012                         10.                     ;ITERATION COUNT                          *
 1631  007030  007032                         AEA                     ;SCOPE ENTRY POINT                        *
 1632          000004                         X=X+1                   ;                                         *
 1633                                  ;*****************************************************************************
 1634                                  ;TEST THAT TXCSR BIT 0 (BREAK) CAN BE SET AND CLEARED
 1635                                  ;AND THAT RESET CLEARS IT
 1636  007032  032777  000001  172354 AEA:    BIT     #BIT0,@TXCSR    ;SEE IF BIT IS CLEAR
 1637  007040  001402                         BEQ     AEB             ;BR IF CLEAR
 1638  007042  104003                         ERROR                   ;RESET DID NOT CLEAR IT
 1639  007044  000421                         BR      AED
 1640  007046  052777  000001  172340 AEB:    BIS     #BIT0,@TXCSR    ;SET TXCSR BIT 0
 1641  007054  032777  000001  172332        BIT     #BIT0,@TXCSR    ;DID IT SET
 1642  007062  001002                         BNE     AEC             ;YES, GO ON
 1643  007064  104003                         ERROR                   ;TXCSR BIT0 FAILED TO SET
 1644  007066  000410                         BR      AED
 1645  007070  042777  000001  172316 AEC:    BIC     #BIT0,@TXCSR    ;CLEAR TXCSR BIT 0
 1646  007076  032777  000001  172310        BIT     #BIT0,@TXCSR    ;DID IT CLEAR
 1647  007104  001401                         BEQ     AED
 1648  007106  104003                         ERROR                   ;TXCSR BIT 0 DID NOT CLEAR
 1649  007110  052777  000001  172276 AED:    BIS     #BIT0,@TXCSR
 1650  007116  104011                         SRESET                  ;ISSUE RESET TO CLEAR
 1651  007120  104012                         SCOPE
 1652  007122                                  TSTA    10.,AG,CD
 1653  007122                                  TSTAA   AG,10.,\X+1+CD,\X+2,\X+1
 1654                                  ;*****************************************************************************
 1655  007122  100005                 AT5:    100005                  ;TEST NUMBER                              *
 1656  007124  007222                         AT6                     ;ADDRESS OF NEXT TEST                     *
 1657  007126  000012                         10.                     ;ITERATION COUNT                          *
 1658  007130  007132                         AGA                     ;SCOPE ENTRY POINT                        *
 1659          000005                         X=X+1                   ;                                         *
 1660                                  ;*****************************************************************************
 1661                                  ;TEST THAT TXCSR BIT2 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
 1662  007132  032777  000004  172254 AGA:    BIT     #BIT2,@TXCSR    ;SEE IF TXCSR BIT2 IS CLEAR.
 1663  007140  001402                         BEQ     AGB             ;BRANCH IF BIT IS CLEAR.
 1664  007142  104003                         ERROR                   ;RESET DID NOT CLEAR TXCSR BIT2
 1665  007144  000421                         BR      AGD
 1666  007146  052777  000004  172240 AGB:    BIS     #BIT2,@TXCSR    ;SET TXCSR BIT2.
 1667  007154  032777  000004  172232        BIT     #BIT2,@TXCSR    ;SEE IF BIT IS SET.
 1668  007162  001002                         BNE     AGC             ;BRANCH IF BIT IS SET.
 1669  007164  104003                         ERROR                   ;TXCSR BIT2 FAILED TO SET.
 1670  007166  000410                         BR      AGD
 1671  007170  042777  000004  172216 AGC:    BIC     #BIT2,@TXCSR    ;CLEAR TXCSR BIT2
 1672  007176  032777  000004  172210        BIT     #BIT2,@TXCSR    ;SEE IF BIT IS CLEAR.
 1673  007204  001401                         BEQ     AGD
 1674  007206  104003                         ERROR                   ;TXCSR BIT2 FAILED TO CLEAR.
 1675  007210  052777  000004  172176 AGD:    BIS     #BIT2,@TXCSR    ;SET TXCSR BIT2.
 1676  007216  104011                         SRESET                  ;ISSUE RESET TO CLEAR BIT.
 1677  007220  104012                         SCOPE                   ;SCOPE
 1678  007222                                  TSTA    10.,AJ,CD
 1679  007222                                  TSTAA   AJ,10.,\X+1+CD,\X+2,\X+1
 1680                                  ;*****************************************************************************
```

```
1681  007222  100006                  AT6:    100006                  ;TEST NUMBER                    *
1682  007224  007330                          AT7                     ;ADDRESS OF NEXT TEST           *
1683  007226  000012                          10.                     ;ITERATION COUNT                *
1684  007230  007232                          AJA                     ;SCOPE ENTRY POINT              *
1685          000006                          X=X+1                   ;                               *
1686                                  ;*******************************************************************
1687                                  ;TEST THAT TXCSR BIT6 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1688  007232  012737  000340  177776  AJA:    MOV     #PRTY7,PSW      ;SET PRIORITY 7.
1689  007240  032777  000100  172146          BIT     #BIT6,@TXCSR    ;SEE IF TXCSR BIT6 IS CLEAR.
1690  007246  001402                          BEQ     A.B             ;BRANCH IF BIT IS CLEAR.
1691  007250  104003                          ERROR                   ;RESET DID NOT CLEAR TXCSR BIT6
1692  007252  000421                          BR      AJD
1693  007254  052777  000100  172132  AJB:    BIS     #BIT6,@TXCSR    ;SET TXCSR BIT6.
1694  007262  032777  000100  172124          BIT     #BIT6,@TXCSR    ;SEE IF BIT IS SET.
1695  007270  001002                          BNE     AJC             ;BRANCH IF BIT IS SET.
1696  007272  104003                          ERROR                   ;TXCSR BIT6 FAILED TO SET.
1697  007274  000410                          BR      AJD
1698  007276  042777  000100  172110  AJC:    BIC     #BIT6,@TXCSR    ;CLEAR TXCSR BIT6
1699  007304  032777  000100  172102          BIT     #BIT6,@TXCSR    ;SEE IF BIT IS CLEAR.
1700  007312  001401                          BEQ     AJD
1701  007314  104003                          ERROR                   ;TXCSR BIT6 FAILED TO CLEAR.
1702  007316  052777  000100  172070  AJD:    BIS     #BIT6,@TXCSR    ;SET TXCSR BIT6.
1703  007324  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1704  007326  104012                          SCOPE                   ;SCOPE
1705  007330                                  TSTA    100.,AK,CD
1706  007330                                  TSTAA   AK,100.,\X+1+CD,\X+2,\X+1
1707                                  ;*******************************************************************
1708  007330  100007                  AT7:    100007                  ;TEST NUMBER                    *
1709  007332  007354                          AT10                    ;ADDRESS OF NEXT TEST           *
1710  007334  000144                          100.                    ;ITERATION COUNT                *
1711  007336  007340                          AKA                     ;SCOPE ENTRY POINT              *
1712          000007                          X=X+1                   ;                               *
1713                                  ;*******************************************************************
1714                                  ;TEST THAT TXCSR BIT 7 (READY BIT) IS SET UPON ENTERING ROUTINE AND
1715                                  ;THAT IT CAN BE READ RELIABLY.
1716  007340  105777  172050          AKA:    TSTB    @TXCSR                  ;SEE IF TXCSR BIT 7 IS SET.
1717  007344  100402                          BMI     AKB                     ;BRANCH IF SET.
1718  007346  104003                          ERROR                           ;TXCSR BIT 7 NOT SET.
1719  007350  104011                          SRESET                          ;ISSUE RESET TO CLEAR BIT IF ERROR
1720  007352  104012                  AKB:    SCOPE                           ;SCOPE
1721  007354                                  TSTA    100.,AL,0
1722  007354                                  TSTAA   AL,100.,\X+1+0,\X+2,\X+1
1723                                  ;*******************************************************************
1724  007354  000010                  AT10:   10                      ;TEST NUMBER                    *
1725  007356  007436                          AT11                    ;ADDRESS OF NEXT TEST           *
1726  007360  000144                          100.                    ;ITERATION COUNT                *
1727  007362  007364                          ALA                     ;SCOPE ENTRY POINT              *
1728          000010                          X=X+1                   ;                               *
1729                                  ;*******************************************************************
1730                                  ;TEST THAT RXCSR BIT 1 CAN BE SET + CLEARED
1731  007364  042777  000002  172016  ALA:    BIC     #BIT1,@RXCSR
1732  007372  052777  000002  172010          BIS     #BIT1,@RXCSR            ;SET RXCSR BIT1
1733  007400  032777  000002  172002          BIT     #BIT1,@RXCSR            ;SEE IF BIT IS SET
1734  007406  001002                          BNE     ALY                     ;BRANCH IF SET
1735  007410  104003                          ERROR                           ;RXCSR BIT 1 FAILED TO SET
1736  007412  000410                          BR      ALZ
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1737  007414  042777  000002  171766  ALY:    BIC     #BIT1,@RXCSR            ;CLEAR RXCSR BIT 1
1738  007422  032777  000002  171760          BIT     #BIT1,@RXCSR            ;SEE IF BIT IS CLEAR
1739  007430  001401                          BEQ     ALZ
1740  007432  104003                          ERROR                           ;RXCSR BIT 1 FAILED TO CLEAR
1741  007434  104012                  ALZ:    SCOPE                           ;SCOPE
1742  007436                                  TSTA    10.,AP,0
1743  007436                                  TSTAA   AP,10.,\X+1+0,\X+2,\X+1
1744                                  ;*****************************************************************************
1745  007436  000011                  AT11:   11                      ;TEST NUMBER                              *
1746  007440  007536                          AT12                    ;ADDRESS OF NEXT TEST                     *
1747  007442  000012                          10.                     ;ITERATION COUNT                          *
1748  007444  007446                          APA                     ;SCOPE ENTRY POINT                        *
1749           000011                         X=X+1                   ;                                         *
1750                                  ;*****************************************************************************
1751                                  ;TEST THAT RXCSR BIT2 IS CLEAR AND CAN BE READ RELIABLY.
1752  007446  032777  000004  171734  APA:    BIT     #BIT2,@RXCSR    ;SEE IF RXCSR BIT2 IS CLEAR.
1753  007454  001402                          BEQ     APB             ;BRANCH IF BIT IS CLEAR.
1754  007456  104003                          ERROR                   ;RXCSR BIT2 IS NOT CLEAR.
1755  007460  000421                          BR      APD
1756  007462  052777  000004  171720  APB:    BIS     #BIT2,@RXCSR    ;SET RXCSR BIT2
1757  007470  032777  000004  171712          BIT     #BIT2,@RXCSR    ;SEE IF BIT IS SET
1758  007476  001002                          BNE     APCX            ;BRANCH IF SET
1759  007500  104003                          ERROR                   ;RXCSR BIT2 FAILED TO SET
1760  007502  000410                          BR      APD
1761  007504  042777  000004  171676  APCX:   BIC     #BIT2,@RXCSR    ;CLEAR RXCSR BIT2
1762  007512  032777  000004  171670          BIT     #BIT2,@RXCSR    ;SEE IF BIT IS CLEAR
1763  007520  001401                          BEQ     APD
1764  007522  104003                          ERROR                   ;RXCSR BIT2 FAILED TO CLEAR
1765  007524  052777  000004  171656  APD:    BIS     #BIT2,@RXCSR    ;SET BIT
1766  007532  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT
1767  007534  104012                          SCOPE
1768  007536                                  TSTA    10.,AQ,0
1769  007536                                  TSTAA   AQ,10.,\X+1+0,\X+2,\X+1
1770                                  ;*****************************************************************************
1771  007536  000012                  AT12:   12                      ;TEST NUMBER                              *
1772  007540  007636                          AT13                    ;ADDRESS OF NEXT TEST                     *
1773  007542  000012                          10.                     ;ITERATION COUNT                          *
1774  007544  007546                          AQA                     ;SCOPE ENTRY POINT                        *
1775           000012                         X=X+1                   ;                                         *
1776                                  ;*****************************************************************************
1777                                  ;TEST THAT RXCSR BIT3 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1778  007546  032777  000010  171634  AQA:    BIT     #BIT3,@RXCSR    ;SEE IF RXCSR BIT3 IS CLEAR.
1779  007554  001402                          BEQ     AQB             ;BRANCH IF BIT IS CLEAR.
1780  007556  104003                          ERROR                   ;RESET DID NOT CLEAR RXCSR BIT3
1781  007560  000421                          BR      AQD
1782  007562  052777  000010  171620  AQB:    BIS     #BIT3,@RXCSR    ;SET RXCSR BIT3.
1783  007570  032777  000010  171612          BIT     #BIT3,@RXCSR    ;SEE IF BIT IS SET.
1784  007576  001002                          BNE     AQC             ;BRANCH IF BIT IS SET.
1785  007600  104003                          ERROR                   ;RXCSR BIT3 FAILED TO SET.
1786  007602  000410                          BR      AQD
1787  007604  042777  000010  171576  AQC:    BIC     #BIT3,@RXCSR    ;CLEAR RXCSR BIT3
1788  007612  032777  000010  171570          BIT     #BIT3,@RXCSR    ;SEE IF BIT IS CLEAR.
1789  007620  001401                          BEQ     AQD
1790  007622  104003                          ERROR                   ;RXCSR BIT3 FAILED TO CLEAR.
1791  007624  052777  000010  171556  AQD:    BIS     #BIT3,@RXCSR    ;SET RXCSR BIT3.
1792  007632  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
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 1793  007634  104012                          SCOPE                   ;SCOPE
 1794  007636                                  TSTA    10.,AR,0
 1795  007636                                  TSTAA   AR,10.,\X+1+0,\X+2,\X+1
 1796
 1797  007636  000013                  AT13:   13                      ;TEST NUMBER                    *
 1798  007640  007744                          AT14                    ;ADDRESS OF NEXT TEST           *
 1799  007642  000012                          10.                     ;ITERATION COUNT                *
 1800  007644  007646                          ARA                     ;SCOPE ENTRY POINT              *
 1801          000013                          X X+1                   ;                               *
 1802
 1803                                  ;TEST THAT RXCSR BIT5 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
 1804  007646  012737  000340  177776  ARA:    MOV     #PRTY7,PSW      ;PRTY7 TO INHIBIT ANY INT
 1805  007654  032777  000040  171526          BIT     #BIT5,@RXCSR    ;SEE IF RXCSR BIT5 IS CLEAR.
 1806  007662  001402                          BEQ     ARB             ;BRANCH IF BIT IS CLEAR.
 1807  007664  104003                          ERROR                   ;RESET DID NOT CLEAR RXCSR BIT5
 1808  007666  000421                          BR      ARD
 1809  007670  052777  000040  171512  ARB:    BIS     #BIT5,@RXCSR    ;SET RXCSR BIT5.
 1810  007676  032777  000040  171504          BIT     #BIT5,@RXCSR    ;SEE IF BIT IS SET.
 1811  007704  001002                          BNE     ARC             ;BRANCH IF BIT IS SET.
 1812  007706  104003                          ERROR                   ;RXCSR BIT5 FAILED TO SET.
 1813  007710  000410                          BR      ARD
 1814  007712  042777  000040  171470  ARC:    BIC     #BIT5,@RXCSR    ;CLEAR RXCSR BIT5
 1815  007720  032777  000040  171462          BIT     #BIT5,@RXCSR    ;SEE IF BIT IS CLEAR.
 1816  007726  001401                          BEQ     ARD
 1817  007730  104003                          ERROR                   ;RXCSR BIT4 FAILED TO CLEAR.
 1818  007732  052777  000040  171450  ARD:    BIS     #BIT5,@RXCSR    ;SET RXCSR BIT5.
 1819  007740  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
 1820  007742  104012                          SCOPE                   ;SCOPE
 1821  007744                                  TSTA    10.,AS,CD
 1822  007744                                  TSTAA   AS,10.,\X+1+CD,\X+2,\X+1
 1823
 1824  007744  100014                  AT14:   100014                  ;TEST NUMBER                    *
 1825  007746  010052                          AT15                    ;ADDRESS OF NEXT TEST           *
 1826  007750  000012                          10.                     ;ITERATION COUNT                *
 1827  007752  007754                          ASA                     ;SCOPE ENTRY POINT              *
 1828          000014                          X=X+1                   ;                               *
 1829
 1830                                  ;TEST THAT RXCSR BIT6 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
 1831  007754  012737  000340  177776  ASA:    MOV     #PRTY7,PSW      ;SET PRIORITY 7.
 1832  007762  032777  000100  171420          BIT     #BIT6,@RXCSR    ;SEE IF RXCSR BIT6 IS CLEAR.
 1833  007770  001402                          BEQ     ASB             ;BRANCH IF BIT IS CLEAR.
 1834  007772  104003                          ERROR                   ;RESET DID NOT CLEAR RXCSR BIT6
 1835  007774  000421                          BR      ASD
 1836  007776  052777  000100  171404  ASB:    BIS     #BIT6,@RXCSR    ;SET RXCSR BIT6.
 1837  010004  032777  000100  171376          BIT     #BIT6,@RXCSR    ;SEE IF BIT IS SET.
 1838  010012  001002                          BNE     ASC             ;BRANCH IF BIT IS SET.
 1839  010014  104003                          ERROR                   ;RXCSR BIT6 FAILED TO SET.
 1840  010016  000410                          BR      ASD
 1841  010020  042777  000100  171362  ASC:    BIC     #BIT6,@RXCSR    ;CLEAR RXCSR BIT6
 1842  010026  032777  000100  171354          BIT     #BIT6,@RXCSR    ;SEE IF BIT IS CLEAR.
 1843  010034  001401                          BEQ     ASD
 1844  010036  104003                          ERROR                   ;RXCSR BIT6 FAILED TO CLEAR.
 1845  010040  052777  000100  171342  ASD:    BIS     #BIT6,@RXCSR    ;SET RXCSR BIT6.
 1846  010046  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
 1847  010050  104012                          SCOPE                   ;SCOPE
 1848  010052                                  TSTA    100.,AT,0
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1849  010052                                  TSTAA   AT,100.,\X+1+0,\X+2,\X+1
1850                                  ;*****************************************************************************
1851  010052  000015                  AT15:   15                      ;TEST NUMBER                              *
1852  010054  010100                          AT16                    ;ADDRESS OF NEXT TEST                     *
1853  010056  000144                          100.                    ;ITERATION COUNT                          *
1854  010060  010062                          ATA                     ;SCOPE ENTRY POINT                        *
1855           000015                         X=X+1                   ;                                         *
1856                                  ;*****************************************************************************
1857                                  ;TEST THAT RXCSR BIT7 IS CLEAR AND CAN BE READ RELIABLY.
1858  010062  032777  000200  171320  ATA:    BIT     #BIT7,@RXCSR    ;SEE IF RXCSR BIT7 IS CLEAR.
1859  010070  001402                          BEQ     ATB             ;BRANCH IF BIT IS CLEAR.
1860  010072  104003                          ERROR                   ;RXCSR BIT7 IS NOT CLEAR.
1861  010074  104011                          SRESET                  ;RESET IF ERROR
1862  010076  104012                  ATB:    SCOPE                   ;SCOPE
1863  010100                                  TSTA    100.,AX,0
1864  010100                                  TSTAA   AX,100.,\X+1+0,\X+2,\X+1
1865                                  ;*****************************************************************************
1866  010100  000016                  AT16:   16                      ;TEST NUMBER                              *
1867  010102  010126                          AT17                    ;ADDRESS OF NEXT TEST                     *
1868  010104  000144                          100.                    ;ITERATION COUNT                          *
1869  010106  010110                          AXA                     ;SCOPE ENTRY POINT                        *
1870           000016                         X=X+1                   ;                                         *
1871                                  ;*****************************************************************************
1872                                  ;TEST THAT RXCSR BIT10 IS CLEAR AND CAN BE READ RELIABLY.
1873  010110  032777  002000  171272  AXA:    BIT     #BIT10,@RXCSR   ;SEE IF RXCSR BIT10 IS CLEAR.
1874  010116  001402                          BEQ     AXB             ;BRANCH IF BIT IS CLEAR.
1875  010120  104003                          ERROR                   ;RXCSR BIT10 IS NOT CLEAR.
1876  010122  104011                          SRESET                  ;RESET BIT IF ERROR
1877  010124  104012                  AXB:    SCOPE                   ;SCOPE
1878  010126                                  TSTA    100.,AY,CD
1879  010126                                  TSTAA   AY,100.,\X+1+CD,\X+2,\X+1
1880                                  ;*****************************************************************************
1881  010126  100017                  AT17:   100017                  ;TEST NUMBER                              *
1882  010130  010154                          AT20                    ;ADDRESS OF NEXT TEST                     *
1883  010132  000144                          100.                    ;ITERATION COUNT                          *
1884  010134  010136                          AYA                     ;SCOPE ENTRY POINT                        *
1885           000017                         X=X+1                   ;                                         *
1886                                  ;*****************************************************************************
1887                                  ;TEST THAT RXCSR BIT11 IS CLEAR AND CAN BE READ RELIABLY.
1888  010136  032777  004000  171244  AYA:    BIT     #BIT11,@RXCSR   ;SEE IF RXCSR BIT11 IS CLEAR.
1889  010144  001402                          BEQ     AYB             ;BRANCH IF BIT IS CLEAR.
1890  010146  104003                          ERROR                   ;RXCSR BIT11 IS NOT CLEAR.
1891  010150  104011                          SRESET                  ;RESET BIT IF ERROR
1892  010152  104012                  AYB:    SCOPE                   ;SCOPE
1893  010154                                  TSTA    100.,AZ,CD
1894  010154                                  TSTAA   AZ,100.,\X+1+CD,\X+2,\X+1
1895                                  ;*****************************************************************************
1896  010154  100020                  AT20:   100020                  ;TEST NUMBER                              *
1897  010156  010202                          AT21                    ;ADDRESS OF NEXT TEST                     *
1898  010160  000144                          100.                    ;ITERATION COUNT                          *
1899  010162  010164                          AZA                     ;SCOPE ENTRY POINT                        *
1900           000020                         X=X+1                   ;                                         *
1901                                  ;*****************************************************************************
1902                                  ;TEST THAT RXCSR BIT14 IS CLEAR AND CAN BE READ RELIABLY.
1903  010164  032777  040000  171216  AZA:    BIT     #BIT14,@RXCSR   ;SEE IF RXCSR BIT14 IS CLEAR.
1904  010172  001402                          BEQ     AZB             ;BRANCH IF BIT IS CLEAR.
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1905  010174  104003                    ERROR                   ;RXCSR BIT14 IS NOT CLEAR.
1906  010176  104011                    SRESET                  ;RESET BIT IF ERROR
1907  010200  104012            AZB:    SCOPE                   ;SCOPE
1908  010202                            TSTA    100.,AAA,CD
1909  010202                            TSTAA   AAA,100.,\X+1+CD,\X+2,\X+1
1910                            ;*****************************************************************************
1911  010202  100021            AT21:   100021                  ;TEST NUMBER                                *
1912  010204  010230                    AT22                    ;ADDRESS OF NEXT TEST                       *
1913  010206  000144                    100.                    ;ITERATION COUNT                            *
1914  010210  010212                    AAAA                    ;SCOPE ENTRY POINT                          *
1915           000021                    X=X+1                   ;                                           *
1916                            ;*****************************************************************************
1917                            ;TEST THAT RXCSR BIT15 IS CLEAR AND CAN BE READ RELIABLY.
1918  010212  032777  100000  171170 AAAA:   BIT     #BIT15,@RXCSR   ;SEE IF RXCSR BIT15 IS CLEAR.
1919  010220  001402                    BEQ     AAAB            ;BRANCH IF BIT IS CLEAR.
1920  010222  104003                    ERROR                   ;RXCSR BIT15 IS NOT CLEAR.
1921  010224  104011                    SRESET                  ;RESET BIT IF ERROR
1922  010226  104012            AAAB:   SCOPE                   ;SCOPE
1923                            ;
1924                            ;ALL PREVIOUS TESTS MUST HAVE BEEN RUN SUCCESSFULLY PRIOR
1925                            ;TO RUNNING THE FOLLOWING TESTS.  ALSO, THE JUMPER CONNECTOR
1926                            ;MUST BE INSERTED IN THE DL11-E CABLE IN PLACE OF THE MODEM.  COMMENTS
1927                            ;REFER TO OPERATION WITH JUMPER INSERTED.
1928                            ;
1929  010230                            TSTA    100.,AFB,0
1930  010230                            TSTAA   AFB,100.,\X+1+0,\X+2,\X+1
1931                            ;*****************************************************************************
1932  010230  000022            AT22:   22                      ;TEST NUMBER                                *
1933  010232  010314                    AT23                    ;ADDRESS OF NEXT TEST                       *
1934  010234  000144                    100.                    ;ITERATION COUNT                            *
1935  010236  010240                    AFBA                    ;SCOPE ENTRY POINT                          *
1936           000022                    X=X+1                   ;                                           *
1937                            ;*****************************************************************************
1938                            ;TEST THAT CARRIER DETECT SETS AND CLEARS WHEN DATA TERMINAL
1939                            ;READY SETS AND CLEARS.
1940  010240  052777  000002  171142 AFBA:   BIS     #BIT1,@RXCSR    ;SET DATA TERMINAL READY
1941  010246  004737  012122            JSR     %7,TIME         ;DELAY
1942  010252  032777  010000  171130    BIT     #BIT12,@RXCSR   ;TEST CARRIER DETECT
1943  010260  001002                    BNE     AFBB            ;SHOULD BE SET
1944  010262  104003                    ERROR                   ;WASN'T
1945  010264  000412                    BR      AFBC
1946  010266  042777  000002  171114 AFBB:   BIC     #BIT1,@RXCSR    ;CLEAR DATA TERMINAL READY
1947  010274  004737  012122            JSR     %7,TIME         ;DELAY
1948  010300  032777  010000  171102    BIT     #BIT12,@RXCSR   ;TEST CARRIER DETECT
1949  010306  001401                    BEQ     AFBC
1950  010310  104003                    ERROR                   ;WAS SET, ERROR
1951  010312  104012            AFBC:   SCOPE
1952  010314                            TSTA    100.,AGB,0
1953  010314                            TSTAA   AGB,100.,\X+1+0,\X+2,\X+1
1954                            ;*****************************************************************************
1955  010314  000023            AT23:   23                      ;TEST NUMBER                                *
1956  010316  010466                    AT24                    ;ADDRESS OF NEXT TEST                       *
1957  010320  000144                    100.                    ;ITERATION COUNT                            *
1958  010322  010324                    AGBA                    ;SCOPE ENTRY POINT                          *
1959           000023                    X=X+1                   ;                                           *
1960                            ;*****************************************************************************
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                                        ;TEST THAT MODEM INTERRUPT (BIT 15) SETS WHEN CARRIER DETECT
                                        ;CHANGES STATE, AND IS CLEARED WHEN RXCSR IS READ.
010324  042777  000002  171056  AGBA:   BIC     #BIT1,@RXCSR    ;CLEAR DATA TERMINAL READY
010332  004737  012122                  JSR     %7,TIME         ;DELAY
010336  017737  171046  001610          MOV     @RXCSR,RXCSRT   ;READ RXCSR
010344  032777  100000  171036          BIT     #BIT15,@RXCSR   ;TEST MODEM INTERRUPT
010352  001402                          BEQ     AGBB            ;WAS CLEAR  GO TO AGBB
010354  104003                          ERROR                   ;WASN'T CLEAR
010356  000442                          BR      AGBE            ;GO TO SCOPE
010360  052777  000002  171022  AGBB:   BIS     #BIT1,@RXCSR    ;SETTING DATA TERMINAL READY
                                                                ;CAUSES CARRIER DETECT TO SET
                                                                ;WHICH CAUSES MODEM INTERRUPT TO SET
010366  004737  012122                  JSR     %7,TIME         ;DELAY
010372  017737  171012  001610          MOV     @RXCSR,RXCSRT   ;MOVE RXCSR TO TEMPORARY LOCATION
010400  032737  100000  001610          BIT     #BIT15,RXCSRT   ;TEST MODEM INTERRUPT
010406  001002                          BNE     AGBC            ;SHOULD BE SET  GO TO AGBC
010410  104003                          ERROR                   ;WAS CLEAR
010412  000424                          BR      AGBE            ;GO TO SCOPE
010414  032777  100000  170766  AGBC:   BIT     #BIT15,@RXCSR   ;MODEM INTERRUPT BIT SHOULD
                                                                ;HAVE BEEN CLEARED
010422  001402                          BEQ     AGBD            ;IT WAS  GO TO AGBD
010424  104003                          ERROR                   ;IT WASN'T
010426  000416                          BR      AGBE            ;GO TO SCOPE
010430  042777  000002  170752  AGBD:   BIC     #BIT1,@RXCSR    ;CLEARING DATA TERMINAL READY
                                                                ;CAUSES CARRIER DETECT TO CLEAR
                                                                ;BUT MODEM INTERRUPT WILL SET
010436  004737  012122                  JSR     %7,TIME         ;DELAY
010442  017737  170742  001610          MOV     @RXCSR,RXCSRT   ;MOV RXCSR TO TEMPORARY LOCATION
010450  032737  100000  001610          BIT     #BIT15,RXCSRT   ;TEST MODEM INTERRUPT
010456  001002                          BNE     AGBE            ;SHOULD BE SET
010460  104003                          ERROR                   ;IT WASN'T
010462  000400                          BR      AGBE
010464  104012                  AGBE:   SCOPE                   ;SCOPE
010466                                  TSTA    100.,AJB,0
010466                                  TSTAA   AJB,100.,\X+1+0,\X+2,\X+1
                                        ;*****************************************************************************
010466  000024                  AT24:   24                      ;TEST NUMBER                                        *
010470  010600                          AT25                    ;ADDRESS OF NEXT TEST                               *
010472  000144                          100.                    ;ITERATION COUNT                                    *
010474  010476                          AJBA                    ;SCOPE ENTRY POINT                                  *
        000024                          X=X+1                   ;                                                   *
                                        ;*****************************************************************************
                                        ;TEST THAT CLEAR TO SEND (BIT13) SETS/CLEARS WHEN DATA TERMINAL
                                        ;READY SETS/CLEARS.
010476  042777  000002  170704  AJBA:   BIC     #BIT1,@RXCSR    ;CLEAR DATA TERMINAL READY
010504  004737  012122                  JSR     %7,TIME         ;DELAY
010510  032777  020000  170672          BIT     #BIT13,@RXCSR   ;TEST CLEAR TO SEND
010516  001402                          BEQ     AJBB
010520  104003                          ERROR                   ;CLEAR TO SEND SHOULD BE CLEAR
010522  000425                          BR      AJBD
010524  052777  000002  170656  AJBB:   BIS     #BIT1,@RXCSR    ;SET DATA TERMINAL READY
010532  004737  012122                  JSR     %7,TIME         ;DELAY
010536  032777  020000  170644          BIT     #BIT13,@RXCSR   ;TEST CLEAR TO SEND
010544  001002                          BNE     AJBC            ;BRANCH IF SET
010546  104003                          ERROR                   ;CLEAR TO SEND SHOULD BE SET
010550  000412                          BR      AJBD
```

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 2017  010552  042777  000002  170630  AJBC:   BIC     #BIT1,@RXCSR    ;CLEAR DATA TERMINAL READY
 2018  010560  004737  012122          AJBC:   JSR     %7,TIME         ;DELAY
 2019  010564  032777  020000  170616          BIT     #BIT13,@RXCSR   ;TEST CLEAR TO SEND
 2020  010572  001401                          BEQ     AJBD
 2021  010574  104003                          ERROR                   ;CLEAR TO SEND SHOULD BE CLEAR
 2022  010576  104012                  AJBD:   SCOPE                   ;SCOPE
 2023  010600                                  TSTA    100.,AKB,0
 2024  010600                                  TSTAA   AKB,100.,\X+1+C,\X+2,\X+1
 2025                                  ;*****************************************************************************
 2026  010600  000025                  AT25:   25                      ;TEST NUMBER                               *
 2027  010602  010674                          AT26                    ;ADDRESS OF NEXT TEST                      *
 2028  010604  000144                          100.                    ;ITERATION COUNT                           *
 2029  010606  010610                          AKBA                    ;SCOPE ENTRY POINT                         *
 2030          000025                          X=X+1                   ;                                          *
 2031                                  ;*****************************************************************************
 2032                                  ;TEST THAT RING (BIT 14 RXCSR) SETS WHEN REQUEST TO
 2033                                  ;SEND SETS AND CLEARS AND RESET CLEARS RING
 2034  010610  042777  000004  170572  AKBA:   BIC     #BIT2,@RXCSR    ;CLEAR REQUEST TO SEND
 2035  010616  004737  012122          AKBA:   JSR     %7,TIME         ;DELAY
 2036  010622  052777  000004  170560          BIS     #BIT2,@RXCSR    ;SET REQUEST TO SEND
 2037  010630  004737  012122          AKBA:   JSR     %7,TIME         ;DELAY
 2038  010634  032777  040000  170546          BIT     #BIT14,@RXCSR   ;TEST RING
 2039  010642  001001                          BNE     AKBC
 2040  010644  104003                          ERROR                   ;RING SHOULD BE SET
 2041  010646  042777  000004  170534  AKBC:   BIC     #BIT2,@RXCSR    ;CLEAR REQUEST TO SEND
 2042  010654  004737  012122          AKBC:   JSR     %7,TIME         ;DELAY
 2043  010660  032777  040000  170522          BIT     #BIT14,@RXCSR   ;TEST RING
 2044  010666  001401                          BEQ     .+4             ;SHOULD BE CLEAR
 2045  010670  104003                          ERROR
 2046  010672  104012                          SCOPE                   ;SCOPE
 2047  010674                                  TSTA    100.,AOB,0
 2048  010674                                  TSTAA   AOB,100.,\X+1+0,\X+2,\X+1
 2049                                  ;*****************************************************************************
 2050  010674  000026                  AT26:   26                      ;TEST NUMBER                               *
 2051  010676  011006                          AT27                    ;ADDRESS OF NEXT TEST                      *
 2052  010700  000144                          100.                    ;ITERATION COUNT                           *
 2053  010702  010704                          AOBA                    ;SCOPE ENTRY POINT                         *
 2054          000026                          X=X+1                   ;                                          *
 2055                                  ;*****************************************************************************
 2056                                  ;TEST THAT MODEM INTERRUPT (BIT 15 RXCSR) SETS WHEN RING SETS.
 2057  010704  042777  000004  170476  AOBA:   BIC     #BIT2,@RXCSR    ;CLEAR REQUEST TO SEND
 2058  010712  004737  012122          AOBA:   JSR     %7,TIME         ;DELAY
 2059  010716  032777  100000  170464          BIT     #BIT15,@RXCSR   ;TEST MODEM INTERRUPT BIT
 2060  010724  001402                          BEQ     AOBB
 2061  010726  104003                          ERROR
 2062  010730  000425                          BR      AOBD
 2063  010732  052777  000004  170450  AOBB:   BIS     #BIT2,@RXCSR    ;SET REQUEST TO SEND
 2064  010740  004737  012122          AOBB:   JSR     %7,TIME         ;DELAY
 2065  010744  032777  100000  170436          BIT     #BIT15,@RXCSR   ;TEST MODEM INTERRUPT BIT
 2066  010752  001002                          BNE     AOBC
 2067  010754  104003                          ERROR
 2068  010756  000412                          BR      AOBD
 2069  010760  042777  000004  170422  AOBC:   BIC     #BIT2,@RXCSR    ;CLEAR REQUEST TO SEND
 2070  010766  004737  012122          AOBC:   JSR     %7,TIME         ;DELAY
 2071  010772  032777  100000  170410          BIT     #BIT15,@RXCSR   ;TEST MODEM INTERRUPT BIT
 2072  011000  001401                          BEQ     AOBD
```

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2073  011002  104003                        ERROR
2074  011004  104012              AOBD:     SCOPE                       ;SCOPE
2075  011006                                TSTA    100.,ALB,0
2076  011006                                TSTAA   ALB,100.,\X+1+0,\X+2,\X+1
2077                                ;*****************************************************************************
2078  011006  000027              AT27:     27                          ;TEST NUMBER                          *
2079  011010  011120                        AT30                        ;ADDRESS OF NEXT TEST                 *
2080  011012  000144                        100.                        ;ITERATION COUNT                      *
2081  011014  011016                        ALBA                        ;SCOPE ENTRY POINT                    *
2082          000027                        X=X+1                       ;                                     *
2083                                ;*****************************************************************************
2084                                ;TEST THAT SUPERVISORY RECEIVE DATA (BIT 10 RXCSR) SETS/CLEARS
2085                                ;WHEN SUPERVISORY XMIT DATA SETS/CLEARS.
2086  011016  042777  000010  170364 ALBA:     BIC     #BIT3,@RXCSR       ;CLEAR SUPERVISOR XMIT DATA
2087  011024  004737  012122                  JSR     %7,TIME            ;DELAY
2088  011030  032777  002000  170352          BIT     #BIT10,@RXCSR      ;TEST SUPERVISORY RECEIVE DATA.
2089  011036  001402                          BEQ     ALBB
2090  011040  104003                          ERROR                      ;SHOULD HAVE BEEN CLEAR
2091  011042  000425                          BR      ALBD
2092  011044  052777  000010  170336 ALBB:     BIS     #BIT3,@RXCSR       ;SET SUPERVISORY XMIT DATA
2093  011052  004737  012122                  JSR     %7,TIME            ;DELAY
2094  011056  032777  002000  170324          BIT     #BIT10,@RXCSR      ;TEST SUPERVISORY RECEIVE DATA
2095  011064  001002                          BNE     ALBC
2096  011066  104003                          ERROR                      ;SHOULD HAVE BEEN SET
2097  011070  000412                          BR      ALBD
2098  011072  042777  000010  170310 ALBC:     BIC     #BIT3,@RXCSR       ;CLEAR SUPERVISORY XMIT DATA
2099  011100  004737  012122                  JSR     %7,TIME            ;DELAY
2100  011104  032777  002000  170276          BIT     #BIT10,@RXCSR      ;TEST SUPERVISORY RECEIVE DATA
2101  011112  001401                          BEQ     ALBD
2102  011114  104003                          ERROR                      ;SHOULD HAVE BEEN CLEAR
2103  011116  104012              ALBD:     SCOPE                       ;SCOPE
2104  011120                                TSTA    100.,AMB,0
2105  011120                                TSTAA   AMB,100.,\X+1+0,\X+2,\X+1
2106                                ;*****************************************************************************
2107  011120  000030              AT30:     30                          ;TEST NUMBER                          *
2108  011122  011260                        AT31                        ;ADDRESS OF NEXT TEST                 *
2109  011124  000144                        100.                        ;ITERATION COUNT                      *
2110  011126  011130                        AMBA                        ;SCOPE ENTRY POINT                    *
2111          000030                        X=X+1                       ;                                     *
2112                                ;*****************************************************************************
2113                                ;TEST THAT SUP REC DATA TRANSISTIONS SET MODEM INTERRUPT
2114  011130  042777  000010  170252 AMBA:     BIC     #BIT3,@RXCSR       ;CLEAR SUP REC
2115  011136  004737  012122                  JSR     %7,TIME            ;DELAY
2116  011142  052777  000010  170240          BIS     #BIT3,@RXCSR       ;SET SUP REC
2117  011150  004737  012122                  JSR     %7,TIME            ;DELAY
2118  011154  032777  100000  170226          BIT     #BIT15,@RXCSR      ;TEST MODEM INTERRUPT
2119  011162  001002                          BNE     AMBB               ;MODEM INTERRUPT SHOULD BE SET
2120  011164  104003                          ERROR
2121  011166  000433                          BR      AMBE
2122  011170  032777  100000  170212 AMBB:     BIT     #BIT15,@RXCSR      ;MODEM INTERRUPT SHOULD BE
2123  011176  001402                          BEQ     AMBC               ;CLEARED BY PREVIOUS READ
2124  011200  104003                          ERROR
2125  011202  000425                          BR      AMBE
2126  011204  042777  000010  170176 AMBC:     BIC     #BIT3,@RXCSR       ;1-0 TRANS OF SUP REC DATA
2127  011212  004737  012122                  JSR     %7,TIME            ;DELAY
2128  011216  032777  100000  170164          BIT     #BIT15,@RXCSR      ;TEST MODEM INTERRUPT
```

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 2129  011224  001002                          BNE     AMBD            ;SHOULD BE SET
 2130  011226  104003                          ERROR
 2131  011230  000412                          BR      AMBE
 2132  011232  052777  000010  170150  AMBD:   BIS     #BIT3,@RXCSR    ;C-1 TRANS OF SUP REC DATA
 2133  011240  004737  012122                  JSR     %7,TIME         ;DELAY
 2134  011244  032777  100000  170136          BIT     #BIT15,@RXCSR   ;TEST MODEM INTERRUPT
 2135  011252  001001                          BNE     AMBE            ;SHOULD BE SET
 2136  011254  104003                          ERROR
 2137  011256  104012                  AMBE:   SCOPE
 2138  011260                                  TSTA    10.,ABA,CD
 2139  011260                                  TSTAA   ABA,10.,\X+1+CD,\X+2,\X+1
 2140                          ;*****************************************************************************
 2141  011260  100031                  AT31:   100031                  ;TEST NUMBER                      *
 2142  011262  011364                          AT32                    ;ADDRESS OF NEXT TEST             *
 2143  011264  000012                          10.                     ;ITERATION COUNT                  *
 2144  011266  011270                          ABAA                    ;SCOPE ENTRY POINT                *
 2145          000031                          X=X+1                   ;                                 *
 2146                          *****************************************************************************
 2147                          ;TEST THAT RESET CLEARS ALL TXCSR BITS, AND SETS BIT 7 (READY)
 2148  011270  012737  000340  177776  ABAA:   MOV     #PRTY7,PSW      ;SET PRIORITY 7.
 2149  011276  012777  177777  170110          MOV     #-1,@TXCSR      ;SET ALL POSSIBLE BITS IN TXCSR
 2150  011304  104011                          SRESET                  ;ISSUE RESET TO CLEAR BITS
 2151  011306  022777  000200  170100          CMP     #BIT7,@TXCSR    ;SEE IF ONLY BIT 7 IS SET.
 2152  011314  001422                          BEQ     ABAB            ;BRANCH IF ONLY BIT 7 IS SET
 2153  011316  017737  170072  001606          MOV     @TXCSR,TXCSRT   ;SAVE CONTENTS OF TXCSR
 2154  011324  012737  000200  001620          MOV     #BIT7,TEMP      ;MOVE EXPECTED TXCSR TO TEMP.
 2155  011332  004537  004624                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
 2156  011336  001620                          TEMP                    ;SOURCE ADDR.
 2157  011340  016306                          ATXSB                   ;DESTINATION ADDR.
 2158  011342  000006                          6                       ;#OF DIGITS TO CONVERT.
 2159  011344  004537  004624                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
 2160  011350  001606                          TXCSRT                  ;SOURCE ADDR.
 2161  011352  016323                          ATXWAS                  ;DESTINATION ADDR.
 2162  011354  000006                          6                       ;#OF DIGITS TO CONVERT.
 2163  011356  104015                          ERROR1                  ;RESET FAILED TO CLEAR ALL BITS EXCEPT
 2164  011360  016273                          ATXCSR                  ;BIT 7 - SEE PRINTOUT
 2165  011362  104012                  ABAB:   SCOPE                   ;SCOPE
 2166  011364                                  TSTA    10.,ACA,0
 2167  011364                                  TSTAA   ACA,10.,\X+1+0,\X+2,\X+1
 2168                          ;*****************************************************************************
 2169  011364  000032                  AT32:   32                      ;TEST NUMBER                      *
 2170  011366  011534                          AT33                    ;ADDRESS OF NEXT TEST             *
 2171  011370  000012                          10.                     ;ITERATION COUNT                  *
 2172  011372  011374                          ACAA                    ;SCOPE ENTRY POINT                *
 2173          000032                          X=X+1                   ;                                 *
 2174                          *****************************************************************************
 2175                          ;TEST THAT RESET CLEARS ALL RXCSR BITS EXCEPT DATA TERMINAL READY, RING
 2176                          ;CLEAR TO SEND,CARRIER DET
 2177  011374  012737  000340  177776  ACAA:   MOV     #PRTY7,PSW      ;SET PRIORITY 7
 2178  011402  042777  000002  170000          BIC     #BIT1,@RXCSR    ;CLEAR DATA TERM.READY
 2179  011410  012777  177777  167772          MOV     #-1,@RXCSR      ;SET ALL POSSIBLE BITS IN RXCSR
 2180  011416  052777  000004  167770          BIS     #4,@TXCSR       ;SET MAINT BIT
 2181  011424  005077  167766                  CLR     @TXBUF          ;TRANSMIT A CHAR
 2182  011430  104020                          TIMETX                  ;TIME OUT TX DONE
 2183  011432  104003                          ERROR                   ;ERROR DONE NOT SETTING
 2184  011434  012777  000001  167754          MOV     #1,@TXBUF       ;TRANSMIT ANOTHER CHAR.
```

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 2185  011442  104017                          TIMERX                  ;TIME OUT RX DONE
 2186  011444  104003                          ERROR                   ;ERROR DONE NOT SETTING
 2187  011446  104011                          SRESET                  ;ISSUE RESET TO CLEAR BITS.
 2188  011450  017737  167734  001610          MOV     @RXCSR,RXCSRT   ;MOVE RXCSR CONTENTS TO RXCSRT
 2189  011456  022737  030002  001610          CMP     #30002,RXCSRT   ;SEE IF ONLY BITS 1,12,13 SET
 2190  011464  001417                          BEQ     ACAB            ;BRANCH IF ONLY BITS 1,12,13 SET.
 2191  011466  012737  030002  001620          MOV     #30002,TEMP
 2192  011474  004537  004624                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
 2193  011500  001620                          TEMP                    ;SOURCE ADDR.
 2194  011502  016345                          ARXSB                   ;DESTINATION ADDR.
 2195  011504  000006                          6                       ;#OF DIGITS TO CONVERT.
 2196  011506  004537  004624                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
 2197  011512  001610                          RXCSRT                  ;SOURCE ADDR.
 2198  011514  016362                          ARXWAS                  ;DESTINATION ADDR.
 2199  011516  000006                          6                       ;#OF DIGITS TO CONVERT.
 2200  011520  104015                          ERROR1                  ;RESET FAILED TO CLEAR ALL BITS EXCEPT
 2201  011522  016332                          ARXCSR                  ;BIT 0. SEE ERROR PRINTOUT.
 2202  011524  042777  000002  167656  ACAB:   BIC     #BIT1,@RXCSR    ;CLEAR DATA TERM. READY
 2203  011532  104012                          SCOPE                   ;SCOPE
 2204  011534                                  TSTA    10.,ADA,CD
 2205  011534                                  TSTAA   ADA,10.,\X+1+CD,\X+2,\X+1
 2206                                  ;*****************************************************************************
 2207  011534  100033                  AT33:   100033                  ;TEST NUMBER                               *
 2208  011536  011614                          AT34                    ;ADDRESS OF NEXT TEST                      *
 2209  011540  000012                          10.                     ;ITERATION COUNT                           *
 2210  011542  011544                          ADAA                    ;SCOPE ENTRY POINT                         *
 2211          000033                          X=X+1                   ;                                          *
 2212                                  ;*****************************************************************************
 2213                                  ;TEST THAT LOADING TXBUF (TRANSMITTER BUFFER) CLEARS TXCSR BIT 7 (READY)
 2214                                  ;AND WITHOUT MAINT SET THAT TXDONE SETS READY
 2215  011544  005077  167646          ADAA:   CLR     @TXBUF          ;LOAD TXBUF
 2216  011550  104020                          TIMETX                  ;TIME OUT TX DONE
 2217  011552  104003                          ERROR                   ;ERROR, DONE NOT SETTING
 2218  011554  005077  167636                  CLR     @TXBUF          ;LOAD TX BUF
 2219  011560  105777  167630                  TSTB    @TXCSR          ;TEST TXCSR BIT 7 (READY BIT)
 2220  011564  100002                          BPL     ADAB            ;BRANCH IF BIT NOT SET.
 2221  011566  104003                          ERROR                   ;ERROR. LOADING TXBUF FAILED TO CLEAR READY.
 2222  011570  000407                          BR      ADAC
 2223  011572  104020                  ADAB:   TIMETX                  ;WAIT FOR DONE
 2224  011574  104003                          ERROR                   ;DONE NEVER SET
 2225  011576  032777  000200  167610          BIT     #BIT7,@TXCSR
 2226  011604  001001                          BNE     .+4
 2227  011606  104003                          ERROR                   ;READY DID NOT SET
 2228  011610  104011                  ADAC:   SRESET
 2229  011612  104012                          SCOPE                   ;SCOPE.
 2230  011614                                  TSTA    1.,AIA,CD
 2231  011614                                  TSTAA   AIA,1.,\X+1+CD,\X+2,\X+1
 2232                                  ;*****************************************************************************
 2233  011614  100034                  AT34:   100034                  ;TEST NUMBER                               *
 2234  011616  012136                          AT35                    ;ADDRESS OF NEXT TEST                      *
 2235  011620  000001                          1.                      ;ITERATION COUNT                           *
 2236  011622  011624                          AIAA                    ;SCOPE ENTRY POINT                         *
 2237          000034                          X=X+1                   ;                                          *
 2238                                  ;*****************************************************************************
 2239                                  ;TEST THAT TRANSMIT SPEEDS ARE ARRANGED IN ASCENDING ORDER BY CHECKING THAT TIME
 2240                                  ;TO READY BIT (TXCSR BIT 7) DECREASES AS A HIGHER SPEED IS SELECTED.
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 2241  011624  004737  006352          AIAA:   JSR     %7,DOTHIS       ;TEST IF THIS TEST SELECTED
 2242  011630  104001                          TYPES
 2243  011632  017653                          MSETTX
 2244  011634  017701                          MSETC
 2245  011636  020163                          MS0
 2246  011640  177777                          -1
 2247  011642  000000                          HALT
 2248  011644  004737  012052                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
 2249  011650  013737  012134  001566          MOV     AIAST,CTR0      ;MOVE ELAPSED TIME TO CTR0.
 2250  011656  104000                          TYPE
 2251  011660  020173                          MS1
 2252  011662  000000                          HALT
 2253  011664  004737  012052                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
 2254  011670  013737  012134  001570          MOV     AIAST,CTR1      ;MOVE ELAPSED TIME TO CTR1.
 2255  011676  104000                          TYPE
 2256  011700  020203                          MS2
 2257  011702  000000                          HALT
 2258  011704  004737  012052                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
 2259  011710  013737  012134  001572          MOV     AIAST,CTR2      ;MOVE ELAPSED TIME TO CTR2.
 2260  011716  104000                          TYPE
 2261  011720  020213                          MS3
 2262  011722  000000                          HALT
 2263  011724  004737  012052                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
 2264  011730  013737  012134  001574          MOV     AIAST,CTR3      ;MOVE ELAPSED TIME TO CTR3.
 2265  011736  104000                          TYPE
 2266  011740  020223                          MS4
 2267  011742  000000                          HALT
 2268  011744  004737  012052                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME
 2269  011750  013737  012134  001576          MOV     AIAST,CTR4      ;MOVE ELAPSED TIME TO CTR4
 2270  011756  104000                          TYPE
 2271  011760  020233                          MS5
 2272  011762  000000                          HALT
 2273  011764  004737  012052                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME
 2274  011770  013737  012134  001600          MOV     AIAST,CTR5      ;MOVE ELAPSED TIME TO CTR5
 2275  011776  104000                          TYPE
 2276  012000  020243                          MS6
 2277  012002  000000                          HALT
 2278  012004  004737  012052                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME
 2279  012010  013737  012134  001602          MOV     AIAST,CTR6      ;MOVE ELAPSED TIME TO CTR6
 2280  012016  104000                          TYPE
 2281  012020  020253                          MS7
 2282  012022  000000                          HALT
 2283  012024  004737  012052                  JSR     %7,AIAS         ;OUTPUT CHAR AND TIME
 2284  012030  013737  012134  001604          MOV     AIAST,CTR7      ;MOVE ELAPSED TIME TO CTR7
 2285  012036  004737  014564                  JSR     %7,CMPT         ;CHECK THAT CTR0 THROUGH CTR7 CONTAIN
 2286  012042  000402                          BR      AIAF            ;DESCENDING VALUES
 2287  012044  104015                          ERROR1                  ;TRANSMIT SPEEDS NOT ARRANGED IN
 2288  012046  016372                          ETXTIM                  ;ASCENDING ORDER.
 2289  012050  104012                  AIAF:   SCOPE                   ;SCOPE
 2290                                  ;
 2291  012052  005037  012134          AIAS:   CLR     AIAST           ;CLEAR ELAPSED TIME COUNTER.
 2292  012056  105777  167332                  TSTB    @TXCSR          ;WAIT FOR TX READY.
 2293  012062  100375                          BPL     .-4
 2294  012064  005077  167326                  CLR     @TXBUF
 2295  012070  105777  167320                  TSTB    @TXCSR
 2296  012074  100375                          BPL     .-4
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 2297  012076  005077  167314            CLR     @TXBUF          ;LOAD TXBUF.
 2298  012102  004737  012122    AIASA:  JSR     %7,TIME         ;WAIT 75 US
 2299  012106  005237  012134            INC     AIAST           ;INCREMENT ELAPSED TIME COUNTER.
 2300  012112  105777  167276            TSTB    @TXCSR          ;READY SET?
 2301  012116  100371                    BPL     AIASA           ;BRANCH IF READY NOT SET.
 2302  012120  000207                    RTS     %7              ;EXIT.
 2303                            ;
 2304  012122  012700  000017    TIME:   MOV     #15.,%0
 2305  012126  005300            TIM1:   DEC     %0
 2306  012130  001376                    BNE     TIM1
 2307  012132  000207                    RTS     %7
 2308  012134  000000            AIAST:  OPEN
 2309  012136                            TSTA    10.,ALA,0
 2310  012136                            TSTAA   ALA,10.,\X+1+0,\X+2,\X+1
 2311                            ;*****************************************************************************
 2312  012136  000035            AT35:   35                      ;TEST NUMBER                              *
 2313  012140  012212                    AT36                    ;ADDRESS OF NEXT TEST                     *
 2314  012142  000012                    10.                     ;ITERATION COUNT                          *
 2315  012144  012146                    ALAA                    ;SCOPE ENTRY POINT                        *
 2316          000035                    X=X+1                   ;                                         *
 2317                            ;*****************************************************************************
 2318                            ;TEST THAT OUTPUTTING A CHARACTER WITH THE MAINTENANCE BIT SET (TXCSR BIT 2)
 2319                            ;RESULTS IN DONE BIT SETTING (RXCSR BIT 7) NO LATER THAN 500 MSECS, AND
 2320                            ;THAT RESET INSTRUCTION CLEARS THE DONE BIT
 2321
 2322  012146  052777  000004  167240  ALAA:   BIS     #BIT2,@TXCSR            ;SET MAINTENANCE BIT
 2323  012154  005077  167236            CLR     @TXBUF          ;LOAD TXBUF
 2324  012160  104016                    DELAY                   ;WAIT 500 MSECS.
 2325  012162  000764                    500.
 2326  012164  105777  167220            TSTB    @RXCSR          ;SEE IF DONE BIT IS SET
 2327  012170  100402                    BMI     ALAB            ;BRANCH IF DONE BIT IS SET
 2328  012172  104003                    ERROR                   ;DONE BIT FAILED TO SET
 2329  012174  000405                    BR      ALAC
 2330  012176  104011            ALAB:   SRESET                  ;ISSUE RESET TO CLEAR DONE BIT
 2331  012200  105777  167204            TSTB    @RXCSR          ;SEE IF DONE BIT IS CLEARED
 2332  012204  100001                    BPL     ALAC            ;BRANCH IF DONE BIT IS CLEARED
 2333  012206  104003                    ERROR                   ;RESET FAILED TO CLEAR DONE BIT
 2334  012210  104012            ALAC:   SCOPE                   ;SCOPE
 2335  012212                            TSTA    100.,AMA,CD
 2336  012212                            TSTAA   AMA,100.,\X+1+CD,\X+2,\X+1
 2337                            ;*****************************************************************************
 2338  012212  100036            AT36:   100036                  ;TEST NUMBER                              *
 2339  012214  012256                    AT37                    ;ADDRESS OF NEXT TEST                     *
 2340  012216  000144                    100.                    ;ITERATION COUNT                          *
 2341  012220  012222                    AMAA                    ;SCOPE ENTRY POINT                        *
 2342          000036                    X=X+1                   ;                                         *
 2343                            ;*****************************************************************************
 2344                            ;TEST THAT DONE BIT (RXCSR BIT 7) IS CLEARED BY READING RXBUF.
 2345                            ;DONE SET BY OUTPUTTING CHARACTER WITH MAINTENANCE BIT SET (TXCSR BIT 2)
 2346  012222  052777  000004  167164  AMAA:   BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT (TXCSR BIT 2)
 2347  012230  005077  167162            CLR     @TXBUF          ;LOAD TXBUF
 2348  012234  104017                    TIMERX                  ;WAIT FOR DONE BIT TO SET.
 2349  012236  104003                    ERROR
 2350  012240  005777  167146            TST     @RXBUF          ;READ RXBUF TO CLEAR DONE BIT
 2351  012244  105777  167140            TSTB    @RXCSR          ;SEE IF DONE BIT IS CLEAR
 2352  012250  100001                    BPL     AMAC            ;BRANCH IF DONE BIT IS CLEAR
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 2353  012252  104003                          ERROR                   ;READING RXBUF FAILED TO CLEAR DONE BIT
 2354  012254  104012                  AMAC:   SCOPE                   ;SCOPE
 2355  012256                                  TSTA    100.,AOA,CD
 2356  012256                                  TSTAA   AOA,100.,\X+1+CD,\X+2,\X+1
 2357                                  ;*****************************************************************************
 2358  012256  100037                  AT37:   100037                  ;TEST NUMBER                              *
 2359  012260  012366                          AT40                    ;ADDRESS OF NEXT TEST                     *
 2360  012262  000144                          100.                    ;ITERATION COUNT                          *
 2361  012264  012272                          AOAA                    ;SCOPE ENTRY POINT                        *
 2362          000037                          X=X+1                   ;                                         *
 2363                                  ;*****************************************************************************
 2364                                  ;TEST THAT RECEIVER ACTIVE SETS WHEN CHAR STARTS AND
 2365                                  ;CLEARS WHEN RECEIVER DONE SETS
 2366  012266  004737  003004                  JSR     %7,CDINIT       ;INIT IF C-D DEVICE
 2367  012272  052777  000004  167114  AOAA:   BIS     #BIT2,@TXCSR    ;SET MAINT
 2368  012300  005077  167112                  CLR     @TXBUF          ;TRANSMIT CHAR
 2369  012304  005037  001620                  CLR     TEMP            ;CLEAR BUSY INDICATOR
 2370  012310  032777  004000  167072  AOAB:   BIT     #BIT11,@RXCSR   ;IS RECEIVER ACTIVE SET
 2371  012316  001402                          BEQ     AOAB1           ;BRANCH IF CLEAR
 2372  012320  005237  001620                  INC     TEMP            ;YES, REMEMBER THAT
 2373  012324  105777  167060  AOAB1:  TSTB    @RXCSR          ;SEE IF DONE SET
 2374  012330  100367                          BPL     AOAB
 2375  012332  023727  001620  000000          CMP     TEMP,#0         ;DID RECEIVER ACTIVE SET
 2376  012340  001002                          BNE     AOAC
 2377  012342  104003                          ERROR                   ;RECEIVER ACTIVE NEVER SET
 2378  012344  000405                          BR      AOAD
 2379  012346  032777  004000  167034  AOAC:   BIT     #BIT11,@RXCSR   ;DID DONE CLEAR ACTIVE
 2380  012354  001401                          BEQ     AOAD
 2381  012356  104003                          ERROR                   ;NO, RECEIVER ACTIVE DID NOT CLEAR
 2382  012360  005777  167026          AOAD:   TST     @RXBUF          ;CLEAR RX DONE
 2383  012364  104012                          SCOPE
 2384  012366                                  TSTA    1.,AQA,0
 2385  012366                                  TSTAA   AQA,1.,\X+1+0,\X+2,\X+1
 2386                                  ;*****************************************************************************
 2387  012366  000040                  AT40:   40                      ;TEST NUMBER                              *
 2388  012370  012670                          AT41                    ;ADDRESS OF NEXT TEST                     *
 2389  012372  000001                          1.                      ;ITERATION COUNT                          *
 2390  012374  012576                          AQAA                    ;SCOPE ENTRY POINT                        *
 2391          000040                          X=X+1                   ;                                         *
 2392                                  ;*****************************************************************************
 2393                                  ;TEST THAT RECEIVE SPEEDS ARE ARRANGED IN ASCENDING ORDER BY CHECKING THAT TIME
 2394                                  ;ELAPSED TO DONE BIT SETTING (RXCSR BIT 7) DECREASES AS A HIGHER SPEED
 2395                                  ;THIS IS NOT DONE IN MAINTENANCE MODE TX AND RX
 2396                                  ;POTS MUST BE STEPPED TOGETHER
 2397                                  ;IS SELECTED.
 2398  012376  004737  006352          AQAA:   JSR     %7,DOTHIS       ;CHECK IF THIS TEST TO BE DONE
 2399  012402  104001                          TYPES
 2400  012404  017625                          MSETRX
 2401  012406  017701                          MSETC
 2402  012410  020163                          MSO
 2403  012412  177777                          -1
 2404  012414  000000                          HALT
 2405  012416  004737  012624                  JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BI
 2406  012422  013737  012666  001566          MOV     AQAST,CTRO      ;MOVE ELAPSED TIME TO CTRO
 2407  012430  104000                          TYPE
 2408  012432  020173                          MS1
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 2409  012434  000000                        HALT
 2410  012436  004737  012624                JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BIT
 2411  012442  013737  012666  001570        MOV     AQAST,CTR1      ;MOVE ELAPSED TIME TO CTR1
 2412  012450  104000                        TYPE
 2413  012452  020203                        MS2
 2414  012454  000000                        HALT
 2415  012456  004737  012624                JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BIT.
 2416  012462  013737  012666  001572        MOV     AQAST,CTR2      ;MOVE ELAPSED TIME TO CTR2.
 2417  012470  104000                        TYPE
 2418  012472  020213                        MS3
 2419  012474  000000                        HALT
 2420  012476  004737  012624                JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BIT
 2421  012502  013737  012666  001574        MOV     AQAST,CTR3      ;MOVE ELAPSED TIME TO CTR3.
 2422  012510  104000                        TYPE
 2423  012512  020223                        MS4
 2424  012514  000000                        HALT
 2425  012516  004737  012624                JSR     %7,AQAS
 2426  012522  013737  012666  001576        MOV     AQAST,CTR4
 2427  012530  104000                        TYPE
 2428  012532  020233                        MS5
 2429  012534  000000                        HALT
 2430  012536  004737  012624                JSR     %7,AQAS
 2431  012542  013737  012666  001600        MOV     AQAST,CTR5
 2432  012550  104000                        TYPE
 2433  012552  020243                        MS6
 2434  012554  000000                        HALT
 2435  012556  004737  012624                JSR     %7,AQAS
 2436  012562  013737  012666  001602        MOV     AQAST,CTR6
 2437  012570  104000                        TYPE
 2438  012572  020253                        MS7
 2439  012574  000000                        HALT
 2440  012576  004737  012624                JSR     %7,AQAS
 2441  012602  013737  012666  001604        MOV     AQAST,CTR7
 2442  012610  004737  014564                JSR     %7,CMPT         ;CHECK THAT CTR0 THROUGH CTR3 CONTAIN
 2443  012614  000402                        BR      AQAB            ;DESCENDING VALUES.
 2444  012616  104015                        ERROR1                  ;RECEIVE SPEEDS NOT ARRANGED IN
 2445  012620  016434                        ERXTIM                  ;ASCENDING ORDER.
 2446  012622  104012              AQAB:     SCOPE                   ;SCOPE
 2447                                ;
 2448  012624  005037  012666      AQAS:     CLR     AQAST           ;CLEAR ELAPSED TIME COUNTER AQAST
 2449  012630  105777  166560              TSTB    @TXCSR          ;WAIT FOR TX READY.
 2450  012634  100375                      BPL     .-4
 2451  012636  005777  166550              TST     @RXBUF          ;CLEAR DONE BIT IF SET
 2452  012642  005077  166550              CLR     @TXBUF          ;LOAD TXBUF
 2453  012646  004737  012122      AQASA:    JSR     %7,TIME
 2454  012652  005237  012666              INC     AQAST           ;INCREMENT ELAPSED TIME COUNTER
 2455  012656  105777  166526              TSTB    @RXCSR          ;DONE SET?
 2456  012662  100371                      BPL     AQASA           ;BRANCH IF DONE NOT SET
 2457  012664  000207                      RTS     %7              ;EXIT
 2458  012666  000000              AQAST:    OPEN                    ;ELAPSED TIME COUNTER
 2459  012670                              TSTA    10.,ARA,CD
 2460  012670                              TSTAA   ARA,10.,\X+1+CD,\X+2,\X+1
 2461                                ;*****************************************************************************
 2462  012670  100041              AT41:     100041                  ;TEST NUMBER                                *
 2463  012672  013034                        AT42                    ;ADDRESS OF NEXT TEST                       *
 2464  012674  000012                        10.                     ;ITERATION COUNT                            *
```

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2465  012676  012700                          ARAA                    ;SCOPE ENTRY POINT                    *
2466          000041                          X=X+1                   ;                                     *
2467                                  ;*************************************************************************
2468                                  ;TEST CORRECT OPERATION OF DATA OVERRUN BIT (RXBUF BIT 14)
2469  012700  004737  013014          ARAA:   JSR     %7,ARAS         ;OUTPUT CHARACTER AND WAIT 500 MSECS
2470  012704  004737  013014                  JSR     %7,ARAS         ;OUTPUT CHARACTER AND WAIT 500 MSECS
2471  012710  017737  166476  001612          MOV     @RXBUF,RXBUFT   ;SAVE RXBUF CONTENTS + CLEAR DONE
2472  012716  032737  040000  001612          BIT     #BIT14,RXBUFT   ;SEE IF DATA OVERRUN BIT WAS SET
2473  012724  001002                          BNE     .+6             ;BRANCH IF BIT WAS SET
2474  012726  104003                          ERROR
2475  012730  104012                          SCOPE
2476  012732  005737  001612                  TST     RXBUFT          ;SEE THAT ERROR BIT WAS SET (RXBUF BIT 15)
2477  012736  100402                          BMI     .+6
2478  012740  104003                          ERROR                   ;ERROR BIT FAILED TO SET WHEN OVERRUN SET
2479  012742  104012                          SCOPE
2480  012744  032777  040000  166440          BIT     #BIT14,@RXBUF   ;SEE THAT DATA OVERRUN WAS NOT
2481                                                                  ;CLEARED WHEN RXBUF WAS READ
2482  012752  001002                          BNE     .+6             ;BRANCH IF SET
2483  012754  104003                          ERROR                   ;READING RXBUF CLEARED DATA OVERRUN
2484  012756  104012                          SCOPE
2485  012760  004737  013014                  JSR     %7,ARAS
2486  012764  032777  100000  166420          BIT     #BIT15,@RXBUF   ;OUTPUT CHAR +WAIT 500MS
2487  012772  001402                          BEQ     .+6             ;TEST THAT ERROR CLEARED
2488  012774  104003                          ERROR
2489  012776  104012                          SCOPE
2490  013000  032777  040000  166404          BIT     #BIT14,@RXBUF   ;TEST THAT OVERRUN CLEARED
2491  013006  001401                          BEQ     .+4
2492  013010  104003                          ERROR
2493  013012  104012                          SCOPE                   ;SCOPE
2494  013014  052777  000004  166372  ARAS:   BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT
2495  013022  005077  166370                  CLR     @TXBUF          ;LOAD TXBUF
2496  013026  104016                          DELAY                   ;DELAY 500 MSECS
2497  013030  000764                          500.
2498  013032  000207                          RTS     %7              ;EXIT
2499  013034                                  TSTA    10.,ATA,CD
2500  013034                                  TSTAA   ATA,10.,\X+1+CD,\X+2,\X+1
2501                                  ;*************************************************************************
2502  013034  100042                  AT42:   100042                  ;TEST NUMBER                          *
2503  013036  013122                          AT43                    ;ADDRESS OF NEXT TEST                 *
2504  013040  000012                          10.                     ;ITERATION COUNT                      *
2505  013042  013054                          ATAA                    ;SCOPE ENTRY POINT                    *
2506          000042                          X=X+1                   ;                                     *
2507                                  ;*************************************************************************
2508                                  ;TEST THAT TRANSMITTER IS ABLE TO INTERRUPT.  IF THE INTERRUPT IS SERVICED.
2509                                  ;IT WILL HAVE OCCURRED AT THE CORRECT VECTOR.
2510  013044  004737  003614                  JSR     7,OVRLAY        ;GO TO OVER LAY ROUTINE
2511  013050  104007                          STTXV                   ;SET TX INTERRUPT SERVICE
2512  013052  013110                          ATAC                    ;TO ATAC
2513  013054  042777  000100  166332  ATAA:   BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPT
2514  013062  005037  177776                  CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2515  013066  052777  000100  166320          BIS     #BIT6,@TXCSR    ;ENABLE TX INTERRUPT
2516  013074  000240                          NOP
2517  013076  104003                          ERROR                   ;READY DID NOT CAUSE AN INTERRUPT
2518  013100  042777  000100  166306          BIC     #BIT6,@TXCSR
2519  013106  104012                  ATAB:   SCOPE                   ;SCOPE
2520  013110  042777  000100  166276  ATAC:   BIC     #BIT6,@TXCSR    ;HERE IF INT, DISABLE TX INT
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2521  013116  022626                        POPSP2
2522  013120  000772                        BR      ATAB
2523  013122                                TSTA    1000.,AUA,CD
2524  013122                                TSTAA   AUA,1000.,\X+1+CD,\X+2,\X+1
2525                                ;*****************************************************************************
2526  013122  100043                ATAB:   100043                  ;TEST NUMBER                              *
2527  013124  013200                        AT44                    ;ADDRESS OF NEXT TEST                     *
2528  013126  001750                        1000.                   ;ITERATION COUNT                          *
2529  013130  013136                        AUAA                    ;SCOPE ENTRY POINT                        *
2530          000043                        X=X+1                   ;                                         *
2531                                ;*****************************************************************************
2532                                ;TEST THAT READY DOES NOT CAUSE AN INTERRUPT WHEN THE PROCESSOR IS
2533                                ;AT THE SAME PRIORITY AS THE TRANSMITTER INTERRUPT REQUEST LEVEL
2534  013132  104007                        STTXV                   ;SET TX INTERRUPT SERVICE TO
2535  013134  013172                        AUAC
2536  013136  013737  001426  177776 AUAA:  MOV     TXLVL,PSW       ;SET PROCESSOR PRIORITY SAME AS TX PRIORITY
2537  013144  042777  000100  166242        BIC     #BIT6,@TXCSR
2538  013152  052777  000100  166234        BIS     #BIT6,@TXCSR    ;ENABLE TX INTERRUPTS
2539  013160  000240                        NOP
2540  013162  042777  000100  166224 AUAB:  BIC     #BIT6,@TXCSR    ;OK IF NO INTERRUPT OCCURS.  DISABLE INTERRUPTS
2541  013170  104012                        SCOPE                   ;SCOPE
2542  013172  022626                AUAC:   POPSP2                  ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2543  013174  104003                        ERROR                   ;TX INTERRUPTED WITH PROCESSOR AT SAME
2544  013176  000771                        BR      AUAB            ;PRIORITY AS THE TRANSMITTER
2545  013200                                TSTA    10.,AVA,CD
2546  013200                                TSTAA   AVA,10.,\X+1+CD,\X+2,\X+1
2547                                ;*****************************************************************************
2548  013200  100044                AT44:   100044                  ;TEST NUMBER                              *
2549  013202  013264                        AT45                    ;ADDRESS OF NEXT TEST                     *
2550  013204  000012                        10.                     ;ITERATION COUNT                          *
2551  013206  013214                        AVAA                    ;SCOPE ENTRY POINT                        *
2552          000044                        X=X+1                   ;                                         *
2553                                ;*****************************************************************************
2554                                ;TEST THAT TRANSMITTER INTERRUPTS WHEN PROCESSOR IS AT PRIORITY ONE LEVEL
2555                                ;LOWER THAN THE TRANSMITTER INTERRUPT PRIORITY.
2556  013210  104007                        STTXV                   ;SET TX INTERRUPT SERVICE TO AVAB
2557  013212  013252                        AVAB
2558  013214  042777  000100  166172 AVAA:  BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2559  013222  013737  001426  177776        MOV     TXLVL,PSW       ;SET PROCESSOR PRIORITY TO ONE LEVEL
2560  013230  162737  000040  177776        SUB     #40,PSW         ;LOWER THAN TX PRIORITY
2561  013236  052777  000100  166150        BIS     #BIT6,@TXCSR    ;ENABLE TX INTERRUPTS
2562  013244  000240                        NOP
2563  013246  104003                        ERROR                   ;TX FAILED TO INTERRUPT
2564  013250  000401                        BR      AVAC
2565  013252  022626                AVAB:   POPSP2                  ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2566  013254  042777  000100  166132 AVAC:  BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2567  013262  104012                        SCOPE                   ;SCOPE
2568  013264                                TSTA    100.,AWA,CD
2569  013264                                TSTAA   AWA,100.,\X+1+CD,\X+2,\X+1
2570                                ;*****************************************************************************
2571  013264  100045                AT45:   100045                  ;TEST NUMBER                              *
2572  013266  013362                        AT46                    ;ADDRESS OF NEXT TEST                     *
2573  013270  000144                        100.                    ;ITERATION COUNT                          *
2574  013272  013274                        AWAA                    ;SCOPE ENTRY POINT                        *
2575          000045                        X=X+1                   ;                                         *
2576                                ;*****************************************************************************
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2577                                    ;TEST THAT TRANSMITTER DOES NOT REINTERRUPT AFTER THE INITIAL INTERRUPT HAS
2578                                    ;OCCURRED AND HAS BEEN SERVICED.
2579  013274  104007                    AWAA:   STTXV                   ;SET TX INTERRUPT SERVICE TO AWAC
2580  013276  013334                            AWAC
2581  013300  042777  000100  166106            BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2582  013306  005037  177776                    CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2583  013312  052777  000100  166074            BIS     #BIT6,@TXCSR    ;ENABLE TX INTERRUPTS
2584  013320  000240                            NOP
2585  013322  104003                            ERROR                   ;TRANSMITTER FAILED TO INTERRUPT
2586  013324  042777  000100  166062  AWAB:     BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2587  013332  104012                            SCOPE                   ;SCOPE
2588  013334  012777  013354  166062  AWAC:     MOV     #AWAE,@TXVTR    ;HERE IF INTERRUPT OCCURS. CHANGE EXIT
2589  013342  012716  013350                    MOV     #AWAD,@%6       ;POINTER TO AWAD AND EXIT INTERRUPT
2590  013346  000002                            RTI
2591  013350  000240                    AWAD:   NOP                     ;OK IF NO INTERRUPT REOCCURS.
2592  013352  000764                            BR      AWAB
2593  013354  022626                    AWAE:   POPSP2                  ;HERE IF INTERRUPT REOCCURS
2594  013356  104003                            ERROR                   ;TX REINTERRUPTED AFTER RTI
2595  013360  000761                            BR      AWAB
2596  013362                                    TSTA    10.,AXA,CD
2597  013362                                    TSTAA   AXA,10.,\X+1+CD,\X+2,\X+1
2598                                  ;*****************************************************************************
2599  013362  100046                  AT46:     100046                  ;TEST NUMBER                               *
2600  013364  013446                            AT47                    ;ADDRESS OF NEXT TEST                      *
2601  013366  000012                            10.                     ;ITERATION COUNT                           *
2602  013370  013406                            AXAA                    ;SCOPE ENTRY POINT                         *
2603          000046                            X=X+1                   ;                                          *
2604                                  ;*****************************************************************************
2605                                  ;TEST THAT RECEIVER DONE BIT IS ABLE TO INTERRUPT. IF THE IN  RRUPT IS
2606                                  ;SERVICED IT WILL HAVE OCCURRED AT THE CORRECT VECTOR.
2607  013372  004737  003614                    JSR     7,OVRLAY        ;GO TO OVERLAY ROUTINE
2608  013376  104006                            STRXV                   ;SET RX INTERRUPT SERIVCE TO AXAB
2609  013400  013434                            AXAB
2610  013402  004737  014544                    JSR     %7,STRXD        ;SET RX DONE BIT
2611  013406  042777  000100  165774  AXAA:     BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
2612  013414  005037  177776                    CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2613  013420  052777  000100  165762            BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
2614  013426  000240                            NOP
2615  013430  104003                            ERROR                   ;RX FAILED TO INTERRUPT
2616  013432  000401                            BR      AXAC
2617  013434  022626                    AXAB:   POPSP2                  ;HERE IF INTERRUPT OCCURS
2618  013436  042777  000100  165744  AXAC:     BIC     #BIT6,@RXCSR    ;DISABLE INT EN
2619  013444  104012                            SCOPE                   ;SCOPE
2620  013446                                    TSTA    10.,AX1,0
2621  013446                                    TSTAA   AX1,10.,\X+1+0,\X+2,\X+1
2622                                  ;*****************************************************************************
2623  013446  000047                  AT47:     47                      ;TEST NUMBER                               *
2624  013450  013530                            AT50                    ;ADDRESS OF NEXT TEST                      *
2625  013452  000012                            10.                     ;ITERATION COUNT                           *
2626  013454  013466                            AX1A                    ;SCOPE ENTRY POINT                         *
2627          000047                            X=X+1                   ;                                          *
2628                                  ;*****************************************************************************
2629                                  ;TEST THAT MODEM INTERRUPT BIT IS ABLE TO INTERRUPT. IF THE INTERRUPT IS
2630                                  ;SERVICED IT WILL HAVE OCCURRED AT THE CORRECT VECTOR.
2631  013456  004737  003614                    JSR     7,OVRLAY        ;GO TO OVERLAY ROUTINE
2632  013462  104006                            STRXV                   ;SET RX INTERRUPT SERIVCE TO AXAB
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 2633  013464  013516                          AX1B
 2634  013466  042777  000044  165714  AX1A:   BIC     #44,@RXCSR      ;DISABLE MODEM INTERRUPTS
 2635  013474  005037  177776                  CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
 2636  013500  052777  000044  165702          BIS     #44,@RXCSR      ;ENABLE MODEM INTERRUPTS,RQ TO SND
 2637  013506  104016                          DCLAY
 2638  013510  000005                          5.
 2639  013512  104003                          ERROR                   ;MODEM FAILED TO INTERRUPT
 2640  013514  000401                          BR      AX1C
 2641  013516  022626                  AX1B:   POPSP2                  ;HERE IF INTERRUPT OCCURS
 2642  013520  042777  000040  165662  AX1C:   BIC     #BIT5,@RXCSR    ;DISABLE INT EN
 2643  013526  104012                          SCOPE
 2644  013530                                  TSTA    1000.,AYA,CD
 2645  013530                                  TSTAA   AYA,1000.,\X+1+CD,\X+2,\X+1
 2646                          ;*****************************************************************************
 2647  013530  100050                  AT50:   100050                  ;TEST NUMBER                        *
 2648  013532  013612                          AT51                    ;ADDRESS OF NEXT TEST               *
 2649  013534  001750                          1000.                   ;ITERATION COUNT                    *
 2650  013536  013550                          AYAA                    ;SCOPE ENTRY POINT                  *
 2651          000050                          X=X+1                   ;                                   *
 2652                          ;*****************************************************************************
 2653                          ;TEST THAT RECEIVER DONE BIT DOES NOT CAUSE AN INTERRUPT WHEN THE PROCESSOR
 2654                          ;IS AT THE SAME PRIORITY LEVEL AS THE RECEIVER INTERRUPT REQUEST LEVEL
 2655  013540  104006                          STRXV                   ;SET RX INTERRUPT SERVICE TO AYAC
 2656  013542  013604                          AYAC
 2657  013544  004737  014544                  JSR     %7,STRXD        ;SET RX DONE BIT
 2658  013550  042777  000100  165632  AYAA:   BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
 2659  013556  013737  001422  177776          MOV     RXLVL,PSW       ;SET PROCESSOR PRIORITY SAME AS RECEIVER'S
 2660  013564  052777  000100  165616          BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
 2661  013572  000240                          NOP
 2662  013574  042777  000100  165606  AYAB:   BIC     #BIT6,@RXCSR    ;OK IF NO INTERRUPT. DISABLE RX INTERRUPTS
 2663  013602  104012                          SCOPE                   ;SCOPE
 2664  013604  022626                  AYAC:   POPSP2                  ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
 2665  013606  104003                          ERROR                   ;RX INTERRUPTED WITH PROCESOR AT SAME
 2666  013610  000771                          BR      AYAB            ;PRIORITY AS THE RECEIVER
 2667  013612                                  TSTA    10.,AZA,CD
 2668  013612                                  TSTAA   AZA,10.,\X+1+CD,\X+2,\X+1
 2669                          ;*****************************************************************************
 2670  013612  100051                  AT51:   100051                  ;TEST NUMBER                        *
 2671  013614  013702                          AT52                    ;ADDRESS OF NEXT TEST               *
 2672  013616  000012                          10.                     ;ITERATION COUNT                    *
 2673  013620  013632                          AZAA                    ;SCOPE ENTRY POINT                  *
 2674          000051                          X=X+1                   ;                                   *
 2675                          ;*****************************************************************************
 2676                          ;TEST THAT RECEIVER DONE BIT CAUSES INTERRUPT WHEN PROCESSOR IS AT PRIORITY
 2677                          ;ONE LEVEL LOWER THAN THE RECEIVER'S INTERRUPT REQUEST LEVEL
 2678  013622  104006                          STRXV                   ;SET RX INTERRUPT TO AZAB
 2679  013624  013670                          AZAB
 2680  013626  004737  014544                  JSR     %7,STRXD        ;SET RX DONE BIT
 2681  013632  042777  000100  165550  AZAA:   BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
 2682  013640  013737  001422  177776          MOV     RXLVL,PSW       ;SET PROCESSOR PRIORITY ONE LEVEL
 2683  013646  162737  000040  177776          SUB     #40,PSW         ;LOWER THAN RECEIVER'S PRIORITY
 2684  013654  052777  000100  165526          BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
 2685  013662  000240                          NOP
 2686  013664  104003                          ERROR                   ;RX FAILED TO INTERRUPT WITH PROCESSOR AT
 2687  013666  000401                          BR      AZAC            ;PRIORITY ONE LEVEL LOWER THAN RECEIVER'S
 2688  013670  022626                  AZAB:   POPSP2                  ;HERE IF INTERRUPT OCCURS
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```
 2689  013672  042777  000100  165510  AZAC:   BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
 2690  013700  104012                          SCOPE                   ;SCOPE
 2691  013702                                  TSTA    100.,AAB,CD
 2692  013702                                  TSTAA   AAB,100.,\X+1+CD,\X+2,\X+1
 2693                                  ;*****************************************************************************
 2694  013702  100052                  AT52:   100052                  ;TEST NUMBER                              *
 2695  013704  014000                          AT53                    ;ADDRESS OF NEXT TEST                     *
 2696  013706  000144                          100.                    ;ITERATION COUNT                          *
 2697  013710  013716                          AABA                    ;SCOPE ENTRY POINT                        *
 2698           000052                         X=X+1                   ;                                         *
 2699                                  ;*****************************************************************************
 2700                                  ;TEST THAT RECEIVER DOES NOT INTERRUPT AFTER THE INITIAL INTERRUPT HAS
 2701                                  ;OCCURED AND DONE BIT HAS NOT BEEN CLEARED
 2702  013712  004737  014544                  JSR     %7,STRXD        ;SET RX DONE BIT
 2703  013716  104006                  AABA:   STRXV                   ;SET RX INTERRUPT SERVICE TO AABC
 2704  013720  013752                          AABC
 2705  013722  042777  000100  165460          BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
 2706  013730  052777  000100  165452          BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
 2707  013736  000240                          NOP
 2708  013740  104003                          ERROR                   ;RX FAILED TO INTERRUPT
 2709  013742  042777  000100  165440  AABB:   BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
 2710  013750  104012                          SCOPE                   ;SCOPE
 2711  013752  012777  013772  165440  AABC:   MOV     #AABE,@RXVTR    ;HERE IF INTERRUPT OCCURS. CHANGE SERVICE TO
 2712  013760  012716  013766                  MOV     #AABD,@%6       ;AABE, SET EXIT POINTER TO AABD
 2713  013764  000002                          RTI                     ;EXIT INTERRUPT SERVICE
 2714  013766  000240                  AABD:   NOP                     ;OK IF NO INTERRUPT REOCCURS
 2715  013770  000764                          BR      AABB
 2716  013772  022626                  AABE:   POPSP2                  ;HERE IF INTERRUPT REOCCURS
 2717  013774  104003                          ERROR                   ;RX REINTERRUPTED AFTER RTI
 2718  013776  000761                          BR      AABB
 2719  014000                                  TSTA    100.,ABB,CD
 2720  014000                                  TSTAA   ABB,100.,\X+1+CD,\X+2,\X+1
 2721                                  ;*****************************************************************************
 2722  014000  100053                  AT53:   100053                  ;TEST NUMBER                              *
 2723  014002  014040                          AT54                    ;ADDRESS OF NEXT TEST                     *
 2724  014004  000144                          100.                    ;ITERATION COUNT                          *
 2725  014006  014010                          ABBA                    ;SCOPE ENTRY POINT                        *
 2726           000053                         X=X+1                   ;                                         *
 2727                                  ;*****************************************************************************
 2728                                  ;TEST THAT READING RXCSR DOES NOT CLEAR DONE BIT (RXCSR BIT 7 )
 2729  014010  004737  014544          ABBA:   JSR     %7,STRXD        ;SET RX DONE BIT
 2730  014014  017737  165370  001610          MOV     @RXCSR,RXCSRT   ;SAVE CONTENT OF RXCSR
 2731  014022  105777  165362                  TSTB    @RXCSR          ;SEE IF DONE BIT IS CLEAR
 2732  014026  100401                          BMI     ABBB            ;BRANCH IF DONE BIT IS NOT CLEAR
 2733  014030  104003                          ERROR
 2734  014032  005777  165354          ABBB:   TST     @RXBUF          ;CLEAR DONE BIT IF SET
 2735  014036  104012                          SCOPE                   ;SCOPE
 2736  014040                                  TSTA    100.,ACB,CD
 2737  014040                                  TSTAA   ACB,100.,\X+1+CD,\X+2,\X+1
 2738                                  ;*****************************************************************************
 2739  014040  100054                  AT54:   100054                  ;TEST NUMBER                              *
 2740  014042  014124                          AT55                    ;ADDRESS OF NEXT TEST                     *
 2741  014044  000144                          100.                    ;ITERATION COUNT                          *
 2742  014046  014054                          ACBA                    ;SCOPE ENTRY POINT                        *
 2743           000054                         X=X+1                   ;                                         *
 2744                                  ;*****************************************************************************
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2745                                    ;TEST THAT DONE CAN CAUSE INT WITH ERROR SET
2746  014050  104006                            STRXV                   ;SET RX INTERRUPT SERVICE TO ACBB.
2747  014052  014112                            ACBB
2748  014054  004737  014544           ACBA:    JSR     %7,STRXD        ;SET RX DONE BIT
2749  014060  004737  014544                    JSR     %7,STRXD        ;SET RX DATA OFLOW
2750  014064  042777  000100  165316            BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
2751  014072  005037  177776                    CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2752  014076  052777  000100  165304            BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
2753  014104  000240                            NOP
2754  014106  104003                            ERROR                   ;RX DONE FAILED TO CAUSE INTERRUPT
2755  014110  000401                            BR      ACBC
2756  014112  022626                    ACBB:   POPSP2                  ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2757  014114  042777  000100  165266    ACBC:   BIC     #BIT6,@RXCSR
2758  014122  104012                            SCOPE
2759  014124                                    TSTA    3.,ADD,CD
2760  014124                                    TSTAA   ADD,3.,\X+1+CD,\X+2,\X+1
2761                                    ;*****************************************************************************
2762  014124  100055                    AT55:   100055                  ;TEST NUMBER                              *
2763  014126  014146                            AT56                    ;ADDRESS OF NEXT TEST                     *
2764  014130  000003                            3.                      ;ITERATION COUNT                          *
2765  014132  014140                            ADDA                    ;SCOPE ENTRY POINT                        *
2766          000055                            X=X+1                   ;                                         *
2767                                    ;*****************************************************************************
2768                                    ;DATA TEST USING NORMAL CONFIGURATION
2769  014134  004737  003004                    JSR     %7,CDINIT       ;INIT IF C-D DEVICE
2770  014140  004537  005120           ADDA:    JSR     5,DATTST
2771  014144  104012                            SCOPE
2772  014146                                    TSTA    3.,APB,0
2773  014146                                    TSTAA   APB,3.,\X+1+0,\X+2,\X+1
2774                                    ;*****************************************************************************
2775  014146  000056                    AT56:   56                      ;TEST NUMBER                              *
2776  014150  014240                            AT57                    ;ADDRESS OF NEXT TEST                     *
2777  014152  000003                            3.                      ;ITERATION COUNT                          *
2778  014154  014162                            APBA                    ;SCOPE ENTRY POINT                        *
2779          000056                            X=X+1                   ;                                         *
2780                                    ;*****************************************************************************
2781                                    ;DATA TEST USING JUMPER CONNECTOR.
2782                                    ;USES SPECIAL BINARY COUNT PATTERN FOR DATA. NO INTERRUPT.
2783  014156  004737  004452                    JSR     7,INBIN         ;INITIALIZE BINARY COUNT PATTERN
2784  014162  012737  001750  001566    APBA:   MOV     #1000.,CTRO     ;SET CHARACTER COUNT TO 1000
2785  014170  104020                    APBB:   TIMETX                  ;TIME OUT TX DONE
2786  014172  104003                            ERROR                   ;ERROR DONE NOT SETTING
2787  014174  004737  004556                    JSR     7,GTBINP        ;GET BINARY CHARACTER
2788  014200  110137  001562                    MOVB    %1,CRBUFA       ;SAVE CHAR IN CRBUFA AND
2789  014204  004737  005530                    JSR     7,MASKIT        ;MASK OFF NON TRANSMITTED BITS
2790  014210  110177  165202                    MOVB    %1,@TXBUF       ;LOAD CHAR.
2791  014214  104017                            TIMERX                  ;TIME OUT RX DONE
2792  014216  104003                            ERROR                   ;ERROR DONE NOT SETTING
2793  014220  117737  165166  001560            MOVB    @RXBUF,CRBUF    ;LOAD RECEIVED DATA INTO CRBUF
2794  014226  104004                            DATCHK                  ;CHECK DATA
2795  014230  005337  001566                    DEC     CTRO            ;TESTED 1000 CHARACTERS
2796  014234  001355                            BNE     APBB            ;BRANCH IF NOT
2797  014236  104012                            SCOPE                   ;YES. SCOPE
2798  014240                                    TSTA    3.,EXT,0
2799  014240                                    TSTAA   EXT,3.,\X+1+0,\X+2,\X+1
2800                                    ;*****************************************************************************
```

```
 2801  014240  000057                AT57:   57                      ;TEST NUMBER                                    *
 2802  014242  014324                        AT60                    ;ADDRESS OF NEXT TEST                           *
 2803  014244  000003                        3.                      ;ITERATION COUNT                                *
 2804  014246  014250                        EXTA                    ;SCOPE ENTRY POINT                              *
 2805          000057                        X=X+1                   ;                                               *
 2806                                ;*********************************************************************************
 2807
 2808                                ;TEST THAT RDR BUSY TURNS OFF RDR ENABLE
 2809                                ;WHEN RUN ON AN XOR TESTER
 2810  014250  000005                EXTA:   RESET                   ;RESET
 2811  014252  005277  165132                INC     @RXCSR          ;SET RDR ENABLE, SEE IF RDE IS TURNED OFF BY RDR BUSY
 2812  014256  012737  177770  014314        MOV     #-10,3$+2
 2813  014264  005237  014314        2$:     INC     3$+2            ;WAIT LOOP FOR XOR TESTER
 2814  014270  001375                        BNE     2$
 2815  014272  005077  165120                CLR     @TXBUF          ;SHIP OUT CHAR.
 2816  014276  012737  130000  014314        MOV     #-50000,3$+2
 2817  014304  105777  165100        5$:     TSTB    @RXCSR          ;TEST COMPLETE
 2818  014310  100404                        BMI     6$
 2819  014312  005227  177770        3$:     INC     #-10            ;ALLOW TIME FOR RDR DONE TO SET
 2820  014316  001372                        BNE     5$
 2821  014320  104003                        ERROR                   ;FAILURE OF RDR DONE TO SET
 2822  014322  104012                6$:     SCOPE
 2823  014324                                TSTA    10.,EX,0
 2824  014324                                TSTAA   EX,10.,\X+1+0,\X+2,\X+1
 2825                                ;*********************************************************************************
 2826  014324  000060                AT60:   60                      ;TEST NUMBER                                    *
 2827  014326  014374                        AT61                    ;ADDRESS OF NEXT TEST                           *
 2828  014330  000012                        10.                     ;ITERATION COUNT                                *
 2829  014332  014334                        EXA                     ;SCOPE ENTRY POINT                              *
 2830          000060                        X=X+1                   ;                                               *
 2831                                ;*********************************************************************************
 2832                                ;TEST THAT WHEN RDR ENABLE IS SET THAT THE RXCSR DONE
 2833                                ;BIT IS CLEARED
 2834  014334  000005                EXA:    RESET
 2835  014336  004737  014544                JSR     PC,STRXD        ;SET RCVR DONE
 2836  014342  005277  165042                INC     @RXCSR          ;SET ENABLE
 2837  014346  105777  165036                TSTB    @RXCSR          ;DONE SHOULD CLEAR
 2838  014352  100001                        BPL     1$
 2839  014354  104003                        ERROR                   ;DONE NOT CLEAR
 2840  014356  012737  177770  014366  1$:   MOV     #-10,3$+2
 2841  014364  005227  177770        3$:     INC     #-10            ;WAIT 100MIC. SEC. FOR XOR
 2842  014370  001375                        BNE     3$
 2843  014372  104012                        SCOPE
 2844  014374                                TSTA    3.,EXA,0
 2845  014374                                TSTAA   EXA,3.,\X+1+0,\X+2,\X+1
 2846                                ;*********************************************************************************
 2847  014374  000061                AT61:   61                      ;TEST NUMBER                                    *
 2848  014376  014430                        AT62                    ;ADDRESS OF NEXT TEST                           *
 2849  014400  000003                        3.                      ;ITERATION COUNT                                *
 2850  014402  014404                        EXAA                    ;SCOPE ENTRY POINT                              *
 2851          000061                        X=X+1                   ;                                               *
 2852                                ;*********************************************************************************
 2853  014404  005737  002110        EXAA:   TST     XORFLG          ;CHECKING JUMPER CONNECTIONS FOR XOR, RCVR
 2854  014410  100006                        BPL     3$
 2855  014412  012777  177777  164770        MOV     #-1,@RXCSR
 2856  014420  005777  164764                TST     @RXCSR
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2857  014424  000005                          RESET
2858  014426  104012                  3$:     SCOPE
2859  014430                                  TSTA    3.,EXB,0
2860  014430                                  TSTAA   EXB,3.,\X+1+0,\X+2,\X+1
2861                                  ;*****************************************************************************
2862  014430  000062                  AT62:   62                      ;TEST NUMBER                            *
2863  014432  014464                          AT63                    ;ADDRESS OF NEXT TEST                   *
2864  014434  000003                          3.                      ;ITERATION COUNT                        *
2865  014436  014440                          EXBA                    ;SCOPE ENTRY POINT                      *
2866          000062                          X=X+1                   ;                                       *
2867                                  ;*****************************************************************************
2868  014440  005737  002110          EXBA:   TST     XORFLG          ;SAME AS ABOVE BUT FOR XMTR
2869  014444  100006                          BPL     4$
2870  014446  012777  177677  164740        MOV     #177677,@TXCSR
2871  014454  005777  164734                TST     @TXCSR
2872  014460  000005                        RESET
2873  014462  104012                  4$:     SCOPE
2874  014464                                  TSTAA   AQB,10.,\X+1+CD,LAST,\X+1
2875                                  ;*****************************************************************************
2876  014464  100063                  AT63:   100063                  ;TEST NUMBER                            *
2877  014466  177777                          ATLAST                  ;ADDRESS OF NEXT TEST                   *
2878  014470  000012                          10.                     ;ITERATION COUNT                        *
2879  014472  014474                          AQBA                    ;SCOPE ENTRY POINT                      *
2880          000063                          X=X+1                   ;                                       *
2881                                  ;*****************************************************************************
2882                                  ;TEST THAT WHEN TXCSR BIT 0 IS SET THAT THE OUTPUT DATA LINE
2883                                  ;IS PULLED TO A SPACE.
2884  014474  004737  003004          AQBA:   JSR     %7,CDINIT       ;INIT IF C-D DEVICE
2885  014500  052777  000004  164706        BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT IN TXCSR
2886  014506  052777  000001  164700        BIS     #BIT0,@TXCSR    ;SET BREAK BIT
2887  014514  012777  000252  164674        MOV     #252,@TXBUF     ;LOAD BUFFER
2888  014522  104017                        TIMERX                  ;TIME OUT RX DONE
2889  014524  104003                        ERROR                   ;ERROR DONE NOT SETTING
2890  014526  127727  164660  000000        CMPB    @RXBUF,#0       ;CHARACTER RECEIVED SHOULD BE 0
2891  014534  001401                        BEQ     .+4
2892  014536  104003                        ERROR                   ;CHARACTER OTHER THAN 0
2893  014540  104011                        SRESET                  ;ISSUE RESET
2894  014542  104012                        SCOPE
2895
2896                                  ;
2897                                  ;SUBROUTINE TO SET RXCSR DONE BIT.
2898  014544  052777  000004  164642  STRXD:  BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT.
2899  014552  005077  164640                CLR     @TXBUF          ;LOAD TXBUF.
2900  014556  104017                        TIMERX                  ;TIME OUT TX DONE
2901  014560  104003                        ERROR                   ;ERROR DONE NOT SETTING
2902  014562  000207                        RTS     %7              ;EXIT.
2903                                  ;SUBROUTINE TO CHECK THAT CTR0 THROUGH CTR3 CONTAIN DESCENDING VALUES.
2904  014564  023737  001566  001570  CMPT:   CMP     CTR0,CTR1
2905  014572  101430                        BLOS    CMPTNG
2906  014574  023737  001570  001572        CMP     CTR1,CTR2
2907  014602  101424                        BLOS    CMPTNG
2908  014604  023737  001572  001574        CMP     CTR2,CTR3
2909  014612  101420                        BLOS    CMPTNG
2910  014614  023737  001574  001576        CMP     CTR3,CTR4
2911  014622  101414                        BLOS    CMPTNG
2912  014624  023737  001576  001600        CMP     CTR4,CTR5
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2913  014632  101410                        BLOS    CMPTNG
2914  014634  023737  001600  001602        CMP     CTR5,CTR6
2915  014642  101404                        BLOS    CMPTNG
2916  014644  023737  001602  001604        CMP     CTR6,CTR7
2917  014652  101002                        BHI     CMPTOK
2918  014654  062716  000002        CMPTNG: ADD     #2,@%6
2919  014660  000207                CMPTOK: RTS     %7
2920
2921
2922                                ;**********
2923                                ;PRG1 - TRANSMITTER SCOPE LOOP
2924                                ;**********
2925  014662  104000                PRG1:   TYPE                    ;TYPE PROGRAM TITLE.
2926  014664  016476                        P1TIT
2927  014666  004537  004262                JSR     5,LINSLX        ;GO GET LINE # FROM USER
2928  014672  104000                        TYPE                    ;TYPE SELECT CHAR AND DELAY.
2929  014674  016573                        SELCAD
2930  014676  004737  003652                JSR     PC,RDOCT        ;READ IN DATA.
2931  014702  012637  001624                MOV     (SP)+,TEMP2     ;STORE DATA.
2932  014706  113737  001624  014730  PRG1A: MOVB    TEMP2,PRG B     ;DELAY COUNT TO PRG1B.
2933  014714  113777  001625  164474        MOVB    TEMP2+1,@TXBUF  ;LOAD TXBUF.
2934  014722  105777  164466                TSTB    @TXCSR          ;TEST FOR DONE.         ;;++G
2935  014726  104016                        DELAY                   ;DELAY # OF MSECS. SET AT SR.
2936  014730  000000                PRG1B:  OPEN
2937  014732  000765                        BR      PRG1A           ;REPEAT.
2938                                ;**********
2939                                ;PRG2 - RECEIVER SCOPE LOOP.
2940                                ;**********
2941  014734  104000                PRG2:   TYPE                    ;TYPE PROGRAM TITLE.
2942  014736  016536                        P2TIT
2943  014740  004537  004262                JSR     5,LINSLX        ;GO GET LINE # FROM USER
2944  014744  104000                        TYPE                    ;TYPE SELECT CHAR AND DELAY.
2945  014746  016573                        SELCAD
2946  014750  004737  003652                JSR     PC,RDOCT        ;READ IN DATA.
2947  014754  012637  001624                MOV     (SP)+,TEMP2     ;STORE DATA.
2948  014760  052777  000004  164426  PRG2A: BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT.
2949  014766  113737  001624  015010        MOVB    TEMP2,PRG2B     ;DELAY COUNT TO PRG2B.
2950  014774  113777  001625  164414        MOVB    TEMP2+1,@TXBUF  ;LOAD TXBUF.
2951  015002  105777  164406                TSTB    @TXCSR          ;TEST FOR DONE          ;;++G
2952  015006  104016                        DELAY                   ;DELAY # OF MSECS. SET IN SR.
2953  015010  000000                PRG2B:  OPEN
2954  015012  017700  164374                MOV     @RXBUF,%0       ;RXBUF CONTENTS TO R0.
2955  015016  000005                        RESET                   ;DISPLAY CONTENTS OF RXBUF (IN R0),
2956  015020  000005                        RESET                   ;BY ISSUING 5 RESET INSTRUCTIONS
2957  015022  000005                        RESET
2958  015024  000005                        RESET
2959  015026  000005                        RESET
2960  015030  000753                        BR      PRG2A
2961
2962
2963                                ;**********
2964                                ;PRG3 - SINGLE CHARACTER MAINTENANCE MODE DATA TEST.
2965                                ;**********
2966  015032  104000                PRG3:   TYPE                    ;TYPE PROGRAM TITLE.
2967  015034  017364                        P3TIT
2968  015036  004537  004262                JSR     5,LINSLX        ;GO GET LINE # FROM USER
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 2969  015042  104000                          TYPE                    ;TYPE: SELECT CHARACTER.
 2970  015044  017507                          SELCAR
 2971  015046  004737  003652                  JSR     PC,RDOCT        ;GET TEST CHAR AND DELAY FROM USER.
 2972  015052  012637  001624                  MOV     (SP)+,TEMP2     ;STORE TEST CHAR AND DELAY
 2973  015056  113737  001625  001562 PRG3A:   MOVB    TEMP2+1,CRBUFA  ;MOVE DATA CHAR TO CRBUFA.
 2974  015064  004737  015124                  JSR     %7,MOUTIN       ;GO OUTPUT, RECEIVE, AND CHECK DATA.
 2975  015070  000772                          BR      PRG3A
 2976                                 ;**********
 2977                                 ;PRG4 - SPECIAL BINARY COUNT MAINTENANCE MODE DATA TEST.
 2978                                 ;**********
 2979  015072  104000                 PRG4.   TYPE                    ;TYPE PROGRAM TITLE.
 2980  015074  017434                          P4TIT
 2981  015076  004537  004262                  JSR     5,LINSLX        ;GO GET LINE # FROM JSER
 2982  015102  004737  004452                  JSR     %7,INBIN        ;INITIALIZE BINARY COUNT.
 2983  015106  004737  004556         PRG4A:  JSR     %7,GTBINP       ;GET BINARY CHARACTER.
 2984  015112  110137  001562                  MOVB    %1,CRBUFA       ;SAVE AT CRBUFA.
 2985  015116  004737  015124                  JSR     %7,MOUTIN       ;GO OUTPUT, RECEIVE, AND CHECK DATA.
 2986  015122  000771                          BR      PRG4A           ;REPEAT.
 2987                                 ;SUBROUTINE TO OUTPUT, RECEIVE, AND CHECK DATA WITH MAINTENANCE BIT SET.
 2988  015124  032777  000200  163036 MOUTIN: BIT     #BIT7,@SRPTR    ;SEE IF BIT 7 IS SET.
 2989  015132  001001                          BNE     .+4             ;BRANCH IF SET.
 2990  015134  104002                          STALL                   ;SET. DO A RANDOM STALL.
 2991  015136  104020                          TIMETX                  ;TIME OUT TX DONE
 2992  015140  104003                          ERROR                   ;ERROR DONE NOT SETTING
 2993  015142  052777  000004  164244          BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT.
 2994  015150  005777  164236                  TST     @RXBUF          ;CLR RX DONE
 2995  015154  013777  001562  164234          MOV     CRBUFA,@TXBUF   ;LOAD TXBUF.
 2996  015162  004737  005530                  JSR     7,MASKIT        ;MASK OFF NON TRANSMITTED BITS
 2997  015166  104017                          TIMERX                  ;TIME OUT RX DONE
 2998  015170  104003                          ERROR                   ;ERROR DONE NOT SETTING
 2999  015172  017737  164214  001560          MOV     @RXBUF,CRBUF    ;MOVE CHAR IN RX BUFFER TO CRBUF.
 3000  015200  104004                          DATCHK                  ;COMPARE EXPECTED AND RECEIVED DATA
 3001  015202  000207                          RTS     %7              ;EXIT.
 3002                                 ;************
 3003                                 ;
 3004                                 ;CHECK SWITCH REGISTER ROUTINE.  CHECKS FOR ^G TO ALLOW CHANGING
 3005                                 ;OF LOC 176.  ROUTINE IS ENTERED AT CNTLU FOR START UP PURPOSES.
 3006                                 ;WHEN A ^G IS GIVEN, THE PROGRAM ENTERS AT CKSWR.  THE PROGRAM
 3007                                 ;GETS CONTENTS OF SOFT. SWITCH REG. ,TYPES IT OUT, AND THEN SEEKS
 3008                                 ;NEW DATA FROM OPERATOR.  ONCE DATA IS SUPPLIED, IT INSERTS THIS
 3009                                 ;DATA INTO THE SOFT.SWITCH REG. AND RESUMES OPERATION IN THE
 3010                                 ;MAIN PROGRAM.  INCORRECT ENTRIES (SUCH AS 8,9,LETTERS) ARE DELETED,
 3011                                 ;AND THE PROCESS RESTARTED.  TYPING ^U ALLOWS THE PRESENT
 3012                                 ;ENTRY TO BE DELETED AND THE PROCESS RESTARTED.
 3013                                 ;
 3014                                 ;
 3015                                 ;************
 3016
 3017
 3018  015204                         CHGH5:
 3019  015204  022737  000176  000170 CKSWR:  CMP     #SWREG,SRPTR    ;SOFTWARE SW REG PRES?
 3020  015212  001132                          BNE     OUT             ;NO, GET OUT
 3021  015214  105777  164210                  TSTB    @TKS            ;YES, IS CHARACTER READY?
 3022  015220  100127                          BPL     OUT             ;IF NOT, GET OUT
 3023  015222  017737  164204  001642          MOV     @TKB,TIB        ;STORE BUFFER
 3024  015230  042737  177600  001642          BIC     #177600,TIB     ;STRIP OFF GARBAGE
```

```
3025  015236  022737  000007  001642          CMP     #7,TIB          ;IS IT A ^G
3026  015244  001115                          BNE     OUT             ;IF NOT GET OUT
3027  015246  104000                          TYPE                    ;ECHO ^G
3028  015250  020321                          CNTG
3029  015252  005077  164160                  CLR     @TPB
3030  015256  104000                  CNTLU:  TYPE                    ;ALLOW SWR= TO BE TYPED
3031  015260  020330                          SWR
3032  015262  017746  162702                  MOV     @SRPTR,-(SP)    ;MOV CONTENTS OF SWR
3033  015266  004737  015520                  JSR     PC,TYPOC        ;OCTAL TYPE OUT ROUTINE
3034  015272  022600                          CMP     (SP)+,R0        ;CORRECT STACK POINTER
3035  015274  104000                          TYPE                    ;ALLOW NEW= TO BE TYPED
3036  015276  020341                          NEW
3037  015300  005037  001644                  CLR     TEMPST          ;CLEAR TEMP STORAGE LOC
3038  015304  012737  000007  001646          MOV     #7,COUNT1       ;SET UP TO ACCEPT 7 CHAR
3039  015312  105777  164112          1$:     TSTB    @TKS            ;IS CHARACTER THERE?
3040  015316  100375                          BPL     1$              ;IF NOT,TRY AGAIN
3041  015320  117737  164106  001642          MOVB    @TKB,TIB        ;PICKUP CHARACTER
3042  015326  105777  164102          8$:     TSTB    @TPS            ;CHECK PRINTER STATUS
3043  015332  100375                          BPL     8$              ;NOT READY, TRY AGAIN
3044  015334  113777  001642  164074          MOVB    TIB,@TPB        ;PRINT IT
3045  015342  042737  177600  001642          BIC     #177600,TIB     ;STRIP OFF GARBAGE
3046  015350  122737  000025  001642          CMPB    #25,TIB         ;IS IT A ^U
3047  015356  001001                          BNE     2$              ;BRANCH IF NOT
3048  015360  000736                  3$:     BR      CNTLU           ;START OVER
3049  015362  122737  000015  001642  2$:     CMPB    #15,TIB         ;IS IT A <CR>
3050  015370  001005                          BNE     4$              ;BRANCH IF NOT
3051  015372  104021                          SCRLF                   ;TYPEOUT <CR>AND <LF>
3052  015374  022737  000007  001646          CMP     #7,COUNT1       ;WAS <CR> FIRST CHAR
3053  015402  001033                          BNE     7$              ;CHANGE SWREG IF NOT FIRST <CR>
3054  015404  122737  000060  001642  4$:     CMPB    #60,TIB         ;IS IT LESS THAN 0
3055  015412  003004                          BGT     5$              ;GO TO ? ROUTINE IF SO
3056  015414  122737  000067  001642          CMPB    #67,TIB         ;IS IT GREATER THAN 7
3057  015422  002003                          BGE     6$              ;GO TO ? ROUTINE IF SO
3058  015424  104000                  5$:     TYPE                    ;SET UP FOR ? TYPEOUT
3059  015426  020352                          QUEST
3060  015430  000753                          BR      3$              ;START INPUT STRING OVER
3061  015432  006337  001644          6$:     ASL     TEMPST          ;MULTIPLY BY 10
3062  015436  006337  001644                  ASL     TEMPST
3063  015442  006337  001644                  ASL     TEMPST
3064  015446  142737  000060  001642          BICB    #60,TIB         ;CLEAR OF ASCII
3065  015454  153737  001642  001644          BISB    TIB,TEMPST      ;MOV CHAR TO TEMPST
3066  015462  005337  001646                  DEC     COUNT1          ;ONLY WANT 6 NUMBERS AND <CR>
3067  015466  001756                          BEQ     5$              ;IF = 7 TOO MANY NUMBERS
3068  015470  000710                          BR      1$              ;GET NEXT CHAR
3069  015472  013777  001644  162470  7$:     MOV     TEMPST,@SRPTR   ;CHANGE SWR CONTENTS
3070  015500  000207                  OUT:    RTS     PC              ;RETURN TO PROGRAM
3071
3072
3073
3074  015502  010046                  TTINTS: MOV     R0,-(SP)        ;INTERRUPT SERVICE ROUTINE
3075  015504  010146                          MOV     R1,-(SP)        ;SAVE R0 AND R1
3076  015506  004737  015204                  JSR     PC,CKSWR        ;GO TO SUBR TO SERVICE TTY INTERRUPT
3077  015512  012601                          MOV     (SP)+,R1        ;RESTORE R1 AND R0
3078  015514  012600                          MOV     (SP)+,R0
3079  015516  000002                          RTI                     ;RETURN FROM INTERRUPT
3080
```

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 3081
 3082
 3083
 3084  015520  112737  000001  001650  TYPOC:  MOVB    #1,FILL         ;SET THE ZERO FILL SWITCH
 3085  015526  112737  000006  001653          MOVB    #6,MODE+1       ;SET FOR SIX(6) DIGITS
 3086  015534  112737  000005  001654  TYPON:  MOVB    #5,CNT          ;SET THE ITERATION COUNT
 3087  015542  010346                          MOV     R3,-(SP)        ;SAVE R3
 3088  015544  010446                          MOV     R4,-(SP)        ;SAVE R4
 3089  015546  010546                          MOV     R5,-(SP)        ;SAVE R5
 3090  015550  113704  001653                  MOVB    MODE+1,R4       ;GET THE NUMBER OF DIGITS TO TYPE
 3091  015554  005404                          NEG     R4
 3092  015556  062704  000006                  ADD     #6,R4           ;SUBTRACT IT FOR MAX. ALLOWED
 3093  015562  110437  001652                  MOVB    R4,MODE         ;SAVE IT FOR USE
 3094  015566  113704  001650                  MOVB    FILL,R4         ;GET THE ZERO FILL SWITCH
 3095  015572  016605  000010                  MOV     10(SP),R5       ;PICKUP THE INPUT NUMBER
 3096  015576  005003                          CLR     R3              ;CLEAR THE OUTPUT WORD
 3097  015600  006105                  1$:     ROL     R5              ;ROTATE MSB INTO "C"
 3098  015602  000404                          BR      3$              ;GO DO MSB
 3099  015604  006105                  2$:     ROL     R5              ;FORM THIS DIGIT
 3100  015606  006105                          ROL     R5
 3101  015610  006105                          ROL     R5
 3102  015612  010503                          MOV     R5,R3
 3103  015614  006103                  3$:     ROL     R3              ;GET LSB OF THIS DIGIT
 3104  015616  105337  001652                  DECB    MODE            ;TYPE THIS DIGIT?
 3105  015622  100020                          BPL     7$              ;BR IF NO
 3106  015624  042703  177770                  BIC     #177770,R3      ;GET RID OF JUNK
 3107  015630  001002                          BNE     4$              ;TEST FOR 0
 3108  015632  005704                          TST     R4              ;SUPPRESS THIS 0
 3109  015634  001403                          BEQ     5$              ;BR IF YES
 3110  015636  005204                  4$:     INC     R4              ;DON'T SUPPRESS ANYMORE 0'S
 3111  015640  052703  000060                  BIS     #60,R3          ;MAKE THIS DIGIT ASCII
 3112  015644  105777  163564          5$:     TSTB    @TPS            ;IS PRINTER READY FOR CHARACTER?
 3113  015650  100375                          BPL     5$              ;IF NOT, TRY AGAIN
 3114  015652  110377  163560                  MOVB    R3,@TPB         ;TYPE OUT NUMBER
 3115  015656  105777  163552          8$:     TSTB    @TPS            ;MAKE SURE LAST DIGIT TYPES
 3116  015662  100375                          BPL     8$
 3117  015664  105337  001654          7$:     DECB    CNT             ;COUNT BY 1
 3118  015670  003345                          BGT     2$              ;BR IF MORE TO DO
 3119  015672  002402                          BLT     6$              ;BR IF DONE
 3120  015674  005204                          INC     R4              ;INSURE LAST DIGIT ISN'T A BLANK
 3121  015676  000742                          BR      2$              ;GO DO THE LAST DIGIT
 3122  015700  012605                  6$:     MOV     (SP)+,R5        ;RESTORE R5
 3123  015702  012604                          MOV     (SP)+,R4        ;RESTORE R4
 3124  015704  012603                          MOV     (SP)+,R3        ;RESTORE R3
 3125  015706  000207                          RTS     PC              ;RETURN FROM INTERRUPT PC
 3126                                  ;************
 3127
 3128
 3129                                  ;ASCII MESSAGES
 3130                                  ;
 3131  015710  042045  030514  026461  MTIT:   .ASCII  '%DL11-E,C/D OFLNE TST - CZDLA-H%'
 3132  015716  026105  027503  020104
 3133  015724  043117  047114  020105
 3134  015732  051524  020124  020055
 3135  015740  055103  046104  026501
 3136  015746  022510
```

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3137  015750  046445  050101  047440          .ASCII  '%MAP OF DEVICES PRESENT%@'
3138  015756  020106  042504  044526
3139  015764  042503  020123  051120
3140  015772  051505  047105  022524
3141  016000     100
3142  016001     040  020040  020040  MDEVAD: .ASCII  '               %@'
3143  016006  020040  020040  020040
3144  016014  020040  022440     100
3145  016021     045  054524  042520  PGMSG:  .ASCII  '%TYPE IN PROGRAM NUMBER    @'
3146  016026  044440  020116  051120
3147  016034  043517  040522  020115
3148  016042  052516  041115  051105
3149  016050  020040  020040     100
3150  016055     045  047516  042516  MNONE:  .ASCII  '%NONE FOUND%@'
3151  016062  043040  052517  042116
3152  016070  040045                  EMO:    .ASCII  '%T'
3153  016072  052045
3154  016074  020040  020040  041520  ATNUMB: .ASCII  '    PC= '
3155  016102  020075
3156  016104  020040  020040  020040  APC:    .ASCII  '        RXCSR= '
3157  016112  020040  054122  051503
3158  016120  036522     040
3159  016123     040  020040  020040  MRXNUM: .ASCII  '        @'
3160  016130  020040  040040
3161  016134  022445  051120  030107  POTIT:  .ASCII  '%%PRGO - INPUT-OUTPUT LOGIC TESTS. '
3162  016142  026440  044440  050116
3163  016150  052125  047455  052125
3164  016156  052520  020124  047514
3165  016164  044507  020103  042524
3166  016172  052123  027123     040
3167  016177     045  044504  041523          .ASCII  '%DISCONNECT DL11-E FROM MODEM'
3168  016204  047117  042516  052103
3169  016212  042040  030514  026461
3170  016220  020105  051106  046517
3171  016226  046440  042117  046505
3172  016234  040440  042116  041440          .ASCII  ' AND CONNECT JUMPER TO CABLE.%@'
3173  016242  047117  042516  052103
3174  016250  045040  046525  042520
3175  016256  020122  047524  041440
3176  016264  041101  042514  022456
3177  016272     100
3178  016273     124  041530  051123  ATXCSR: .ASCII  'TXCSR S/B: '
3179  016300  051440  041057  020072
3180  016306  020040  020040  020040  ATXSB:  .ASCII  '        WAS: '
3181  016314  020040  040527  035123
3182  016322     040
3183  016323     040  020040  020040  ATXWAS: .ASCII  '      @'
3184  016330  040040
3185  016332  054122  051503  020122  ARXCSR: .ASCII  'RXCSR S/B: '
3186  016340  027523  035102     040
3187  016345     040  020040  020040  ARXSB:  .ASCII  '        WAS: '
3188  016352  020040  053440  051501
3189  016360  020072
3190  016362  020040  020040  020040  ARXWAS: .ASCII  '       @'
3191  016370  040040
3192  016372  054124  051440  042520  ETXTIM: .ASCII  'TX SPEEDS NOT IN ASCENDING ORDER.@'
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 3193  016400  042105  020123  047516
 3194  016406  020124  047111  040440
 3195  016414  041523  047105  044504
 3196  016422  043516  047440  042122
 3197  016430  051105  040056
 3198  016434  054122  051440  042520  ERXTIM: .ASCII  'Rx SPEEDS NOT IN ASCENDING ORDER.@'
 3199  016442  042105  020123  047516
 3200  016450  020124  047111  040440
 3201  016456  041523  047105  044504
 3202  016464  043516  047440  042122
 3203  016472  051105  040056
 3204  016476  022445  051120  030507  P1TIT:  .ASCII  '%%PRG1 - TRANSMITTER SCOPE LOOP@'
 3205  016504  026440  052040  040522
 3206  016512  051516  044515  052124
 3207  016520  051105  051440  047503
 3208  016526  042520  046040  047517
 3209  016534  040120
 3210  016536  022445  051120  031107  P2TIT:  .ASCII  '%%PRG2 - RECEIVER SCOPE LOOP@'
 3211  016544  026440  051040  041505
 3212  016552  044505  042526  020122
 3213  016560  041523  050117  020105
 3214  016566  047514  050117     100
 3215  016573     045  054524  042520  SELCAD: .ASCII  '%TYPE TEST CHAR. CODE IN BITS 15-8,TYPE DELAY TIME IN BITS 7-0'
 3216  016600  052040  051505  020124
 3217  016606  044103  051101  020056
 3218  016614  047503  042504  044440
 3219  016622  020116  044502  051524
 3220  016630  030440  026465  026070
 3221  016636  054524  042520  042040
 3222  016644  046105  054501  052040
 3223  016652  046511  020105  047111
 3224  016660  041040  052111  020123
 3225  016666  026467     060
 3226  016671     045  043117  040440          .ASCII  '%OF AN OCTAL WORD.%@'
 3227  016676  020116  041517  040524
 3228  016704  020114  047527  042122
 3229  016712  022456     100
 3230  016715     104  052101  020101  ERDAT:  .ASCII  'DATA S/B: '
 3231  016722  027523  035102     040
 3232  016727     040  020040  053440  AASB:   .ASCII  '    WAS: '
 3233  016734  051501  020072
 3234  016740  020040     040          AWAS:   .ASCII  '   '
 3235  016743     040  054122  052502          .ASCII  ' RXBUF: '
 3236  016750  035106     040
 3237  016753     040  020040  020040  ARXBUF: .ASCII  '       @'
 3238  016760  020040     100
 3239  016763     045  042523  020124  ASETSR: .ASCII  '%SET HARDWARE SR OPTIONS. NORMAL OPERATION '
 3240  016770  040510  042122  040527
 3241  016776  042522  051440  020122
 3242  017004  050117  044524  047117
 3243  017012  027123  047040  051117
 3244  017020  040515  020114  050117
 3245  017026  051105  052101  047511
 3246  017034  020116
 3247  017036  051511  053440  052111          .ASCII  'IS WITH SR=000000. IF NONE, TYPE <CR>%@'
 3248  017044  020110  051123  030075
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 3249  017052  030060  030060  027060
 3250  017060  044440  020106  047516
 3251  017066  042516  020054  054524
 3252  017074  042520  036040  051103
 3253  017102  022476     100
 3254  017105     045  047111  047503  AINCRT: .ASCII  '%INCORRECT ROUTINE SELECTED, PLACE CORRECT PROGRAM'
 3255  017112  051122  041505  020124
 3256  017120  047522  052125  047111
 3257  017126  020105  042523  042514
 3258  017134  052103  042105  020054
 3259  017142  046120  041501  020105
 3260  017150  047503  051122  041505
 3261  017156  020124  051120  043517
 3262  017164  040522     115
 3263  017167     045  047111  051440          .ASCII  '%IN SR 0-2 AND PRESS CONTINUE.@'
 3264  017174  020122  026460  020062
 3265  017202  047101  020104  051120
 3266  017210  051505  020123  047503
 3267  017216  052116  047111  042525
 3268  017224  040056
 3269  017226  044445  053116  046101  AINCPG:  ASCII  '%INVALID PROGRAM SELECTED.@'
 3270  017234  042111  050040  047522
 3271  017242  051107  046501  051440
 3272  017250  046105  041505  042524
 3273  017256  027104     100
 3274  017261     207                  APGEND: .BYTE   207
 3275  017262  042445  042116  050040          .ASCII  '%END PASS = '
 3276  017270  051501  020123  020075
 3277  017276  020040  020040  020040  APCNT:  .ASCII  '        LINE =  '
 3278  017304  020040  044514  042516
 3279  017312  036440  020040
 3280  017316  020040  020040  054122  ACLIN:  .ASCII  '    RXCSR = '
 3281  017324  051503  020122  020075
 3282  017332  020040  020040  020040  APRXC:  .AS     '        VECTOR = '
 3283  017340  020040  042526  052103
 3284  017346  051117  036440     040
 3285  017353     040  020040  020040  APVEC:  .ASCII  '        @'
 3286  017360  020040  040040
 3287  017364  022445  051120  031507  P3TIT:  .ASCII  '%%PRG3-SINGLE CHAR MAINT MODE DATA TEST@'
 3288  017372  051455  047111  046107
 3289  017400  020105  044103  051101
 3290  017406  046440  044501  052116
 3291  017414  046440  042117  020105
 3292  017422  040504  040524  052040
 3293  017430  051505  040124
 3294  017434  022445  051120  032107  P4TIT:  .ASCII  '%%PRG4-SPEC BIN COUNT MAINT MODE DATA TEST@'
 3295  017442  051455  042520  020103
 3296  017450  044502  020116  047503
 3297  017456  047125  020124  040515
 3298  017464  047111  020124  047515
 3299  017472  042504  042040  052101
 3300  017500  020101  042524  052123
 3301  017506     100
 3302  017507     045  054524  042520  SELCAR: .ASCII  '%TYPE IN TEST CHAR, CODE.    %@'
 3303  017514  044440  020116  042524
 3304  017522  052123  041440  040510
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 3305  017530  027122  041440  042117
 3306  017536  027 05  020040  020040
 3307  017544  040045
 3308  017546  052045  050131  020105  LDLINE: .ASCII  '%TYPE IN LINE NO.    @'
 3309  017554  047111  046040  047111
 3310  017562  020105  047516  020056
 3311  017570  020040  040040
 3312  017574  046045  047111  020105  ALINE:  .ASCII  '%LINE NO.'
 3313  017602  047516     056
 3314  017605     040  020040  040527  SELINE: .ASCII  '   WAS SELECTED@'
 3315  017612  020123  042523  042514
 3316  017620  052103  042105     100
 3317  017625     045  042522  042503  MSETRX: .ASCII  '%RECEIVER SPEED CHECK@'
 3318  017632  053111  051105  051440
 3319  017640  042520  042105  041440
 3320  017646  042510  045503     100
 3321  017653     045  051124  047101  MSETTX: .ASCII  '%TRANSMIT SPEED CHECK@'
 3322  017660  046523  052111  051440
 3323  017666  042520  042105  041440
 3324  017674  042510  045503     100
 3325  017701     045  042523  020124  MSETC:  .ASCII  '%SET CLOCK SWITCHES TO POSITION, THEN PRESS CONTINUE.@'
 3326  017706  046103  041517  020113
 3327  017714  053523  052111  044103
 3328  017722  051505  052040  020117
 3329  017730  047520  044523  044524
 3330  017736  047117  020054  044124
 3331  017744  047105  050040  042522
 3332  017752  051523  041440  047117
 3333  017760  044524  052516  027105
 3334  017766     100
 3335  017767     045  051105  047522  MTERR:  .ASCII  '%ERROR - UNEXPECTED TRAP'
 3336  017774  020122  020055  047125
 3337  020002  054105  042520  052103
 3338  020010  042105  052040  040522
 3339  020016     120
 3340  020017     045  051124  050101          .ASCII  '%TRAPPED TO  '
 3341  020024  042520  020104  047524
 3342  020032  020040
 3343  020034  020040  020040  020040  MTO:    .ASCII  '        '
 3344  020042  020040
 3345  020044  052045  040522  050120          .ASCII  '%TRAPPED FROM PC  '
 3346  020052  042105  043040  047522
 3347  020060  020115  041520  020040
 3348  020066  020040  020040  020040  MFROM:  .ASCII  '        @'
 3349  020074  020040     100
 3350  020077     045  047516  042040  MNOLIN: .ASCII  '%NO DEVICE PRESENT - THIS LINE NO.@'
 3351  020104  053105  041511  020105
 3352  020112  051120  051505  047105
 3353  020120  020124  020055  044124
 3354  020126  051511  046040  047111
 3355  020134  020105  047516  040056
 3356  020142  022477     100          DTERR:  .ASCII  '?%@'
 3357  020145     045  047516  044440  INTER:  .ASCII  '%NO INTERRUPT@'
 3358  020152  052116  051105  052522
 3359  020160  052120     100
 3360  020163     045  051503  036440  MSO:    .ASCII  '%CS = 0@'
```

```
 3361  020170  030040     100
 3362  020173     045  051503  036440  MS1:     .ASCII  '%CS - 1@'
 3363  020200  030440     100
 3364  020203     045  051503  036440  MS2:     .ASCII  '%CS = 2@'
 3365  020210  031040     100
 3366  020213     045  051503  036440  MS3:     .ASCII  '%CS = 3@'
 3367  020220  031440     100
 3368  020223     045  051503  036440  MS4:     .ASCII  '%CS = 4@'
 3369  020230  032040     100
 3370  020233     045  051503  036440  MS5:     .ASCII  '%CS = 5@'
 3371  020240  032440     100
 3372  020243     045  051503  036440  MS6:     .ASCII  '%CS = 6@'
 3373  020250  033040     100
 3374  020253     045  051503  036440  MS7:     .ASCII  '%CS = 7@'
 3375  020260  033440     100
 3376  020263     045  042522  047503  MPWRF:   .ASCII  '%RECOVERED FROM POWER FAILURE@'
 3377  020270  042526  042522  020104
 3378  020276  051106  046517  050040
 3379  020304  053517  051105  043040
 3380  020312  044501  052514  042522
 3381  020320     100
 3382                                  ;********** CHGH6 **********
 3383  020321     040  057040  020107  CNTG:    .ASCII  /  ^G @ /
 3384  020326  020100
 3385  020330  020040  053523  036522  SWR:     .ASCII  /  SWR=  @/
 3386  020336  020040     100
 3387  020341     040  047040  053505  NEW:     .ASCII  /  NEW=  @/
 3388  020346  020075  040040
 3389  020352  020040  020077  040040  QUEST:   .ASCII  /  ?  @/
 3390                                  ;*****************************
 3391                                          .EVEN
 3392          000001                          .END
```

AAA	006654	1565	1569#									
AAAA	010212	1914	1918#									
AAAB	010226	1919	1922#									
AAB	006666	1571#	1574									
AABA	013716	2697	2703#									
AABB	013742	2709#	2715	2718								
AABC	013752	2704	2711#									
AABD	013766	2712	2714#									
AABE	013772	2711	2716#									
AAE	006670	1569	1572#									
AASB	016727	1388	3232#									
ABA	006706	1581	1585#									
ABAA	011270	2144	2148#									
ABAB	011362	2152	2165#									
ABB	006726	1587	1589#	1592								
ABBA	014010	2725	2729#									
ABBB	014032	2732	2734#									
ABE	006730	1585	1590#									
ACA	006746	1599	1603#									
ACAA	011374	2172	2177#									
ACAB	011524	2190	2202#									
ACB	006760	1605#	1608									
ACBA	014054	2742	2748#									
ACBB	014112	2747	2756#									
ACBC	014114	2755	2757#									
ACE	006762	1603	1606#									
ACLIN	017316	1320	3280#									
ADA	007000	1615	1619#									
ADAA	011544	2210	2215#									
ADAB	011572	2220	2223#									
ADAC	011610	2222	2228#									
ADB	007012	1621#	1624									
ADDA	014140	2765	2770#									
ADE	007014	1619	1622#									
ADTENP	005100	1247	1273#									
AEA	007032	1631	1636#									
AEB	007046	1637	1640#									
AEC	007070	1642	1645#									
AED	007110	1639	1644	1647	1649#							
AFBA	010240	1935	1940#									
AFBB	010266	1943	1946#									
AFBC	010312	1945	1949	1951#								
AGA	007132	1658	1662#									
AGB	007146	1663	1666#									
AGBA	010324	1958	1963#									
AGBB	010360	1967	1970#									
AGBC	010414	1976	1979#									
AGBD	010430	1981	1984#									
AGBE	010464	1969	1978	1983	1990	1992	1993#,					
AGC	007170	1668	1671#									
AGD	007210	1665	1670	1673	1675#							
AIAA	011624	2236	2241#									
AIAF	012050	2286	2289#									
AIAS	012052	2248	2253	2258	2263	2268	2273	2278	2283	2291#		
AIASA	012102	2298#	2301									
AIAST	012134	2249	2254	2259	2264	2269	2274	2279	2284	2291*	2299*	2308#

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AINCPG  017226            1308    3269#
AINCRT  017105            1304    3254#
AJA     007232            1684    1688#
AJB     007254            1690    1693#
AJBA    010476            2000    2005#
AJBB    010524            2008    2011#
AJBC    010552            2014    2017#
AJBD    010576            2010    2016    2020    2022#
AJC     007276            1695    1698#
AJD     007316            1692    1697    1700    1702#
AKA     007340            1711    1716#
AKB     007352            1717    1720#
AKBA    010610            2029    2034#
AKBC    010646            2039    2041#
ALA     007364            1727    1731#
ALAA    012146            2315    2322#
ALAB    012176            2327    2330#
ALAC    012210            2329    2332    2334#
ALBA    011016            2081    2086#
ALBB    011044            2089    2092#
ALBC    011072            2095    2098#
ALBD    011116            2091    2097    2101    2103#
ALINE   017574            1173    3312#
ALY     007414            1734    1737#
ALZ     007434            1736    1739    1741#
AMAA    012222            2341    2346#
AMAC    012254            2352    2354#
AMBA    011130            2110    2114#
AMBB    011170            2119    2122#
AMBC    011204            2123    2126#
AMBD    011232            2129    2132#
AMBE    011256            2121    2125    2131    2135    2137#
AOAA    012272            2361    2367#
AOAB    012310            2370#   2374
AOAB1   012324            2371    2373#
AOAC    012346            2376    2379#
AOAD    012360            2378    2380    2382#
AOBA    010704            2053    2057#
AOBB    010732            2060    2063#
AOBC    010760            2066    2069#
AOBD    011004            2062    2068    2072    2074#
APA     007446            1748    1752#
APB     007462            1753    1756#
APBA    014162            2778    2784#
APBB    014170            2785#   2796
APC     016104            1415    3156#
APCNT   017276            1316    3277#
APCX    007504            1758    1761#
APD     007524            1755    1760    1763    1765#
APGEND  017261            1331    3274#
APRXC   017332            1324    3282#
APVEC   017353            1328    3285#
AQA     007546            1774    1778#
AQAA    012376            2390    2398#
AQAB    012622            2443    2446#
AQAS    012624            2405    2410    2415    2420    2425    2430    2435    2440    2448#
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AQASA	012646	2453#	2456									
AQAST	012666	2406	2411	2416	2421	2426	2431	2436	2441	2448*	2454*	2458#
AQB	007562	1779	1782#									
AQBA	014474	2879	2884#									
AQC	007604	1784	1787#									
AQD	007624	1781	1786	1789	1791#							
ARA	007646	1800	1804#									
ARAA	012700	2465	2469#									
ARAS	013014	2469	2470	2485	2494#							
ARB	007670	1806	1809#									
ARC	007712	1811	1814#									
ARD	007732	1808	1813	1816	1818#							
ARXBUF	016753	1392	3237#									
ARXCSR	016332	2201	3185#									
ARXSB	016345	2194	3187#									
ARXWAS	016362	2198	3190#									
ASA	007754	1827	1831#									
ASB	007776	1833	1836#									
ASC	010020	1838	1841#									
ASD	010040	1835	1840	1843	1845#							
ASETSR	016763	1299	3239#									
ATA	010062	1854	1858#									
ATAA	013054	2505	2513#									
ATAB	013106	2519#	2522									
ATAC	013110	2512	2520#									
ATB	010076	1859	1862#									
ATLAST=	177777	491#	2877									
ATNUMB	016074	1423	3154#									
ATXCSR	016273	2164	3178#									
ATXSB	016306	2157	3180#									
ATXWAS	016323	2161	3183#									
AT0	006644	1548	1562#									
AT1	006676	1563	1578#									
AT10	007354	1709	1724#									
AT11	007436	1725	1745#									
AT12	007536	1746	1771#									
AT13	007636	1772	1797#									
AT14	007744	1798	1824#									
AT15	010052	1825	1851#									
AT16	010100	1852	1866#									
AT17	010126	1867	1881#									
AT2	006736	1579	1596#									
AT20	010154	1882	1896#									
AT21	010202	1897	1911#									
AT22	010230	1912	1932#									
AT23	010314	1933	1955#									
AT24	010466	1956	1997#									
AT25	010600	1998	2026#									
AT26	010674	2027	2050#									
AT27	011006	2051	2078#									
AT3	006770	1597	1612#									
AT30	011120	2079	2107#									
AT31	011260	2108	2141#									
AT32	011364	2142	2169#									
AT33	011534	2170	2207#									
AT34	011614	2208	2233#									

AT35	012136	2234	2312#	
AT36	012212	2313	2338#	
AT37	012256	2339	2358#	
AT4	007022	1613	1628#	
AT40	012366	2359	2387#	
AT41	012670	2388	2462#	
AT42	013034	2463	2502#	
AT43	013122	2503	2526#	
AT44	013200	2527	2548#	
AT45	013264	2549	2571#	
AT46	013362	2572	2599#	
AT47	013446	2600	2623#	
AT5	007122	1629	1655#	
AT50	013530	2624	2647#	
AT51	013612	2648	2670#	
AT52	013702	2671	2694#	
AT53	014000	2695	2722#	
AT54	014040	2723	2739#	
AT55	014124	2740	2762#	
AT56	014146	2763	2775#	
AT57	014240	2776	2801#	
AT6	007222	1656	1681#	
AT60	014324	2802	2826#	
AT61	014374	2827	2847#	
AT62	014430	2848	2862#	
AT63	014464	2863	2876#	
AT7	007330	1682	1708#	
AUAA	013136	2529	2536#	
AUAB	013162	2540#	2544	
AUAC	013172	2535	2542#	
AVAA	013214	2551	2558#	
AVAB	013252	2557	2565#	
AVAC	013254	2564	2566#	
AWAA	013274	2574	2579#	
AWAB	013324	2586#	2592	2595
AWAC	013334	2580	2588#	
AWAD	013350	2589	2591#	
AWAE	013354	2588	2593#	
AWAS	016740	1384	3234#	
AXA	010110	1869	1873#	
AXAA	013406	2602	2611#	
AXAB	013434	2609	2617#	
AXAC	013436	2616	2618#	
AXB	010124	1874	1877#	
AX1A	013466	2626	2634#	
AX1B	013516	2633	2641#	
AX1C	013520	2640	2642#	
AYA	010136	1884	1888#	
AYAA	013550	2650	2658#	
AYAB	013574	2662#	2666	
AYAC	013604	2656	2664#	
AYB	010152	1889	1892#	
AZA	010164	1899	1903#	
AZAA	013632	2673	2681#	
AZAB	013670	2679	2688#	
AZAC	013672	2687	2689#	

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AZB      010200          1904    1907#
BDCNV    004734          1242#   1314
BDCNVA   004766          1249#   1252
BDCNVB   005020          1254*   1256#
BDCNVC   005022          1245*   1257#
BDCNVD   005024          1246*   1253    1258#
BIT0   = 000001           459#    764     769     785    1152    1159    1356    1513    1636    1640    1641    1645    1646
                         1649    2886
BIT1   = 000002           458#   1280    1731    1732    1733    1737    1738    1940    1946    1963    1970    1984    2005
                         2011    2017    2178    2202
BIT10  = 002000           449#    859    1873    2088    2094    2100
BIT11  = 004000           448#    854    1888    2370    2379
BIT12  = 010000           447#   1137    1332    1353    1942    1948
BIT13  = 020000           446#   1312    1407    1520    2007    2013    2019
BIT14  = 040000           445#    844    1903    2038    2043    2472    2480    2490
BIT15  = 100000           443     444#    862    1412    1918    1966    1975    1979    1989    2059    2065    2071    2118
                         2122    2128    2134    2486
BIT2   = 000004           457#    879    1281    1662    1666    1667    1671    1672    1675    1752    1756    1757    1761
                         1762    1765    2034    2036    2041    2057    2063    2069    2322    2346    2367    2494    2885
                         2898    2948    2993
BIT3   = 000010           456#   1778    1782    1783    1787    1788    1791    2086    2092    2098    2114    2116    2126
                         2132
BIT4   = 000020           455#
BIT5   = 000040           454#   1805    1809    1810    1814    1815    1818    2642
BIT6   = 000100           453#   1160    1161    1166    1514    1515    1526    1689    1693    1694    1698    1699    1702
                         1832    1836    1837    1841    1842    1845    2513    2515    2518    2520    2537    2538    2540
                         2558    2561    2566    2581    2583    2586    2611    2613    2618    2658    2660    2662    2681
                         2684    2689    2705    2706    2709    2750    2752    2757
BIT7   = 000200           452#   1858    2151    2154    2225    2988
BIT8   = 000400           451#
BIT9   = 001000           450#    824     864    1492
BMOVA    004722          1235#   1237
BMOVE    004712          1178    1231#   1255
CD     = 100000           492#   1560    1576    1594    1610    1626    1653    1679    1706    1822    1879    1894    1909
                         2139    2205    2231    2336    2356    2460    2500    2524    2546    2569    2597    2645    2668
                         2692    2720    2737    2760    2874
CDINIT   003004           877#   2366    2769    2884
CDINX    003030           878     883#
CHAINN   002632           641     843#
CHALT  = 104005           478#
CHGM2    001662           690#
CHGM3    002632           842#
CHGM5    015204          3018#
CHGM7    004212          1126#
CHGM8    000224          1300#   1301
CHGM9    006622          1553#   1554
CHNA     002654           845     848#
CHNAA    002722           855     858#
CHNAB    002646           846#    857     873
CHNB     002746           831     860     864#
CKSWR    015204           843    3019#   3076
CLRCC    003376           752     976#   1142
CMAS0    001302           558#   1480
CMAS1    001304           559#
CMAS10   001322           566#
CMAS11   001324           567#
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CMAS12  001326            568#
CMAS13  001330            569#
CMAS14  001332            570#
CMAS15  001334            571#
CMAS16  001336            572#
CMAS17  001340            573#
CMAS2   001306            560#
CMAS20  001342            574#
CMAS21  001344            575#
CMAS22  001346            576#
CMAS23  001350            577#
CMAS24  001352            578#
CMAS25  001354            579#
CMAS26  001356            580#
CMAS27  001360            581#
CMAS3   001310            561#
CMAS30  001362            582#
CMAS31  001364            583#
CMAS32  001366            584#
CMAS33  001370            585#
CMAS34  001372            586#
CMAS35  001374            587#
CMAS36  001376            588#
CMAS37  001400            589#
CMAS4   001312            562#
CMAS5   001314            563#
CMAS6   001316            564#
CMAS7   001320            565#
CMPT    014564   2285     2442    2904#
CMPTNG  014654   2905     2907    2909    2911    2913    2915    2918#
CMPTOK  014660   2917     2919#
CNT     001654    681#    3086*   3117*
CNTG    020321   3028     3383#
CNTLU   015256    703     3030#   3048
CNVCTR  005072   1248*    1251*   1270#
CONT    005456   1347     1353#
COUNT   001626    669#    1039*   1055*   1056
COUNT1  001646    678#    3038*   3052    3066*
CRBUF   001560    650#    1291*   1380    1383    2793*   2999*
CRBUFA  001562    651#    1286*   1373*   1380    1387    2788*   2973*   2984*   2995
CRBUFB  001564    652#    1377*   1378    1391
CTR0    001566    653#    1282*   1293*   2249*   2406*   2784*   2795*   2904
CTR1    001570    654#    2254*   2411*   2904    2906
CTR2    001572    655#    2259*   2416*   2906    2908
CTR3    001574    656#    2264*   2421*   2908    2910
CTR4    001576    657#    2269*   2426*   2910    2912
CTR5    001600    658#    2274*   2431*   2912    2914
CTR6    001602    659#    2279*   2436*   2914    2916
CTR7    001604    660#    2284*   2441*   2916
CURTST  001454    615#     830     836     891*
DATAA   005142   1283#    1294
DATCHK= 104004    477#    1292    2794    3000
DATTST  005120   1280#    2770
DECVAL  005112   1243     1278#
DELAY - 104016    487#     880    1096    2324    2496    2637    2935    2952
DIGIT   005074   1261*    1264*   1267*   1268    1271#
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DISPLA  000174            504#    698
DISPRE  000172            503#    698*
DLCNT   004070           1075*   1077    1088#
DLY     004024            645    1075#
DLYA    004046           1080#   1085
DLYB    004052           1081#   1082
DLYC    004064           1078    1086#
DOTHIS  006352           1492#   2241    2398
DTCHK   005560            635    1377#
DTCHKA  005650           1381    1396#
DTCHKX  005606           1379    1382#
D'ERR   020142           1065    3356#
ECDAT   003704           1044#   1045
EHALT = 104010            481#   1429
EHLT    005516            639    1364#
EHLTA   005526           1365    1367#
EMTA    003076            897#
EMTINT  003064            424     894#
EMTTAB  001514            631#    899
EMO     016072           1426    3153#
ERDAT   016715           1395    3230#
ERR     005652            634    1399#
ERRA    005722           1402    1407#
ERRB    006022           1399*   1400*   1403*   1404*   1405*   1427#
ERRC    006026           1408    1429#
ERRD    006036           1409*   1410*   1414    1432#
ERRE    006040           1401*   1406*   1430    1433#
ERROR = 104003            476#   1504    1524    1573    1591    1607    1623    1638    1643    1648    1664    1669    1674
                         1691    1696    1701    1718    1735    1740    1754    1759    1764    1780    1785    1790    1807
                         1812    1817    1834    1839    1844    1860    1875    1890    1905    1920    1944    1950    1968
                         1977    1982    1991    2009    2015    2021    2040    2045    2061    2067    2073    2090    2096
                         2102    2120    2124    2130    2136    2183    2186    2217    2221    2224    2227    2328    2333
                         2349    2353    2377    2381    2474    2478    2483    2488    2492    2517    2543    2563    2585
                         2594    2615    2639    2665    2686    2708    2717    2733    2754    2786    2792    2821    2839
                         2889    2892    2901    2992    2998
ERROR1- 104015            486#   1394    2163    2200    2287    2444
ERR1    005674            644    1403#
ERTP    006042            412     414     416     418     426     781     817    1436#
ERTPA   006112           1444#   1463
ERXTIM  016434           2445    3198#
ETXTIM  016372           2288    3192#
EXA     014334           2829    2834#
EXAA    014404           2850    2853#
EXBA    014440           2865    2868#
EXTA    014250           2804    2810#
FILL    001650            679#   3084*   3094
FMAP    001472            622#    751*    819*   1159*   1462    1467*   1513*
FNONE   001632            671#    759*    779*    782
FORMAD  006226            791    1157    1360    1471#
FORWD   003032            823     886#
FOUNDV  001614            664#    750*   1139*   1311*   1508    1528*
FROMPC  001636            673#   1443*   1449    1460*
FTITLE  001630            670#    710*    754     758*    801*
GETRDY  002474            816#    840     865     869    1557
GOBACK  006366           1493    1495#
GRCNT   004116           1101#   1103
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GTBIN   004510          1191#
GTBINP  004556          1200#   1285    2787    2983
GTPDA1  002564           827     830#
GTRDYA  002534           823#    829     838
GTRDYC  002572           825     832#
GTRDYD  002614           835     837#
GTRDYX  002502           817#    867     1494
ICTR    001464           619#    856*    889*
INBIN   004452          1177#   2783    2982
INCRPG  005244           628     629     630     1307#   1541    1542    1543
INCRTN  005234           839    1303#
INDA    003660          1038#   1067
INTER   020145          1523    3357#
KSTART  001452           614#    816    1548*
LDLINE  017546          1144    3308#
LINA    004344          1154#   1165
LINB    004352          1153    1157#
LINENO  001616           665#    787*    788*    789*    1148*   1169    1319    1336    1344*   1359*   1478
LINSEL  004244          1137#   1556
LINSLX  004262          1138    1141#   1156    2927    2943    2968    2981
LOGIC   005446           431    1349#
MACHER  000004           414#    760*    781*    817*    818*   1569*   1585*   1603*   1619*
MANUAL= 100000           443#
MAPA    002224           762#    771     780
MAPEND  002312           763     781#
MAPERR  002376           783     796#
MAPNE   002252           760     769#
MAPOK   002262           768     772#
MAPVEC  006150           420    1458#
MASKIT  005530          1287    1370#   2789    2996
MDEVAD  016001           775     778    3142#
MESS1   002054           718     720#
MFROM   020066          1450    3348#
MNOLIN  020077          1155    3350#
MNONE   016055           797    3150#
MODE    001652           680#   3085*   3090    3093*   3104*
MOUTIN  015124          2974    2985    2988#
MPWRF   020263          1503    3376#
MRXNUM  016123          1419    3159#
MSETC   017701          2244    2401    3325#
MSETRX  017625          2400    3317#
MSETTX  017653          2243    3321#
MS0     020163          2245    2402    3360#
MS1     020173          2251    2408    3362#
MS2     020203          2256    2413    3364#
MS3     020213          2261    2418    3366#
MS4     020223          2266    2423    3368#
MS5     020233          2271    2428    3370#
MS6     020243          2276    2433    3372#
MS7     020253          2281    2438    3374#
MTERR   017767          1453    3335#
MTIT    015710           757    3131#
MTO     020034          1446    3343#
NEW     020341          3036    3387#
NOP   = 000240           441#
NXTST   001462           618#    816*    837     866     886     888*
```

```
OACNV   004624   773  1168  1211#  1318  1322  1326  1382  1386  1390  1413  1417  1421  1444
                1448  2155  2159   2192  2196
OACNVA  004640  1216# 1225
OACNVX  004710  1212* 1216  1220*  1221* 1222* 1223* 1228#
OLDPS   001470   621# 1436* 1438*  1439* 1440* 1441* 1442
OPEN  = 000000   442#  504   505   613   614   615   616   618   619   620   636   650   651
                 652   653   654   655   656   657   658   659   660   661   662   663   666
                 676   677   678   679   680   681   915   916   930   931   938   947  1009
                1019  1088  1097  1106  1107  1183  1184  1185  1186  1187  1188  1228  1270
                1271  1272  1427  1432  1433  2308  2458  2936  2953
OUT     015500  3020  3022  3026  3070#
OVRLAY  003614   753  1023# 1141  1510  2510  2607  2631
OVRLYA  003630  1026# 1031
OVRLYB  003650  1030  1032#
PASCNT  001640   674#  804* 1315  1334* 1343*
PFAIL   006370   422   749  1497#  1499
PGMSG   016021   808  3145#
PIND    004502  1186# 1202*
POPSP = 005726   460# 1083  1086
POPSP2= 022626   461#  696   770   858  1459  1572  1590  1606  1622  2521  2542  2565  2593
                2617  2641  2664  2688  2716  2756
PRGEA   005404  1339# 1354
PRGEB   005470  1342  1356#
PRGEC   005376  1338# 1357
PRGEND  005256   868  1311#
PRGEXT  005346  1313  1332#
PRGNUM  001450   613#  812* 1532
PRGTAB  001474   623#  814
PRGXTL  005436   800  1335  1346#
PRGXT1  005364  1333  1336#
PRG0    006602   623  1548#
PRG0A   006640  1536  1557#
PRG0B   006634  1550  1556#
PRG1    014662   624  2925#
PRG1A   014706  1537  2932#  2937
PRG1B   014730  2932* 2936#
PRG2    014734   625  2941#
PRG2A   014760  1538  2948#  2960
PRG2B   015010  2949* 2953#
PRG3    015032   626  2966#
PRG3A   015056  1539  2973#  2975
PRG4    015072   627  2979#
PRG4A   015106  1540  2983#  2986
PRTY0 = 000000   469#
PRTY1 = 000040   468#
PRTY2 = 000100   467#
PRTY3 = 000140   466#
PRTY4 = 000200   465#  610   612
PRTY5 = 000240   464#
PRTY6 = 000300   463#
PRTY7 = 000340   421   423   425   462#  1167  1437  1527  1688  1804  1831  2148  2177
PSW   = 177776   439#  765*  805*  822*  1079* 1158* 1167* 1436  1437* 1512* 1527* 1688* 1804*
                1831* 2148* 2177* 2514* 2536* 2559* 2560* 2582* 2612* 2655* 2659* 2682* 2683*
                2751*
PTO     004476  1184# 1191  1197*
PTOP    004504  1187# 1200  1206*
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PT1     004500          1185#   1191*   1192*   1195*   1196*   1197    1198
PT1P    004506          1188#   1200*   1201*   1204*   1205*   1206    1207
PWRUP   006400          1497    1499#
POTIT   016134          1552    3161#
P1TIT   016476          2926    3204#
P2TIT   016536          2942    3210#
P3TIT   017364          2967    3287#
P4TIT   017434          2980    3294#
QUEST   020352          3059    3389#
RCMSK   004136          1102    1106#
RDDAT   003066          1040#   1041    1063
RDOCT   003652           809    1035#   1145    2930    2946    2971
RESTAR  006550           509    1505    1532#
RETRN   004010          1048    1068#
RIND    004474          1177*   1179    1180    1183#   1193*
RMASK   001404           592#   1370*   1371*   1372*   1373
RNCNT   004140          1104*   1107#
RNGEN   003324           959#   1092    1101
RP1     003372           959     963*    970     972#
RP2     003374           962     966     969*    973#
RREAD   004000          1050    1052    1054    1057    1064#
RSTART  006562          1534    1536#
RSTPC   003212           920*    928     930#
RSTPSW  003214           921*    927     931#
RSTREG= 104014           485#   1226    1238    1259
RSTRG   003156           643     920#
RTNNO   001456           616#    806*    828     834     861     887*    1411    1422
RXBUF   001412           596#    882     979*   1291    1377    1473*   1588    2350    2382    2451    2471    2480    2486
                        2490    2734    2793    2890    2954    2994    2999
RXBUFT  001612           663#   2471*   2472    2476
RXCR0   001200           517#    761     784     788    1151    1340
RXCR1   001202           518#
RXCR10  001220           525#
RXCR11  001222           526#
RXCR12  001224           527#
RXCR13  001226           528#
RXCR14  001230           529#
RXCR15  001232           530#
RXCR16  001234           531#
RXCR17  001236           532#
RXCR2   001204           519#
RXCR20  001240           533#
RXCR21  001242           534#
RXCR22  001244           535#
RXCR23  001246           536#
RXCR24  001250           537#
RXCR25  001252           538#
RXCR26  001254           539#
RXCR27  001256           540#
RXCR3   001206           520#
RXCR30  001260           541#
RXCR31  001262           542#
RXCR32  001264           543#
RXCR33  001266           544#
RXCR34  001270           545#
RXCR35  001272           546#
```

```
RXCR36  001274          547#
RXCR4   001210          521#
RXCR5   001212          522#
RXCR6   001214          523#
RXCR7   001216          524#
RXCSR   001410          595#    978*   1110   1280*  1289   1323   1418   1471*  1570*  1731*  1732*  1733   1737*
                       1738    1752   1756*  1757   1761*  1762   1765*  1778   1782*  1783   1787*  1788   1791*
                       1805    1809*  1810   1814*  1815   1818*  1832   1836*  1837   1841*  1842   1845*  1858
                       1873    1888   1903   1918   1940*  1942   1946*  1948   1963*  1965   1966   1970*  1974
                       1979    1984*  1988   2005*  2007   2011*  2013   2017*  2019   2034*  2036*  2038   2041*
                       2043    2057*  2059   2063*  2065   2069*  207    2086*  2088   2092*  2094   2098*  2100
                       2114*   2116*  2118   2122   2126*  212    2132*  2134   2178*  2179*  2188   2202*  2326
                       2331    2351   2370   2373   2379   2455   2611*  2613*  2618*  2634*  2636*  2642*  2658*
                       2660*   2662*  2681*  2684*  2689*  2705*  2706*  2709*  2730   2731   2750*  2752*  2757*
                       2811*   2817   2836*  2837   2855*  2856
RXCSRT  001610          662#    1965*  1974*  1975   1988*  1989   2188*  2189   2197   2730*
RXEND   001300          549#    762    794
RXLVL   001422          600#    939    982*   1486*  2659   2682
RXVTR   001420          599#    937    980*   1164   1327   1466*  1511*  1518   2711*
SAVREG= 104013          484#    1211   1231   1242
SAVRG   003116          642     905#
SCOPE   104012          483#    1296   1571   1589   1605   1621   1651   1677   1704   1720   1741   1767   1793
                       1820    1847   1862   1877   1892   1907   1922   1951   1993   2022   2046   2074   2103
                       2137    2165   2203   2229   2289   2334   2354   2383   2446   2475   2479   2484   2489
                       2493    2519   2541   2567   2587   2619   2643   2663   2690   2710   2735   2758   2771
                       2797    2822   2843   2858   2873   2894
SCOPTR  001466          620#    846    890*
SCRLF   104021          490#    3051
SELCAD  016573         2929    2945   3215#
SELCAR  017507         2970    3302#
SELINE  017605         1170    3314#
SETSR   005220         1298#   1555
SIOT    004210         1110*   1112*  1116   1121#
SPBOT   001176          440#    688    748    820    1501
SRESET  104011          482#    821    1650   1676   1703   1719   1766   1792   1819   1846   1861   1876   1891
                       1906    1921   2150   2187   2228   2330   2893
SRPTR   000170          502#    693    697*   701    824    832    844    854    859    864    1137   1312   1332
                       1353    1364   1407   1492   1520   2988   3019   3032   3069*
SRSETT  003306          640     952#   954*
STAL    004072          633     1092#
STALA   004112         1095*   1097#
STALB   004114         1094    1098#
STALL   104002          475#    2990
START   002136          719     732    748#   803    1310   1455
STARTZ  001656          507     688#
START1  002326          755     784#
START2  002332          785#    795
START3  002366          786     793#
START4  002426          792     804#
STLMSK  001406          593#    1093
STLSPV  003252          638     943#
STLSRV  003216          637     934#
STPPA   003274          944*    947#
STPRA   003240          935*    938#
STRXD   014544         2610    2657   2680   2702   2729   2748   2749   2835   2898#
STRXV   104006          479#    2608   2632   2655   2678   2703   2746
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STTXV   104007   480#  2511   2534  2556  2579
SUBTEN  005032  1250   1261#
SUBTNA  005036  1262#  1265
SUBTNB  005052  1263   1266#
SVRPC   003152   905*   913    915#
SVRPSW  003154   906*   912    916#
SWR     020330  3031   3385#
SWREG   000176   505#   697    701   3019
TEMP    001620   666#  1146*  1147* 1148  1149* 1150  1336* 1337* 1338* 1339  1345* 1358* 1359
                1478*  1479*  1480* 1481  2154* 2156  2191* 2193  2369* 2372* 2375
TEMPST  001644   677#  3037*  3061* 3062* 3063* 3065* 3069
TEMP1   001622   667#   772*   774  1481* 1482  1483* 1484* 1485* 1486  1487
TEMP2   001624   668#  2931*  2932  2933  2947* 2949  2950  2972* 2973
TENPWR  005076  1249*  1262   1266  1272#
TIB     001642   676#  3023*  3024* 3025  3041* 3044  3045* 3046  3049  3054  3056  3064* 3065
TIME    012122  1941   1947   1964  1973  1987  2006  2012  2018  2035  2037  2042  2058  2064
                2070   2087   2093  2099  2115  2117  2127  2133  2298  2304# 2453
TIMER   004206  1113*  1114*  1120#
TIMERX= 104017   488#  2185   2348  2791  2888  2900  2997
TIMETX= 104020   489#  2182   2216  2223  2785  2991
TIMEX   004204  1115   1119#
TIME1   004160  1111   1113#
TIME2   004164  1114#  1117
TIM1    012126  2305#  2306
TKB     001432   606#   707    1042  3023  3041
TKLVL   001442   610#   706
TKS     001430   605#   708*   1040  1300  1553  3021  3039
TKVTR   001440   609#   704
TMRX    004142   646   1110#
TMTX    004152   647   1112#
TNNO    001460   617#  1411*  1412*
TOPC    001634   672#  1442*  1445  1458* 1461* 1464  1465* 1466
TPB     001436   608#  1000*  1046* 1129* 1132* 3029* 3044* 3114*
TPLVL   001446   612#
TPS     001434   607#  1001   1044  1127  1130  3042  3112  3115
TPVTR   001444   611#
TSTVA   006526  1519   1526#
TSTVEC  006424   934    943    1508# 1521  1525
TSTVEX  006546  1509   1529#
TTINTS  015502   705   3074#
TXBUF   001416   598#   976*  1288* 1477* 1620  2181* 2184* 2215* 2218* 2294* 2297* 2323* 2347*
                2368*  2452*  2495* 2790* 2815* 2887* 2899* 2933* 2950* 2995*
TXCSR   001414   597#   879*   977* 1112  1160* 1161* 1166* 1281* 1283  1475* 1514* 1515* 1526*
                1604   1636   1640* 1641  1645* 1646  1649* 1662  1666* 1667  1671* 1672  1675*
                1689   1693*  1694  1698* 1699  1702* 1716  2149* 2151  2155  2180* 2219  2225
                2292   2295   2300  2322* 2346* 2367* 2449  2494* 2513* 2515* 2518* 2520* 2537*
                2538*  2540*  2558* 2561* 2566* 2581* 2583* 2586* 2870* 2871  2885* 2886* 2898*
                2934   2948*  2951  2993*
TXCSRT  001606   661#  2153*  2160
TXLVL   001426   602#   948    983*  1487* 2536  2559
TXVTR   001424   601#   946    981*  1464* 2588*
TYP     003440   631    987#
TYPA    003450   990#   999    1008
TYPC    003466   992    994#
TYPD    003514   998   1000#   1005  1007
TYPDAT  003560   990*   991    994   996   1000  1004* 1006* 1009#
```

```
TYPE   - 104000   473#  717   756   777   796   807  1018  1064  1143  1154  1172  1298  1303
                 1307  1330  1452  1502  1522  1551  2250  2255  2260  2265  2270  2275  2280
                 2407  2412  2417  2422  2427  2432  2437  2925  2928  2941  2944  2966  2969
                 2979  3027  3030  3035  3058
TYPES  = 104001   474#  1425  2242  2399
TYPF     003532   995  1004#
TYPG     003544   997  1006#
TYPOC    015520  3033  3084#
TYPON    015534  3086#
TYPS     003562   632  1012#  1020
TYPSA    003606  1016  1018#
TYPSB    003610  1014* 1015  1019#
UMASK    001402   591#  826   877  1370  1482*
X      = 000063  1558#  1560  1566#  1576  1582#  1594  1600#  1610  1616#  1626  1632#  1653  1659#
                 1679  1685#  1706  1712#  1722  1728#  1743  1749#  1769  1775#  1795  1801#  1822
                 1828#  1849  1855#  1864  1870#  1879  1885#  1894  1900#  1909  1915#  1930  1936#
                 1953  1959#  1995  2001#  2024  2030#  2048  2054#  2076  2082#  2105  2111#  2139
                 2145#  2167  2173#  2205  2211#  2231  2237#  2310  2316#  2336  2342#  2356  2362#
                 2385  2391#  2460  2466#  2500  2506#  2524  2530#  2546  2552#  2569  2575#  2597
                 2603#  2621  2627#  2645  2651#  2668  2674#  2692  2698#  2720  2726#  2737  2743#
                 2760  2766#  2773  2779#  2799  2805#  2824  2830#  2845  2851#  2860  2866#  2874
                 2880#
XOR      002774   851  871#
XORA     002112   712  728#
XORADD   001276   548#  715* 730*
XORFLG   002110   716* 726#  731*  848  1586  2853  2868
$SCRLF   004212   648  1127#  1128
.        020360   411#  428   430#  436   501#  506#  508#  510#  725#  799  1002  1194  1203
                 1284  1290  2044  2226  2293  2296  2450  2473  2477  2482  2487  2491  2891
                 2989
```

.MAIN. MACY11 30A(1052) 28-JUN-79 10:53 PAGE 77
CZDLAH.P11 28-JUN-79 10:49 CROSS REFERENCE TABLE -- MACRO NAMES SEQ 007

TSTA	744#	1559	1575	1593	1609	1625	1652	1678	1705	1721	1742	1768	1794	1821	1848
	1863	1878	1893	1908	1929	1952	1994	2023	2047	2075	2104	2138	2166	2204	2230
	2309	2335	2355	2384	2459	2499	2523	2545	2568	2596	2620	2644	2667	2691	2719
	2736	2759	2772	2798	2823	2844	2859								
TSTAA	735#	1560	1576	1594	1610	1626	1653	1679	1706	1722	1743	1769	1795	1822	1849
	1864	1879	1894	1909	1930	1953	1995	2024	2048	2076	2105	2139	2167	2205	2231
	2310	2336	2356	2385	2460	2500	2524	2546	2569	2597	2621	2645	2668	2692	2720
	2737	2760	2773	2799	2824	2845	2860	2874							

. ABS. 020360 000

ERRORS DETECTED: 0

CZDLAH.BIN,CZDLAH.LST/CRF/SOL/NL:TOC=CZDLAH.P11
RUN-TIME: 11 23 4 SECONDS
RUN-TIME RATIO: 122/39=3.0
CORE USED: 11K (21 PAGES)