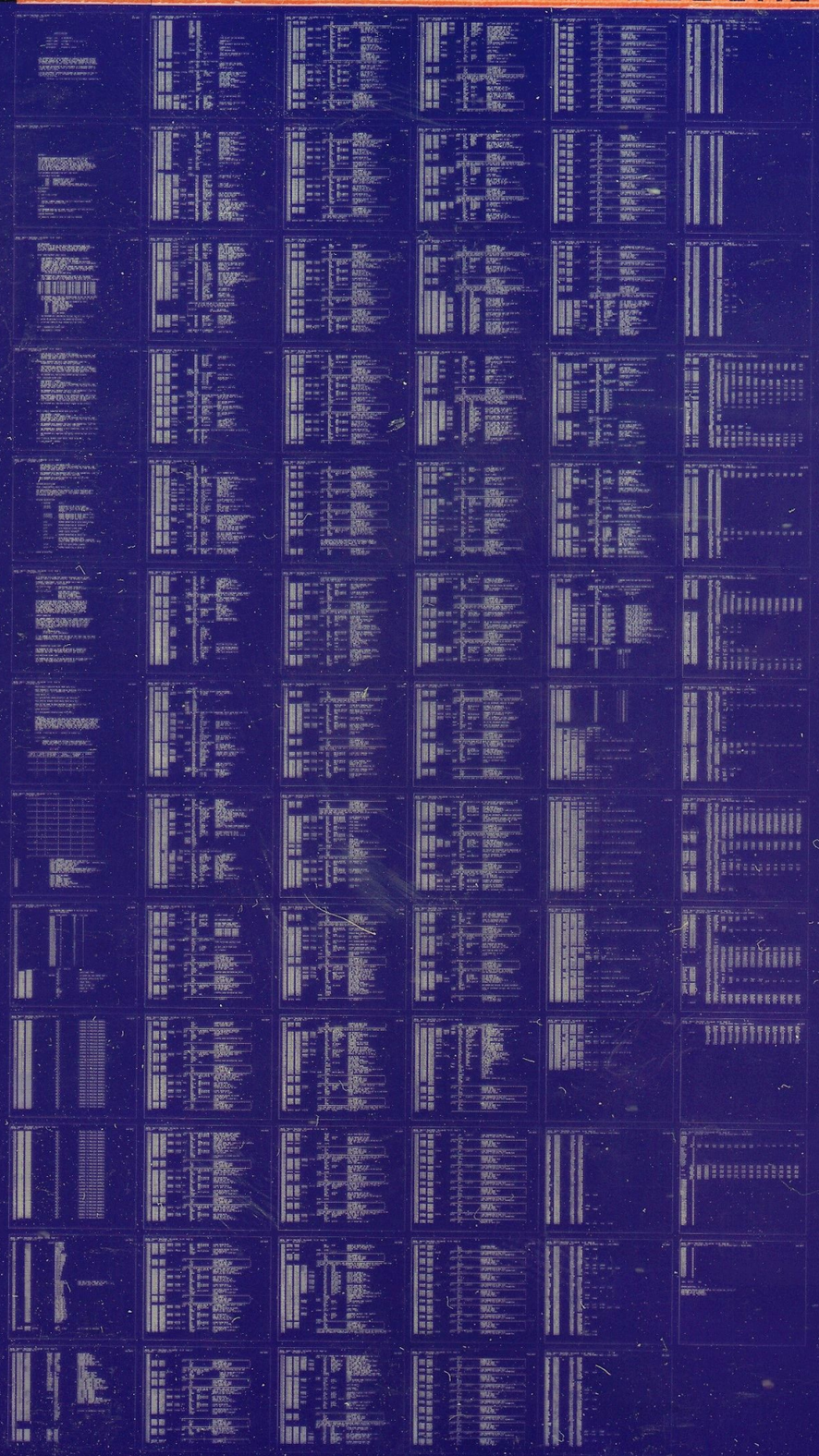
DC11

DC11 OFLNE DIAG TEST
CZDCADO

AH-8430D-MC
FICHE 1 OF 1



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IDENTIFICATION

PRODUCT CODE: AC-8428D-MC

PRODUCT NAME: CZDCAD0 DC11 OFLNE DIAG TST

PRODUCT DATE: MAY 1980

MAINTAINER: DIAGNOSTIC GROUP

1. ABSTRACT

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

THIS DOCUMENT DESCRIBES THE OFF LINE TESTS.

THE AVAILABLE TESTS ARE:

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

2. REQUIREMENTS

2.1 EQUIPMENT

A. PDP 11/20 SYSTEM

B. DC11

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

2.2 STORAGE

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

3. LOADING PROCEDURE

THE ABSOLUTE LOADER IS USED TO LOAD THE PROGRAM.

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

4.1 PRG0 INPUT/OUTPUT LOGIC TESTS

A. LOAD ADDRESS = 000200 (RESTART LOAD ADDR. = 000200)
LOAD SR 0-2 = 0, AND PRESS START SWITCH.
THE DIAGNOSTIC WILL IDENTIFY THE PROGAM YOU SELECTED.
'PRG0-INPUT-OUTPUT LOGIC TESTS. DISCONNECT DC11 FROM MODEM AND CONNECT JUMPER TO CABLE'
DISCONNECT THE DC11 FROM THE MODEM AND INSERT THE JUMPER CONNECTOR IN THE MODEM END OF THE CABLE,AND PRESS CONTINUE.
NOTE, IF THE CABLE IS LEFT CONNECTED TO THE MODEM THE FOLLOWING TESTS WILL FAIL:
AT5,AT34-AT42,AT44,AND AT144

B. THE PROGRAM WILL NOW REQUEST THE LINE # (8) YOU WISH TO TEST. LOAD THE LINE # AS REQUESTED AND PRESS CONTINUE.
LINE NUMBER REFERS TO THE ADDRESSES TO WHICH THE DC11 RESPONDS.

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

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

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

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

E. REFER TO SECTION 5.1.2 FOR ERROR DESCRIPTION

F. AFTER ONE COMPLETE PASS PRGEND WILL BE TYPED OUT

4.2 PRG1 - TRANSMITTER SCOPE LOOP

A. LOAD ADDRESS = 000200

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

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

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

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

4.3 PRG2 - RECEIVER SCOPE LOOP

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

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

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

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

4.4 PRG3 - SINGLE CHARACTER MAINT MODE DATA TEST

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

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

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

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

4.5 PRG4 - SPECIAL BINARY COUNT MAINT. MODE DATA TEST

A. LOAD ADDRESS = 000200

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

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

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

5. PROGRAM DESCRIPTIONS

5.1 PRG0 - INPUT/OUTPUT LOGIC TESTS

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

5.1.1 ROUTINE DESCRIPTIONS

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

5.1.2 ERROR DESCRIPTION

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

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

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

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

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

5.1.3 JUMPER CONNECTOR

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

AT5,AT34-AT42,AT44
AT140 WILL LOOP CONTINUOSLY

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

5.2 PRG1-TRANSMITTER SCOPE LOOP

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

5.3 PRG2-RECEIVER SCOPE LOOP

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

5.4 PRG3-SINGLE CHARACTER MAINT MODE DATA TEST

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

5.4.1 ERROR PRINTOUTS

SELF EXPLANITORY ERROR PRINTOUTS ARE PROVIDED.

5.5 PRG4-SPECIAL BINARY COUNT MAINT MODE DATA TEST

PRG4 IS THE SAME AS PRG0 ROUTINE 77 AND 100 EXCEPT THAT THE USER SPECIFIES DC11 RUNNING PARAMETERS.

5.5.1 ERROR PRINTOUTS

SELF EXPLANATORY PRINTOUTS ARE PROVIDED.

6.0 POWER FAIL

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

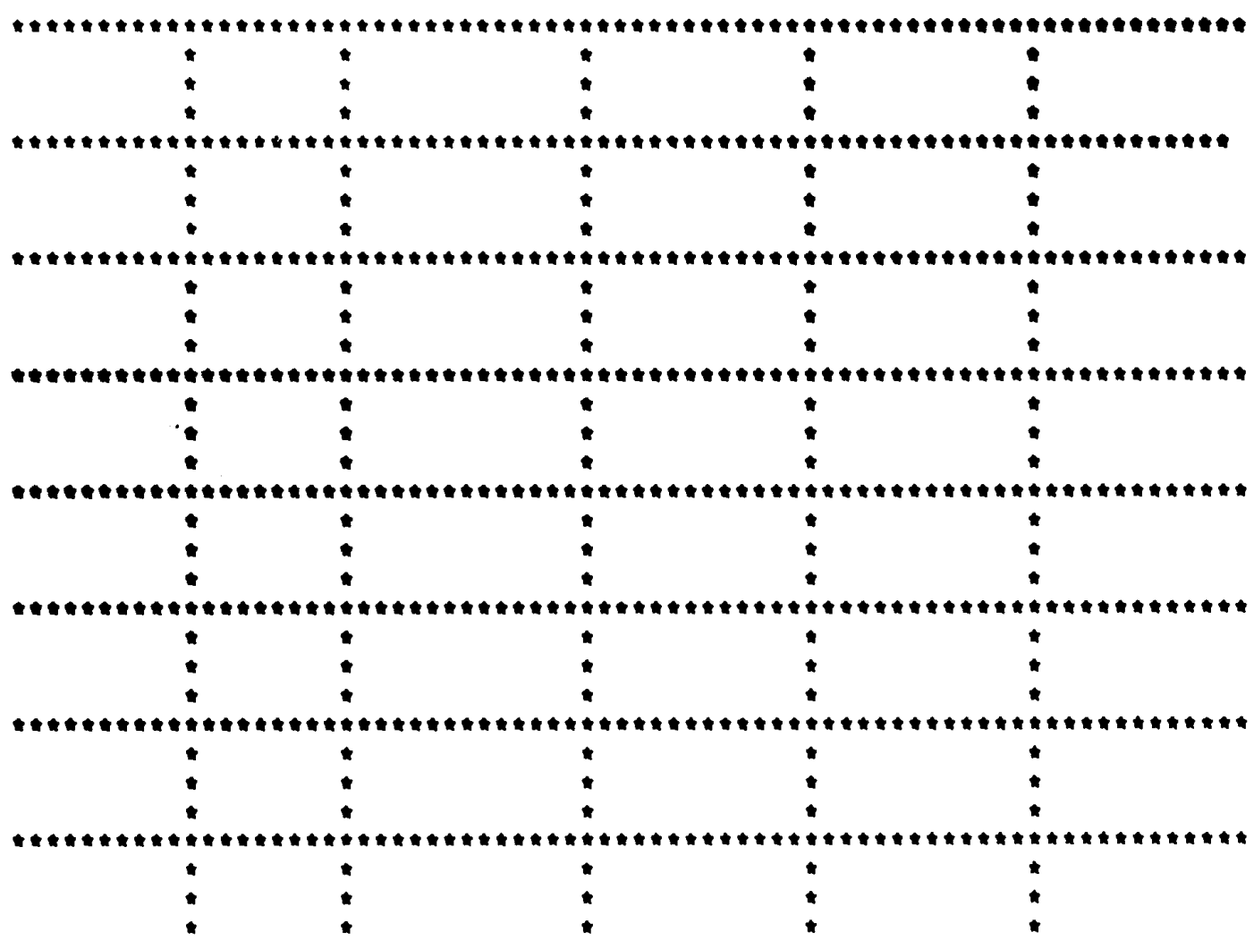
P(PRG#) T(ROUTINE #) PC = (ADDRESS OF ERROR CALL)

7 0 ECO HISTORY

CHGD1 - CHANGED LOCATION FOR SETTING STACK POINTER TO OCCUR BEFORE JSR COMMAND IS GIVEN TO PREVENT PROGRAM FROM TRAPING OUT DUE TO YELLOW OR RED ZONE VIOLATIONS.

DC11 DATA

LINE # (CUST ID)	UNIT# (DEC ID)	RXCSR ADRS. RX VECTOR	FREQS. AVAILABLE	TELEPHONE NUMBER	REMARKS



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@
413                             .LIST   SEQ,BIN
414                             ;DC11 DIAGNOSTIC PROGRAM (OFF LINE TESTS)
415                             ;COPYRIGHT 1970,1980 DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
416                             ;PRG0- INPUT-OUTPUT LOGIC TESTS
417                             ;PRG1- TRANSMITTER SCOPE LOOP
418                             ;PRG2- RECEIVER SCOPE LOOP
419                             ;PRG3- SINGLE CHARACTER MAINTENANCE MODE DATA TEST
420                             ;PRG4- SPECIAL BINARY COUNT MAINTENANCE MODE DATA TEST
421                             ;STANDARD SR SWITCH OPTIONS (SWITCH SET TO A 1 )
422                             ;
423                             ;SR15- HALT ON ERROR
424                             ;SR14- SCOPE.
425                             ;SR13- INHIBIT PRINTOUT
426                             ;SR12- INHIBIT TRACE
427                             ;SR11- INHIBIT ITERATION.
428                             ;SR10- HALT  AT END OF PROGRAM
429                             ;SR9- SELECT ROUTINE.
430                             ;SR8- DISABLE STALL MODE AND RUN FULL SPEED.
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                        ;SR6 THROUGH SR0 - NUMBER OF ROUTINE TO BE SELECTED.
                        ;DATA TEST PARAMETERS
                        ;
                        ;       CHAR LENGTH     SPEED   STOP CODE
                        ;NOTE0      8             00        2
                        ;NOTE1      7             00        2
                        ;NOTE2      6             00        2
                        ;NOTE3      5             00        2
                        ;NOTE4      8             01        2
                        ;NOTE5      7             01        2
                        ;NOTE6      6             01        2
                        ;NOTE7      5             01        2
                        ;NOTE10     8             10        2
                        ;NOTE11     7             10        2
                        ;NOTE12     6             10        2
                        ;NOTE13     5             10        2
                        ;NOTE14     8             11        2
                        ;NOTE15     7             11        2
                        ;NOTE16     6             11        2
                        ;NOTE17     5             11        2
                        ;NOTE20     8             00        1
                        ;NOTE21     7             00        1
                        ;NOTE22     6             00        1
                        ;NOTE23     5             00        1
                        ;NOTE24     8             01        1
                        ;NOTE25     7             01        1
                        ;NOTE26     6             01        1
                        ;NOTE27     5             01        1
                        ;NOTE30     8             10        1
                        ;NOTE31     7             10        1
                        ;NOTE32     6             10        1
                        ;NOTE33     5             10        1
                        ;NOTE34     8             11        1
                        ;NOTE35     7             11        1
                        ;NOTE36     6             11        1
                        ;NOTE37     5             11        1

                                .LIST   BIN,SEQ
        000000          .=0
000000  000002          .+2                     ;UNASSIGNED TRAP
000002  000000          HALT
000004  000006  MACHER: .+2                     ;SP OVERFLOW, BUS ERROR TRAP
000006  000000          HALT
000010  000012          .+2                     ;RESERVED INSTRUCTION TRAP
000012  000000          HALT
000014  000016          .+2                     ;TRACE TRAP
000016  000000          HALT
000020  000022          .+2                     ;TRAP TO CALL IOX
000022  000002          2
000024  000026          .+2                     ;POWER FAIL TRAP
000026  000000          HALT
000030  002112          EMTINT                  ;EMT TRAP
000032  000340          PRTY7
000034  000036          .+2
000036  000000          HALT
000040  000042          .+2
```

```
   487  000042  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   488  000044  000046                    .+2
   489  000046  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   490  000050  000052                    .+2
   491  000052  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   492  000054  000056                    .+2
   493  000056  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   494  000060  000062                    .+2
   495  000062  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   496  000064  000066                    .+2
   497  000066  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   498  000070  000072                    .+2
   499  000072  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   500  000074  000076                    .+2
   501  000076  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   502  000100  000102                    .+2
   503  000102  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   504  000104  000106                    .+2
   505  000106  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   506  000110  000112                    .+2
   507  000112  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   508  000114  000116                    .+2
   509  000116  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   510  000120  000122                    .+2
   511  000122  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   512  000124  000126                    .+2
   513  000126  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   514  000130  000132                    .+2
   515  000132  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   516  000134  000136                    .+2
   517  000136  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   518  000140  000142                    .+2
   519  000142  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   520  000144  000146                    .+2
   521  000146  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   522  000150  000152                    .+2
   523  000152  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   524  000154  000156                    .+2
   525  000156  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   526  000160  000162                    .+2
   527  000162  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   528  000164  000166                    .+2
   529  000166  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   530  000170  000172                    .+2
   531  000172  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   532  000174  000176                    .+2
   533  000176  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   534  000200  000202                    .+2
   535  000202  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   536  000204  000206                    .+2
   537  000206  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   538  000210  000212                    .+2
   539  000212  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   540  000214  000216                    .+2
   541  000216  000000                    HALT                ;TRAPPED TO PREVIOUS ADDRESS.
   542  000220  000222                    .+2
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   543  000222  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   544  000224  000226                    .+2
   545  000226  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   546  000230  000232                    .+2
   547  000232  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   548  000234  000236                    .+2
   549  000236  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   550  000240  000242                    .+2
   551  000242  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   552  000244  000246                    .+2
   553  000246  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   554  000250  000252                    .+2
   555  000252  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   556  000254  000256                    .+2
   557  000256  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   558  000260  000262                    .+2
   559  000262  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   560  000264  000266                    .+2
   561  000266  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   562  000270  000272                    .+2
   563  000272  000000                    HALT            ;TRAPPED TO PREVIUUS ADDRESS.
   564  000274  000276                    .+2
   565  000276  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   566  000300  000302                    .+2
   567  000302  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   568  000304  000306                    .+2
   569  000306  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   570  000310  000312                    .+2
   571  000312  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   572  000314  000316                    .+2
   573  000316  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   574  000320  000322                    .+2
   575  000322  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   576  000324  000326                    .+2
   577  000326  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   578  000330  000332                    .+2
   579  000332  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   580  000334  000336                    .+2
   581  000336  000000                    HALT            ;TRAPPFD TO PREVIOUS ADDRESS.
   582  000340  000342                    .+2
   583  000342  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   584  000344  000346                    .+2
   585  000346  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   586  000350  000352                    .+2
   587  000352  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   588  000354  000356                    .+2
   589  000356  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   590  000360  000362                    .+2
   591  000362  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   592  000364  000366                    .+2
   593  000366  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   594  000370  000372                    .+2
   595  000372  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   596  000374  000376                    .+2
   597  000376  000000                    HALT            ;TRAPPED TO PREVIOUS ADDRESS.
   598
```

```
                                ;EQUATE STATEMENTS
            177570                      SR=177570
            177776                      CC=177776
            177776                      PSW=177776
            001076                      SPBOT=1076
            000240                      NOP=240
            000000                      OPEN=0
            100000                      MANUAL=BIT15
            100000                      BIT15=100000
            040000                      BIT14=40000
            020000                      BIT13=20000
            010000                      BIT12=10000
            004000                      BIT11=4000
            002000                      BIT10=2000
            001000                      BIT9=1000
            000400                      BIT8=400
            000200                      BIT7=200
            000100                      BIT6=100
            000040                      BIT5=40
            000020                      BIT4=20
            000010                      BIT3=10
            000004                      BIT2=4
            000002                      BIT1=2
            000001                      BIT0=1
            005726                      POPSP=5726              ;POP THE STACK. SAME AS TST (6)+
            022626                      POPSP2=022626           ;POP STACK TWICE. SAME AS CMP (6)+,(6)+
            000340                      PRTY7=340               ;PRIORITY LEVEL DEFINITIONS
            000300                      PRTY6=300
            000240                      PRTY5=240
            000200                      PRTY4=200
            000140                      PRTY3=140
            000100                      PRTY2=100
            000040                      PRTY1=40
            000000                      PRTY0=0
            104000                      TYPE=EMT+0
            104001                      TYPES=EMT+1
            104002                      STALL=EMT+2
            104003                      ERROR=EMT+3
            104004                      DATCHK=EMT+4
            104005                      CHALT=EMT+5
            104006                      STRXV=EMT+6
            104007                      STTXV=EMT+7
            104010                      EHALT=EMT+10
            104011                      SRESET=EMT+11
            104012                      SCOPE=EMT+12
            104013                      SAVREG=EMT+13
            104014                      RSTREG=EMT+14
            104015                      ERROR1=EMT+15
            104016                      DELAY=EMT+16
            000007                      BELL=007
            177777                      ATLAST=-1


            000200                      .=200
000200      000167  001356              JMP     START           ;GO TO START OF PROGRAM.
            001100                      .=1100
```

```
   655  001100  174000                RXCSR:  174000          ;RECEIVER CSR
   656  001102  174002                RXBUF:  174002          ;RECEIVER BUFFER
   657  001104  174004                TXCSR:  174004          ;TRANSMITTER CSR
   658  001106  174006                TXBUF:  174006          ;TRANSMITTER BUFFER
   659  001110  000000                RXVTR:  OPEN            ;RECEIVER VECTOR
   660  001112  000240                RXLVL:  PRTY5           ;RECEIVER PRIORITY LEVEL
   661  001114  000304                TXVTR:  304             ;TRANSMITTER VECTOR
   662  001116  000240                TXLVL:  PRTY5           ;TRANSMITTER PRIORITY LEVEL
   663  001120  177560                TKS:    177560          ;LSR CSR
   664  001122  177562                TKB:    177562          ;LSR BUFFER
   665  001124  177564                TPS:    177564          ;LSP CSR
   666  001126  177566                TPB:    177566          ;LSP BUFFER
   667  001130  000060                TKVTR:  60              ;LSR INTERRUPT VECTOR
   668  001132  000200                TKLVL:  PRTY4           ;LSR PRIORITY LEVEL
   669  001134  000064                TPVTR:  64              ;LSP INTERRUPT VECTOR
   670  001136  000200                TPLVL:  PRTY4           ;LSP PRIORITY LEVEL
   671  001140  000000                PRGNUM: OPEN            ;CONTAINS CURRENT PROGRAM#
   672  001142  000000                KSTART: OPEN            ;CURRENT PROGRAM START ADDRESS.
   673  001144  000000                CURTST: OPEN            ;CONTAINS ADDR OF CURRENT TEST.
   674  001146  000000                RTNNO:  OPEN            ;CONTAINS CURRENT TEST #.
   675  001150  000000                NXTST:  OPEN            ;CONTAINS ADDR OF NEXT TEST.
   676  001152  000000                ICTR:   OPEN            ;CONTAINS CURRENT ITERATION COUNT
   677  001154  000000                SCOPTR: OPEN            ;CONTAINS CURRENT SCOPE POINTER.
   678  001156  003726                PRGTAB: PRG0            ;PRG0 START ADDRESS
   679  001160  014422                        PRG1            ;PRG1 START ADDRESS
   680  001162  014466                        PRG2            ;PRG2 START ADDRESS
   681  001164  014562                        PRG3            ;PRG3 START ADDRESS
   682  001166  014620                        PRG4            ;PRG4 START ADDRESS
   683  001170  002456                EMTTAB: TYP             ;POINTER TO TYPEOUT ROUTINE
   684  001172  002600                        TYPS            ;POINTER TO CHAINED MESSAGES ROUTINE
   685  001174  002732                        STAL            ;POINTER    RANDOM STALL ROUTINE
   686  001176  001406                        ERR             ;POINTER TO ERROR ROUTINE
   687  001200  001344                        DTCHK
   688  001202  000000                        OPEN
   689  001204  002302                        STLSRV
   690  001206  002332                        STLSPV
   691  001210  001332                        EHLT            ;POINTER TO ERROR HALT ROUTINE.
   692  001212  002362                        SRSETT
   693  001214  001756                        CHAINN
   694  001216  002202                        SAVRG
   695  001220  002242                        RSTRG
   696  001222  001430                        ERR1
   697  001224  002664                        DLY
   698
   699
   700
   701
   702
   703  001226  000000                RCNT:   OPEN
   704  001230  000000                CRBUF:  OPEN
   705  001232  000000                CRBUFA: OPEN
   706  001234  000000                CARMSK: OPEN
   707  001236  000000                CHR1:   OPEN
   708  001240  000000                CHR2:   OPEN
   709  001242  000000                CHR3:   OPEN
   710  001244  000000                ERCTR:  OPEN
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   711  001246  000000                    CTRA:   OPEN
   712  001250  000000                    CTRB:   OPEN
   713  001252  000000                    CTRC:   OPEN
   714  001254  000000                    CTRD:   OPEN
   715  001256  000000                    TXCSRT: OPEN
   716  001260  000000                    RXCSRT: OPEN
   717  001262  000000                    RXBUFT: OPEN
   718  001264  000000                    TEMP:   OPEN
   719  001266  000000                    SRT:    OPEN
   720  001270  177740                    STLMSK: 177740
   721  001272  104000                    SETSR:  TYPE                    ;TYPE SELECT OPTION MESSAGE.
   722  001274  016433                            ASETSR
   723  001276  000000                            HALT                    ;COMMON HALT.
   724  001300  000207                            RTS     %7              ;EXIT.
   725  001302  104000                    INCRTN: TYPE                    ;TYPE INCORRECT ROUTINE SELECTED.
   726  001304  016531                            AINCRT
   727  001306  000000                            HALT                    ;COMMON HALT.
   728  001310  000207                            RTS     %7              ;EXIT.
   729  001312  104000                    PRGEND: TYPE                    ;TYPE PROGRAM END.
   730  001314  016566                            APGEND
   731  001316  032767  002000  176244            BIT     #BIT10,SR       ;TEST END OF PROGRAM HALT OPTION
   732  001324  001401                            BEQ     .+4             ;BRANCH IF NOT SELECTED
   733  001326  000000                            HALT
   734  001330  000207                            RTS     %7              ;EXIT.
   735
   736                                    ;CONDITIONAL ERROR HALT ROUTINE.
   737  001332  005767  176232            EHLT:   TST     SR              ;CHECK FOR HALT ON ERROR.
   738  001336  100001                            BPL     EHLTA           ;BRANCH IF NO HALT DESIRED.
   739  001340  000000                            HALT                    ;HALT.
   740  001342  000002                    EHLTA:  RTI                     ;IN DATA LIGHTS.
   741
   742                                    ;DATA CHECK ROUTINE.
   743  001344  026767  177660  177660    DTCHK:  CMP     CRBUF,CRBUFA    ;COMPARE EXPECTED AND RECEIVED
   744  001352  001414                            BEQ     DTCHKA          ;CHARS. BRANCH IF SAME.
   745  001354  004567  001720                    JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
   746  001360  001230                            CRBUF                   ;SOURCE ADDR.
   747  001362  016424                            AWAS                    ;DESTINATION ADDR.
   748  001364  000003                            3                       ;#OF DIGITS TO CONVERT.
   749  001366  004567  001706                    JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
   750  001372  001232                            CRBUFA                  ;SOURCE ADDR.
   751  001374  016412                            AASB                    ;DESTINATION ADDR.
   752  001376  000003                            3                       ;#OF DIGITS TO CONVERT.
   753  001400  104015                            ERROR1
   754  001402  016371                            ERDAT
   755  001404  000002                    DTCHKA: RTI                     ; EXIT.
   756
   757
   758  001406  012767  177777  000126    ERR:    MOV     #-1,ERRB        ;SET UP ONE MESSAGE CALL.
   759  001414  012767  000240  000122            MOV     #240,ERRB+2
   760  001422  005067  000132                    CLR     ERRE
   761  001426  000413                            BR      ERRA
   762  001430  011667  000106            ERR1:   MOV     @%6,ERRB        ;DEVELOP ADDT'L MESSAGE ADDR.
   763  001434  017767  000102  000100            MOV     @ERRB,ERRB      ;STORE AT ERRB.
   764  001442  012767  177777  000074            MOV     #-1,ERRB+2
   765  001450  012767  000002  000102            MOV     #2,ERRE
   766  001456  032767  020000  176104    ERRA:   BIT     #BIT13,SR       ;INHIBIT ERROR PRINT?
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```
   767  001464  001030                          BNE     ERRC            ;BRANCH TO INHIBIT PRINT.
   768  001466  011667  000064                  MOV     @%6,ERRD        ;DEVELOP CALLING ADDR.
   769  001472  162767  000002  000056          SUB     #2,ERRD
   770  001500  004567  001574                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
   771  001504  001556                          ERRD                    ;SOURCE ADDR.
   772  001506  015300                          APC                     ;DESTINATION ADDR.
   773  001510  000006                          6                       ;#OF DIGITS TO CONVERT.
   774  001512  004567  001562                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
   775  001516  001140                          PRGNUM                  ;SOURCE ADDR.
   776  001520  015263                          APNUMB                  ;DESTINATION ADDR.
   777  001522  000002                          2                       ;#OF DIGITS TO CONVERT.
   778  001524  004567  001550                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
   779  001530  001146                          RTNNO                   ;SOURCE ADDR.
   780  001532  015271                          ATNUMB                  ;DESTINATION ADDR.
   781  001534  000003                          3                       ;#OF DIGITS TO CONVERT.
   782  001536  104001                          TYPES                   ;TYPE:
   783  001540  015260                          EMO                     ;ERROR HEADER,
   784  001542  000000                  ERRB:   OPEN                    ;ADDT'L ERROR MESSAGE IF ANY.
   785  001544  177777                          -1
   786  001546  104010                  ERRC:   EHALT                   ;GO ERR HALT IF DESIRED.
   787  001550  066716  000004                  ADD     ERRE,@%6
   788  001554  000002                          RTI                     ;EXIT.
   789  001556  000000                  ERRD:   OPEN
   790  001560  000000                  ERRE:   OPEN
   791
   792
   793  001562                          CHGD1:
   794  001562  012706  001076          START:  MOV     #SPBOT,%6       ;SET BOTTOM OF SP STACK.
   795  001566  004767  000352                  JSR     PC,DCACHE       ;DISABLE CACHE  ;;++C
   796  001572  005067  176200                  CLR     PSW
   797  001576  012767  000006  176200          MOV     #6,MACHER
   798  001604  005067  177336                  CLR     RTNNO
   799  001610  016700  175754                  MOV     SR,%0           ;(SR) TO R0
   800  001614  042700  177770                  BIC     #177770,%0      ;LIMIT (SR) TO BITS 3-0
   801  001620  010067  177314                  MOV     %0,PRGNUM       ;SAVE PROGRAM #
   802  001624  006300                          ASL     %0
   803  001626  012767  003644  176170          MOV     #PFAIL,24
   804  001634  012767  000340  176164          MOV     #PRTY7,26
   805  001642  000170  001156                  JMP     @PRGTAB(0)      ;GO TO SELECTED PROGRAM.
   806  001646  016767  177270  177274  GETRDY: MOV     KSTART,NXTST    ;ADDR OF 1ST ROUTINE TO NXTST
   807  001654  012767  000006  176122  GTRDYX: MOV     #6,MACHER       ;RESET MACHER TRAP.
   808  001662  005067  176110                  CLR     PSW
   809  001666  012706  001076                  MOV     #SPBOT,%6       ;SET BOTTOM OF STACK.
   810  001672  104011                          SRESET                  ;ISSUE RESET.
   811  001674  004767  000142          GTRDYA: JSR     %7,FORWD        ;ROLL FORWARD TO "NEXT" ROUTINE.
   812  001700  032767  001000  175662  GTRDYB: BIT     #BIT9,SR        ;CHECK SELECT ROUTINE SWITCH
   813  001706  001003                          BNE     GTRDYC          ;BRANCH IF SELECT ROUTINE SWITCH IS SET.
   814  001710  000177  177230                  JMP     @CURTST         ;GO RUN CURRENT ROUTINE.
   815  001714  000437                          BR      CHNB            ;NO GO. MANUAL RTN BYPASSED.
   816  001716  016700  175646          GTRDYC: MOV     SR,%0           ;(SR) TO R0
   817  001722  042700  177600                  BIC     #177600,%0      ;MASK UNDESIRED BITS
   818  001726  126700  177214                  CMPB    RTNNO,%0        ;COMPARE RTNNO TO (R0)
   819  001732  001002                          BNE     GTRDYD          ;BRANCH IF ROUTINE NOT FOUND YET.
   820  001734  000177  177204                  JMP     @CURTST         ;GO RUN ROUTINE.
   821  001740  022767  177777  177202  GTRDYD: CMP     #-1,NXTST       ;NO. CHECK FOR LAST ROUTINE.
   822  001746  001352                          BNE     GTRDYA          ;BRANCH IF NOT LAST ROUTINE.
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   823  001750  004767  177326                 JSR     %7,INCRTN       ;YES. INCORRECT ROUTINE SELECTED.
   824  001754  000734                         BR      GETRDY          ;START OVER.
   825  001756  032767  040000  175604 CHAINN: BIT     #BIT14,SR       ;CHECK FOR SCOPE OPTION.
   826  001764  001403                         BEQ     CHNA            ;BRANCH IF SCOPE SW NOT SET.
   827  001766  016716  177162        CHNAB:  MOV     SCOPTR,@%6      ;SET UP TO RETURN TO ROUTINE.
   828  001772  000002                         RTI                     ;RETURN TO ROUTINE.
   829  001774  032767  004000  175566 CHNA:   BIT     #BIT11,SR       ;TEST INHIBIT ITERATION SWITCH
   830  002002  001003                         BNE     CHNAA           ;BRANCH IF INHIBIT ITERATION SW SET.
   831  002004  005367  177142                 DEC     ICTR            ;DECREMENT ITERATION COUNT.
   832  002010  001366                         BNE     CHNAB           ;BRANCH IF COUNT NOT 0.
   833  002012  022626                 CHNAA:  POPSP2                  ;POP STACK TWICE
   834
   835  002014  032767  001000  175546 CHNB:   BIT     #BIT9,SR        ;CHECK SELECT ROUTINE SWITCH
   836  002022  001311                         BNE     GETRDY          ;BRANCH IF SELECT RTN SW SET
   837  002024  022767  177777  177116         CMP     #-1,NXTST       ;LAST TEST?
   838  002032  001310                         BNE     GTRDYX          ;BRANCH IF NOT LAST TEST.
   839  002034  004767  177252                 JSR     %7,PRGEND       ;PROGRAM END.
   840  002040  000702                         BR      GETRDY
   841  002042  016705  177102        FORWD:  MOV     NXTST,%5        ;ADDR OF NEXT ROUTINE TO R5.
   842  002046  012567  177074                 MOV     (5)+,RTNNO      ;GET NEXT ROUTINE NUMBER.
   843  002052  012567  177072                 MOV     (5)+,NXTST      ;GET ADDR OF NEXT "NEXT" ROUTINE.
   844  002056  012567  177070                 MOV     (5)+,ICTR       ;GET ITERATION COUNT.
   845  002062  012567  177066                 MOV     (5)+,SCOPTR     ;GET SCOPE LOOP ENTRY POINTER.
   846  002066  010567  177052        FORWDA: MOV     %5,CURTST       ;ADDR OF NOW CURRENT TEST TO CURTST.
   847  002072  000207                         RTS     %7              ;EXIT FORWD SUBROUTINE.
   848  002074  012767  177777  177052 FORWDB: MOV     #-1,SCOPTR      ;FORCE "NO SCOPE"
   849  002102  012767  000001  177042         MOV     #1,ICTR         ;FORCE I COUNT OF 1
   850  002110  000766                         BR      FORWDA
   851  002112  011646                 EMTINT: MOV     @%6,-(6)        ;GET SAVED PC.
   852  002114  162716  000002                 SUB     #2,@%6          ;DECREMENT PC BY 2.
   853  002120  017616  000000                 MOV     @(6),@%6
   854  002124  006316                 EMTA:   ASL     @%6             ;EMT ARG X 2.
   855  002126  042716  177001                 BIC     #177001,@%6     ;REMOVE 7 MSB.
   856  002132  062716  001170                 ADD     #EMTTAB,@%6     ;FORM EMT RTN ADDR.
   857  002136  017616  000000                 MOV     @(6),@%6
   858  002142  000136                         JMP     @(6)+           ;GO TO EMT ROUTINE.
   859
   860                                  ;SUBROUTINE TO SIZE FOR AN 11/70 CENTRAL PROCESSOR      ;;++C
   861                                  ;       IF IT IS AN 11/70 CPU, CACHE WILL BE DISABLED
   862                                  ;       IF NOT AN 11/70 CPU, NO ACTION TAKEN
   863                                  ;
   864                                  ;CALLED BY              JSR     PC,DCACHE
   865                                  ;                       NO ARGUEMENTS PASSED
   866                                  ;
   867                                  ;
   868  002144  013746  000004         DCACHE: MOV     @#4,-(SP)       ;SAVE TRAP INFO
   869  002150  012737  002172  000004         MOV     #1$,@#4         ;SETUP FOR TIMEPUT
   870  002156  005737  177746                 TST     @#177746        ;TEST FOR CACHE
   871  002162  012737  000014  177746         MOV     #14,@#177746    ;DISABLE CACHE
   872  002170  000401                         BR      2$              ;EXIT,CACHE DISABLED.
   873  002172  022626                 1$:     CMP     (SP)+,(SP)+     ;CLEAN UP STACK
   874  002174  012637  000004        2$:     MOV     (SP)+,@#4
   875  002200  000207                         RTS     PC              ;RETURN
   876
   877                                  ;SAVE REGS 0 TO 4 SUBROUTINF.
   878  002202  012667  000030        SAVRG:  MOV     (6)+,SVRPC      ;SAVE PC AND PSW.
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   879  002206  012667  000026                  MOV     (6)+,SVRPSW
   880  002212  010446                          MOV     %4,-(6)         ;SAVE REGS 0 - 4
   881  002214  010346                          MOV     %3,-(6)         ;IN STACK.
   882  002216  010246                          MOV     %2,-(6)
   883  002220  010146                          MOV     %1,-(6)
   884  002222  010046                          MOV     %0,-(6)
   885  002224  016746  000010                  MOV     SVRPSW,-(6)     ;RESTORE PC AND PSW.
   886  002230  016746  000002                  MOV     SVRPC,-(6)
   887  002234  000002                          RTI                     ;EXIT.
   888  002236  000000              SVRPC:      OPEN
   889  002240  000000              SVRPSW:     OPEN
   890                               ;RESTORE REGS 0 TO 4 SUBROUTINE.
   891  002242  012667  000030      RSTRG:      MOV     (6)+,RSTPC      ;SAVE PC AND PSW.
   892  002246  012667  000026                  MOV     (6)+,RSTPSW
   893  002252  012600                          MOV     (6)+,%0         ;RESTORE REGS 0 - 4
   894  002254  012601                          MOV     (6)+,%1         ;FROM STACK.
   895  002256  012602                          MOV     (6)+,%2
   896  002260  012603                          MOV     (6)+,%3
   897  002262  012604                          MOV     (6)+,%4
   898
   899  002264  016746  000010                  MOV     RSTPSW,-(6)     ;RESTORE PC AND PSW.
   900  002270  016746  000002                  MOV     RSTPC,-(6)
   901  002274  000002                          RTI                     ;EXIT
   902  002276  000000              RSTPC:      OPEN
   903  002300  000000              RSTPSW:     OPEN
   904                               ;ROUTINE TO SET RECEIVER INTERRUPT VECTOR AND PRIORITY
   905  002302  017667  000000  000012  STLSRV: MOV     @(6),STPRA+2    ;MOVE VECTOR ADDR TO STPRA+2
   906  002310  062716  000002                  ADD     #2,@%6          ;SET UP EXIT
   907  002314  016701  176570                  MOV     RXVTR,%1
   908  002320  012721  000000      STPRA:      MOV     #OPEN,(1)+      ;SET VECTOR ADDRESS
   909  002324  016721  176562                  MOV     RXLVL,(1)+      ;SET PRIORITY
   910  002330  000002                          RTI                     ;EXIT
   911                               ;ROUTINE TO SET TRANSMITTER INTERRUPT VECTOR AND PRIORITY.
   912  002332  017667  000000  000012  STLSPV: MOV     @(6),STPPA+2    ;MOVE VECTOR ADDR TO STPPA+2
   913  002340  062716  000002                  ADD     #2,@%6          ;SET UP EXIT
   914  002344  016701  176544                  MOV     TXVTR,%1
   915  002350  012721  000000      STPPA:      MOV     #OPEN,(1)+      ;SET VECTOR ADDRESS.
   916  002354  016721  176536                  MOV     TXLVL,(1)+      ;SET PRIORITY
   917  002360  000002                          RTI                     ;EXIT.
   918                               ;ROUTINE TO ISSUE RESET.
   919  002362  012700  052525      SRSETT:     MOV     #52525,%0               ;DATA TO R0.
   920  002366  005100                          COM     %0              ;COMPLEMENT (R0).
   921  002370  010067  177770                  MOV     %0,SRSETT+2     ;(R0) TO SRSETT+2.
   922  002374  000005                          RESET                   ;ISSUE RESET. (R0) IS
   923  002376  004767  177542                  JSR     PC,DCACHE       ;DISABLE CACHE. ;;++C
   924  002402  000002                          RTI                     ;DISPLAYED. EXIT.
   925
   926                               ;RANDOM NUMBER GENERATOR. ROUTINE EXITS WITH NUMBER IN REGISTER 0.
   927  002404  016700  000042      RNGEN:      MOV     RP1,%0
   928  002410  006100                          ROL     %0
   929  002412  006100                          ROL     %0
   930  002414  066700  000034                  ADD     RP2,%0
   931  002420  010067  000026                  MOV     %0,RP1
   932  002424  006100                          ROL     %0
   933  002426  006100                          ROL     %0
   934  002430  066700  000020                  ADD     RP2,%0
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   935  002434  006100                          ROL     %0
   936  002436  006100                          ROL     %0
   937  002440  010067  000010                  MOV     %0,RP2
   938  002444  016700  000002                  MOV     RP1,%0
   939  002450  000207                          RTS     %7              ;EXIT. NUMBER IN R0
   940  002452  001233                  RP1:    1233
   941  002454  007622                  RP2:    7622
   942                                  ;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.
   943  002456  011600                  TYP:    MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS.
   944  002460  062716  000002                  ADD     #2,@%6          ;SET UP EXIT.
   945  002464  011000                          MOV     @%0,%0          ;ADDRESS OF MESSAGE TO R0.
   946  002466  112067  000104          TYPA:   MOVB    (0)+,TYPDAT     ;GET CHARACTER
   947  002472  122767  000100  000076          CMPB    #100,TYPDAT     ;CHECK FOR''@''CHARACTER
   948  002500  001001                          BNE     TYPC            ;BRANCH IF NOT''@''.
   949  002502  000002                          RTI                     ;TERMINATOR CHAR. DONE. EXIT.
   950  002504  122767  000045  000064  TYPC:   CMPB    #45,TYPDAT      ;CHECK FOR''%''.
   951  002512  001416                          BEQ     TYPF            ;BRANCH IF''%''
   952  002514  122767  000043  000054          CMPB    #43,TYPDAT      ;NOT''%''.CHECK FOR''#''.
   953  002522  001417                          BEQ     TYPG            ;BRANCH IF ''#''
   954  002524  004767  000002                  JSR     %7,TYPD         ;TYPE CHAR IN TYPDAT
   955  002530  000756                          BR      TYPA
   956  002532  116777  000040  176366  TYPD:   MOVB    TYPDAT,@TPB     ;OUTPUT CHARACTER TO PRINTER
   957  002540  105777  176360                  TSTB    @TPS            ;WAIT FOR DONE FLAG.
   958  002544  100375                          BPL     .-4
   959  002546  000207                          RTS     %7              ;EXIT
   960  002550  112767  000015  000020  TYPF:   MOVB    #15,TYPDAT      ;MOVE CARRIAGE RETURN CODE TO TYPDAT
   961  002556  004767  177750                  JSR     %7,TYPD         ;GO TYPE CHAR.
   962  002562  112767  000012  000006  TYPG:   MOVB    #12,TYPDAT      ;MOVE LF CODE TO TYPDAT.
   963  002570  004767  177736                  JSR     %7,TYPD         ;GO TYPE CHAR.
   964  002574  000734                          BR      TYPA
   965  002576  000000                  TYPDAT: OPEN
   966                                  ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER
   967  002600  011600                  TYPS:   MOV     @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
   968  002602  062716  000002                  ADD     #2,@%6          ;UPDATE TO NEXT MESSAGE ADDRESS
   969  002606  011067  000014                  MOV     @%0,TYPSB       ;ADDRESS OF MESSAGE TO TYPSB
   970  002612  022767  177777  000006          CMP     #-1,TYPSB       ;CHECK FOR TERMINATOR
   971  002620  001001                          BNE     TYPSA           ;BRANCH IF NOT TERMINATOR.
   972  002622  000002                          RTI                     ;TERMINATOR, EXIT
   973  002624  104000                  TYPSA:  TYPE                    ;CALL ON TYP SUB TO TYPE MESSAGE
   974  002626  000000                  TYPSB:  OPEN                    ;ADDRESS OF MESSAGE GOES HERE
   975  002630  000763                          BR      TYPS            ;GO PROCESS NEXT MESSAGE
   976
   977  002632  012701  000300          OVRLAY: MOV     #300,%1         ;GET DC11 VECTOR BASE ADDRESS
   978  002636  012702  000302                  MOV     #302,%2         ;GET NEXT ADDRESS
   979  002642  010221                  OVRLYA: MOV     %2,(1)+         ;LOAD VECTOR WITH ADDRESS OF NEXT ADDRESS
   980  002644  005021                          CLR     (1)+            ;PUT A HALT IN THE NEXT ADDRESS
   981  002646  020267  176126                  CMP     %2,1000         ;ALL VECTORS BEEN LOADED
   982  002652  001403                          BEQ     OVRLYB
   983  002654  062702  000004                  ADD     #4,%2           ;GET NEXT VECTOR ADDRESS
   984  002660  000770                          BR      OVRLYA
   985  002662  000207                  OVRLYB: RTS     7               ;EXIT
   986
   987                                  ;SUBROUTINE TO DELAY A SPECIFIED NUMBER OF MILLISECONDS
   988  002664  011667  000040          DLY:    MOV     @%6,DLCNT       ;GET DELAY COUNT ADDRESS.
   989  002670  062716  000002                  ADD     #2,@%6          ;SET UP EXIT ADDRESS
   990  002674  017746  000030                  MOV     @DLCNT,-(6)     ;DELAY COUNT TO STACK
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 991  002700  001411                    BEQ     DLYC
 992  002702  005067  175070            CLR     PSW                 ;SET PRIORITY 0
 993  002706  012746  000554    DLYA:   MOV     #554,-(6)           ;1 MSEC COUNT TO STACK
 994  002712  005316            DLYB:   DEC     @%6                 ;DECREMENT 1 MSEC COUNT
 995  002714  001376                    BNE     DLYB                ;BRANCH IF NOT 0.
 996  002716  005726                    POPSP                       ;ZERO. UNCOVER MSECS. COUNT.
 997  002720  005316                    DEC     @%6                 ;DECREMENT IT
 998  002722  001371                    BNE     DLYA                ;BR IF NOT DONE DELAYING
 999  002724  005726            DLYC:   POPSP                       ;DONE
1000  002726  000002                    RTI                         ;EXIT.
1001  002730  000000            DLCNT:  OPEN                        ;CONTAINS MILLISECONDS COUNT ADDRESS.
1002                            ;SUBROUTINE TO STALL A RANDOM NUMBER OF MILLISECONDS. MAXIMUM STALL
1003                            ;DETERMINED BY CONTENTS OF LOC STLMSK.
1004  002732  004767  177446    STAL:   JSR     %7,RNGEN            ;GO GET RANDOM NUMBER.
1005  002736  046700  176326            BIC     STLMSK,%0           ;# IN R0. APPLY STALL MASK.
1006  002742  001404                    BEQ     STALB               ;BRANCH IF RESULT IS 0.
1007  002744  010067  000002            MOV     %0,STALA
1008  002750  104016                    DELAY                       ;DELAY
1009  002752  000000            STALA:  OPEN                        ;DELAY COUNT
1010  002754  000002            STALB:  RTI                         ;DONE. EXIT.
1011                            ;SUBROUTINE TO GENERATE RANDOM CHARACTER COUNT
1012  002756  004767  177422    GRCNT:  JSR     %7,RNGEN            ;GET RANDOM NUMBER
1013  002762  046700  000010            BIC     RCMSK,%0            ;APPLY MASK
1014  002766  001773                    BEQ     GRCNT               ;TRY AGAIN IF RESULT 0
1015  002770  010067  000004            MOV     %0,RNCNT            ;COUNT TO RNCNT
1016  002774  000207                    RTS     %7                  ;EXIT.
1017  002776  000000            RCMSK:  OPEN                        ;RANDOM CHARACTER MASK.
1018  003000  000000            RNCNT:  OPEN                        ;RANDOM CHARACTER COUNT.
1019                            ;SUBROUTINE TO SELECT LINE AND
1020  003002  104000            LINSEL: TYPE
1021  003004  017010                    LDLINE
1022  003006  000000                    HALT
1023  003010  016701  174554            MOV     SR,%1
1024  003014  042701  177407            BIC     #177407,%1
1025  003020  010167  176240            MOV     %1,TEMP
1026  003024  012702  000770            MOV     #770,%2
1027  003030  012703  001100            MOV     #RXCSR,%3
1028  003034  012704  000004            MOV     #4,%4
1029  003040  040213                    BIC     %2,(3)
1030  003042  050123                    BIS     %1,(3)+
1031  003044  005304                    DEC     %4
1032  003046  001374                    BNE     .-6
1033  003050  006201                    ASR     %1                  ;POSITION SELECTED LINE
1034  003052  006201                    ASR     %1                  ;  "  "  "
1035  003054  016101  015160            MOV     VECTAB(1),%1        ;GET LINE VECTOR ADDRESS
1036  003060  010167  176024            MOV     %1,RXVTR            ;LOAD INTO PROGRAM RXVTR
1037  003064  022121                    CMP     (1)+,(1)+           ;ADD +4
1038  003066  010167  176022            MOV     %1,TXVTR            ;LOAD INTO PROGRAM TXVTR
1039  003072  006267  176166            ASR     TEMP
1040  003076  006267  176162            ASR     TEMP
1041  003102  006267  176156            ASR     TEMP
1042  003106  004567  000166            JSR     5,OACNV             ;TYPE LINE #
1043  003112  001264                    TEMP
1044  003114  017061                    SELINE
1045  003116  000002                    2
1046  003120  104000                    TYPE
```

```
  1047  003122  017047                          ALINE
  1048  003124  000205                          RTS     5
  1049                                ;SUBROUTINE TO INITIALIZE BINARY COUNT PATTERNS
  1050  003126  012767  177777  000014  INBIN:  MOV     #-1,RIND        ;SET ALL VARIABLES
  1051  003134  004567  000222                  JSR     %5,BMOVE        ;TO MINUS 1.
  1052  003140  003150                          RIND
  1053  003142  003151                          RIND+1
  1054  003144  000013                          11.
  1055  003146  000207                          RTS     %7              ;EXIT
  1056  003150  000000                  RIND:   OPEN
  1057  003152  000000                  PT0:    OPEN
  1058  003154  000000                  PT1:    OPEN
  1059  003156  000000                  PIND:   OPEN
  1060  003160  000000                  PT0P:   OPEN
  1061  003162  000000                  PT1P:   OPEN
  1062                                ;SPECIAL BINARY COUNT PATTERN SUBROUTINE. EXITS WITH BIN CHAR IN R0
  1063  003164  016767  177762  177762  GTBIN:  MOV     PT0,PT1         ;PREVIOUS BIN CHAR TO PT1
  1064  003172  005167  177756                  COM     PT1
  1065  003176  005167  177746                  COM     RIND
  1066  003202  001002                          BNE     .+6
  1067  003204  005267  177744                  INC     PT1
  1068  003210  042767  177400  177736          BIC     #177400,PT1     ;MASK TO 8 BITS
  1069  003216  016767  177732  177726          MOV     PT1,PT0         ;SAVE BIN CHAR IN PT0
  1070  003224  016700  177724                  MOV     PT1,%0          ;BIN CHAR TO R0.
  1071  003230  000207                          RTS     %7              ;EXIT.
  1072  003232  016767  177722  177722  GTBINP: MOV     PT0P,PT1P       ;PREVIOUS BIN CHAR TO PT1P
  1073  003240  005167  177716                  COM     PT1P
  1074  003244  005167  177706                  COM     PIND
  1075  003250  001002                          BNE     .+6
  1076  003252  005267  177704                  INC     PT1P
  1077  003256  042767  177400  177676          BIC     #177400,PT1P    ;MASK TO 8 BITS.
  1078  003264  016767  177672  177666          MOV     PT1P,PT0P       ;SAVE BIN CHAR IN PT0P.
  1079  003272  016701  177664                  MOV     PT1P,%1         ;BIN CHAR TO R1.
  1080  003276  000207                          RTS     %7              ;EXIT.
  1081                                ;OCTAL TO ASCII CONVERT ROUTINE
  1082  003300  013567  000054          OACNV:  MOV     @(5)+,OACNVX    ;GET OCTAL VALUE.
  1083  003304  012501                          MOV     (5)+,%1         ;GET DESTINATION ADDR.
  1084  003306  012502                          MOV     (5)+,%2         ;GET CONVERT COUNT.
  1085  003310  060201                          ADD     %2,%1           ;DEVELOP ADDR TO STORE 1ST CHAR.
  1086  003312  016703  000042          OACNVA: MOV     OACNVX,%3
  1087  003316  042703  177770                  BIC     #177770,%3      ;ISOLATE LEAST SIGNIFICANT DIGIT.
  1088  003322  062703  000060                  ADD     #60,%3          ;CONVERT DIGIT TO ASCII.
  1089  003326  110341                          MOVB    %3,-(1)         ;STORE ASCII CHARACTER.
  1090  003330  042767  000007  000022          BIC     #7,OACNVX
  1091  003336  006067  000016                  ROR     OACNVX
  1092  003342  006067  000012                  ROR     OACNVX
  1093  003346  006067  000006                  ROR     OACNVX
  1094  003352  005302                          DEC     %2              ;DONE ALL DIGITS?
  1095  003354  001356                          BNE     OACNVA          ;BRANCH IF NOT DONE.
  1096  003356  000205                          RTS     %5              ;DONE. EXIT.
  1097  003360  000000                  OACNVX: OPEN
  1098                                ;SUBROUTINE TO MOVE A VARIABLE NUMBER OF BYTES.
  1099  003362  104013                  BMOVE:  SAVREG                  ;SAVE REGS.
  1100  003364  012501                          MOV     (5)+,%1         ;GET"FROM"ADDRESS
  1101  003366  012502                          MOV     (5)+,%2         ;GET"TO"ADDRESS
  1102  003370  012503                          MOV     (5)+,%3         ;GET COUNT
```

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1103  003372  112122                  BMOVA:  MOVB    (1)+,(2)+       ;MOVE BYTE
1104  003374  005303                          DEC     %3              ;DECREMENT COUNT
1105  003376  001375                          BNE     BMOVA           ;BRANCH IF NOT DONE.
1106  003400  104014                          RSTREG                  ;RESTORE REGS.
1107  003402  000205                          RTS     %5              ;DONE EXIT
1108                                  ;BINARY TO DECIMAL ASCII CONVERT SUBROUTINE.
1109  003404  012700  003524         BDCNV:  MOV     #DECVAL,%0      ;SET UP ADDR TO STORE DECIMAL ASCII IN R0
1110  003410  013501                          MOV     @(5)+,%1        ;BINARY VALUE TO R1.
1111  003412  012702  003512                  MOV     #ADTENP,%2      ;ADDR OF TEN POWER STRING TO R2.
1112  003416  012767  000005  000060         MOV     #5,CNVCTR       ;SET UP FOR 5 POWER CONVERSIONS.
1113  003424  012267  000060         BDCNVA: MOV     (2)+,TENPWR     ;MOVE POWER OF TEN VALUE TO TENPWR.
1114  003430  004767  000010                 JSR     %7,SUBTEN       ;PERFORM CONVERSION
1115  003434  005367  000044                 DEC     CNVCTR          ;DONE 5 CONVERSIONS?
1116  003440  001371                          BNE     BDCNVA          ;BRANCH IF NOT YET 5.
1117  003442  000205                          RTS     %5              ;YES, EXIT.
1118  003444  005067  000036         SUBTEN: CLR     DIGIT           ;CLEAR DIGIT
1119  003450  166701  000034         SUBTNA: SUB     TENPWR,%1       ;SUBTRACT TEN POWER FROM BINARY VALUE.
1120  003454  103403                          BCS     SUBTNB          ;BRANCH IF UNSUCCESSFUL SUBTRACTION.
1121  003456  005267  000024                  INC     DIGIT
1122  003462  000772                          BR      SUBTNA
1123  003464  066701  000020         SUBTNB: ADD     TENPWR,%1       ;RESTORE SUBTRACTED VALUE.
1124  003470  062767  000060  000010         ADD     #60,DIGIT       ;CONVERT (DIGIT) TO ASCII
1125  003476  116720  000004                  MOVB    DIGIT,(0)+      ;MOVE ASCII CHAR TO DECVAL FIELD.
1126  003502  000207                          RTS     %7              ;EXIT.
1127  003504  000000         CNVCTR: OPEN
1128  003506  000000         DIGIT:  OPEN
1129  003510  000000         TENPWR: OPEN
1130  003512  023420         ADTENP: 10000.
1131  003514  001750                 1000.
1132  003516  000144                 100.
1133  003520  000012                 10.
1134  003522  000001                 1
1135  003524    040     040     040  DECVAL: .BYTE   040,040,040,040,040,040
1136  003527    040     040     040
1137  003532  012567  175530         DATTST: MOV     (5)+,SRT                ;GET PARAMETERS
1138  003536  004767  011230                 JSR     7,STPARB        ;LOAD PARAMETERS
1139  003542  042777  000001  175330         BIC     #BIT0,@RXCSR    ;CLEAR DATA TERM. READY
1140  003550  052777  000004  175326         BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT
1141  003556  012767  000144  175462         MOV     #100.,CTRA      ;GET CHARACTER COUNT
1142  003564  105777  175314         DATAA:  TSTB    @TXCSR          ;WAIT FOR
1143  003570  100375                          BPL     .-4             ;READY FLAG
1144  003572  004767  177434                 JSR     7,GTBINP        ;GET CHARACTER
1145  003576  110167  175430                 MOVB    %1,CRBUFA       ;MOVE CHARACTER
1146  003602  046767  175426  175422         BIC     CARMSK,CRBUFA   ;MASK OFF NON TRANSMITTED BITS
1147  003610  110177  175272                 MOVB    %1,@TXBUF       ;TRANSMIT CHARACTER
1148  003614  105777  175260                 TSTB    @RXCSR          ;WAIT FOR
1149  003620  100375                          BPL     .-4             ;DONE FLAG
1150  003622  117767  175254  175400         MOVB    @RXBUF,CRBUF    ;GET RECEIVED CHARACTER
1151  003630  104004                          DATCHK                  ;CHK DATA
1152  003632  005367  175410                 DEC     CTRA            ;DECREMENT CHARACTER COUNT
1153  003636  001352                          BNE     DATAA
1154  003640  005726                          TST     (6)+            ;POP STACK
1155  003642  104012                          SCOPE
1156
1157  003644  012767  003654  174152  PFAIL: MOV     #PWRUP,24
1158  003652  000000                 HALT
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1159
1160  003654  000005                  PWRUP:  RESET
1161  003656  004767  176262                  JSR     PC,DCACHE       ;DISABLE CACHE. ;;++C
1162  003662  012706  001076                  MOV     #SPBOT,%6
1163  003666  104003                          ERROR
1164  003670  016700  175244          RESTART:MOV     PRGNUM,%0       ;GET PROGRAM NUMBER
1165  003674  006300                          ASL     %0
1166  003676  012767  003644  174120        MOV     #PFAIL,24       ;RELOAD POWER FAIL VECTOR
1167  003704  004767  011062                  JSR     7,STPARB        ;RELOAD LINE PARAMETERS
1168  003710  000170  003714                  JMP     @RSTART(0)      ;GO RESTART SELECTED PROGRAM
1169
1170  003714  003752                  RSTART: PRG0A                   ;PROGRAM 0 RESTART ADDRESS
1171  003716  014444                          PRG1A                   ;PROGRAM 1 RESTART ADDRESS
1172  003720  014510                          PRG2A                   ;PROGRAM 2 RESTART ADDRESS
1173  003722  014604                          PRG3A                   ;PROGRAM 3 RESTART ADDRESS
1174  003724  014640                          PRG4A                   ;PROGRAM 4 RESTART ADDRESS
1175
1176                                  ;PRG0 - INPUT-OUTPUT LOGIC TESTS
1177  003726  012767  003756  175206  PRG0:   MOV     #AT0,KSTART
1178  003734  104000                          TYPE                    ;TYPE TITLE AND INSTRUCTIONS
1179  003736  015311                          POTIT
1180  003740  000000                          HALT
1181  003742  004567  177034                  JSR     5,LINSEL        ;GO GET LINE # FROM USER
1182  003746  004767  175320                  JSR     7,SETSR
1183  003752  000167  175670          PRG0A:  JMP     GETRDY          ;GET STARTED.
1184          177777                          TX=-1
1185
1186                                  ;*****************************************************************************
1187  003756  000000                  AT0:    0                       ;TEST NUMBER 0                              *
1188  003760  004010                          AT1                     ;ADDRESS OF NEXT TEST                       *
1189  003762  001750                          1000.                   ;TEST ITERATION COUNT                       *
1190  003764  003766                          AAA                     ;SCOPE ENTRY POINT                          *
1191                                  ;*****************************************************************************
1192                                  ;TEST ABILITY TO REFERENCE RECEIVER CSR WITHOUT TRAPPING
1193  003766  012767  004002  174010  AAA:    MOV     #AAE,MACHER     ;SET UP MACHINE ERROR TRAP.
1194  003774  005777  175100                  TST     @RXCSR          ;REFERENCE RXCSR
1195  004000  104012                  AAB:    SCOPE                   ;OK IF NO TRAP. SCOPE
1196  004002  022626                  AAE:    POPSP2
1197  004004  104003                          ERROR                   ;TRAPPED WHEN REFERENCING RXCSR.
1198  004006  000774                          BR      AAB
1199                                  ;*****************************************************************************
1200  004010  000001                  AT1:    1                       ;TEST NUMBER 1                              *
1201  004012  004042                          AT2                     ;ADDRESS OF NEXT TEST                       *
1202  004014  001750                          1000.                   ;TEST ITERATION COUNT                       *
1203  004016  004020                          ABA                     ;SCOPE ENTRY POINT                          *
1204                                  ;*****************************************************************************
1205                                  ;TEST ABILITY TO REFERENCE RECEIVER BUFFER WITHOUT TRAPPING
1206  004020  012767  004034  173756  ABA:    MOV     #ABE,MACHER     ;SET UP MACHINE ERROR TRAP.
1207  004026  005777  175050                  TST     @RXBUF          ;REFERENCE RXBUF
1208  004032  104012                  ABB:    SCOPE                   ;OK IF NO TRAP SCOPE
1209  004034  022626                  ABE:    POPSP2
1210  004036  104003                          ERROR                   ;TRAPPED WHEN REFERENCING RXBUF
1211  004040  000774                          BR      ABB
1212
1213                                  ;*****************************************************************************
1214  004042  000002                  AT2:    2                       ;TEST NUMBER 2                              *
```

```
                        AT3                     ;ADDRESS OF NEXT TEST                   *
                        1000.                   ;TEST ITERATION COUNT                   *
                        ACA                     ;SCOPE ENTRY POINT                      *
                        TX=TX+1
                ;*****************************************************************************
                ;TEST ABILITY TO REFERENCE TRANSMITTER CSR WITHOUT TRAPPING.
004052  012767  004066  173724  ACA:    MOV     #ACE,MACHER     ;SET UP MACHINE ERROR TRAP.
004060  005777  175020          ACB:    TST     @TXCSR          ;REFERENCE TXCSR
004064  104012                  ACE:    SCOPE                   ;SCOPE
004066  022626                          POPSP2
004070  104003                          ERROR                   ;TRAPPED WHEN REFERENCING TXCSR
004072  000774                          BR      ACB

                ;*****************************************************************************
004074  000003                  AT3:    3                       ;TEST NUMBER 3                  *
004076  004126                          AT4                     ;ADDRESS OF NEXT TEST           *
004100  001750                          1000.                   ;TEST ITERATION COUNT           *
004102  004104                          ADA                     ;SCOPE ENTRY POINT              *
                ;*****************************************************************************
                ;TEST ABILITY TO REFERENCE TRANSMITTER BUFFER WITHOUT TRAPPING
004104  012767  004120  173672  ADA:    MOV     #ADE,MACHER     ;SET UP MACHINE ERROR TRAP.
004112  005777  174770          ADB:    TST     @TXBUF          ;REFERENCE TX BUF.
004116  104012                  ADE:    SCOPE                   ;SCOPE
004120  022626                          POPSP2
004122  104003                          ERROR                   ;TRAPPED WHEN REFERENCING TXBUF
004124  000774                          BR      ADB

                ;*****************************************************************************
004126  000004                  AT4:    4                       ;TEST NUMBER 4                  *
004130  004226                          AT5                     ;ADDRESS OF NEXT TEST           *
004132  000144                          100.                    ;TEST ITERATION COUNT           *
004134  004136                          AEA                     ;SCOPE ENTRY POINT              *
                ;*****************************************************************************
                ;TEST THAT TXCSR BIT0 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
004136  032777  000001  174740  AEA:    BIT     #BIT0,@TXCSR    ;SEE IF TXCSR BIT0 IS CLEAR.
004144  001402                          BEQ     AEB             ;BRANCH IF BIT IS CLEAR.
004146  104003                          ERROR                   ;RESET DID NOT CLEAR TXCSR BIT0
004150  000421                          BR      AED
004152  052777  000001  174724  AEB:    BIS     #BIT0,@TXCSR    ;SET TXCSR BIT0.
004160  032777  000001  174716          BIT     #BIT0,@TXCSR    ;SEE IF BIT IS SET.
004166  001002                          BNE     AEC             ;BRANCH IF BIT IS SET.
004170  104003                          ERROR                   ;TXCSR BIT0 FAILED TO SET.
004172  000410                          BR      AED
004174  042777  000001  174702  AEC:    BIC     #BIT0,@TXCSR    ;CLEAR TXCSR BIT0
004202  032777  000001  174674          BIT     #BIT0,@TXCSR    ;SEE IF BIT IS CLEAR.
004210  001401                          BEQ     AED
004212  104003                          ERROR                   ;TXCSR BIT0 FAILED TO CLEAR.
004214  052777  000001  174662  AED:    BIS     #BIT0,@TXCSR    ;SET TXCSR BIT0.
004222  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
004224  104012                          SCOPE                   ;SCOPE
                ;*****************************************************************************
004226  000005                  AT5:    5                       ;TEST NUMBER 5                  *
004230  004324                          AT6                     ;ADDRESS OF NEXT TEST           *
004232  000144                          100.                    ;TEST ITERATION COUNT           *
004234  004236                          AFA                     ;SCOPE ENTRY POINT              *
                ;*****************************************************************************
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1271                                    ;TEST THAT TXCSR BIT1 (CLEAR TO SEND) CAN BE SET, AND CLEARED
1272  004236  042777  000001  174634  AFA:    BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1273  004244  032777  000002  174632          BIT     #BIT1,@TXCSR    ;SEE IF TXCSR BIT1 IS CLEAR.
1274  004252  001402                          BEQ     AFB             ;BRANCH IF BIT IS CLEAR.
1275  004254  104003                          ERROR                   ;TXCSR BIT1 IS NOT CLEAR.
1276  004256  000421                          BR      AFD             ;EXIT TEST
1277  004260  052777  000001  174612  AFB:    BIS     #BIT0,@RXCSR    ;SET DATA TERM. RDY. (SETS CTS VIA JUMPER)
1278  004266  032777  000002  174610          BIT     #BIT1,@TXCSR    ;IS CLEAR TO SEND SET?
1279  004274  001002                          BNE     AFC             ;BRANCH IF SET
1280  004276  104003                          ERROR                   ;CTS NOT BEING SET VIA DTR
1281  004300  000410                          BR      AFD             ;EXIT TEST
1282  004302  042777  000001  174570  AFC:    BIC     #BIT0,@RXCSR    ;CLEAR DATA TERM. RDY.
1283  004310  032777  000002  174566          BIT     #BIT1,@TXCSR    ;IS CTS CLEAR?
1284  004316  001401                          BEQ     AFD
1285  004320  104003                          ERROR                   ;CTS FAILED TO CLEAR VIA DTR
1286  004322  104012                  AFD:    SCOPE                   ;SCOPE
1287
1288                                    ;*************************************************************************
1289  004324  000006                  AT6:    6                       ;TEST NUMBER 6                          *
1290  004326  004424                          AT7                     ;ADDRESS OF NEXT TEST                   *
1291  004330  000144                          100.                    ;TEST ITERATION COUNT                   *
1292  004332  004334                          AGA                     ;SCOPE ENTRY POINT                      *
1293                                    ;*************************************************************************
1294                                    ;TEST THAT TXCSR BIT2 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1295  004334  032777  000004  174542  AGA:    BIT     #BIT2,@TXCSR    ;SEE IF TXCSR BIT2 IS CLEAR.
1296  004342  001402                          BEQ     AGB             ;BRANCH IF BIT IS CLEAR.
1297  004344  104003                          ERROR                   ;RESET DID NOT CLEAR TXCSR BIT2
1298  004346  000421                          BR      AGD
1299  004350  052777  000004  174526  AGB:    BIS     #BIT2,@TXCSR    ;SET TXCSR BIT2.
1300  004356  032777  000004  174520          BIT     #BIT2,@TXCSR    ;SEE IF BIT IS SET.
1301  004364  001002                          BNE     AGC             ;BRANCH IF BIT IS SET.
1302  004366  104003                          ERROR                   ;TXCSR BIT2 FAILED TO SET.
1303  004370  000410                          BR      AGD
1304  004372  042777  000004  174504  AGC:    BIC     #BIT2,@TXCSR    ;CLEAR TXCSR BIT2
1305  004400  032777  000004  174476          BIT     #BIT2,@TXCSR    ;SEE IF BIT IS CLEAR.
1306  004406  001401                          BEQ     AGD
1307  004410  104003                          ERROR                   ;TXCSR BIT2 FAILED TO CLEAR.
1308  004412  052777  000004  174464  AGD:    BIS     #BIT2,@TXCSR    ;SET TXCSR BIT2.
1309  004420  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1310  004422  104012                          SCOPE                   ;SCOPE
1311                                    ;*************************************************************************
1312  004424  000007                  AT7:    7                       ;TEST NUMBER 7                          *
1313  004426  004524                          AT10                    ;ADDRESS OF NEXT TEST                   *
1314  004430  000144                          100.                    ;TEST ITERATION COUNT                   *
1315  004432  004434                          AHA                     ;SCOPE ENTRY POINT                      *
1316                                    ;*************************************************************************
1317                                    ;TEST THAT TXCSR BIT3 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1318  004434  032777  000010  174442  AHA:    BIT     #BIT3,@TXCSR    ;SEE IF TXCSR BIT3 IS CLEAR.
1319  004442  001402                          BEQ     AHB             ;BRANCH IF BIT IS CLEAR.
1320  004444  104003                          ERROR                   ;RESET DID NOT CLEAR TXCSR BIT3
1321  004446  000421                          BR      AHD
1322  004450  052777  000010  174426  AHB:    BIS     #BIT3,@TXCSR    ;SET TXCSR BIT3.
1323  004456  032777  000010  174420          BIT     #BIT3,@TXCSR    ;SEE IF BIT IS SET.
1324  004464  001002                          BNE     AHC             ;BRANCH IF BIT IS SET.
1325  004466  104003                          ERROR                   ;TXCSR BIT3 FAILED TO SET.
1326  004470  000410                          BR      AHD
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1327  004472  042777  000010  174404  AHC:    BIC     #BIT3,@TXCSR    ;CLEAR TXCSR BIT3
1328  004500  032777  000010  174376          BIT     #BIT3,@TXCSR    ;SEE IF BIT IS CLEAR.
1329  004506  001401                          BEQ     AHD
1330  004510  104003                          ERROR                   ;TXCSR BIT3 FAILED TO CLEAR.
1331  004512  052777  000010  174364  AHD:    BIS     #BIT3,@TXCSR    ;SET TXCSR BIT3.
1332  004520  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1333  004522  104012                          SCOPE                   ;SCOPE
1334
1335
1336                                  ;*************************************************************************
1337  004524  000010                  AT10:   10                      ;TEST NUMBER 10                         *
1338  004526  004624                          AT11                    ;ADDRESS OF NEXT TEST                   *
1339  004530  000144                          100.                    ;TEST ITERATION COUNT                   *
1340  004532  004534                          AIA                     ;SCOPE ENTRY POINT                      *
1341                                  ;*************************************************************************
1342                                  ;TEST THAT TXCSR BIT4 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1343  004534  032777  000020  174342  AIA:    BIT     #BIT4,@TXCSR    ;SEE IF TXCSR BIT4 IS CLEAR.
1344  004542  001402                          BEQ     AIB             ;BRANCH IF BIT IS CLEAR.
1345  004544  104003                          ERROR                   ;RESET DID NOT CLEAR TXCSR BIT4
1346  004546  000421                          BR      AID
1347  004550  052777  000020  174326  AIB:    BIS     #BIT4,@TXCSR    ;SET TXCSR BIT4.
1348  004556  032777  000020  174320          BIT     #BIT4,@TXCSR    ;SEE IF BIT IS SET.
1349  004564  001002                          BNE     AIC             ;BRANCH IF BIT IS SET.
1350  004566  104003                          ERROR                   ;TXCSR BIT4 FAILED TO SET.
1351  004570  000410                          BR      AID
1352  004572  042777  000020  174304  AIC:    BIC     #BIT4,@TXCSR    ;CLEAR TXCSR BIT4
1353  004600  032777  000020  174276          BIT     #BIT4,@TXCSR    ;SEE IF BIT IS CLEAR.
1354  004606  001401                          BEQ     AID
1355  004610  104003                          ERROR                   ;TXCSR BIT4 FAILED TO CLEAR.
1356  004612  052777  000020  174264  AID:    BIS     #BIT4,@TXCSR    ;SET TXCSR BIT4.
1357  004620  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1358  004622  104012                          SCOPE                   ;SCOPE
1359                                  ;*************************************************************************
1360  004624  000011                  AT11:   11                      ;TEST NUMBER 11                         *
1361  004626  004732                          AT12                    ;ADDRESS OF NEXT TEST                   *
1362  004630  000144                          100.                    ;TEST ITERATION COUNT                   *
1363  004632  004634                          AJA                     ;SCOPE ENTRY POINT                      *
1364                                  ;*************************************************************************
1365                                  ;TEST THAT TXCSR BIT6 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1366  004634  012767  000340  173134  AJA:    MOV     #PRTY7,PSW      ;SET PRIORITY 7.
1367  004642  032777  000100  174234          BIT     #BIT6,@TXCSR    ;SEE IF TXCSR BIT6 IS CLEAR.
1368  004650  001402                          BEQ     AJB             ;BRANCH IF BIT IS CLEAR.
1369  004652  104003                          ERROR                   ;RESET DID NOT CLEAR TXCSR BIT6
1370  004654  000421                          BR      AJD
1371  004656  052777  000100  174220  AJB:    BIS     #BIT6,@TXCSR    ;SET TXCSR BIT6.
1372  004664  032777  000100  174212          BIT     #BIT6,@TXCSR    ;SEE IF BIT IS SET.
1373  004672  001002                          BNE     AJC             ;BRANCH IF BIT IS SET.
1374  004674  104003                          ERROR                   ;TXCSR BIT6 FAILED TO SET.
1375  004676  000410                          BR      AJD
1376  004700  042777  000100  174176  AJC:    BIC     #BIT6,@TXCSR    ;CLEAR TXCSR BIT6
1377  004706  032777  000100  174170          BIT     #BIT6,@TXCSR    ;SEE IF BIT IS CLEAR.
1378  004714  001401                          BEQ     AJD
1379  004716  104003                          ERROR                   ;TXCSR BIT6 FAILED TO CLEAR.
1380  004720  052777  000100  174156  AJD:    BIS     #BIT6,@TXCSR    ;SET TXCSR BIT6.
1381  004726  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1382  004730  104012                          SCOPE                   ;SCOPE
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1386                                    ;*****************************************************************************
1387  004732  000012                    AT12:   12                      ;TEST NUMBER 12                            *
1388  004734  004754                            AT13                    ;ADDRESS OF NEXT TEST                      *
1389  004736  000144                            100.                    ;TEST ITERATION COUNT                      *
1390  004740  004742                            AKA                     ;SCOPE ENTRY POINT                         *
1391                                    ;*****************************************************************************
1392                                    ;TEST THAT TXCSR BIT 7 (READY BIT) IS SET UPON ENTERING ROUTINE AND
1393                                    ;THAT IT CAN BE READ RELIABLY.
1394  004742  105777  174136            AKA:    TSTB    @TXCSR                  ;SEE IF TXCSR BIT 7 IS SET.
1395  004746  100401                            BMI     AKB                     ;BRANCH IF SET.
1396  004750  104003                            ERROR                           ;TXCSR BIT 7 NOT SET.
1397  004752  104012                    AKB:    SCOPE                           ;SCOPE
1398                                    ;*****************************************************************************
1399  004754  000013                    AT13:   13                      ;TEST NUMBER 13                            *
1400  004756  005054                            AT14                    ;ADDRESS OF NEXT TEST                      *
1401  004760  00  44                            100.                    ;TEST ITERATION COUNT                      *
1402  004762  004764                            ALA                     ;SCOPE ENTRY POINT                         *
1403                                    ;*****************************************************************************
1404                                    ;TEST THAT TXCSR BIT8 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1405  004764  032777  000400  174112    ALA:    BIT     #BIT8,@TXCSR            ;SEE IF TXCSR BIT8 IS CLEAR.
1406  004772  001402                            BEQ     ALB                     ;BRANCH IF BIT IS CLEAR.
1407  004774  104003                            ERROR                           ;RESET DID NOT CLEAR TXCSR BIT8
1408  004776  000421                            BR      ALD
1409  005000  052777  000400  174076    ALB:    BIS     #BIT8,@TXCSR            ;SET TXCSR BIT8.
1410  005006  032777  000400  174070            BIT     #BIT8,@TXCSR            ;SEE IF BIT IS SET.
1411  005014  001002                            BNE     ALC                     ;BRANCH IF BIT IS SET.
1412  005016  104003                            ERROR                           ;TXCSR BIT8 FAILED TO SET.
1413  005020  000410                            BR      ALD
1414  005022  042777  000400  174054    ALC:    BIC     #BIT8,@TXCSR            ;CLEAR TXCSR BIT8
1415  005030  032777  000400  174046            BIT     #BIT8,@TXCSR            ;SEE IF BIT IS CLEAR.
1416  005036  001401                            BEQ     ALD
1417  005040  104003                            ERROR                           ;TXCSR BIT8 FAILED TO CLEAR.
1418  005042  052777  000400  174034    ALD:    BIS     #BIT8,@TXCSR            ;SET TXCSR BIT8.
1419  005050  104011                            SRESET                          ;ISSUE RESET TO CLEAR BIT.
1420  005052  104012                            SCOPE                           ;SCOPE
1421
1422
1423                                    ;*****************************************************************************
1424  005054  000014                    AT14:   14                      ;TEST NUMBER 14                            *
1425  005056  005100                            AT15                    ;ADDRESS OF NEXT TEST                      *
1426  005060  000144                            100.                    ;TEST ITERATION COUNT                      *
1427  005062  005064                            AMA                     ;SCOPE ENTRY POINT                         *
1428                                    ;*****************************************************************************
1429                                    ;TEST THAT TXCSR BIT15 IS CLEAR AND CAN BE READ RELIABLY.
1430  005064  032777  100000  174012    AMA:    BIT     #BIT15,@TXCSR           ;SEE IF TXCSR BIT15 IS CLEAR.
1431  005072  001401                            BEQ     AMB                     ;BRANCH IF BIT IS CLEAR.
1432  005074  104003                            ERROR                           ;TXCSR BIT15 IS NOT CLEAR.
1433  005076  104012                    AMB:    SCOPE                           ;SCOPE
1434
1435
1436                                    ;*****************************************************************************
1437  005100  000015                    AT15:   15                      ;TEST NUMBER 15                            *
1438  005102  005172                            AT16                    ;ADDRESS OF NEXT TEST                      *
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1439  005104  000144                          100.                    ;TEST ITERATION COUNT                   *
1440  005106  005110                          ANA                     ;SCOPE ENTRY POINT                      *
1441                                  ;*************************************************************************
1442                                  ;TEST THAT RXCSR BIT 0 (DATA TERMINAL READY) CAN BE SET, NOT CLEARED BY RESET, AND CLEAR
1443  005110  052777  000001  173762  ANA:    BIS     #BIT0,@RXCSR            ;SET RXCSR BIT 0.
1444  005116  032777  000001  173754          BIT     #BIT0,@RXCSR            ;SEE IF BIT IS SET.
1445  005124  001002                          BNE     ANB                     ;BRANCH IF BIT IS SET.
1446  005126  104003                          ERROR
1447  005130  000417                          BR      AND
1448  005132  104011                  ANB:    SRESET                          ;ISSUE RESET.
1449  005134  032777  000001  173736          BIT     #BIT0,@RXCSR            ;SEE IF BIT IS STILL SET.
1450  005142  001002                          BNE     ANC                     ;BRANCH IF BIT SET.
1451  005144  104003                          ERROR                           ;RESET CLEARED RXCSR BIT 0.
1452  005146  000410                          BR      AND
1453  005150  042777  000001  173722  ANC:    BIC     #BIT0,@RXCSR            ;CLEAR RXCSR BIT 0.
1454  005156  032777  000001  173714          BIT     #BIT0,@RXCSR            ;SEE IF BIT IS CLEAR.
1455  005164  001401                          BEQ     AND                     ;BRANCH IF BIT IS CLEAR.
1456  005166  104003                          ERROR                           ;RXCSR BIT 0 FAILED TO CLEAR.
1457  005170  104012                  AND:    SCOPE                           ;SCOPE
1458                                  ;*************************************************************************
1459  005172  000016                  AT16:   16                              ;TEST NUMBER 16
1460  005174  005272                          AT17                            ;ADDRESS OF NEXT TEST
1461  005176  000144                          100.                            ;TEST ITERATION COUNT
1462  005200  005202                          ANW                             ;SCOPE ENTRY POINT
1463                                  ;*************************************************************************
1464                                  ;TEST THAT RXCSR BIT 1 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT
1465
1466  005202  032777  000002  173670  ANW:    BIT     #BIT1,@RXCSR            ;SEE IF BIT 1 IS CLEAR
1467  005210  001402                          BEQ     ANX                     ;BRANCH IF CLEAR
1468  005212  104003                          ERROR                           ;RESET DID NOT CLEAR RXCSR BIT 1
1469  005214  000421                          BR      ANZ
1470  005216  052777  000002  173654  ANX:    BIS     #BIT1,@RXCSR            ;SET RXCSR BIT1
1471  005224  032777  000002  173646          BIT     #BIT1,@RXCSR            ;SEE IF BIT IS SET
1472  005232  001002                          BNE     ANY                     ;BRANCH IF SET
1473  005234  104003                          ERROR                           ;RXCSR BIT 1 FAILED TO SET
1474  005236  000410                          BR      ANZ
1475  005240  042777  000002  173632  ANY:    BIC     #BIT1,@RXCSR            ;CLEAR RXCSR BIT 1
1476  005246  032777  000002  173624          BIT     #BIT1,@RXCSR            ;SEE IF BIT IS CLEAR
1477  005254  001401                          BEQ     ANZ
1478  005256  104003                          ERROR                           ;RXCSR BIT 1 FAILED TO CLEAR
1479  005260  052777  000002  173612  ANZ:    BIS     #BIT1,@RXCSR            ;SET RXCSR BIT 1
1480  005266  104011                          SRESET                          ;ISSUE RESET TO CLEAR BIT
1481  005270  104012                          SCOPE                           ;SCOPE
1482
1483                                  ;*************************************************************************
1484  005272  000017                  AT17:   17                              ;TEST NUMBER 17                         *
1485  005274  005316                          AT20                            ;ADDRESS OF NEXT TEST                   *
1486  005276  000144                          100.                            ;TEST ITERATION COUNT                   *
1487  005300  005302                          APA                             ;SCOPE ENTRY POINT                      *
1488                                  ;*************************************************************************
1489                                  ;TEST THAT RXCSR BIT2 IS CLEAR AND CAN BE READ RELIABLY.
1490  005302  032777  000004  173570  APA:    BIT     #BIT2,@RXCSR    ;SEE IF RXCSR BIT2 IS CLEAR.
1491  005310  001401                          BEQ     APB             ;BRANCH IF BIT IS CLEAR.
1492  005312  104003                          ERROR                   ;RXCSR BIT2 IS NOT CLEAR.
1493  005314  104012                  APB:    SCOPE                   ;SCOPE
1494                                  ;*************************************************************************
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1495  005316  000020                    AT20:   20                      ;TEST NUMBER 20                 *
1496  005320  005416                            AT21                    ;ADDRESS OF NEXT TEST           *
1497  005322  000144                            100.                    ;TEST ITERATION COUNT           *
1498  005324  005326                            AQA                     ;SCOPE ENTRY POINT              *
1499                                    ;*******************************************************************
1500                                    ;TEST THAT RXCSR BIT3 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1501  005326  032777  000010  173544    AQA:    BIT     #BIT3,@RXCSR    ;SEE IF RXCSR BIT3 IS CLEAR.
1502  005334  001402                            BEQ     AQB             ;BRANCH IF BIT IS CLEAR.
1503  005336  104003                            ERROR                   ;RESET DID NOT CLEAR RXCSR BIT3
1504  005340  000421                            BR      AQD
1505  005342  052777  000010  173530    AQB:    BIS     #BIT3,@RXCSR    ;SET RXCSR BIT3.
1506  005350  032777  000010  173522            BIT     #BIT3,@RXCSR    ;SEE IF BIT IS SET.
1507  005356  001002                            BNE     AQC             ;BRANCH IF BIT IS SET.
1508  005360  104003                            ERROR                   ;RXCSR BIT3 FAILED TO SET.
1509  005362  000410                            BR      AQD
1510  005364  042777  000010  173506    AQC:    BIC     #BIT3,@RXCSR    ;CLEAR RXCSR BIT3
1511  005372  032777  000010  173500            BIT     #BIT3,@RXCSR    ;SEE IF BIT IS CLEAR.
1512  005400  001401                            BEQ     AQD
1513  005402  104003                            ERROR                   ;RXCSR BIT3 FAILED TO CLEAR.
1514  005404  052777  000010  173466    AQD:    BIS     #BIT3,@RXCSR    ;SET RXCSR BIT3.
1515  005412  104011                            SRESET                  ;ISSUE RESET TO CLEAR BIT.
1516  005414  104012                            SCOPE                   ;SCOPE
1517                                    ;*******************************************************************
1518  005416  000021                    AT21:   21                      ;TEST NUMBER 21                 *
1519  005420  005516                            AT22                    ;ADDRESS OF NEXT TEST           *
1520  005422  000144                            100.                    ;TEST ITERATION COUNT           *
1521  005424  005426                            ARA                     ;SCOPE ENTRY POINT              *
1522                                    ;*******************************************************************
1523                                    ;TEST THAT RXCSR BIT4 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1524  005426  032777  000020  173444    ARA:    BIT     #BIT4,@RXCSR    ;SEE IF RXCSR BIT4 IS CLEAR.
1525  005434  001402                            BEQ     ARB             ;BRANCH IF BIT IS CLEAR.
1526  005436  104003                            ERROR                   ;RESET DID NOT CLEAR RXCSR BIT4
1527  005440  000421                            BR      ARD
1528  005442  052777  000020  173430    ARB:    BIS     #BIT4,@RXCSR    ;SET RXCSR BIT4.
1529  005450  032777  000020  173422            BIT     #BIT4,@RXCSR    ;SEE IF BIT IS SET.
1530  005456  001002                            BNE     ARC             ;BRANCH IF BIT IS SET.
1531  005460  104003                            ERROR                   ;RXCSR BIT4 FAILED TO SET.
1532  005462  000410                            BR      ARD
1533  005464  042777  000020  173406    ARC:    BIC     #BIT4,@RXCSR    ;CLEAR RXCSR BIT4
1534  005472  032777  000020  173400            BIT     #BIT4,@RXCSR    ;SEE IF BIT IS CLEAR.
1535  005500  001401                            BEQ     ARD
1536  005502  104003                            ERROR                   ;RXCSR BIT4 FAILED TO CLEAR.
1537  005504  052777  000020  173366    ARD:    BIS     #BIT4,@RXCSR    ;SET RXCSR BIT4.
1538  005512  104011                            SRESET                  ;ISSUE RESET TO CLEAR BIT.
1539  005514  104012                            SCOPE                   ;SCOPE
1540
1541                                    ;*******************************************************************
1542  005516  000022                    AT22:   22                      ;TEST NUMBER 22
1543  005520  005542                            AT23                    ;ADDRESS OF NEXT TEST
1544  005522  000144                            100.                    ;TEST ITERATION COUNT
1545  005524  005526                            ARBA                    ;SCOPE ENTRY POINT
1546                                    ;*******************************************************************
1547                                    ;TEST THAT PARITY INDICATOR (BIT5 RXCSR) IS CLEAR
1548                                    ;AND CAN BE READ RELIABLY.
1549
1550  005526  032777  000040  173344    ARBA:   BIT     #BIT5,@RXCSR    ;SEE IF PARITY INDICATOR IS CLEAR
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 1551  005534  001401                        BEQ     ARBB            ;BRANCH IF CLEAR
 1552  005536  104003                        ERROR                   ;IS NOT CLEAR
 1553  005540  104012                ARBB:   SCOPE                   ;SCOPE
 1554
 1555                                ;*****************************************************************************
 1556  005542  000023                AT23:   23                      ;TEST NUMBER 23                            *
 1557  005544  005650                        AT24                    ;ADDRESS OF NEXT TEST                      *
 1558  005546  000144                        100.                    ;TEST ITERATION COUNT                      *
 1559  005550  005552                        ASA                     ;SCOPE ENTRY POINT                         *
 1560                                ;*****************************************************************************
 1561                                ;TEST THAT RXCSR BIT6 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
 1562  005552  012767  000340  172216 ASA:    MOV     #PRTY7,PSW      ;SET PRIORITY 7.
 1563  005560  032777  000100  173312        BIT     #BIT6,@RXCSR    ;SEE IF RXCSR BIT6 IS CLEAR.
 1564  005566  001402                        BEQ     ASB             ;BRANCH IF BIT IS CLEAR.
 1565  005570  104003                        ERROR                   ;RESET DID NOT CLEAR RXCSR BIT6
 1566  005572  000421                        BR      ASD
 1567  005574  052777  000100  173276 ASB:    BIS     #BIT6,@RXCSR    ;SET RXCSR BIT6.
 1568  005602  032777  000100  173270        BIT     #BIT6,@RXCSR    ;SEE IF BIT IS SET.
 1569  005610  001002                        BNE     ASC             ;BRANCH IF BIT IS SET.
 1570  005612  104003                        ERROR                   ;RXCSR BIT6 FAILED TO SET.
 1571  005614  000410                        BR      ASD
 1572  005616  042777  000100  173254 ASC:    BIC     #BIT6,@RXCSR    ;CLEAR RXCSR BIT6
 1573  005624  032777  000100  173246        BIT     #BIT6,@RXCSR    ;SEE IF BIT IS CLEAR.
 1574  005632  001401                        BEQ     ASD
 1575  005634  104003                        ERROR                   ;RXCSR BIT6 FAILED TO CLEAR.
 1576  005636  052777  000100  173234 ASD:    BIS     #BIT6,@RXCSR    ;SET RXCSR BIT6.
 1577  005644  104011                        SRESET                  ;ISSUE RESET TO CLEAR BIT.
 1578  005646  104012                        SCOPE                   ;SCOPE
 1579                                ;*****************************************************************************
 1580  005650  000024                AT24:   24                      ;TEST NUMBER IS 24
 1581  005652  005674                        AT25                    ;ADDRESS OF NEXT TEST                      *
 1582  005654  000144                        100.                    ;TEST ITERATION COUNT                      *
 1583  005656  005660                        ATA                     ;SCOPE ENTRY POINT                         *
 1584                                ;*****************************************************************************
 1585                                ;TEST THAT RXCSR BIT7 IS CLEAR AND CAN BE READ RELIABLY.
 1586  005660  032777  000200  173212 ATA:    BIT     #BIT7,@RXCSR    ;SEE IF RXCSR BIT7 IS CLEAR.
 1587  005666  001401                        BEQ     ATB             ;BRANCH IF BIT IS CLEAR.
 1588  005670  104003                        ERROR                   ;RXCSR BIT7 IS NOT CLEAR.
 1589  005672  104012                ATB:    SCOPE                   ;SCOPE
 1590
 1591                                ;*****************************************************************************
 1592  005674  000025                AT25:   25                      ;TEST NUMBER 25                            *
 1593  005676  005774                        AT26                    ;ADDRESS OF NEXT TEST                      *
 1594  005700  000144                        100.                    ;TEST ITERATION COUNT                      *
 1595  005702  005704                        AUA                     ;SCOPE ENTRY POINT                         *
 1596                                ;*****************************************************************************
 1597                                ;TEST THAT RXCSR BIT8 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
 1598  005704  032777  000400  173166 AUA:    BIT     #BIT8,@RXCSR    ;SEE IF RXCSR BIT8 IS CLEAR.
 1599  005712  001402                        BEQ     AUB             ;BRANCH IF BIT IS CLEAR.
 1600  005714  104003                        ERROR                   ;RESET DID NOT CLEAR RXCSR BIT8
 1601  005716  000421                        BR      AUD
 1602  005720  052777  000400  173152 AUB:    BIS     #BIT8,@RXCSR    ;SET RXCSR BIT8.
 1603  005726  032777  000400  173144        BIT     #BIT8,@RXCSR    ;SEE IF BIT IS SET.
 1604  005734  001002                        BNE     AUC             ;BRANCH IF BIT IS SET.
 1605  005736  104003                        ERROR                   ;RXCSR BIT8 FAILED TO SET.
 1606  005740  000410                        BR      AUD
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1607  005742  042777  000400  173130  AUC:    BIC     #BIT8,@RXCSR    ;CLEAR RXCSR BIT8
1608  005750  032777  000400  173122          BIT     #BIT8,@RXCSR    ;SEE IF BIT IS CLEAR.
1609  005756  001401                          BEQ     AUD
1610  005760  104003                          ERROR                   ;RXCSR BIT8 FAILED TO CLEAR.
1611  005762  052777  000400  173110  AUD:    BIS     #BIT8,@RXCSR    ;SET RXCSR BIT8.
1612  005770  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1613  005772  104012                          SCOPE                   ;SCOPE
1614                                  ;*************************************************************************
1615  005774  000026                  AT26:   26                      ;TEST NUMBER 26                         *
1616  005776  006074                          AT27                    ;ADDRESS OF NEXT TEST                   *
1617  006000  000144                          100.                    ;TEST ITERATION COUNT                   *
1618  006002  006004                          AVA                     ;SCOPE ENTRY POINT                      *
1619                                  ;*************************************************************************
1620                                  ;TEST THAT RXCSR BIT9 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1621  006004  032777  001000  173066  AVA:    BIT     #BIT9,@RXCSR    ;SEE IF RXCSR BIT9 IS CLEAR.
1622  006012  001402                          BEQ     AVB             ;BRANCH IF BIT IS CLEAR.
1623  006014  104003                          ERROR                   ;RESET DID NOT CLEAR RXCSR BIT9
1624  006016  000421                          BR      AVD
1625  006020  052777  001000  173052  AVB:    BIS     #BIT9,@RXCSR    ;SET RXCSR BIT9.
1626  006026  032777  001000  173044          BIT     #BIT9,@RXCSR    ;SEE IF BIT IS SET.
1627  006034  001002                          BNE     AVC             ;BRANCH IF BIT IS SET.
1628  006036  104003                          ERROR                   ;RXCSR BIT9 FAILED TO SET.
1629  006040  000410                          BR      AVD
1630  006042  042777  001000  173030  AVC:    BIC     #BIT9,@RXCSR    ;CLEAR RXCSR BIT9
1631  006050  032777  001000  173022          BIT     #BIT9,@RXCSR    ;SEE IF BIT IS CLEAR.
1632  006056  001401                          BEQ     AVD
1633  006060  104003                          ERROR                   ;RXCSR BIT9 FAILED TO CLEAR.
1634  006062  052777  001000  173010  AVD:    BIS     #BIT9,@RXCSR    ;SET RXCSR BIT9.
1635  006070  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1636  006072  104012                          SCOPE                   ;SCOPE
1637                                  ;*************************************************************************
1638  006074  000027                  AT27:   27                      ;TEST NUMBER 27                         *
1639  006076  006174                          AT30                    ;ADDRESS OF NEXT TEST                   *
1640  006100  000144                          100.                    ;TEST ITERATION COUNT                   *
1641  006102  006104                          AWA                     ;SCOPE ENTRY POINT                      *
1642                                  ;*************************************************************************
1643                                  ;TEST THAT RXCSR BIT10 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1644  006104  032777  002000  172766  AWA:    BIT     #BIT10,@RXCSR   ;SEE IF RXCSR BIT10 IS CLEAR.
1645  006112  001402                          BEQ     AWB             ;BRANCH IF BIT IS CLEAR.
1646  006114  104003                          ERROR                   ;RESET DID NOT CLEAR RXCSR BIT10
1647  006116  000421                          BR      AWD
1648  006120  052777  002000  172752  AWB:    BIS     #BIT10,@RXCSR   ;SET RXCSR BIT10.
1649  006126  032777  002000  172744          BIT     #BIT10,@RXCSR   ;SEE IF BIT IS SET.
1650  006134  001002                          BNE     AWC             ;BRANCH IF BIT IS SET.
1651  006136  104003                          ERROR                   ;RXCSR BIT10 FAILED TO SET.
1652  006140  000410                          BR      AWD
1653  006142  042777  002000  172730  AWC:    BIC     #BIT10,@RXCSR   ;CLEAR RXCSR BIT10
1654  006150  032777  002000  172722          BIT     #BIT10,@RXCSR   ;SEE IF BIT IS CLEAR.
1655  006156  001401                          BEQ     AWD
1656  006160  104003                          ERROR                   ;RXCSR BIT10 FAILED TO CLEAR.
1657  006162  052777  002000  172710  AWD:    BIS     #BIT10,@RXCSR   ;SET RXCSR BIT10.
1658  006170  104011                          SRESET                  ;ISSUE RESET TO CLEAR BIT.
1659  006172  104012                          SCOPE                   ;SCOPE
1660                                  ;*************************************************************************
1661  006174  000030                  AT30:   30                      ;TEST NUMBER 30                         *
1662  006176  006220                          AT31                    ;ADDRESS OF NEXT TEST                   *
```

```
1663  006200  000144                        100.                    ;TEST ITERATION COUNT                   *
1664  006202  006204                        AXA                     ;SCOPE ENTRY POINT                      *
1665                                  ;*************************************************************************
1666                                  ;TEST THAT RXCSR BIT12 IS CLEAR AND CAN BE READ RELIABLY.
1667  006204  032777  010000  172666  AXA:   BIT     #BIT12,@RXCSR   ;SEE IF RXCSR BIT12 IS CLEAR.
1668  006212  001401                        BEQ     AXB             ;BRANCH IF BIT IS CLEAR.
1669  006214  104003                        ERROR                   ;RXCSR BIT12 IS NOT CLEAR.
1670  006216  104012                  AXB:  SCOPE                   ;SCOPE
1671
1672                                  ;*************************************************************************
1673  006220  000031                  AT31: 31                      ;TEST NUMBER 31                         *
1674  006222  006244                        AT32                    ;ADDRESS OF NEXT TEST                   *
1675  006224  000144                        100.                    ;TEST ITERATION COUNT                   *
1676  006226  006230                        AYA                     ;SCOPE ENTRY POINT                      *
1677                                  ;*************************************************************************
1678                                  ;TEST THAT RXCSR BIT13 IS CLEAR AND CAN BE READ RELIABLY.
1679  006230  032777  020000  172642  AYA:   BIT     #BIT13,@RXCSR   ;SEE IF RXCSR BIT13 IS CLEAR.
1680  006236  001401                        BEQ     AYB             ;BRANCH IF BIT IS CLEAR.
1681  006240  104003                        ERROR                   ;RXCSR BIT13 IS NOT CLEAR.
1682  006242  104012                  AYB:  SCOPE                   ;SCOPE
1683
1684
1685                                  ;*************************************************************************
1686  006244  000032                  AT32: 32                      ;TEST NUMBER 32                         *
1687  006246  006270                        AT33                    ;ADDRESS OF NEXT TEST                   *
1688  006250  000144                        100.                    ;TEST ITERATION COUNT                   *
1689  006252  006254                        AZA                     ;SCOPE ENTRY POINT                      *
1690                                  ;*************************************************************************
1691                                  ;TEST THAT RXCSR BIT14 IS CLEAR AND CAN BE READ RELIABLY.
1692  006254  032777  040000  172616  AZA:   BIT     #BIT14,@RXCSR   ;SEE IF RXCSR BIT14 IS CLEAR.
1693  006262  001401                        BEQ     AZB             ;BRANCH IF BIT IS CLEAR.
1694  006264  104003                        ERROR                   ;RXCSR BIT14 IS NOT CLEAR.
1695  006266  104012                  AZB:  SCOPE                   ;SCOPE
1696                                  ;*************************************************************************
1697  006270  000033                  AT33: 33                      ;TEST NUMBER 33                         *
1698  006272  006314                        AT34                    ;ADDRESS OF NEXT TEST                   *
1699  006274  000144                        100.                    ;TEST ITERATION COUNT                   *
1700  006276  006300                        AAAA                    ;SCOPE ENTRY POINT                      *
1701                                  ;*************************************************************************
1702                                  ;TEST THAT RXCSR BIT15 IS CLEAR AND CAN BE READ RELIABLY.
1703  006300  032777  100000  172572  AAAA:  BIT     #BIT15,@RXCSR   ;SEE IF RXCSR BIT15 IS CLEAR.
1704  006306  001401                        BEQ     AAAB            ;BRANCH IF BIT IS CLEAR.
1705  006310  104003                        ERROR                   ;RXCSR BIT15 IS NOT CLEAR.
1706  006312  104012                  AAAB: SCOPE                   ;SCOPE
1707
1708
1709                                  ;ALL PREVIOUS TESTS MUST HAVE BEEN RUN SUCCESSFULLY PRIOR
1710                                  ;TO RUNNING THE FOLLOWING TESTS.  ALSO, THE JUMPER CONNECTOR
1711                                  ;MUST BE INSERTED IN THE DC11 CABLE. TO THE MODEM.  COMMENTS
1712                                  ;REFER TO OPERATION WITH JUMPER INSERTED.
1713                                  ;
1714                                  ;*************************************************************************
1715  006314  000034                  AT34: 34                      ;TEST NUMBER 34
1716  006316  006372                        AT35                    ;ADDRESS OF NEXT TEST
1717  006320  000144                        100.                    ;TEST ITERATION COUNT
1718  006322  006324                        AFBA                    ;SCOPE ENTRY POINT
```

```
1719                                    ;*****************************************************************************
1720                                    ;TEST THAT CARRIER DETECT SETS AND CLEARS WHEN DATA TERMINAL
1721                                    ;READY SETS AND CLEARS.
1722                                    ;
1723  006324  052777  000001  172546  AFBA:   BIS     #BIT0,@RXCSR    ;SET DATA TERMINAL READY
1724  006332  032777  000004  172540          BIT     #BIT2,@RXCSR    ;TEST CARRIER DETECT
1725  006340  001002                          BNE     AFBB            ;SHOULD BE SET
1726  006342  104003                          ERROR                   ;WASN'T
1727  006344  000410                          BR      AFBC
1728  006346  042777  000001  172524  AFBB:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1729  006354  032777  000004  172516          BIT     #BIT2,@RXCSR    ;TEST CARRIER DETECT
1730  006362  001401                          BEQ     AFBC
1731  006364  104003                          ERROR                   ;WAS SET, ERROR
1732  006366  104011                  AFBC:   SRESET
1733  006370  104012                          SCOPE
1734                                    ;*****************************************************************************
1735  006372  000035                  AT35:   35                      ;TEST NUMBER 35
1736  006374  006532                          AT36                    ;ADDRESS OF NEXT TEST
1737  006376  000144                          100.                    ;TEST ITERATION COUNT
1738  006400  006402                          AGBA                    ;SCOPE ENTRY POINT
1739                                    ;*****************************************************************************
1740                                    ;TEST THAT CARRIER TRANSITION (BIT 14) SETS WHEN CARRIER DETECT
1741                                    ;CHANGES STATE, AND IS CLEARED WHEN RXCSR IS READ.
1742
1743  006402  042777  000001  172470  AGBA:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1744  006410  017767  172464  172642          MOV     @RXCSR,RXCSRT   ;READ RXCSR
1745  006416  032777  040000  172454          BIT     #BIT14,@RXCSR   ;TEST CARRIER TRANSITION
1746  006424  001402                          BEQ     AGBB            ;WAS CLEAR  GO TO AGBB
1747  006426  104003                          ERROR                   ;WASN'T CLEAR
1748  006430  000436                          BR      AGBE            ;GO TO SCOPE
1749  006432  005277  172442          AGBB:   INC     @RXCSR          ;SETTING DATA TERMINAL READY
1750  006436  000004                          IOT                     ;CAUSES CARRIER DETECT TO SET
1751                                                                  ;WHICH CAUSES CARRIER TRANSITION
1752                                                                  ;TO SET.
1753  006440  017767  172434  172612          MOV     @RXCSR,RXCSRT   ;MOVE RXCSR TO TEMPORARY LOCATION
1754  006446  032767  040000  172604          BIT     #BIT14,RXCSRT   ;TEST CARRIER TRANSITION
1755  006454  001002                          BNE     AGBC            ;SHOULD BE SET  GO TO AGBC
1756  006456  104003                          ERROR                   ;WAS CLEAR
1757  006460  000422                          BR      AGBE            ;GO TO SCOPE
1758  006462  032777  040000  172410  AGBC:   BIT     #BIT14,@RXCSR   ;CARRIER TRANSITION BIT SHOULD
1759                                                                  ;HAVE BEEN CLEARED
1760  006470  001402                          BEQ     AGBD            ;IT WAS  GO TO AGBD
1761  006472  104003                          ERROR                   ;IT WASN'T
1762  006474  000414                          BR      AGBE            ;GO TO SCOPE
1763
1764  006476  042777  000001  172374  AGBD:   BIC     #BIT0,@RXCSR    ;CLEARING DATA TERMINAL READY
1765                                                                  ;CAUSES CARRIER DETECT TO CLEAR
1766                                                                  ;BUT CARRIER TRANSITION
1767                                                                  ;WILL NOT SET
1768  006504  017767  172370  172546          MOV     @RXCSR,RXCSRT   ;MOV RXCSR TO TEMPORARY LOCATION
1769  006512  032767  040000  172540          BIT     #BIT14,RXCSRT   ;TEST CARRIER TRANSITION
1770  006520  001402                          BEQ     AGBE            ;SHOULD BE CLEAR
1771  006522  104003                          ERROR                   ;IT WASN'T
1772  006524  000400                          BR      AGBE
1773  006526  104011                  AGBE:   SRESET                  ;ISSUE RESET
1774  006530  104012                          SCOPE                   ;SCOPE
```

```
1775                                    ;*****************************************************************************
1776
1777  006532  000036                    AT36:   36                      ;TEST NUMBER 36
1778  006534  006646                            AT37                    ;ADDRESS OF NEXT TEST
1779  006536  000144                            100.                    ;TEST ITERATION COUNT
1780  006540  006542                            AMBA                    ;SCOPE ENTRY POINT
1781                                    ;*****************************************************************************
1782                                    ;TEST THAT CARRIER TRANSITION SETTING CAUSES ERROR (BIT 15 RXCSR) TO
1783                                    ;SET AND THAT READING RXCSR CLEARS ERROR.
1784
1785  006542  042777  000001  172330    AMBA:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1786  006550  005277  172324                    INC      @RXCSR         ;SET DATA TERMINAL READY
1787  006554  000004                            IOT
1788  006556  017767  172316  172474            MOV     @RXCSR,+RXCSRT  ;MOVE RXCSR TO TEMPORARY LOCATION
1789  006564  032767  100000  172466            BIT     #BIT15,RXCSRT   ;TEST ERROR BIT
1790  006572  001002                            BNE     AMBB            ;ERROR BIT SHOULD BE SET
1791  006574  104003                            ERROR
1792  006576  000421                            BR      AMBD
1793  006600  032777  100000  172272    AMBB.   BIT     #BIT15,@RXCSR   ;TEST ERROR BIT
1794  006606  001402                            BEQ     AMBC            ;SHOULD BE CLEAR
1795  006610  104003                            ERROR
1796  006612  000413                            BR      AMBD
1797  006614  042777  000001  172256    AMBC:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1798  006622  017767  172252  172430            MOV     @RXCSR,RXCSRT   ;MOV RXCSR TO TEMPORARY LOCATION
1799  006630  032767  100000  172422            BIT     #BIT15,RXCSRT   ;TEST ERROR BIT
1800  006636  001401                            BEQ     AMBD            ;SHOULD BE CLEAR
1801  006640  104003                            ERROR
1802  006642  104011                    AMBD:   SRESET                  ;ISSUE RESET
1803  006644  104012                            SCOPE                   ;SCOPE
1804
1805
1806                                    ;*****************************************************************************
1807  006646  000037                    AT37:   37                      ;TEST NUMBER 37
1808  006650  006742                            AT40                    ;ADDRESS OF NEXT TEST
1809  006652  000144                            100.                    ;TEST ITERATION COUNT
1810  006654  006656                            AJBA                    ;SCOPE ENTRY POINT
1811                                    ;*****************************************************************************
1812                                    ;TEST THAT CLEAR TO SEND (BIT1) SET/CLEARS WHEN DATA TERMINAL
1813                                    ;READY SETS/CLEARS.
1814
1815  006656  042777  000001  172214    AJBA:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1816  006664  032777  000004  172212            BIT     #BIT2,@TXCSR    ;TEST CLEAR TO SEND
1817  006672  001400                            BEQ     AJBB
1818
1819
1820  006674  052777  000001  172176    AJBB:   BIS     #BIT0,@RXCSR    ;SET DATA TERMINAL READY
1821  006702  032777  000002  172174            BIT     #BIT1,@TXCSR    ;TEST CLEAR TO SEND
1822  006710  001002                            BNE     AJBC            ;BRANCH IF SET
1823  006712  104003                            ERROR                   ;CLEAR TO SEND SHOULD BE SET
1824  006714  000410                            BR      AJBD
1825  006716  042777  000001  172154    AJBC:   BIC     #BIT0,@RXCSR    ;CLEAR DATA TERMINAL READY
1826  006724  032777  000002  172152            BIT     #BIT1,@TXCSR    ;TEST CLEAR TO SEND
1827  006732  001401                            BEQ     AJBD
1828  006734  104003                            ERROR                   ;CLEAR TO SEND SHOULD BE CLEAR
1829  006736  104011                    AJBD:   SRESET                  ;ISSUE RESET
1830  006740  104012                            SCOPE                   ;SCOPE
```

```
                                ;*****************************************************************************
006742  000040                 AT40:   40                      ;TEST NUMBER 40
006744  007060                         AT41                    ;ADDRESS OF NEXT TEST
006746  000144                         100.                    ;TEST ITERATION COUNT
006750  006752                         AKBA                    ;SCOPE ENTRY POINT
                                ;*****************************************************************************
                                ;TEST THAT RING (BIT 13 RXCSR) SETS WHEN REQUEST TO
                                ;SEND SETS AND THEN CLEARS; AND RING CLEARS WHEN RXCSR IS READ.
                                ;AND THAT RESET CLEARS RING.

006752  042777  000001  172124 AKBA:   BIC     #BIT0,@TXCSR    ;CLEAR REQUEST TO SEND
006760  052777  000001  172116 AKBB:   BIS     #BIT0,@TXCSR    ;SET REQUEST TO SEND
006766  042777  000001  172110         BIC     #BIT0,@TXCSR
006774  032777  020000  172076         BIT     #BIT13,@RXCSR   ;TEST RING
007002  001002                       BNE     AKBC
007004  104003                       ERROR                   ;RING SHOULD BE SET
007006  000422                       BR      AKBE
007010  032777  020000  172062 AKBC:   BIT     #BIT13,@RXCSR   ;TEST RING
007016  001402                       BEQ     AKBD
007020  104003                       ERROR                   ;RING SHOULD BE CLEAR
007022  000414                       BR      AKBE
007024  052777  000001  172052 AKBD:   BIS     #BIT0,@TXCSR    ;SET
007032  042777  000001  172044         BIC     #BIT0,@TXCSR    ;RING
007040  000005                       RESET
007042  032777  020000  172030         BIT     #BIT13,@RXCSR   ;TEST RING
007050  001401                       BEQ     AKBE            ;BRANCH IF CLEAR
007052  104003                       ERROR                   ;RING SHOULD BE CLEAR AFTER RESE
                                                             ;BUT WAS SET
007054  104011                 AKBE:   SRESET                  ;ISSUE RESET
007056  104012                         SCOPE                   ;SCOPE
                                ;*****************************************************************************
007060  000041                 AT41:   41                      ;TEST NUMBER 41
007062  007166                         AT42                    ;ADDRESS OF NEXT TEST
007064  000144                         100.                    ;TEST ITERATION COUNT
007066  007070                         AOBA                    ;SCOPE ENTRY POINT
                                ;*****************************************************************************
                                ;TEST THAT ERROR (BIT 15 RXCSR) SETS WHEN RING SETS.

007070  042777  000001  172006 AOBA:   BIC     #BIT0,@TXCSR    ;SET REQUEST TO SEND
007076  032777  100000  171774         BIT     #BIT15,@RXCSR   ;TEST ERROR BIT
007104  001402                       BEQ     AOBB
007106  104003                       ERROR
007110  000424                       BR      AOBD
007112  052777  000001  171764 AOBB:   BIS     #BIT0,@TXCSR    ;SET REQUEST TO SEND
007120  042777  000001  171756         BIC     #BIT0,@TXCSR    ;CLEAR REQUEST TO SEND
007126  032777  100000  171744         BIT     #BIT15,@RXCSR   ;TEST ERROR BIT
007134  001002                       BNE     AOBC
007136  104003                       ERROR
007140  000410                       BR      AOBD
007142  042777  000001  171734 AOBC:   BIC     #BIT0,@TXCSR    ;CLEAR REQUEST TO SEND
007150  032777  100000  171722         BIT     #BIT15,@RXCSR   ;TEST ERROR BIT
007156  001401                       BEQ     AOBD
007160  104003                       ERROR
007162  104011                 AOBD:   SRESET                  ;ISSUE RESET
007164  104012                         SCOPE                   ;SCOPE
```

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1887
1888                                    ;*****************************************************************************
1889  007166  000042                    AT42:   42                      ;TEST NUMBER 42
1890  007170  007272                            AT43                    ;ADDRESS OF NEXT TEST
1891  007172  000144                            100.                    ;TEST ITERATION COUNT
1892  007174  007176                            ALBA                    ;SCOPE ENTRY POINT
1893                                    ;*****************************************************************************
1894                                    ;TEST THAT SUPERVISORY RECEIVE DATA (BIT 15 TXCSR) SETS/CLEARS
1895                                    ;WHEN SUPERVISORY XMIT DATA SETS/CLEARS.
1896
1897  007176  042777  000400  171674  ALBA:   BIC     #BIT8,@RXCSR    ;CLEAR SUPERVISOR XMIT DATA
1898  007204  032777  100000  171672          BIT     #BIT15,@TXCSR   ;TEST SUPERVISORY RECEIVE DATA.
1899  007212  001402                          BEQ     ALBB
1900  007214  104003                          ERROR                   ;SHOULD HAVE BEEN CLEAR
1901  007216  000423                          BR      ALBD
1902  007220  052777  000400  171652  ALBB:   BIS     #BIT8,@RXCSR    ;SET SUPERVISORY XMIT DATA
1903  007226  104016                          DELAY                   ;DEL 1 MSEC.                    ;;++C
1904  007230  000001                          1
1905  007232  032777  100000  171644          BIT     #BIT15,@TXCSR   ;TEST SUPERVISORY RECEIVE DATA
1906  007240  001002                          BNE     ALBC
1907  007242  104003                          ERROR                   ;SHOULD HAVE BEEN SET
1908  007244  000410                          BR      ALBD
1909  007246  042777  000400  171624  ALBC:   BIC     #BIT8,@RXCSR    ;CLEAR SUPERVISORY XMIT DATA
1910  007254  032777  100000  171622          BIT     #BIT15,@TXCSR   ;TEST SUPERVISORY RECEIVE DATA
1911  007262  001401                          BEQ     ALBD
1912  007264  104003                          ERROR                   ;SHOULD HAVE BEEN CLEAR
1913  007266  104011                  ALBD:   SRESET                  ;ISSUE RESET
1914  007270  104012                          SCOPE                   ;SCOPE
1915                                    ;*****************************************************************************
1916  007272  000043                    AT43:   43                      ;TEST NUMBER 43                 *
1917  007274  007376                            AT44                    ;ADDRESS OF NEXT TEST           *
1918  007276  000144                            100.                    ;TEST ITERATION COUNT           *
1919  007300  007302                            ABAA                    ;SCOPE ENTRY POINT              *
1920                                    ;*****************************************************************************
1921                                    ;TEST THAT RESET CLEARS ALL TXCSR BITS, AND SETS BIT 7 (READY)
1922  007302  012767  000340  170466  ABAA:   MOV     #PRTY7,PSW      ;SET PRIORITY 7.
1923  007310  012777  177777  171566          MOV     #-1,@TXCSR      ;SET ALL POSSIBLE BITS IN TXCSR
1924  007316  104011                          SRESET                  ;ISSUE RESET TO CLEAR BITS
1925  007320  022777  000200  171556          CMP     #BIT7,@TXCSR    ;SEE IF ONLY BIT 7 IS SET.
1926  007326  001422                          BEQ     ABAB            ;BRANCH IF ONLY BIT 7 IS SET
1927  007330  017767  171550  171720          MOV     @TXCSR,TXCSRT   ;SAVE CONTENTS OF TXCSR
1928  007336  012767  000200  171720          MOV     #BIT7,TEMP      ;MOVE EXPECTED TXCSR TO TEMP.
1929  007344  004567  173730                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
1930  007350  001264                          TEMP                    ;SOURCE ADDR.
1931  007352  015461                          ATXSB                   ;DESTINATION ADDR.
1932  007354  000006                          6                       ;#OF DIGITS TO CONVERT.
1933  007356  004567  173716                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
1934  007362  001256                          TXCSRT                  ;SOURCE ADDR.
1935  007364  015476                          ATXWAS                  ;DESTINATION ADDR.
1936  007366  000006                          6                       ;#OF DIGITS TO CONVERT.
1937  007370  104015                          ERROR1                  ;RESET FAILED TO CLEAR ALL BITS EXCEPT
1938  007372  015446                          ATXCSR                  ;BIT 7 - SEE PRINTOUT
1939  007374  104012                  ABAB:   SCOPE                   ;SCOPE
1940
1941                                    ;*****************************************************************************
1942  007376  000044                    AT44:   44                      ;TEST NUMBER 44                 *
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1943  007400  007552                        AT45                    ;ADDRESS OF NEXT TEST                  *
1944  007402  000144                        100.                    ;TEST ITERATION COUNT                  *
1945  007404  007406                        ACAA                    ;SCOPE ENTRY POINT                     *
1946                                  ;*************************************************************************
1947                                  ;TEST THAT RESET CLEARS ALL RXCSR BITS EXCEPT BIT 0 (DATA TERMINAL READY)
1948                                  ;,RING, AND THE BREAK BIT.
1949  007406  012767  000340  170362  ACAA:  MOV     #PRTY7,PSW      ;SET PRIORITY 7
1950  007414  042777  000001  171456        BIC     #BIT0,@RXCSR    ;CLEAR DATA TERM.READY
1951  007422  012777  177775  171450        MOV     #177775,@RXCSR  ;SET ALL POSSIBLE BITS IN RXCSR
1952  007430  052777  000030  171446        BIS     #30,@TXCSR      ;SET MAINT BIT
1953  007436  005077  171444               CLR     @TXBUF          ;TRANSMIT A CHAR
1954  007442  105777  171436               TSTB    @TXCSR          ;WAIT FOR
1955  007446  100375                        BPL     .-4             ;TRANSMITTER TO FINISH
1956  007450  012777  000001  171430        MOV     #1,@TXBUF       ;TRANSMIT ANOTHER CHAR.
1957  007456  105777  171422               TSTB    @TXCSR          ;WAIT FOR
1958  007462  100375                        BPL     .-4             ;TRANSMITTER TO FINISH
1959  007464  104011                        SRESET                  ;ISSUE RESET TO CLEAR BITS.
1960  007466  017767  171406  171564        MOV     @RXCSR,RXCSRT   ;MOVE RXCSR CONTENTS TO RXCSRT
1961  007474  022767  000005  171556        CMP     #5,RXCSRT       ;SEE IF ONLY BIT 0 IS SET
1962  007502  001417                        BEQ     ACAB            ;BRANCH IF ONLY BIT 0 IS SET.
1963  007504  012767  000005  171552        MOV     #5,TEMP
1964  007512  004567  173562               JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
1965  007516  001264                        TEMP                    ;SOURCE ADDR.
1966  007520  015520                        ARXSB                   ;DESTINATION ADDR.
1967  007522  000006                        6                       ;#OF DIGITS TO CONVERT.
1968  007524  004567  173550               JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT.
1969  007530  001260                        RXCSRT                  ;SOURCE ADDR.
1970  007532  015535                        ARXWAS                  ;DESTINATION ADDR.
1971  007534  000006                        6                       ;#OF DIGITS TO CONVERT.
1972  007536  104015                        ERROR1                  ;RESET FAILED TO CLEAR ALL BITS EXCEPT
1973  007540  015505                        ARXCSR                  ;BIT 0. SEE ERROR PRINTOUT.
1974  007542  042777  000001  171330  ACAB:  BIC     #BIT0,@RXCSR    ;CLEAR DATA TERM. READY
1975  007550  104012                        SCOPE                   ;SCOPE
1976                                  ;*************************************************************************
1977  007552  000045                  AT45:  45                      ;TEST NUMBER 45                        *
1978  007554  007602                        AT46                    ;ADDRESS OF NEXT TEST                  *
1979  007556  000144                        100.                    ;TEST ITERATION COUNT                  *
1980  007560  007562                        ADAA                    ;SCOPE ENTRY POINT                     *
1981                                  ;*************************************************************************
1982                                  ;TEST THAT LOADING TXBUF (TRANSMITTER BUFFER) CLEARS TXCSR BIT 7 (READY)
1983  007562  005077  171320          ADAA:  CLR     @TXBUF          ;LOAD TXBUF
1984  007566  105777  171312               TSTB    @TXCSR          ;TEST TXCSR BIT 7 (READY BIT)
1985  007572  100001                        BPL     ADAB            ;BRANCH IF BIT NOT SET.
1986  007574  104003                        ERROR                   ;ERROR. LOADING TXBUF FAILED TO CLEAR READY.
1987  007576  104011                  ADAB:  SRESET                  ;ISSUE RESET TO SET READY.
1988  007600  104012                        SCOPE                   ;SCOPE.
1989
1990                                  ;*************************************************************************
1991  007602  000046                  AT46:  46                      ;TEST NUMBER 46                        *
1992  007604  007634                        AT47                    ;ADDRESS OF NEXT TEST                  *
1993  007606  000012                        10.                     ;TEST ITERATION COUNT                  *
1994  007610  007612                        AEAA                    ;SCOPE ENTRY POINT                     *
1995                                  ;*************************************************************************
1996                                  ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 1000 MSECS AFTER
1997                                  ;LOADING TXBUF WITH TRANSMIT SPEED SET TO 00 (TXCSR BITS 3 AND 4)
1998  007612  005077  171270          AEAA:  CLR     @TXBUF          ;LOAD TXBUF
```

```
                                        DELAY                   ;DELAY 1000 MSECS APPROX.
                                        1000.
                        171256          TSTB    @TXCSR          ;SEE IF READY BIT IS SET
                                        BMI     AEAB            ;BRANCH IF READY IS SET
                                        ERROR                   ;READY NOT SET 200 MSECS AFTER BUFFER
                                                                ;LOAD. TX SPEED = 00.
                                AEAB:   SCOPE                   ;SCOPE

                                ;*****************************************************************************
                                AT47:   47                      ;TEST NUMBER 47                              *
                                        AT50                    ;ADDRESS OF NEXT TEST                        *
                                        10.                     ;TEST ITERATION COUNT                        *
                                        AFAA                    ;SCOPE ENTRY POINT                           *
                                ;*****************************************************************************
                                ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 500 MSECS AFTER
                                ;LOADING TXBUF, WITH TRANSMIT SPEED SET TO 01 (TXCSR BITS 3 AND 4).
                        171232  AFAA:   BIS     #10,@TXCSR      ;SET TX SPEED TO 01.
                        171230          CLR     @TXBUF          ;LOAD TXBUF
                                        DELAY                   ;DELAY 500 MSECS
                                        500.
                        171216          TSTB    @TXCSR          ;SEE IF READY BIT IS SET
                                        BMI     AFAB            ;BRANCH IF READY IS SET
                                        ERROR                   ;READY NOT SET 200 MSECS AFTER BUFFER
                                                                ;LOAD. TX SPEED = 01.
                                AFAB:   SCOPE                   ;SCOPE.
                                ;*****************************************************************************
                                AT50:   50                      ;TEST NUMBER 50                              *
                                        AT51                    ;ADDRESS OF NEXT TEST                        *
                                        10.                     ;TEST ITERATION COUNT                        *
                                        AGAA                    ;SCOPE ENTRY POINT                           *
                                ;*****************************************************************************
                                ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 400 MSECS AFTER
                                ;LOADING TXBUF, WITH TRANSMIT SPEED SET TO 10 (TXCSR BITS 3 AND 4).
                        171172  AGAA:   BIS     #20,@TXCSR      ;SET TX SPEED TO 10.
                        171170          CLR     @TXBUF          ;LOAD TXBUF
                                        DELAY                   ;DELAY 400 MSECS
                                        400.
                        171156          TSTB    @TXCSR          ;SEE IF READY BIT IS SET
                                        BMI     AGAB            ;BRANCH IF READY BIT IS SET
                                        ERROR                   ;READY NOT SET 200 MSECS AFTER BUFFER
                                                                ;LOAD. TX SPEED = 10.
                                AGAB:   SCOPE                   ;SCOPE

                                ;*****************************************************************************
                                AT51:   51                      ;TEST NUMBER 51                              *
                                        AT52                    ;ADDRESS OF NEXT TEST                        *
                                        10.                     ;TEST ITERATION COUNT                        *
                                        AHAA                    ;SCOPE ENTRY POINT                           *
                                ;*****************************************************************************
                                ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 250 MSECS AFTER
                                ;LOADING TXBUF, WITH TRANSMIT SPEED SET TO 11 (TXCSR BITS 3 AND 4).
                        171132  AHAA:   BIS     #30,@TXCSR      ;SET TX SPEED TO 30.
                        171130          CLR     @TXBUF          ;LOAD TXBUF
                                        DELAY                   ;DELAY 250 MSECS.
                                        250.
                        171116          TSTB    @TXCSR          ;SEE IF READY BIT IS SET.
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2055  007766  100401                  BMI     AHAB            ;BRANCH IF READY BIT IS SET.
2056  007770  104003                  ERROR                   ;READY NOT SET 200 MSECS AFTER
2057                                                          ;BUFFER LOAD. TX SPEED = 11.
2058  007772  104012          AHAB:   SCOPE                   ;SCOPE
2059
2060                          ;*************************************************************************
2061  007774  000052          AT52:   52                      ;TEST NUMBER 52                         *
2062  007776  010212                  AT53                    ;ADDRESS OF NEXT TEST                   *
2063  010000  000144                  100.                    ;TEST ITERATION COUNT                   *
2064  010002  010004                  AIAA                    ;SCOPE ENTRY POINT                      *
2065                          ;*************************************************************************
2066                          ;TEST THAT TRANSMIT SPEEDS ARE ARRANGED IN ASCENDING ORDER BY CHECKING THAT TIME
2067                          ;TO READY BIT (TXCSR BIT 7) DECREASES AS A HIGHER SPEED IS SELECTED.
2068  010004  005067  171236  AIAA:   CLR     CTRA            ;CLEAR CTRA THROUGH CTRD
2069  010010  005067  171234          CLR     CTRB            ;(USED TO COUNT ELAPSED TIME.)
2070  010014  005067  171232          CLR     CTRC
2071  010020  005067  171230          CLR     CTRD
2072  010024  042777  000030  171052  BIC     #30,@TXCSR      ;SELECT TX SPEED 0
2073  010032  004767  000110          JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
2074  010036  066767  000146  171202  ADD     AIAST,CTRA      ;ADD ELAPSED TIME TO CTRA.
2075  010044  052777  000010  171032  BIS     #10,@TXCSR      ;SELECT TX SPEED 1
2076  010052  004767  000070          JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
2077  010056  066767  000126  171164  ADD     AIAST,CTRB      ;ADD ELAPSED TIME TO CTRB.
2078  010064  042777  000030  171012  BIC     #30,@TXCSR      ;SELECT TX SPEED 2
2079  010072  052777  000020  171004  BIS     #20,@TXCSR
2080  010100  004767  000042          JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
2081  010104  066767  000100  171140  ADD     AIAST,CTRC      ;ADD ELAPSED TIME TO CTRC.
2082  010112  052777  000030  170764  BIS     #30,@TXCSR      ;SELECT TX SPEED 3
2083  010120  004767  000022          JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
2084  010124  066767  000060  171122  ADD     AIAST,CTRD      ;ADD ELAPSED TIME TO CTRD.
2085  010132  004767  004176          JSR     %7,CMPT         ;CHECK THAT CTRA THROUGH CTRD CONTAIN
2086  010136  000402                  BR      AIAF            ;DESCENDING VALUES
2087  010140  104015                  ERROR1                  ;TRANSMIT SPEEDS NOT ARRANGED IN
2088  010142  015544                  ETXTIM                  ;ASCENDING ORDER.
2089  010144  104012          AIAF:   SCOPE                   ;SCOPE
2090  010146  005067  000036  AIAS:   CLR     AIAST           ;CLEAR ELAPSED TIME COUNTER.
2091  010152  105777  170726          TSTB    @TXCSR          ;WAIT FOR TX READY.
2092  010156  100375                  BPL     .-4
2093  010160  104016                  DELAY                   ;WAIT 20 MSECS.
2094  010162  000024                  20.
2095  010164  005077  170716          CLR     @TXBUF          ;LOAD TXBUF.
2096  010170  104016          AIASA:  DELAY                   ;DELAY 1 MSEC.
2097  010172  000001                  1
2098  010174  005267  000010          INC     AIAST           ;INCREMENT ELAPSED TIME COUNTER.
2099  010200  105777  170700          TSTB    @TXCSR          ;READY SET?
2100  010204  100371                  BPL     AIASA           ;BRANCH IF READY NOT SET.
2101  010206  000207                  RTS     %7              ;EXIT.
2102  010210  000000          AIAST:  OPEN
2103                          ;*************************************************************************
2104  010212  000053          AT53:   53                      ;TEST NUMBER 53                         *
2105  010214  010376                  AT54                    ;ADDRESS OF NEXT TEST                   *
2106  010216  000144                  100.                    ;TEST ITERATION COUNT                   *
2107  010220  010222                  AJAA                    ;SCOPE ENTRY POINT                      *
2108                          ;*************************************************************************
2109                          ;TEST FOR CORRECT OPERATION OF STOP CODE BIT (TXCSR BIT 8) BY CHECKING THAT TIME.
2110                          ;REQUIRED TO COMPLETE TRANSMISSION OF 2 CONSECUTIVE CHARACTERS WITH STOP BIT
```

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2111                                        ;SET TO 0 IS LONGER THAN TIME REQUIRED WITH STOP CODE BIT SET TO A 1.
2112  010222  005067  171020          AJAA:  CLR     CTRA             ;CLEAR CTRA AND CTRB
2113  010226  005067  171016                 CLR     CTRB             ;(ELAPSED TIME COUNTERS).
2114  010232  042777  000400  170644         BIC     #BIT8,@TXCSR     ;SET STOP CODE TO 0 (2 STOP CODES)
2115  010240  004767  000044                 JSR     %7,AJAS          ;OUTPUT CHAR AND TIME
2116  010244  066767  000124  170774         ADD     AJAST,CTRA       ;ADD ELAPSED TIME TO CTRA
2117  010252  052777  000400  170624         BIS     #BIT8,@TXCSR     ;SET STOP CODE TO 1 (1 STOP CODE)
2118  010260  004767  000024                 JSR     %7,AJAS          ;OUTPUT CHARACTER AND TIME.
2119  010264  066767  000104  170756         ADD     AJAST,CTRB       ;ADD ELAPSED TIME TO CTRB
2120  010272  026767  170750  170750         CMP     CTRA,CTRB        ;SEE IF CTRA IS GREATER THAN CTRB
2121  010300  101002                         BHI     AJAB             ;BRANCH IF CTRA IS GREATER.
2122  010302  104015                         ERROR1                   ;ERROR. ELAPSED TIME FOR 2 STOP CODE
2123  010304  015606                         ESTPCD                   ;OPERATION NOT GREATER THAN FOR 1 STOP
2124                                                                   ;CODE.
2125  010306  104012                   AJAB: SCOPE                    ;SCOPE
2126  010310  005067  000060          AJAS:  CLR     AJAST            ;CLEAR ELAPSED TIME COUNTER AJAST
2127  010314  105777  170564                 TSTB    @TXCSR           ;WAIT FOR TX READY.
2128  010320  100375                         BPL     .-4
2129  010322  104016                         DELAY                    ;WAIT 20 MSECS.
2130  010324  000024                         20.
2131  010326  005077  170554                 CLR     @TXBUF           ;LOAD TXBUF
2132  010332  104016                   AJASA: DELAY                    ;DELAY 1 MSEC
2133  010334  000001                         1
2134  010336  005267  000032                 INC     AJAST            ;INCREMENT ELAPSED TIME COUNTER
2135  010342  105777  170536                 TSTB    @TXCSR           ;READY SET?
2136  010346  100371                         BPL     AJASA            ;BRANCH IF READY NOT SET.
2137  010350  005077  170532                 CLR     @TXBUF           ;LOAD TXBUF.
2138  010354  104016                   AJASB: DELAY                ;DELAY 1 MSEC.
2139  010356  000001                         1
2140  010360  005267  000010                 INC     AJAST            ;INCR ELAPSED TIME COUNTER.
2141  010364  105777  170514                 TSTB    @TXCSR           ;READY SET?
2142  010370  100371                         BPL     AJASB            ;BRANCH IF READY NOT SET.
2143  010372  000207                         RTS     %7               ;EXIT
2144  010374  000000                   AJAST: OPEN                     ;ELAPSED TIME COUNTER.
2145
2146
2147                                        ;*************************************************************************
2148  010376  000054                   AT54:  54                       ;TEST NUMBER 54                          *
2149  010400  010622                         AT55                     ;ADDRESS OF NEXT TEST                    *
2150  010402  000144                         100.                     ;TEST ITERATION COUNT                    *
2151  010404  010406                         AKAA                     ;SCOPE ENTRY POINT                       *
2152                                        *************************************************************************
2153                                        ;TEST FOR CORRECT OPERATION OF CHARACTER LENGTH SELECTION (RXCSR BITS 9 AND 10)
2154                                        ;BY CHECKING THAT TIME REQUIRED FOR OUTPUTTING A CHARACTER IS LONGEST FOR
2155                                        ;8 BIT CODE THAN FOR 7 BIT CODE ETC.
2156  010406  005067  170634          AKAA:  CLR     CTRA             ;CLEAR CTRA THROUGH CTRD.
2157  010412  005067  170632                 CLR     CTRB             ;(ELAPSED TIME COUNTERS).
2158  010416  005067  170630                 CLR     CTRC
2159  010422  005067  170626                 CLR     CTRD
2160  010426  042777  003000  170444         BIC     #3000,@RXCSR     ;SET CHAR LENGTH TO 00 (8 BIT CODE).
2161  010434  004767  000116                 JSR     %7,AKAS          ;OUTPUT CHARACTER AND TIME.
2162  010440  066767  000154  170600         ADD     AKAST,CTRA       ;ADD ELAPSED TIME TO CTRA
2163  010446  042777  003000  170424         BIC     #3000,@RXCSR     ;SET CHAR LENGTH TO 01 (7 BIT CODE).
2164  010454  052777  001000  170416         BIS     #1000,@RXCSR
2165  010462  004767  000070                 JSR     %7,AKAS          ;OUTPUT CHARACTER AND TIME.
2166  010466  066767  000126  170554         ADD     AKAST,CTRB       ;ADD ELAPSED TIME TO CTRB.
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2167  010474  042777  003000  170376          BIC     #3000,@RXCSR    ;SET CHAR LENGTH TO 10 (6 BIT CODE)
2168  010502  052777  002000  170370          BIS     #2000,@RXCSR
2169  010510  004767  000042                  JSR     %7,AKAS         ;OUTPUT CHARACTER AND TIME.
2170  010514  066767  000100  170530          ADD     AKAST,CTRC      ;ADD ELAPSED TIME TO CTRC
2171  010522  052777  003000  170350          BIS     #3000,@RXCSR    ;SET CHAR LENGTH TO 11 (5 BIT CODE)
2172  010530  004767  000022                  JSR     %7,AKAS         ;OUTPUT CHACTER AND TIME
2173  010534  066767  000060  170512          ADD     AKAST,CTRD      ;ADD ELAPSED TIME TO CTRD
2174  010542  004767  003566                  JSR     %7,CMPT         ;CHECK THAT CTRA THROUGH CTRD
2175  010546  000402                          BR      AKAB            ;DESCENDING VALUES.
2176  010550  104015                          ERROR1                  ;TX CHARACTER LENGTH NOT ARRANGED
2177  010552  015657                          ETCLGT                  ;IN DESCENDING ORDER.
2178  010554  104012                  AKAB:   SCOPE                   ;SCOPE
2179  010556  005067  000036          AKAS:   CLR     AKAST           ;CLEAR ELAPSED TIME COUNTER AKAST
2180  010562  105777  170316                  TSTB    @TXCSR          ;WAIT FOR TX READY.
2181  010566  100375                          BPL     .-4
2182  010570  104016                          DELAY                   ;WAIT 20 MSECS.
2183  010572  000024                          20.
2184  010574  005077  170306                  CLR     @TXBUF          ;LOAD TXBUF
2185  010600  104016                  AKASA:  DELAY                   ;DELAY 1 MSEC
2186  010602  000001                          1
2187  010604  005267  000010                  INC     AKAST           ;INCREMENT ELAPSED TIME COUNTER
2188  010610  105777  170270                  TSTB    @TXCSR          ;READY SET?
2189  010614  100371                          BPL     AKASA           ;BRANCH IF READY NOT SET
2190  010616  000207                          RTS     %7              ;EXIT
2191  010620  000000                  AKAST:  OPEN                    ;ELAPSED TIME COUNTER
2192
2193
2194                                          ;*************************************************************************
2195  010622  000055                  AT55:   55                      ;TEST NUMBER 55                                 *
2196  010624  010676                          AT56                    ;ADDRESS OF NEXT TEST                           *
2197  010626  000144                          100.                    ;TEST ITERATION COUNT                           *
2198  010630  010632                          ALAA                    ;SCOPE ENTRY POINT                              *
2199                                          ;*************************************************************************
2200                                          ;TEST THAT OUTPUTTING A CHARACTER WITH THE MAINTENANCE BIT SET (TXCSR BIT 2)
2201                                          ;RESULTS IN DONE BIT SETTING (RXCSR BIT 7) NO LATER THAN 200 MSECS, AND
2202                                          ;THAT RESET INSTRUCTION CLEARS THE DONE BIT
2203  010632  052777  000004  170244  ALAA:   BIS     #BIT2,@TXCSR    ;SET MAINTENANCE (TXCSR BIT 2)
2204  010640  005077  170242                  CLR     @TXBUF          ;LOAD TXBUF
2205  010644  104016                          DELAY                   ;WAIT 200 MSECS.
2206  010646  000310                          200.
2207  010650  105777  170224                  TSTB    @RXCSR          ;SEE IF DONE BIT IS SET
2208  010654  100402                          BMI     ALAB            ;BRANCH IF DONE BIT IS SET
2209  010656  104003                          ERROR                   ;DONE BIT FAILED TO SET
2210  010660  000405                          BR      ALAC
2211  010662  104011                  ALAB:   SRESET                  ;ISSUE RESET TO CLEAR DONE BIT
2212  010664  105777  170210                  TSTB    @RXCSR          ;SEE IF DONE BIT IS CLEARED
2213  010670  100001                          BPL     ALAC            ;BRANCH IF DONE BIT IS CLEARED
2214  010672  104003                          ERROR                   ;RESET FAILED TO CLEAR DONE BIT
2215  010674  104012                  ALAC:   SCOPE                   ;SCOPE
2216                                          ;*************************************************************************
2217  010676  000056                  AT56:   56                      ;TEST NUMBER 56                                 *
2218  010700  010744                          AT57                    ;ADDRESS OF NEXT TEST                           *
2219  010702  000144                          100.                    ;TEST ITERATION COUNT                           *
2220  010704  010706                          AMAA                    ;SCOPE ENTRY POINT                              *
2221                                          ;*************************************************************************
2222                                          ;TEST THAT DONE BIT (RXCSR BIT 7) IS CLEARED BY READING RXBUF.
```

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                                        ;DONE SET BY OUTPUTTING CHARACTER WITH MAINTENANCE BIT SET (TXCSR BIT 2)
010706  052777  000004  170170  AMAA:   BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT (TXCSR BIT 2)
010714  005077  170166          AMAB:   CLR     @TXBUF          ;LOAD TXBUF
010720  105777  170154                  TSTB    @RXCSR          ;WAIT FOR DONE BIT TO SET.
010724  100375                          BPL     AMAB
010726  005777  170150                  TST     @RXBUF          ;READ RXBUF TO CLEAR DONE BIT
010732  105777  170142                  TSTB    @RXCSR          ;SEE IF DONE BIT IS CLEAR
010736  100001                          BPL     AMAC            ;BRANCH IF DONF BIT IS CLEAR
010740  104003                          ERROR                   ;READING RXBUF FAILED TO CLEAR DONE BIT
010742  104012                  AMAC:   SCOPE                   ;SCOPE

                                        ;*************************************************************************
010744  000057                  AT57:   57                      ;TEST NUMBER 57                                 *
010746  011032                          AT60                    ;ADDRESS OF NEXT TEST                           *
010750  000012                          10.                     ;TEST ITERATION COUNT                           *
010752  010754                          ANAA                    ;SCOPE ENTRY POINT                              *
                                        ;*************************************************************************
                                        ;TEST THAT DONE BIT (RXCSR BIT 7) SETS NO LATER THAN 500 MSECS AFTER OUTPUTTING
                                        ;CHARACTER WITH MAINTENANCE BIT SET AND RECEIVE SPEED SET TO 01 (TRANSMIT
                                        ;SPEED ALSO SET TO 01
010754  042777  000030  170122  ANAA:   BIC     #30,@TXCSR      ;SET MAINTENANCE BIT AND SET
010762  052777  000014  170114          BIS     #14,@TXCSR      ;TX SPEED=01
010770  042777  000030  170102          BIC     #30,@RXCSR      ;SET RX SPEED =01
010776  052777  000010  170074          BIS     #10,@RXCSR
011004  005077  170076                  CLR     @TXBUF          ;LOAD TXBUF
011010  104016                          DELAY                   ;DELAY 500 MSECS.
011012  000764                          500.
011014  105777  170060                  TSTB    @RXCSR          ;SEE IF DONE BIT IS SET.
011020  100401                          BMI     ANAB            ;BRANCH IF DONE IS SET.
011022  104003                          ERROR                   ;DONE FAILED TO SET WITH RX SPEED=01.
011024  005777  170052          ANAB:   TST     @RXBUF          ;CLEAR DONE BIT IF SET.
011030  104012                          SCOPE                   ;SCOPE

                                        ;*************************************************************************
011032  000060                  AT60:   60                      ;TEST NUMBER 60                                 *
011034  011120                          AT61                    ;ADDRESS OF NEXT TEST                           *
011036  000012                          10.                     ;TEST ITERATION COUNT                           *
011040  011042                          AOAA                    ;SCOPE ENTRY POINT                              *
                                        ;*************************************************************************
                                        ;TEST THAT DONE BIT (RXCSR BIT 7) SETS NO LATER THAN 400 MSECS AFTER OUTPUTING
                                        ;CHARACTER WITH MAINTENANCE BIT SET AND RECEIVE SPEED SET TO 10 (TRANSMIT
                                        ;SPEED ALSO SET TO 10).
011042  042777  000030  170034  AOAA:   BIC     #30,@TXCSR      ;SET MAINTENANCE BIT AND SET
011050  052777  000024  170026          BIS     #24,@TXCSR      ;TX SPEED=10.
011056  042777  000030  170014          BIC     #30,@RXCSR      ;SET RX SPEED=10.
011064  052777  000020  170006          BIS     #20,@RXCSR
011072  005077  170010                  CLR     @TXBUF          ;LOAD TXBUF
011076  104016                          DELAY                   ;DELAY 400 MSECS
011100  000620                          400.
011102  105777  167772                  TSTB    @RXCSR          ;SEE IF DONE BIT IS SET.
011106  100401                          BMI     AOAB            ;BRANCH IF DONE BIT IS SET.
011110  104003                          ERROR                   ;DONE FAILED TO SET WITH RX SPEED=10.
011112  005777  167764          AOAB:   TST     @RXBUF          ;CLEAR DONE BIT IF SET
011116  104012                          SCOPE                   ;SCOPE
                                        ;*************************************************************************
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2279  011120  000061                    AT61:   61                      ;TEST NUMBER 61                         *
2280  011122  011172                            AT62                    ;ADDRESS OF NEXT TEST                   *
2281  011124  000012                            10.                     ;TEST ITERATION COUNT                   *
2282  011126  011130                            APAA                    ;SCOPE ENTRY POINT                      *
2283                                    ;*************************************************************************
2284                                    ;TEST THAT DONE BIT (RXCSR BIT 7) SETS NO LATER THAN 250 MSECS AFTER OUTPUTTING
2285                                    ;CHARACTER WITH MAINTENANCE BIT SET AND RECEIVE SPEED SET11 (TRANSMIT SPEED
2286                                    ;ALSO SET TO 11).
2287  011130  052777  000034  167746    APAA:   BIS     #34,@TXCSR      ;SET MAINT BIT AND TX SPEED=11
2288  011136  052777  000030  167734            BIS     #30,@RXCSR      ;SET RX SPEED=11
2289  011144  005077  167736                    CLR     @TXBUF          ;LOAD TXBUF
2290  011150  104016                            DELAY                   ;DELAY 250 MSECS.
2291  011152  000372                            250.
2292  011154  105777  167720                    TSTB    @RXCSR          ;SEE IF DONE BIT IS SET.
2293  011160  100401                            BMI     APAB            ;BRANCH IF DONE BIT IS SET.
2294  011162  104003                            ERROR                   ;DONE FAILED TO SET WITH RX SPEED=11
2295  011164  005777  167712            APAB:   TST     @RXBUF          ;CLEAR DONE BIT IF SET.
2296  011170  104012                            SCOPE                   ;SCOPE
2297
2298
2299                                    ;*************************************************************************
2300  011172  000062                    AT62:   62                      ;TEST NUMBER 62                         *
2301  011174  011474                            AT63                    ;ADDRESS OF NEXT TEST                   *
2302  011176  000144                            100.                    ;TEST ITERATION COUNT                   *
2303  011200  011202                            AQAA                    ;SCOPE ENTRY POINT                      *
2304                                    ;*************************************************************************
2305                                    ;TEST THAT RECEIVE SPEEDS ARE ARRANGED IN ASCENDING ORDER BY CHECKING THAT TIME
2306                                    ;ELAPSED TO DONE BIT SETTING (RXCSR BIT 7) DECREASES AS A HIGHER SPEED
2307                                    ;IS SELECTED.  THE TRANSMIT SPEED SELECTED WILL CORRESPOND TO THE SELECTED RECEIVE SPEED
2308  011202  005067  170040            AQAA:   CLR     CTRA            ;CLEAR CTRA THROUGH CTRD
2309  011206  005067  170036                    CLR     CTRB            ;(ELAPSED TIME COUNTERS)
2310  011212  005067  170034                    CLR     CTRC
2311  011216  005067  170032                    CLR     CTRD
2312  011222  042777  000030  167654            BIC     #30,@TXCSR      ;SELECT TX SPEED 00
2313  011230  052777  000004  167646            BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT
2314  011236  042777  000030  167634            BIC     #30,@RXCSR      ;SELECT RX SPEED 00
2315  011244  004767  000154                    JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BIT
2316  011250  066767  000216  167770            ADD     AQAST,CTRA      ;ADD ELAPSED TIME TO CTRA
2317  011256  042777  000030  167620            BIC     #30,@TXCSR      ;SELECT TX SPEED 01
2318  011264  052777  000010  167612            BIS     #10,@TXCSR
2319  011272  042777  000030  167600            BIC     #30,@RXCSR      ;SELECT RX SPEED 01.
2320  011300  052777  000010  167572            BIS     #10,@RXCSR
2321  011306  004767  000112                    JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BIT
2322  011312  066767  000154  167730            ADD     AQAST,CTRB      ;ADD ELAPSED TIME TO CTRB
2323  011320  042777  000030  167556            BIC     #30,@TXCSR      ;SELECT TX SPEED 10
2324  011326  052777  000020  167550            BIS     #20,@TXCSR
2325  011334  042777  000030  167536            BIC     #30,@RXCSR      ;SELECT RX SPEED 10
2326  011342  052777  000020  167530            BIS     #20,@RXCSR
2327  011350  004767  000050                    JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BIT.
2328  011354  066767  000112  167670            ADD     AQAST,CTRC      ;ADD ELAPSED TIME TO CTRC.
2329  011362  052777  000030  167514            BIS     #30,@TXCSR      ;SELECT TX SPEED 11
2330  011370  052777  000030  167502            BIS     #30,@RXCSR      ;SELECT RX SPEED 11
2331  011376  004767  000022                    JSR     %7,AQAS         ;OUTPUT CHARACTER AND TIME DONE BIT
2332  011402  066767  000064  167644            ADD     AQAST,CTRD      ;ADD ELAPSED TIME TO CTRD.
2333  011410  004767  002720                    JSR     %7,CMPT         ;CHECK THAT CTRA THROUGH CTRD CONTAIN
2334  011414  000402                            BR      AQAB            ;DESCENDING VALUES.
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2335  011416  104015                        ERROR1                  ;RECEIVE SPEEDS NOT ARRANGED IN
2336  011420  015730                        ERXTIM                  ;ASCENDING ORDER.
2337  011422  104012              AQAB:     SCOPE                   ;SCOPE
2338  011424  005067  000042      AQAS:     CLR     AQAST           ;CLEAR ELAPSED TIME COUNTER AQAST
2339  011430  105777  167450              TSTB    @TXCSR          ;WAIT FOR TX READY.
2340  011434  100375                      BPL     .-4
2341  011436  104016                      DELAY                   ;WAIT 20 MSECS.
2342  011440  000024                      20.
2343  011442  005777  167434              TST     @RXBUF          ;CLEAR DONE BIT IF SET
2344  011446  005077  167434              CLR     @TXBUF          ;LOAD TXBUF
2345  011452  104016              AQASA:    DELAY                   ;DELAY 1 MSEC
2346  011454  000001                      1
2347  011456  005267  000010              INC     AQAST           ;INCREMENT ELAPSED TIME COUNTER
2348  011462  105777  167412              TSTB    @RXCSR          ;DONE SET?
2349  011466  100371                      BPL     AQASA           ;BRANCH IF DONE NOT SET
2350  011470  000207                      RTS     %7              ;EXIT
2351  011472  000000              AQAST:    OPEN                    ;ELAPSED TIME COUNTER
2352
2353
2354                                      ;*************************************************************************
2355  011474  000063              AT63:     63                      ;TEST NUMBER 63                          *
2356  011476  011732                      AT64                    ;ADDRESS OF NEXT TEST                    *
2357  011500  000144                      100.                    ;TEST ITERATION COUNT                    *
2358  011502  011504                      ARAA                    ;SCOPE ENTRY POINT                       *
2359                                      *************************************************************************
2360                                      ;TEST FOR CORRECT OPERATION OF CHARACTER LENGTH SELECTION DURING RECEIVE
2361                                      ;(RXCSR BITS 9 AND 10) BY CHECKING THAT TIME REQUIRED TO RECEIVE A CHARACTER
2362                                      ;IS LONGEST FOR 8 BIT CODE THAN FOR 7 BIT CODE ETC.
2363  011504  005067  167536      ARAA:     CLR     CTRA            ;CLEAR CTRA THROUGH CTRD
2364  011510  005067  167534              CLR     CTRB            ;(ELAPSED TIME COUNTERS)
2365  011514  005067  167532              CLR     CTRC
2366  011520  005067  167530              CLR     CTRD
2367  011524  042777  003000  167346      BIC     #3000,@RXCSR    ;SET CHAR LENGTH TO 00 (8 BIT CODE)
2368  011532  004767  000116              JSR     %7,ARAS         ;OUTPUT CHAR AND TIME DONE BIT.
2369  011536  066767  000166  167502      ADD     ARAST,CTRA      ;ADD ELAPSED TIME TO CTRA
2370  011544  042777  003000  167326      BIC     #3000,@RXCSR    ;SET CHAR LENGTH TO 01 (7 BIT CODE)
2371  011552  052777  001000  167320      BIS     #1000,@RXCSR
2372  011560  004767  000070              JSR     %7,ARAS         ;OUTPUT CHAR AND TIME DONE BIT
2373  011564  066767  000140  167456      ADD     ARAST,CTRB      ;ADD ELAPSED TIME TO CTRB
2374  011572  042777  003000  167300      BIC     #3000,@RXCSR    ;SET CHAR LENGTH TO 10 (6 BIT CODE)
2375  011600  052777  002000  167272      BIS     #2000,@RXCSR
2376  011606  004767  000042              JSR     %7,ARAS         ;OUTPUT CHAR AND TIME DONE BIT
2377  011612  066767  000112  167432      ADD     ARAST,CTRC      ;ADD ELAPSED TIME TO CTRC
2378  011620  052777  003000  167252      BIS     #3000,@RXCSR    ;SET CHAR LENGTH TO 11 (5 BIT CODE)
2379  011626  004767  000022              JSR     %7,ARAS         ;OUTPUT CHAR AND TIME DONE BIT
2380  011632  066767  000072  167414      ADD     ARAST,  CTRD    ;ADD ELAPSED TIME TO CTRD
2381  011640  004767  002470              JSR     %7,CMPT         ;CHECK THAT CTRA THROUGH CTRD
2382  011644  000402                      BR      ARAB            ;CONTAIN DESCENDING VALUES
2383  011646  104015                      ERROR1                  ;RECEIVE CHARACTER LENGTHS NOT ARRANGED
2384  011650  015772                      ERCLGT                  ;IN DESCENDING ORDER
2385  011652  104012              ARAB:     SCOPE                   ;SCOPE
2386  011654  005067  000050      ARAS:     CLR     ARAST           ;CLEAR ELAPSED TIME COUNTER ARAST
2387  011660  105777  167220              TSTB    @TXCSR          ;WAIT FOR TX READY.
2388  011664  100375                      BPL     .-4
2389  011666  104016                      DELAY                   .WAIT 20 MSECS.
2390  011670  000024                      20.
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2391  011672  005777  167204                TST     @RXBUF          ;CLEAR DONE BIT IF SET
2392  011676  052777  000004  167200        BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT
2393  011704  005077  167176                CLR     @TXBUF          ;LOAD TXBUF
2394
2395  011710  104016                ARASA:  DELAY                   ;DELAY 1 MSEC.
2396  011712  000001                        1
2397  011714  005267  000010                INC     ARAST           ;INCREMENT ELAPSED TIME COUNTER
2398  011720  105777  167154                TSTB    @RXCSR          ;SEE IF DONE DIT IS SET.
2399  011724  100371                        BPL     ARASA           ;BRANCH IF NOT SET
2400  011726  000207                        RTS     %7              ;EXIT
2401  011730  000000                ARAST:  OPEN                    ;ELAPSED TIME COUNTER
2402
2403
2404                                ;*****************************************************************************
2405  011732  000064                AT64:   64                      ;TEST NUMBER 64                            *
2406  011734  012046                        AT65                    ;ADDRESS OF NEXT TEST                      *
2407  011736  000144                        100.                    ;TEST ITERATION COUNT                      *
2408  011740  011742                        ASAA                    ;SCOPE ENTRY POINT                         *
2409                                ;*****************************************************************************
2410                                ;TEST CORRECT OPERATION OF DATA OVERRUN BIT (RXCSR BIT 12)
2411  011742  004767  000060        ASAA:   JSR     %7,ASAS         ;OUTPUT CHARACTER AND WAIT 200 MSECS
2412  011746  004767  000054                JSR     %7,ASAS         ;OUTPUT CHARACTER AND WAIT 200 MSECS
2413  011752  017767  167122  167300        MOV     @RXCSR,RXCSRT   ;SAVE RXCSR CONTENTS
2414  011760  032767  010000  167272        BIT     #BIT12,RXCSRT   ;SEE IF DATA OVERRUN BIT WAS SET
2415  011766  001002                        BNE     ASAB            ;BRANCH IF BIT WAS SET
2416  011770  104003                        ERROR
2417  011772  000412                        BR      ASAD
2418  011774  005767  167260        ASAB:   TST     RXCSRT          ;SEE IF ERROR BIT WAS SET (RXCSR BIT 15)
2419  012000  100402                        BMI     ASAC
2420  012002  104003                        ERROR                   ;ERROR BIT FAILED TO SET
2421                                                                ;WHEN DATA OVERRUN SET
2422  012004  000405                        BR      ASAD
2423  012006  032777  010000  167064 ASAC:   BIT     #BIT12,@RXCSR   ;SEE IF DATA OVERRUN WAS
2424                                                                ;CLEARED WHEN RXCSR WAS READ
2425  012014  001401                        BEQ     ASAD            ;BRANCH IF CLEAR
2426  012016  104003                        ERROR                   ;READING RXCSR FAILED
2427                                                                ;TO CLEAR DATA OVERRUN
2428  012020  005777  167056        ASAD:   TST     @RXBUF          ;CLEAR DONE BIT (RXCSR BIT 7)
2429  012024  104012                        SCOPE                   ;SCOPE
2430  012026  052777  000004  167050 ASAS:   BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT
2431  012034  005077  167046                CLR     @TXBUF          ;LOAD TXBUF
2432  012040  104016                        DELAY                   ;DELAY 200 MSECS
2433  012042  000310                        200.
2434  012044  000207                        RTS     %7              ;EXIT
2435
2436                                ;*****************************************************************************
2437  012046  000065                AT65:   65                      ;TEST NUMBER 65                            *
2438  012050  012120                        AT66                    ;ADDRESS OF NEXT TEST                      *
2439  012052  000012                        10.                     ;TEST ITERATION COUNT                      *
2440  012054  012066                        ATAA                    ;SCOPE ENTRY POINT                         *
2441                                ;*****************************************************************************
2442                                ;TEST THAT TRANSMITTER IS ABLE TO INTERRUPT.  IF THE INTERRUPT IS SERVICED,
2443                                ;IT WILL HAVE OCCURRED AT THE CORRECT VECTOR.
2444  012056  004767  170550                JSR     7,OVRLAY        ;GO TO OVER LAY ROUTINE
2445  012062  104007                        STTXV                   ;SET TX INTERRUPT SERVICE
2446  012064  012114                        ATAC                    ;TO ATAC
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2447  012066  042777  000100  167010  ATAA:   BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPT
2448  012074  005067  165676                  CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2449  012100  052777  000104  166776          BIS     #104,@TXCSR     ;ENABLE TX INTERRUPT
2450  012106  000240                          NOP
2451  012110  104003                          ERROR                   ;READY DID NOT CAUSE AN INTERRUPT
2452  012112  104012                  ATAB:   SCOPE                   ;SCOPE
2453  012114  022626                  ATAC:   POPSP2                  ;HERE IF INTERRUPT IS SERVICED.  POP
2454  012116  000775                          BR      ATAB            ;THE STOCK TWICE
2455
2456
2457
2458                                  ;*************************************************************************
2459  012120  000066                  AT66:   66                      ;TEST NUMBER 66                         *
2460  012122  012176                          AT67                    ;ADDRESS OF NEXT TEST                   *
2461  012124  001750                          1000.                   ;TEST ITERATION COUNT                   *
2462  012126  012134                          AUAA                    ;SCOPE ENTRY POINT                      *
2463                                  ;*************************************************************************
2464                                  ;TEST THAT READY DOES NOT CAUSE AN INTERRUPT WHEN THE PROCESSOR IS
2465                                  ;AT THE SAME PRIORITY AS THE TRANSMITTER INTERRUPT REQUEST LEVEL
2466  012130  104007                          STTXV                   ;SET TX INTERRUPT SERVICE TO
2467  012132  012166                          AUAC
2468  012134  016767  166756  165634  AUAA:   MOV     TXLVL,PSW       ;SET PROCESSOR PRIORITY SAME AS TX PRIORITY
2469  012142  042777  000100  166734          BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2470  012150  052777  000104  166726          BIS     #104,@TXCSR     ;ENABLE TX INTERRUPTS
2471  012156  000240                          NOP
2472
2473
2474  012160  042777  000100  166716  AUAB:   BIC     #BIT6,@TXCSR    ;OK IF NO INTERRUPT OCCURS.  DISABLE INTERRUPTS
2475  012166  104012                  AUAC:   SCOPE                   ;SCOPE
2476  012170  022626                          POPSP2                  ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2477  012172  104003                          ERROR                   ;TX INTERRUPTED WITH PROCESSOR AT SAME
2478  012174  000774                          BR      AUAC            ;PRIORITY AS THE TRANSMITTER
2479
2480                                  ;*************************************************************************
2481  012176  000067                  AT67:   67                      ;TEST NUMBER 67                         *
2482  012200  012262                          AT70                    ;ADDRESS OF NEXT TEST                   *
2483  012202  000012                          10.                     ;TEST ITERATION COUNT                   *
2484  012204  012212                          AVAA                    ;SCOPE ENTRY POINT                      *
2485                                  ;*************************************************************************
2486                                  ;TEST THAT TRANSMITTER INTERRUPTS WHEN PROCESSOR IS AT PRIORITY ONE LEVEL
2487                                  ;LOWER THAN THE TRANSMITTER INTERRUPT PRIORITY.
2488  012206  104007                          STTXV                   ;SET TX INTERRUPT SERVICE TO AVAB
2489  012210  012250                          AVAB
2490  012212  042777  000100  166664  AVAA:   BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2491  012220  016767  166672  165550          MOV     TXLVL,PSW       ;SET PROCESSOR PRIORITY TO ONE LEVEL
2492  012226  162767  000040  165542          SUB     #40,PSW         ;LOWER THAN TX PRIORITY
2493  012234  052777  000104  166642          BIS     #104,@TXCSR     ;ENABLE TX INTERRUPTS
2494  012242  000240                          NOP
2495  012244  104003                          ERROR                   ;TX FAILED TO INTERRUPT
2496  012246  000401                          BR      AVAC
2497  012250  022626                  AVAB:   POPSP2                  ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2498  012252  042777  000100  166624  AVAC:   BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2499  012260  104012                          SCOPE                   ;SCOPE
2500
2501
2502
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2503                                    ;*****************************************************************************
2504  012262  000070                    AT70:   70                      ;TEST NUMBER 70                            *
2505  012264  012360                            AT71                    ;ADDRESS OF NEXT TEST                      *
2506  012266  000144                            100.                    ;TEST ITERATION COUNT                      *
2507  012270  012272                            AWAA                    ;SCOPE ENTRY POINT                         *
2508                                    ;*****************************************************************************
2509                                    ;TEST THAT TRANSMITTER DOES NOT REINTERRUPT AFTER THE INITIAL INTERRUPT HAS
2510                                    ;OCCURRED AND HAS BEEN SERVICED.
2511  012272  104007                    AWAA:   STTXV                   ;SET TX INTERRUPT SERVICE TO AWAC
2512  012274  012332                            AWAC
2513  012276  042777  000100  166600            BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2514  012304  005067  165466                    CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2515  012310  052777  000104  166566            BIS     #104,@TXCSR     ;ENABLE TX INTERRUPTS
2516  012316  000240                            NOP
2517  012320  104003                            ERROR                   ;TRANSMITTER FAILED TO INTERRUPT
2518  012322  042777  000100  166554  AWAB:     BIC     #BIT6,@TXCSR    ;DISABLE TX INTERRUPTS
2519  012330  104012                            SCOPE                   ;SCOPE
2520  012332  012777  012352  166554  AWAC:     MOV     #AWAE,@TXVTR    ;HERE IF INTERRUPT OCCURS. CHANGE EXIT
2521  012340  012716  012346                    MOV     #AWAD,@%6       ;POINTER TO AWAD AND EXIT INTERRUPT
2522  012344  000002                            RTI
2523  012346  000240                    AWAD:   NOP                     ;OK IF NO INTERRUPT REOCCURS.
2524  012350  000764                            BR      AWAB
2525  012352  022626                    AWAE:   POPSP2                  ;HERE IF INTERRUPT REOCCURS
2526  012354  104003                            ERROR                   ;TX REINTERRUPTED AFTER RTI
2527  012356  000761                            BR      AWAB
2528
2529                                    ;*****************************************************************************
2530  012360  000071                    AT71:   71                      ;TEST NUMBER 71                            *
2531  012362  012436                            AT72                    ;ADDRESS OF NEXT TEST                      *
2532  012364  000012                            10.                     ;TEST ITERATION COUNT                      *
2533  012366  012404                            AXAA                    ;SCOPE ENTRY POINT                         *
2534                                    ;*****************************************************************************
2535                                    ;TEST THAT RECEIVER DONE BIT IS ABLE TO INTERRUPT. IF THE INTERRUPT IS
2536                                    ;SERVICED IT WILL HAVE OCCURRED AT THE CORRECT VECTOR.
2537  012370  004767  170236                    JSR     7,OVRLAY        ;GO TO OVERLAY ROUTINE
2538  012374  104006                            STRXV                   ;SET RX INTERRUPT SERIVCE TO AXAB
2539  012376  012432                            AXAB
2540  012400  004767  001710                    JSR     %7,STRXD        ;SET RX DONE BIT
2541  012404  042777  000100  166466  AXAA:     BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
2542  012412  005067  165360                    CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2543  012416  052777  000100  166454            BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
2544  012424  000240                            NOP
2545  012426  104003                            ERROR                   ;RX FAILED TO INTERRUPT
2546  012430  000401                            BR      AXAC
2547  012432  022626                    AXAB:   POPSP2                  ;HERE IF INTERRUPT OCCURS
2548  012434  104012                    AXAC:   SCOPE                   ;SCOPE
2549
2550
2551
2552                                    ;*****************************************************************************
2553  012436  000072                    AT72:   72                      ;TEST NUMBER 72                            *
2554  012440  012520                            AT73                    ;ADDRESS OF NEXT TEST                      *
2555  012442  001750                            1000.                   ;TEST ITERATION COUNT                      *
2556  012444  012456                            AYAA                    ;SCOPE ENTRY POINT                         *
2557                                    ;*****************************************************************************
2558                                    ;TEST THAT RECEIVER DONE BIT DOES NOT CAUSE AN INTERRUPT WHEN THE PROCESSOR
```

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                                        ,IS AT THE SAME PRIORITY LEVEL AS THE RECEIVER INTERRUPT REQUEST LEVEL
012446  104006                                STRXV                   ;SET RX INTERRUPT SERVICE TO AYAC
012450  012512                                AYAC
012452  004767  001636                        JSR     %7,STRXD        ;SET RX DONE BIT
012456  042777  000100  166414  AYAA:         BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
012464  016767  166422  165304                MOV     RXLVL,PSW       ;SET PROCESSOR PRIORITY SAME AS RECEIVER'S
012472  052777  000100  166400                BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
012500  000240                                NOP
012502  042777  000100  166370  AYAB:         BIC     #BIT6,@RXCSR    ;OK IF NO INTERRUPT. DISABLE RX INTERRUPTS
012510  104012                                SCOPE                   ;SCOPE
012512  022626                    AYAC:       POPSP2                  ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
012514  104003                                ERROR                   ;RX INTERRUPTED WITH PROCESOR AT SAME
012516  000771                                BR      AYAB            ;PRIORITY AS THE RECEIVER

                                        ;*************************************************************************
012520  000073                    AT73:       73                      ;TEST NUMBER 73                          *
012522  012610                                AT74                    ;ADDRESS OF NEXT TEST                    *
012524  000012                                10.                     ;TEST ITERATION COUNT                    *
012526  012540                                AZAA                    ;SCOPE ENTRY POINT                       *
                                        ;*************************************************************************
                                        ;TEST THAT RECEIVER DONE BIT CAUSES INTERRUPT WHEN PROCESSOR IS AT PRIORITY
                                        ;ONE LEVEL LOWER THAN THE RECEIVER'S INTERRUPT REQUEST LEVEL
012530  104006                                STRXV                   ;SET RX INTERRUPT TO AZAB
012532  012576                                AZAB
012534  004767  001554                        JSR     %7,STRXD        ;SET RX DONE BIT
012540  042777  000100  166332  AZAA:         BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
012546  016767  166340  165222                MOV     RXLVL,PSW       ;SET PROCESSOR PRIORITY ONE LEVEL
012554  162767  000040  165214                SUB     #40,PSW         ;LOWER THAN RECEIVER'S PRIORITY
012562  052777  000100  166310                BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
012570  000240                                NOP
012572  104003                                ERROR                   ;RX FAILED TO INTERRUPT WITH PROCESSOR AT
012574  000401                                BR      AZAC            ;PRIORITY ONE LEVEL LOWER THAN RECEIVER'S

012576  022626                    AZAB:       POPSP2                  ;HERE IF INTERRUPT OCCURS
012600  042777  000100  166272  AZAC:         BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
012606  104012                                SCOPE                   ;SCOPE


                                        ;*************************************************************************
012610  000074                    AT74:       74                      ;TEST NUMBER 74                          *
012612  012706                                AT75                    ;ADDRESS OF NEXT TEST                    *
012614  000144                                100.                    ;TEST ITERATION COUNT                    *
012616  012624                                AABA                    ;SCOPE ENTRY POINT                       *
                                        ;*************************************************************************

                                        ;TEST THAT RECEIVER DOES NOT INTERRUPT AFTER THE INITIAL INTERRUPT HAS
                                        ;OCCURED AND DONE BIT HAS NOT BEEN CLEARED
012620  004767  001470                        JSR     %7,STRXD        ;SET RX DONE BIT
012624  104006                    AABA:       STRXV                   ;SET RX INTERRUPT SERVICE TO AABC
012626  012660                                AABC
012630  042777  000100  166242                BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
012636  052777  000100  166234                BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
012644  000240                                NOP
012646  104003                                ERROR                   ;RX FAILED TO INTERRUPT
012650  042777  000100  166222  AABB:         BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
012656  104012                                SCOPE                   ;SCOPE
012660  012777  012700  166222  AABC:         MOV     #AABE,@RXVTR    ;HERE IF INTERRUPT OCCURS. CHANGE SERVICE TO
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2615  012666  012716  012674                MOV     #AABD,@%6       ;AABE, SET EXIT POINTER TO AABD
2616  012672  000002                       RTI                     ;EXIT INTERRUPT SERVICE
2617  012674  000240              AABD:    NOP                     ;OK IF NO INTERRUPT REOCCURS
2618  012676  000764                       BR      AABB
2619  012700  022626              AABE:    POPSP2                  ;HERE IF INTERRUPT REOCCURS
2620  012702  104003                       ERROR                   ;RX REINTERRUPTED AFTER RTI
2621  012704  000761                       BR      AABB
2622
2623                                    ;*************************************************************************
2624  012706  000075              AT75:    75                      ;TEST NUMBER 75                          *
2625  012710  012762                       AT76                    ;ADDRESS OF NEXT TEST                    *
2626  012712  000144                       100.                    ;TEST ITERATION COUNT                    *
2627  012714  012716                       ABBA                    ;SCOPE ENTRY POINT                       *
2628                                    *************************************************************************
2629                                    ;TEST THAT DATA OVERRUN (RXCSR BIT 12) CLEARS THE DONE BIT (RXCSR BIT 7)
2630  012716  004767  001372       ABBA:    JSR     %7,STRXD        ;SET RX DONE BIT
2631  012722  005077  166160                CLR     @TXBUF          ;LOAD TXBUF
2632  012726  104016                       DELAY                   ;WAIT 20 MSECS.
2633  012730  000024                       20.
2634  012732  017767  166142  166320       MOV     @RXCSR,RXCSRT   ;SAVE CONTENT OF RXCSR
2635  012740  105777  166134                TSTB    @RXCSR          ;SEE IF DONE BIT IS CLEAR
2636  012744  100001                       BPL     ABBB            ;BRANCH IF DONE BIT IS CLEAR
2637  012746  104003                       ERROR
2638  012750  104016              ABBB:    DELAY                   ;WAIT FOR RX DONE TO SET.
2639  012752  000310                       200.
2640  012754  005777  166122                TST     @RXBUF          ;CLEAR DONE BIT IF SET
2641  012760  104012                       SCOPE                   ;SCOPE
2642
2643
2644
2645                                    ;*************************************************************************
2646  012762  000076              AT76:    76                      ;TEST NUMBER 76                          *
2647  012764  013040                       AT77                    ;ADDRESS OF NEXT TEST                    *
2648  012766  000144                       100.                    ;TEST ITERATION COUNT                    *
2649  012770  012776                       ACBA                    ;SCOPE ENTRY POINT                       *
2650                                    *************************************************************************
2651                                    ;TEST THAT ERROR BIT (RXCSR BIT 15) IS ABLE TO CAUSE AN INTERRUPT
2652  012772  104006                       STRXV                   ;SET RX INTERRUPT SERVICE TO ACBB.
2653  012774  013034                       ACBB
2654  012776  004767  001312       ACBA:    JSR     %7,STRXD        ;SET RX DONE BIT
2655  013002  004767  001306                JSR     %7,STRXD        ;SET RX DATA OFLOW
2656  013006  042777  000100  166064       BIC     #BIT6,@RXCSR    ;DISABLE RX INTERRUPTS
2657  013014  005067  164756                CLR     PSW             ;SET PROCESSOR PRIORITY TO 0
2658  013020  052777  000100  166052       BIS     #BIT6,@RXCSR    ;ENABLE RX INTERRUPTS
2659  013026  000240                       NOP
2660  013030  104003                       ERROR                   ;RX ERROR BIT FAILED TO CAUSE INTERRUPT
2661  013032  000401                       BR      ACBC
2662  013034  022626              ACBB:    POPSP2                  ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2663  013036  104012              ACBC:    SCOPE                   ;SCOPE
2664
2665
2666
2667                                    ;*************************************************************************
2668  013040  000077              AT77:    77                      ;TEST NUMBER 77
2669  013042  013222                       AT100                   ;ADDRESS OF NEXT TEST
2670  013044  000144                       100.                    ;TEST ITERATION COUNT
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2671  013046  013062                        ANBB                    ;SCOPE ENTRY POINT
2672                                        ;***********************************************************************
2673                                        ;TEST THAT PARITY INDICATOR OPERATES CORRECT.
2674  013050  004567  170052          ANBA: JSR     5,INBIN           ;INITIALIZE BINARY COUNT PATTERN
2675  013054  052777  000004  166022        BIS     #BIT2,@TXCSR      ;SET MAINTENANCE BIT
2676  013062  112767  000144  166156  ANBB: MOVB    #100.,CTRA        ;GET CHARACTER COUNT
2677  013070  112767  000010  166151  ANBC: MOVB    #8.,CTRA+1        ;GET CHARACTER BIT COUNT
2678  013076  004567  170130              JSR     5,GTBINP          ;GET A CHARACTER (IN R1)
2679  013102  105777  165776              TSTB    @TXCSR            ;WAIT FOR
2680  013106  100375                      BPL     .-4               ;TRANSMITTER READY FLAG
2681  013110  010177  165772              MOV     %1,@TXBUF         ;LOAD TRANSMITTER BUFFER
2682  013114  105777  165760              TSTB    @RXCSR            ;WAIT FOR
2683  013120  100375                      BPL     .-4               ;RECEIVER READY FLAG
2684  013122  017767  165754  166102        MOV     @RXBUF,CRBUFA     ;GET RECEIVED CHARACTER
2685  013130  005000                      CLR     %0                ;CLEAR WORKING REGISTER
2686  013132  006067  166074          ANBD: ROR     CRBUFA            ;LOOK AT CHARACTER BITS
2687  013136  103001                      BCC     .+4               ;AND COMPLEMENT R0 WHEN
2688  013140  005100                      COM     %0                ;A 1 IS RECEIVED
2689  013142  105367  166101              DECB    CTRA+1            ;IF R0=1'S, ODD#1'S RECEIVED
2690  013146  001371                      BNE     ANBD              ;IF R0=0'S, EVEN #1'S RECEIVED
2691  013150  032777  000040  165722        BIT     #BIT5,@RXCSR      ;TEST PARITY INDICATOR
2692  013156  001403                      BEQ     ANBE              ;BRANCH IF INDICATES EVEN
2693  013160  005700                      TST     %0                ;TEST RECEIVED PARITY (IN R0)
2694  013162  001403                      BEQ     ANBF              ;ERROR BRANCH
2695  013164  000412                      BR      ANBG              ;OK BRANCH
2696  013166  005700                  ANBE: TST     %0                ;TEST RECEIVED PARITY (IN R0)
2697  013170  001410                      BEQ     ANBG              ;OK BRANCH
2698  013172  104003                  ANBF: ERROR                     ;TYPE PC
2699  013174  004567  170100              JSR     5,OACNV           ;GO TO OCTAL
2700  013200  001232                      CRBUFA                    ;TO ASCII
2701  013202  016424                      AWAS                      ;ROUTINE AND
2702  013204  000003                      3                         ;CONVERT DATA
2703  013206  104015                      ERROR1                    ;TYPE
2704  013210  016424                      AWAS                      ;DATA
2705  013212  105367  166030          ANBG: DECB    CTRA              ;DECREMENT CHARACTER COUNT
2706  013216  001324                      BNE     ANBC
2707  013220  104012                      SCOPE
2708          000077                      X=77
2709          000000                      Y=0
2710                                        ;***********************************************************************
2711  013222  000100                  AT100: 100                     ;ROUTINE #100                              *
2712  013224  013240                      AT101                     ;ADDRESS OF NEXT TEST                      *
2713  013226  000003                      3.                        ;ITERATION COUNT                           *
2714  013230  013232                      DAT0                      ;SCOPE ENTRY POINT                         *
2715          000100                      X=X+1
2716                                        ;***********************************************************************
2717  013232  004567  170274          DAT0: JSR     5,DATTST          ;LOAD PARAMETERS & RUN TEST
2718  013236  000000                      0                         ;SEE NOTE 0 FOR DATA TEST PARAMETERS
2719          000001                      Y=Y+1
2720                                        ;***********************************************************************
2721  013240  000101                  AT101: 101                     ;ROUTINE #101                              *
2722  013242  013256                      AT102                     ;ADDRESS OF NEXT TEST                      *
2723  013244  000003                      3.                        ;ITERATION COUNT                           *
2724  013246  013250                      DAT1                      ;SCOPE ENTRY POINT                         *
2725          000101                      X=X+1
2726                                        ;***********************************************************************
```

```
2727  013250  004567  170256          DAT1:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2728  013254  000001                          1                       ;SEE NOTE 1 FOR DATA TEST PARAMETERS
2729          000002                          Y=Y+1
2730                                  ;*****************************************************************************
2731  013256  000102                  AT102:  102                     ;ROUTINE #102                             *
2732  013260  013274                          AT103                   ;ADDRESS OF NEXT TEST                     *
2733  013262  000003                          3.                      ;ITERATION COUNT                          *
2734  013264  013266                          DAT2                    ;SCOPE ENTRY POINT                        *
2735          000102                          X=X+1
2736                                  ;*****************************************************************************
2737  013266  004567  170240          DAT2:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2738  013272  000002                          2                       ;SEE NOTE 2 FOR DATA TEST PARAMETERS
2739          000003                          Y=Y+1
2740                                  ;*****************************************************************************
2741  013274  000103                  AT103:  103                     ;ROUTINE #103                             *
2742  013276  013312                          AT104                   ;ADDRESS OF NEXT TEST                     *
2743  013300  000003                          3.                      ;ITERATION COUNT                          *
2744  013302  013304                          DAT3                    ;SCOPE ENTRY POINT                        *
2745          000103                          X=X+1
2746                                  ;*****************************************************************************
2747  013304  004567  170222          DAT3:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2748  013310  000003                          3                       ;SEE NOTE 3 FOR DATA TEST PARAMETERS
2749          000004                          Y=Y+1
2750                                  ;*****************************************************************************
2751  013312  000104                  AT104:  104                     ;ROUTINE #104                             *
2752  013314  013330                          AT105                   ;ADDRESS OF NEXT TEST                     *
2753  013316  000003                          3.                      ;ITERATION COUNT                          *
2754  013320  013322                          DAT4                    ;SCOPE ENTRY POINT                        *
2755          000104                          X=X+1
2756                                  ;*****************************************************************************
2757  013322  004567  170204          DAT4:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2758  013326  000004                          4                       ;SEE NOTE 4 FOR DATA TEST PARAMETERS
2759          000005                          Y=Y+1
2760                                  ;*****************************************************************************
2761  013330  000105                  AT105:  105                     ;ROUTINE #105                             *
2762  013332  013346                          AT106                   ;ADDRESS OF NEXT TEST                     *
2763  013334  000003                          3.                      ;ITERATION COUNT                          *
2764  013336  013340                          DAT5                    ;SCOPE ENTRY POINT                        *
2765          000105                          X=X+1
2766                                  ;*****************************************************************************
2767  013340  004567  170166          DAT5:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2768  013344  000005                          5                       ;SEE NOTE 5 FOR DATA TEST PARAMETERS
2769          000006                          Y=Y+1
2770                                  ;*****************************************************************************
2771  013346  000106                  AT106:  106                     ;ROUTINE #106                             *
2772  013350  013364                          AT107                   ;ADDRESS OF NEXT TEST                     *
2773  013352  000003                          3.                      ;ITERATION COUNT                          *
2774  013354  013356                          DAT6                    ;SCOPE ENTRY POINT                        *
2775          000106                          X=X+1
2776                                  ;*****************************************************************************
2777  013356  004567  170150          DAT6:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2778  013362  000006                          6                       ;SEE NOTE 6 FOR DATA TEST PARAMETERS
2779          000007                          Y=Y+1
2780                                  ;*****************************************************************************
2781  013364  000107                  AT107:  107                     ;ROUTINE #107                             *
2782  013366  013402                          AT110                   ;ADDRESS OF NEXT TEST                     *
```

```
2783  013370  000003                  3.                      ;ITERATION COUNT                *
2784  013372  013374                  DAT7                    ;SCOPE ENTRY POINT              *
2785          000107                  X=X+1
2786                          ;*****************************************************************************
2787  013374  004567  170132  DAT7:   JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2788  013400  000007                  7                       ;SEE NOTE 7 FOR DATA TEST PARAMETERS
2789          000010                  Y=Y+1
2790                          ;*****************************************************************************
2791  013402  000110          AT110:  110                     ;ROUTINE #110                   *
2792  013404  013420                  ,T111                   ;ADDRESS OF NEXT TEST           *
2793  013406  000003                  3.                      ;ITERATION COUNT                *
2794  013410  013412                  DAT10                   ;SCOPE ENTRY POINT              *
2795          000110                  X=X+1
2796                          ;*****************************************************************************
2797  013412  004567  170114  DAT10:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2798  013416  000010                  10                      ;SEE NOTE 10 FOR DATA TEST PARAMETERS
2799          000011                  Y=Y+1
2800                          ;*****************************************************************************
2801  013420  000111          AT111:  111                     ;ROUTINE #111                   *
2802  013422  013436                  AT112                   ;ADDRESS OF NEXT TEST           *
2803  013424  000003                  3.                      ;ITERATION COUNT                *
2804  013426  013430                  DAT11                   ;SCOPE ENTRY POINT              *
2805          000111                  X=X+1
2806                          ;*****************************************************************************
2807  013430  004567  170076  DAT11:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2808  013434  000011                  11                      ;SEE NOTE 11 FOR DATA TEST PARAMETERS
2809          000012                  Y=Y+1
2810                          ;*****************************************************************************
2811  013436  000112          AT112:  112                     ;ROUTINE #112                   *
2812  013440  013454                  AT113                   ;ADDRESS OF NEXT TEST           *
2813  013442  000003                  3.                      ;ITERATION COUNT                *
2814  013444  013446                  DAT12                   ;SCOPE ENTRY POINT              *
2815          000112                  X=X+1
2816                          ;*****************************************************************************
2817  013446  004567  170060  DAT12:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2818  013452  000012                  12                      ;SEE NOTE 12 FOR DATA TEST PARAMETERS
2819          000013                  Y=Y+1
2820                          ;*****************************************************************************
2821  013454  000113          AT113:  113                     ;ROUTINE #113                   *
2822  013456  013472                  AT114                   ;ADDRESS OF NEXT TEST           *
2823  013460  000003                  3.                      ;ITERATION COUNT                *
2824  013462  013464                  DAT13                   ;SCOPE ENTRY POINT              *
2825          000113                  X=X+1
2826                          ;*****************************************************************************
2827  013464  004567  170042  DAT13:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2828  013470  000013                  13                      ;SEE NOTE 13 FOR DATA TEST PARAMETERS
2829          000014                  Y=Y+1
2830                          ;*****************************************************************************
2831  013472  000114          AT114:  114                     ;ROUTINE #114                   *
2832  013474  013510                  AT115                   ;ADDRESS OF NEXT TEST           *
2833  013476  000003                  3.                      ;ITERATION COUNT                *
2834  013500  013502                  DAT14                   ;SCOPE ENTRY POINT              *
2835          000114                  X=X+1
2836                          ;*****************************************************************************
2837  013502  004567  170024  DAT14:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2838  013506  000014                  14                      ;SEE NOTE 14 FOR DATA TEST PARAMETERS
```

```
2839            000015                          Y=Y+1
2840                    ;*******************************************************************************
2841  013510   000115                  AT115:  115                     ;ROUTINE #115                  *
2842  013512   013526                          AT116                   ;ADDRESS OF NEXT TEST          *
2843  013514   000003                          3.                      ;ITERATION COUNT               *
2844  013516   013520                          DAT15                   ;SCOPE ENTRY POINT             *
2845            000115                          X=X+1
2846                    ;*******************************************************************************
2847  013520   004567   170006          DAT15:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2848  013524   000015                          15                      ;SEE NOTE 15 FOR DATA TEST PARAMETERS
2849            000016                          Y=Y+1
2850                    ;*******************************************************************************
2851  013526   000116                  AT116:  116                     ;ROUTINE #116                  *
2852  013530   013544                          AT117                   ;ADDRESS OF NEXT TEST          *
2853  013532   000003                          3.                      ;ITERATION COUNT               *
2854  013534   013536                          DAT16                   ;SCOPE ENTRY POINT             *
2855            000116                          X=X+1
2856                    ;*******************************************************************************
2857  013536   004567   167770          DAT16:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2858  013542   000016                          16                      ;SEE NOTE 16 FOR DATA TEST PARAMETERS
2859            000017                          Y=Y+1
2860                    ;*******************************************************************************
2861  013544   000117                  AT117:  117                     ;ROUTINE #117                  *
2862  013546   013562                          AT120                   ;ADDRESS OF NEXT TEST          *
2863  013550   000003                          3.                      ;ITERATION COUNT               *
2864  013552   013554                          DAT17                   ;SCOPE ENTRY POINT             *
2865            000117                          X=X+1
2866                    ;*******************************************************************************
2867  013554   004567   167752          DAT17:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2868  013560   000017                          17                      ;SEE NOTE 17 FOR DATA TEST PARAMETERS
2869            000020                          Y=Y+1
2870                    ;*******************************************************************************
2871  013562   000120                  AT120:  120                     ;ROUTINE #120                  *
2872  013564   013600                          AT121                   ;ADDRESS OF NEXT TEST          *
2873  013566   000003                          3.                      ;ITERATION COUNT               *
2874  013570   013572                          DAT20                   ;SCOPE ENTRY POINT             *
2875            000120                          X=X+1
2876                    ;*******************************************************************************
2877  013572   004567   167734          DAT20:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2878  013576   000020                          20                      ;SEE NOTE 20 FOR DATA TEST PARAMETERS
2879            000021                          Y=Y+1
2880                    ;*******************************************************************************
2881  013600   000121                  AT121:  121                     ;ROUTINE #121                  *
2882  013602   013616                          AT122                   ;ADDRESS OF NEXT TEST          *
2883  013604   000003                          3.                      ;ITERATION COUNT               *
2884  013606   013610                          DAT21                   ;SCOPE ENTRY POINT             *
2885            000121                          X=X+1
2886                    ;*******************************************************************************
2887  013610   004567   167716          DAT21:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2888  013614   000021                          21                      ;SEE NOTE 21 FOR DATA TEST PARAMETERS
2889            000022                          Y=Y+1
2890                    ;*******************************************************************************
2891  013616   000122                  AT122:  122                     ;ROUTINE #122                  *
2892  013620   013634                          AT123                   ;ADDRESS OF NEXT TEST          *
2893  013622   000003                          3.                      ;ITERATION COUNT               *
2894  013624   013626                          DAT22                   ;SCOPE ENTRY POINT             *
```

```
2895            000122                          X=X+1
2896                            ;*****************************************************************************
2897  013626   004567  167700   DAT22:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2898  013632   000022                  22                      ;SEE NOTE 22 FOR DATA TEST PARAMETERS
2899            000023                  Y=Y+1
2900                            ;*****************************************************************************
2901  013634   000123   AT123:  123                     ;ROUTINE #123                                   *
2902  013636   013652           AT124                   ;ADDRESS OF NEXT TEST                           *
2903  013640   000003           3.                      ;ITERATION COUNT                                *
2904  013642   013644           DAT23                   ;SCOPE ENTRY POINT                              *
2905            000123          X=X+1
2906                            ;*****************************************************************************
2907  013644   004567  167662   DAT23:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2908  013650   000023                  23                      ;SEE NOTE 23 FOR DATA TEST PARAMETERS
2909            000024                  Y=Y+1
2910                            ;*****************************************************************************
2911  013652   000124   AT124:  124                     ;ROUTINE #124                                   *
2912  013654   013670           AT125                   ;ADDRESS OF NEXT TEST                           *
2913  013656   000003           3.                      ;ITERATION COUNT                                *
2914  013660   013662           DAT24                   ;SCOPE ENTRY POINT                              *
2915            000124          X=X+1
2916                            ;*****************************************************************************
2917  013662   004567  167644   DAT24:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2918  013666   000024                  24                      ;SEE NOTE 24 FOR DATA TEST PARAMETERS
2919            000025                  Y=Y+1
2920                            ;*****************************************************************************
2921  013670   000125   AT125:  125                     ;ROUTINE #125                                   *
2922  013672   013706           AT126                   ;ADDRESS OF NEXT TEST                           *
2923  013674   000003           3.                      ;ITERATION COUNT                                *
2924  013676   013700           DAT25                   ;SCOPE ENTRY POINT                              *
2925            000125          X=X+1
2926                            ;*****************************************************************************
2927  013700   004567  167626   DAT25:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2928  013704   000025                  25                      ;SEE NOTE 25 FOR DATA TEST PARAMETERS
2929            000026                  Y=Y+1
2930                            ;*****************************************************************************
2931  013706   000126   AT126:  126                     ;ROUTINE #126                                   *
2932  013710   013724           AT127                   ;ADDRESS OF NEXT TEST                           *
2933  013712   000003           3.                      ;ITERATION COUNT                                *
2934  013714   013716           DAT26                   ;SCOPE ENTRY POINT                              *
2935            000126          X=X+1
2936                            ;*****************************************************************************
2937  013716   004567  167610   DAT26:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2938  013722   000026                  26                      ;SEE NOTE 26 FOR DATA TEST PARAMETERS
2939            000027                  Y=Y+1
2940                            ;*****************************************************************************
2941  013724   000127   AT127:  127                     ;ROUTINE #127                                   *
2942  013726   013742           AT130                   ;ADDRESS OF NEXT TEST                           *
2943  013730   000003           3.                      ;ITERATION COUNT                                *
2944  013732   013734           DAT27                   ;SCOPE ENTRY POINT                              *
2945            000127          X=X+1
2946                            ;*****************************************************************************
2947  013734   004567  167572   DAT27:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2948  013740   000027                  27                      ;SEE NOTE 27 FOR DATA TEST PARAMETERS
2949            000030                  Y=Y+1
2950                            ;*****************************************************************************
```

```
2951  013742  000130                AT130:  130                     ;ROUTINE #130                                  *
2952  013744  013760                        AT131                   ;ADDRESS OF NEXT TEST                          *
2953  013746  000003                        3.                      ;ITERATION COUNT                               *
2954  013750  013752                        DAT30                   ;SCOPE ENTRY POINT                             *
2955          000130                        X=X+1
2956                                ;*************************************************************************************
2957  013752  004567  167554        DAT30:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2958  013756  000030                        30                      ;SEE NOTE 30 FOR DATA TEST PARAMETERS
2959          000031                        Y=Y+1
2960                                ;*************************************************************************************
2961  013760  000131                AT131:  131                     ;ROUTINE #131                                  *
2962  013762  013776                        AT132                   ;ADDRESS OF NEXT TEST                          *
2963  013764  000003                        3.                      ;ITERATION COUNT                               *
2964  013766  013770                        DAT31                   ;SCOPE ENTRY POINT                             *
2965          000131                        X=X+1
2966                                ;*************************************************************************************
2967  013770  004567  167536        DAT31:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2968  013774  000031                        31                      ;SEE NOTE 31 FOR DATA TEST PARAMETERS
2969          000032                        Y=Y+1
2970                                ;*************************************************************************************
2971  013776  000132                AT132:  132                     ;ROUTINE #132                                  *
2972  014000  014014                        AT133                   ;ADDRESS OF NEXT TEST                          *
2973  014002  000003                        3.                      ;ITERATION COUNT                               *
2974  014004  014006                        DAT32                   ;SCOPE ENTRY POINT                             *
2975          000132                        X=X+1
2976                                ;*************************************************************************************
2977  014006  004567  167520        DAT32:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2978  014012  000032                        32                      ;SEE NOTE 32 FOR DATA TEST PARAMETERS
2979          000033                        Y=Y+1
2980                                ;*************************************************************************************
2981  014014  000133                AT133:  133                     ;ROUTINE #133                                  *
2982  014016  014032                        AT134                   ;ADDRESS OF NEXT TEST                          *
2983  014020  000003                        3.                      ;ITERATION COUNT                               *
2984  014022  014024                        DAT33                   ;SCOPE ENTRY POINT                             *
2985          000133                        X=X+1
2986                                ;*************************************************************************************
2987  014024  004567  167502        DAT33:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2988  014030  000033                        33                      ;SEE NOTE 33 FOR DATA TEST PARAMETERS
2989          000034                        Y=Y+1
2990                                ;*************************************************************************************
2991  014032  000134                AT134:  134                     ;ROUTINE #134                                  *
2992  014034  014050                        AT135                   ;ADDRESS OF NEXT TEST                          *
2993  014036  000003                        3.                      ;ITERATION COUNT                               *
2994  014040  014042                        DAT34                   ;SCOPE ENTRY POINT                             *
2995          000134                        X=X+1
2996                                ;*************************************************************************************
2997  014042  004567  167464        DAT34:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
2998  014046  000034                        34                      ;SEE NOTE 34 FOR DATA TEST PARAMETERS
2999          000035                        Y=Y+1
3000                                ;*************************************************************************************
3001  014050  000135                AT135:  135                     ;ROUTINE #135                                  *
3002  014052  014066                        AT136                   ;ADDRESS OF NEXT TEST                          *
3003  014054  000003                        3.                      ;ITERATION COUNT                               *
3004  014056  014060                        DAT35                   ;SCOPE ENTRY POINT                             *
3005          000135                        X=X+1
3006                                ;*************************************************************************************
```

```
3007  014060  004567  167446          DAT35:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
3008  014064  000035                          35                      ;SEE NOTE 35 FOR DATA TEST PARAMETERS
3009          000036                          Y=Y+1
3010                                  ;*****************************************************************************
3011  014066  000136                  AT136:  136                     ;ROUTINE #136                              *
3012  014070  014104                          AT137                   ;ADDRESS OF NEXT TEST                      *
3013  014072  000003                          3.                      ;ITERATION COUNT                           *
3014  014074  014076                          DAT36                   ;SCOPE ENTRY POINT                         *
3015          000136                          X=X+1
3016                                  ;*****************************************************************************
3017  014076  004567  167430          DAT36:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
3018  014102  000036                          36                      ;SEE NOTE 36 FOR DATA TEST PARAMETERS
3019          000037                          Y=Y+1
3020                                  ;*****************************************************************************
3021  014104  000137                  AT137:  137                     ;ROUTINE #137                              *
3022  014106  014122                          AT140                   ;ADDRESS OF NEXT TEST                      *
3023  014110  000003                          3.                      ;ITERATION COUNT                           *
3024  014112  014114                          DAT37                   ;SCOPE ENTRY POINT                         *
3025          000137                          X=X+1
3026                                  ;*****************************************************************************
3027  014114  004567  167412          DAT37:  JSR     5,DATTST        ;LOAD PARAMETERS & RUN TEST
3028  014120  000037                          37                      ;SEE NOTE 37 FOR DATA TEST PARAMETERS
3029          000040                          Y=Y+1
3030
3031
3032  014122  000140                  AT140:  140                     ;TEST NUMBER 140
3033  014124  014236                          AT141                   ;ADDRESS OF NEXT TEST
3034  014126  000012                          10.                     ;TEST ITERATION COUNT
3035  014130  014152                          APBA                    ;SCOPE ENTRY POINT
3036                                  ;*****************************************************************************
3037                                  ;DATA TEST USING JUMPER CONNECTOR. TX SPEED = 11, RX SPEED = 11,
3038                                  ;CHAR LENGTH = 11, STOP CODE = 1.  USES SPECIAL BINARY COUNT PATTERN
3039                                  ;FOR DATA.  NO INTERRUPT.
3040
3041  014132  012777  000430  164744          MOV     #430,@TXCSR     ;SET TX SPEED = 11, STOP CODE = 1
3042  014140  012777  003031  164732          MOV     #3031,@RXCSR    ;SET RX SPEED = 11, CHAR. LENGTH = 11
3043  014146  004767  166754                  JSR     7,INBIN         ;INITIALIZE BINARY COUNT PATTERN
3044  014152  012767  001750  165066  APBA:   MOV     #1000.,CTRA     ;SET CHARACTER COUNT TO 1000
3045  014160  105777  164720          APBB:   TSTB    @TXCSR          ;WAIT FOR TX READY
3046  014164  100375                          BPL     .-4
3047  014166  004767  167040                  JSR     7,GTBINP        ;GET BINARY CHARACTER
3048  014172  110167  165034                  MOVB    %1,CRBUFA       ;SAVE CHAR IN CRBUFA AND
3049  014176  042767  177740  165026          BIC     #177740,CRBUFA  ;MASK OFF ALL BUT 5 LSB.
3050  014204  110177  164676                  MOVB    %1,@TXBUF       ;LOAD CHAR.
3051  014210  105777  164664                  TSTB    @RXCSR          ;WAIT FOR RECEIVER
3052  014214  100375                          BPL     .-4             ;TO RECEIVE CHARACTER
3053  014216  117767  164660  165004          MOVB    @RXBUF,CRBUF    ;LOAD RECEIVED DATA INTO CRBUF
3054  014224  104004                          DATCHK                  ;CHECK DATA
3055  014226  005367  165014                  DEC     CTRA            ;TESTED 1000 CHARACTERS
3056  014232  001352                          BNE     APBB            ;BRANCH IF NOT
3057  014234  104012                          SCOPE                   ;YES. SCOPE
3058                                  ;*****************************************************************************
3059  014236  000141                  AT141:  141                     ;TEST NUMBER 141
3060  014240  177777                          ATLAST                  ;ADDRESS OF NEXT TEST
3061  014242  000144                          100.                    ;TEST ITERATION COUNT
3062  014244  014246                          AQBA                    ;SCOPE ENTRY POINT
```

```
3063                                    ;*************************************************************************
3064                                    ;TEST THAT WHEN RXCSR BIT 1 IS SET THAT THE OUTPUT DATA LINE
3065                                    ;IS PULLED TO A SPACE.
3066
3067  014246  012777  000004  164630  AQBA:   MOV     #BIT2,@TXCSR    ;SET MAINTENANCE BIT IN TXCSR
3068  014254  012777  000002  164616          MOV     #BIT1,@RXCSR
3069  014262  012777  000377  164616          MOV     #377,@TXBUF     ;LOAD BUFFER
3070  014270  105777  164604                  TSTB    @RXCSR          ;WAIT FOR RECEIVER
3071  014274  100375                          BPL     .-4             ;TO RECEIVE CHARACTER
3072  014276  027727  164600  000000          CMP     @RXBUF,#0       ;CHARACTER RECEIVED SHOULD BE 0
3073  014304  001401                          BEQ     .+4
3074  014306  104003                          ERROR                   ;CHARACTER OTHER THAN 0
3075  014310  104011                          SRESET                  ;ISSUE RESET
3076  014312  104012                          SCOPE
3077                                    ;SUBROUTINE TO SET RXCSR DONE BIT.
3078  014314  052777  000004  164562  STRXD:  BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT.
3079  014322  005077  164560                  CLR     @TXBUF          ;LOAD TXBUF.
3080  014326  104016                          DELAY                   ;DELAY 200 MSECS.
3081  014330  000310                          200.
3082  014332  000207                          RTS     %7              ;EXIT.
3083                                    ;SUBROUTINE TO CHECK THAT CTRA THROUGH CTRD CONTAIN DESCENDING VALUES.
3084  014334  026767  164706  164706  CMPT:   CMP     CTRA,CTRB
3085  014342  101424                          BLOS    CMPTA
3086  014344  026767  164676  164700          CMP     CTRA,CTRC
3087  014352  101420                          BLOS    CMPTA
3088  014354  026767  164666  164672          CMP     CTRA,CTRD
3089  014362  101414                          BLOS    CMPTA
3090  014364  026767  164660  164660          CMP     CTRB,CTRC
3091  014372  101410                          BLOS    CMPTA
3092  014374  026767  164650  164652          CMP     CTRB,CTRD
3093  014402  101404                          BLOS    CMPTA
3094  014404  026767  164642  164642          CMP     CTRC,CTRD
3095  014412  101002                          BHI     CMPTB
3096  014414  062716  000002          CMPTA:  ADD     #2,@%6
3097  014420  000207                  CMPTB:  RTS     %7
3098
3099
3100                                    ;**********
3101                                    ;PRG1 - TRANSMITTER SCOPE LOOP
3102                                    ;**********
3103  014422  104000                  PRG1:   TYPE                    ;TYPE PROGRAM TITLE.
3104  014424  016043                          P1TIT
3105  014426  004567  166350                  JSR     5,LINSEL        ;GO GET LINE # FROM USER
3106  014432  004767  000302                  JSR     %7,SETPAR       ;GO SET PARAMETERS.
3107  014436  104000                          TYPE                    ;TYPE SELECT CHAR AND DELAY.
3108  014440  016275                          SELCAD
3109  014442  000000                          HALT                    ;WAIT FOR USER.
3110  014444  116767  163120  000010  PRG1A:  MOVB    SR,PRG1B        ;DELAY COUNT TO PRG1B.
3111  014452  116777  163113  164426          MOVB    SR+1,@TXBUF     ;LOAD TXBUF.
3112  014460  104016                          DELAY                   ;DELAY # OF MSECS. SET AT SR.
3113  014462  000000                  PRG1B:  OPEN
3114  014464  000767                          BR      PRG1A           ;REPEAT.
3115                                    ;**********
3116                                    ;PRG2 - RECEIVER SCOPE LOOP.
3117                                    ;**********
3118  014466  104000                  PRG2:   TYPE                    ;TYPE PROGRAM TITLE.
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3119  014470  016103                          P2TIT
3120  014472  004567  166304                  JSR     5,LINSEL        ;GO GET LINE # FROM USER
3121  014476  004767  000236                  JSR     %7,SETPAR       ;GO SET PARAMETERS.
3122  014502  104000                          TYPE                    ;TYPE SELECT CHAR AND DELAY.
3123  014504  016275                          SELCAD
3124  014506  000000                          HALT                    ;WAIT FOR USER.
3125  014510  004767  000256          PRG2A:  JSR     7,STPARB        ;RELOAD PARAMETERS
3126  014514  052777  000004  164362          BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT.
3127  014522  116767  163042  000010          MOVB    SR,PRG2B        ;DELAY COUNT TO PRG2B.
3128  014530  116777  163035  164350          MOVB    SR+1,@TXBUF     ;LOAD TXBUF.
3129  014536  104016                          DELAY                   ;DELAY # OF MSECS. SET IN SR.
3130  014540  000000                  PRG2B:  OPEN
3131  014542  017700  164334                  MOV     @RXBUF,%0       ;RXBUF CONTENTS TO R0.
3132  014546  000005                          RESET                   ;DISPLAY CONTENTS OF RXBUF (IN R0),
3133  014550  000005                          RESET                   ;BY ISSUING 5 RESET INSTRUCTIONS
3134  014552  000005                          RESET
3135  014554  000005                          RESET
3136  014556  000005                          RESET
3137  014560  000753                          BR      PRG2A
3138                                  ;**********
3139                                  ;PRG3 - SINGLE CHARACTER MAINTENANCE MODE DATA TEST.
3140                                  ;**********
3141  014562  104000                  PRG3:   TYPE                    ;TYPE PROGRAM TITLE.
3142  014564  016604                          P3TIT
3143  014566  004567  166210                  JSR     5,LINSEL        ;GO GET LINE # FROM USER
3144  014572  004767  000142                  JSR     %7,SETPAR       ;SET PARAMETERS.
3145  014576  104000                          TYPE                    ;TYPE: SELECT CHARACTER.
3146  014600  016750                          SELCAR
3147  014602  000000                          HALT
3148  014604  116767  162760  164420  PRG3A:  MOVB    SR,CRBUFA       ;MOVE DATA CHAR TO CRBUFA.
3149  014612  004767  000040                  JSR     %7,MOUTIN       ;GO OUTPUT, RECEIVE, AND CHECK DATA.
3150  014616  000772                          BR      PRG3A
3151                                  ;**********
3152                                  ;PRG4 - SPECIAL BINARY COUNT MAINTENANCE MODE DATA TEST.
3153                                  ;**********
3154  014620  104000                  PRG4:   TYPE                    ;TYPE PROGRAM TITLE.
3155  014622  016654                          P4TIT
3156  014624  004567  166152                  JSR     5,LINSEL        ;GO GET LINE # FROM USER
3157  014630  004767  000104                  JSR     %7,SETPAR       ;SET PARAMETERS.
3158  014634  004767  166266                  JSR     %7,INBIN        ;INITIALIZE BINARY COUNT.
3159  014640  004767  166366          PRG4A:  JSR     %7,GTBINP       ;GET BINARY CHARACTER.
3160  014644  110167  164362                  MOVB    %1,CRBUFA       ;SAVE AT CRBUFA.
3161  014650  004767  000002                  JSR     %7,MOUTIN       ;GO OUTPUT, RECEIVE, AND CHECK DATA.
3162  014654  000771                          BR      PRG4A           ;REPEAT.
3163                                  ;SUBROUTINE TO OUTPUT, RECEIVE, AND CHECK DATA WITH MAINTENANCE BIT SET.
3164  014656  032767  000400  162704  MOUTIN: BIT     #BIT8,SR        ;SEE IF BIT 8 IS SET.
3165  014664  001001                          BNE     .+4             ;BRANCH IF SET.
3166  014666  104002                          STALL                   ;SET. DO A RANDOM STALL.
3167  014670  105777  164210                  TSTB    @TXCSR          ;WAIT FOR TX READY.
3168  014674  100375                          BPL     .-4
3169  014676  052777  000004  164200          BIS     #BIT2,@TXCSR    ;SET MAINTENANCE BIT.
3170  014704  016777  164322  164174          MOV     CRBUFA,@TXBUF   ;LOAD TXBUF.
3171  014712  046767  164316  164312          BIC     CARMSK,CRBUFA   ;MASK OFF NON-EXPECTED BITS.
3172  014720  105777  164154                  TSTB    @RXCSR          ;WAIT FOR RECEIVER DONE BIT.
3173  014724  100375                          BPL     .-4
3174  014726  017767  164150  164274          MOV     @RXBUF,CRBUF    ;MOVE CHAR IN RX BUFFER TO CRBUF.
```

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3175  014734  104004                          DATCHK                  ;COMPARE EXPECTED AND RECEIVED DATA
3176  014736  000207                          RTS     %7              ;EXIT.
3177
3178                                  ;
3179                                  ;SUBROUTINE TO SET STOP CODE,SPEED, AND CHARACTER LENGTH PARAMETERS SE
3180                                  ;IN SR INTO TXCSR AND RXCSR.
3181  014740  104000                  SETPAR: TYPE                    ;TYPE: SELECT PARAMETERS.
3182  014742  016140                          SELPAR
3183  014744  000000                          HALT                            ;WAIT FOR USER.
3184  014746  016767  162616  164312          MOV     SR,SRT                  ;SR TO SRT.
3185  014754  004567  166320                  JSR     5,OACNV
3186  014760  001266                          SRT
3187  014762  016745                          APARM
3188  014764  000002                          2
3189  014766  104000                          TYPE
3190  014770  016727                          PARMTS
3191  014772  032767  000020  164266  STPARB: BIT     #BIT4,SRT               ;SEE IF SR BIT 4 IS SET.
3192  015000  001403                          BEQ     .+10                    ;BRANCH IF NOT SET.
3193  015002  052777  000400  164074          BIS     #BIT8,@TXCSR            ;SET. SET STOP CODE TO A 1.
3194  015010  032767  000010  164250          BIT     #BIT3,SRT               ;SEE IF SR BIT 3 IS SET.
3195  015016  001406                          BEQ     .+16                    ;BRANCH IF NOT SET.
3196  015020  052777  000020  164056          BIS     #BIT4,@TXCSR            ;SET BIT4 IN TXCSR AND RXCSR
3197  015026  052777  000020  164044          BIS     #BIT4,@RXCSR            ;(MSB OF SPEED SELECT BITS.)
3198  015034  032767  000004  164224          BIT     #BIT2,SRT               ;SEE IF SR BIT 2 IS SET.
3199  015042  001406                          BEQ     .+16                    ;BRANCH IF NOT SET.
3200  015044  052777  000010  164032          BIS     #BIT3,@TXCSR            ;SET BIT3 IN TXCSR AND RXCSR
3201  015052  052777  000010  164020          BIS     #BIT3,@RXCSR            ;(LSB OF SPEED SELECT BITS).
3202  015060  012767  177400  164146          MOV     #177400,CARMSK          ;SET CHARACTER MASK TO 8 BITS.
3203  015066  032767  000002  164172          BIT     #BIT1,SRT               ;SEE IF SR BIT 1 IS SET.
3204  015074  001421                          BEQ     STPARA                  ;BRANCH IF NOT SET.
3205  015076  012767  177700  164130          MOV     #177700,CARMSK          ;CHANGE CHAR MASK TO 6 BITS.
3206  015104  052777  002000  163766          BIS     #BIT10,@RXCSR           ;SET RXCSR BIT 10(MSB OF CHAR LENGTH BITS.
3207  015112  032767  000001  164146          BIT     #BIT0,SRT               ;SEE IF SR BIT0 IS SET.
3208  015120  001406                          BEQ     .+16                    ;BRANCH IF NOT SET.
3209  015122  012767  177740  164104          MOV     #177740,CARMSK          ;CHANGE CHAR MASK TO 5 BITS.
3210  015130  052777  001000  163742          BIS     #BIT9,@RXCSR            ;SET RXCSR BIT9 (LSB OF CHAR LENGTH BITS).
3211  015136  000207                          RTS     %7                      ;EXIT.
3212  015140  032767  000001  164120  STPARA: BIT     #BIT0,SRT               ;SEE IF SR BIT0 IS SET.
3213  015146  001773                          BEQ     STPARA-2                ;BRANCH IF NOT SET.
3214  015150  012767  177600  164056          MOV     #177600,CARMSK          ;CHANGE CHAR MASK TO 7 BITS.
3215  015156  000764                          BR      STPARA-10
3216
3217
3218                                  ;VECTOR ASSIGNMENT TABLE
3219  015160  000300                  VECTAB: 300                     ;LINE 0 VECTOR
3220  015162  000310                          310                     ;LINE 1 VECTOR
3221  015164  000320                          320                     ;LINE 2   ..
3222  015166  000330                          330                     ;   ..  3   ..
3223  015170  000340                          340                     ;   ..  4   ..
3224  015172  000350                          350                     ;   ..  5   ..
3225  015174  000360                          360                     ;   ..  6   ..
3226  015176  000370                          370                     ;   ..  7   ..
3227  015200  000400                          400                     ;   ..  10  ..
3228  015202  000410                          410                     ;   ..  11  ..
3229  015204  000420                          420                     ;   ..  12  ..
3230  015206  000430                          430                     ;   ..  13  ..
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 3231  015210  000440                          440                    ;  ;;  14  ;;
 3232  015212  000450                          450                    ;  ;;  15  ;;
 3233  015214  000460                          460                    ;  ;;  16  ;;
 3234  015216  000470                          470                    ;  ;;  17  ;;
 3235  015220  000500                          500                    ;  ;;  20  ;;
 3236  015222  000510                          510                    ;  ;;  21  ;;
 3237  015224  000520                          520                    ;  ;;  22  ;;
 3238  015226  000530                          530                    ;  ;;  23  ;;
 3239  015230  000540                          540                    ;  ;;  24  ;;
 3240  015232  000550                          550                    ;  ;;  25  ;;
 3241  015234  000560                          560                    ;  ;;  26  ;;
 3242  015236  000570                          570                    ;  ;;  27  ;;
 3243  015240  000600                          600                    ;  ;;  30  ;;
 3244  015242  000610                          610                    ;  ;;  31  ;;
 3245  015244  000620                          620                    ;  ;;  32  ;;
 3246  015246  000630                          630                    ;  ;;  33  ;;
 3247  015250  000640                          640                    ;  ;;  34  ;;
 3248  015252  000650                          650                    ;  ;;  35  ;;
 3249  015254  000660                          660                    ;  ;;  36  ;;
 3250  015256  000670                          670                    ;  ;;  37  ;;
 3251
 3252
 3253
 3254                                          ;ASCII MESSAGES
 3255  015260  050045      040                 EMO:    .ASCII  '%P '
 3256  015263      040  020040  052040         APNUMB: .ASCII  '    T '
 3257  015270      040
 3258  015271      040  020040  050040         ATNUMB: .ASCII  '    PC '
 3259  015276  020103
 3260  015300  020040  020040  020040         APC:    .ASCII  '       @'
 3261  015306  020040      100
 3262  015311      045  050045  043522         POTIT:  .ASCII  '%%PRGO - INPUT-OUTPUT LOGIC TESTS. '
 3263  015316  020060  020055  047111
 3264  015324  052520  026524  052517
 3265  015332  050124  052125  046040
 3266  015340  043517  041511  052040
 3267  015346  051505  051524  020056
 3268  015354  044504  041523  047117                 .ASCII  'DISCONNECT DC11 FROM MODEM.%'
 3269  015362  042516  052103  042040
 3270  015370  030503  020061  051106
 3271  015376  046517  046440  042117
 3272  015404  046505  022456
 3273  015410  047101  020104  047503                 .ASCII  'AND CONNECT JUMPER TO CABLE.%@'
 3274  015416  047116  041505  020124
 3275  015424  052512  050115  051105
 3276  015432  052040  020117  040503
 3277  015440  046102  027105  040045
 3278  015446  054124  051503  020122         ATXCSR: .ASCII  'TXCSR S/B: '
 3279  015454  027523  035102      040
 3280  015461      040  020040  020040         ATXSB:  .ASCII  '       WAS: '
 3281  015466  020040  053440  051501
 3282  015474  020072
 3283  015476  020040  020040  020040         ATXWAS: .ASCII  '     @'
 3284  015504      100
 3285  015505      122  041530  051123         ARXCSR: .ASCII  'RXCSR S/B: '
 3286  015512  051440  041057  020072
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  3287  015520  020040  020040  020040  ARXSB:  .ASCII  '        WAS: '
  3288  015526  020040  040527  035123
  3289  015534     040
  3290  015535     040  020040  020040  ARXWAS: .ASCII  '      a'
  3291  015542  040040
  3292  015544  054124  051440  042520  ETXTIM: .ASCII  'TX SPEEDS NOT IN ASCENDING ORDER.a'
  3293  015552  042105  020123  047516
  3294  015560  020124  047111  040440
  3295  015566  041523  047105  044504
  3296  015574  043516  047440  042122
  3297  015602  051105  040056
  3298  015606  044524  042515  043040  ESTPCD: .ASCII  'TIME FOR 2 STOP CODE OP LESS THAN FOR 1.a'
  3299  015614  051117  031040  051440
  3300  015622  047524  020120  047503
  3301  015630  042504  047440  020120
  3302  015636  042514  051523  052040
  3303  015644  040510  020116  047506
  3304  015652  020122  027061     100
  3305  015657     124  020130  044103  ETCLGT: .ASCII  'TX CHAR LENGTHS NOT IN DESCENDING ORDER.a'
  3306  015664  051101  046040  047105
  3307  015672  052107  051510  047040
  3308  015700  052117  044440  020116
  3309  015706  042504  041523  047105
  3310  015714  044504  043516  047440
  3311  015722  042122  051105  040056
  3312  015730  054122  051440  042520  ERXTIM: .ASCII  'RX SPEEDS NOT IN ASCENDING ORDER.a'
  3313  015736  042105  020123  047516
  3314  015744  020124  047111  040440
  3315  015752  041523  047105  044504
  3316  015760  043516  047440  042122
  3317  015766  051105  040056
  3318  015772  054122  041440  040510  ERCLGT: .ASCII  'RX CHAR LENGTHS NOT IN DESCENDING ORDER.a'
  3319  016000  020122  042514  043516
  3320  016006  044124  020123  047516
  3321  016014  020124  047111  042040
  3322  016022  051505  042503  042116
  3323  016030  047111  020107  051117
  3324  016036  042504  027122     100
  3325  016043     045  050045  043522  P1TIT:  .ASCII  '%%PRG1 - TRANSMITTER SCOPE LOOPa'
  3326  016050  020061  020055  051124
  3327  016056  047101  046523  052111
  3328  016064  042524  020122  041523
  3329  016072  050117  020105  047514
  3330  016100  050117     100
  3331  016103     045  050045  043522  P2TIT:  .ASCII  '%%PRG2 - RECEIVER SCOPE LOOPa'
  3332  016110  020062  020055  042522
  3333  016116  042503  053111  051105
  3334  016124  051440  047503  042520
  3335  016132  046040  047517  040120
  3336  016140  051445  052105  050040  SELPAR: .ASCII  '%SET PARAMETERS IN SR AS FOLLOWS:'
  3337  016146  051101  046501  052105
  3338  016154  051105  020123  047111
  3339  016162  051440  020122  051501
  3340  016170  043040  046117  047514
  3341  016176  051527     072
  3342  016201     045  051123  020064          .ASCII  '%SR4 = STOP CODE%SR3 AND 2 = SPEED'
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 3343  016206  020075  052123  050117
 3344  016214  041440  042117  022505
 3345  016222  051123  020063  047101
 3346  016230  020104  020062  020075
 3347  016236  050123  042505     104
 3348  016243     045  051123  020061          .ASCII  '%SR1 AND 0 = CHAR LENGTH%@'
 3349  016250  047101  020104  020060
 3350  016256  020075  044103  051101
 3351  016264  046040  047105  052107
 3352  016272  022510     100
 3353  016275     045  042523  020124  SELCAD: .ASCII  '%SET TEST CHAR CODE IN SR15-SR8, SET DELAY TIME IN SR7-SR0.@'
 3354  016302  042524  052123  041440
 3355  016310  040510  020122  047503
 3356  016316  042504  044440  020116
 3357  016324  051123  032461  051455
 3358  016332  034122  020054  042523
 3359  016340  020124  042504  040514
 3360  016346  020131  044524  042515
 3361  016354  044440  020116  051123
 3362  016362  026467  051123  027060
 3363  016370     100
 3364  016371     040  042040  052101  ERDAT:  .ASCII  '  DATA ERR  S/B: '
 3365  016376  020101  051105  020122
 3366  016404  051440  041057  020072
 3367  016412  020040  020040  053440  AASB:   .ASCII  '     WAS: '
 3368  016420  051501  020072
 3369  016424  020040  040040          AWAS:   .ASCII  '   @'
 3370  016430  037445     100          AINPRG: .ASCII  '%?@'
 3371  016433     045  042523  020124  ASETSR: .ASCII  '%SET DESIRED SR OPTIONS. NORMAL OPERATION '
 3372  016440  042504  044523  042522
 3373  016446  020104  051123  047440
 3374  016454  052120  047511  051516
 3375  016462  020056  047516  046522
 3376  016470  046101  047440  042520
 3377  016476  040522  044524  047117
 3378  016504     040
 3379  016505     111  020123  044527          .ASCII  'IS WITH SR = 000000@'
 3380  016512  044124  051440  020122
 3381  016520  020075  030060  030060
 3382  016526  030060     100
 3383  016531     045  047111  047503  AINCRT: .ASCII  '%INCORRECT ROUTINE SELECTED.@'
 3384  016536  051122  041505  020124
 3385  016544  047522  052125  047111
 3386  016552  020105  042523  042514
 3387  016560  052103  042105  040056
 3388  016566  050045  047522  051107  APGEND: .ASCII  '%PROGRAM END.@'
 3389  016574  046501  042440  042116
 3390  016602  040056
 3391  016604  022445  051120  031507  P3TIT:  .ASCII  '%%PRG3-SINGLE CHAR MAINT MODE DATA TEST@'
 3392  016612  051455  047111  046107
 3393  016620  020105  044103  051101
 3394  016626  046440  044501  052116
 3395  016634  046440  042117  020105
 3396  016642  040504  040524  052040
 3397  016650  051505  040124
 3398  016654  022445  051120  032107  P4TIT:  .ASCII  '%%PRG4-SPEC BIN COUNT MAINT MODE DATA TEST@'
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 3399  016662  051455  042520  020103
 3400  016670  044502  020116  047503
 3401  016676  047125  020124  040515
 3402  016704  047111  020124  047515
 3403  016712  042504  042040  052101
 3404  016720  020101  042524  052123
 3405  016726     100
 3406  016727     045  040520  040522  PARMTS:  ASCII  '%PARAMETERS = '
 3407  016734  042515  042524  051522
 3408  016742  036440     040
 3409  016745     040  040040          APARM:  .ASCII  ' @'
 3410  016750  051445  052105  052040  SELCAR: .ASCII  '%SET TEST CHAR CODE IN SR7-SR0.@'
 3411  016756  051505  020124  044103
 3412  016764  051101  041440  042117
 3413  016772  020105  047111  051440
 3414  017000  033522  051455  030122
 3415  017006  040056
 3416  017010  046045  040517  020104  LDLINE: .ASCII  '%LOAD LINE NO. (8) INTO SR 3-7@'
 3417  017016  044514  042516  047040
 3418  017024  027117  024040  024470
 3419  017032  044440  052116  020117
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 3421  017046     100
 3422  017047     040  046040  047111  ALINE:  .ASCII  '  LINE NO.'
 3423  017054  020105  047516     056
 3424  017061     040  020040  040527  SELINE: .ASCII  '   WAS SELECTED@'
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 3426  017074  052103  042105     100
 3427  017101  000001                  DEND:   .END
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ABAB	007374	1926	1939#				
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ACA	004052	1217	1221#				
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ACAB	007542	1962	1974#				
ACB	004064	1223#	1226				
ACBA	012776	2649	2654#				
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ADA	004104	1232	1235#				
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ADAB	007576	1985	1987#				
ADB	004116	1237#	1240				
ADE	004120	1235	1238#				
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AEA	004136	1246	1249#				
AEAA	007612	1994	1998#				
AEAB	007632	2002	2005#				
AEB	004152	1250	1253#				
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AFAB	007672	2020	2023#				
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AFBC	006366	1727	1730	1732#			
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AFD	004322	1276	1281	1284	1286#		
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AIAS    010146            2073    2076    2080    2083    2090#
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AINPRG  016430            3370#
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AKAS    010556            2161    2165    2169    2172    2179#
AKASA   010600            2185#   2189
AKAST   010620            2162    2166    2170    2173    2179*   2187*   2191#
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AKBA    006752            1835    1841#
AKBB    006760            1842#
AKBC    007010            1845    1848#
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AKBE    007054            1847    1851    1856    1859#
ALA     004764            1402    1405#
ALAA    010632            2198    2203#
ALAB    010662            2208    2211#
ALAC    010674            2210    2213    2215#
ALB     005000            1406    1409#
ALBA    007176            1892    1897#
ALBB    007220            1899    1902#
ALBC    007246            1906    1909#
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ALD     005042            1408    1413    1416    1418#
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AND     005170          1447    1452    1455    1457#
ANW     005202          1462    1466#
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AOBD    007162          1873    1879    1882    1884#
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APAB    011164          2293    2295#
APARM   016745          3187    3409#
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ARD     005504          1527    1532    1535    1537#
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AT51	007734	2026	2043#
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AUC	005742	1604	1607#		
AUD	005762	1601	1606	1609	1611#
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AVAB	012250	2489	2497#		
AVAC	012252	2496	2498#		
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AWAC	012332	2512	2520#		
AWAD	012346	2521	2523#		
AWAE	012352	2520	2525#		
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AWB	006120	1645	1648#		
AWC	006142	1650	1653#		
AWD	006162	1647	1652	1655	1657#
AXA	006204	1664	1667#		
AXAA	012404	2533	2541#		
AXAB	012432	2539	2547#		
AXAC	012434	2546	2548#		
AXB	006216	1668	1670#		
AYA	006230	1676	1679#		
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AYB	006242	1680	1682#		
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AZB	006266	1693	1695#		

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BDCNVA  003424          1113#   1116
BELL  = 000007           648#
BIT0  = 000001           622#   1139   1249   1253   1254   1258   1259   1262   1272   1277   1282   1443   1444
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                        1842   1843   1852   1853   1869   1874   1875   1880   1950   1974   3207   3212
BIT1  = 000002           621#   1273   1278   1283   1466   1470   1471   1475   1476   1479   1821   1826   3068
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BIT10 = 002000           612#    731   1644   1648   1649   1653   1654   1657   3206
BIT11 = 004000           611#    829
BIT12 = 010000           610#   1667   2414   2423
BIT13 = 020000           609#    766   1679   1844   1848   1855
BIT14 = 040000           608#    825   1692   1745   1754   1758   1769
BIT15 = 100000           606     607#  1430   1703   1789   1793   1799   1870   1876   1881   1898   1905   1910
BIT2  = 000004           620#   1140   1295   1299   1300   1304   1305   1308   1490   1724   1729   1816   2203
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BIT3  = 000010           619#   1318   1322   1323   1327   1328   1331   1501   1505   1506   1510   1511   1514
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BIT4  = 000020           618#   1343   1347   1348   1352   1353   1356   1524   1528   1529   1533   1534   1537
                        3191   3196   3197
BIT5  = 000040           617#   1550   2691
BIT6  = 000100           616#   1367   1371   1372   1376   1377   1380   1563   1567   1568   1572   1573   1576
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                        2587   2593   2608   2609   2612   2656   2658
BIT7  = 000200           615#   1586   1925   1928
BIT8  = 000400           614#   1405   1409   1410   1414   1415   1418   1598   1602   1603   1607   1608   1611
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BIT9  = 001000           613#    812    835   1621   1625   1626   1630   1631   1634   3210
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BMOVE   003362          1051    1099#
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CHAINN  001756           693     825#
CHALT = 104005           638#
CHGD1   001562           793#
CHNA    001774           826     829#
CHNAA   002012           830     833#
CHNAB   001766           827#    832
CHNB    002014           815     835#
CHR1    001236           707#
CHR2    001240           708#
CHR3    001242           709#
CMPT    014334          2085   2174   2333   2381   3084#
CMPTA   014414          3085   3087   3089   3091   3093   3096#
CMPTB   014420          3095   3097#
CNVCTR  003504          1112*  1115*  1127#
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CRBUFA  001232           705#   743    750   1145*  1146*  2684*  2686*  2700   3048*  3049*  3148*  3160*  3170
                        3171*
CTRA    001246           711#  1141*  1152*  2068*  2074*  2112*  2116*  2120   2156*  2162*  2308*  2316*  2363*
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CTRB    001250           712#  2069*  2077*  2113*  2119*  2120   2157*  2166*  2309*  2322*  2364*  2373*  3084
                        3090   3092
CTRC    001252           713#  2070*  2081*  2158*  2170*  2310*  2328*  2365*  2377*  3086   3090   3094
CTRD    001254           714#  2071*  2084*  2159*  2173*  2311*  2332*  2366*  2380*  3088   3092   3094
CURTST  001144           673#   814    820    846*
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DATCHK= 104004           637#   1151    3054    3175
DATTST  003532          1137#   2717    2727    2737    2747    2757    2767    2777    2787    2797    2807    2817    2827
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DAT1    013250          2724    2727#
DAT10   013412          2794    2797#
DAT11   013430          2804    2807#
DAT12   013446          2814    2817#
DAT13   013464          2824    2827#
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DAT22   013626          2894    2897#
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DAT34   014042          2994    2997#
DAT35   014060          3004    3007#
DAT36   014076          3014    3017#
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DAT5    013340          2764    2767#
DAT6    013356          2774    2777#
DAT7    013374          2784    2787#
DCACHE  002144           795     868#    923     1161
DECVAL  003524          1109    1135#
DELAY = 104016           647#   1008    1903    1999    2017    2034    2052    2093    2096    2129    2132    2138    2182
                        2185    2205    2249    2271    2290    2341    2345    2389    2395    2432    2632    2638    3080
                        3112    3129
DEND    017101          3427#
DIGIT   003506          1118*   1121*   1124*   1125    1128#
DLCNT   002730           988*    990    1001#
DLY     002664           697     988#
DLYA    002706           993#    998
DLYB    002712           994#    995
DLYC    002724           991     999#
DTCHK   001344           687     743#
DTCHKA  001404           744     755#
EHALT = 104010           641#    786
EHLT    001332           691     737#
EHLTA   001342           738     740#
EMTA    002124           854#
EMTINT  002112           482     851#
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EMO     015260            783    3255#
ERCLGT  015772           2384    3318#
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ERDAT   016371            754    3364#
ERR     001406            686     758#
ERRA    001456            761     766#
ERRB    001542            758*    759*    762*    763*    764*    784#
ERRC    001546            767     786#
ERRD    001556            768*    769*    771     789#
ERRE    001560            760*    765*    787     790#
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                         1412    1417    1432    1446    1451    1456    1468    1473    1478    1492    1503    1508    1513
                         1526    1531    1536    1552    1565    1570    1575    1588    1600    1605    1610    1623    1628
                         1633    1646    1651    1656    1669    1681    1694    1705    1726    1731    1747    1756    1761
                         1771    1791    1795    1801    1823    1828    1846    1850    1857    1872    1878    1883    1900
                         1907    1912    1986    2003    2021    2038    2056    2209    2214    2231    2253    2275    2294
                         2416    2420    2426    2451    2477    2495    2517    2526    2545    2570    2589    2611    2620
                         2637    2660    2698    3074
ERROR1= 104015             646#    753    1937    1972    2087    2122    2176    2335    2383    2703
ERR1    001430             696     762#
ERXTIM  015730            2336    3312#
ESTPCD  015606            2123    3298#
ETCLGT  015657            2177    3305#
ETXTIM  015544            2088    3292#
FORWD   002042             811     841#
FORWDA  002066             846#    850
FORWDB  002074             848#
GETRDY  001646             806#    824     836     840    1183
GRCNT   002756            1012#   1014
GTBIN   003164            1063#
GTBINP  003232            1072#   1144    2678    3047    3159
GTRDYA  001674             811#    822
GTRDYB  001700             812#
GTRDYC  001716             813     816#
GTRDYD  001740             819     821#
GTRDYX  001654             807#    838
ICIR    001152             676#    831*    844*    849*
INBIN   003126            1050#   2674    3043    3158
INCRTN  001302             725#    823
KSTART  001142             672#    806    1177*
LDLINE  017010            1021    3416#
LINSEL  003002            1020#   1181    3105    3120    3143    3156
MACHER  000004             472#    797*    807*   1193*   1206*   1221*   1235*
MANUAL= 100000             606#
MOUTIN  014656            3149    3161    3164#
NOP   = 000240             604#
NXTST   001150             675#    806*    821     837     841     843*
OACNV   003300             745     749     770     774     778    1042    1082#   1929    1933    1964    1968    2699    3185
OACNVA  003312            1086#   1095
OACNVX  003360            1082*   1086    1090*   1091*   1092*   1093*   1097#
OPEN  = 000000             605#    659     671     672     673     674     675     676     677     688     703     704     705
                           706     707     708     709     710     711     712     713     714     715     716     717     718
                           719     784     789     790     888     889     902     903     908     915     965     974    1001
                          1009    1017    1018    1056    1057    1058    1059    1060    1061    1097    1127    1128    1129
```

```
                        2102    2144    2191    2351    2401    3113    3130
OVRLAY  002632           977#   2444    2537
OVRLYA  002642           979#    984
OVRLYB  002662           982     985#
PARMTS  016727          3190    3406#
PFAIL   003644           803    1157#   1166
PIND    003156          1059#   1074*
POPSP = 005726           623#    996     999
POPSP2= 022626           624#    833    1196    1209    1224    1238    2453    2476    2497    2525    2547    2569    2592
                        2619    2662
PRGEND  001312           729#    839
PRGNUM  001140           671#    775     801*    1164
PRGTAB  001156           678#    805
PRG0    003726           678    1177#
PRG0A   003752          1170    1183#
PRG1    014422           679    3103#
PRG1A   014444          1171    3110#   3114
PRG1B   014462          3110*   3113#
PRG2    014466           680    3118#
PRG2A   014510          1172    3125#   3137
PRG2B   014540          3127*   3130#
PRG3    014562           681    3141#
PRG3A   014604          1173    3148#   3150
PRG4    014620           682    3154#
PRG4A   014640          1174    3159#   3162
PRTY0 = 000000           632#
PRTY1 = 000040           631#
PRTY2 = 000100           630#
PRTY3 = 000140           629#
PRTY4 = 000200           628#    668     670
PRTY5 = 000240           627#    660     662
PRTY6 = 000300           626#
PRTY7 = 000340           483     625#    804    1366    1562    1922    1949
PSW   = 177776           602#    796*    808*    992*   1366*   1562*   1922*   1949*   2448*   2468*   2491*   2492*   2514*
                        2542*   2564*   2585*   2586*   2657*
PT0     003152          1057#   1063    1069*
PTOP    003160          1060#   1072    1078*
PT1     003154          1058#   1063*   1064*   1067*   1068*   1069    1070
PT1P    003162          1061#   1072*   1073*   1076*   1077*   1078    1079
PWRUP   003654          1157    1160#
POTIT   015311          1179    3262#
P1TIT   016043          3104    3325#
P2TIT   016103          3119    3331#
P3TIT   016604          3142    3391#
P4TIT   016654          3155    3398#
RCMSK   002776          1013    1017#
RCNT    001226           703#
RESTAR  003670          1164#
RIND    003150          1050*   1052    1053    1056#   1065*
RNCNT   003000          1015*   1018#
RNGEN   002404           927#   1004    1012
RP1     002452           927     931*    938     940#
RP2     002454           930     934     937*    941#
RSTART  003714          1168    1170#
RSTPC   002276           891*    900     902#
RSTPSW  002300           892*    899     903#
```

```
RSTREG= 104014   645#  1106
RSTRG   002242   695    891#
RTNNO   001146   674#   779   798*   818   842*
RXBUF   001102   656#  1150  1207  2228  2254  2276  2295  2343  2391  2428  2640  2684  3053
                3072  3131  3174
RXBUFT  001262   717#
RXCSR   001100   655#  1027  1139* 1148  1194  1272* 1277* 1282* 1443* 1444  1449  1453* 1454
                1466  1470* 1471  1475* 1476  1479* 1490  1501  1505* 1506  1510* 1511  1517*
                1524  1528* 1529  1533* 1534  1537* 1550  1563  1567* 1568  1572* 1573  1576*
                1586  1598  1602* 1603  1607* 1608  1611* 1621  1625* 1626  1630* 1631  1634*
                1644  1648* 1649  1653* 1654  1657* 1667  1679  1692  1703  1723* 1724  1728*
                1729  1743* 1744  1745  1749* 1753  1758  1764* 1768  1785* 1786* 1788  1793
                1797* 1798  1815* 1820* 1825* 1844  1848  1855  1870  1876  1881  1897* 1902*
                1909* 1950* 1951* 1960  1974* 2160* 2163* 2164* 2167* 2168* 2171* 2207  2212
                2226  2229  2246* 2247* 2251  2268* 2269* 2273  2288* 2292  2314* 2319* 2320*
                2325* 2326* 2330* 2348  2367* 2370* 2371* 2374* 2375* 2378* 2398  2413  2423
                2541* 2543* 2563* 2565* 2567* 2584* 2587* 2593* 2608* 2609* 2612* 2634  2635
                2656* 2658* 2682  2691  3042* 3051  3068* 3070  3172  3197* 3201* 3206* 3210*
RXCSRT  001260   716#  1744* 1753* 1754  1768* 1769  1788* 1789  1798* 1799  1960* 1961  1969
                2413* 2414  2418  2634*
RXLVL   001112   660#   909  2564  2585
RXVTR   001110   659#   907  1036* 2614*
SAVREG= 104013   644#  1099
SAVRG   002202   694    878#
SCOPE = 104012   643#  1155  1195  1208  1223  1237  1264  1286  1310  1333  1358  1382  1397
                1420  1433  1457  1481  1493  1516  1539  1553  1578  1589  1613  1636  1659
                1670  1682  1695  1706  1733  1774  1803  1830  1860  1885  1914  1939  1975
                1988  2005  2023  2040  2058  2089  2125  2178  2215  2232  2255  2277  2296
                2337  2385  2429  2452  2475  2499  2519  2548  2568  2594  2613  2641  2663
                2707  3057  3076
SCOPTR  001154   677#   827   845*  848*
SELCAD  016275  3108  3123  3353#
SELCAR  016750  3146  3410#
SELINE  017061  1044  3424#
SELPAR  016140  3182  3336#
SETPAR  014740  3106  3121  3144  3157  3181#
SETSR   001272   721#  1182
SPBOT = 001076   603#   794   809  1162
SR    = 177570   600#   731   737   766   799   812   816   825   829   835  1023  3110  3111
                3127  3128  3148  3164  3184
SRESET= 104011   642#   810  1263  1309  1332  1357  1381  1419  1448  1480  1515  1538  1577
                1612  1635  1658  1732  1773  1802  1829  1859  1884  1913  1924  1959  1987
                2211  3075
SRSETT  002362   692    919#  921*
SRT     001266   719#  1137* 3184* 3186  3191  3194  3198  3203  3207  3212
STAL    002732   685   1004#
STALA   002752  1007* 1009#
STALB   002754  1006  1010#
STALL = 104002   635#  3166
START   001562   653    794#
STLMSK  001270   720#  1005
STLSPV  002332   690    912#
STLSRV  002302   689    905#
STPARA  015140  3204  3212#  3213  3215
STPARB  014772  1138  1167  3125  3191#
STPPA   002350   912*  915#
```

```
STPRA   002320            905*   908#
STRXD   014314           2540   2562   2583   2605   2630   2654   2655   3078#
STRXV = 104006            639#  2538   2560   2581   2606   2652
STTXV = 104007            640#  2445   2466   2488   2511
SUBTEN  003444           1114   1118#
SUBTNA  003450           1119#  1122
SUBTNB  003464           1120   1123#
SVRPC   002236            878*   886    888#
SVRPSW  002240            879*   885    889#
TEMP    001264            718#  1025*  1039*  1040*  1041*  1043   1928*  1930   1963*  1965
TENPWR  003510           1113*  1119   1123   1129#
TKB     001122            664#
TKLVL   001132            668#
TKS     001120            663#
TKVTR   001130            667#
TPB     001126            666#   956*
TPLVL   001136            670#
TPS     001124            665#   957
TPVTR   001134            669#
TX    = 000000           1184#  1218#
TXBUF   001106            658#  1147*  1236   1953*  1956*  1983*  1998*  2016*  2073*  2051*  2095*  2131*  2137*
                         2184*  2204*  2225*  2248*  2270*  2289*  2344*  2393*  2431*  2631*  2681*  3050*  3069*
                         3079*  3111*  3128*  3170*
TXCSR   001104            657#  1140*  1142   1222   1249   1253*  1254   1258*  1259   1262*  1273   1278   1283
                         1295   1299*  1300   1304*  1305   1308*  1318   1322*  1323   1327*  1328   1331*  1343
                         1347*  1348   1352*  1353   1356*  1367   1371*  1372   1376*  1377   1380*  1394   1405
                         1409*  1410   1414*  1415   1418*  1430   1816   1821   1826   1841*  1842*  1843*  1852*
                         1853*  1869*  1874*  1875*  1880*  1898   1905   1910   1923*  1925   1927   1952*  1954
                         1957   1984   2001   2015*  2019   2032*  2036   2050*  2054   2072*  2075*  2078*  2079*
                         2082*  2091   2099   2114*  2117*  2127   2135   2141   2180   2188   2203*  2224*  2244*
                         2245*  2266*  2267*  2287*  2312*  2313*  2317*  2318*  2323*  2324*  2329*  2339   2387
                         2392*  2430*  2447*  2449*  2469*  2470*  2474*  2490*  2493*  2498*  2513*  2515*  2518*
                         2675*  2679   3041*  3045   3067*  3078*  3126*  3167   3169*  3193*  3196*  3200*
TXCSRT  001256            715#  1927*  1934
TXLVL   001116            662#   916   2468   2491
TXVTR   001114            661#   914   1038*  2520*
TYP     002456            683    943#
TYPA    002466            946#   955    964
TYPC    002504            948    950#
TYPD    002532            954    956#   961    963
TYPDAT  002576            946*   947    950    952    956    960*   962*   965#
TYPE  = 104000            633#   721    725    729    973   1020   1046   1178   3103   3107   3118   3122   3141
                         3145   3154   3181   3189
TYPES = 104001            634#   782
TYPF    002550            951    960#
TYPG    002562            953    962#
TYPS    002600            684    967#   975
TYPSA   002624            971    973#
TYPSB   002626            969*   970    974#
VECTAB  015160           1035   3219#
X     = 000137           2708#  2710   2715#  2720   2725#  2730   2735#  2740   2745#  2750   2755#  2760   2765#
                         2770   2775#  2780   2785#  2790   2795#  2800   2805#  2810   2815#  2820   2825#  2830
                         2835#  2840   2845#  2850   2855#  2860   2865#  2870   2875#  2880   2885#  2890   2895#
                         2900   2905#  2910   2915#  2920   2925#  2930   2935#  2940   2945#  2950   2955#  2960
                         2965#  2970   2975#  2980   2985#  2990   2995#  3000   3005#  3010   3015#  3020   3025#
Y     = 000040           2709#  2710   2719#  2720   2729#  2730   2739#  2740   2749#  2750   2759#  2760   2769#
```

```
                    2770    2779#   2780    2789#   2790    2799#   2800    2809#   2810    2819#   2820    2829#   2830
                    2839#   2840    2849#   2850    2859#   2860    2869#   2870    2879#   2880    2889#   2890    2899#
                    2900    2909#   2910    2919#   2920    2929#   2930    2939#   2940    2949#   2950    2959#   2960
                    2969#   2970    2979#   2980    2989#   2990    2999#   3000    3009#   3010    3019#   3020    3029#
.     = 017101       469#    470     472     474     476     478     480     484     486     488     490     492     494
                     496     498     500     502     504     506     508     510     512     514     516     518     520
                     522     524     526     528     530     532     534     536     538     540     542     544     546
                     548     550     552     554     556     558     560     562     564     566     568     570     572
                     574     576     578     580     582     584     586     588     590     592     594     596     652#
                     654#    732     958     1032    1066    1075    1143    1149    1955    1958    2092    2128    2181
                    2340    2388    2680    2683    2687    3046    3052    3071    3073    3165    3168    3173    3192
                    3195    3199    3208
```

```
COMMEN       1#
ENDCOM       1#
ESCAPE       1#
GETPRI       1#
GETSWR       1#
LINE       791#  1458  1463  1541  1546  1714  1719  1734  1739  1775  1781  1806  1811  1831  1836
          1861   1866  1888  1893  2667  2672  3036  3058  3063
MULT         1#
NEWTST       1#
POP          1#
PUSH         1#
REPORT       1#
SETPRI       1#
SETUP        1#
SKIP         1#
SLASH        1#
STARS        1#
SWRSU        1#
TEST       791#  2710  2720  2730  2740  2750  2760  2770  2780  2790  2800  2810  2820  2830  2840
          2850   2860  2870  2880  2890  2900  2910  2920  2930  2940  2950  2960  2970  2980  2990
          3000   3010  3020
TSTA       791#  2710  2720  2730  2740  2750  2760  2770  2780  2790  2800  2810  2820  2830  2840
          2850   2860  2870  2880  2890  2900  2910  2920  2930  2940  2950  2960  2970  2980  2990
          3000   3010  3020
TSTAA      791#  2710  2720  2730  2740  2750  2760  2770  2780  2790  2800  2810  2820  2830  2840
          2850   2860  2870  2880  2890  2900  2910  2920  2930  2940  2950  2960  2970  2980  2990
          3000   3010  3020
TYPBIN       1#
TYPDEC       1#
TYPNAM       1#
TYPNUM       1#
TYPOCS       1#
TYPOCT       1#
TYPTXT       1#
$$ESCA       1#
$$NEWT       1#
$$SKIP       1#
.EQUAT       1#
.HEADE       1#
.KT11        1#
.SETUP       1#
.SWRHI       1#
.$ACT1       1#
.$APTB       1#
.$APTH       1#
.$APTY       1#
.$ASTA       1#
.$CATC       1#
.$CMTA       1#
.$DB2D       1#
.$DB2O       1#
.$DIV        1#
.$EOP        1#
.$ERRO       1#
.$ERRT       1#
.$MULT       1#
```

```
.$POWE      1#
.$RAND      1#
.$RDDE      1#
.$RDOC      1#
.$READ      1#
.$R2AZ      1#
.$SAVE      1#
.$SB2D      1#
.$SB2O      1#
.$SCOP      1#
.$SIZE      1#
.$SUPR      1#
.$TRAP      1#
.$TYPB      1#
.$TYPD      1#
.$TYPE      1#
.$TYPO      1#
.$40CA      1#
.1170       1#


. ABS.  017101     000


 ERRORS DETECTED:  0

 CZDCAD.BIN,CZDCAD.LST/CRF/SOL/NL:TOC=CZDCAD.SML,CZDCAD.P11
 RUN-TIME: 31 43 4 SECONDS
 RUN-TIME RATIO: 646/80=8.0
 CORE USED:  32K  (63 PAGES)
```