DV11

ASYNCHRONOUS

MD-11-DZDVF-A

EP-DZDVF-A-DL-A

OCT 1976

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digital

Made in U.S.A.

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IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DZDVF-A-D
PRODUCT NAME:	ASYNCHRONOUS LINE CARD TESTS
DATE RELEASED:	21-APRIL-1976
MAINTAINER:	DIAGNOSTICS
AUTHOR:	JOHN EGOLF

1. ABSTRACT

THE FUNCTION OF THE DV11 DIAGNOSTICS ARE TO VERIFY THAT THE OPTION OPERATES ACCORDING TO SPECIFICATIONS. THE DIAGNOSTICS VERFIY THAT THERE ARE NO MALFUNCTIONS AND THE ALL OPERATIONS OF THE DV11 ARE CORRECT IN ITS ENVIROMENT.
PARAMETERS MAY BE SET TO ALERT DIAGNOSTICS AS TO THE DV11 CONFIGURATION BY USING THE "TRIAL" PROGRAM (DZDVE SA:210). ALL QUESTIONS SHOULD BE ANSWERED AND THEN EACH DIAGNOSTIC WILL "OVERLAY" THESE PARAMETERS WHICH ARE STORED IN THE "STATUS TABLE" (SEE SECTION 8.4A). THE ALTERNATIVE TO "TRIAL" PROGRAM IS "AUTO SIZING" (SEE SECTION 8.5).

DZDVF WILL TEST ONLY ASYNCHRONOUS LINE CARDS. ANY SYNCHRONOUS LINE CARDS INSTALLED IN THE DV11 WILL BE SKIPPED AND UNTESTED. DZDVF ATTEMPTS TO TEST ALL PROGRAMMABLE LOGIC ASSOCIATED WITH THE ASYNC LINE CARD. IN ADDITION TO ALL THE TESTS THERE IS A SPECIAL TEST (TEST 41) TO BE USED TO BRING UP SPECIFIC CONDITIONS ACCORDING TO THE USERS PREFERANCE. IN ORDER TO USE TEST 41; LOAD ADDRESS 200 AND START WITH SW1=1 (TEST NO:) TYPE "41" AND ENTER THE ASYNC LINE CARD PARAMETERS FOR EACH OF THE TWO LINES TIED TOGETHER AT THE DIST PNL BY A BC03-P CABLE. ALL DV11 PRIMARY REGISTERS AND SECONDARY REGISTERS FOR THE 2 SELECTED LINES WILL BE PRINTED OUT AND THE EXECUTION PHASE WILL BE REPEATED. TYPE OUT MAY BE SUPPRESSED BY SW12=1.

CURRENTLY THERE ARE SIX OFF LINE DIAGNOSTICS THAT ARE TO BE RUN IN SEQUENCE TO INSURE THAT IF AN ERROR SHOULD OCCUR IT WILL BE DETECTED AT AN EARLY STAGE AND INSURING THAT DIAGNOSIS OF ERROR WILL BE IMMEDIATE TO PROBLEM
NOTE: ADDITIONAL DIAGNOSTICS MAY BE ADDED IN THE FUTURE.

THE SIX DIAGNOSTICS ARE:
1. DZDVA [REV] BASIS R/W TEST AND ROM INSTRUCTION EXERCISER.
2. DZDVB [REV] STATIC LINE CARD TESTS.
3. DZDVC [REV] 'FREE RUNNING' ROM TESTS PART 1.
4. DZDVD [REV] 'FREE RUNNING' ROM TESTS PART 2.
5. DZDVE [REV] MODEM CONTROL AND CABLE TESTS PLUS MANUAL PARAMETER INPUT.
6. DZDVF [REV] ASYNCHRONOUS LINE CARD TESTS.

2. REQUIREMENTS

2.1 EQUIPMENT

ANY PDP11 FAMILY CPU (WITH MINIMUM 8K MEMORY)
ASR 33 (OR EQUILIVALENT)
DV11-AA MUX CNTRL UNIT
AT LEAST ONE OF THE FOLLOWING
DV11-BA 8 LINE SYNC MODULES
DV11-BB 8 LINE ASYNC MODULES
DV11-BC 4 SYNC LINES, 4 ASYNC LINES

2.2 STORAGE

PROGRAM WILL USE ALL 8K OF MEMORY EXCEPT WHERE ABL AND BOOTSTRAP LOADER RESIDE. LOCATION 1500 THRU 1736 ARE ESPECIALLY TO BE NOTED AND TO BE UNTOUCHED BY OPERATOR AFTER DV11 TRIAL PROGRAM HAS BEEN EXECUTED; OR AFTER THE 'AUTO SIZING' HAS BEEN DONE.

3. LOADING PROCEEDURE

3.1 METHOD

ALL PROGRAMS ARE IN ABSOLUTE FORMAT AND ARE LOADED USING THE ABSOLUTE LOADER. NOTE: IF THE DIAGNOSTICS ARE ON A MEDIA SUCH AS DISK ,MAGTAPE,DECTAPE, OR CASSETTE; FOLLOW INSTRUCTIONS FOR THE MONITOR WHICH HAS BEEN PROVIDED ON THAT SPECIFIC MEDIA.

ABSOLUTE LOADER STARTING ADDRESS *500

MEMORY	* SIZE
4K	17
8K	37
12K	57
16K	77
20K	117
24K	137
28K	157

3.1.1 PLACE ADDRESS OF ABS LOADER INTO SWITCH REGISTER.
(ALSO PLACE 'HALT' SW UP)

3.1.2 DEPRESS 'LOAD ADDRESS' KEY ON CONSOLE AND RELEASE.

3.1.3 DEPRESS 'START KEY' ON CONSOLE AND RELEASE (PROGRAM SHOULD NOW BE LOADING INTO CPU)

4. STARTING PROCEEDURE

A. SET SWITCH REGISTER TO 000200
B. DEPRESS 'LOAD ADDRESS' KEY AND RELEASE
C. SET SWR TO ZERO FOR 'AUTO SIZING' OR LEAVE
    LEAVE SWR BIT 7=1 TO USE EXISTING PARAMETERS SET UP BY DV11 TRIAL PROGRAM OR A PREVIOUSLY RUN DV11 DIAGNOSTIC THAT USED THE 'AUTO SIZING'.(SECTION 7.2 AND 8.4.8.5 MAY BE HELPFUL)
D. DEPRESS 'START KEY' AND RELEASE THE PROGRAM WILL TYPE MAINDEC NAME AND PROGRAM NAME (IF THIS WAS THE FIRST START UP OF THE PROGRAM) AND ALSO THE FOLLOWING:

```
        'MAP OF DV11 STATUS'
        1500    175000
        1502    000300
        1504    000226
        1506    000062
        1510    000226
        1512    000062
        1514    000226
        1516    000062
        1520    000226
        1522    000062
```

THE ABOVE IS ONLY AN EXAMPLE! THIS WOULD INDICATE THE STATUS TABLE STARTING AT ADD. 1500 IN THE PROGRAM. THE STATUS TABLE MUST BE VERIFIED BY THE USER IF AUTO SIZING IS DONE. FOR INFORMATION OF STATUS TABLE SEE SECTION 8.4 FOR HELP.

THE PROGRAM WILL TYPE 'R' AND PROCEED TO RUN THE DIAGNOSTIC

4.1 CONTROL SWITCH SETTINGS

NOTE: IF THERE IS NO REAL SWR (177570): SWR MAY BE MODIFIED AT LOC:176 OR BY HITTING CONTROL "G" (↑G) ON CONSOLE TERMINAL.

```
SW 15   SET:  HALT ON ERROR
SW 14   SET:  LOOP ON CURRENT TEST
SW 13   SET:  INHIBIT ERROR PRINT OUT
SW 12   SET:  INHIBIT **ALL** TYPE OUT/BELL ON ERROR.
SW 11   SET:  INHIBIT ITERATIONS.  (QUICK PASS)
SW 10   SET:  ESCAPE TO NEXT TEST
SW 09   SET:  LOOP WITH CURRENT DATA
SW 08   SET:  CATCH ERROR AND LOOP ON IT
SW 07   SET:  USE PREVIOUS STATUS TABLE.  CLR-DO AUTO SIZE.
SW 06   SET:  RESERVED
SW 05   SET:  RESERVED
SW 04   SET:  RESERVED
SW 03   SET:  RESERVED
SW 02   SET:  LOCK ON SELECTED TEST
SW 01   SET:  RESTART PROGRAM AT SELECTED TEST
SW 00   SET:  RESELECT DV11'S DESIRED ACTIVE.
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                                4.1.2   SWITCH REGISTER RESTRICTIONS

                                        SW 00   RESELECT DV11'S DESIRED ACTIVE.  PLEASE NOTE THAT A  MESSAGE  IS
                                                TYPED  OUT  FOR  SETTING  THE  SWITCH  REGISTER  EQUAL TO DV11'S
                                                ACTIVE.   THIS  MEANS  IF  THE  SYSTEM  HAS  FOUR  DV11S;   BITS
                                                00,01,02,03  WILL  BE  SET  IN  LOC  'DVACTV'  FROM  THE  SWITCH
                                                REGISTER.     USING     THIS     SWITCH(SW00)     ALTERS     THAT
                                                LOCATION;THEREFORE  IF FOUR DV11S ARE IN THE SYSTEM ***DO NOT***
                                                SET SWITCHS GREATER THAN SW 03 IN THE UP POSITION.   THIS  WOULD
                                                BE A FATAL ERROR.  DO NOT SELECT MORE ACTIVE DV11S THAN HAS BEEN
                                                GIVEN INFORMATION ABOUT IN TRIAL PROGRAM.
                                METHOD: A:      LOAD ADDRESS 200
                                        B:      START WITH SW 00=1
                                        C:      PROGRAM WILL TYPE MESSAGE
                                        D:      SET THE BINARY NUMBER OF  DV11S  DESIRED  ACTIVE  EXAMPLE:   1=1
                                                DV11;   3=2  DV11;   7=3  DV11;  17=4 DV11 37=5 DV11 ETC.  PRESS
                                                CONTINUE.
                                        E:      NUMBER (IF VALID) WILL BE IN DATA LIGHTS (EXCLUDING 11/05)
                                        F:      SET WITH ANY OTHER SWITCH SETTINGS DESIRED.  PRESS CONTINUE.


                                        SW 01   RESTART PROGRAM AT SELECTED TEST        IT IS STRONGLY SUGGESTED
                                                THAT  AT LEAST ONE PASS HASS BEEN MADE BEFORE TRYING TO SELECT A
                                                TEST THAT IS NOT IN THE ORDER OF SEQUENCE THE  REASON  BEING  IS
                                                THAT THE PROGRAM HAS TO CLEAR AREAS AND SET UP PARAMETERS.  ALSO
                                                WHEN A TEST IS SELECTED ALWAYS START AT THE  VERY  BEGINNING  OF
                                                THAT TEST.

                                        SW 09   LOOP ON CURRENT DATA:   THIS  SWITCH  WILL  ONLY  WORK  IF  CALL
                                                'SCOP1'  IS IN THAT TEST.  THE REASON BEING THAT MOST TESTS DEAL
                                                WITH BLOCKS OF DIFFERENT DATA TO BE SENT OR RECEIVED ALL AT ONCE
                                                THUS IN BLOCK DATA;  ONE PATTERN CANN'T BE SINGLED OUT.
```

4.1.3 SWITCH REGISTER PRIORITYS

ERROR SWITCHES

1. SW 12 DELETE PRINT OUT/BELL ON ERROR.
2. SW 13 DELETE ERROR PRINTOUT.
3. SW 15 HALT ON THE ERROR.
4. SW 08 GOTO BEGINNING OF THE TEST(ON ERROR).
5. SW 10 GOTO NEXT TEST(ON ERROR).

SCOPE SWITCHES

1. SW 09 (IF ENABLED BY 'SCOP1') ON AN ERROR; IF AN '*' IS PRINTED IN FRONT OF THE TEST NO. (EX. *TEST NO. 10) SW09 IS INCORPORATED IN THAT TEST AND THEREFORE SW09 IS *USUALLY* THE BEST SWITCH FOR THE SCOPE LOOP (SW14=0, SW10=0, SW09=1, SW08=0). IF SW09 IS NOT ENABELED; AND THERE IS A *HARD* ERROR (CONSTANT); SW08 IS BEST.
   (SW14=1,0, SW10=0, SW09=0, SW08=1). FOR INTERMITTEMT ERRORS; SW14=1 WILL LOOP ON TEST REGUARDLESS OF ERROR OR NOT ERROR.
   (SW14=1, SW10=0, SW09=0, SW08=1,0)
2. SW 14
3. SW 11

4.2 STARTING ADDRESS

STARTING ADDRESS IS AT 000200 THERE ARE NO OTHER STARTING ADDRESSES FOR THE DV11 DIAGNOSTICS PREVIOUSLY MENTIONED EXCEPT FOR DZDVE WHICH IS: 000200 FOR THE MODEM CONTROL AND CABLE TESTS AND 000210 FOR THE MANUAL PARAMETER INPUT PROGRAM.

NOTE: IF ADDRESS 000042 IS NON-ZERO THE PROGRAM ASSUMES IT IS UNDER ACT11 OR XXDP CONTROL AND WILL ACT ACCORDINGLY AFTER *ALL* AVAILABLE DV11'S ARE TESTED THE PROGRAM WILL RETURN TO 'XXDP' OR 'ACT-11'.

5. OPERATING PROCEDURE

WHEN PROGRAM IS INITIALLY STARTED MESSAGES AS DESCRIBED IN SECTION FOUR WILL BE PRINTED.

AND PROGRAM WILL BEGIN RUNNING THE DIAGNOSTIC

5.2 PROGRAM AND/OR OPERATOR ACTION

THE TYPICAL APPROACH SHOULD BE

1. HALT ON ERROR (VIA SW 15=1) WHEN EVER AN ERROR OCCURS.
2. CLEAR SW 15.
3. SET SW 14: (LOOP ON THIS TEST)
4. SET SW 13: (INHIBIT ERROR PRINT OUT)

THE TEST NUMBER AND PC WILL BE TYPED OUT AND POSSIBILY AN ERROR MESSAGE (THIS DEPENDS ON THE TEST) TO GIVE THE OPERATOR AN IDEA AS TO THE SOURCE OF THE PROBLEM. IF IT IS NECESSARY TO KNOW MORE INFORMATION CONCERNING THE ERROR REPORT; LOOK IN THE LISTING FOR THAT TEST NUMBER WHICH WAS TYPED OUT AND THEN NOTE THE PC OF THE ERROR REPORT THIS WAY THE EXACT FUNCTIONING OF THE TEST CAN BE INTERPEDITED.

6. ERRORS

AS DESCRIBED PREVIOUSLY THERE WILL ALWAYS BE A TEST NUMBER AND PC TYPED OUT AT THE TIME OF AN ERROR (PROVIDING SW 13=0 AND SW 12=0). IN MOST CASES ADDITIONAL INFORMATION WILL BE SUPPLIED TO THE THE ERROR MESSAGE WHICH IS TO GIVE THE OPERATOR AN INDICATION OF THE ERROR.

6.2 ERROR RECOVERY

IF FOR SOME REASON THE DV11 SHOULD 'HANG THE BUS' (GAIN CONTROL OF BUS SO THAT CONSOLE MANUAL FUNCTIONS ARE INHIBITED) AN INIT OR POWER DOWN/UP IS NECESSARY FOR OPERATOR TO REGAIN CONTROL OF CPU. IF THIS SHOULD HAPPEN; LOOK IN LOCATION 'TSTNO' (ADDRESS 1224)FOR THE NUMBER OF THE TEST THAT WAS RUNNING AT THE TIME OF THE CATASTROPHIC ERROR. IN THIS WAY THE OPERATOR WILL HAVE AN IDEA AS TO WHAT THE DV11 WAS DOING AT THE TIME OF THE ERROR.

7. RESTRICTIONS

7.1 STARTING RESTRICTIONS

SEE SECTION 4. (PLEASE)
STATUS TABLE SHOULD BE VERIFIED REGUARDLESS OF HOW PROGRAM WAS STARTED. ALSO IT IS IMPORTANT TO USE THIS LISTING ALONG WITH THE INFORMATION PRINTED ON THE TTY TO COMPLETLY ISOLATE PROBLEMS.

7.2 OPERATING RESTRICTIONS

DV11 TRIAL PROGRAM MUST BE RUN PRIOR TO THE FIRST AND ONLY THE FIRST RUNNING OF ANY DV11 DIAGNOSTIC IF "AUTO SIZING" IS NOT USED.
NOTE: IF NO PROGRAM OTHER THAN A DV11 DIAGNOSTIC WAS LOADED AFTER DV11 TRIAL OR IF CORE MEMORY HAS NOT BEEN CHANGED;OR IF THERE IS NO DV11 CONFIGURATION CHANGES; THE DV11 TRIAL PROGRAM NEED NEVER BE RUN AGAIN. HOWEVER IF ANY OF THE ABOVE HAVE BEEN VIOLATED THE DV11 TRIAL PROGRAM MUST BE RUN AGAIN BEFORE RUNNING THE DIAGNOSTICS NOTE: AN ALTERNATIVE TO THE ABOVE IS ATTEMPTING THE 'AUTO SIZING' WHEN PROGRAM IS INITIALLY STARTED WITH SW07=0.

7.3 HARDWARE CONFIGURATION RESTRICTIONS (SYNC LINE CARDS ONLY)

1. HARDWARE MUST BE SET TO FULL DUPLEX
2. PARITY OFF.
3. ALL LINES OF A PARTICULAR LINE CARD MUST BE CONFIGURED THE SAME.

8. MISCELLANEOUS

8.1 EXECUTION TIME

ALL DV11 DEVICE DIAGNOSTICS WILL GIVE AN 'END PASS' MESSAGE (PROVIDING NO ERRORS AND SW12=0) WITHIN 4 MINS. THIS IS ASSUMING SW11=1 (DELETE ITERATIONS) IS SET TO GIVE THE FASTEST POSSIBLE EXECUTION. THE ACTUAL EXECUTION TIME DEPENDS GREATLY ON THE PDP11 CPU CONFIGURATION.

8.2 PASS COMPLETE

NOTE: *EVERY* TIME THE PROGRAM IS STARTED; THE TESTS WILL RUN AS IF SW11 (DELETE ITERATIONS) WAS UP (=1). THIS IS TO 'VERIFY NO *HARD* ERRORS' AS SOON AS POSSIBLE. THEREFORE THE FIRST PASS -EACH TIME PROGRAM IS STARTED- WILL BE A 'QUICK PASS' UNTILL ALL DV11'S IN SYSTEM ARE TESTED. WHEN THE DIAGNOSTIC HAS COMPLETED A PASS THE FOLLOWING IS AN EXAMPLE OF THE PRINT OUT TO BE EXPECTED.

END PASS DZDVF-A CSR: 175000 VEC: 300 PASSES: 000001 ERRORS: 000000

NOTE: THE NUMBERS FOR CSR AND VEC ARE NOT NECESSARILY THE VALUES FOR THE DEVICE. THEY ARE ONLY FOR THIS EXAMPLE.
NOTE: DZDVE (MODEM AND CABLE TEST) END PASS MESSAGE IS A LARGE "END" TYPED OUT ON TTY. PLEASE NOTE THAT EACH CHARACTER PRINTED IS ACTUALLY AND "END PASS" INDICATION. THIS WAS USED IN PLACE OF "BELL" BECAUSE IF SW12=1 AND AN ERROR OCCURED THE BELL MAY BE MISTAKEN FOR END PASS. THE PASS EXECUTION IS SO FAST THAT THE STANDARD END PASS WAS TOO LENGHTLY. THEREFORE EACH CHAR IS AN "END PASS AND THE ENTIRE "END" IS NOT REQUIRED FOR ACCEPTANCE.

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                                8.4     KEY LOCATIONS

                                        RETURN (1212)   CONTAINS THE ADDRESS  WHERE  PROGRAM  WILL  RETURN  WHEN
                                                        ITERATION  COUNT  IS  REACHED  OR  IF  LOOP  ON  TEST IS
                                                        ASSERTED.

                                        NEXT   (1214)   CONTAINS THE ADDRESS OF THE NEXT TEST TO BE PEFORMED.
                                        TSTNO  (1224)   CONTAINS THE NUMBER OF THE TEST NOW BEING PEFORMED.
                                        RUN    (1302)   THE BIT  IN  'RUN'  ALWAYS  POINTS  ONE  PAST  THE  DV11
                                                        CURRENTLY     BEING     TESTED.      EXAMPLE:      (RUN)
                                                        1302/0000000001000000 MEANS THAT DV11 NO.05 IS THE  DV11
                                                        NOW RUNNING.

                                        DVCR00-DVCR17
                                        DVST00-DVST17
                                        (1500)-(1736)
                                                        THESE LOCATIONS CONTAIN THE INFORMATION NEEDED  TO  TEST
                                                        UP  TO  8 (DECIMAL) DV11S SEQUENTIALY.  THEY CONTAIN THE
                                                        CSR,VECTOR AND STATUS CONCERNING  THE  CONFIGURATION  OF
                                                        EACH DV11.
                                        DVACTV (1276)   EACH  BIT  SET  IN  THIS  LOCATION  INDICATES  THAT  THE
                                                        ASSOCIATED  DV11  WILL  BE  TESTED  IN  TURN.   EXAMPLE:
                                                        (DVACTV)  1276/0000000000011111  MEANS  THAT  DV11   NO.
                                                        00,01,02,03,04   WILL   BE   TESTED.   EXAMPLE:   (DVACTV)
                                                        1276/0000000000010001 MEANS THAT DV11 NO.  00,04 WILL BE
                                                        TESTED.
                                        DVSCR  (1356)   CONTAINS THE RECEIVER CSR  OF  THE  CURRENT  DV11  UNDER
                                                        TEST.

                                        L00.03 (1412)
                                        L04.07 (1414)
                                        L08.11 (1416)
                                        L12.15 (1420)   CONTAINS THE STATUS OF THE CURRENT DV11 UNDER TEST.
                                                BIT 15  SET:    LINE CARD *NOT INSTALLED (AND WONT BE TESTED)
                                                BIT 14  SET:    RESERVED
                                                BIT 13  SET:    RESERVED
                                                BIT 12  SET:    ONE SYNC, =0:  TWO SYNCS.
                                                BIT 11  SET:    ASYNC LINE CARD, =0 SYNC LINE CARD
                                                BIT 10  SET:    RESERVED
                                                BIT 09   SET:   BITS PER CHAR.  (USED WITH BIT8)
                                                BIT 08  SET:    BITS PER CHAR.  (USED WITH BIT9)
                                                        BIT09 BIT08 BITS PER CHAR.
                                                          0     0      8
                                                          0     1      7
                                                          1     0      6
                                                          1     1      5
                                                BIT 07-00       SYNC "A" FOR SPECIFIED LINE  CARD.   BITS  07-00
                                                                MUST BE ALL ZEROS FOR TESTING ASYNC LINE CARDS.
```

8.4A MORE ON THAT 'STATUS TABLE' (1500-1736)

```
        'MAP OF DV11 STATUS'
1500    175000
1502    000300
1504    000226
1506    000062
1510    000226
1512    000062
1514    004000
1516    000000
1520    004000
1522    000000
```

THE ABOVE INFORMATION WILL BE REPEATED FOR EACH OF UP TO 8 DV11'S IN THE SYSTEM(THESE WILL FOLLOW UNDER THIS TABLE). EXPLANATION:

1500 175000 THIS IS THE SYSTEM CONTROL REGISTER FOR THE 1ST DV11 IN THE SYSTEM.

1502 000300 THIS IS VECTOR 'A' FOR THE FIRST DV11 IN THE SYSTEM.

1504 000226 THIS REPRESENTS 'SYNC A' AND THE SOFTWARE STATUS FOR THE 1ST LINE CARD IN THE 1ST DV11. THE BITS ARE AS FOLLOWS:

BIT 15 SET: LINE CARD *NOT INSTALLED (AND WONT BE TESTED)
BIT 14 SET: RESERVED
BIT 13 SET: RESERVED
BIT 12 SET: ONE SYNC, =0: TWO SYNCS.
BIT 11 SET: ASYNC LINE CARD, =0 SYNC LINE CARD.
BIT 10 SET: RESERVED
BIT 09 SET: BITS PER CHAR. (USED WITH BIT8)
BIT 08 SET: BITS PER CHAR. (USED WITH BIT9)

BIT09	BIT08	BITS PER CHAR.
0	0	8
0	1	7
1	0	6
1	1	5

BIT 07-00 SYNC 'A' FOR SPECIFIED LINE CARD.

1506 000062 THIS REPRESENTS 'SYNC B' FOR THE 1ST LINE CARD.

1510 000226 THIS IS 'SYNC A' AND LINE STATUS FOR THE 2ND LINE CARD. (FOR BITS DEFINATION SEE EXPLANATION FOR LINE CARD 1).

1512 000062 THIS IS 'SYNC B' FOR THE SECOND LINE CARD.

1514 000226 THIS IS 'SYNC A' AND LINE STATUS FOR THE 3RD LINE CARD. (FOR BITS DEFINATION SEE EXPLANATION FOR LINE CARD 1).

1516 000062 THIS IS 'SYNC B' FOR LINE CARD NO. 3.

1520 000226 THIS IS 'SYNC A' AND LINE STATUS FOR THE 4TH LINE CARD. (FOR BITS DEFINATION SEE EXPLANATION FOR LINE CARD 1).

1522 000062 THIS IS SYNC B FOR THE 4TH LINE CARD.

THE ABOVE IS REPEATED FOR EACH DV11 IN THE SYSTEM. THE TABLE IS FILLED BY AUTO SIZING OR BY THE MANUAL PARAMETER INPUT PROGRAM AS DESCRIBED PREVIOUSLY. ALSO IF DESIRED BY USER: THE LOCATIONS MAY BE ALTERED BY HAND (TOGGLED IN) TO SUIT THE SPECIFIC CONFIGURATION.

8.5 *** METHOD OF AUTO SIZING ***

8.5.1 FINDING THE CONTROL STATUS REGISTER.

THE PROGRAM WILL START AT ADDRESS 175000 AND START 'REFERENCEING' ADDRESS. IF A NON-EX MEMORY TRAP OCCURES; THE POINTER (HOLDING 175000) IS UPDATED BY 10 AND THE ABOVE IS REPEATED UNTILL ADDRESS 175400 IS REACHED. IF A 'SLAVE SYNC RESPONSE' WAS ISSUED BY THE DV11 (OR ANY OTHER DEVICE) (NO NXM TRAP)(AND IT(SEL0)WAS=0) ; POINTER PLUS 12 (SEL12) IS TESTED TO CONTAIN 177777 (MUST BE EXACTLY 177777); IF A TRAP IS ENCOUNTERED OR IF SEL12 DOES NOT CONTAIN 177777 THE ABOVE UPDATING IS PERFORMED. IF SEL12 WAS EQUAL TO 177777 THE POINTER IS STORED AWAY AND THE ROUTINE CONTINUES AS ABOVE:
NOTE: IF THE PROGRAM DOES NOT FIND YOUR DV11; SOMETHING IS WRONG AND AUTO SIZING SHOULD NOT BE DONE.

8.5.2 FINDING THE VECTOR

THE VECTOR AREA (ADDRESS 300-776) IS FILLED WITH THE INSTRUCTION IOT AND '.+2' (NEXT ADDRESS). BIT7 AND BIT6 (RX INTERUPT AND RX INTERUPT IE) ARE SET INTO DVSCR REGISTER; A DELAY IS MADE AND IF NO INTERUPT OCCURES (BECAUSE OF A BAD DV11) THE PROGRAM ASSUMES VECTOR ADDRESS 300 AND THE PROBLEM SHOULD BE FIXED IN THE DIAGNOSTIC. ONCE THE PROBLEM IS FIXED; THE PROGRAM SHOULD BE RE-SETUP AGAIN TO GET CORRECT VECTOR. IF AN INTERUPT OCCURED; THE ADDRESS TO WHICH THE DV11 INTERUPTED TO IS PICKED UP AND REPORTED AS THE VECTOR. NOTE: IF THE VECTOR REPORTED IS NOT THE VECTOR SET UP BY YOU; THERE IS A PROBLEM AND AUTO SIZING SHOULD NOT BE DONE.

8.5.3 PARAMETER ASSUMPTIONS.

SINCE TOO MUCH HARDWARE WOULD NEED TO BE TURNED ON TO SIZE THE REST OF THE PARAMETERS; THE PROGRAM MUST ASSUME THE REMAINING VARIATIONS. THE RESULT IF NOT TO YOUR SPECIFIC CONFIGURATION MAY BE ALTERED BY HANG (TOGGLE IN) IS DESIRED. IN THIS WAY 95% OF THE PARAMETER SETUP WAS DONE BY THE PROGRAM AND 5% BY YOU.
THEREFORE:

1) ALL LINE CARDS(4) ARE ASSUMED TO BE INSTALLED.
   SET BIT15 OF STATUS MAP OF ANY (APPROIATE) LINE CARDS MISSING
2) TWO SYNCS.
   SET BIT12 IF YOU HAVE A 4 LINE GROUP SET FOR 1 SYNC.
3) EIGHT BITS PER CHAR.
   ADJUST BITS 9 AND BIT 8 IN STATUS MAP FOR YOUR CORRECT CONFIG.
4) SYNCHRONOUS LINE CARDS INSTALLED
   SET BIT11 OF STATUS MAP FOR ASYNC LINE CARD AND ZERO SYNC CARDS.
5) SYNC "A"=226 AND SYNC "B"=062

IN ALL ADJUSTMENTS PLEASE REFER TO SECTION 8.4A FOR GREATER DETAIL.
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                                ;*MAINDEC-11-DZDVF-A/<377>/ASYNCHRONOUS LINE CARD TESTS.
                                ;*COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
                                ;*-------------------------------------------------------------------

                                        ;STARTING PROCEDURE
                                        ;LOAD PROGRAM
                                        ;LOAD ADDRESS 000200
                                        ;PRESS START
                                        ;PROGRAM WILL TYPE "MAINDEC-11-DZDVF-A/<377>/ASYNCHRONOUS LINE CARD TESTS."
                                        ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED
                                        ;AT THE END OF A PASS, PROGRAM WILL TYPE PASS COMPLETE MESSAGE
                                        ;AND THEN RESUME TESTING


                                ;SWITCH REGISTER OPTIONS
                                ;----------------------

  100000                        SW15=100000             ;=1,HALT ON ERROR
  040000                        SW14=40000              ;=1,LOOP ON CURRENT TEST
  020000                        SW13=20000              ;=1,INHIBIT ERROR TYPEOUT
  010000                        SW12=10000              ;=1,DELETE TYPEOUT/BELL ON ERROR.
  004000                        SW11=4000               ;=1,INHIBIT ITERATIONS
  002000                        SW10=2000               ;=1,ESCAPE TO NEXT TEST ON ERROR
  001000                        SW09=1000               ;=1,LOOP WITH CURRENT DATA
  000400                        SW08=400                ;=1,LOOP ON ERROR
  000200                        SW07=200                ;=1, DO "AUTO SIZING" ON INITAL START UP.
  000100                        SW06=100
  000040                        SW05=40
  000020                        SW04=20
  000010                        SW03=10
  000004                        SW02=4                  ;LOCK ON TEST SELECT
  000002                        SW01=2                  ;RESTART PROGRAM AT SELECTED TEST
  000001                        SW00=1                  ;RESELECT DV11 DESIRED ACTIVE
                                                        ;NOTE: THIS MUST NOT EXCEED ORIGINAL COUNT
```

```
                                ;REGISTER DEFINITIONS
                                ;--------------------

000000                          R0=%0           ;GENERAL REGISTER
000001                          R1=%1           ;GENERAL REGISTER
000002                          R2=%2           ;GENERAL REGISTER
000003                          R3=%3           ;GENERAL REGISTER
000004                          R4=%4           ;GENERAL REGISTER
000005                          R5=%5           ;GENERAL REGISTER
000006                          SP=%6           ;PROCESSOR STACK POINTER
000007                          PC=%7           ;PROGRAM COUNTER

                                ;LOCATION EQUIVALENCIES
                                ;----------------------

177776                          PS=177776       ;PROCESSOR STATUS WORD
001200                          STACK=1200      ;START OF PROCESSOR STACK

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
                                ;---------------------------------

010000                          ALU=BIT12
020000                          RAM=BIT13
030000                          XFR=BIT13+BIT12
040000                          NPR=BIT14
050000                          S.C=BIT14+BIT12
060000                          BCC=BIT14+BIT13
070000                          BRB=BIT14+BIT13+BIT12
                                ;---------------------------------
```

```
                                        ;;*****************************************************************************
                                        ;-----------------------------------------------------------------------------
                                                ;TRAPCATCAER FOR ILLEGAL INTERRUPTS
                                                ;THE STANDARD "TRAP CATCHER" IS PLACED
                                                ;BETWEEN ADDRESS 0 TO ADDRESS 776.
                                                ;IT LOOKS LIKE "PC+2 HALT".
                                        ;-----------------------------------------------------------------------------
                                        ;;*****************************************************************************

                    000000              .=0
                                                ;STANDARD INTERRUPT VECTORS
                                                ;-------------------------

                    000024              .=24
000024  004402                                  .PFAIL                  ;POWER FAIL HANDLER
000026  000340                                 340                     ;SERVICE AT LEVEL 7
000030  004002                                  .HLT                    ;ERROR HANDLER
000032  000340                                 340                     ;SERVICE AT LEVEL 7
000034  003750                                  .TRPSRV                 ;GENERAL HANDLER DISPATCH SERVICE
000036  000340                                 340                     ;SERVICE AT LEVEL 7
                    000040              .=40
000040  000001                                  .BLKW 1                 ;SAVE FOR ACT-11 OR DDP2
000042  000001                                  .BLKW 1                 ;RETURN ADDRESS IF UNDER ACT-11 OR DDP2
000044  000001                                  .BLKW 1                 ;SAVE FOR ACT-11 OR DDP2
000046  002560                                 LOGICAL                 ;FOR USE WITH ACT-11 OR DDP2

                    000174              .=174
000174  000000     LIGHT:  0
                    000176              .=176
000176  000000     SSWR:   0

                    000200              .=200
000200  000137  001742                          JMP     .START          ;GO TO START OF PROGRAM


                    001000              .=1000
001000  005377  040515  047111  MTITLE: .ASCIZ  <377><12>/MAINDEC-11-DZDVF-A/<377>/ASYNCHRONOUS LINE CARD TESTS./<377>
(2)
                    001200              .=1200
001200                              LIGHTS:
001200  177570                              177570
001202  177570                      SWR:    177570
                                                ;INDIRECT POINTERS TO TELETYPE VECTORS AND REGISTERS
                                                ;--------------------------------------------------


001204  177560                      TKCSR:  177560                  ;TELETYPE KEYBOARD CONTROL REGISTER
001206  177562                      TKDBR:  177562                  ;TELETYPE KEYBOARD DATA BUFFER
001210  177564                      TPCSR:  177564                  ;TELEPRINTER CONTROL REGISTER
001212  177566                      TPDBR:  177566                  ;TELEPRINTER DATA BUFFER


                                                ;PROGRAM CONTROL PARAMETERS
                                                ;--------------------------


001214  000000                      RETURN: 0                       ;SCOPE ADDRESS FOR LOOP ON TEST
001216  000000                      NEXT:   0                       ;ADDRESS OF NEXT TEST TO BE EXECUTED
001220  000000                      LOCK:   0                       ;ADDRESS FOR LOCK ON CURRENT DATA
```

```
                                ICOUNT: 3               ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
                                LPCNT:  0               ;NUMBER OF ITEREATIONS COMPLETED
                                TSTNO:  0               ;NUMBER OF TEST IN PROGRESS
                                PASCNT: 0               ;NUMBER OF PASSES COMPLETED
                                ERRCNT: 0               ;TOTAL NUMBER OF ERRORS
                                LSTERR: 0               ;PC OF LAST ERROR CALL

                                        ;PROGRAM VARIABLES
                                        ;-----------------

                                STAT:   0               ;DV STATUS WORD STORAGE
                                SYNCX:  0
                                CLKX:   0
                                MASKX:  0
                                TEMP1:  0               ;TEMPORARY STORAGE
                                TEMP2:  0               ;TEMPORARY STORAGE
                                TEMP3:  0               ;TEMPORARY STORAGE
                                TEMP4:  0               ;TEMPORARY STORAGE
                                TEMP5:  0               ;TEMPORARY STORAGE
                                SAVR0:  0               ;R0 STORAGE
                                SAVR1:  0               ;R1 STORAGE
                                SAVR2:  0               ;R2 STORAGE
                                SAVR3:  0               ;R3 STORAGE
                                SAVR4:  0               ;R4 STORAGE
                                SAVR5:  0               ;R5 STORAGE
                                SAVSP:  0               ;STACK POINTER STORAGE
                                SAVPC:  0               ;PROGRAM COUNTER STORAGE
                                DVACTV: .BLKB 1         ;DV11'S SELECTED ACTIVE.
                                DVNUM:  .BLKB 1         ;OCTAL NUMBER OF DV11'S.
                                SAVACT: .BLKB 1         ;ORIGINAL ACTV.  DEVICES.
                                SAVNUM: .BLKB 1         ;WORKABLE NUMBER.
                                RUN:    .BLKB 1         ;POINTER ONE PAST RUNNING DEVICE.
                                .EVEN
                                CREAM:  DV.MAP          ;TABLE POINTER.
```

```
DZDVF  MACY11 27(732)  17-SEP-76  13:54  PAGE 18
DZDVFA.P11      PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.


                                        ;PROGRAM CONTROL FLAGS
                                        ;---------------------

001310  000     INIFLG: .BYTE   0                ;PROGRAM INITIALIZATION FLAG
001311  000     ERRFLG: .BYTE   0                ;ERROR OCCURED FLAG
001312  000     LOKFLG: .BYTE   0                ;LOCK ON CURRENT TEST FLAG
001313  000     QV.FLG: .BYTE   0                ;QUICK VERIFY FLAG.
                                                 ;ON FIRST PASS OF EACH DV11 ITERATIONS WILL BE SUPPRESSE
                .EVEN
        000000  $Y=0


                        ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
                        ;POINTERS TO SUBROUTINES CAN BE FOUND
                        ;IN THE TABLE IMMEDIATLY FOLLOWING THE DEFINITIONS

                ;:**************************************************************************
                ;--------------------------------------------------------------------------
001314          .TRPTAB:
        104400  SCOPE=TRAP+0            ;CALL TO SCOPE LOOP AND ITERATION HANDLER
001314  002634          .SCOPE
        104401  SCOP1=TRAP+1            ;CALL TO LOOP ON CURRENT DATA HANDLER
001316  003020          .SCOP1
        104402  TYPE=TRAP+2             ;CALL TO TELETYPE OUTPUT ROUTINE
001320  003044          .TYPE
        104403  INSTR=TRAP+3            ;CALL TO ASCII STRING INPUT ROUTINE
001322  003120          .INSTR
        104404  INSTER=TRAP+4           ;CALL TO INPUT ERROR HANDLER
001324  003224          .INSTER
        104405  PARAM=TRAP+5            ;CALL TO NUMERICAL DATA INPUT ROUTINE
001326  003244          .PARAM
        104406  SAVO5=TRAP+6            ;CALL TO REGISTER SAVE ROUTINE
001330  003444          .SAVO5
        104407  RESO5=TRAP+7            ;CALL TO REGISTER RESTORE ROUTINE
001332  003504          .RESO5
        104410  CONVRT=TRAP+10          ;CALL TO DATA OUTPUT ROUTINE
001334  003536          .CONVRT
        104411  CNVRT=TRAP+11           ;CALL TO DATA OUTPUT ROUNTINE WITHOUT CR/LF.
001336  003542          .CNVRT
        104412  MSTCLR=TRAP+12          ;CALL TO ISUE A MASTER CLEAR
001340  004556          .MSTCLR
        104413  RAMCLR=TRAP+13          ;CALL TO CLEAR THE RAMS
001342  004516          .RAMCLR
        104414  DELAY=TRAP+14           ;CALL TO VARIABLE DELAY COUNTER
001344  004476          .DELAY
        104415  ROMCLK=TRAP+15          ;CALL TO CLOCK ROM ONCE
001346  004566          .ROMCLK
        104416  DATACLK=TRAP+16         ;CALL TO CLK DATA
001350  004576          .DATACLK

                ;--------------------------------------------------------------------------
                ;:**************************************************************************
```

```
                                        ;DV11 VECTOR AND REGISTER INDIRECT POINTERS

001352  000000          DVRVEC: 0               ;POINTER TO DV11 RECEIVER INTERRUPT VECTOR
001354  000000          DVRLVL: 0               ;POINTER TO DV11 RECEIVER INTERRUPT SERVICE PS
001356  000000          DVTVEC: 0               ;POINTER TO DV11 TRANSMITTER INTERRUPT VECTOR
001360  000000          DVTLVL: 0               ;POINTER TO DV11 TRANSMITTER INTERRUPT SERVICE PS
001362  000000          DVSCR:  0               ;POINTER TO DV11 SYSTEM CONTROL REGISTER
001364  000000          DVSCRH: 0               ;POINTER TO DV11 SYSTEM CONTROL REGISTER HIGH BYTE.
001366  000000          DVRIC:  0               ;POINTER TO DV11 NEXT RECEIVED CHARACTER REGISTER
001370  000000          DVLCR:  0               ;POINTER TO DV11 LINE PRAMETER REGISTER
001372  000000          DVSRS:  0               ;POINTER TO DV11 SECONDARY REGISTER SELECT REGISTER
001374  000000          DVSRSH: 0               ;POINTER TO DV11 SECONDARY REGISTER SELECT HIGH BYTE.
001376  000000          DVSRA:  0               ;POINTER TO DV11 SECONDARY REGISTER ACCESS REGISTER
001400  000000          DVSFR:  0               ;POINTER TO DV11 SPECIAL FUNCTIONS REGISTER
001402  000000          DVNSR:  0               ;POINTER TO DV11 NPR STATUS REGISTER
001404  000000          RESV16: 0               ;POINTER TO RESERVED REGISTER.


                                        ;DV11 CONTROL INDICATORS FOR CURRENT DV11 UNDER TEST
                                        ;--------------------------------------------------

001406      000         MASK.A: .BYTE 000       ;LAST CHAR TO TEST AND PARITY MASK FOR LINES 00-03
001407      000         MASK.B: .BYTE 000       ;LAST CHAR TO TEST AND PARITY MASK FOR LINES 04-07
001410      000         MASK.C: .BYTE 000       ;LAST CHAR TO TEST AND PARITY MASK FOR LINES 08-11
001411      000         MASK.D: .BYTE 000       ;LAST CHAR TO TEST AND PARITY MASK FOR LINES 12-15

001412      010         CLK.A:  .BYTE 8.        ;NUMBER OF CLOCKS NEEDED FOR ONE CHAR FOR LINES 00-03
001413      010         CLK.B:  .BYTE 8.        ;NUMBER OF CLOCKS NEEDED FOR ONE CHAR FOR LINES 04-07
001414      010         CLK.C:  .BYTE 8.        ;NUMBER OF CLOCKS NEEDED FOR ONE CHAR FOR LINES 08-11
001415      010         CLK.D:  .BYTE 8.        ;NUMBER OF CLOCKS NEEDED FOR ONE CHAR FOR LINES 12-15

001416  000000          L00.03: 000000          ;PARAMETERS FOR LINES 00-03
001420  000000          L04.07: 000000          ;PARAMETERS FOR LINES 04-07
001422  000000          L08.11: 000000          ;PARAMETERS FOR LINES 08-11
001424  000000          L12.15: 000000          ;PARAMETERS FOR LINES 12-15

001426  000000          SYNC2A: 000000          ;SYNC 2
001430  000000          SYNC2B: 000000          ;
001432  000000          SYNC2C: 000000          ;
001434  000000          SYNC2D: 000000          ;

                                        ;SUMMARY
                                        ;-------
;                       MASK.X          040     5 BITS PER CHAR.
;                                       100     6 BITS PER CHAR.
;                                       200     7 BITS PER CHAR.
;                                       000     8 BITS PER CHAR.

;                       CLK.X           005     5 BITS PER CHAR.
;                                       006     6 BITS PER CHAR.
;                                       007     7 BITS PER CHAR.
;                                       010     8 BITS PER CHAR.
```

```
                                        ;DV11 STATUS TABLE AND ADDRESS ASSIGNMENTS
                                        ;-----------------------------------------

          001500                .=1500
001E00                          DV.MAP:
001500  000001                 DVCR00: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 00
001502  000001                 DVTR00: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 00
001504  000001                 DV00.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 00
001506  000001                 SYNA00: .BLKW 1         ;SYNC TWO
001510  000001                 DV00.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 00
001512  000001                 SYNB00: .BLKW 1         ;SYNC TWO
001514  000001                 DV00.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 00
001516  000001                 SYNC00: .BLKW 1         ;SYNC TWO
001520  000001                 DV00.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 00
001522  000001                 SYND00: .BLKW 1         ;SYNC TWO

001524  000001                 DVCR01: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 01
001526  000001                 DVTR01: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 01
001530  000001                 DV01.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 01
001532  000001                 SYNA01: .BLKW 1         ;SYNC TWO
001534  000001                 DV01.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 01
001536  000001                 SYNB01: .BLKW 1         ;SYNC TWO
001540  000001                 DV01.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 01
001542  000001                 SYNC01: .BLKW 1         ;SYNC TWO
001544  000001                 DV01.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 01
001546  000001                 SYND01: .BLKW 1         ;SYNC TWO

001550  000001                 DVCR02: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 02
001552  000001                 DVTR02: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 02
001554  000001                 DV02.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 02
001556  000001                 SYNA02: .BLKW 1         ;SYNC TWO
001560  000001                 DV02.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 02
001562  000001                 SYNB02: .BLKW 1         ;SYNC TWO
001564  000001                 DV02.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 02
001566  000001                 SYNC02: .BLKW 1         ;SYNC TWO
001570  000001                 DV02.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 02
001572  000001                 SYND02: .BLKW 1         ;SYNC TWO

001574  000001                 DVCR03: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 03
001576  000001                 DVTR03: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 03
001600  000001                 DV03.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 03
001602  000001                 SYNA03: .BLKW 1         ;SYNC TWO
001604  000001                 DV03.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 03
001606  000001                 SYNB03: .BLKW 1         ;SYNC TWO
001610  000001                 DV03.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 03
001612  000001                 SYNC03: .BLKW 1         ;SYNC TWO
001614  000001                 DV03.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 03
001616  000001                 SYND03: .BLKW 1         ;SYNC TWO

001620  000001                 DVCR04: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 04
001622  000001                 DVTR04: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 04
001624  000001                 DV04.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 04
001626  000001                 SYNA04: .BLKW 1         ;SYNC TWO
001630  000001                 DV04.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 04
001632  000001                 SYNB04: .BLKW 1         ;SYNC TWO
001634  000001                 DV04.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 04
```

```
866  001636  000001                SYNC04: .BLKW 1         ;SYNC TWO
867  001640  000001                DV04.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 04
868  001642  000001                SYND04: .BLKW 1         ;SYNC TWO
869
870  001644  000001                DVCR05: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 05
871  001646  000001                DVTR05: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 05
872  001650  000001                DV05.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 05
873  001652  000001                SYNA05: .BLKW 1         ;SYNC TWO
874  001654  000001                DV05.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 05
875  001656  000001                SYNB05: .BLKW 1         ;SYNC TWO
876  001660  000001                DV05.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 05
877  001662  000001                SYNC05: .BLKW 1         ;SYNC TWO
878  001664  000001                DV05.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 05
879  001666  000001                SYND05: .BLKW 1         ;SYNC TWO
880
881  001670  000001                DVCR06: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 06
882  001672  000001                DVTR06: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 06
883  001674  000001                DV06.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 06
884  001676  000001                SYNA06: .BLKW 1         ;SYNC TWO
885  001700  000001                DV06.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 06
886  001702  000001                SYNB06: .BLKW 1         ;SYNC TWO
887  001704  000001                DV06.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 06
888  001706  000001                SYNC06: .BLKW 1         ;SYNC TWO
889  001710  000001                DV06.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 06
890  001712  000001                SYND06: .BLKW 1         ;SYNC TWO
891
892  001714  000001                DVCR07: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 07
893  001716  000001                DVTR07: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 07
894  001720  000001                DV07.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 07
895  001722  000001                SYNA07: .BLKW 1         ;SYNC TWO
896  001724  000001                DV07.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 07
897  001726  000001                SYNB07: .BLKW 1         ;SYNC TWO
898  001730  000001                DV07.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 07
899  001732  000001                SYNC07: .BLKW 1         ;SYNC TWO
900  001734  000001                DV07.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 07
901  001736  000001                SYND07: .BLKW 1         ;SYNC TWO
902
903  001740  000000                DV.END: 000000
```

```
                                        ;PROGRAM INITIALIZATION
                                        ;LOCK OUT INTERRUPTS
                                        ;SET UP PROCESSOR STACK
                                        ;SET UP POWER FAIL VECTOR
                                        ;CLEAR PROGRAM CONTROL FLAGS AND COUNTS
                                        ;TYPE TITLE MESSAGE

001742  012737  000340  177776  .START: MOV     #340,PS                 ;LOCK OUT INTERRUPTS
001750  012706  001200                  MOV     #STACK,SP               ;SET UP STACK
001754  012737  004402  000024          MOV     #.PFAIL,@#24            ;SET UP POWER FAIL VECTOR
001762  113737  001301  001303          MOVB    DVNUM,SAVNUM            ;SAVE NUMBER OF DEVICES IN SYSTEM.
001770  005037  001230                  CLR     PASCNT                  ;CLEAR PASS COUNT
001774  105037  001311                  CLRB    ERRFLG                  ;CLEAR ERROR FLAG
002000  105037  001313                  CLRB    QV.FLG                  ;ZERO QUICK VERIFY FLAG
002004  012737  001500  001306          MOV     #DV.MAP,CREAM           ;GET MAP POINTER.
002012  112737  000001  001304          MOVB    #1,RUN                  ;POINT POINTER TO FIRST DEVICE.
002020  005037  001232                  CLR     ERRCNT                  ;CLEAR ERROR COUNT
002024  005037  001234                  CLR     LSTERR                  ;CLEAR LAST ERROR POINTER
002030  012737  000001  001226          MOV     #1,TSTNO                ;SET UP FOR TEST 1
002036  012737  001742  001214          MOV     #.START,RETURN          ;SET UP FOR POWER FAIL BEFORE
                                                                        ;TESTING STARTS
002044  105737  001310                  TSTB    INIFLG                  ;HAS INITIALIZATION BEEN PERFORMED
002050  001063                          BNE     1$                      ;BR IF YES
002052  013746  000004                  MOV     4,-(SP)                 ;
002056  013746  000006                  MOV     6,-(SP)                 ;
002062  005037  000006                  CLR     6                       ;
002066  012737  002104  000004          MOV     #80$,4                  ;
002074  005777  177102                  TST     @SWR                    ;
002100  000240                          NOP                             ;
002102  000407                          BR      81$                     ;
002104  022626                  80$:    CMP     (SP)+,(SP)+             ;
002106  012737  000174  001200          MOV     #LIGHT,LIGHTS           ;
002114  012737  000176  001202          MOV     #SSWR,SWR               ;
002122  012637  000006          81$:    MOV     (SP)+,6                 ;
002126  012637  000004                  MOV     (SP)+,4                 ;
002132  104402  001000                  TYPE    ,MTITLE                 ;TYPE TITLE MESSAGE
002136  105137  001310                  COMB    INIFLG                  ;IF NOT SET FLAG AND DO
002142  105777  177034                  TSTB    @SWR                    ;BIT7=1??
002146  100402                          BMI     16$                     ;BR IF NO AUTO SIZE
002150  004737  006624                  JSR     PC,CSRMAP               ;GO DO THE AUTO SIZE
002154  104402  005461          16$:    TYPE    ,XHEAD          ;TYPE HEADER
002160  012737  001500  001246          MOV     #DV.MAP,TEMP1           ;SET POINTER
002166  017737  177054  001250  5$:     MOV     @TEMP1,TEMP2            ;SET DATA
002174  022737  177777  001250          CMP     #177777,TEMP2           ;ALL DONE?
002202  001406                          BEQ     1$                      ;BR IF YES
002204  104410                          CONVRT                          ;
002206  005506                          XSTATQ                          ;
002210  062737  000002  001246          ADD     #2,TEMP1                ;UPDATE POINTER
002216  000763                          BR      5$
002220  005737  000042          1$:     TST     @#42                    ;IS PROGRAM RUNNING UNDER MONITOR
002224  001030                          BNE     3$                      ;BR IF YES
002226  032777  000001  176746          BIT     #SW00,@SWR              ;SELECT SPECIFIC DEVICES??
002234  001424                          BEQ     3$                      ;BR IF NO.
002236  104402  005402                  TYPE    ,MNEW                   ;TYPE THE MESSAGE.
002242  005000                          CLR     R0                      ;ZERO DATA LIGHTS
```

```
                                        HALT                    ;WAIT FOR USER TO TELL WHAT DEVICES TO RUN
002246  127737  176730  001302        CMPB    @SWR,SAVACT     ;IS THE NUMBER VALID?
002254  101404                        BLOS    2$              ;BR IF NUMBER IS OK.
002256  104402  005243                TYPE    ,MERR3          ;TELL USER OF INVALID NUMBER.
002262  000000                        HALT                    ;STOP EVERY THING.
002264  000776                        BR      .-2             ;RESTART THE PROGRAM AGAIN.
002266  117737  176710  001300  2$:   MOVB    @SWR,DVACTV     ;GET NEW DEVICE PATTERN
002274  113700  001300                MOVB    DVACTV,R0       ;SHOW THE USER WHAT HE SELECTED.
002300  042700  177400                BIC     #^C<377>,R0     ;USE ONLY LOW BYTE.
002304  000000                        HALT                    ;CONTINUE DYNAMIC SWITCHES.
002306  012700  000300          3$:   MOV     #300,R0         ;PREPARE TO CLEAR THE FLOATING
002312  012701  000302                MOV     #302,R1         ;VECTOR AREA. 300-776
002316  010120                  4$:   MOV     R1,(R0)+        ;START PUTTING "PC+2 - HALT"
002320  005021                        CLR     (R1)+           ;IN VECTOR AREA.
002322  022021                        CMP     (R0)+,(R1)+     ;POP POINTERS
002324  022700  001000                CMP     #1000,R0        ;ALL DONE??
002330  001372                        BNE     4$              ;BR IF NO.

                                        ;TEST START AND RESTART
                                        ;----------------------

002332  012737  000340  177776  .BEGIN: MOV     #340,PS         ;LOCK OUT INTERRUPTS
002340  012706  001200                MOV     #STACK,SP       ;SET UP STACK
002344  005737  000042                TST     @#42            ;IS PROGRAM UNDER MONITOR CONTROL
002350  001023                        BNE     3$              ;BR IF YES
002352  032777  000004  176622        BIT     #BIT2,@SWR      ;CHECK FOR LOCK ON TEST
002360  001411                        BEQ     1$              ;BR IF NO LOCK DESIRED.
002362  104402  005301                TYPE    ,MLOCK          ;TYPE LOCK SELECTED.
002366  012737  000240  002702        MOV     #NOP,TTST       ;ADJUST SCOPE ROUTINE.
002374  012737  000240  002704        MOV     #NOP,TTST+2     ;SET UP TO LOCK
002402  000406                        BR      2$              ;CONTINUE ALONG.
002404  013737  003014  002702  1$:   MOV     BRW,TTST        ;PREPARE NORMAL SCOPE ROUTINE
002412  013737  003016  002704        MOV     BRX,TTST+2      ;LOCK NOT SELECTED. SET UP FOR NORMAL SCOPE LOOP
002420                          2$:
002420  012737  005666  001214  3$:   MOV     #CYCLE,RETURN   ;START AT "CYCLE" FIND WHICH DEVICE TO TEST
002426  104402  005171          4$:   TYPE    ,MR             ;TYPE R
002432  000177  176556                JMP     @RETURN         ;START TESTING
```

```
                                                ;END OF PASS
                                                ;TYPE NAME OF TEST
                                                ;UPDATE PASS COUNT
                                                ;CHECK FOR EXIT TO ACT-11
                                                ;RESTART TEST

002436  000005                    .EOP:   RESET                   ;MAKE THE  WORLD CLEAN AGAIN.
002440  005037  001234                    CLR     LSTERR          ;CLEAR LAST ERROR PC
002444  105037  001311                    CLRB    ERRFLG          ;CLEAR ERROR FLAG
002450  005237  001230                    INC     PASCNT          ;UPDATE PASS COUNT
002454  013777  001230  176516            MOV     PASCNT,@LIGHTS  ;DISPLAY PASS COUNT
002462  104402  005145                    TYPE    ,MEPASS         ;TYPE END PASS
002466  104402  005330                    TYPE    ,MCSRX          ;TYPE CSR
002472  104411  002604                    CNVRT   ,XCSR           ;SHOW IT
002476  104402  005336                    TYPE    ,MVECX          ;TYPE VECTOR
002502  104411  002612                    CNVRT   ,XVEC           ;SHOW IT
002506  104402  005344                    TYPE    ,MPASSX         ;TYPE PASSES
002512  104411  002620                    CNVRT   ,XPASS          ;SHOW IT
002516  104402  005355                    TYPE    ,MERRX          ;TYPE ERRORS
002522  104411  002626                    CNVRT   ,XERR           ;SHOW IT
002526  105337  001303                    DECB    $AVNUM          ;ARE ALL DEVICES TESTED?
002532  001017                            BNE     RESTRT          ;BR IF NO.
002534  112737  000377  001313            MOVB    #377,QV.FLG     ;SET THE QUICK VERIFY FLAG.
002542  113737  001301  001303            MOVB    DVNUM,SAVNUM    ;RESTORE THE COUNT
002550  013701  000042                    MOV     @#42,R1         ;CHECK FOR ACT-11 OR DDP
002554  001406                            BEQ     RESTRT          ;IF NOT, CONTINUE TESTING
002556  000005                            RESET                   ;STOP THE SHOW--CLEAR THE WORLD
002560                            LOGICAL:
002560  004711                            JSR     PC,(R1)
002562  000240                            NOP
002564  000240                            NOP
002566  000240                            NOP
002570  000240                            NOP
002572  012737  005666  001214    RESTRT: MOV     #CYCLE,RETURN
002600  000137  005666                    JMP     CYCLE
002604  000001                    XCSR:   1
002606     006     002                    .BYTE   6,2
002610  001362                            DVSCR
002612  000001                    XVEC:   1
002614     003     002                    .BYTE   3,2
002616  001352                            DVRVEC
002620  000001                    XPASS:  1
002622     006     002                    .BYTE   6,2
002624  001230                            PASCNT
002626  000001                    XERR:   1
002630     006     002                    .BYTE   6,2
002632  001232                            ERRCNT

                                                ;SCOPE LOOP AND INTERATION HANDLER
                                                ;--------------------------------

002634                            .SCOPE:
002634  022737  177570  001202            CMP     #177570,SWR     ;IS THERE A REAL SWR?
002642  001411                            BEQ     64$             ;BR IF YES
002644  017746  176336                    MOV     @TKDBR,-(SP)    ;SAVE KEYBOARD CHAR
002650  042716  000200                    BIC     #BIT7,(SP)      ;CLEAR PARITY BIT
```

```
1053  002654  122726  000007                        CMPB    #7,(SP)+        ;WAS IT CNTRL 'G' ?
1054  002660  001002                                BNE     .+6             ;BR IF NO.
1055  002662  004737  004640                        JSR     PC,SERV.G       ;SERVICE "CNTRL 'G'".
1056  002666  005037  001234            64$:        CLR     LSTERR          ;CLEAR LAST ERROR PC.
1057  002672  010016                                MOV     R0,(SP)         ;SAVE R0 ON THE STACK
1058  002674  032777  040000  176300                BIT     #BIT14,@SWR     ;"LOOP ON THIS TEST"?
1059  002702  001407                    TTST:       BEQ     1$              ;BR IF NO.  (IF LOCK SW01=1; THIS LOC =240)
1060  002704  000437                                BR      3$              ;GOTO 3$    (IF LOCK SW01=1; THIS LOC =240)
1061  002706  105777  176272                        TSTB    @TKCSR          ;KEYBOAD DONE?
1062  002712  100034                                BPL     3$              ;BR IF NO. (LOCK: HIT KEY TO GOTO NEXT TEST)
1063  002714  017700  176266                        MOV     @TKDBR,R0       ;CLEAR DONE BIT
1064  002720  000415                                BR      2$              ;CONTINUE
1065  002722  032777  004000  176252    1$:         BIT     #SW11,@SWR      ;DELETE ITERATION?  (QUICK PASS)
1066  002730  001011                                BNE     2$              ;BR IF YES
1067  002732  105737  001313                        TSTB    QV.FLG          ;HAVE PASSES BEECOMPLETED?
1068  002736  001406                                BEQ     2$              ;BR IF QUICK PASS.
1069  002740  005237  001224                        INC     LPCNT           ;UPDATE ITERATION COUNTER
1070  002744  023737  001224  001222                CMP     LPCNT,ICOUNT    ;ARE ALL ITERATIONS DONE??
1071  002752  001014                                BNE     3$              ;BR IF NOT YET
1072  002754  105037  001311            2$:         CLRB    ERRFLG          ;PREPARE FOR NEW TEST
1073  002760  005037  001224                        CLR     LPCNT           ;START ICOUNTER AT 0
1074  002764  005037  001220                        CLR     LOCK
1075  002770  012737  000004  001222                MOV     #4.,ICOUNT      ;RESET ITERATIONS
1076  002776  013737  001216  001214                MOV     NEXT,RETURN     ;GET NEXT TEST
1077  003004  011600                    3$:         MOV     (SP),R0         ;POP R0 OFF OF THE STACK
1078  003006  022626                                POP2SP                  ;FAKE AN "RTI"
1079  003010  000177  176200                        JMP     @RETURN         ;GO DO THE TEST
1080  003014  001407                    BRW:        1407
1081  003016  000437                    BRX:        437
1082
1083                                               ;CHECK FOR FREEZE ON CURRENT DATA
1084                                               ;-------------------------------
1085
1086  003020  032777  001000  176154    .SCOP1:     BIT     #SW09,@SWR      ;IS SW09=1(SET)?
1087  003026  001405                                BEQ     1$              ;BR IF NOT SET.
1088  003030  005737  001220                        TST     LOCK
1089  003034  001402                                BEQ     1$
1090  003036  013716  001220                        MOV     LOCK,(SP)       ;GOTO THE ADDRESS IN LOCK.
1091  003042  000002                    1$:         RTI                     ;GO BACK.
1092
1093                                               ;TELETYPE OUTPUT ROUTINE
1094                                               ;----------------------
1095
1096  003044  010546                    .TYPE:      MOV     R5,-(SP)        ;SAVE R5 ON THE STACK.
1097  003046  017605  000002                        MOV     @2(SP),R5       ;GET ADDRESS OF MESSAGE.
1098  003052  062766  000002  000002                ADD     #2,2(SP)        ;POP OVER ADDRESS.
1099  003060  032777  010000  176114    1$:         BIT     #SW12,@SWR      ;INHIBIT ALL PRINT OUT??
1100  003066  001012                                BNE     3$              ;BR IF NO PRINT OUT WANTED (SW12=1)
1101  003070  105715                                TSTB    (R5)            ;IS NUMBER MINUS? (MSB=1(BIT7))
1102  003072  100002                                BPL     2$              ;BR IF NUMBER IS PLUS
1103  003074  104402  005104                        TYPE    ,MCRLF          ;TYPE A CR/LF!
1104  003100  105777  176104            2$:         TSTB    @TPCSR          ;TTY READY?
1105  003104  100375                                BPL     2$              ;BR IF NO.
1106  003106  112577  176100                        MOVB    (R5)+,@TPDBR    ;PRINT CURRENT CHAR.
1107  003112  001362                                BNE     1$              ;IF NOT ZERO KEEP PRINTING!
1108  003114  012605                    3$:         MOV     (SP)+,R5        ;END OF OUTPUT. RESTORE R5
```

```
1109  003116  000002                          RTI                     ;GO HOME
1110                                          ;-----------------------
1111
1112  003120  010346                  .INSTR: MOV     R3,-(SP)        ;SAVE R3 ON STACK
1113  003122  010446                          MOV     R4,-(SP)        ;SAVE R4 ON STACK
1114  003124  017637  000004  003142          MOV     @4(SP),.MSG
1115  003132  062766  000002  000004          ADD     #2,4(SP)
1116  003140  104402                  .INST1: TYPE
1117  003142  000000                  .MSG:   0
1118  003144  012704  005520                  MOV     #INBUF,R4
1119  003150  012703  000007                  MOV     #7,R3
1120  003154  105777  176024          1$:     TSTB    @TKCSR
1121  003160  100375                          BPL     1$
1122  003162  117714  176020                  MOVB    @TKDBR,(R4)
1123  003166  142714  000200                  BICB    #200,(R4)
1124  003172  122427  000015                  CMPB    (R4)+,#15
1125  003176  001417                          BEQ     INSTR2
1126  003200  105777  176004          2$:     TSTB    @TPCSR
1127  003204  100375                          BPL     2$
1128  003206  017777  175774  175776          MOV     @TKDBR,@TPDBR
1129  003214  005303                          DEC     R3
1130  003216  001356                          BNE     1$
1131  003220  012604                          MOV     (SP)+,R4
1132  003222  012603                          MOV     (SP)+,R3
1133  003224  104402  005100          .INSTE: TYPE    ,MQM
1134  003230  010346                          MOV     R3,-(SP)
1135  003232  010446                          MOV     R4,-(SP)
1136  003234  000741                          BR      .INST1
1137  003236  012604                  INSTR2: MOV     (SP)+,R4        ;RESTORE R4
1138  003240  012603                          MOV     (SP)+,R3        ;RESTORE R3
1139  003242  000002                          RTI
1140
1141                                          ;CONVERT ASCII STRING TO OCTAL
1142                                          ;----------------------------
1143
1144  003244  010546                  .PARAM: MOV     R5,-(SP)
1145  003246  010446                          MOV     R4,-(SP)
1146  003250  016605  000004                  MOV     4(SP),R5
1147  003254  012537  003434                  MOV     (R5)+,LOLIM
1148  003260  012537  003436                  MOV     (R5)+,HILIM
1149  003264  012537  003440                  MOV     (R5)+,DEVADR
1150  003270  112537  003442                  MOVB    (R5)+,LOBITS
1151  003274  112537  003443                  MOVB    (R5)+,ADRCNT
1152  003300  010566  000004                  MOV     R5,4(SP)
1153  003304  005005                  PARAM1: CLR     R5
1154  003306  012704  005520                  MOV     #INBUF,R4
1155  003312  122714  000015                  CMPB    #15,(R4)
1156  003316  001420                          BEQ     PARERR
1157  003320  121427  000060          1$:     CMPB    (R4),#60
1158  003324  002415                          BLT     PARERR
1159  003326  121427  000067                  CMPB    (R4),#67
1160  003332  003012                          BGT     PARERR
1161  003334  142714  000060                  BICB    #60,(R4)
1162  003340  152405                          BISB    (R4)+,R5
1163  003342  122714  000015                  CMPB    #15,(R4)
1164  003346  001406                          BEQ     LIMITS
```

```
1165  003350  006305                          ASL     R5
1166  003352  006305                          ASL     R5
1167  003354  006305                          ASL     R5
1168  003356  000760                          BR      1$
1169  003360  104404                PARERR:   INSTER
1170  003362  000750                          BR      PARAM1
1171
1172                                          ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
1173                                          ;--------------------------------------
1174
1175  003364  020537  003436        LIMITS:   CMP     R5,HILIM
1176  003370  101373                          BHI     PARERR
1177  003372  020537  003434                  CMP     R5,LOLIM
1178  003376  103770                          BLO     PARERR
1179  003400  133705  003442                  BITB    LOBITS,R5
1180  003404  001365                          BNE     PARERR
1181
1182                                          ;STORE NUMBER AT SPECIFIED ADDRESS
1183
1184  003406  013704  003440                  MOV     DEVADR,R4
1185  003412  010524                1$:       MOV     R5,(R4)+
1186  003414  062705  000002                  ADD     #2,R5
1187  003420  105337  003443                  DECB    ADRCNT
1188  003424  001372                          BNE     1$
1189  003426  012604                          MOV     (SP)+,R4
1190  003430  012605                          MOV     (SP)+,R5
1191  003432  000002                          RTI
1192  003434  000000                LOLIM:    0
1193  003436  000000                HILIM:    0
1194  003440  000000                DEVADR:   0
1195  003442  000000                LOBITS:   0
1196          003443                ADRCNT=LOBITS+1
1197
1198                                          ;SAVE PC OF TEST THAT FAILED AND R0-R5
1199                                          ;------------------------------------
1200
1201  003444  016637  000004  001276  .SAV05:  MOV     4(SP),SAVPC     ;SAVE R7 (PC)
1202
1203                                          ;SAVE R0-R5
1204
1205  003452  010537  001272          SV05:   MOV     R5,SAVR5        ;SAVE R5
1206  003456  010437  001270                  MOV     R4,SAVR4        ;SAVE R4
1207  003462  010337  001266                  MOV     R3,SAVR3        ;SAVE R3
1208  003466  010237  001264                  MOV     R2,SAVR2        ;SAVE R2
1209  003472  010137  001262                  MOV     R1,SAVR1        ;SAVE R1
1210  003476  010037  001260                  MOV     R0,SAVR0        ;SAVE R0
1211  003502  000002                          RTI                     ;LEAVE.
1212
1213                                          ;RESTORE R0-R5
1214
1215  003504  013700  001260          .RES05: MOV     SAVR0,R0        ;RESTORE R0
1216  003510  013701  001262                  MOV     SAVR1,R1        ;RESTORE R1
1217  003514  013702  001264                  MOV     SAVR2,R2        ;RESTORE R2
1218  003520  013703  001266                  MOV     SAVR3,R3        ;RESTORE R3
1219  003524  013704  001270                  MOV     SAVR4,R4        ;RESTORE R4
1220  003530  013705  001272                  MOV     SAVR5,R5        ;RESTORE R5
```

```
1221  003534  000002                          RTI                     ;LEAVE
1222
1223                                          ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
1224                                          ;-----------------------------------------------------
1225
1226  003536  104402  005104          .CONVR: TYPE    ,MCRLF
1227  003542  010046                  .CNVRT: MOV     R0,-(SP)
1228  003544  010146                          MOV     R1,-(SP)
1229  003546  010346                          MOV     R3,-(SP)
1230  003550  010446                          MOV     R4,-(SP)
1231  003552  010546                          MOV     R5,-(SP)
1232  003554  017601  000012                  MOV     @12(SP),R1
1233  003560  062766  000002  000012          ADD     #2,12(SP)
1234  003566  012137  003742                  MOV     (R1)+,WRDCNT
1235  003572  112137  003744          1$:     MOVB    (R1)+,CHRCNT
1236  003576  112137  003745                  MOVB    (R1)+,SPACNT
1237  003602  013137  003746                  MOV     @(R1)+,BINWRD
1238  003606  013704  003746          2$:     MOV     BINWRD,R4
1239  003612  113705  003744                  MOVB    CHRCNT,R5
1240  003616  012700  005562                  MOV     #TEMP,R0
1241  003622  010403                  3$:     MOV     R4,R3
1242  003624  042703  177770                  BIC     #177770,R3
1243  003630  062703  000060                  ADD     #060,R3
1244  003634  110320                          MOVB    R3,(R0)+
1245  003636  000241                          CLC
1246  003640  006004                          ROR     R4
1247  003642  000241                          CLC
1248  003644  006004                          ROR     R4
1249  003646  000241                          CLC
1250  003650  006004                          ROR     R4
1251  003652  005305                          DEC     R5
1252  003654  001362                          BNE     3$
1253  003656  012703  005624                  MOV     #MDATA,R3
1254  003662  114023                  4$:     MOVB    -(R0),(R3)+
1255  003664  105337  003744                  DECB    CHRCNT
1256  003670  001374                          BNE     4$
1257  003672  105737  003745                  TSTB    SPACNT
1258  003676  001405                          BEQ     6$
1259  003700  112723  000040          5$:     MOVB    #040,(R3)+
1260  003704  105337  003745                  DECB    SPACNT
1261  003710  001373                          BNE     5$
1262  003712  105013                  6$:     CLRB    (R3)
1263  003714  104402  005624                  TYPE    ,MDATA
1264  003720  005337  003742                  DEC     WRDCNT
1265  003724  001322                          BNE     1$
1266  003726  012605                          MOV     (SP)+,R5
1267  003730  012604                          MOV     (SP)+,R4
1268  003732  012603                          MOV     (SP)+,R3
1269  003734  012601                          MOV     (SP)+,R1
1270  003736  012600                          MOV     (SP)+,R0
1271  003740  000002                          RTI
1272  003742  000000                  WRDCNT: 0
1273  003744  000000                  CHRCNT: 0
1274          003745                  SPACNT=CHRCNT+1
1275  003746  000000                  BINWRD: 0
1276
```

```
                                                ;TRAP DISPATCH SERVICE
                                                ;ARGUMENT OF TRAP IS EXTRACTED
                                                ;AND USED AS OFFSET TO OBTAIN POINTER
                                                ;TO SELECTED SUBROUTINE

003750  011646                    .TRPSR: MOV     (SP),-(SP)              ;GET PC OF RETURN
003752  162716  000002                    SUB     #2,(SP)                 ;=PC OF TRAP
003756  017616  000000                    MOV     @(SP),(SP)              ;GET TRP
003762  006316                    TRPOK:  ASL     (SP)                    ;MULTIPLY TRAP ARG BY 2
003764  042716  177001                    BIC     #177001,(SP)            ;CLEAR UNWANTED BITS
003770  062716  001314                    ADD     #.TRPTAB,(SP)           ;POINTER TO SUBROUTINE ADDRESS
003774  017616  000000                    MOV     @(SP),(SP)              ;SUBROUTINE ADDRESS
004000  000136                          JMP     @(SP)+                  ;GO TO SUBROUTINE

                                                ;ERROR HANDLER
                                                ;-------------

004002                            .HLT:
004002  022737  177570  001202            CMP     #177570,SWR     ;IS THERE A REAL SWR?
004010  001411                          BEQ     64$             ;BR IF YES
004012  017746  175170                  MOV     @TKDBR,-(SP)    ;SAVE KEYBOARD CHAR
004016  042716  000200                  BIC     #BIT7,(SP)      ;CLEAR PARITY BIT
004022  122726  000007                  CMPB    #7,(SP)+        ;WAS IT CNTRL 'G' ?
004026  001002                          BNE     .+6             ;BR IF NO.
004030  004737  004640                  JSR     PC,SERV.G       ;SERVICE "CNTRL 'G'".
004034  032777  010000  175140  64$:    BIT     #SW12,@SWR      ;BELL ON ERROR?
004042  001406                          BEQ     XBX             ;BR IF NO BELL
004044  105777  175140                  TSTB    @TPCSR          ;TTY READY.
004050  100003                          BPL     XBX             ;DON'T WAIT IF TTY NOT READY.
004052  112777  000207  175132          MOVB    #207,@TPDBR     ;PUSH A BELL AT THE TTY.
004060  032777  020000  175114  XBX:    BIT     #SW13,@SWR      ;DELETE ERROR PRINT OUT?
004066  001105                          BNE     HALTS           ;BR IF NO PRINT OUT WANTED.
004070  021637  001234                  CMP     (SP),LSTERR     ;WAS THIS ERROR FOUND LAST TIME?
004074  001404                          BEQ     1$              ;BR IF YES
004076  011637  001234                  MOV     (SP),LSTERR     ;RECORD BEING HERE
004102  105037  001311                  CLRB    ERRFLG          ;PREPARE HEADER
004106  104406                  1$:     SAVDS                   ;SAVE ALL PROC REGISTERS
004110  011605                          MOV     (SP),R5         ;GET THE PC OF ERROR
004112  162705  000002                  SUB     #2,R5           ;GET ADDRESS OF TRAP CALL
004116  011504                          MOV     (R5),R4         ;GET HLT INSTRUCTION
004120  006304                          ASL     R4              ;MULT BY TWO
004122  061504                          ADD     (R5),R4         ;DOUBLE IT
004124  006304                          ASL     R4              ;MULT AGAIN
004126  042704  177001                  BIC     #177001,R4      ;CLEAR JUNK
004132  062704  035740                  ADD     #.ERRTAB,R4     ;GET POINTER
004136  012437  004252                  MOV     (R4)+,ERRMSG    ;GET ERROR MESSAGE
004142  012437  004264                  MOV     (R4)+,DATAHD    ;GET DATA HEADRER
004146  011437  004276                  MOV     (R4),DATABP     ;GET DATA TABLE
004152  105737  001311                  TSTB    ERRFLG          ;TYPE HEADREER
004156  001403                          BEQ     TYPMSG          ;BR IF YES
004160  005737  004276                  TST     DATABP          ;DOES DATA TABLE EXIST?
004164  001040                          BNE     TYPDAT          ;BR IF YES.
004166  104402  005104          TYPMSG: TYPE    ,MCRLF
004172  104402  005104                  TYPE    ,MCRLF
004176  005737  001220                  TST     LOCK
```

```
 1333  004202  001402                        BEQ     1$
 1334  004204  104402  005400                TYPE    ,MASTEK
 1335  004210  104402  005366        1$:     TYPE    ,MTSTN
 1336  004214  104411  004374                CNVRT   ,XTSTN          ;SHOW IT
 1337  004220  104402  005454                TYPE    ,MERRPC         ;TYPE PC.
 1338  004224  104411  004366                CNVRT   ,ERTABO         ;SHOW IT
 1339  004230  104402  005104                TYPE    ,MCRLF          ;GIVE A CR/LF
 1340  004234  112737  177777  001311        MOVB    #-1,ERRFLG      ;NO MORE HEADER UNLESS NO DATA TABLE.
 1341  004242  005737  004252                TST     ERRMSG          ;IS THERE AN ERROR MESSAGE?
 1342  004246  001402                        BEQ     WRKO.FM         ;BR IF NO.
 1343  004250  104402                        TYPE                    ;TYPE
 1344  004252  000000                ERRMSG: 0                       ;    ERROR MESSAGE
 1345  004254                        WRKO.FM:                        ;
 1346  004254  005737  004264                TST     DATAHD          ;DATA HEADER?
 1347  004260  001402                        BEQ     TYPDAT          ;BR IF NO
 1348  004262  104402                        TYPE                    ;TYPE
 1349  004264  000000                DATAHD: 0                       ;    DATA HEADER
 1350  004266  005737  004276        TYPDAT: TST     DATABP          ;DATA TABLE?
 1351  004272  001402                        BEQ     RESREG          ;BR IF NO.
 1352  004274  104410                        CONVRT                  ;SHOW
 1353  004276  000000                DATABP: 0                       ;    DATA TABLE
 1354  004300  104407                RESREG: RESOS                   ;RESTORE PROC REGISTERS
 1355  004302  005777  174674        HALTS:  TST     @SWR            ;HALT ON ERROR?
 1356  004306  100005                        BPL     EXITER          ;BR IF NO HALT ON ERROR
 1357  004310  010046                        PUSHRO                  ;SAVE RO
 1358  004312  016600  000002                MOV     2(SP),RO        ;SHOW ERROR PC IN DATA LIGHTS
 1359  004316  000000                        HALT                    ;HALT
 1360  004320  012600                        POPRO                   ;GET RO
 1361  004322  005237  001232        EXITER: INC     ERRCNT          ;UPDATE ERROR COUNT
 1362  004326  032777  000400  174646        BIT     #SW08,@SWR      ;GOTO TOP OF TEST?
 1363  004334  001007                        BNE     1$              ;BR IF YES
 1364  004336  032777  002000  174636        BIT     #SW10,@SWR      ;GOTO NEXT TEST?
 1365  004344  001407                        BEQ     2$              ;BR IF NO
 1366  004346  013737  001216  001214        MOV     NEXT,RETURN     ;SET FOR NEXT TEST
 1367  004354  012706  001200        1$:     MOV     #STACK,SP       ;RESET SP
 1368  004360  000177  174630                JMP     @RETURN         ;GOTO SPECIFIED TEST
 1369  004364  000002                2$:     RTI                     ;RETURN
 1370  004366  000001                ERTABO: 1
 1371  004370     006     002                .BYTE   6,2
 1372  004372  001276                        SAVPC
 1373  004374  000001                XTSTN:  1
 1374  004376     003     002                .BYTE   3,2
 1375  004400  001226                        TSTNO
 1376                                        ;ENTER HERE ON POWER FAILURE
 1377                                        ;--------------------------
 1378
 1379
 1380  004402                        .PFAIL:
 1381  004402  012737  004414  000024        MOV     #RESTART,24             ;SET UP FOR POWER UP TRAP
 1382  004410  000000                        HALT                            ;HALT ON POWER DOWN NORMAL
 1383  004412  000777                        BR      .
 1384
 1385                                        ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
 1386
 1387  004414                        RESTAR:
 1388  004414  012737  004402  000024        MOV     #.PFAIL,24      ;SET UP FOR POWER FAILURE
```

```
1389   004422  012706  001200                  MOV     #STACK,SP       ;RESET THE STACK POINTER
1390   004426  005037  005562                  CLR     TEMP            ;READY FOR TIMMER
1391   004432  005237  005562                  INC     TEMP            ;PLUS ONE TO THE TIMER!
1392   004436  001375                          BNE     .-4             ;BR IF MORE TO GO
1393   004440  104402  005107                  TYPE    ,MPFAIL         ;TYPE THE MESSAGE
1394   004444  104411  004470                  CNVRT   ,FFTAB          ;TELL WHAT TEST TO RETURN TO.
1395   004450  105037  001311                  CLRB    ERRFLG          ;START CLEAN
1396   004454  005037  001234                  CLR     LSTERR          ;
1397   004460  104412                          MSTCLR                  ;START CLEAN UP OF DEVICE
1398   004462  104413                          RAMCLR                  ;CLEAR IT ALL!
1399   004464  000177  174524                  JMP     @RETURN         ;START DOING THAT TEST AGAIN.
1400   004470  000001                  FFTAB:  1
1401   004472      003     002         .BYTE   3,2
1402   004474  001226                          TSTNO
1403   004476  010046                  .DELAY: MOV     R0,-(SP)
1404   004500  013700  004514                  MOV     1$,R0
1405   004504  005300                          DEC     R0
1406   004506  001376                          BNE     .-2
1407   004510  012600                          MOV     (SP)+,R0
1408   004512  000002                          RTI
1409   004514  000036                  1$:     30.
1410
1411   004516                          .RAMCLR:
1412   004516  012777  004000  174636          MOV     #MRESET,@DVSCR  ;ISSUE A MASTER CLEAR
1413   004524  010146                          MOV     R1,-(SP)        ;SAVE R1 ON THE STACK
1414   004526  010446                          MOV     R4,-(SP)        ;SAVE R4 ON THE STACK
1415   004530  013701  001372                  MOV     DVSRS,R1        ;GET SECONDARY SEL. REG.
1416   004534  013704  001376                  MOV     DVSRA,R4        ;GET SECONDARY REGISTER ACCESS REG.
1417   004540  005014                  1$:     CLR     (R4)            ;ZERO THE SECONDARY REGISTER.
1418   004542  062711  170361                  ADD     #^C<BIT11+BIT10+BIT9+BIT8+BIT3+BIT2+BIT1+BIT0>+BIT0,(R1)
1419   004546  001374                          BNE     1$
1420   004550  012604                          MOV     (SP)+,R4        ;RESTORE R4
1421   004552  012601                          MOV     (SP)+,R1        ;RESTORE R1
1422   004554  000002                          RTI
1423
1424   004556                          .MSTCLR:
1425   004556  012777  004000  174576          MOV     #MRESET,@DVSCR  ;ISSUE MASTER CLEAR.
1426   004564  000002                          RTI
1427
1428   004566                          .ROMCLK:
1429   004566  052777  000002  174566          BIS     #BIT1,@DVSCR
1430   004574  000002                          RTI
1431
1432   004576                          .DATACLK:
1433   004576  010046                          MOV     R0,-(SP)
1434   004600  005000                          CLR     R0
1435   004602  052777  000400  174560          BIS     #BIT8,@DVLCR
1436   004610  017737  174554  004636  1$:     MOV     @DVLCR,3$
1437   004616  106037  004637                  RORB    3$+1
1438   004622  103003                          BCC     2$
1439   004624  005200                          INC     R0
1440   004626  001370                          BNE     1$
1441   004630  104000                          HLT     0
1442   004632  012600                  2$:     MOV     (SP)+,R0
1443   004634  000002                          RTI
1444   004636  000001                  3$:     .BLKW 1
```

```
1445
1446  004640  032777  004000  174336  SERV.G: BIT     #4000,@TKCSR    ;RX BUSY?
1447  004646  001374                  BNE     SERV.G          ;BR IF YES
1448  004650  017737  174326  005072  MOV     @SWR,90$        ;SAVE (SWR).
1449  004656  013777  005072  174316  1$:     MOV     90$,@SWR        ;
1450  004664  104402  005052          TYPE    .89$            ;
1451  004670  104411  005064          CNVRT   .88$            ;
1452  004674  104402  005074          TYPE    .91$            ;
1453  004700  105777  174300          TSTB    @TKCSR          ;WAIT FOR DONE.
1454  004704  100375                  BPL     .-4
1455  004706  017746  174274          MOV     @TKDBR,-(SP)    ;
1456  004712  042716  000200          BIC     #BIT7,(SP)      ;
1457  004716  122726  000015          CMPB    #15,(SP)+       ;
1458  004722  001450                  BEQ     5$              ;
1459  004724  005077  174252          CLR     @SWR            ;
1460  004730  105777  174254          2$:     TSTB    @TPCSR          ;
1461  004734  100375                  BPL     .-4
1462  004736  016677  177776  174246  MOV     -2(SP),@TPDBR   ;
1463  004744  000241                  CLC                     ;
1464  004746  006177  174230          ROL     @SWR            ;
1465  004752  006177  174224          ROL     @SWR            ;
1466  004756  006177  174220          ROL     @SWR            ;
1467  004762  103735                  BCS     1$              ;ERROR
1468  004764  026627  177776  000060  CMP     -2(SP),#60      ;
1469  004772  002731                  BLT     1$              ;
1470  004774  026627  177776  000067  CMP     -2(SP),#67      ;
1471  005002  003325                  BGT     1$              ;
1472  005004  042766  177770  177776  BIC     #^C<7>,-2(SP)   ;
1473  005012  056677  177776  174162  BIS     -2(SP),@SWR     ;
1474  005020  105777  174160          TSTB    @TKCSR          ;
1475  005024  100375                  BPL     .-4             ;
1476  005026  017746  174154          MOV     @TKDBR,-(SP)
1477  005032  042716  000200          BIC     #BIT7,(SP)
1478  005036  122726  000015          CMPB    #15,(SP)+
1479  005042  001332                  BNE     2$              ;
1480  005044  104402  005104          5$:     TYPE    ,MCRLF          ;
1481  005050  000207                  RTS     PC
1482
1483  005052  020377  051450  051127  89$:    .ASCIZ  <377>? (SWR)=/?
1484  005060  036451  000057
1485                                  .EVEN
1486  005064  000001                  88$:    1
1487  005066     006     000                  .BYTE   6,0
1488  005070  005072                  90$
1489  005072  000000                  90$:    .WORD   0
1490  005074  036457  000057          91$:    .ASCIZ  ?/=/?
1491                                  .EVEN
1492  005100  020040  000077          MQM:    .ASCIZ  /  ?/
 (2)  005104  005015     000          MCRLF:  .ASCIZ  <15><12>
 (2)  005107     377  053520  020122  MPFAIL: .ASCIZ  <377>/PWR FAILED. RESTART AT TEST /
 (2)  005145     377  047105  020104  MEPASS: .ASCIZ  <377>/END PASS DZDVF-A  /
 (2)  005171     377  000122          MR:     .ASCIZ  <377>/R/
 (2)  005174  050377  047522  051107  MERR2:  .ASCIZ  <377>/PROGRAM INDICATES NO DEVICES PRESENT./
 (2)  005243     377  047111  052523  MERR3:  .ASCIZ  <377>/INSUFFICIENT DATA!/
 (2)  005267     377  042524  052123  MTSTPC: .ASCIZ  <377>/TEST PC-/
 (2)  005301     377  047514  045503  MLOCK:  .ASCIZ  <377>/LOCK ON SELECTED TEST/
```

F03


```
                (2)  005330  051503  035122  000040  MCSRX:  .ASCIZ   /CSR: /
                (2)  005336  042526  035103  000040  MVECX:  .ASCIZ  /VEC: /
                (2)  005344  040520  051523  051505  MPASSX: .ASCIZ  /PASSES: /
                (2)  005355     105  051122  051117  MERRX:  .ASCIZ  /ERRORS: /
                (2)  005366  042524  052123  047040  MTSTN:  .ASCIZ  /TEST NO: /
                (2)  005400  000052                  MASTEK: .ASCIZ  /*/
                (2)  005402  051777  052105  051440  MNEW:   .ASCIZ  <377>/SET SWITCH REG TO DV11'S DESIRED ACTIVE./
                (2)  005454  041520  020072     000  MERRPC: .ASCIZ  /PC: /
                (2)  005461     377  040515  020120  XHEAD:  .ASCIZ  <377>/MAP OF DV11 STATUS/<377>
                                                     .EVEN
                (2)  005506  000002                  XSTATQ: 2
1493            (2)  005510     006     003                  .BYTE   6,3
1494            (2)  005512  001246                          TEMP1
1495            (2)  005514     006     002                  .BYTE   6,2
1496            (2)  005516  001250                          TEMP2
1497                                                 .EVEN
1498
1499                                                         ;BUFFERS FOR INPUT-OUTPUT
1500
1501            (2)  005520  000000                  INBUF:  0
1502                 005562                          .=.+40
1503            (2)  005562  000000                  TEMP:   0
1504                 005624                          .=.+40
1505            (2)  005624  000000                  MDATA:  0
1506                 005666                          .=.+40
```

```
1507
1508                                        ;
1509                                        ;ROUTINE USED TO "CYCLE" THROUGH UP TO EIGHT DV11'S
1510                                        ;THIS ROUTINE SETS UP THE CONTROL ADDRESS FOR THE DIAGNOSTIC
1511                                        ;AND RUNS THE SPECIFIED DV11'S.   THIS ROUTINE *MUST*
1512                                        ;BE RUN FIRST BEFORE ENTERING THE DIAGNOSTIC FOR THE
1513                                        ;SETUP NECESSARY.
1514                                        ;
1515
1516  005666  105737  001300        CYCLE:  TSTB    DVACTV          ;ARE ANY DV11'S TO BE TESTED?
1517  005672  001004                        BNE     1$              ;BR IF OK.
1518  005674  104402  005174                TYPE    ,MERR2          ;NO DV11'S SELECTED!!
1519  005700  000000                        HALT                    ;STOP THE SHOW.
1520  005702  000776                        BR      .-2             ;DISQUALIFY CONT. SW.
1521  005704  133737  001304  001300  1$:    BITB    RUN,DVACTV      ;IS THIS ONE "ACTIVE"
1522  005712  001020                        BNE     2$              ;BR IF GOOD ONE FOUND.
1523  005714  000241                        CLC                     ;CLEAR PROC. CARRY BIT.
1524  005716  106137  001304                ROLB    RUN             ;UPDATE POINTER
1525  005722  105537  001304                ADCB    RUN             ;CATCH CARRY FROM RUN
1526  005726  062737  000024  001306        ADD     #24,CREAM       ;UPDATE ADDRESS POINTER.
1527  005734  022737  001740  001306        CMP     #DV.END,CREAM
1528  005742  001360                        BNE     1$              ;KEEP GOING; NOT ALL TESTED FOR.
1529  005744  012737  001500  001306        MOV     #DV.MAP,CREAM   ;RESET ADDRESS POINTER.
1530  005752  000754                        BR      1$              ;KEEP LOOKING FOR ACTIVE DV11
1531  005754  000241                2$:     CLC                     ;CLEAR PROC. CARRY.
1532  005756  106137  001304                ROLB    RUN             ;UPDATE POINTER.
1533  005762  105537  001304                ADCB    RUN             ;CATCH CARRY.
1534  005766  013700  001306                MOV     CREAM,R0        ;GET ADDRESS POINTER.
1535  005772  062737  000024  001306        ADD     #24,CREAM       ;UPDATE.
1536  006000  022737  001740  001306        CMP     #DV.END,CREAM
1537                                                                ;ALL DONE?
1538  006006  001003                        BNE     3$              ;BR IF NO.
1539  006010  012737  001500  001306        MOV     #DV.MAP,CREAM   ;RESTORE POINTER.
1540  006016  012037  001362        3$:     MOV     (R0)+,DVSCR     ;LOAD SYSTEM CTRL. REG
1541  006022  012037  001352                MOV     (R0)+,DVRVEC    ;LOAD VECTOR
1542  006026  012037  001416                MOV     (R0)+,L00.03    ;GET LINE PARAMETERS. 00-03
1543  006032  012037  001426                MOV     (R0)+,SYNC2A    ;
1544  006036  012037  001420                MOV     (R0)+,L04.07    ;                     04-07
1545  006042  012037  001430                MOV     (R0)+,SYNC2B    ;
1546  006046  012037  001422                MOV     (R0)+,L08.11    ;                     08-11
1547  006052  012037  001432                MOV     (R0)+,SYNC2C    ;
1548  006056  012037  001424                MOV     (R0)+,L12.15    ;                     12-15
1549  006062  012037  001434                MOV     (R0)+,SYNC2D    ;
1550  006066  012700  000002                MOV     #2,R0           ;SAVE CORE THIS WAY!
1551  006072  013737  001362  001364        MOV     DVSCR,DVSCRH    ;GET SYS CTRL. REG HIGH BYTE.
1552  006100  005237  001364                INC     DVSCRH          ;GOT IT.
1553  006104  013737  001364  001366        MOV     DVSCRH,DVRIC    ;GET NXT REC. CHAR REG.
1554  006112  005237  001366                INC     DVRIC           ;GOT IT
1555  006116  013737  001366  001370        MOV     DVRIC,DVLCR     ;GET LN. PAR.REG.
1556  006124  060037  001370                ADD     R0,DVLCR        ;GOT IT
1557  006130  013737  001370  001372        MOV     DVLCR,DVSRS     ;GET SEC. REG. SEL. REG.
1558  006136  060037  001372                ADD     R0,DVSRS        ;GOT IT
1559  006142  013737  001372  001374        MOV     DVSRS,DVSRSH    ;GET HIGH BYTE.
1560  006150  005237  001374                INC     DVSRSH          ;GOT IT
1561  006154  013737  001374  001376        MOV     DVSRSH,DVSRA    ;SEC. REG. ACCESS.
1562  006162  005237  001376                INC     DVSRA           ;GOT IT
```

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1563  006166  013737  001376  001400          MOV     DVSRA,DVSFR     ;SPEC. FUN. REG.
1564  006174  060037  001400                  ADD     R0,DVSFR        ;
1565  006200  013737  001400  001402          MOV     DVSFR,DVNSR     ;NPR STAT. REG.
1566  006206  060037  001402                  ADD     R0,DVNSR        ;
1567  006212  013737  001402  001404          MOV     DVNSR,RESV16    ;RESERVED REG
1568  006220  060037  001404                  ADD     R0,RESV16       ;
1569
1570  006224  013737  001352  001354          MOV     DVRVEC,DVRLVL   ;PTY LVL
1571  006232  060037  001354                  ADD     R0,DVRLVL       ;
1572  006236  013737  001354  001356          MOV     DVRLVL,DVTVEC   ;TX VEC
1573  006244  060037  001356                  ADD     R0,DVTVEC       ;
1574  006250  013737  001356  001360          MOV     DVTVEC,DVTLVL   ;TX LVL
1575  006256  060037  001360                  ADD     R0,DVTLVL
1576
1577  006262  012700  001416                  MOV     #L00.03,R0      ;LOAD STAUS 00-03
1578  006266  012701  001406                  MOV     #MASK.A,R1      ;PREPARE MASK.
1579  006272  012702  001412                  MOV     #CLK.A,R2       ;PREPARE CLOCKS
1580  006276  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1581
1582  006302  012700  001420                  MOV     #L04.07,R0      ;LOAD STAUS 00-03
1583  006306  012701  001407                  MOV     #MASK.B,R1      ;PREPARE MASK.
1584  006312  012702  001413                  MOV     #CLK.B,R2       ;PREPARE CLOCKS
1585  006316  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1586
1587  006322  012700  001422                  MOV     #L08.11,R0      ;LOAD STAUS 00-03
1588  006326  012701  001410                  MOV     #MASK.C,R1      ;PREPARE MASK.
1589  006332  012702  001414                  MOV     #CLK.C,R2       ;PREPARE CLOCKS
1590  006336  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1591
1592  006342  012700  001424                  MOV     #L12.15,R0      ;LOAD STAUS 00-03
1593  006346  012701  001411                  MOV     #MASK.D,R1      ;PREPARE MASK.
1594  006352  012702  001415                  MOV     #CLK.D,R2       ;PREPARE CLOCKS
1595  006356  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1596  006362  032777  000002  172612          BIT     #SW01,@SWR
1597  006370  001445                          BEQ     7$
1598  006372                          4$:
1599  006372  005737  000042                  TST     @#42
1600  006376  001042                          BNE     7$
1601  006400  104402  005104                  TYPE    ,MCRLF
1602  006404  104403                          INSTR
1603  006406  005366                          MTSTN
1604  006410  104405                          PARAM
1605  006412  000001                          1
1606  006414  001000                          1000
1607  006416  001226                          TSTNO
1608  006420     000                  .BYTE   0
1609  006421     001                  .BYTE   1
1610  006422  012700  007256                  MOV     #TST1,R0
1611  006426  022710                  5$:     CMP     (PC)+,(R0)
1612  006430  012737                          MOV     (PC)+,@(PC)+
1613  006432  001015                          BNE     6$
1614  006434  023760  001226  000002          CMP     TSTNO,2(R0)
1615  006442  001011                          BNE     6$
1616  006444  022760  001226  000004          CMP     #TSTNO,4(R0)
1617  006452  001005                          BNE     6$
1618  006454  010037  001214                  MOV     R0,RETURN
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1619  006460  104402  005104                    TYPE    ,MCRLF
1620  006464  000412                            BR      9$
1621  006466  005720                    6$:     TST     (R0)+
1622  006470  020027  026444                    CMP     R0,#TLAST+10
1623  006474  001354                            BNE     5$
1624  006476  104402  005100                    TYPE    ,MQM
1625  006502  000733                            BR      4$
1626  006504  012737  007256  001214    7$:     MOV     #TST1,RETURN    ;PREPARE RETURN ADDRESS
1627  006512  000177  172476            9$:     JMP     @RETURN         ;GO START TESTING.
1628
1629  006516  011003                    FIX.00: MOV     (R0),R3         ;GET PARAMETERS.
1630  006520  042703  176377                    BIC     #^C<1400>,R3    ;CLEAR JUNK.
1631  006524  005703                            TST     R3              ;TEST FOR EIGHT BITS.
1632  006526  001004                            BNE     1$              ;BR IF NOT 8 BITS.
1633  006530  105011                            CLRB    (R1)            ;SET
1634  006532  112712  000010                    MOVB    #8.,(R2)        ;
1635  006536  000424                            BR      4$
1636  006540  022703  000400            1$:     CMP     #400,R3         ;CHECK FOR SEVEN BITS.
1637  006544  001005                            BNE     2$              ;BR IF NOT 7 BITS.
1638  006546  112711  000200                    MOVB    #200,(R1)       ;
1639  006552  112712  000007                    MOVB    #7,(R2)         ;
1640  006556  000414                            BR      4$
1641  006560  022703  001000            2$:     CMP     #1000,R3        ;CHECK FOR SIX BITS.
1642  006564  001005                            BNE     3$              ;BR IF NOT SIX BITS.
1643  006566  112711  000300                    MOVB    #300,(R1)       ;
1644  006572  112712  000006                    MOVB    #6,(R2)         ;
1645  006576  000404                            BR      4$
1646  006600  112711  000340            3$:     MOVB    #340,(R1)       ;IF NONE OF THE ABOVE; MUST BE 5 BITS.
1647  006604  112712  000005                    MOVB    #5,(R2)         ;
1648  006610  032710  040000            4$:     BIT     #PARBIT,(R0)    ;PARITY ENABLED?
1649  006614  001401                            BEQ     5$              ;IF =0; THEN NO PARITY.
1650  006616  105212                            INCB    (R2)            ;PLUS ONE TO THE CLOCK!
1651  006620  000207                    5$:     RTS     PC              ;
1652
1653                                            ;*ROUTINE USED TO "AUTO SIZE" THE DV11
1654                                            ;*CSR AND VECTOR.
1655                                            ;*NOTE: THE CSR MAY BE ANY WHERE IN THE FLOATING
1656                                            ;*      ADDRESS RANGE (175000:175400)
1657                                            ;*      AND THE VECTOR MAY BE ANY WHERE IN THE
1658                                            ;*      FLOATING VECTOR RANGE (300:770)
1659                                            ;*
1660
1661  006622                            AUTO.SIZE:
1662  006622  000005                            RESET                   ;INSURE A BUS INIT.
1663  006624  012702  001500            CSRMAP: MOV     #DV.MAP,R2      ;LOAD MAP POINTER.
1664  006630  005022                    1$:     CLR     (R2)+           ;ZERO ENTIRE MAP
1665  006632  022702  001740                    CMP     #DV.END,R2      ;ALL DONE?
1666  006636  001374                            BNE     1$              ;BR IF NO
1667  006640  105037  001301                    CLRB    DVNUM           ;SET OCTAL NUMBER OF DV11'S TO 0
1668  006644  012702  001500                    MOV     #DV.MAP,R2
1669  006650  012701  175000                    MOV     #175000,R1      ;SET FOR FIRST ADDRESS TO BE TESTED
1670  006654  012737  007074  000004          MOV     #6$,@#4         ;SET FOR NON-EXISTANT DEVICE TIME OUT
1671  006662  005711                    2$:     TST     (R1)            ;IF DV11 DVSCR S/B 0
1672  006664  001037                            BNE     3$              ;IF NO DEV ; TRAP TO 4. IF NO BIT 8 THEN NO DV11
1673  006666  022761  177777  000012          CMP     #177777,12(R1)  ;IF DV11 THEN DVSFR S/B ALL 1'S ON INIT!
1674  006674  001033                            BNE     3$              ;BR IF NOT DV11
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 1675  006676  005761  000016                  TST     16(R1)          ;IF DV11 THEN RESV16 S/B ALL 0'S
 1676  006702  001030                          BNE     3$              ;BR IF NOT DV11
 1677                                  ;AT THIS POINT IT IS ASSUMED THAT R1 HOLDS A DV11 CSR ADDRESS.
 1678  006704  010122                          MOV     R1,(R2)+        ;STORE CSR IN CORE TABLE.
 1679  006706  005722                          TST     (R2)+           ;POP OVER VECTOR STORE AREA
 1680  006710  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 1 STAT AND SYNC
 1681  006714  052722  000062                  BIS     #62,(R2)+       ;
 1682  006720  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 2 STAT AND SYNC
 1683  006724  052722  000062                  BIS     #62,(R2)+       ;
 1684  006730  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 3 STAT AND SYNC
 1685  006734  052722  000062                  BIS     #62,(R2)+       ;
 1686  006740  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 4 STAT AND SYNC
 1687  006744  052722  000062                  BIS     #62,(R2)+       ;
 1688  006750  105237  001301                  INCB    DVNUM           ;UPDATE DEVICE COUNTER
 1689  006754  122737  000010  001301          CMPB    #10,DVNUM       ;ARE MAX. NO. OF DEV FOUND?
 1690  006762  001405                          BEQ     100$            ;YES DON'T LOOK FOR ANY MORE.
 1691  006764  062701  000010          3$:     ADD     #10,R1          ;UPDATE CSR POINTER ADDRESS
 1692  006770  022701  175400                  CMP     #175400,R1
 1693  006774  001332                          BNE     2$              ;BR IF MORE ADDRESS TO CHECK.
 1694  006776  012722  177777          100$:   MOV     #177777,(R2)+   ;TERMINATER.
 1695  007002  105037  001300                  CLRB    DVACTV
 1696  007006  105737  001301                  TSTB    DVNUM           ;WERE ANY DV11'S FOUND AT ALL?
 1697  007012  001423                          BEQ     5$              ;ERROR AUTO SIZER FOUND NO DV11'S IN THIS SYS.
 1698  007014  113701  001301                  MOVB    DVNUM,R1
 1699  007020  110137  001303                  MOVB    R1,SAVNUM       ;SAVE NUMBER OF DEVICES
 1700  007024  000241                  4$:     CLC
 1701  007026  106137  001300                  ROLB    DVACTV          ;GENERATE ACTIVE REGISTER OF DEVICES.
 1702  007032  105237  001300                  INCB    DVACTV          ;SET THE BIT
 1703  007036  005301                          DEC     R1
 1704  007040  001371                          BNE     4$              ;BR IF MORE TO GENERATE
 1705  007042  012737  000006  000004          MOV     #6,@#4          ;RESTORE TRAP VECTOR
 1706  007050  113737  001300  001302          MOVB    DVACTV,SAVACT   ;SAVE ACTIVE REGISTER
 1707  007056  000137  007102                  JMP     VECMAP          ;GO FIND THE VECTOR NOW.
 1708  007062  104402  005174          5$:     TYPE    ,MERR2          ;NOTIFY OPR THAT NO DV11'S FOUND.
 1709  007066  005000                          CLR     R0              ;MAKE DATA LIGHTS ZERO
 1710  007070  000000                          HALT                    ;STOP THE SHOW
 1711  007072  000776                          BR      .-2             ;DISABLE CONT. SW.
 1712  007074  012716  006764          6$:     MOV     #3$,(SP)        ;ENTERED BY NON-EXISTANT TIME-OUT.
 1713  007100  000002                          RTI                     ;RETURN TO MAINSTREAM
 1714
 1715  007102  012737  000340  000022  VECMAP: MOV     #340,@#22       ;SET IOT TRAP PRIO TO 7
 1716  007110  012737  007232  000020          MOV     #4$,@#20        ;SET IOT TRAP VECTOR
 1717  007116  012702  001500                  MOV     #DV.MAP,R2      ;SET SOFTWARE POINTER
 1718  007122  012700  000300                  MOV     #300,R0         ;FLOATING VECTORS START HERE.
 1719  007126  012701  000302                  MOV     #302,R1         ;PC OF IOT INSTR.
 1720  007132  010120                  1$:     MOV     R1,(R0)+        ;START FILLING VECTOR AREA
 1721  007134  012721  000004                  MOV     #4,(R1)+        ;WITH .+2; IOT
 1722  007140  022021                          CMP     (R0)+,(R1)+     ;ADD 2 TO R0 +R1
 1723  007142  020127  001000                  CMP     R1,#1000
 1724  007146  101771                          BLOS    1$              ;BR IF MORE TO FILL
 1725  007150  113737  001300  001246          MOVB    DVACTV,TEMP1    ;STORE TEMPORALLY
 1726  007156  006037  001246          2$:     ROR     TEMP1           ;BRING OUT A BIT
 1727  007162  103034                          BCC     5$              ;BR IF ALL DONE
 1728  007164  005037  177776                  CLR     PS              ;ZERO CPU PRIO
 1729  007170  012772  001300  000000          MOV     #BIT9+BIT7+BIT6,@(R2)
 1730  007176  005000                          CLR     R0              ;ATTEMPT TO FORCE AN INTERUPT
```

```
 1731  007200  005200                          INC     R0              ;STALL
 1732  007202  001376                          BNE     .-2             ;       FOR TIME TO INTERUPT
 1733  007204  052762  000300  000002          BIS     #300,2(R2)      ;NO INTERUPT ASSUME 300 AND FIX DV11 LATER
 1734  007212  042772  176777  000000  3$:     BIC     #^C<BIT9>,@(R2)
 1735  007220  005072  000000                  CLR     @(R2)
 1736  007224  062702  000024                  ADD     #24,R2          ;POP SOFTWARE POINTER
 1737  007230  000752                          BR      2$              ;KEEP GOING
 1738  007232  051662  000002          4$:     BIS     (SP),2(R2)      ;GET VECTOR ADDRESS
 1739  007236  042762  000007  000002          BIC     #7,2(R2)        ;CLEAR JUNK
 1740  007244  022626                          CMP     (SP)+,(SP)+     ;POP IOT JUNK OFF STACK
 1741  007246  012716  007212                  MOV     #3$,(SP)        ;SET FOR RETURN
 1742  007252  000002                          RTI
 1743  007254  000207                  5$:     RTS     PC              ;ALL DONE WITH "AUTO SIZING"
 1744
```

```
                                        ;************************ TEST 1 *******************************
                                        ;*TEST OF CHARACTER LENGTH FUNCTIONS
                                        ;*ON THE ASYNC LINE CARD.
                                        ;*THIS TEST WILL TRANSMIT 256 CHARS AT 5 BITS PER CHAR.
                                        ;DATA IN THE TRANSMITTER BUFFER WILL BE
                                        ;*FROM 000 TO 377(8).
                                        ;*NOTE: THIS TEST USES "INTERNAL LOOPBACK" MODE.
                                        ;:***********************************************************

                                ;  TEST 1
                                ;--------------
007256  012737  000001  001226  TST1:   MOV     #1,TSTNO
007264  012737  007626  001216          MOV     #TST2,NEXT
007272  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
007276  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
007304  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
007306  004737  007374                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
007312  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
007316  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
007324  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
007326  004737  007374                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
007332  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
007336  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
007344  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
007346  004737  007374                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
007352  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
007356  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
007364  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
007366  004737  007374                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
007372  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
007374                          105$:                           ;TEST ENTRANCE.
007374  032737  004000  001416          BIT     #ASYNC,L00.03   ;ASYNC?
007402  001047                          BNE     99$             ;YES
007404  032737  004000  001420          BIT     #ASYNC,L04.07   ;ASYNC?
007412  001043                          BNE     99$             ;YES
007414  032737  004000  001422          BIT     #ASYNC,L08.11   ;ASYNC?
007422  001037                          BNE     99$             ;YES
007424  032737  004000  001424          BIT     #ASYNC,L12.15   ;ASYNC?
007432  001033                          BNE     99$             ;YES
007434  104402  030610                  TYPE    ,MNOASYN
007440  104411  002604                  CNVRT   ,XCSR
007444  005037  001234                  CLR     LSTERR
007450  105037  001311                  CLRB    ERRFLG
007454  105337  001303                  DECB    SAVNUM
007460  001013                          BNE     98$
007462  112737  000377  001313          MOVB    #377,QV.FLG
007470  113737  001301  001303          MOVB    DVNUM,SAVNUM
007476  013701  000042                  MOV     @#42,R1
007502  001402                          BEQ     98$
007504  000137  002560                  JMP     LOGICAL
007510  012737  005666  001214  98$:    MOV     #CYCLE,RETURN
007516  000137  005666                  JMP     CYCLE
007522                          99$:
007522  012737  000004  032314          MOV     #4,COUNT        ;SET TO DO 4 LINES
```

```
1801  007530  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
1802  007536  001001                          BNE     1$              ;BR IF YES
1803  007540  000207                          RTS     PC              ;EXIT TEST.
1804  007542  004537  032144          1$:     JSR     R5,TURNON       ;TURN ON DV11 AND SETUP PARAMETERS
1805  007546  001000                          (000)+BIT9              ;PARAMETERS AND CHAR LENGTH (5 B/P/C)
1806  007550  005001                          CLR     R1              ;CHAR COUNTER.
1807  007552  012702  033340                  MOV     #TXBAP,R2       ;GET TRANSMITTER BUFFER.
1808  007556  012703  033740                  MOV     #RXBA,R3        ;GET RECEIVER BUFFER
1809  007562  005004                          CLR     R4              ;GET STORAGE OF DATA
1810  007564  005005                          CLR     R5              ;
1811  007566  112205                  2$:     MOVB    (R2)+,R5        ;LOAD GOOD DATA
1812  007570  112304                          MOVB    (R3)+,R4        ;LOAD RECEIVED DATA
1813  007572  042705  177740                  BIC     #(377*400)!340,R5       ;CLEAR HIBYTE AND MASK.
1814  007576  042704  177400                  BIC     #(377*400),R4           ;CLEAR HIGH BYTE
1815  007602  020504                          CMP     R5,R4           ;DATA OK?
1816  007604  001401                          BEQ     3$              ;BR IF YES
1817  007606  104001                          HLT     1               ;DATA COMPARE ERROR.
1818  007610  105201                  3$:     INCB    R1              ;UPDATE COUNTER.
1819  007612  001365                          BNE     2$              ;ALL CHAR CHECKED?
1820  007614  005200                          INC     R0              ;UPDATE LINE NO.
1821  007616  005337  032314                  DEC     COUNT           ;4 LINES DONE?
1822  007622  001347                          BNE     1$              ;BR IF NO
1823  007624  000207                          RTS     PC              ;EXIT TEST.
1824
1825
1826                                          ;********************** TEST 2 ****************************
1827                                          ;*TEST OF CHARACTER LENGTH FUNCTIONS
1828                                          ;*ON THE ASYNC LINE CARD.
1829                                          ;*THIS TEST WILL TRANSMIT 256 CHARS AT 6 BITS PER CHAR.
1830                                          ;DATA IN THE TRANSMITTER BUFFER WILL BE
1831                                          ;*FROM 000 TO 377(8).
1832                                          ;*NOTE: THIS TEST USES "INTERNAL LOOPBACK" MODE.
1833                                          ;:*************************************************************
1834
1835                                  ;  TEST 2
1836                                  ;--------------
1837  007626  012737  000002  001226  TST2:   MOV     #2,TSTNO
1838  007634  012737  010050  001216          MOV     #TST3,NEXT
1839  007642  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
1840  007646  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
1841  007654  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
1842  007656  004737  007744                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
1843  007662  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
1844  007666  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
1845  007674  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
1846  007676  004737  007744                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
1847  007702  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
1848  007706  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
1849  007714  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
1850  007716  004737  007744                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
1851  007722  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
1852  007726  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
1853  007734  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
1854  007736  004737  007744                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
1855  007742  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
1856  007744                          105$:                           ;TEST ENTRANCE.
```

```
1857  007744  012737  000004  032314          MOV     #4,COUNT        ;SET TO DO 4 LINES
1858  007752  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
1859  007760  001001                          BNE     1$              ;BR IF YES
1860  007762  000207                          RTS     PC              ;EXIT TEST.
1861  007764  004537  032144          1$:     JSR     R5,TURNON       ;TURN ON DV11 AND SETUP PARAMETERS
1862  007770  005000                          <BIT11>+BIT9            ;PARAMETERS AND CHAR LENGTH (5 B/P/C)
1863  007772  005001                          CLR     R1              ;CHAR COUNTER.
1864  007774  012702  033340                  MOV     #TXBAP,R2       ;GET TRANSMITTER BUFFER.
1865  010000  012703  033740                  MOV     #RXBA,R3        ;GET RECEIVER BUFFER
1866  010004  005004                          CLR     R4              ;GET STORAGE OF DATA
1867  010006  005005                          CLR     R5              ;
1868  010010  112205          2$:     MOVB    (R2)+,R5                ;LOAD GOOD DATA
1869  010012  112304                          MOVB    (R3)+,R4        ;LOAD RECEIVED DATA
1870  010014  042705  177700                  BIC     #<377*400>!300,R5       ;CLEAR HIBYTE AND MASK.
1871  010020  042704  177400                  BIC     #<377*400>,R4           ;CLEAR HIGH BYTE
1872  010024  020504                          CMP     R5,R4           ;DATA OK?
1873  010026  001401                          BEQ     3$              ;BR IF YES
1874  010030  104001                          HLT     1               ;DATA COMPARE ERROR.
1875  010032  105201          3$:     INCB    R1                      ;UPDATE COUNTER.
1876  010034  001365                          BNE     2$              ;ALL CHAR CHECKED?
1877  010036  005200                          INC     R0              ;UPDATE LINE NO.
1878  010040  005337  032314                  DEC     COUNT           ;4 LINES DONE?
1879  010044  001347                          BNE     1$              ;BR IF NO
1880  010046  000207                          RTS     PC              ;EXIT TEST.
1881
1882
1883                                          ;********************** TEST 3 ******************************
1884                                          ;*TEST OF CHARACTER LENGTH FUNCTIONS
1885                                          ;*ON THE ASYNC LINE CARD.
1886                                          ;*THIS TEST WILL TRANSMIT 256 CHARS AT 7 BITS PER CHAR.
1887                                          ;DATA IN THE TRANSMITTER BUFFER WILL BE
1888                                          ;*FROM 000 TO 377(8).
1889                                          ;*NOTE: THIS TEST USES "INTERNAL LOOPBACK" MODE.
1890                                          ;:***********************************************************
1891
1892                                  ;  TEST 3
1893                                  ;--------------
1894  010050  012737  000003  001226  TST3:   MOV     #3,TSTNO
1895  010056  012737  010272  001216          MOV     #TST4,NEXT
1896  010064  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
1897  010070  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
1898  010076  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
1899  010100  004737  010166                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
1900  010104  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
1901  010110  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
1902  010116  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
1903  010120  004737  010166                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
1904  010124  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
1905  010130  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
1906  010136  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
1907  010140  004737  010166                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
1908  010144  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
1909  010150  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
1910  010156  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
1911  010160  004737  010166                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
1912  010164  104400          103$:   SCOPE                           ;SCOPE THIS TEST.
```

```
                                105$:                           ;TEST ENTRANCE.
010166  012737  000004  032314          MOV     #4,COUNT        ;SET TO DO 4 LINES
010172  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
010200  001001                          BNE     1$              ;BR IF YES
010202  000207                          RTS     PC              ;EXIT TEST.
010204  004537  032144          1$:     JSR     R5,TURNON       ;TURN ON DV11 AND SETUP PARAMETERS
010210  011000                          (BIT12)+BIT9            ;PARAMETERS AND CHAR LENGTH (7 B/P/C)
010212  005001                          CLR     R1              ;CHAR COUNTER.
010214  012702  033340                  MOV     #TXBAP,R2       ;GET TRANSMITTER BUFFER.
010220  012703  033740                  MOV     #RXBA,R3        ;GET RECEIVER BUFFER
010224  005004                          CLR     R4              ;GET STORAGE OF DATA
010226  005005                          CLR     R5              ;
010230  112205                  2$:     MOVB    (R2)+,R5        ;LOAD GOOD DATA
010232  112304                          MOVB    (R3)+,R4        ;LOAD RECEIVED DATA
010234  042705  177600                  BIC     #<377*400>!200,R5       ;CLEAR HIBYTE AND MASK.
010240  042704  177400                  BIC     #<377*400>,R4           ;CLEAR HIGH BYTE
010244  020504                          CMP     R5,R4           ;DATA OK?
010246  001401                          BEQ     3$              ;BR IF YES
010250  104001                          HLT     1               ;DATA COMPARE ERROR.
010252  105201                  3$:     INCB    R1              ;UPDATE COUNTER.
010254  001365                          BNE     2$              ;ALL CHAR CHECKED?
010256  005200                          INC     R0              ;UPDATE LINE NO.
010260  005337  032314                  DEC     COUNT           ;4 LINES DONE?
010264  001347                          BNE     1$              ;BR IF NO
010266  000207                          RTS     PC              ;EXIT TEST.


                                ;********************** TEST 4 ****************************
                                ;*TEST OF CHARACTER LENGTH FUNCTIONS
                                ;*ON THE ASYNC LINE CARD.
                                ;*THIS TEST WILL TRANSMIT 256 CHARS AT 8 BITS PER CHAR.
                                ;DATA IN THE TRANSMITTER BUFFER WILL BE
                                ;*FROM 000 TO 377(8).
                                ;*NOTE: THIS TEST USES "INTERNAL LOOPBACK" MODE.
                                ;:**************************************************************

                                ;  TEST 4
                                ;--------------
010270  012737  000004  001226  TST4:   MOV     #4,TSTNO
010276  012737  010514  001216          MOV     #TST5,NEXT
010304  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
010310  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
010316  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
010320  004737  010410                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
010324  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
010330  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
010336  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
010340  004737  010410                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
010344  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
010350  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
010356  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
010360  004737  010410                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
010364  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
010370  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
010374  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
010376  004737  010410                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
```

```
 1969  010406  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
 1970  010410                          105$:                           ;TEST ENTRANCE.
 1971  010410  012737  000004  032314          MOV     #4,COUNT        ;SET TO DO 4 LINES
 1972  010416  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
 1973  010424  001001                          BNE     1$              ;BR IF YES
 1974  010426  000207                          RTS     PC              ;EXIT TEST.
 1975  010430  004537  032144          1$:     JSR     R5,TURNON       ;TURN ON DV11 AND SETUP PARAMETERS
 1976  010434  015000                          <BIT12+BIT11>+BIT9              ;PARAMETERS AND CHAR LENGTH (8 B/P/C)
 1977  010436  005001                          CLR     R1              ;CHAR COUNTER.
 1978  010440  012702  033340                  MOV     #TXBAP,R2       ;GET TRANSMITTER BUFFER.
 1979  010444  012703  033740                  MOV     #RXBA,R3        ;GET RECEIVER BUFFER
 1980  010450  005004                          CLR     R4              ;GET STORAGE OF DATA
 1981  010452  005005                          CLR     R5              ;
 1982  010454  112205                  2$:     MOVB    (R2)+,R5        ;LOAD GOOD DATA
 1983  010456  112304                          MOVB    (R3)+,R4        ;LOAD RECEIVED DATA
 1984  010460  042705  177400                  BIC     #<377*400>!000,R5       ;CLEAR HIBYTE AND MASK.
 1985  010464  042704  177400                  BIC     #<377*400>,R4           ;CLEAR HIGH BYTE
 1986  010470  020504                          CMP     R5,R4           ;DATA OK?
 1987  010472  001401                          BEQ     3$              ;BR IF YES
 1988  010474  104001                          HLT     1               ;DATA COMPARE ERROR.
 1989  010476  105201                  3$:     INCB    R1              ;UPDATE COUNTER.
 1990  010500  001365                          BNE     2$              ;ALL CHAR CHECKED?
 1991  010502  005200                          INC     R0              ;UPDATE LINE NO.
 1992  010504  005337  032314                  DEC     COUNT           ;4 LINES DONE?
 1993  010510  001347                          BNE     1$              ;BR IF NO
 1994  010512  000207                          RTS     PC              ;EXIT TEST.
 1995
 1996
 1997                                  ;************************ TEST 5 ******************************
 1998                                  ;*THIS TEST WILL CYCLE THROUGH A LINE CARD
 1999                                  ;*AT SPEED SEL 17(8)(38.4 K BAUD) AT
 2000                                  ;*VARIOUS CHAR LENGHTS (8,7,6,5) AND TRANSFER
 2001                                  ;*400(8) CHARS FROM TRANSMITTER TO REVEIVER.
 2002                                  ;*IT IS IMPORTANT TO NOTE THAT ALL 4 LINES
 2003                                  ;*OF A GIVEN LINE CARD ARE TURNED ON AT THE
 2004                                  ;*SAME TIME!.
 2005                                  ;*
 2006                                  ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
 2007                                  ;;**********************************************************************
 2008
 2009                          ;  TEST 5
 2010                          ;--------------
 2011  010514  012737  000005  001226  TST5:   MOV     #5,TSTNO
 2012  010522  012737  011336  001216          MOV     #TST6,NEXT
 2013  010530  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
 2014  010534  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
 2015  010542  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
 2016  010544  004737  010632                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
 2017  010550  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
 2018  010554  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
 2019  010562  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
 2020  010564  004737  010632                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
 2021  010570  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
 2022  010574  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
 2023  010602  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
 2024  010604  004737  010632                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
```

```
2025  010610  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
2026  010614  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2027  010622  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2028  010624  004737  010632                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2029  010630  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
2030  010632                          105$:                           ;TEST ENTRANCE.
2031  010632  010037  011330                  MOV     R0,81$          ;SAVE LINE NO.
2032  010636  012737  177400  011332          MOV     #177400,MASK    ;8 B/P/C MASK
2033  010644  012737  015000  011334          MOV     #<BIT12+BIT11>+BIT9,CHAR.SIZE   ;SET CHAR SIZE TO 8.
2034  010652  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
2035  010660  001001                          BNE     1$              ;BR IF YES
2036  010662  000207                          RTS     PC              ;EXIT TEST
2037  010664  104413                  1$:     RAMCLR                  ;CLEAR DVALL
2038  010666  012702  033740                  MOV     #RXBA,R2        ;SET TO CLEAR RX BUFFER
2039  010672  012703  002000                  MOV     #<4*400>,R3     ;4 BUFFERS  @400 BYTES
2040  010676  105022                          CLRB    (R2)+           ;CLEAR
2041  010700  005303                          DEC     R3              ;ALL
2042  010702  001375                          BNE     .-4             ;BUFFERS
2043  010704  005003                          CLR     R3              ;LOAD TX BUFFERS
2044  010706  012702  033340                  MOV     #TXBAP,R2       ;ONLY ONE BUFFER
2045  010712  110322                          MOVB    R3,(R2)+        ;LOAD DATA
2046  010714  105203                          INCB    R3              ;UPDATE DATA
2047  010716  001373                          BNE     .-10            ;ALL DONE?
2048  010720  012702  000004                  MOV     #4,R2           ;SET TRO LOAD 4 LINES
2049  010724  005003                          CLR     R3              ;RX BUFFER OFFSET POINTYER
2050  010726  010077  170440                  MOV     R0,@DVSRS       ;LOAD INITAL LINE #
2051  010732  004537  033156          2$:     PERFORM ,SETREG         ;SETUP REGISTERS
2052  010736     000     001          .BYTE   000,001                 ;TXBAP AND BYTE CNT
2053  010740  033340                  TXBAP                           ;
2054  010742  077400                  <-400>-BIT15                    ;400 CHARS AND MARKED BYTE CNT
2055  010744  004537  033156          PERFORM ,SETREG                 ;
2056  010750     005     004          .BYTE   005,004                 ;RX BYTE CNT AND BUS ADDR.
2057  010752  077400                  <-400>-BIT15                    ;400 CHRAS MARKED
2058  010754  033740                  RXBA                            ;
2059  010756  060377  170414          ADD     R3,@DVSRA               ;UPDATE TO RIGHT BUFFER
2060  010762  004537  033156          PERFORM ,SETREG                 ;
2061  010766     012     013          .BYTE   012,013                 ;
2062  010770  000140                  BIT6+BIT5                       ;RX TX DDCMP MODE
2063  010772  000004                  BIT2                            ;TX GO.
2064  010774  004537  033222          PERFORM ,LOAD.MODE              ;
2065  011000  020000                  BIT13                           ;RX ENABLE
2066  011002  013737  011334  011014  MOV     CHAR.SIZE,64$           ;SET CHAR SIZE.
2067  011010  004537  033222          PERFORM ,LOAD.MODE              ;
2068  011014  000001          64$:    .BLKW   1                       ;CHAR SIZE
2069  011016  004537  033222          PERFORM ,LOAD.MODE              ;LOAD SPEED 17(38.4K BAUD)
2070  011022  076000                  <BIT14+BIT13+BIT12+BIT11>+BIT10
2071  011024  062703  000400          ADD     #400,R3                 ;UPDATE RX BA OFFSET (NEXT BUFFER)
2072  011030  005277  170336          INC     @DVSRS                  ;GET NEXT LINE
2073  011034  005302                  DEC     R2                      ;4 LINES DONE?
2074  011036  001335                  BNE     2$                      ;BR IF NO
2075  011040  012703  000004          MOV     #4,R3                   ;
2076  011044  005277  170312          INC     @DVSCR                  ;SET UCPU GO
2077  011050  005002                  CLR     R2                      ;SET DELAY TIME OUT
2078  011052  105777  170304          TSTB    @DVSCR          3$:     ;WAIT FOR 1ST LINE TO FISNISH
2079  011056  100404                  BMI     4$                      ;BR IF DONE
2080  011060  104414                  DELAY                           ;STALL FOR TIME
```

```
 2081  011062  005202                          INC     R2              ;DELAY COUNT
 2082  011064  001372                          BNE     3$              ;KEEP WAITING
 2083  011066  104002                          HLT     2               ;NO LINES FINISHED.
 2084  011070  052777  000400  170264  4$:     BIS     #BIT8,@DVSCR    ;RESTART UCPU SERVICE
 2085  011076  005002                          CLR     R2              ;DELAY COUNT
 2086  011100  105777  170256          5$:     TSTB    @DVSCR          ;WAIT FOR 2ND LINE TO FINISH
 2087  011104  100404                          BMI     6$              ;BR WHEN DONE
 2088  011106  104414                          DELAY                   ;STALL FOR TIME
 2089  011110  005202                          INC     R2              ;COUNT TIME
 2090  011112  001372                          BNE     5$              ;BR FOR MORE TIME
 2091  011114  104002                          HLT     2               ;2ND LINE NOT DONE
 2092  011116  052777  000400  170236  6$:     BIS     #BIT8,@DVSCR    ;RESTART UCPU
 2093  011124  005002                          CLR     R2              ;SET FOR DELAY
 2094  011126  105777  170230          7$:     TSTB    @DVSCR          ;WAIT FOR 3RD LINE TO FINISH
 2095  011132  100404                          BMI     8$              ;BR WHEN DONE
 2096  011134  104414                          DELAY                   ;STALL FOR TIME
 2097  011136  005202                          INC     R2              ;DELAY COUNTER
 2098  011140  001372                          BNE     7$              ;BR FOR MORE TIME
 2099  011142  104002                          HLT     2               ;3RD LINE NOT DONE
 2100  011144  052777  000400  170210  8$:     BIS     #BIT8,@DVSCR    ;RESTART UCPU
 2101  011152  005002                          CLR     R2              ;DELAY COUNTER
 2102  011154  105777  170202          9$:     TSTB    @DVSCR          ;WAIT FOR 4TH LINE TO FINISH
 2103  011160  100404                          BMI     10$             ;BR WHEN DONE
 2104  011162  104414                          DELAY                   ;STALL
 2105  011164  005202                          INC     R2              ;DELAY COUNTER
 2106  011166  001372                          BNE     9$              ;BR FOR MORE TIME
 2107  011170  104002                          HLT     2               ;4TH LINE NOT DONE
 2108  011172  012737  000004  011324  10$:     MOV     #4,79$          ;SET FOR 4 LINES
 2109  011200  005037  011326                  CLR     80$             ;SET RX OFF SET TO ZERO
 2110  011204  012701  033340          65$:    MOV     #TXBAP,R1       ;GET GOOD DATA
 2111  011210  012702  033740                  MOV     #RXBA,R2        ;GET 1ST RX BA
 2112  011214  063702  011326                  ADD     80$,R2          ;GET OFFSET
 2113  011220  005003                          CLR     R3              ;SET DATA COUNTER TO ZERO
 2114  011222  112105          11$:    MOVB    (R1)+,R5        ;GET GOOD DATA
 2115  011224  112204                  MOVB    (R2)+,R4        ;GET RX DATA
 2116  011226  042704  177400                  BIC     #177400,R4      ;CLEAR SIGN EXTEND.
 2117  011232  043705  011332                  BIC     MASK,R5         ;CLEAR B/P/C MASK
 2118  011236  020504                          CMP     R5,R4           ;DATA OK?
 2119  011240  001401                          BEQ     .+4             ;BR IF YES
 2120  011242  104001                          HLT     1               ;DATA ERROR!
 2121  011244  105203                          INCB    R3              ;UPDATE DATA COUNTER
 2122  011246  001365                          BNE     11$             ;ALL DONE?
 2123  011250  062737  000400  011326          ADD     #400,80$        ;POINT TO NEXT RX BUFFER
 2124  011256  005200                          INC     R0              ;UPDATE LINE POINTER
 2125  011260  005337  011324                  DEC     79$             ;ALL 4 LINES DONE?
 2126  011264  001347                          BNE     65$             ;BR IF NO
 2127  011266  013700  011330                  MOV     81$,R0          ;RESTORE LINE NO.
 2128  011272  162737  004000  011334          SUB #BIT11,CHAR.SIZE    ;ALTER TO NEW CHAR SIZE
 2129  011300  000261                          SEC                     ;ALTER MASK
 2130  011302  006037  011332                  ROR     MASK            ;MAKE NEW MASK.
 2131                                                                  ;177400  8 B/P/C
                                                                       ;177600  7 B/P/C
                                                                       ;177700  6 B/P/C
                                                                       ;177740  5 B/P/C
                                                                       ;177760  DONE
 2136  011306  022737  177760  011332          CMP     #177760,MASK    ;?
```

```
                                                BEQ     .+6             ;BR IF ALL CHAR SIZES DONE.
                                                JMP     1$              ;CONTINUE WITH NEW SIZE
                                                RTS     PC
                                        79$:    0
                                        80$:    0
                                        81$:    0
                                        MASK:   0
                                        CHAR.SIZE:
                                                0


                                ;************************ TEST 6 *******************************
                                ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
                                ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
                                ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                ;*   PART 1   PART 2   PART 1A PART 2A
                                ;*   X  X+1   X  X+1   X  X+1   X  X+1
                                ;*   00-01    01-00    02-03    03-02
                                ;*   04-05    05-04    06-07    07-06
                                ;*   10-11    11-10    12-13    13-12
                                ;*   14-15    15-14    16-17    17-16
                                ;*
                                ;*LINE X:   5 B/P/C,1ST,9600 BAUD.
                                ;*LINE X+1: 5 B/P/C,1ST,9600 BAUD,PARITY(EVEN).
                                ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                ;;***********************************************************


                        ;  TEST 6
                        ;--------------
011336  012737  000006  001226  TST6:   MOV     #6,TSTNO
011344  012737  011730  001216          MOV     #TST7,NEXT
011352  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
011356  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
011364  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
011366  004737  011454                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
011372  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
011376  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
011404  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
011406  004737  011454                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
011412  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
011416  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
011424  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
011426  004737  011454                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
011432  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
011436  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
011444  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
011446  004737  011454                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
011452  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
011454                          105$:                           ;TEST ENTRANCE.
011454  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
011462  001001                          BNE     1$              ;BR IF YES
011464  000207                          RTS     PC              ;EXIT TEST
011466  010037  011512          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
```

```
                                                        ;LINE 0 OR 4 OR 10 OR 14(8)
011472  010037  011532                MOV     R0,4$         ;SAVE SAME LINE
011476  010037  011522                MOV     R0,3$         ;PREPARE FOR LINE+1
011502  005237  011522                INC     3$            ;MAKE LINE = LINE+1
                                                        ;LINE 1 OR 5 OR 11 OR 15(8)
                              ; ***************************************************
                              ;               PART 1
                              ;       IN THIS ROUTINE LOCATION "2$"
                              ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                              ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                              ;
011506  004537  032316                JSR     R5,TIME.PAR   ;GOTO SUBROUTINE
011512  000001              2$:       .BLKW 1               ;LINE 0 OR 4 OR 10 OR 14(8)
011514  020000                        BIT13                 ;RECEIVER ENABLE
011516  001000                        <000>+BIT9            ;PARAMETERS FOR REG 1.
011520  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

011522  000001              3$:       .BLKW 1               ;LINE 1 OR 5 OR 11 OR 15(8).
011524  020000                        BIT13                 ;RECEIVER ENABLE
011526  041000                        <BIT14>+BIT9          ;PARAMETERS FOR REG 1.
011530  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
011532  000001              4$:       .BLKW 1               ;LINE EXPECTED TO FINISH FIRST.
                                                        ;LINE 0 OR 4 OR 10 OR 14(8).
                              ; ***************************************************

011534  010037  011562      5$:       MOV     R0,6$         ;GET INITAL LINE NO.
011540  010037  011572                MOV     R0,7$         ;STORE FOR NEXT TEST.
011544  005237  011572                INC     7$            ;MAKE LINE=LINE+1.
011550  013737  011572  011602        MOV     7$,8$         ;STORE LINE+1 FOR NEXT TESTS.
                              ; ***************************************************
                              ;               PART 2
                              ;       IN THIS ROUTINE LOCATION "7$"
                              ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                              ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                              ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                              ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                              ;
011556  004537  032316                JSR     R5,TIME.PAR   ;GOTO SUBROUTINE.
011562  000001              6$:       .BLKW 1               ;LINE 0 OR 4 OR 10 OR 14(8).
011564  020000                        BIT13                 ;RECEIVER ENABLE.
011566  041000                        <BIT14>+BIT9          ;PARAMETERS FOR REG 1.
011570  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

011572  000001              7$:       .BLKW 1               ;LINE 1 OR 5 OR 11 OR 15(8).
011574  020000                        BIT13                 ;RECEIVER ENABLE.
011576  001000                        <000>+BIT9            ;PARAMETERS FOR REG 1.
011600  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
011602  000001              8$:       .BLKW 1               ;LINE 1 OR 5 OR 11 OR 15(8).
                              ; ***************************************************

011604  062700  000002                ADD     #2,R0         ;PREPARE FOR NEXT GROUP OF LINES.
011610  010037  011634      9$:       MOV     R0,10$        ;SAVE LINE NO. FOR TEST.
011614  010037  011654                MOV     R0,12$        ;SAVE NO.
011620  010037  011644                MOV     R0,11$        ;
011624  005237  011644                INC     11$           ;MAKE LINE=LINE+1.
                              ; ***************************************************
```

```
                                        ;               PART 1A
                                        ;       IN THIS ROUTINE LOCATION "10$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
011630  004537  032316                  10$:    JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
011634  000001                          11$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
011636  020000                          12$:    BIT13                   ;RECEIVER ENABLE.
011640  001000                                  <000>+BIT9              ;PARAMETERS FOR REG 1
011642  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

011644  000001                                  .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
011646  020000                                  BIT13                   ;RECEIVER ENABLE.
011650  041000                                  <BIT14>+BIT9            ;PARAMETERS FOR REG 1.
011652  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
011654  000001                                  .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                        ;LINE 2 OR 6 OR 12 OR 16(8).
                                        ; ******************************************************

011656  010037  011704                  13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
011662  010037  011714                          MOV     R0,15$          ;STORE LINE.
011666  005237  011714                          INC     15$             ;LINE =LINE+1.
011672  013737  011714  011724                  MOV     15$,16$         ;SET FASTEST LINE.
                                        ; ******************************************************
                                        ;               PART 2A
                                        ;       IN THIS ROUTINE LOCATION "14$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
011700  004537  032316                  14$:    JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
011704  000001                          15$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
011706  020000                          16$:    BIT13                   ;RECEIVER ENABLE.
011710  041000                                  <BIT14>+BIT9            ;PARAMETER FOR REG 1.
011712  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD

011714  000001                                  .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
011716  020000                                  BIT13                   ;RECEIVER ENABLE.
011720  001000                                  <000>+BIT9              ;PARAMETERS FOR REG 1.
011722  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
011724  000001                                  .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                        ;LINE 3 OR 7 OR 13 OR 17(8).
                                        ; ******************************************************

011726  000207                                  RTS     PC              ;EXIT TEST.


                                                ;************************ TEST 7 ********************************
                                                ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
                                                ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
                                                ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                                ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                                ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                                ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                                ;*  PART 1  PART 2  PART 1A PART 2A
```

```
2305                                            :*  X  X+1   X  X+1   X  X+1   X  X+1
2306                                            :*  00-01   01-00   02-03   03-02
2307                                            :*  04-05   05-04   06-07   07-06
2308                                            :*  10-11   11-10   12-13   13-12
2309                                            :*  14-15   15-14   16-17   17-16
2310                                            :*
2311                                            :*LINE X:   5 B/P/C,1ST,9600 BAUD.
2312                                            :*LINE X+1: 5 B/P/C,2ST,9600 BAUD.
2313                                            :*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
2314                                            ;;*****************************************************************
2315
2316                                    ;  TEST 7
2317                                    ;-------------
2318  011730  012737  000007  001226  TST7:   MOV     #7,TSTNO
2319  011736  012737  012322  001216          MOV     #TST10,NEXT
2320  011744  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
2321  011750  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
2322  011756  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
2323  011760  004737  012046                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
2324  011764  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
2325  011770  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
2326  011776  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
2327  012000  004737  012046                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
2328  012004  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
2329  012010  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
2330  012016  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
2331  012020  004737  012046                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
2332  012024  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
2333  012030  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2334  012036  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2335  012040  004737  012046                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2336  012044  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
2337  012046                          105$:                           ;TEST ENTRANCE.
2338  012046  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
2339  012054  001001                          BNE     1$              ;BR IF YES
2340  012056  000207                          RTS     PC              ;EXIT TEST
2341  012060  010037  012104          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
2342                                                                  ;LINE 0 OR 4 OR 10 OR 14(8)
2343  012064  010037  012124                  MOV     R0,4$           ;SAVE SAME LINE
2344  012070  010037  012114                  MOV     R0,3$           ;PREPARE FOR LINE+1
2345  012074  005237  012114                  INC     3$              ;MAKE LINE = LINE+1
2346                                                                  ;LINE 1 OR 5 OR 11 OR 15(8)
2347                                    ; ***************************************************
2348                                    ;               PART 1
2349                                    ;       IN THIS ROUTINE LOCATION "2$"
2350                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
2351                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
2352                                    ;
2353  012100  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
2354  012104  000001                  2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
2355  012106  020000                          BIT13                   ;RECEIVER ENABLE
2356  012110  001000                          <000>+BIT9              ;PARAMETERS FOR REG 1.
2357  012112  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2358
2359  012114  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
2360  012116  020000                          BIT13                   ;RECEIVER ENABLE
```

```
2361  012120  021000                        <BIT13>+BIT9              ;PARAMETERS FOR REG 1.
2362  012122  072000                        BIT14+BIT13+BIT12+BIT10   ;9600 BAUD.
2363  012124  000001              4$:       .BLKW 1                   ;LINE EXPECTED TO FINISH FIRST.
2364                                                                   ;LINE 0 OR 4 OR 10 OR 14(8).
2365                              ; ***************************************************
2366
2367  012126  010037  012154      5$:       MOV     R0,6$             ;GET INITAL LINE NO.
2368  012132  010037  012164                MOV     R0,7$             ;STORE FOR NEXT TEST.
2369  012136  005237  012164                INC     7$                ;MAKE LINE=LINE+1.
2370  012142  013737  012164  012174       MOV     7$,8$             ;STORE LINE+1 FOR NEXT TESTS.
2371                              ; ***************************************************
2372                              ;               PART 2
2373                              ;       IN THIS ROUTINE LOCATION "7$"
2374                              ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
2375                              ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
2376                              ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
2377                              ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
2378                              ;
2379  012150  004537  032316                JSR     R5,TIME.PAR       ;GOTO SUBROUTINE.
2380  012154  000001              6$:       .BLKW 1                   ;LINE 0 OR 4 OR 10 OR 14(8).
2381  012156  020000                        BIT13                     ;RECEIVER ENABLE.
2382  012160  021000                        <BIT13>+BIT9              ;PARAMETERS FOR REG 1.
2383  012162  072000                        BIT14+BIT13+BIT12+BIT10   ;9600 BAUD.
2384
2385  012164  000001              7$:       .BLKW 1                   ;LINE 1 OR 5 OR 11 OR 15(8).
2386  012166  020000                        BIT13                     ;RECEIVER ENABLE.
2387  012170  001000                        <000>+BIT9                ;PARAMETERS FOR REG 1.
2388  012172  072000                        BIT14+BIT13+BIT12+BIT10   ;9600 BAUD.
2389  012174  000001              8$:       .BLKW 1                   ;LINE 1 OR 5 OR 11 OR 15(9).
2390                              ; ***************************************************
2391
2392  012176  062700  000002                ADD     #2,R0             ;PREPARE FOR NEXT GROUP OF LINES.
2393  012202  010037  012226      9$:       MOV     R0,10$            ;SAVE LINE NO. FOR TEST.
2394  012206  010037  012246                MOV     R0,12$            ;SAVE NO.
2395  012212  010037  012236                MOV     R0,11$            ;
2396  012216  005237  012236                INC     11$               ;MAKE LINE=LINE+1.
2397                              ; ***************************************************
2398                              ;               PART 1A
2399                              ;       IN THIS ROUTINE LOCATION "10$"
2400                              ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
2401                              ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
2402                              ;
2403  012222  004537  032316                JSR     R5,TIME.PAR       ;GOTO SUBROUTINE.
2404  012226  000001              10$:      .BLKW 1                   ;LINE 2 OR 6 OR 12 OR 16(8).
2405  012230  020000                        BIT13                     ;RECEIVER ENABLE.
2406  012232  001000                        <000>+BIT9                ;PARAMETERS FOR REG 1
2407  012234  072000                        BIT14+BIT13+BIT12+BIT10   ;9600 BAUD.
2408
2409  012236  000001              11$:      .BLKW 1                   ;LINE 3 OR 7 OR 13 OR 17(8).
2410  012240  020000                        BIT13                     ;RECEIVER ENABLE.
2411  012242  021000                        <BIT13>+BIT9              ;PARAMETERS FOR REG 1.
2412  012244  072000                        BIT14+BIT13+BIT12+BIT10   ;9600 BAUD.
2413  012246  000001              12$:      .BLKW 1                   ;LINE EXPECTED TO FINISH FIRST
2414                                                                   ;LINE 2 OR 6 OR 12 OR 16(8).
2415                              ; ***************************************************
2416
```

```
2417  012250  010037  012276          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
2418  012254  010037  012306                  MOV     R0,15$          ;STORE LINE.
2419  012260  005237  012306                  INC     15$             ;LINE =LINE+1.
2420  012264  013737  012306  012316          MOV     15$,16$         ;SET FASTEST LINE.
2421                                  ; ***************************************************
2422                                  ;               PART 2A
2423                                  ;       IN THIS ROUTINE LOCATION "14$"
2424                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
2425                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
2426                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
2427                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
2428                                  ;
2429  012272  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
2430  012276  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
2431  012300  020000                          BIT13                   ;RECEIVER ENABLE.
2432  012302  021000                          <BIT13>+BIT9            ;PARAMETER FOR REG 1.
2433  012304  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD
2434
2435  012306  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
2436  012310  020000                          BIT13                   ;RECEIVER ENABLE.
2437  012312  001000                          <000>+BIT9              ;PARAMETERS FOR REG 1.
2438  012314  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2439  012316  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
2440                                                                  ;LINE 3 OR 7 OR 13 OR 17(8).
2441                                  ; ***************************************************
2442
2443  012320  000207                          RTS     PC              ;EXIT TEST.
2444
2445
2446                                  ;************************ TEST 10 *******************************
2447                                  ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
2448                                  ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
2449                                  ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
2450                                  ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
2451                                  ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
2452                                  ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
2453                                  ;*  PART 1  PART 2  PART 1A PART 2A
2454                                  ;*  X  X+1  X  X+1  X  X+1  X  X+1
2455                                  ;*  00-01   01-00   02-03   03-02
2456                                  ;*  04-05   05-04   06-07   07-06
2457                                  ;*  10-11   11-10   12-13   13-12
2458                                  ;*  14-15   15-14   16-17   17-16
2459                                  ;*
2460                                  ;*LINE X:   6 B/P/C,1ST,9600 BAUD.
2461                                  ;*LINE X+1: 6 B/P/C,1ST,9600 BAUD,PARITY(EVEN).
2462                                  ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
2463                                  ;*****************************************************************
2464
2465                                  ;  TEST 10
2466                                  ;--------------
2467  012322  012737  000010  001226  TST10:  MOV     #10,TSTNO
2468  012330  012737  012714  001216          MOV     #TST11,NEXT
2469  012336  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
2470  012342  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
2471  012350  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
2472  012352  004737  012440                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
```

```
2473  012356  012700  000004          100$:  MOV   #4.,R0          ;PLACE LINE NUMBER INTO R0
2474  012362  013737  001420  001236         MOV   L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
2475  012370  100402                        BMI   101$            ;BR IF LINE CARD NOT TO BE TESTED
2476  012372  004737  012440                JSR   PC,105$         ;GO DO THE TEST FOR LINE CARD 2
2477  012376  012700  000010          101$:  MOV   #8.,R0          ;LOAD LINE NUMBER
2478  012402  013737  001422  001236         MOV   L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
2479  012410  100402                        BMI   102$            ;BR IF LINE CARD NOT TO BE TESTED
2480  012412  004737  012440                JSR   PC,105$         ;DO THE TEST FOR LINE CARD 3
2481  012416  012700  000014          102$:  MOV   #12.,R0         ;LOAD LINE NO.
2482  012422  013737  001424  001236         MOV   L12.15,STAT     ;LOAD LINE CARD STATUS
2483  012430  100402                        BMI   103$            ;BR IF LINE CARD NOT TO BE TESTED
2484  012432  004737  012440                JSR   PC,105$         ;DO THE TESTS FOR LINE CARD 4
2485  012436  104400                 103$:  SCOPE                 ;SCOPE THIS TEST.
2486  012440                          105$:                        ;TEST ENTRANCE.
2487  012440  032737  004000  001236         BIT   #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
2488  012446  001001                        BNE   1$              ;BR IF YES
2489  012450  000207                        RTS   PC              ;EXIT TEST
2490  012452  010037  012476           1$:  MOV   R0,2$           ;GET LINE UNDER TEST
2491                                                               ;LINE 0 OR 4 OR 10 OR 14(8)
2492  012456  010037  012516                MOV   R0,4$           ;SAVE SAME LINE
2493  012462  010037  012506                MOV   R0,3$           ;PREPARE FOR LINE+1
2494  012466  005237  012506                INC   3$              ;MAKE LINE = LINE+1
2495                                                               ;LINE 1 OR 5 OR 11 OR 15(8)
2496                                  ; *****************************************************
2497                                  ;              PART 1
2498                                  ;       IN THIS ROUTINE LOCATION "2$"
2499                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
2500                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
2501                                  ;
2502  012472  004537  032316                JSR     R5,TIME.PAR   ;GOTO SUBROUTINE
2503  012476  000001                  2$:   .BLKW 1               ;LINE 0 OR 4 OR 10 OR 14(8)
2504  012500  020000                        BIT13                 ;RECEIVER ENABLE
2505  012502  005000                        <BIT11>+BIT9          ;PARAMETERS FOR REG 1.
2506  012504  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2507
2508  012506  000001                  3$:   .BLKW 1               ;LINE 1 OR 5 OR 11 OR 15(8).
2509  012510  020000                        BIT13                 ;RECEIVER ENABLE
2510  012512  045000                        <BIT14+BIT11>+BIT9          ;PARAMETERS FOR REG 1.
2511  012514  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2512  012516  000001                  4$:   .BLKW 1               ;LINE EXPECTED TO FINISH FIRST.
2513                                                               ;LINE 0 OR 4 OR 10 OR 14(8).
2514                                  ; *****************************************************
2515
2516  012520  010037  012546          5$:   MOV     R0,6$         ;GET INITAL LINE NO.
2517  012524  010037  012556                MOV     R0,7$         ;STORE FOR NEXT TEST.
2518  012530  005237  012556                INC     7$            ;MAKE LINE=LINE+1.
2519  012534  013737  012556  012566        MOV     7$,8$         ;STORE LINE+1 FOR NEXT TESTS.
2520                                  ; *****************************************************
2521                                  ;              PART 2
2522                                  ;       IN THIS ROUTINE LOCATION "7$"
2523                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
2524                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
2525                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
2526                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
2527                                  ;
2528  012542  004537  032316                JSR     R5,TIME.PAR   ;GOTO SUBROUTINE.
```

```
2529  012546  000001                  5$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
2530  012550  020000                          BIT13                   ;RECEIVER ENABLE.
2531  012552  045000                          <BIT14+BIT11>+BIT9              ;PARAMETERS FOR REG 1.
2532  012554  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2533
2534  012556  000001                  7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
2535  012560  020000                          BIT13                   ;RECEIVER ENABLE.
2536  012562  005000                          <BIT11>+BIT9            ;PARAMETERS FOR REG 1.
2537  012564  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2538  012566  000001                  8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
2539                                  ; ***************************************************
2540
2541  012570  062700  000002                  ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
2542  012574  010037  012620          9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
2543  012600  010037  012640                  MOV     R0,12$          ;SAVE NO.
2544  012604  010037  012630                  MOV     R0,11$          ;
2545  012610  005237  012630                  INC     11$             ;MAKE LINE=LINE+1.
2546                                  ; ***************************************************
2547                                  ;               PART 1A
2548                                  ;       IN THIS ROUTINE LOCATION "10$"
2549                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
2550                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
2551                                  ;
2552  012614  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
2553  012620  000001                  10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
2554  012622  020000                          BIT13                   ;RECEIVER ENABLE.
2555  012624  005000                          <BIT11>+BIT9            ;PARAMETERS FOR REG 1
2556  012626  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2557
2558  012630  000001                  11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
2559  012632  020000                          BIT13                   ;RECEIVER ENABLE.
2560  012634  045000                          <BIT14+BIT11>+BIT9              ;PARAMETERS FOR REG 1.
2561  012636  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2562  012640  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
2563                                                                  ;LINE 2 OR 6 OR 12 OR 16(8).
2564                                  ; ***************************************************
2565
2566  012642  010037  012670          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
2567  012646  010037  012700                  MOV     R0,15$          ;STORE LINE.
2568  012652  005237  012700                  INC     15$             ;LINE =LINE+1.
2569  012656  013737  012700  012710          MOV     15$,16$         ;SET FASTEST LINE.
2570                                  ; ***************************************************
2571                                  ;               PART 2A
2572                                  ;       IN THIS ROUTINE LOCATION "14$"
2573                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
2574                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
2575                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
2576                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
2577                                  ;
2578  012664  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
2579  012670  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
2580  012672  020000                          BIT13                   ;RECEIVER ENABLE.
2581  012674  045000                          <BIT14+BIT11>+BIT9              ;PARAMETER FOR REG 1.
2582  012676  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD
2583
2584  012700  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
```

```
2585  012702  020000                          BIT13                   ;RECEIVER ENABLE.
2586  012704  005000                          <BIT11>+BIT9            ;PARAMETERS FOR REG 1.
2587  012706  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2588  012710  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
2589                                                                  ;LINE 3 OR 7 OR 13 OR 17(8).
2590                                  ; ***************************************************
2591
2592  012712  000207                          RTS     PC              ;EXIT TEST.
2593
2594
2595                                          ;************************ TEST 11 ******************************
2596                                          ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
2597                                          ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
2598                                          ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
2599                                          ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
2600                                          ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
2601                                          ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
2602                                          ;*  PART 1  PART 2  PART 1A PART 2A
2603                                          ;*  X  X+1  X  X+1  X  X+1  X  X+1
2604                                          ;*  00-01   01-00   02-03   03-02
2605                                          ;*  04-05   05-04   06-07   07-06
2606                                          ;*  10-11   11-10   12-13   13-12
2607                                          ;*  14-15   15-14   16-17   17-16
2608                                          ;*
2609                                          ;*LINE X:   6 B/P/C,1ST,9600 BAUD.
2610                                          ;*LINE X+1: 6 B/P/C,2ST,9600 BAUD.
2611                                          ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
2612                                          ;:***************************************************************
2613
2614                                  ;  TEST 11
2615                                  ;--------------
2616  012714  012737  000011  001226  TST11:  MOV     #11,TSTNO
2617  012722  012737  013306  001216          MOV     #TST12,NEXT
2618  012730  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
2619  012734  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
2620  012742  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
2621  012744  004737  013032                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
2622  012750  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
2623  012754  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
2624  012762  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
2625  012764  004737  013032                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
2626  012770  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
2627  012774  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
2628  013002  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
2629  013004  004737  013032                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
2630  013010  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
2631  013014  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2632  013022  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2633  013024  004737  013032                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2634  013030  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
2635  013032                          105$:                           ;TEST ENTRANCE.
2636  013032  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
2637  013040  001001                          BNE     1$              ;BR IF YES
2638  013042  000207                          RTS     PC              ;EXIT TEST
2639  013044  010037  013070          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
2640                                                                  ;LINE 0 OR 4 OR 10 OR 14(8)
```

```
013050  010037  013110                MOV     R0,4$           ;SAVE SAME LINE
013054  010037  013100                MOV     R0,3$           ;PREPARE FOR LINE+1
013060  005237  013100                INC     3$              ;MAKE LINE = LINE+1
                                                              ;LINE 1 OR 5 OR 11 OR 15(8)
                              ; ***************************************************
                              ;               PART 1
                              ;       IN THIS ROUTINE LOCATION "2$"
                              ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                              ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                              ;
013064  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
013070  000001              2$:       .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
013072  020000                        BIT13                   ;RECEIVER ENABLE
013074  005000                        (BIT11)+BIT9            ;PARAMETERS FOR REG 1.
013076  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

013100  000001              3$:       .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
013102  020000                        BIT13                   ;RECEIVER ENABLE
013104  025000                        (BIT13+BIT11)+BIT9              ;PARAMETERS FOR REG 1.
013106  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
013110  000001              4$:       .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                              ;LINE 0 OR 4 OR 10 OR 14(8).
                              ; ***************************************************

013112  010037  013140      5$:       MOV     R0,6$           ;GET INITAL LINE NO.
013116  010037  013150                MOV     R0,7$           ;STORE FOR NEXT TEST.
013122  005237  013150                INC     7$              ;MAKE LINE=LINE+1.
013126  013737  013150  013160        MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
                              ; ***************************************************
                              ;               PART 2
                              ;       IN THIS ROUTINE LOCATION "7$"
                              ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                              ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                              ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                              ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                              ;
013134  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
013140  000001              6$:       .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
013142  020000                        BIT13                   ;RECEIVER ENABLE.
013144  025000                        (BIT13+BIT11)+BIT9              ;PARAMETERS FOR REG 1.
013146  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

013150  000001              7$:       .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
013152  020000                        BIT13                   ;RECEIVER ENABLE.
013154  005000                        (BIT11)+BIT9            ;PARAMETERS FOR REG 1.
013156  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
013160  000001              8$:       .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                              ; ***************************************************

013162  062700  000002                ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
013166  010037  013212      9$:       MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
013172  010037  013232                MOV     R0,12$          ;SAVE NO.
013176  010037  013222                MOV     R0,11$          ;
013202  005237  013222                INC     11$             ;MAKE LINE=LINE+1.
                              ; ***************************************************
                              ;               PART 1A
```

```
                                        ;       IN THIS ROUTINE LOCATION "10$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
013206  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
013212  000001                  10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8..
013214  020000                          BIT13                   ;RECEIVER ENABLE.
013216  005000                          <BIT11>+BIT9            ;PARAMETERS FOR REG 1
013220  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

013222  000001                  11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
013224  020000                          BIT13                   ;RECEIVER ENABLE.
013226  025000                          <BIT13+BIT11>+BIT9              ;PARAMETERS FOR REG 1.
013230  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
013232  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
                                        ; ******************************************************

013234  010037  013262          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
013240  010037  013272                  MOV     R0,15$          ;STORE LINE.
013244  005237  013272                  INC     15$             ;LINE =LINE+1.
013250  013737  013272  013302          MOV     15$,16$         ;SET FASTEST LINE.
                                        ; ******************************************************
                                        ;               PART 2A
                                        ;       IN THIS ROUTINE LOCATION "14$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
013256  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
013262  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
013264  020000                          BIT13                   ;RECEIVER ENABLE.
013266  025000                          <BIT13+BIT11>+BIT9              ;PARAMETER FOR REG 1.
013270  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD

013272  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
013274  020000                          BIT13                   ;RECEIVER ENABLE.
013276  005000                          <BIT11>+BIT9            ;PARAMETERS FOR REG 1.
013300  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
013302  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 3 OR 7 OR 13 OR 17(8).
                                        ; ******************************************************

013304  000207                          RTS     PC              ;EXIT TEST.


                                        ;************************ TEST 12 *******************************
                                        ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
                                        ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
                                        ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                        ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                        ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                        ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                        ;*  PART 1  PART 2  PART 1A PART 2A
                                        ;*  X  X+1  X  X+1  X  X+1  X  X+1
```

```
                                        :*  00-01   01-00   02-03   03-02
                                        :*  04-05.  05-04   06-07   07-06
                                        :*  10-11   11-10   12-13   13-12
                                        :*  14-15   15-14   16-17   17-16
                                        :*
                                        :*LINE X:   7 B/P/C,1ST,9600 BAUD.
                                        :*LINE X+1: 7 B/P/C,1ST,9600 BAUD,PARITY(EVEN).
                                        :*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                        ::**************************************************************-*


                                ;  TEST 12
                                ;--------------
013306  012737  000012  001226  TST12:  MOV     #12,TSTNO
013314  012737  013700  001216          MOV     #TST13,NEXT
013322  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
013326  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
013334  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
013336  004737  013424                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
013342  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
013346  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
013354  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
013356  004737  013424                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
013362  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
013366  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
013374  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
013376  004737  013424                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
013402  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
013406  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
013414  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
013416  004737  013424                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
013422  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
013424                          105$:                           ;TEST ENTRANCE.
013424  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
013432  001001                          BNE     1$              ;BR IF YES
013434  000207                          RTS     PC              ;EXIT TEST
013436  010037  013462          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
013442  010037  013502                  MOV     R0,4$           ;SAVE SAME LINE
013446  010037  013472                  MOV     R0,3$           ;PREPARE FOR LINE+1
013452  005237  013472                  INC     3$              ;MAKE LINE = LINE+1
                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***************************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
013456  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
013462  000001          2$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8)
                                BIT13                           ;RECEIVER ENABLE
                                (BIT12)+BIT9                    ;PARAMETERS FOR REG 1.
013470  072000                  BIT14+BIT13+BIT12+BIT10         ;9600 BAUD.

013472  000001          3$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
                                BIT13                           ;RECEIVER ENABLE
                                (BIT14+BIT12)+BIT9                      ;PARAMETERS FOR REG 1.
```

```
 2809  013500  072000                    BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 2810  013502  000001            4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
 2811                                                            ;LINE 0 OR 4 OR 10 OR 14(8).
 2812                            ; ***************************************************
 2813
 2814  013504  010037  013532    5$:     MOV     R0,6$           ;GET INITAL LINE NO.
 2815  013510  010037  013542            MOV     R0,7$           ;STORE FOR NEXT TEST.
 2816  013514  005237  013542            INC     7$              ;MAKE LINE=LINE+1.
 2817  013520  013737  013542  013552    MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
 2818                            ; ***************************************************
 2819                            ;               PART 2
 2820                            ;       IN THIS ROUTINE LOCATION "7$"
 2821                            ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 2822                            ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 2823                            ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
 2824                            ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
 2825                            ;
 2826  013526  004537  032316            JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 2827  013532  000001            6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
 2828  013534  020000                    BIT13                   ;RECEIVER ENABLE.
 2829  013536  051000                    (BIT14+BIT12)+BIT9              ;PARAMETERS FOR REG 1.
 2830  013540  072000                    BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 2831
 2832  013542  000001            7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 2833  013544  020000                    BIT13                   ;RECEIVER ENABLE.
 2834  013546  011000                    (BIT12)+BIT9            ;PARAMETERS FOR REG 1.
 2835  013550  072000                    BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 2836  013552  000001            8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 2837                            ; ***************************************************
 2838
 2839  013554  062700  000002            ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
 2840  013560  010037  013604    9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
 2841  013564  010037  013624            MOV     R0,12$          ;SAVE NO.
 2842  013570  010037  013614            MOV     R0,11$          ;
 2843  013574  005237  013614            INC     11$             ;MAKE LINE=LINE+1.
 2844                            ; ***************************************************
 2845                            ;               PART 1A
 2846                            ;       IN THIS ROUTINE LOCATION "10$"
 2847                            ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 2848                            ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 2849                            ;
 2850  013600  004537  032316            JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 2851  013604  000001            10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
 2852  013606  020000                    BIT13                   ;RECEIVER ENABLE.
 2853  013610  011000                    (BIT12)+BIT9            ;PARAMETERS FOR REG 1
 2854  013612  072000                    BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 2855
 2856  013614  000001            11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
 2857  013616  020000                    BIT13                   ;RECEIVER ENABLE.
 2858  013620  051000                    (BIT14+BIT12)+BIT9              ;PARAMETERS FOR REG 1.
 2859  013622  072000                    BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 2860  013624  000001            12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
 2861                                                            ;LINE 2 OR 6 OR 12 OR 16(8).
 2862                            ; ***************************************************
 2863
 2864  013626  010037  013654    13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
```

```
2865  013632  010037  013664                  MOV     R0,15$          ;STORE LINE.
2866  013636  005237  013664                  INC     15$             ;LINE =LINE+1.
2867  013642  013737  013664  013674          MOV     15$,16$         ;SET FASTEST LINE.
2868                          ;*****************************************************
2869                          ;               PART 2A
2870                          ;       IN THIS ROUTINE LOCATION "14$"
2871                          ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
2872                          ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
2873                          ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
2874                          ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
2875                          ;
2876  013650  004537  032316          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
2877  013654  000001          14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
2878  013656  020000                  BIT13                   ;RECEIVER ENABLE.
2879  013660  051000                  <BIT14+BIT12>+BIT9              ;PARAMETER FOR REG 1.
2880  013662  072000                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD
2881
2882  013664  000001          15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
2883  013666  020000                  BIT13                   ;RECEIVER ENABLE.
2884  013670  011000                  <BIT12>+BIT9            ;PARAMETERS FOR REG 1.
2885  013672  072000                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2886  013674  000001          16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
2887                                                          ;LINE 3 OR 7 OR 13 OR 17(8).
2888                          ;*****************************************************
2889
2890  013676  000207                  RTS     PC              ;EXIT TEST.
2891
2892
2893                          ;************************ TEST 13 ******************************
2894                          ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
2895                          ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
2896                          ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
2897                          ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
2898                          ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
2899                          ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
2900                          ;*   PART 1  PART 2  PART 1A PART 2A
2901                          ;*   X  X+1  X  X+1  X  X+1  X  X+1
2902                          ;*   00-01   01-00   02-03   03-02
2903                          ;*   04-05   05-04   06-07   07-06
2904                          ;*   10-11   11-10   12-13   13-12
2905                          ;*   14-15   15-14   16-17   17-16
2906                          ;*
2907                          ;*LINE X:   7 B/P/C,1ST,9600 BAUD.
2908                          ;*LINE X+1: 7 B/P/C,2ST,9600 BAUD.
2909                          ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
2910                          ;;*****************************************************************
2911
2912                          ;  TEST 13
2913                          ;--------------
2914  013700  012737  000013  001226  TST13:  MOV     #13,TSTNO
2915  013706  012737  014272  001216          MOV     #TST14,NEXT
2916  013714  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
2917  013720  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
2918  013726  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
2919  013730  004737  014016                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
2920  013734  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
```

```
2921  013740  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
2922  013746  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
2923  013750  004737  014016                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
2924  013754  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
2925  013760  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
2926  013766  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
2927  013770  004737  014016                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
2928  013774  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
2929  014000  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2930  014006  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2931  014010  004737  014016                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2932  014014  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
2933  014016                          105$:                           ;TEST ENTRANCE.
2934  014016  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
2935  014024  001001                          BNE     1$              ;BR IF YES
2936  014026  000207                          RTS     PC              ;EXIT TEST
2937  014030  010037  014054          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
2938                                                                  ;LINE 0 OR 4 OR 10 OR 14(8)
2939  014034  010037  014074                  MOV     R0,4$           ;SAVE SAME LINE
2940  014040  010037  014064                  MOV     R0,3$           ;PREPARE FOR LINE+1
2941  014044  005237  014064                  INC     3$              ;MAKE LINE = LINE+1
2942                                                                  ;LINE 1 OR 5 OR 11 OR 15(8)
2943                                  ; ***************************************************
2944                                  ;               PART 1
2945                                  ;       IN THIS ROUTINE LOCATION "2$"
2946                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
2947                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
2948                                  ;
2949  014050  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
2950  014054  000001                  2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
2951  014056  020000                          BIT13                   ;RECEIVER ENABLE
2952  014060  011000                          <BIT12>+BIT9            ;PARAMETERS FOR REG 1.
2953  014062  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2954
2955  014064  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
2956  014066  020000                          BIT13                   ;RECEIVER ENABLE
2957  014070  031000                          <BIT13+BIT12>+BIT9              ;PARAMETERS FOR REG 1.
2958  014072  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
2959  014074  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
2960                                                                  ;LINE 0 OR 4 OR 10 OR 14(8).
2961                                  ; ***************************************************
2962
2963  014076  010037  014124          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
2964  014102  010037  014134                  MOV     R0,7$           ;STORE FOR NEXT TEST.
2965  014106  005237  014134                  INC     7$              ;MAKE LINE=LINE+1.
2966  014112  013737  014134  014144          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
2967                                  ; ***************************************************
2968                                  ;               PART 2
2969                                  ;       IN THIS ROUTINE LOCATION "7$"
2970                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
2971                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
2972                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
2973                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
2974                                  ;
2975  014120  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
2976  014124  000001                  6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
```

```
 2977  014126  020000                        BIT13                   ;RECEIVER ENABLE.
 2978  014130  031000                        <BIT13+BIT12>+BIT9              ;PARAMETERS FOR REG 1.
 2979  014132  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 2980
 2981  014134  000001              7$:       .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 2982  014136  020000                        BIT13                   ;RECEIVER ENABLE.
 2983  014140  011000                        <BIT12>+BIT9            ;PARAMETERS FOR REG 1.
 2984  014142  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 2985  014144  000001              9$:       .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 2986                                ; ***************************************************
 2987
 2988  014146  062700  000002              ADD     #2,R0             ;PREPARE FOR NEXT GROUP OF LINES.
 2989  014152  010037  014176        9$:   MOV     R0,10$            ;SAVE LINE NO. FOR TEST.
 2990  014156  010037  014216              MOV     R0,12$            ;SAVE NO.
 2991  014162  010037  014206              MOV     R0,11$            ;
 2992  014166  005237  014206              INC     11$               ;MAKE LINE=LINE+1.
 2993                                ; ***************************************************
 2994                                ;               PART 1A
 2995                                ;       IN THIS ROUTINE LOCATION "10$"
 2996                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 2997                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 2998                                ;
 2999  014172  004537  032316              JSR     R5,TIME.PAR       ;GOTO SUBROUTINE.
 3000  014176  000001              10$:    .BLKW 1                   ;LINE 2 OR 6 OR 12 OR 16(8).
 3001  014200  020000                      BIT13                     ;RECEIVER ENABLE.
 3002  014202  011000                      <BIT12>+BIT9              ;PARAMETERS FOR REG 1
 3003  014204  072000                      BIT14+BIT13+BIT12+BIT10   ;9600 BAUD.
 3004
 3005  014206  000001              11$:    .BLKW 1                   ;LINE 3 OR 7 OR 13 OR 17(8).
 3006  014210  020000                      BIT13                     ;RECEIVER ENABLE.
 3007  014212  031000                      <BIT13+BIT12>+BIT9                ;PARAMETERS FOR REG 1.
 3008  014214  072000                      BIT14+BIT13+BIT12+BIT10   ;9600 BAUD.
 3009  014216  000001              12$:    .BLKW 1                   ;LINE EXPECTED TO FINISH FIRST
 3010                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
 3011                                ; ***************************************************
 3012
 3013  014220  010037  014246      13$:    MOV     R0,14$            ;STORE LINE FOR NEXT TEST.
 3014  014224  010037  014256              MOV     R0,15$            ;STORE LINE.
 3015  014230  005237  014256              INC     15$               ;LINE =LINE+1.
 3016  014234  013737  014256  014266      MOV     15$,16$           ;SET FASTEST LINE.
 3017                                ; ***************************************************
 3018                                ;               PART 2A
 3019                                ;       IN THIS ROUTINE LOCATION "14$"
 3020                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 3021                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 3022                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
 3023                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
 3024                                ;
 3025  014242  004537  032316              JSR     R5,TIME.PAR       ;GOTO SUBROUTINE.
 3026  014246  000001              14$:    .BLKW 1                   ;LINE 2 OR 6 OR 12 OR 16(8)
 3027  014250  020000                      BIT13                     ;RECEIVER ENABLE.
 3028  014252  031000                      <BIT13+BIT12>+BIT9                ;PARAMETER FOR REG 1.
 3029  014254  072000                      BIT14+BIT13+BIT12+BIT10   ;9600 BAUD
 3030
 3031  014256  000001              15$:    .BLKW 1                   ;LINE 3 OR 7 OR 13 OR 17(8).
 3032  014260  020000                      BIT13                     ;RECEIVER ENABLE.
```

```
3033  014262  011000                          (BIT12)+BIT9            ;PARAMETERS FOR REG 1.
3034  014264  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
3035  014266  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
3036                                                                  ;LINE 3 OR 7 OR 13 OR 17(8).
3037                                  ; ***************************************************
3038
3039  014270  000207                          RTS     PC              ;EXIT TEST.
3040
3041
3042                                          ;************************ TEST 14 *******************************
3043                                          ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
3044                                          ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
3045                                          ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
3046                                          ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
3047                                          ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
3048                                          ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
3049                                          ;*   PART 1   PART 2   PART 1A PART 2A
3050                                          ;*   X  X+1   X  X+1   X  X+1   X  X+1
3051                                          ;*   00-01    01-00    02-03    03-02
3052                                          ;*   04-05    05-04    06-07    07-06
3053                                          ;*   10-11    11-10    12-13    13-12
3054                                          ;*   14-15    15-14    16-17    17-16
3055                                          ;*
3056                                          ;*LINE X:   8 B/P/C,1ST,9600 BAUD.
3057                                          ;*LINE X+1: 8 B/P/C,1ST,9600 BAUD,PARITY(EVEN).
3058                                          ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
3059                                          ;:***************************************************************
3060
3061                                  ;  TEST 14
3062                                  ;--------------
3063  014272  012737  000014  001226  TST14:  MOV     #14,TSTNO
3064  014300  012737  014664  001216          MOV     #TST15,NEXT
3065  014306  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
3066  014312  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
3067  014320  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
3068  014322  004737  014410                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
3069  014326  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
3070  014332  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
3071  014340  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
3072  014342  004737  014410                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
3073  014346  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
3074  014352  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
3075  014360  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
3076  014362  004737  014410                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
3077  014366  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
3078  014372  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
3079  014400  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
3080  014402  004737  014410                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
3081  014406  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
3082  014410                          105$:                           ;TEST ENTRANCE.
3083  014410  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
3084  014416  001001                          BNE     1$              ;BR IF YES
3085  014420  000207                          RTS     PC              ;EXIT TEST
3086  014422  010037  014446          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
3087                                                                  ;LINE 0 OR 4 OR 10 OR 14(8)
3088  014426  010037  014466                  MOV     R0,4$           ;SAVE SAME LINE
```

```
 3089  014432  010037  014456                MOV     R0,3$           ;PREPARE FOR LINE+1
 3090  014436  005237  014456                INC     3$              ;MAKE LINE = LINE+1
 3091                                                                 ;LINE 1 OR 5 OR 11 OR 15(8)
 3092                                ; ***************************************************
 3093                                ;               PART 1
 3094                                ;       IN THIS ROUTINE LOCATION "2$"
 3095                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 3096                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 3097                                ;
 3098  014442  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
 3099  014446  000001                2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
 3100  014450  020000                        BIT13                   ;RECEIVER ENABLE
 3101  014452  015000                        <BIT12+BIT11>+BIT9              ;PARAMETERS FOR REG 1.
 3102  014454  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 3103
 3104  014456  000001                3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 3105  014460  020000                        BIT13                   ;RECEIVER ENABLE
 3106  014462  055000                        <BIT14+BIT12+BIT11>+BIT9                ;PARAMETERS FOR REG 1.
 3107  014464  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 3108  014466  000001                4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
 3109                                                                 ;LINE 0 OR 4 OR 10 OR 14(8).
 3110                                ; ***************************************************
 3111
 3112  014470  010037  014516        5$:     MOV     R0,6$           ;GET INITAL LINE NO.
 3113  014474  010037  014526                MOV     R0,7$           ;STORE FOR NEXT TEST.
 3114  014500  005237  014526                INC     7$              ;MAKE LINE=LINE+1.
 3115  014504  013737  014526  014536        MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
 3116                                ; ***************************************************
 3117                                ;               PART 2
 3118                                ;       IN THIS ROUTINE LOCATION "7$"
 3119                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 3120                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 3121                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
 3122                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
 3123                                ;
 3124  014512  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 3125  014516  000001                6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
 3126  014520  020000                        BIT13                   ;RECEIVER ENABLE.
 3127  014522  055000                        <BIT14+BIT12+BIT11>+BIT9                ;PARAMETERS FOR REG 1.
 3128  014524  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 3129
 3130  014526  000001                7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 3131  014530  020000                        BIT13                   ;RECEIVER ENABLE.
 3132  014532  015000                        <BIT12+BIT11>+BIT9              ;PARAMETERS FOR REG 1.
 3133  014534  072000                        BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 3134  014536  000001                8$:     .BLKW 1 .               ;LINE 1 OR 5 OR 11 OR 15(8).
 3135                                ; ***************************************************
 3136
 3137  014540  062700  000002                ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
 3138  014544  010037  014570        9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
 3139  014550  010037  014610                MOV     R0,12$          ;SAVE NO.
 3140  014554  010037  014600                MOV     R0,11$          ;
 3141  014560  005237  014600                INC     11$             ;MAKE LINE=LINE+1.
 3142                                ; ***************************************************
 3143                                ;               PART 1A
 3144                                ;       IN THIS ROUTINE LOCATION "10$"
```

```
3145                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3146                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3147                                    ;
3148  014564  004537  032316            ;       JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
3149  014570  000001                    10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
3150  014572  020000                            BIT13                   ;RECEIVER ENABLE.
3151  014574  015000                            <BIT12+BIT11>+BIT9              ;PARAMETERS FOR REG 1
3152  014576  072000                            BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
3153
3154  014600  000001                    11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
3155  014602  020000                            BIT13                   ;RECEIVER ENABLE.
3156  014604  055000                            <BIT14+BIT12+BIT11>+BIT9                ;PARAMETERS FOR REG 1.
3157  014606  072000                            BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
3158  014610  000001                    12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
3159                                                                    ;LINE 2 OR 6 OR 12 OR 16(8).
3160                                    ; ***************************************************
3161
3162  014612  010037  014640            13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
3163  014616  010037  014650                    MOV     R0,15$          ;STORE LINE.
3164  014622  005237  014650                    INC     15$             ;LINE =LINE+1.
3165  014626  013737  014650  014660            MOV     15$,16$         ;SET FASTEST LINE.
3166                                    ; ***************************************************
3167                                    ;               PART 2A
3168                                    ;       IN THIS ROUTINE LOCATION "14$"
3169                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3170                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3171                                    ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
3172                                    ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
3173                                    ;
3174  014634  004537  032316            ;       JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
3175  014640  000001                    14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
3176  014642  020000                            BIT13                   ;RECEIVER ENABLE.
3177  014644  055000                            <BIT14+BIT12+BIT11>+BIT9                ;PARAMETER FOR REG 1.
3178  014646  072000                            BIT14+BIT13+BIT12+BIT10 ;9600 BAUD
3179
3180  014650  000001                    15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
3181  014652  020000                            BIT13                   ;RECEIVER ENABLE.
3182  014654  015000                            <BIT12+BIT11>+BIT9              ;PARAMETERS FOR REG 1.
3183  014656  072000                            BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
3184  014660  000001                    16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
3185                                                                    ;LINE 3 OR 7 OR 13 OR 17(8).
3186                                    ; ***************************************************
3187
3188  014662  000207                            RTS     PC              ;EXIT TEST.
3189
3190
3191                                            ;************************ TEST 15 *******************************
3192                                            ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
3193                                            ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
3194                                            ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
3195                                            ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
3196                                            ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
3197                                            ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
3198                                            ;*  PART 1  PART 2  PART 1A PART 2A
3199                                            ;*  X  X+1  X  X+1  X  X+1  X  X+1
3200                                            ;*  00-01   01-00   02-03   03-02
```

```
                                        ;*  04-05   05-04   06-07   07-06
                                        ;*  10-11   11-10   12-13   13-12
                                        ;*  14-15   15-14   16-17   17-16
                                        ;*
                                        ;*LINE X:   8 B/P/C,1ST,9600 BAUD.
                                        ;*LINE X+1: 8 B/P/C,2ST,9600 BAUD.
                                        ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                        ;;*****************************************************************
                                ;  TEST 15
                                ;--------------
014664  012737  000015  001226 TST15:  MOV     #15,TSTNO
014672  012737  015256  001216         MOV     #TST16,NEXT
014700  012700  000000                 MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
014704  013737  001416  001236         MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
014712  100402                       BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
014714  004737  015002                 JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
014720  012700  000004         100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
014724  013737  001420  001236         MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
014732  100402                       BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
014734  004737  015002                 JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
014740  012700  000010         101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
014744  013737  001422  001236         MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
014752  100402                       BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
014754  004737  015002                 JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
014760  012700  000014         102$:   MOV     #12.,R0         ;LOAD LINE NO.
014764  013737  001424  001236         MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
014772  100402                       BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
014774  004737  015002                 JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
015000  104400                 103$:   SCOPE                   ;SCOPE THIS TEST.
015002                         105$:                           ;TEST ENTRANCE.
015002  032737  004000  001236         BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
015010  001001                       BNE     1$              ;BR IF YES
015012  000207                       RTS     PC              ;EXIT TEST
015014  010037  015040          1$:   MOV     R0,2$           ;GET LINE UNDER TEST
                                                             ;LINE 0 OR 4 OR 10 OR 14(8)
015020  010037  015060                 MOV     R0,4$           ;SAVE SAME LINE
015024  010037  015050                 MOV     R0,3$           ;PREPARE FOR LINE+1
015030  005237  015050                 INC     3$              ;MAKE LINE = LINE+1
                                                             ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***************************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
015034  004537  032316                 JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
015040  000001                 2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
015042  020000                         BIT13                   ;RECEIVER ENABLE
015044  015000                         (BIT12+BIT11)+BIT9              ;PARAMETERS FOR REG 1.
015046  072000                         BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

015050  000001                 3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
015052  020000                         BIT13                   ;RECEIVER ENABLE
015054  035000                         (BIT13+BIT12+BIT11)+BIT9                ;PARAMETERS FOR REG 1.
015056  072000                         BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
```

```
3257  015060  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
3258                                                                    ;LINE 0 OR 4 OR 10 OR 14(8).
3259                                  ; ***************************************************
3260                                  ;
3261  015062  010037  015110          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
3262  015066  010037  015120                  MOV     R0,7$           ;STORE FOR NEXT TEST.
3263  015072  005237  015120                  INC     7$              ;MAKE LINE=LINE+1.
3264  015076  013737  015120  015130          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
3265                                  ; ***************************************************
3266                                  ;               PART 2
3267                                  ;       IN THIS ROUTINE LOCATION "7$"
3268                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3269                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3270                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
3271                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
3272                                  ;
3273  015104  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
3274  015110  000001                  6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
3275  015112  020000                          BIT13                   ;RECEIVER ENABLE.
3276  015114  035000                          <BIT13+BIT12+BIT11>+BIT9                ;PARAMETERS FOR REG 1.
3277  015116  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
3278
3279  015120  000001                  7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
3280  015122  020000                          BIT13                   ;RECEIVER ENABLE.
3281  015124  015000                          <BIT12+BIT11>+BIT9              ;PARAMETERS FOR REG 1.
3282  015126  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
3283  015130  000001                  8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
3284                                  ; ***************************************************
3285
3286  015132  062700  000002                  ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
3287  015136  010037  015162          9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
3288  015142  010037  015202                  MOV     R0,12$          ;SAVE NO.
3289  015146  010037  015172                  MOV     R0,11$          ;
3290  015152  005237  015172                  INC     11$             ;MAKE LINE=LINE+1.
3291                                  ; ***************************************************
3292                                  ;               PART 1A
3293                                  ;       IN THIS ROUTINE LOCATION "10$"
3294                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3295                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3296                                  ;
3297  015156  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
3298  015162  000001                  10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
3299  015164  020000                          BIT13                   ;RECEIVER ENABLE.
3300  015166  015000                          <BIT12+BIT11>+BIT9              ;PARAMETERS FOR REG 1
3301  015170  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
3302
3303  015172  000001                  11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
3304  015174  020000                          BIT13                   ;RECEIVER ENABLE.
3305  015176  035000                          <BIT13+BIT12+BIT11>+BIT9                ;PARAMETERS FOR REG 1.
3306  015200  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
3307  015202  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
3308                                                                  ;LINE 2 OR 6 OR 12 OR 16(8).
3309                                  ; ***************************************************
3310
3311  015204  010037  015232          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
3312  015210  010037  015242                  MOV     R0,15$          ;STORE LINE.
```

```
3313  015214  005237  015242                  INC     15$                 ;LINE =LINE+1.
3314  015220  013737  015242  015252          MOV     15$,16$             ;SET FASTEST LINE.
3315                                  ; ***************************************************
3316                                  ;               PART 2A
3317                                  ;       IN THIS ROUTINE LOCATION "14$"
3318                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3319                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3320                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
3321                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
3322                                  ;
3323  015226  004537  032316                  JSR     R5,TIME.PAR         ;GOTO SUBROUTINE.
3324  015232  000001                  14$:    .BLKW 1                     ;LINE 2 OR 6 OR 12 OR 16(8)
3325  015234  020000                          BIT13                       ;RECEIVER ENABLE.
3326  015236  035000                          <BIT13+BIT12+BIT11>+BIT9                ;PARAMETER FOR REG 1.
3327  015240  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD
3328
3329  015242  000001                  15$:    .BLKW 1                     ;LINE 3 OR 7 OR 13 OR 17(8).
3330  015244  020000                          BIT13                       ;RECEIVER ENABLE.
3331  015246  015000                          <BIT12+BIT11>+BIT9                  ;PARAMETERS FOR REG 1.
3332  015250  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
3333  015252  000001                  16$:    .BLKW 1                     ;LINE EXPECTED TO FINISH FIRST.
3334                                                                      ;LINE 3 OR 7 OR 13 OR 17(8).
3335                                  ; ***************************************************
3336
3337  015254  000207                          RTS     PC                  ;EXIT TEST.
3338
3339
3340                                          ;************************ TEST 16 ******************************
3341                                          ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
3342                                          ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
3343                                          ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
3344                                          ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
3345                                          ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
3346                                          ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
3347                                          ;*   PART 1   PART 2   PART 1A PART 2A
3348                                          ;*   X  X+1   X  X+1   X  X+1   X  X+1
3349                                          ;*   00-01    01-00    02-03    03-02
3350                                          ;*   04-05    05-04    06-07    07-06
3351                                          ;*   10-11    11-10    12-13    13-12
3352                                          ;*   14-15    15-14    16-17    17-16
3353                                          ;*
3354                                          ;*LINE X:   8 B/P/C,1ST,9600 BAUD,PARITY(ODD).
3355                                          ;*LINE X+1: 8 B/P/C,2ST,9600 BAUD,PARITY(ODD).
3356                                          ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
3357                                          ;:***************************************************************
3358
3359                                  ;  TEST 16
3360                                  ;--------------
3361  015256  012737  000016  001226  TST16:  MOV     #16,TSTNO
3362  015264  012737  015650  001216          MOV     #TST17,NEXT
3363  015272  012700  000000                  MOV     #0.,R0              ;PLACE LINE NUMBER INTO R0
3364  015276  013737  001416  001236          MOV     L00.03,STAT         ;LOAD LINE CARD STATUS INTO STAT
3365  015304  100402                          BMI     100$                ;BR IF LINE CARD NOT TO BE TESTED
3366  015306  004737  015374                  JSR     PC,105$             ;GO DO THE TEST FOR LINE CARD 1
3367  015312  012700  000004          100$:   MOV     #4.,R0              ;PLACE LINE NUMBER INTO R0
3368  015316  013737  001420  001236          MOV     L04.07,STAT         ;LOAD LINE CARD STATUS INTO STAT
```

```
015324  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
015326  004737  015374                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
015332  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
015336  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
015344  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
015346  004737  015374                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
015352  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
015356  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
015364  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
015366  004737  015374                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
015372  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
015374                          105$:                           ;TEST ENTRANCE.
015374  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
015402  001001                          BNE     1$              ;BR IF YES
015404  000207                          RTS     PC              ;EXIT TEST
015406  010037  015432          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
015412  010037  015452                  MOV     R0,4$           ;SAVE SAME LINE
015416  010037  015442                  MOV     R0,3$           ;PREPARE FOR LINE+1
015422  005237  015442                  INC     3$              ;MAKE LINE = LINE+1
                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***************************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
015426  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
015432  000001                  2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
015434  030000                          BIT13+BIT12                     ;PARAMETERS FOR REG 0.
015436  055000                          (BIT14+BIT12+BIT11)+BIT9                ;PARAMETERS FOR REG 1.
015440  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

015442  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
015444  030000                          BIT13+BIT12                     ;PARAMETERS FOR REG 0.
015446  075000                          (BIT14+BIT13+BIT12+BIT11)+BIT9          ;PARAMETERS FOR REG 1.
015450  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
015452  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; ***************************************************

015454  010037  015502          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
015460  010037  015512                  MOV     R0,7$           ;STORE FOR NEXT TEST.
015464  005237  015512                  INC     7$              ;MAKE LINE=LINE+1.
015470  013737  015512  015522          MOV     7$,9$           ;STORE LINE+1 FOR NEXT TESTS.
                                ; ***************************************************
                                ;               PART 2
                                ;       IN THIS ROUTINE LOCATION "7$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
015476  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
015502  000001                  6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
015504  030000                          BIT13+BIT12                     ;PARAMETERS FOR REG 0.
```

```
 3425  015506  075000                    (BIT14+BIT13+BIT12+BIT11)+BIT9          ;PARAMETERS FOR REG 1.
 3426  015510  072000                    BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 3427
 3428  015512  000001            7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 3429  015514  030000                    BIT13+BIT12                     ;PARAMETERS FOR REG 0.
 3430  015516  055000                    (BIT14+BIT12+BIT11)+BIT9                ;PARAMETERS FOR REG 1.
 3431  015520  072000                    BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 3432  015522  000001            9$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 3433                            ; ***************************************************
 3434
 3435  015524  062700  000002            ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
 3436  015530  010037  015554    9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
 3437  015534  010037  015574            MOV     R0,12$          ;SAVE NO.
 3438  015540  010037  015564            MOV     R0,11$          ;
 3439  015544  005237  015564            INC     11$             ;MAKE LINE=LINE+1.
 3440                            ; ***************************************************
 3441                            ;               PART 1A
 3442                            ;       IN THIS ROUTINE LOCATION "10$"
 3443                            ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 3444                            ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 3445                            ;
 3446  015550  004537  032316            JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 3447  015554  000001            10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
 3448  015556  030000                    BIT13+BIT12                     ;PARAMETERS FOR REG 0.
 3449  015560  055000                    (BIT14+BIT12+BIT11)+BIT9                ;PARAMETERS FOR REG 1
 3450  015562  072000                    BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 3451
 3452  015564  000001            11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
 3453  015566  030000                    BIT13+BIT12                     ;PARAMETERS FOR REG 0.
 3454  015570  075000                    (BIT14+BIT13+BIT12+BIT11)+BIT9          ;PARAMETERS FOR REG 1.
 3455  015572  072000                    BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 3456  015574  000001            12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
 3457                                                            ;LINE 2 OR 6 OR 12 OR 16(8).
 3458                            ; ***************************************************
 3459
 3460  015576  010037  015624    13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
 3461  015602  010037  015634            MOV     R0,15$          ;STORE LINE.
 3462  015606  005237  015634            INC     15$             ;LINE =LINE+1.
 3463  015612  013737  015634  015644    MOV     15$,16$         ;SET FASTEST LINE.
 3464                            ; ***************************************************
 3465                            ;               PART 2A
 3466                            ;       IN THIS ROUTINE LOCATION "14$"
 3467                            ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 3468                            ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 3469                            ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
 3470                            ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
 3471                            ;
 3472  015620  004537  032316            JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 3473  015624  000001            14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
 3474  015626  030000                    BIT13+BIT12                     ;PARAMETER FOR REG 0.
 3475  015630  075000                    (BIT14+BIT13+BIT12+BIT11)+BIT9          ;PARAMETER FOR REG 1.
 3476  015632  072000                    BIT14+BIT13+BIT12+BIT10 ;9600 BAUD
 3477
 3478  015634  000001            15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
 3479  015636  030000                    BIT13+BIT12                     ;PARAMETERS FOR REG 0.
 3480  015640  055000                    (BIT14+BIT12+BIT11)+BIT9                ;PARAMETERS FOR REG 1.
```

```
015642  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
015644  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 3 OR 7 OR 13 OR 17(8).
                                ; ***************************************************

015646  000207                          RTS     PC              ;EXIT TEST.


                                        ;************************ TEST 17 ******************************
                                        ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
                                        ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
                                        ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                        ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                        ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                        ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                        ;*  PART 1  PART 2  PART 1A PART 2A
                                        ;*  X  X+1  X  X+1  X  X+1  X  X+1
                                        ;*  00-01   01-00   02-03   03-02
                                        ;*  04-05   05-04   06-07   07-06
                                        ;*  10-11   11-10   12-13   13-12
                                        ;*  14-15   15-14   16-17   17-16
                                        ;*
                                        ;*LINE X:   8 B/P/C,2ST,9600 BAUD.
                                        ;*LINE X+1: 8 B/P/C,2ST,9600 BAUD,PARITY(ODD).
                                        ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                        ;;*************************************************************


                                ;  TEST 17
                                ;--------------
015650  012737  000017  001226  TST17:  MOV     #17,TSTNO
015656  012737  016242  001216          MOV     #TST20,NEXT
015664  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
015670  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
015676  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
015700  004737  015766                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
015704  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
015710  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
015716  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
015720  004737  015766                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
015724  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
015730  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
015736  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
015740  004737  015766                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
015744  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
015750  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
015756  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
015760  004737  015766                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
015764  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
015766                          105$:                           ;TEST ENTRANCE.
015766  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
015774  001001                          BNE     1$              ;BR IF YES
015776  000207                          RTS     PC              ;EXIT TEST
016000  010037  016024          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
016004  010037  016044                  MOV     R0,4$           ;SAVE SAME LINE
016010  010037  016034                  MOV     R0,3$           ;PREPARE FOR LINE+1
```

```
                                        INC     3$              ;MAKE LINE = LINE+1
                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***************************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
016020  004537  032316          2$:     JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
016024  000001                          .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
016026  030000                          BIT13+BIT12                     ;PARAMETERS FOR REG 0.
016030  035000                          (BIT13+BIT12+BIT11)+BIT9                ;PARAMETERS FOR REG 1.
016032  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

016034  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
016036  030000                          BIT13+BIT12                     ;PARAMETERS FOR REG 0.
016040  075000                          (BIT14+BIT13+BIT12+BIT11)+BIT9          ;PARAMETERS FOR REG 1.
016042  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
016044  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; ***************************************************

016046  010037  016074          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
016052  010037  016104                  MOV     R0,7$           ;STORE FOR NEXT TEST.
016056  005237  016104                  INC     7$              ;MAKE LINE=LINE+1.
016062  013737  016104  016114          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
                                ; ***************************************************
                                ;               PART 2
                                ;       IN THIS ROUTINE LOCATION "7$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
016070  004537  032316          6$:     JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
016074  000001                          .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
016076  030000                          BIT13+BIT12                     ;PARAMETERS FOR REG 0.
016100  075000                          (BIT14+BIT13+BIT12+BIT11)+BIT9          ;PARAMETERS FOR REG 1.
016102  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

016104  000001                  7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
016106  030000                          BIT13+BIT12                     ;PARAMETERS FOR REG 0.
016110  035000                          (BIT13+BIT12+BIT11)+BIT9                ;PARAMETERS FOR REG 1.
016112  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
016114  000001                  8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                ; ***************************************************

016116  062700  000002                  ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
016122  010037  016146          9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
016126  010037  016166                  MOV     R0,12$          ;SAVE NO.
016132  010037  016156                  MOV     R0,11$          ;
016136  005237  016156                  INC     11$             ;MAKE LINE=LINE+1.
                                ; ***************************************************
                                ;               PART 1A
                                ;       IN THIS ROUTINE LOCATION "10$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
```

```
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
016142  004537  032316                 JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
016146  000001                 10$:     .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
016150  030000                         BIT13+BIT12                     ;PARAMETERS FOR REG 0.
016152  035000                         <BIT13+BIT12+BIT11>+BIT9                ;PARAMETERS FOR REG 1
016154  072000                         BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

016156  000001                 11$:     .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
016160  030000                         BIT13+BIT12                     ;PARAMETERS FOR REG 0.
016162  075000                         <BIT14+BIT13+BIT12+BIT11>+BIT9          ;PARAMETERS FOR REG 1.
016164  072000                         BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
016166  000001                 12$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
                                ; ***************************************************

016170  010037  016216         13$:     MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
016174  010037  016226                 MOV     R0,15$          ;STORE LINE.
016200  005237  016226                 INC     15$             ;LINE =LINE+1.
016204  013737  016226  016236         MOV     15$,16$         ;SET FASTEST LINE.
                                ; ***************************************************
                                        ;               PART 2A
                                        ;       IN THIS ROUTINE LOCATION "14$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
016212  004537  032316                 JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
016216  000001                 14$:     .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
016220  030000                         BIT13+BIT12                     ;PARAMETER FOR REG 0.
016222  075000                         <BIT14+BIT13+BIT12+BIT11>+BIT9          ;PARAMETER FOR REG 1.
016224  072000                         BIT14+BIT13+BIT12+BIT10 ;9600 BAUD

016226  000001                 15$:     .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
016230  030000                         BIT13+BIT12                     ;PARAMETERS FOR REG 0.
016232  035000                         <BIT13+BIT12+BIT11>+BIT9                ;PARAMETERS FOR REG 1.
016234  072000                         BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
016236  000001                 16$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 3 OR 7 OR 13 OR 17(8).
                                ; ***************************************************

016240  000207                         RTS     PC              ;EXIT TEST.


                                        ;************************ TEST 20 ******************************
                                        ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
                                        ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
                                        ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                        ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                        ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                        ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                        ;*  PART 1  PART 2  PART 1A PART 2A
                                        ;*  X  X+1  X  X+1  X  X+1  X  X+1
                                        ;*  00-01   01-00   02-03   03-02
                                        ;*  04-05   05-04   06-07   07-06
```

```
                                        ;*  10-11   11-10   12-13   13-12
                                        ;*  14-15   15-14   16-17   17-16
                                        ;*
                                        ;*      BAUD RATE TEST.
                                        ;*LINE X:   8 B/P/C,1ST,  75 BAUD.
                                        ;*LINE X+1: 8 B/P/C,1ST,  50 BAUD.
                                        ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                        ;;*****************************************************************

                                ;  TEST 20
                                ;--------------
016242  012737  000020  001226  TST20:  MOV     #20,TSTNO
016250  012737  016634  001216          MOV     #TST21,NEXT
016256  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
016262  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
016270  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
016272  004737  016360                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
016276  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
016302  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
016310  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
016312  004737  016360                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
016316  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
016322  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
016330  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
016332  004737  016360                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
016336  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
016342  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
016350  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
016352  004737  016360                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
016356  104400          103$:           SCOPE                   ;SCOPE THIS TEST.
016360                  105$:                                   ;TEST ENTRANCE.
016360  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
016366  001001                          BNE     1$              ;BR IF YES
016370  000207                          RTS     PC              ;EXIT TEST
016372  010037  016416          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
016376  010037  016436                  MOV     R0,4$           ;SAVE SAME LINE
016402  010037  016426                  MOV     R0,3$           ;PREPARE FOR LINE+1
016406  005237  016426                  INC     3$              ;MAKE LINE = LINE+1
                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***************************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
016412  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
016416  000001          2$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8)
016420  020000                  BIT13                           ;RECEIVER ENABLE
016422  015000                  <BIT12+BIT11>+BIT9              ;PARAMETERS: 8 BITS PER/CHAR
016424  006000                  <BIT11>+BIT10                   ;PARAMETERS FOR REG 2

016426  000001          3$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
016430  020000                  BIT13                           ;RECEIVER ENABLE
016432  015000                  <BIT12+BIT11>+BIT9              ;9 BITS PER CHAR
016434  002000                  <000>+BIT10                     ;PARAMETERS FOR REG 2
```

```
3705  016436  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
3706                                                                    ;LINE 0 OR 4 OR 10 OR 14(8).
3707                                  ; ***************************************************
3708
3709  016440  010037  016466          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
3710  016444  010037  016476                  MOV     R0,7$           ;STORE FOR NEXT TEST.
3711  016450  005237  016476                  INC     7$              ;MAKE LINE=LINE+1.
3712  016454  013737  016476  016506          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
3713                                  ; ***************************************************
3714                                  ;               PART 2
3715                                  ;       IN THIS ROUTINE LOCATION "7$"
3716                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3717                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3718                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
3719                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
3720                                  ;
3721  016462  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
3722  016466  000001                  6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
3723  016470  020000                          BIT13                   ;RECEIVER ENABLE.
3724  016472  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
3725  016474  002000                          <000>+BIT10             ;PARAMETERS FOR REG 2.
3726
3727  016476  000001                  7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
3728  016500  020000                          BIT13                   ;RECEIVER ENABLE.
3729  016502  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
3730  016504  006000                          <BIT11>+BIT10           ;PARAMETERS FOR REG 2.
3731  016506  000001                  8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
3732                                  ; ***************************************************
3733
3734  016510  062700  000002                  ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
3735  016514  010037  016540          9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
3736  016520  010037  016560                  MOV     R0,12$          ;SAVE NO.
3737  016524  010037  016550                  MOV     R0,11$          ;
3738  016530  005237  016550                  INC     11$             ;MAKE LINE=LINE+1.
3739                                  ; ***************************************************
3740                                  ;               PART 1A
3741                                  ;       IN THIS ROUTINE LOCATION "10$"
3742                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3743                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3744                                  ;
3745  016534  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
3746  016540  000001                  10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
3747  016542  020000                          BIT13                   ;RECEIVER ENABLE.
3748  016544  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
3749  016546  006000                          <BIT11>+BIT10           ;PARAMETERS FOR REG 2.
3750
3751  016550  000001                  11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
3752  016552  020000                          BIT13                   ;RECEIVER ENABLE.
3753  016554  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
3754  016556  002000                          <000>+BIT10             ;PARAMETERS FOR LINE 2.
3755  016560  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
3756                                                                  ;LINE 2 OR 6 OR 12 OR 16(8).
3757                                  ; ***************************************************
3758
3759  016562  010037  016610          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
3760  016566  010037  016620                  MOV     R0,15$          ;STORE LINE.
```

```
3761  016572  005237  016620                  INC     15$                ;LINE =LINE+1.
3762  016576  013737  016620  016630          MOV     15$,16$            ;SET FASTEST LINE.
3763                                  ; ***************************************************
3764                                  ;               PART 2A
3765                                  ;       IN THIS ROUTINE LOCATION "14$"
3766                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3767                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3768                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
3769                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
3770                                  ;
3771  016604  004537  032316                  JSR     R5,TIME.PAR        ;GOTO SUBROUTINE.
3772  016610  000001                  14$:    .BLKW 1                    ;LINE 2 OR 6 OR 12 OR 16(8)
3773  016612  020000                          BIT13                      ;RECEIVER ENABLE.
3774  016614  015000                          <BIT12+BIT11>+BIT9         ;8 BITS/PER/CHAR.
3775  016616  002000                          <000>+BIT10                ;PARAMETER FOR REG 2.
3776
3777  016620  000001                  15$:    .BLKW 1                    ;LINE 3 OR 7 OR 13 OR 17(8).
3778  016622  020000                          BIT13                      ;RECEIVER ENABLE.
3779  016624  015000                          <BIT12+BIT11>+BIT9         ;8 BITS/PER/CHAR.
3780  016626  006000                          <BIT11>+BIT10              ;PARAMETERS FOR REG 1.
3781  016630  000001                  16$:    .BLKW 1                    ;LINE EXPECTED TO FINISH FIRST.
3782                                                                     ;LINE 3 OR 7 OR 13 OR 17(8).
3783                                  ; ***************************************************
3784
3785  016632  000207                          RTS     PC                 ;EXIT TEST.
3786
3787
3788                                          ;************************ TEST 21 *******************************
3789                                          ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
3790                                          ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
3791                                          ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
3792                                          ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
3793                                          ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
3794                                          ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
3795                                          ;*   PART 1   PART 2   PART 1A PART 2A
3796                                          ;*   X  X+1   X  X+1   X  X+1   X  X+1
3797                                          ;*   00-01    01-00    02-03    03-02
3798                                          ;*   04-05    05-04    06-07    07-06
3799                                          ;*   10-11    11-10    12-13    13-12
3800                                          ;*   14-15    15-14    16-17    17-16
3801                                          ;*
3802                                          ;*       BAUD RATE TEST.
3803                                          ;*LINE X:    8 B/P/C,1ST,   110 BAUD.
3804                                          ;*LINE X+1:  8 B/P/C,1ST,    75 BAUD.
3805                                          ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
3806                                          ;:***************************************************************
3807
3808                                  ;  TEST 21
3809                                  ;-------------
3810  016634  012737  000021  001226  TST21:  MOV     #21,TSTNO
3811  016642  012737  017226  001216          MOV     #TST22,NEXT
3812  016650  012700  000000                  MOV     #0.,R0             ;PLACE LINE NUMBER INTO R0
3813  016654  013737  001416  001236          MOV     L00.03,STAT        ;LOAD LINE CARD STATUS INTO STAT
3814  016662  100402                          BMI     100$               ;BR IF LINE CARD NOT TO BE TESTED
3815  016664  004737  016752                  JSR     PC,105$            ;GO DO THE TEST FOR LINE CARD 1
3816  016670  012700  000004          100$:   MOV     #4.,R0             ;PLACE LINE NUMBER INTO R0
```

```
3817  016674  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
3818  016702  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
3819  016704  004737  016752                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
3820  016710  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
3821  016714  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
3822  016722  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
3823  016724  004737  016752                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
3824  016730  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
3825  016734  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
3826  016742  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
3827  016744  004737  016752                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
3828  016750  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
3829  016752                          105$:                           ;TEST ENTRANCE.
3830  016752  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
3831  016760  001001                          BNE     1$              ;BR IF YES
3832  016762  000207                          RTS     PC              ;EXIT TEST
3833  016764  010037  017010          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
3834                                                                  ;LINE 0 OR 4 OR 10 OR 14(8)
3835  016770  010037  017030                  MOV     R0,4$           ;SAVE SAME LINE
3836  016774  010037  017020                  MOV     R0,3$           ;PREPARE FOR LINE+1
3837  017000  005237  017020                  INC     3$              ;MAKE LINE = LINE+1
3838                                                                  ;LINE 1 OR 5 OR 11 OR 15(8)
3839                                  ; ***************************************************
3840                                  ;               PART 1
3841                                  ;       IN THIS ROUTINE LOCATION "2$"
3842                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3843                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3844                                  ;
3845  017004  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
3846  017010  000001          2$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8)
3847  017012  020000                  BIT13                           ;RECEIVER ENABLE
3848  017014  015000                  <BIT12+BIT11>+BIT9              ;PARAMETERS: 8 BITS PER/CHAR
3849  017016  012000                  <BIT12>+BIT10                   ;PARAMETERS FOR REG 2
3850
3851  017020  000001          3$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
3852  017022  020000                  BIT13                           ;RECEIVER ENABLE
3853  017024  015000                  <BIT12+BIT11>+BIT9              ;8 BITS PER CHAR
3854  017026  006000                  <BIT11>+BIT10                   ;PARAMETERS FOR REG 2
3855  017030  000001          4$:     .BLKW 1                         ;LINE EXPECTED TO FINISH FIRST.
3856                                                                  ;LINE 0 OR 4 OR 10 OR 14(8).
3857                                  ; ***************************************************
3858
3859  017032  010037  017060          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
3860  017036  010037  017070                  MOV     R0,7$           ;STORE FOR NEXT TEST.
3861  017042  005237  017070                  INC     7$              ;MAKE LINE=LINE+1.
3862  017046  013737  017070  017100          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
3863                                  ; ***************************************************
3864                                  ;               PART 2
3865                                  ;       IN THIS ROUTINE LOCATION "7$"
3866                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3867                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3868                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
3869                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
3870                                  ;
3871  017054  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
3872  017060  000001          6$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8).
```

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3873  017062  020000                        BIT13                   ;RECEIVER ENABLE.
3874  017064  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
3875  017066  006000                        <BIT11>+BIT10           ;PARAMETERS FOR REG 2.
3876
3877  017070  000001              7$:       .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
3878  017072  020000                        BIT13                   ;RECEIVER ENABLE.
3879  017074  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
3880  017076  012000                        <BIT12>+BIT10           ;PARAMETERS FOR REG 2.
3881  017100  000001              9$:       .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
3882                                ; ***************************************************
3883
3884  017102  062700  000002              ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
3885  017106  010037  017132    9$:       MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
3886  017112  010037  017152              MOV     R0,12$          ;SAVE NO.
3887  017116  010037  017142              MOV     R0,11$          ;
3888  017122  005237  017142              INC     11$             ;MAKE LINE=LINE+1.
3889                                ; ***************************************************
3890                                ;               PART 1A
3891                                ;       IN THIS ROUTINE LOCATION "10$"
3892                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3893                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3894                                ;
3895  017126  004537  032316              JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
3896  017132  000001              10$:      .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
3897  017134  020000                        BIT13                   ;RECEIVER ENABLE.
3898  017136  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
3899  017140  012000                        <BIT12>+BIT10           ;PARAMETERS FOR REG 2.
3900
3901  017142  000001              11$:      .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(9).
3902  017144  020000                        BIT13                   ;RECEIVER ENABLE.
3903  017146  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
3904  017150  006000                        <BIT11>+BIT10           ;PARAMETERS FOR LINE 2.
3905  017152  000001              12$:      .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
3906                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
3907                                ; ***************************************************
3908
3909  017154  010037  017202    13$:      MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
3910  017160  010037  017212              MOV     R0,15$          ;STORE LINE.
3911  017164  005237  017212              INC     15$             ;LINE =LINE+1.
3912  017170  013737  017212  017222      MOV     15$,16$         ;SET FASTEST LINE.
3913                                ; ***************************************************
3914                                ;               PART 2A
3915                                ;       IN THIS ROUTINE LOCATION "14$"
3916                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
3917                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
3918                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
3919                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
3920                                ;
3921  017176  004537  032316              JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
3922  017202  000001              14$:      .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
3923  017204  020000                        BIT13                   ;RECEIVER ENABLE.
3924  017206  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
3925  017210  006000                        <BIT11>+BIT10           ;PARAMETER FOR REG 2.
3926
3927  017212  000001              15$:      .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
3928  017214  020000                        BIT13                   ;RECEIVER ENABLE.
```

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3929  017216  015000                          (BIT12+BIT11)+BIT9      ;8 BITS/PER/CHAR.
3930  017220  012000                          (BIT12)+BIT10           ;PARAMETERS FOR REG 1.
3931  017222  000001              16$:        .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
3932                                                                  ;LINE 3 OR 7 OR 13 OR 17(8).
3933                              ; ***************************************************
3934
3935  017224  000207                          RTS     PC              ;EXIT TEST.
3936
3937
3938                                          ;************************ TEST 22 ******************************
3939                                          ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
3940                                          ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
3941                                          ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
3942                                          ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
3943                                          ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
3944                                          ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
3945                                          ;*  PART 1  PART 2  PART 1A PART 2A
3946                                          ;*  X  X+1  X  X+1  X  X+1  X  X+1
3947                                          ;*  00-01   01-00   02-03   03-02
3948                                          ;*  04-05   05-04   06-07   07-06
3949                                          ;*  10-11   11-10   12-13   13-12
3950                                          ;*  14-15   15-14   16-17   17-16
3951                                          ;*
3952                                          ;*      BAUD RATE TEST.
3953                                          ;*LINE X:   8 B/P/C,1ST, 134.5 BAUD.
3954                                          ;*LINE X+1: 8 B/P/C,1ST, 110 BAUD.
3955                                          ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
3956                                          ;:***************************************************************
3957
3958                              ;  TEST 22
3959                              ;--------------
3960  017226  012737  000022  001226  TST22:  MOV     #22,TSTNO
3961  017234  012737  017620  001216          MOV     #TST23,NEXT
3962  017242  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
3963  017246  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
3964  017254  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
3965  017256  004737  017344                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
3966  017262  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
3967  017266  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
3968  017274  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
3969  017276  004737  017344                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
3970  017302  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
3971  017306  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
3972  017314  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
3973  017316  004737  017344                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
3974  017322  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
3975  017326  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
3976  017334  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
3977  017336  004737  017344                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
3978  017342  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
3979  017344                          105$:                           ;TEST ENTRANCE.
3980  017344  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
3981  017352  001001                          BNE     1$              ;BR IF YES
3982  017354  000207                          RTS     PC              ;EXIT TEST
3983  017356  010037  017402          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
3984                                                                  ;LINE 0 OR 4 OR 10 OR 14(8)
```

```
 3985  017362  010037  017422                MOV     R0,4$           ;SAVE SAME LINE
 3986  017366  010037  017412                MOV     R0,3$           ;PREPARE FOR LINE+1
 3987  017372  005237  017412                INC     3$              ;MAKE LINE = LINE+1
 3988                                                                 ;LINE 1 OR 5 OR 11 OR 15(8)
 3989                                ; ***************************************************
 3990                                ;               PART 1
 3991                                ;       IN THIS ROUTINE LOCATION "2$"
 3992                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 3993                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 3994                                ;
 3995  017376  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
 3996  017402  000001                2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
 3997  017404  020000                        BIT13                   ;RECEIVER ENABLE
 3998  017406  015000                        <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
 3999  017410  016000                        <BIT12+BIT11>+BIT10             ;PARAMETERS FOR REG 2
 4000
 4001  017412  000001                3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 4002  017414  020000                        BIT13                   ;RECEIVER ENABLE
 4003  017416  015000                        <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
 4004  017420  012000                        <BIT12>+BIT10           ;PARAMETERS FOR REG 2
 4005  017422  000001                4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
 4006                                                                 ;LINE 0 OR 4 OR 10 OR 14(8).
 4007                                ; ***************************************************
 4008
 4009  017424  010037  017452          5$:   MOV     R0,6$           ;GET INITAL LINE NO.
 4010  017430  010037  017462                MOV     R0,7$           ;STORE FOR NEXT TEST.
 4011  017434  005237  017462                INC     7$              ;MAKE LINE=LINE+1.
 4012  017440  013737  017462  017472        MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
 4013                                ; ***************************************************
 4014                                ;               PART 2
 4015                                ;       IN THIS ROUTINE LOCATION "7$"
 4016                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 4017                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 4018                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
 4019                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
 4020                                ;
 4021  017446  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 4022  017452  000001                6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
 4023  017454  020000                        BIT13                   ;RECEIVER ENABLE.
 4024  017456  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 4025  017460  012000                        <BIT12>+BIT10           ;PARAMETERS FOR REG 2.
 4026
 4027  017462  000001                7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 4028  017464  020000                        BIT13                   ;RECEIVER ENABLE.
 4029  017466  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 4030  017470  016000                        <BIT12+BIT11>+BIT10             ;PARAMETERS FOR REG 2.
 4031  017472  000001                8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 4032                                ; ***************************************************
 4033
 4034  017474  062700  000002                ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
 4035  017500  010037  017524          9$:   MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
 4036  017504  010037  017544                MOV     R0,12$          ;SAVE NO.
 4037  017510  010037  017534                MOV     R0,11$          ;
 4038  017514  005237  017534                INC     11$             ;MAKE LINE=LINE+1.
 4039                                ; ***************************************************
 4040                                ;               PART 1A
```

```
4041                                    ;       IN THIS ROUTINE LOCATION "10$"
4042                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
4043                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
4044                                    ;
4045  017520  004537  032316                    JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
4046  017524  000001                    10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
4047  017526  020000                            BIT13                   ;RECEIVER ENABLE.
4048  017530  015000                            <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4049  017532  016000                            <BIT12+BIT11>+BIT10             ;PARAMETERS FOR REG 2.
4050
4051  017534  000001                    11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
4052  017536  020000                            BIT13                   ;RECEIVER ENABLE.
4053  017540  015000                            <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4054  017542  012000                            <BIT12>+BIT10           ;PARAMETERS FOR LINE 2.
4055  017544  000001                    12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
4056                                                                    ;LINE 2 OR 6 OR 12 OR 16(8).
4057                                    ; ******************************************************
4058
4059  017546  010037  017574            13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
4060  017552  010037  017604                    MOV     R0,15$          ;STORE LINE.
4061  017556  005237  017604                    INC     15$             ;LINE =LINE+1.
4062  017562  013737  017604  017614            MOV     15$,16$         ;SET FASTEST LINE.
4063                                    ; ******************************************************
4064                                    ;               PART 2A
4065                                    ;       IN THIS ROUTINE LOCATION "14$"
4066                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
4067                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
4068                                    ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
4069                                    ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
4070                                    ;
4071  017570  004537  032316                    JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
4072  017574  000001                    14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
4073  017576  020000                            BIT13                   ;RECEIVER ENABLE.
4074  017600  015000                            <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4075  017602  012000                            <BIT12>+BIT10           ;PARAMETER FOR REG 2.
4076
4077  017604  000001                    15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
4078  017606  020000                            BIT13                   ;RECEIVER ENABLE.
4079  017610  015000                            <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4080  017612  016000                            <BIT12+BIT11>+BIT10             ;PARAMETERS FOR REG 1.
4081  017614  000001                    16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
4082                                                                    ;LINE 3 OR 7 OR 13 OR 17(8).
4083                                    ; ******************************************************
4084
4085  017616  000207                            RTS     PC              ;EXIT TEST.
4086
4087
4088                                            ;************************ TEST 23 ********************************
4089                                            ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
4090                                            ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
4091                                            ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
4092                                            ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
4093                                            ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
4094                                            ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
4095                                            ;*  PART 1  PART 2  PART 1A PART 2A
4096                                            ;*  X  X+1  X  X+1  X  X+1  X  X+1
```

```
                                        :*  00-01   01-00   02-03   03-02
                                        :*  04-05   05-04   06-07   07-06
                                        :*  10-11   11-10   12-13   13-12
                                        :*  14-15   15-14   16-17   17-16
                                        :*
                                        :*      BAUD RATE TEST.
                                        :*LINE X:   8 B/P/C.1ST. 150 BAUD.
                                        :*LINE X+1: 8 B/P/C.1ST. 134.5 BAUD.
                                        :*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                        ::**********************************************************************

                                    ;  TEST 23
                                    ;--------------
017620  012737  000023  001226  TST23:  MOV     #23,TSTNO
017626  012737  020212  001216           MOV     #TST24,NEXT
017634  012700  000000                   MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
017640  013737  001416  001236           MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
017646  100402                           BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
017650  004737  017736                   JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
017654  012700  000004           100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
017660  013737  001420  001236           MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
017666  100402                           BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
017670  004737  017736                   JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
017674  012700  000010           101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
017700  013737  001422  001236           MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
017706  100402                           BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
017710  004737  017736                   JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
017714  012700  000014           102$:   MOV     #12.,R0         ;LOAD LINE NO.
017720  013737  001424  001236           MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
017726  100402                           BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
017730  004737  017736                   JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
017734  104400           103$:   SCOPE                           ;SCOPE THIS TEST.
017736                   105$:                                   ;TEST ENTRANCE.
017736  032737  004000  001236           BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
017744  001001                           BNE     1$              ;BR IF YES
017746  000207                           RTS     PC              ;EXIT TEST
017750  010037  017774           1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                 ;LINE 0 OR 4 OR 10 OR 14(8)
017754  010037  020014                   MOV     R0,4$           ;SAVE SAME LINE
017760  010037  020004                   MOV     R0,3$           ;PREPARE FOR LINE+1
017764  005237  020004                   INC     3$              ;MAKE LINE = LINE+1
                                                                 ;LINE 1 OR 5 OR 11 OR 15(8)
                                    ; ***************************************************
                                    ;               PART 1
                                    ;       IN THIS ROUTINE LOCATION "2$"
                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                    ;
017770  004537  032316           2$:     JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
017774  000001                           .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
017776  020000                           BIT13                   ;RECEIVER ENABLE
020000  015000                           (BIT12+BIT11)+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
020002  022000                           (BIT13)+BIT10           ;PARAMETERS FOR REG 2

020004  000001           3$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
020006  020000                   BIT13                           ;RECEIVER ENABLE
```

```
                                        <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
                                        <BIT12+BIT11>+BIT10             ;PARAMETERS FOR REG 2
020014  000001                  4$:   .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                              ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; ***************************************************
                                5$:   MOV     R0,6$           ;GET INITAL LINE NO.
020022  010037  020054                MOV     R0,7$           ;STORE FOR NEXT TEST.
020026  005237  020054                INC     7$              ;MAKE LINE=LINE+1.
020032  013737  020054  020064        MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
                                ; ***************************************************
                                ;             PART 2
                                ;     IN THIS ROUTINE LOCATION "7$"
                                ;     HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;     LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;     THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;     FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
020040  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
020044  000001                  6$:   .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
020046  020000                        BIT13                   ;RECEIVER ENABLE.
020050  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
020052  016000                        <BIT12+BIT11>+BIT10             ;PARAMETERS FOR REG 2.

020054  000001                  7$:   .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
020056  020000                        BIT13                   ;RECEIVER ENABLE.
020060  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
020062  022000                        <BIT13>+BIT10           ;PARAMETERS FOR REG 2.
020064  000001                  8$:   .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                ; ***************************************************

020066  062700  000002                ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
020072  010037  020116          9$:   MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
020076  010037  020136                MOV     R0,12$          ;SAVE NO.
020102  010037  020126                MOV     R0,11$          ;
020106  005237  020126                INC     11$             ;MAKE LINE=LINE+1.
                                ; ***************************************************
                                ;             PART 1A
                                ;     IN THIS ROUTINE LOCATION "10$"
                                ;     HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;     LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
020112  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
020116  000001                  10$:  .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
020120  020000                        BIT13                   ;RECEIVER ENABLE.
020122  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
020124  022000                        <BIT13>+BIT10           ;PARAMETERS FOR REG 2.

020126  000001                  11$:  .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
020130  020000                        BIT13                   ;RECEIVER ENABLE.
020132  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
020134  016000                        <BIT12+BIT11>+BIT10             ;PARAMETERS FOR LINE 2.
020136  000001                  12$:  .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                              ;LINE 2 OR 6 OR 12 OR 16(8).
                                ; ***************************************************
```

```
 4209  020140  010037  020166          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
 4210  020144  010037  020176                  MOV     R0,15$          ;STORE LINE.
 4211  020150  005237  020176                  INC     15$             ;LINE =LINE+1.
 4212  020154  013737  020176  020206          MOV     15$,16$         ;SET FASTEST LINE.
 4213                                  ; ***************************************************
 4214                                  ;               PART 2A
 4215                                  ;       IN THIS ROUTINE LOCATION "14$"
 4216                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 4217                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 4218                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
 4219                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
 4220                                  ;
 4221  020162  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 4222  020166  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
 4223  020170  020000                  BIT13                           ;RECEIVER ENABLE.
 4224  020172  015000                  (BIT12+BIT11)+BIT9              ;8 BITS/PER/CHAR.
 4225  020174  016000                  (BIT12+BIT11)+BIT10                     ;PARAMETER FOR REG 2.
 4226
 4227  020176  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
 4228  020200  020000                  BIT13                           ;RECEIVER ENABLE.
 4229  020202  015000                  (BIT12+BIT11)+BIT9              ;8 BITS/PER/CHAR.
 4230  020204  022000                  (BIT13)+BIT10                   ;PARAMETERS FOR REG 1.
 4231  020206  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
 4232                                                                  ;LINE 3 OR 7 OR 13 OR 17(8).
 4233                                  ; ***************************************************
 4234
 4235  020210  000207                          RTS     PC              ;EXIT TEST.
```

```
                                  ;************************ TEST 24 *******************************
                                  ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
                                  ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
                                  ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                  ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                  ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                  ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                  ;*   PART 1   PART 2   PART 1A PART 2A
                                  ;*   X  X+1.  X  X+1   X  X+1  X  X+1
                                  ;*   00-01    01-00    02-03   03-02
                                  ;*   04-05    05-04    06-07   07-06
                                  ;*   10-11    11-10    12-13   13-12
                                  ;*   14-15    15-14    16-17   17-16
                                  ;*
                                  ;*       BAUD RATE TEST.
                                  ;*LINE X:   8 B/P/C,1ST, 300 BAUD.
                                  ;*LINE X+1: 8 B/P/C,1ST, 150 BAUD.
                                  ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                  ;*****************************************************************

                                  ;  TEST 24
                                  ;---------  --
 4260  020212  012737  000024  001226  TST24:  MOV     #24,TSTNO
 4261  020220  012737  020604  001216          MOV     #TST25,NEXT
 4262  020226  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
 4263  020232  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
 4264  020240  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
```

```
 4265  020242  004737  020330                    JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
 4266  020246  012700  000004          100$:     MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
 4267  020252  013737  001420  001236            MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
 4268  020260  100402                            BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
 4269  020262  004737  020330                    JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
 4270  020266  012700  000010          101$:     MOV     #8.,R0          ;LOAD LINE NUMBER
 4271  020272  013737  001422  001236            MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
 4272  020300  100402                            BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
 4273  020302  004737  020330                    JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
 4274  020306  012700  000014          102$:     MOV     #12.,R0         ;LOAD LINE NO.
 4275  020312  013737  001424  001236            MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
 4276  020320  100402                            BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
 4277  020322  004737  020330                    JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
 4278  020326  104400                  103$:     SCOPE                   ;SCOPE THIS TEST.
 4279  020330                          105$:                             ;TEST ENTRANCE.
 4280  020330  032737  004000  001236            BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
 4281  020336  001001                            BNE     1$              ;BR IF YES
 4282  020340  000207                            RTS     PC              ;EXIT TEST
 4283  020342  010037  020366            1$:     MOV     R0,2$           ;GET LINE UNDER TEST
 4284                                                                    ;LINE 0 OR 4 OR 10 OR 14(8)
 4285  020346  010037  020406                    MOV     R0,4$           ;SAVE SAME LINE
 4286  020352  010037  020376                    MOV     R0,3$           ;PREPARE FOR LINE+1
 4287  020356  005237  020376                    INC     3$              ;MAKE LINE = LINE+1
 4288                                                                    ;LINE 1 OR 5 OR 11 OR 15(8)
 4289                                  ; ***************************************************
 4290                                  ;               PART 1
 4291                                  ;       IN THIS ROUTINE LOCATION "2$"
 4292                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 4293                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 4294                                  ;
 4295  020362  004537  032316                    JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
 4296  020366  000001                  2$:       .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
 4297  020370  020000                            BIT13                   ;RECEIVER ENABLE
 4298  020372  015000                            <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
 4299  020374  026000                            <BIT13+BIT11>+BIT10             ;PARAMETERS FOR REG 2
 4300
 4301  020376  000001                  3$:       .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 4302  020400  020000                            BIT13                   ;RECEIVER ENABLE
 4303  020402  015000                            <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
 4304  020404  022000                            <BIT13>+BIT10           ;PARAMETERS FOR REG 2
 4305  020406  000001                  4$:       .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
 4306                                                                    ;LINE 0 OR 4 OR 10 OR 14(8).
 4307                                  ; ***************************************************
 4308
 4309  020410  010037  020436          5$:       MOV     R0,6$           ;GET INITAL LINE NO.
 4310  020414  010037  020446                    MOV     R0,7$           ;STORE FOR NEXT TEST.
 4311  020420  005237  020446                    INC     7$              ;MAKE LINE=LINE+1.
 4312  020424  013737  020446  020456            MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
 4313                                  ; ***************************************************
 4314                                  ;               PART 2
 4315                                  ;       IN THIS ROUTINE LOCATION "7$"
 4316                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 4317                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 4318                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
 4319                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
 4320                                  ;
```

```
4321  020432  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
4322  020436  000001                6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
4323  020440  020000                        BIT13                   ;RECEIVER ENABLE.
4324  020442  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4325  020444  022000                        <BIT13>+BIT10           ;PARAMETERS FOR REG 2.
4326
4327  020446  000001                7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
4328  020450  020000                        BIT13                   ;RECEIVER ENABLE.
4329  020452  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4330  020454  026000                        <BIT13+BIT11>+BIT10             ;PARAMETERS FOR REG 2.
4331  020456  000001                8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
4332                                ; ***************************************************
4333
4334  020460  062700  000002                ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
4335  020464  010037  020510        9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
4336  020470  010037  020530                MOV     R0,12$          ;SAVE NO.
4337  020474  010037  020520                MOV     R0,11$          ;
4338  020500  005237  020520                INC     11$             ;MAKE LINE=LINE+1.
4339                                ; ***************************************************
4340                                ;               PART 1A
4341                                ;       IN THIS ROUTINE LOCATION "10$"
4342                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
4343                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
4344                                ;
4345  020504  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
4346  020510  000001                10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
4347  020512  020000                        BIT13                   ;RECEIVER ENABLE.
4348  020514  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4349  020516  026000                        <BIT13+BIT11>+BIT10             ;PARAMETERS FOR REG 2.
4350
4351  020520  000001                11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
4352  020522  020000                        BIT13                   ;RECEIVER ENABLE.
4353  020524  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4354  020526  022000                        <BIT13>+BIT10           ;PARAMETERS FOR LINE 2.
4355  020530  000001                12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
4356                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
4357                                ; ***************************************************
4358
4359  020532  010037  020560        13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
4360  020536  010037  020570                MOV     R0,15$          ;STORE LINE.
4361  020542  005237  020570                INC     15$             ;LINE =LINE+1.
4362  020546  013737  020570  020600        MOV     15$,16$         ;SET FASTEST LINE.
4363                                ; ***************************************************
4364                                ;               PART 2A
4365                                ;       IN THIS ROUTINE LOCATION "14$"
4366                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
4367                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
4368                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
4369                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
4370                                ;
4371  020554  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
4372  020560  000001                14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
4373  020562  020000                        BIT13                   ;RECEIVER ENABLE.
4374  020564  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4375  020566  022000                        <BIT13>+BIT10           ;PARAMETER FOR REG 2.
4376
```

```
4377  020570  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
4378  020572  020000                          BIT13                   ;RECEIVER ENABLE.
4379  020574  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4380  020576  026000                          <BIT13+BIT11>+BIT10             ;PARAMETERS FOR REG 1.
4381  020600  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
4382                                                                  ;LINE 3 OR 7 OR 13 OR 17(8).
4383                                  ; ***************************************************
4384
4385  020602  000207                          RTS     PC              ;EXIT TEST.
4386
4387
4388                                          ;************************ TEST 25 *******************************
4389                                          ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
4390                                          ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
4391                                          ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
4392                                          ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
4393                                          ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
4394                                          ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
4395                                          ;*   PART 1   PART 2   PART 1A PART 2A
4396                                          ;*   X  X+1   X  X+1   X  X+1   X  X+1
4397                                          ;*   00-01    01-00    02-03    03-02
4398                                          ;*   04-05    05-04    06-07    07-06
4399                                          ;*   10-11    11-10    12-13    13-12
4400                                          ;*   14-15    15-14    16-17    17-16
4401                                          ;*
4402                                          ;*       BAUD RATE TEST.
4403                                          ;*LINE X:    8 B/P/C,1ST, 600 BAUD.
4404                                          ;*LINE X+1:  8 B/P/C,1ST, 300 BAUD.
4405                                          ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
4406                                          ;;***************************************************************
4407
4408                                  ;  TEST 25
4409                                  ;--------------
4410  020604  012737  000025  001226  TST25:  MOV     #25,TSTNO
4411  020612  012737  021176  001216          MOV     #TST25,NEXT
4412  020620  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
4413  020624  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
4414  020632  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
4415  020634  004737  020722                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
4416  020640  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
4417  020644  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
4418  020652  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
4419  020654  004737  020722                  JSR     PC.105$         ;GO DO THE TEST FOR LINE CARD 2
4420  020660  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
4421  020664  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
4422  020672  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
4423  020674  004737  020722                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
4424  020700  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
4425  020704  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
4426  020712  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
4427  020714  004737  020722                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
4428  020720  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
4429  020722                          105$:                           ;TEST ENTRANCE.
4430  020722  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
4431  020730  001001                          BNE     1$              ;BR IF YES
4432  020732  000207                          RTS     PC              ;EXIT TEST
```

```
 4433  020734  010037  020760          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
 4434                                                                  ;LINE 0 OR 4 OR 10 OR 14(8)
 4435  020740  010037  021000                  MOV     R0,4$           ;SAVE SAME LINE
 4436  020744  010037  020770                  MOV     R0,3$           ;PREPARE FOR LINE+1
 4437  020750  005237  020770                  INC     3$              ;MAKE LINE = LINE+1
 4438                                                                  ;LINE 1 OR 5 OR 11 OR 15(8)
 4439                                  ; ***************************************************
 4440                                  ;               PART 1
 4441                                  ;       IN THIS ROUTINE LOCATION "2$"
 4442                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 4443                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 4444                                  ;
 4445  020754  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
 4446  020760  000001                  2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
 4447  020762  020000                          BIT13                   ;RECEIVER ENABLE
 4448  020764  015000                          <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
 4449  020766  032000                          <BIT13+BIT12>+BIT10             ;PARAMETERS FOR REG 2
 4450
 4451  020770  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 4452  020772  020000                          BIT13                   ;RECEIVER ENABLE
 4453  020774  015000                          <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
 4454  020776  026000                          <BIT13+BIT11>+BIT10             ;PARAMETERS FOR REG 2
 4455  021000  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
 4456                                                                  ;LINE 0 OR 4 OR 10 OR 14(8).
 4457                                  ; ***************************************************
 4458
 4459  021002  010037  021030          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
 4460  021006  010037  021040                  MOV     R0,7$           ;STORE FOR NEXT TEST.
 4461  021012  005237  021040                  INC     7$              ;MAKE LINE=LINE+1.
 4462  021016  013737  021040  021050          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
 4463                                  ; ***************************************************
 4464                                  ;               PART 2
 4465                                  ;       IN THIS ROUTINE LOCATION "7$"
 4466                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 4467                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 4468                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
 4469                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
 4470                                  ;
 4471  021024  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 4472  021030  000001                  6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
 4473  021032  020000                          BIT13                   ;RECEIVER ENABLE.
 4474  021034  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 4475  021036  026000                          <BIT13+BIT11>+BIT10             ;PARAMETERS FOR REG 2.
 4476
 4477  021040  000001                  7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 4478  021042  020000                          BIT13                   ;RECEI"ER ENAPLE.
 4479  021044  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 4480  021046  032000                          <BIT13+BIT12>+BIT10             ;PARAMETERS FOR REG 2.
 4481  021050  000001                  8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 4482                                  ; ***************************************************
 4483
 4484  021052  062700  000002                  ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
 4485  021056  010037  021102          9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
 4486  021062  010037  021122                  MOV     R0,12$          ;SAVE NO.
 4487  021066  010037  021112                  MOV     R0,11$          ;
 4488  021072  005237  021112                  INC     11$             ;MAKE LINE=LINE+1.
```

```
                                ; ***************************************************
                                ;               PART 1A
                                ;       IN THIS ROUTINE LOCATION "10$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
021076  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
021102  000001                  10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
021104  020000                          BIT13                   ;RECEIVER ENABLE.
021106  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
021110  032000                          <BIT13+BIT12>+BIT10             ;PARAMETERS FOR REG 2.

021112  000001                  11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
021114  020000                          BIT13                   ;RECEIVER ENABLE.
021116  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
021120  026000                          <BIT13+BIT11>+BIT10             ;PARAMETERS FOR LINE 2.
021122  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
                                ; ***************************************************

021124  010037  021152          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
021130  010037  021162                  MOV     R0,15$          ;STORE LINE.
021134  005237  021162                  INC     15$             ;LINE =LINE+1.
021140  013737  021162  021172          MOV     15$,16$         ;SET FASTEST LINE.
                                ; ***************************************************
                                ;               PART 2A
                                ;       IN THIS ROUTINE LOCATION "14$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
021146  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
021152  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
021154  020000                          BIT13                   ;RECEIVER ENABLE.
021156  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
021160  026000                          <BIT13+BIT11>+BIT10             ;PARAMETER FOR REG 2.

021162  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
021164  020000                          BIT13                   ;RECEIVER ENABLE.
021166  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
021170  032000                          <BIT13+BIT12>+BIT10             ;PARAMETERS FOR REG 1.
021172  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 3 OR 7 OR 13 OR 17(8).
                                ; ***************************************************

021174  000207                          RTS     PC              ;EXIT TEST.


                                ;************************ TEST 26 ********************************
                                ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
                                ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
                                ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
```

```
                                        ;*  PART 1  PART 2  PART 1A PART 2A
                                        ;*  X  X+1  X  X+1  X  X+1  X  X+1
                                        ;*  00-01  01-00  02-03  03-02
                                        ;*  04-05  05-04  06-07  07-06
                                        ;*  10-11  11-10  12-13  13-12
                                        ;*  14-15  15-14  16-17  17-16
                                        ;*
                                        ;*      BAUD RATE TEST.
                                        ;*LINE X:   8 B/P/C,1ST, 1200 BAUD.
                                        ;*LINE X+1: 8 B/P/C,1ST,  600 BAUD.
                                        ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                        ;:**************************************************************

                                ;  TEST 26
                                ;--------------
021176  012737  000026  001226  TST26:  MOV     #26,TSTNO
021204  012737  021570  001216          MOV     #TST27,NEXT
021212  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
021216  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
021224  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
021226  004737  021314                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
021232  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
021236  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
021244  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
021246  004737  021314                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
021252  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
021256  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
021264  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
021266  004737  021314                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
021272  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
021276  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
021304  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
021306  004737  021314                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
021312  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
021314                          105$:                           ;TEST ENTRANCE.
021314  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
021322  001001                          BNE     1$              ;BR IF YES
021324  000207                          RTS     PC              ;EXIT TEST
021326  010037  021352          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
021332  010037  021372                  MOV     R0,4$           ;SAVE SAME LINE
021336  010037  021362                  MOV     R0,3$           ;PREPARE FOR LINE+1
021342  005237  021362                  INC     3$              ;MAKE LINE = LINE+1
                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***************************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
021346  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
021352  000001          2$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8)
021354  020000                  BIT13                           ;RECEIVER ENABLE
021356  015000                  <BIT12+BIT11>+BIT9              ;PARAMETERS: 8 BITS PER/CHAR
021360  036000                  <BIT13+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 3
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4601  021362  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
4602  021364  020000                          BIT13                   ;RECEIVER ENABLE
4603  021366  015000                          <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
4604  021370  032000                          <BIT13+BIT12>+BIT10             ;PARAMETERS FOR REG 2
4605  021372  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
4606                                                                  ;LINE 0 OR 4 OR 10 OR 14(8).
4607                                  ; ***************************************************
4608
4609  021374  010037  021422          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
4610  021400  010037  021432                  MOV     R0,7$           ;STORE FOR NEXT TEST.
4611  021404  005237  021432                  INC     7$              ;MAKE LINE=LINE+1.
4612  021410  013737  021432  021442          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
4613                                  ; ***************************************************
4614                                  ;               PART 2
4615                                  ;       IN THIS ROUTINE LOCATION "7$"
4616                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
4617                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
4618                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
4619                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
4620                                  ;
4621  021416  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
4622  021422  000001                  6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
4623  021424  020000                          BIT13                   ;RECEIVER ENABLE.
4624  021426  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4625  021430  032000                          <BIT13+BIT12>+BIT10             ;PARAMETERS FOR REG 2.
4626
4627  021432  000001                  7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
4628  021434  020000                          BIT13                   ;RECEIVER ENABLE.
4629  021436  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4630  021440  036000                          <BIT13+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2.
4631  021442  000001                  8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
4632                                  ; ***************************************************
4633
4634  021444  062700  000002                  ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
4635  021450  010037  021474          9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
4636  021454  010037  021514                  MOV     R0,12$          ;SAVE NO.
4637  021460  010037  021504                  MOV     R0,11$          ;
4638  021464  005237  021504                  INC     11$             ;MAKE LINE=LINE+1.
4639                                  ; ***************************************************
4640                                  ;               PART 1A
4641                                  ;       IN THIS ROUTINE LOCATION "10$"
4642                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
4643                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
4644                                  ;
4645  021470  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
4646  021474  000001                  10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
4647  021476  020000                          BIT13                   ;RECEIVER ENABLE.
4648  021500  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4649  021502  036000                          <BIT13+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2.
4650
4651  021504  000001                  11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
4652  021506  020000                          BIT13                   ;RECEIVER ENABLE.
4653  021510  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4654  021512  032000                          <BIT13+BIT12>+BIT10             ;PARAMETERS FOR LINE 2.
4655  021514  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
4656                                                                  ;LINE 2 OR 6 OR 12 OR 16(8).
```

```
4657                                    ; ***************************************************
4658
4659  021516  010037  021544           13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
4660  021522  010037  021554                   MOV     R0,15$          ;STORE LINE.
4661  021526  005237  021554                   INC     15$             ;LINE =LINE+1.
4662  021532  013737  021554  021564           MOV     15$,16$         ;SET FASTEST LINE.
4663                                    ; ***************************************************
4664                                    ;               PART 2A
4665                                    ;       IN THIS ROUTINE LOCATION "14$"
4666                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
4667                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
4668                                    ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
4669                                    ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
4670                                    ;
4671  021540  004537  032316                   JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
4672  021544  000001                   14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
4673  021546  020000                           BIT13                   ;RECEIVER ENABLE.
4674  021550  015000                           <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4675  021552  032000                           <BIT13+BIT12>+BIT10             ;PARAMETER FOR REG 2.
4676
4677  021554  000001                   15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
4678  021556  020000                           BIT13                   ;RECEIVER ENABLE.
4679  021560  015000                           <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4680  021562  036000                           <BIT13+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 1.
4681  021564  000001                   16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
4682                                                                   ;LINE 3 OR 7 OR 13 OR 17(8).
4683                                    ; ***************************************************
4684
4685  021566  000207                           RTS     PC              ;EXIT TEST.
4686
4687
4688                                            ;************************ TEST 27 ******************************
4689                                            ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
4690                                            ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
4691                                            ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
4692                                            ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
4693                                            ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
4694                                            ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
4695                                            ;*  PART 1  PART 2  PART 1A PART 2A
4696                                            ;*  X  X+1  X  X+1  X  X+1  X  X+1
4697                                            ;*  00-01   01-00   02-03   03-02
4698                                            ;*  04-05   05-04   06-07   07-06
4699                                            ;*  10-11   11-10   12-13   13-12
4700                                            ;*  14-15   15-14   16-17   17-16
4701                                            ;*
4702                                            ;*      BAUD RATE TEST.
4703                                            ;*LINE X:   8 B/P/C,1ST,1800 BAUD.
4704                                            ;*LINE X+1: 8 B/P/C,1ST,1200 BAUD.
4705                                            ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
4706                                            ;:***************************************************************
4707
4708                                    ;  TEST 27
4709                                    ;--------------
4710  021570  012737  000027  001226   TST27:  MOV     #27,TSTNO
4711  021576  012737  022162  001216           MOV     #TST30,NEXT
4712  021604  012700  000000                   MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
```

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4713  021610  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
4714  021616  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
4715  021620  004737  021706                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
4716  021624  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
4717  021630  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
4718  021636  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
4719  021640  004737  021706                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
4720  021644  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
4721  021650  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
4722  021656  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
4723  021660  004737  021706                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
4724  021664  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
4725  021670  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
4726  021676  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
4727  021700  004737  021706                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
4728  021704  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
4729  021706                          105$:                           ;TEST ENTRANCE.
4730  021706  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
4731  021714  001001                          BNE     1$              ;BR IF YES
4732  021716  000207                          RTS     PC              ;EXIT TEST
4733  021720  010037  021744          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
4734                                                                  ;LINE 0 OR 4 OR 10 OR 14(8)
4735  021724  010037  021764                  MOV     R0,4$           ;SAVE SAME LINE
4736  021730  010037  021754                  MOV     R0,3$           ;PREPARE FOR LINE+1
4737  021734  005237  021754                  INC     3$              ;MAKE LINE = LINE+1
4738                                                                  ;LINE 1 OR 5 OR 11 OR 15(8)
4739                                  ; ***************************************************
4740                                  ;               PART 1
4741                                  ;       IN THIS ROUTINE LOCATION "2$"
4742                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
4743                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
4744                                  ;
4745  021740  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
4746  021744  000001          2$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8)
4747  021746  020000                  BIT13                           ;RECEIVER ENABLE
4748  021750  015000                  <BIT12+BIT11>+BIT9              ;PARAMETERS: 8 BITS PER/CHAR
4749  021752  042000                  <BIT14>+BIT10                   ;PARAMETERS FOR REG 2
4750
4751  021754  000001          3$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
4752  021756  020000                  BIT13                           ;RECEIVER ENABLE
4753  021760  015000                  <BIT12+BIT11>+BIT9              ;8 BITS PER CHAR
4754  021762  036000                  <BIT13+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2
4755  021764  000001          4$:     .BLKW 1                         ;LINE EXPECTED TO FINISH FIRST.
4756                                                                  ;LINE 0 OR 4 OR 10 OR 14(8).
4757                                  ; ***************************************************
4758
4759  021766  010037  022014          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
4760  021772  010037  022024                  MOV     R0,7$           ;STORE FOR NEXT TEST.
4761  021776  005237  022024                  INC     7$              ;MAKE LINE=LINE+1.
4762  022002  013737  022024  022034          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
4763                                  ; ***************************************************
4764                                  ;               PART 2
4765                                  ;       IN THIS ROUTINE LOCATION "7$"
4766                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
4767                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
4768                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
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4769                                    ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
4770                                    ;
4771  022010  004537  032316            6$:     JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
4772  022014  000001                            .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
4773  022016  020000                            BIT13                   ;RECEIVER ENABLE.
4774  022020  015000                            <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4775  022022  036000                            <BIT13+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2.
4776
4777  022024  000001                    7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
4778  022026  020000                            BIT13                   ;RECEIVER ENABLE.
4779  022030  015000                            <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4780  022032  042000                            <BIT14>+BIT10           ;PARAMETERS FOR REG 2.
4781  022034  000001                    8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
4782                                    ; ***************************************************
4783
4784  022036  062700  000002                    ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
4785  022042  010037  022066            9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
4786  022046  010037  022106                    MOV     R0,12$          ;SAVE NO.
4787  022052  010037  022076                    MOV     R0,11$          ;
4788  022056  005237  022076                    INC     11$             ;MAKE LINE=LINE+1.
4789                                    ; ***************************************************
4790                                    ;               PART 1A
4791                                    ;       IN THIS ROUTINE LOCATION "10$"
4792                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
4793                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
4794                                    ;
4795  022062  004537  032316                    JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
4796  022066  000001                    10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
4797  022070  020000                            BIT13                   ;RECEIVER ENABLE.
4798  022072  015000                            <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4799  022074  042000                            <BIT14>+BIT10           ;PARAMETERS FOR REG 2.
4800
4801  022076  000001                    11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
4802  022100  020000                            BIT13                   ;RECEIVER ENABLE.
4803  022102  015000                            <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
4804  022104  036000                            <BIT13+BIT12+BIT11>+BIT10               ;PARAMETERS FOR LINE 2.
4805  022106  000001                    12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
4806                                                                    ;LINE 2 OR 6 OR 12 OR 16(8).
4807                                    ; ***************************************************
4808
4809  022110  010037  022136            13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
4810  022114  010037  022146                    MOV     R0,15$          ;STORE LINE.
4811  022120  005237  022146                    INC     15$             ;LINE =LINE+1.
4812  022124  013737  022146  022156            MOV     15$,16$         ;SET FASTEST LINE.
4813                                    ; ***************************************************
4814                                    ;               PART 2A
4815                                    ;       IN THIS ROUTINE LOCATION "14$"
4816                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
4817                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
4818                                    ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
4819                                    ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
4820                                    ;
4821  022132  004537  032316                    JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
4822  022136  000001                    14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
4823  022140  020000                            BIT13                   ;RECEIVER ENABLE.
4824  022142  015000                            <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
```

```
 4825  022144  036000                    (BIT13+BIT12+BIT11)+BIT10              ;PARAMETER FOR REG 2.
 4826
 4827  022146  000001            15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
 4828  022150  020000                    BIT13                   ;RECEIVER ENABLE.
 4829  022152  015000                    (BIT12+BIT11)+BIT9      ;8 BITS/PER/CHAR.
 4830  022154  042000                    (BIT14)+BIT10           ;PARAMETERS FOR REG 1.
 4831  022156  000001            16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
 4832                                    ;                       ;LINE 3 OR 7 OR 13 OR 17(8).
 4833                                    ; *****************************************************
 4834
 4835  022160  000207                    RTS     PC              ;EXIT TEST.
 4836
 4837
 4838                                    ;************************ TEST 30 ********************************
 4839                                    ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
 4840                                    ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
 4841                                    ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
 4842                                    ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
 4843                                    ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
 4844                                    ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
 4845                                    ;*  PART 1  PART 2  PART 1A PART 2A
 4846                                    ;*  X  X+1  X  X+1  X  X+1  X  X+1
 4847                                    ;*  00-01   01-00   02-03   03-02
 4848                                    ;*  04-05   05-04   06-07   07-06
 4849                                    ;*  10-11   11-10   12-13   13-12
 4850                                    ;*  14-15   15-14   16-17   17-16
 4851                                    ;*
 4852                                    ;*      BAUD RATE TEST.
 4853                                    ;*LINE X:   8 B/P/C,1ST,2000 BAUD.
 4854                                    ;*LINE X+1: 8 B/P/C,1ST,1800 BAUD.
 4855                                    ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
 4856                                    ;;*****************************************************************
 4857
 4858                                    ;  TEST 30
 4859                                    ;--------------
 4860  022162  012737  000030  001226    TST30:  MOV     #30,TSTNO
 4861  022170  012737  022554  001216            MOV     #TST31,NEXT
 4862  022176  012700  000000                    MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
 4863  022202  013737  001416  001236            MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
 4864  022210  100402                            BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
 4865  022212  004737  022300                    JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
 4866  022216  012700  000004            100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
 4867  022222  013737  001420  001236            MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
 4868  022230  100402                            BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
 4869  022232  004737  022300                    JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
 4870  022236  012700  000010            101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
 4871  022242  013737  001422  001236            MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
 4872  022250  100402                            BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
 4873  022252  004737  022300                    JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
 4874  022256  012700  000014            102$:   MOV     #12.,R0         ;LOAD LINE NO.
 4875  022262  013737  001424  001236            MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
 4876  022270  100402                            BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
 4877  022272  004737  022300                    JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
 4878  022276  104400            103$:   SCOPE                           ;SCOPE THIS TEST.
 4879  022300                    105$:                                   ;TEST ENTRANCE.
 4880  022300  032737  004000  001236            BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
```

```
 4881  022306  001001                        BNE     1$              ;BR IF YES
 4882  022310  000207                        RTS     PC              ;EXIT TEST
 4883  022312  010037  022336          1$:   MOV     R0,2$           ;GET LINE UNDER TEST
 4884                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
 4885  022316  010037  022356                MOV     R0,4$           ;SAVE SAME LINE
 4886  022322  010037  022346                MOV     R0,3$           ;PREPARE FOR LINE+1
 4887  022326  005237  022346                INC     3$              ;MAKE LINE = LINE+1
 4888                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
 4889                                  ; ***************************************************
 4890                                  ;               PART 1
 4891                                  ;       IN THIS ROUTINE LOCATION "2$"
 4892                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 4893                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 4894                                  ;
 4895  022332  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
 4896  022336  000001                  2$:   .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
 4897  022340  020000                        BIT13                   ;RECEIVER ENABLE
 4898  022342  015000                        <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
 4899  022344  046000                        <BIT14+BIT11>+BIT10             ;PARAMETERS FOR REG 2
 4900
 4901  022346  000001                  3$:   .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 4902  022350  020000                        BIT13                   ;RECEIVER ENABLE
 4903  022352  015000                        <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
 4904  022354  042000                        <BIT14>+BIT10           ;PARAMETERS FOR REG 2
 4905  022356  000001                  4$:   .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
 4906                                                                ;LINE 0 OR 4 OR 10 OR 14(8).
 4907                                  ; ***************************************************
 4908
 4909  022360  010037  022406          5$:   MOV     R0,6$           ;GET INITAL LINE NO.
 4910  022364  010037  022416                MOV     R0,7$           ;STORE FOR NEXT TEST.
 4911  022370  005237  022416                INC     7$              ;MAKE LINE=LINE+1.
 4912  022374  013737  022416  022426        MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
 4913                                  ; ***************************************************
 4914                                  ;               PART 2
 4915                                  ;       IN THIS ROUTINE LOCATION "7$"
 4916                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 4917                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 4918                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
 4919                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
 4920                                  ;
 4921  022402  004537  032316                JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 4922  022406  000001                  6$:   .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
 4923  022410  020000                        BIT13                   ;RECEIVER ENABLE.
 4924  022412  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 4925  022414  042000                        <BIT14>+BIT10           ;PARAMETERS FOR REG 2.
 4926
 4927  022416  000001                  7$:   .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 4928  022420  020000                        BIT13                   ;RECEIVER ENABLE.
 4929  022422  015000                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 4930  022424  046000                        <BIT14+BIT11>+BIT10             ;PARAMETERS FOR REG 2.
 4931  022426  000001                  8$:   .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 4932                                  ; ***************************************************
 4933
 4934  022430  062700  000002                ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
 4935  022434  010037  022460          9$:   MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
 4936  022440  010037  022500                MOV     R0,12$          ;SAVE NO.
```

```
 4937  022444  010037  022470              MOV     R0,11$          ;
 4938  022450  005237  022470              INC     11$             ;MAKE LINE=LINE+1.
 4939                                  ; ***************************************************
 4940                                  ;               PART 1A
 4941                                  ;       IN THIS ROUTINE LOCATION "10$"
 4942                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 4943                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 4944                                  ;
 4945  022454  004537  032316              JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 4946  022460  000001                  10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
 4947  022462  020000                      BIT13                   ;RECEIVER ENABLE.
 4948  022464  015000                      <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 4949  022466  046000                      <BIT14+BIT11>+BIT10             ;PARAMETERS FOR REG 2.
 4950
 4951  022470  000001                  11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
 4952  022472  020000                      BIT13                   ;RECEIVER ENABLE.
 4953  022474  015000                      <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 4954  022476  042000                      <BIT14>+BIT10           ;PARAMETERS FOR LINE 2.
 4955  022500  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
 4956                                                                  ;LINE 2 OR 6 OR 12 OR 16(8).
 4957                                  ; ***************************************************
 4958
 4959  022502  010037  022530          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
 4960  022506  010037  022540              MOV     R0,15$          ;STORE LINE.
 4961  022512  005237  022540              INC     15$             ;LINE =LINE+1.
 4962  022516  013737  022540  022550      MOV     15$,16$         ;SET FASTEST LINE.
 4963                                  ; ***************************************************
 4964                                  ;               PART 2A
 4965                                  ;       IN THIS ROUTINE LOCATION "14$"
 4966                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
 4967                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
 4968                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
 4969                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
 4970                                  ;
 4971  022524  004537  032316              JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 4972  022530  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
 4973  022532  020000                      BIT13                   ;RECEIVER ENABLE.
 4974  022534  015000                      <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 4975  022536  042000                      <BIT14>+BIT10           ;PARAMETER FOR REG 2.
 4976
 4977  022540  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
 4978  022542  020000                      BIT13                   ;RECEIVER ENABLE.
 4979  022544  015000                      <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 4980  022546  046000                      <BIT14+BIT11>+BIT10             ;PARAMETERS FOR REG 1.
 4981  022550  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
 4982                                                                  ;LINE 3 OR 7 OR 13 OR 17(8).
 4983                                  ; ***************************************************
 4984
 4985  022552  000207                      RTS     PC              ;EXIT TEST.
 4986
 4987
 4988                                      ;************************ TEST 31 *********************************
 4989                                      ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
 4990                                      ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
 4991                                      ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
 4992                                      ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
```

```
                                        ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                        ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                        ;*  PART 1  PART 2  PART 1A PART 2A
                                        ;*  X  X+1  X  X+1  X  X+1  X  X+1
                                        ;*  00-01   01-00   02-03   03-02
                                        ;*  04-05   05-04   06-07   07-06
                                        ;*  10-11   11-10   12-13   13-12
                                        ;*  14-15   15-14   16-17   17-16
                                        ;*
                                        ;*      BAUD RATE TEST.
                                        ;*LINE X:   8 B/P/C,1ST,2400 BAUD.
                                        ;*LINE X+1: 8 B/P/C,1ST,2000 BAUD.
                                        ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                        ;;*****************************************************************

                                ;  TEST 31
                                ;--------------
022554  012737  000031  001226  TST31:  MOV     #31,TSTNO
022562  012737  023146  001216          MOV     #TST32,NEXT
022570  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
022574  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
022602  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
022604  004737  022672                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
022610  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
022614  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
022622  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
022624  004737  022672                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
022630  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
022634  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
022642  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
022644  004737  022672                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
022650  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
022654  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
022662  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
022664  004737  022672                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
022670  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
022672                          105$:                           ;TEST ENTRANCE.
022672  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
022700  001001                          BNE     1$              ;BR IF YES
022702  000207                          RTS     PC              ;EXIT TEST
022704  010037  022730          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
022710  010037  022750                  MOV     R0,4$           ;SAVE SAME LINE
022714  010037  022740                  MOV     R0,3$           ;PREPARE FOR LINE+1
022720  005237  022740                  INC     3$              ;MAKE LINE = LINE+1
                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***************************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
022724  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
022730  000001          2$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8)
                                BIT13                           ;RECEIVER ENABLE
022734  015000                  (BIT12+BIT11)+BIT9              ;PARAMETERS: 8 BITS PER/CHAR
```

```
5049  022736  052000                          <BIT14+BIT12>+BIT10             ;PARAMETERS FOR REG 2
5050
5051  022740  000001                3$:       .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
5052  022742  020000                          BIT13                           ;RECEIVER ENABLE
5053  022744  015000                          <BIT12+BIT11>+BIT9              ;8 BITS PER CHAR
5054  022746  046000                          <BIT14+BIT11>+BIT10                     ;PARAMETERS FOR REG 2
5055  022750  000001                4$:       .BLKW 1                         ;LINE EXPECTED TO FINISH FIRST.
5056                                                                          ;LINE 0 OR 4 OR 10 OR 14(8).
5057                                ; ***************************************************
5058
5059  022752  010037  023000        5$:       MOV     R0,6$                   ;GET INITAL LINE NO.
5060  022756  010037  023010                  MOV     R0,7$                   ;STORE FOR NEXT TEST.
5061  022762  005237  023010                  INC     7$                      ;MAKE LINE=LINE+1.
5062  022766  013737  023010  023020          MOV     7$,8$                   ;STORE LINE+1 FOR NEXT TESTS.
5063                                ; ***************************************************
5064                                ;               PART 2
5065                                ;       IN THIS ROUTINE LOCATION "7$"
5066                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5067                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5068                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
5069                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
5070                                ;
5071  022774  004537  032316                  JSR     R5,TIME.PAR             ;GOTO SUBROUTINE.
5072  023000  000001                6$:       .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8).
5073  023002  020000                          BIT13                           ;RECEIVER ENABLE.
5074  023004  015000                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
5075  023006  046000                          <BIT14+BIT11>+BIT10                     ;PARAMETERS FOR REG 2.
5076
5077  023010  000001                7$:       .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
5078  023012  020000                          BIT13                           ;RECEIVER ENABLE.
5079  023014  015000                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
5080  023016  052000                          <BIT14+BIT12>+BIT10                     ;PARAMETERS FOR REG 2.
5081  023020  000001                8$:       .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
5082                                ; ***************************************************
5083
5084  023022  062700  000002                  ADD     #2,R0                   ;PREPARE FOR NEXT GROUP OF LINES.
5085  023026  010037  023052        9$:       MOV     R0,10$                  ;SAVE LINE NO. FOR TEST.
5086  023032  010037  023072                  MOV     R0,12$                  ;SAVE NO.
5087  023036  010037  023062                  MOV     R0,11$                  ;
5088  023042  005237  023062                  INC     11$                     ;MAKE LINE=LINE+1.
5089                                ; ***************************************************
5090                                ;               PART 1A
5091                                ;       IN THIS ROUTINE LOCATION "10$"
5092                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5093                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5094                                ;
5095  023046  004537  032316                  JSR     R5,TIME.PAR             ;GOTO SUBROUTINE.
5096  023052  000001                10$:      .BLKW 1                         ;LINE 2 OR 6 OR 12 OR 16(8).
5097  023054  020000                          BIT13                           ;RECEIVER ENABLE.
5098  023056  015000                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
5099  023060  052000                          <BIT14+BIT12>+BIT10                     ;PARAMETERS FOR REG 2.
5100
5101  023062  000001                11$:      .BLKW 1                         ;LINE 3 OR 7 OR 13 OR 17(8).
5102  023064  020000                          BIT13                           ;RECEIVER ENABLE.
5103  023066  015000                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
5104  023070  046000                          <BIT14+BIT11>+BIT10                     ;PARAMETERS FOR LINE 2.
```

```
023072  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
                                ; ***************************************************

023074  010037  023122          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
023100  010037  023132                  MOV     R0,15$          ;STORE LINE.
023104  005237  023132                  INC     15$             ;LINE =LINE+1.
023110  013737  023132  023142          MOV     15$,16$         ;SET FASTEST LINE.
                                ; ***************************************************
                                ;               PART 2A
                                ;       IN THIS ROUTINE LOCATION "14$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
023116  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
023122  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
023124  020000                          BIT13                   ;RECEIVER ENABLE.
023126  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
023130  046000                          <BIT14+BIT11>+BIT10             ;PARAMETER FOR REG 2.

023132  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
023134  020000                          BIT13                   ;RECEIVER ENABLE.
023136  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
023140  052000                          <BIT14+BIT12>+BIT10             ;PARAMETERS FOR REG 1.
023142  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 3 OR 7 OR 13 OR 17(8).
                                ; ***************************************************

023144  000207                          RTS     PC              ;EXIT TEST.


                                ;************************ TEST 32 *******************************
                                ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
                                ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
                                ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                ;*   PART 1   PART 2   PART 1A PART 2A
                                ;*   X  X+1   X  X+1   X  X+1   X  X+1
                                ;*   00-01    01-00    02-03    03-02
                                ;*   04-05    05-04    06-07    07-06
                                ;*   10-11    11-10    12-13    13-12
                                ;*   14-15    15-14    16-17    17-16
                                ;*
                                ;*       BAUD RATE TEST.
                                ;*LINE X:    8 B/P/C,1ST,3600 BAUD.
                                ;*LINE X+1: 8 B/P/C,1ST,2400 BAUD.
                                ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                ;:***************************************************************

                        ;  TEST 32
                        ;--------------
023146  012737  000032  001226  TST32:  MOV     #32,TSTNO
```

```
5161  023154  012737  023540  001216          MOV     #TST33,NEXT
5162  023162  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
5163  023166  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
5164  023174  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
5165  023176  004737  023264                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
5166  023202  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
5167  023206  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
5168  023214  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
5169  023216  004737  023264                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
5170  023222  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
5171  023226  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
5172  023234  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
5173  023236  004737  023264                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
5174  023242  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
5175  023246  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
5176  023254  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
5177  023256  004737  023264                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
5178  023262  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
5179  023264                          105$:                           ;TEST ENTRANCE.
5180  023264  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
5181  023272  001001                          BNE     1$              ;BR IF YES
5182  023274  000207                          RTS     PC              ;EXIT TEST
5183  023276  010037  023322          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
5184                                                                  ;LINE 0 OR 4 OR 10 OR 14(8)
5185  023302  010037  023342                  MOV     R0,4$           ;SAVE SAME LINE
5186  023306  010037  023332                  MOV     R0,3$           ;PREPARE FOR LINE+1
5187  023312  005237  023332                  INC     3$              ;MAKE LINE = LINE+1
5188                                                                  ;LINE 1 OR 5 OR 11 OR 15(8)
5189                                  ; ***************************************************
5190                                  ;               PART 1
5191                                  ;       IN THIS ROUTINE LOCATION "2$"
5192                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5193                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5194                                  ;
5195  023316  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
5196  023322  000001                  2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
5197  023324  020000                          BIT13                   ;RECEIVER ENABLE
5198  023326  015000                          <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
5199  023330  056000                          <BIT14+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2
5200
5201  023332  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
5202  023334  020000                          BIT13                   ;RECEIVER ENABLE
5203  023336  015000                          <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
5204  023340  052000                          <BIT14+BIT12>+BIT10             ;PARAMETERS FOR REG 2
5205  023342  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
5206                                                                  ;LINE 0 OR 4 OR 10 OR 14(8).
5207                                  ; ***************************************************
5208
5209  023344  010037  023372          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
5210  023350  010037  023402                  MOV     R0,7$           ;STORE FOR NEXT TEST.
5211  023354  005237  023402                  INC     7$              ;MAKE LINE=LINE+1.
5212  023360  013737  023402  023412          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
5213                                  ; ***************************************************
5214                                  ;               PART 2
5215                                  ;       IN THIS ROUTINE LOCATION "7$"
5216                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
```

```
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
023366  004537  032316                  6$:     JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
023372  000001                          6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
023374  020000                                  BIT13                   ;RECEIVER ENABLE.
023376  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
023400  052000                                  <BIT14+BIT12>+BIT10             ;PARAMETERS FOR REG 2.
                                        7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
023402  000001                                  BIT13                   ;RECEIVER ENABLE.
023404  020000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
023406  015000                                  <BIT14+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2.
023410  056000                          9$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
023412  000001                          ; ***************************************************
                                        ;
023414  062700  000002                          ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
023420  010037  023444                  9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
023424  010037  023464                          MOV     R0,12$          ;SAVE NO.
023430  010037  023454                          MOV     R0,11$          ;
023434  005237  023454                          INC     11$             ;MAKE LINE=LINE+1.
                                        ; ***************************************************
                                        ;               PART 1A
                                        ;       IN THIS ROUTINE LOCATION "10$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
023440  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
023444  000001                          10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
023446  020000                                  BIT13                   ;RECEIVER ENABLE.
023450  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
023452  056000                                  <BIT14+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2.
023454  000001                          11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
023456  020000                                  BIT13                   ;RECEIVER ENABLE.
023460  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
023462  052000                                  <BIT14+BIT12>+BIT10             ;PARAMETERS FOR LINE 2.
023464  000001                          12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                        ;LINE 2 OR 6 OR 12 OR 16(8).
                                        ; ***************************************************

023466  010037  023514                  13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
023472  010037  023524                          MOV     R0,15$          ;STORE LINE.
023476  005237  023524                          INC     15$             ;LINE =LINE+1.
023502  013737  023524  023534                  MOV     15$,16$         ;SET FASTEST LINE.
                                        ; ***************************************************
                                        ;               PART 2A
                                        ;       IN THIS ROUTINE LOCATION "14$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
023510  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
023514  000001                          14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
```

```
                                        BIT13                   ;RECEIVER ENABLE.
                                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
                                        <BIT14+BIT12>+BIT10             ;PARAMETER FOR REG 2.

                                15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
                                        BIT13                   ;RECEIVER ENABLE.
                                        <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
                                        <BIT14+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 1.
                                16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 3 OR 7 OR 13 OR 17(8).
                                ; ***************************************************

                                        RTS     PC              ;EXIT TEST.


                                        ;************************ TEST 33 *******************************
                                        ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
                                        ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
                                        ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                        ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                        ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                        ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                        ;*   PART 1   PART 2   PART 1A PART 2A
                                        ;*   X  X+1   X  X+1   X  X+1   X  X+1
                                        ;*   00-01    01-00    02-03    03-02
                                        ;*   04-05    05-04    06-07    07-06
                                        ;*   10-11    11-10    12-13    13-12
                                        ;*   14-15    15-14    16-17    17-16
                                        ;*
                                        ;*       BAUD RATE TEST.
                                        ;*LINE X:   8 B/P/C,1ST,4800 BAUD.
                                        ;*LINE X+1: 8 B/P/C,1ST,3600 BAUD.
                                        ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                        ;:***************************************************************


                                ;  TEST 33
                                ;--------------
023540  012737  000033  001226  TST33:  MOV     #33,TSTNO
023546  012737  024132  001216          MOV     #TST34,NEXT
023554  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
023560  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
023566  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
023570  004737  023656                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
023574  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
023600  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
023606  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
023610  004737  023656                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
023614  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
023620  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
023626  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
023630  004737  023656                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
023634  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
023640  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
023646  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
023650  004737  023656                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
023654  104400          103$:   SCOPE                           ;SCOPE THIS TEST.
```

```
5329  023656                          105$:                   ;TEST ENTRANCE.
5330  023656  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
5331  023664  001001                          BNE     1$              ;BR IF YES
5332  023666  000207                          RTS     PC              ;EXIT TEST
5333  023670  010037  023714          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
5334                                                                  ;LINE 0 OR 4 OR 10 OR 14(8)
5335  023674  010037  023734                  MOV     R0,4$           ;SAVE SAME LINE
5336  023700  010037  023724                  MOV     R0,3$           ;PREPARE FOR LINE+1
5337  023704  005237  023724                  INC     3$              ;MAKE LINE = LINE+1
5338                                                                  ;LINE 1 OR 5 OR 11 OR 15(8)
5339                                  ; ***************************************************
5340                                  ;               PART 1
5341                                  ;       IN THIS ROUTINE LOCATION "2$"
5342                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5343                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5344                                  ;
5345  023710  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
5346  023714  000001                  2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
5347  023716  020000                          BIT13                   ;RECEIVER ENABLE
5348  023720  015000                          <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
5349  023722  062000                          <BIT14+BIT13>+BIT10             ;PARAMETERS FOR REG 2
5350
5351  023724  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
5352  023726  020000                          BIT13                   ;RECEIVER ENABLE
5353  023730  015000                          <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
5354  023732  056000                          <BIT14+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2
5355  023734  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
5356                                                                  ;LINE 0 OR 4 OR 10 OR 14(8).
5357                                  ; ***************************************************
5358
5359  023736  010037  023764          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
5360  023742  010037  023774                  MOV     R0,7$           ;STORE FOR NEXT TEST.
5361  023746  005237  023774                  INC     7$              ;MAKE LINE=LINE+1.
5362  023752  013737  023774  024004          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
5363                                  ; ***************************************************
5364                                  ;               PART 2
5365                                  ;       IN THIS ROUTINE LOCATION "7$"
5366                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5367                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5368                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
5369                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
5370                                  ;
5371  023760  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
5372  023764  000001                  6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
5373  023766  020000                          BIT13                   ;RECEIVER ENABLE.
5374  023770  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
5375  023772  056000                          <BIT14+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2.
5376
5377  023774  000001                  7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
5378  023776  020000                          BIT13                   ;RECEIVER ENABLE.
5379  024000  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
5380  024002  062000                          <BIT14+BIT13>+BIT10             ;PARAMETERS FOR REG 2.
5381  024004  000001                  8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
5382                                  ; ***************************************************
5383
5384  024006  062700  000002                  ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
```

```
5385  024012  010037  024036          9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
5386  024016  010037  024056                  MOV     R0,12$          ;SAVE NO.
5387  024022  010037  024046                  MOV     R0,11$          ;
5388  024026  005237  024046                  INC     11$             ;MAKE LINE=LINE+1.
5389                                  ; ***************************************************
5390                                  ;               PART 1A
5391                                  ;       IN THIS ROUTINE LOCATION "10$"
5392                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5393                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5394                                  ;
5395  024032  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
5396  024036  000001                  10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
5397  024040  020000                  BIT13                           ;RECEIVER ENABLE.
5398  024042  015000                  <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
5399  024044  062000                  <BIT14+BIT13>+BIT10                     ;PARAMETERS FOR REG 2.
5400
5401  024046  000001                  11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
5402  024050  020000                  BIT13                           ;RECEIVER ENABLE.
5403  024052  015000                  <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
5404  024054  056000                  <BIT14+BIT12+BIT11>+BIT10                       ;PARAMETERS FOR LINE 2.
5405  024056  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
5406                                                                  ;LINE 2 OR 6 OR 12 OR 16(8).
5407                                  ; ***************************************************
5408
5409  024060  010037  024106          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
5410  024064  010037  024116                  MOV     R0,15$          ;STORE LINE.
5411  024070  005237  024116                  INC     15$             ;LINE =LINE+1.
5412  024074  013737  024116  024126          MOV     15$,16$         ;SET FASTEST LINE.
5413                                  ; ***************************************************
5414                                  ;               PART 2A
5415                                  ;       IN THIS ROUTINE LOCATION "14$"
5416                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5417                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5418                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
5419                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
5420                                  ;
5421  024102  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
5422  024106  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
5423  024110  020000                  BIT13                           ;RECEIVER ENABLE.
5424  024112  015000                  <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
5425  024114  056000                  <BIT14+BIT12+BIT11>+BIT10                       ;PARAMETER FOR REG 2.
5426
5427  024116  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
5428  024120  020000                  BIT13                           ;RECEIVER ENABLE.
5429  024122  015000                  <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
5430  024124  062000                  <BIT14+BIT13>+BIT10                     ;PARAMETERS FOR REG 1.
5431  024126  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
5432                                                                  ;LINE 3 OR 7 OR 13 OR 17(8).
5433                                  ; ***************************************************
5434
5435  024130  000207                          RTS     PC              ;EXIT TEST.
5436
5437
5438                                  ;************************ TEST 34 ******************************
5439                                  ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
5440                                  ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
```

```
                                        ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                        ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                        ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                        ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                        ;*   PART 1  PART 2  PART 1A PART 2A
                                        ;*   X  X+1  X  X+1  X  X+1  X  X+1
                                        ;*   00-01   01-00   02-03   03-02
                                        ;*   04-05   05-04   06-07   07-06
                                        ;*   10-11   11-10   12-13   13-12
                                        ;*   14-15   15-14   16-17   17-16
                                        ;*
                                        ;*       BAUD RATE TEST.
                                        ;*LINE X:   8 B/P/C,1ST,7200 BAUD.
                                        ;*LINE X+1: 8 B/P/C,1ST,4800 BAUD.
                                        ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                        ;:*****************************************************************

                                ;  TEST 34
                                ;--------------
024132  012737  000034  001226  TST34:  MOV     #34,TSTNO
024140  012737  024524  001216          MOV     #TST35,NEXT
024146  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
024152  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
024160  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
024162  004737  024250                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
024166  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
024172  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
024200  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
024202  004737  024250                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
024206  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
024212  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
024220  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
024222  004737  024250                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
024226  012700  000014          102$:   MOV     #12.,RC         ;LOAD LINE NO.
024232  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
024240  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
024242  004737  024250                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
024246  104400          103$:           SCOPE                   ;SCOPE THIS TEST.
024250                  105$:                                   ;TEST ENTRANCE.
024250  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
024256  001001                          BNE     1$              ;BR IF YES
024260  000207                          RTS     PC              ;EXIT TEST
024262  010037  024306          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
024266  010037  024326                  MOV     R0,4$           ;SAVE SAME LINE
024272  010037  024316                  MOV     R0,3$           ;PREPARE FOR LINE+1
024276  005237  024316                  INC     3$              ;MAKE LINE = LINE+1
                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***************************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
024302  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
024306  000001          2$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8)
```

```
5497  024310  020000                          BIT13                   ;RECEIVER ENABLE
5498  024312  015000                          <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
5499  024314  066000                          <BIT14+BIT13+BIT11>+BIT10               ;PARAMETERS FOR REG 2
5500
5501  024316  000001                3$:       .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
5502  024320  020000                          BIT13                   ;RECEIVER ENABLE
5503  024322  015000                          <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
5504  024324  062000                          <BIT14+BIT13>+BIT10             ;PARAMETERS FOR REG 2
5505  024326  000001                4$:       .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
5506                                                                  ;LINE 0 OR 4 OR 10 OR 14(8).
5507                                ; ***************************************************
5508
5509  024330  010037  024356        5$:       MOV     R0,6$           ;GET INITAL LINE NO.
5510  024334  010037  024366                  MOV     R0,7$           ;STORE FOR NEXT TEST.
5511  024340  005237  024366                  INC     7$              ;MAKE LINE=LINE+1.
5512  024344  013737  024366  024376          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
5513                                ; ***************************************************
5514                                ;               PART 2
5515                                ;       IN THIS ROUTINE LOCATION "7$"
5516                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5517                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5518                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
5519                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
5520                                ;
5521  024352  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
5522  024356  000001                6$:       .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
5523  024360  020000                          BIT13                   ;RECEIVER ENABLE.
5524  024362  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
5525  024364  062000                          <BIT14+BIT13>+BIT10             ;PARAMETERS FOR REG 2.
5526
5527  024366  000001                7$:       .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
5528  024370  020000                          BIT13                   ;RECEIVER ENABLE.
5529  024372  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
5530  024374  066000                          <BIT14+BIT13+BIT11>+BIT10               ;PARAMETERS FOR REG 2.
5531  024376  000001                8$:       .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
5532                                ; ***************************************************
5533
5534  024400  062700  000002                  ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
5535  024404  010037  024430        9$:       MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
5536  024410  010037  024450                  MOV     R0,12$          ;SAVE NO.
5537  024414  010037  024440                  MOV     R0,11$          ;
5538  024420  005237  024440                  INC     11$             ;MAKE LINE=LINE+1.
5539                                ; ***************************************************
5540                                ;               PART 1A
5541                                ;       IN THIS ROUTINE LOCATION "10$"
5542                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5543                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5544                                ;
5545  024424  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
5546  024430  000001                10$:      .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
5547  024432  020000                          BIT13                   ;RECEIVER ENABLE.
5548  024434  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
5549  024436  066000                          <BIT14+BIT13+BIT11>+BIT10               ;PARAMETERS FOR REG 2.
5550
5551  024440  000001                11$:      .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
5552  024442  020000                          BIT13                   ;RECEIVER ENABLE.
```

```
024444  015000                          (BIT12+BIT11)+BIT9      ;8 BITS/PER/CHAR.
024446  062000                          (BIT14+BIT13)+BIT10             ;PARAMETERS FOR LINE 2.
024450  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
                                ; ***************************************************

024452  010037  024500          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
024456  010037  024510                  MOV     R0,15$          ;STORE LINE.
024462  005237  024510                  INC     15$             ;LINE =LINE+1.
024466  013737  024510  024520          MOV     15$,16$         ;SET FASTEST LINE.
                                ; ***************************************************
                                ;               PART 2A
                                ;       IN THIS ROUTINE LOCATION "14$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
024474  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
024500  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
024502  020000                          BIT13                   ;RECEIVER ENABLE.
024504  015000                          (BIT12+BIT11)+BIT9      ;8 BITS/PER/CHAR.
024506  062000                          (BIT14+BIT13)+BIT10             ;PARAMETER FOR REG 2.

024510  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
024512  020000                          BIT13                   ;RECEIVER ENABLE.
024514  015000                          (BIT12+BIT11)+BIT9      ;8 BITS/PER/CHAR.
024516  066000                          (BIT14+BIT13+BIT11)+BIT10               ;PARAMETERS FOR REG 1.
024520  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 3 OR 7 OR 13 OR 17(8).
                                ; ***************************************************

024522  000207                          RTS     PC              ;EXIT TEST.


                                ;************************ TEST 35 *******************************
                                ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
                                ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
                                ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                ;*   PART 1   PART 2   PART 1A PART 2A
                                ;*   X  X+1   X  X+1   X  X+1   X  X+1
                                ;*   00-01    01-00    02-03    03-02
                                ;*   04-05    05-04    06-07    07-06
                                ;*   10-11    11-10    12-13    13-12
                                ;*   14-15    15-14    16-17    17-16
                                ;*
                                ;*       BAUD RATE TEST.
                                ;*LINE X:   8 B/P/C,1ST,9600 BAUD.
                                ;*LINE X+1: 8 B/P/C,1ST,7200 BAUD.
                                ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                ;:***************************************************************

                        ;  TEST 35
```

```
                                        ;--------------
024524  012737  000035  001226  TST35:  MOV     #35,TSTNO
024532  012737  025116  001216          MOV     #TST36,NEXT
024540  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
024544  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
024552  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
024554  004737  024642                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
024560  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
024564  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
024572  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
024574  004737  024642                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
024600  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
024604  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
024612  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
024614  004737  024642                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
024620  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
024624  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
024632  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
024634  004737  024642                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
024640  104400          103$:   SCOPE                           ;SCOPE THIS TEST.
024642          105$:                                           ;TEST ENTRANCE.
024642  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
024650  001001                          BNE     1$              ;BR IF YES
024652  000207                          RTS     PC              ;EXIT TEST
024654  010037  024700          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
024660  010037  024720                  MOV     R0,4$           ;SAVE SAME LINE
024664  010037  024710                  MOV     R0,3$           ;PREPARE FOR LINE+1
024670  005237  024710                  INC     3$              ;MAKE LINE = LINE+1
                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***************************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
024674  004537  032316          2$:     JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
024700  000001                  2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
024702  020000                          BIT13                   ;RECEIVER ENABLE
024704  015000                          (BIT12+BIT11)+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
024706  072000                          (BIT14+BIT13+BIT12)+BIT10               ;PARAMETERS FOR REG 2
024710  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
024712  020000                          BIT13                   ;RECEIVER ENABLE
024714  015000                          (BIT12+BIT11)+BIT9      ;8 BITS PER CHAR
024716  066000                          (BIT14+BIT13+BIT11)+BIT10               ;PARAMETERS FOR REG 2
024720  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; ***************************************************
024722  010037  024750          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
024726  010037  024760                  MOV     R0,7$           ;STORE FOR NEXT TEST.
024732  005237  024760                  INC     7$              ;MAKE LINE=LINE+1.
024736  013737  024760  024770          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
                                ; ***************************************************
                                ;               PART 2
```

```
                                ;       IN THIS ROUTINE LOCATION "7$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
024744  004537  032316          6$:     JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
024750  000001                  6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
024752  020000                          BIT13                   ;RECEIVER ENABLE.
024754  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
024756  066000                          <BIT14+BIT13+BIT11>+BIT10               ;PARAMETERS FOR REG 2.

024760  000001                  7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
024762  020000                          BIT13                   ;RECEIVER ENABLE.
024764  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
024766  072000                          <BIT14+BIT13+BIT12>+BIT10               ;PARAMETERS FOR REG 2.
024770  000001                  8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                ; ***************************************************

024772  062700  000002                  ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
024776  010037  025022          9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
025002  010037  025042                  MOV     R0,12$          ;SAVE NO.
025006  010037  025032                  MOV     R0,11$          ;
025012  005237  025032                  INC     11$             ;MAKE LINE=LINE+1.
                                ; ***************************************************
                                ;               PART 1A
                                ;       IN THIS ROUTINE LOCATION "10$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
025016  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
025022  000001                  10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
025024  020000                          BIT13                   ;RECEIVER ENABLE.
025026  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
025030  072000                          <BIT14+BIT13+BIT12>+BIT10               ;PARAMETERS FOR REG 2.

025032  000001                  11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
025034  020000                          BIT13                   ;RECEIVER ENABLE.
025036  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
025040  066000                          <BIT14+BIT13+BIT11>+BIT10               ;PARAMETERS FOR LINE 2.
025042  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
                                ; ***************************************************

025044  010037  025072          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
025050  010037  025102                  MOV     R0,15$          ;STORE LINE.
025054  005237  025102                  INC     15$             ;LINE =LINE+1.
025060  013737  025102  025112          MOV     15$,16$         ;SET FASTEST LINE.
                                ; ***************************************************
                                ;               PART 2A
                                ;       IN THIS ROUTINE LOCATION "14$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
```

```
                025066  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
                025072  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
                025074  020000                          BIT13                   ;RECEIVER ENABLE.
                025076  015000                          (BIT12+BIT11)+BIT9      ;8 BITS/PER/CHAR.
                025100  066000                          (BIT14+BIT13+BIT11)+BIT10               ;PARAMETER FOR REG 2.

                025102  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
                025104  020000                          BIT13                   ;RECEIVER ENABLE.
                025106  015000                          (BIT12+BIT11)+BIT9      ;8 BITS/PER/CHAR.
                025110  072000                          (BIT14+BIT13+BIT12)+BIT10               ;PARAMETERS FOR REG 1.
                025112  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                                ;LINE 3 OR 7 OR 13 OR 17(8).
                                                ; ***************************************************

                025114  000207                          RTS     PC              ;EXIT TEST.


                                                        ;************************ TEST 36 *******************************
                                                        ;RELATIVE TIMMING TEST TO VERIFY PARAMETER SETUP.
                                                        ;*EACH LINE IS TESTED USING PROGRAMABLE PARAMETERS.
                                                        ;*TWO LINES ARE SETUP AT THE SAME TIME WITH DIFFERENT
                                                        ;*PARAMETERS. ONE LINE WILL ALWAYS HAVE A GREATER
                                                        ;*TOTAL NUMBER OF BITS/PER/CHAR OR A FASTER BAUD RATE
                                                        ;*THAN THE OTHER LINE.  LINES RUN TOGETHER ARE:
                                                        ;*   PART 1   PART 2   PART 1A PART 2A
                                                        ;*   X  X+1   X  X+1   X  X+1   X  X+1
                                                        ;*   00-01    01-00    02-03    03-02
                                                        ;*   04-05    05-04    06-07    07-06
                                                        ;*   10-11    11-10    12-13    13-12
                                                        ;*   14-15    15-14    16-17    17-16
                                                        ;*
                                                        ;*       BAUD RATE TEST.
                                                        ;*LINE X:   8 B/P/C,1ST,38.4K BAUD.
                                                        ;*LINE X+1: 8 B/P/C,1ST,9600  BAUD.
                                                        ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                                        ;;***************************************************************


                                                ;  TEST 36
                                                ;--------------
                025116  012737  000036  001226  TST36:  MOV     #36,TSTNO
                025124  012737  025510  001216          MOV     #TST37,NEXT
                025132  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
                025136  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
                025144  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
                025146  004737  025234                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
                025152  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
                025156  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
                025164  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
                025166  004737  025234                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
                025172  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
                025176  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
                025204  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
                025206  004737  025234                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
                025212  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
                025216  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
                025224  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
```

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5777  025226  004737  025234              JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
5778  025232  104400                103$: SCOPE                   ;SCOPE THIS TEST.
5779  025234                        105$:                         ;TEST ENTRANCE.
5780  025234  032737  004000  001236      BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
5781  025242  001001                      BNE     1$              ;BR IF YES
5782  025244  000207                      RTS     PC              ;EXIT TEST
5783  025246  010037  025272        1$:   MOV     R0,2$           ;GET LINE UNDER TEST
5784                                                              ;LINE 0 OR 4 OR 10 OR 14(8)
5785  025252  010037  025312              MOV     R0,4$           ;SAVE SAME LINE
5786  025256  010037  025302              MOV     R0,3$           ;PREPARE FOR LINE+1
5787  025262  005237  025302              INC     3$              ;MAKE LINE = LINE+1
5788                                                              ;LINE 1 OR 5 OR 11 OR 15(8)
5789                                ; ***************************************************
5790                                ;               PART 1
5791                                ;       IN THIS ROUTINE LOCATION "2$"
5792                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5793                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5794                                ;
5795  025266  004537  032316              JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
5796  025272  000001                2$:   .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
5797  025274  020000                      BIT13                   ;RECEIVER ENABLE
5798  025276  015000                      <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
5799  025300  076000                      <BIT14+BIT13+BIT12+BIT11>+BIT10         ;PARAMETERS FOR REG 2
5800
5801  025302  000001                3$:   .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
5802  025304  020000                      BIT13                   ;RECEIVER ENABLE
5803  025306  015000                      <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
5804  025310  072000                      <BIT14+BIT13+BIT12>+BIT10                ;PARAMETERS FOR REG 2
5805  025312  000001                4$:   .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
5806                                                              ;LINE 0 OR 4 OR 10 OR 14(8).
5807                                ; ***************************************************
5808
5809  025314  010037  025342        5$:   MOV     R0,6$           ;GET INITAL LINE NO.
5810  025320  010037  025352              MOV     R0,7$           ;STORE FOR NEXT TEST.
5811  025324  005237  025352              INC     7$              ;MAKE LINE=LINE+1.
5812  025330  013737  025352  025362      MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
5813                                ; ***************************************************
5814                                ;               PART 2
5815                                ;       IN THIS ROUTINE LOCATION "7$"
5816                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5817                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5818                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
5819                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
5820                                ;
5821  025336  004537  032316              JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
5822  025342  000001                6$:   .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
5823  025344  020000                      BIT13                   ;RECEIVER ENABLE.
5824  025346  015000                      <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
5825  025350  072000                      <BIT14+BIT13+BIT12>+BIT10                ;PARAMETERS FOR REG 2.
5826
5827  025352  000001                7$:   .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
5828  025354  020000                      BIT13                   ;RECEIVER ENABLE.
5829  025356  015000                      <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
5830  025360  076000                      <BIT14+BIT13+BIT12+BIT11>+BIT10         ;PARAMETERS FOR REG 2.
5831  025362  000001                8$:   .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
5832                                ; ***************************************************
```

```
5833
5834  025364  062700  000002            ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
5835  025370  010037  025414      9$:   MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
5836  025374  010037  025434            MOV     R0,12$          ;SAVE NO.
5837  025400  010037  025424            MOV     R0,11$          ;
5838  025404  005237  025424            INC     11$             ;MAKE LINE=LINE+1.
5839                                ; ***************************************************
5840                                ;               PART 1A
5841                                ;       IN THIS ROUTINE LOCATION "10$"
5842                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5843                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5844                                ;
5845  025410  004537  032316            JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
5846  025414  000001              10$:  .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
5847  025416  020000                    BIT13                   ;RECEIVER ENABLE.
5848  025420  015000                    <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
5849  025422  076000                    <BIT14+BIT13+BIT12+BIT11>+BIT10         ;PARAMETERS FOR REG 2.
5850
5851  025424  000001              11$:  .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
5852  025426  020000                    BIT13                   ;RECEIVER ENABLE.
5853  025430  015000                    <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
5854  025432  072000                    <BIT14+BIT13+BIT12>+BIT10               ;PARAMETERS FOR LINE 2.
5855  025434  000001              12$:  .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
5856                                                          ;LINE 2 OR 6 OR 12 OR 16(8).
5857                                ; ***************************************************
5858
5859  025436  010037  025464      13$:  MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
5860  025442  010037  025474            MOV     R0,15$          ;STORE LINE.
5861  025446  005237  025474            INC     15$             ;LINE =LINE+1.
5862  025452  013737  025474  025504    MOV     15$,16$         ;SET FASTEST LINE.
5863                                ; ***************************************************
5864                                ;               PART 2A
5865                                ;       IN THIS ROUTINE LOCATION "14$"
5866                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
5867                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
5868                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
5869                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
5870                                ;
5871  025460  004537  032316            JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
5872  025464  000001              14$:  .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
5873  025466  020000                    BIT13                   ;RECEIVER ENABLE.
5874  025470  015000                    <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
5875  025472  072000                    <BIT14+BIT13+BIT12>+BIT10               ;PARAMETER FOR REG 3.
5876
5877  025474  000001              15$:  .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
5878  025476  020000                    BIT13                   ;RECEIVER ENABLE.
5879  025500  015000                    <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
5880  025502  076000                    <BIT14+BIT13+BIT12+BIT11>+BIT10         ;PARAMETERS FOR REG 1.
5881  025504  000001              16$:  .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
5882                                                          ;LINE 3 OR 7 OR 13 OR 17(8).
5883                                ; ***************************************************
5884
5885  025506  000207                    RTS     PC              ;EXIT TEST.
5886
5887
5888                                    ;************************ TEST 37 *******************************
```

```
                                        ;*BREAK AND FRAMING ERROR TESTS.
                                        ;*IN THIS TEST THE TX IS SET TO TRANSMIT
                                        ;*50(8) CHARS AND THE RX 40(8) CHARS.
                                        ;*THE BREAK FUNCTION IS SET UP AND THE DV11
                                        ;*IS ENABLED. WHEN THE TX IS DONE SENDING
                                        ;*ALL THE CHARS; A TEST IS MADE TO CHECK
                                        ;*IF THE RECEIVER RECEIVED ANY CHARS. THERE
                                        ;*SHOULD ONLY BE ONE CHAR AND THAT ONE SHOULD
                                        ;*HAVE A FRAMING ERROR WITH A ZERO DATA CHAR.
                                        ;*AFTER THIS IS CHECKED A TEST IS MADE TO VERIFY
                                        ;*THAT NO OTHER CHARS WERE RECEIVED.
                                        ;*IF THERE WERE THIS IS CONSIDERED AN ERROR!
                                        ;*
                                        ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                        ;;*****************************************************************

                                ;  TEST 37
                                ;--------------
025510  012737  000037  001226  TST37:  MOV     #37,TSTNO
025516  012737  026060  001216          MOV     #TST40,NEXT
025524  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
025530  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
025536  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
025540  004737  025626                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
025544  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
025550  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
025556  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
025560  004737  025626                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
025564  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
025570  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
025576  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
025600  004737  025626                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
025604  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
025610  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
025616  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
025620  004737  025626                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
025624  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
025626                          105$:                           ;TEST ENTRANCE.
025626  012737  000004  032314          MOV     #4,COUNT        ;SET TO TEST 4 LINES
025634  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
025642  001001                          BNE     1$              ;BR IF YES
025644  000207                          RTS     PC              ;EXIT TEST
025646  104413                  1$:     RAMCLR                  ;CLEAR ALL DV11
025650  012737  125125  033340          MOV     #<252*400>+125,TXBAP    ;SET DATA CHARS
025656  010077  153510                  MOV     R0,@DVSRS       ;LOAD LINE NO.
025662  004537  033156                  PERFORM ,SETREG         ;SET REGISTERS
025666     000     001                  .BYTE   000,001         ;TXBAP  ,TXBC
025670  033340                          TXBAP                   ;BA
025672  077730                          <-50>-BIT15             ;BC (MARKED.
025674  004537  033156                  PERFORM ,SETREG         ;SET REGISTERS
025700     004     005                  .BYTE   004,005         ;RXBA  ,RXBC
025702  033740                          RXBA                    ;BA
025704  077740                          <-40>-BIT15             ;BC (MARKED)
025706  004537  033156                  PERFORM ,SETREG         ;SET REGISTERS
025712     012     013                  .BYTE   012,013         ;
025714  000140                          BIT6+BIT5               ;TXDDCMP  ,RXDDCMP
```

```
5945  025716  000004                          BIT2                    ;TX GO.
5946  025720  004537  033222                  PERFORM ,LOAD.MODE      ;LOAD MODES
5947  025724  060000                          BIT14+BIT13             ;BREAK AND RX ENABLE.
5948  025726  004537  033222                  PERFORM ,LOAD.MODE      ;LOAD MODES.
5949  025732  015000                          BIT12+BIT11+BIT9        ;8 BITS/PER/CHAR
5950  025734  004537  033222                  PERFORM ,LOAD.MODE      ;LOAD MODES
5951  025740  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
5952  025742  005277  153414                  INC     @DVSCR          ;SET UCPU GO.
5953  025746  005004                          CLR     R4              ;SET TIMER
5954  025750  005777  153406          2$:     TST     @DVSCR          ;TX DONE?
5955  025754  100404                          BMI     3$              ;BR IF YES
5956  025756  104414                          DELAY                   ;WASTE TIME
5957  025760  005204                          INC     R4              ;UPDATE DELAY
5958  025762  001372                          BNE     2$              ;BR IF NOT DONE.
5959  025764  104005                          HLT     5               ;DVSCR15<>1. TX NOT DONE.
5960  025766  105777  153370          3$:     TSTB    @DVSCR          ;RX DONE (DVSCR07=1)
5961  025772  100401                          BMI     .+4             ;BR IF YES
5962  025774  104002                          HLT     2               ;DVSCR07<>1 (RX NOT DONE)
5963  025776  017704  153364                  MOV     @DVRIC,R4       ;READ RX CHAR.
5964  026002  010005                          MOV     R0,R5           ;GET GOOD LINE NO.
5965  026004  000305                          SWAB    R5              ;PUT LINE IN HIGH BYTE
5966  026006  052705  030000                  BIS     #BIT13+BIT12,R5 ;SET FRAMING ERROR CONDITION.
5967  026012  020504                          CMP     R5,R4           ;DID RICR GE CORRECT ENTRY
5968  026014  001401                          BEQ     4$              ;BR IF OK
5969  026016  104000                          HLT                     ;DVRIC INCORRECT!
5970  026020  052777  000400  153334  4$:     BIS     #BIT8,@DVSCR    ;CHECK THAT ONLY ONE CHAR IS IN SILO
5971  026026  012705  000017                  MOV     #15.,R5         ;SET TIMER FOR CHAR TO FALL INTO RIC
5972  026032  005305                          DEC     R5              ;WAIST TIME
5973  026034  001376                          BNE     .-2             ;
5974  026036  105777  153320                  TSTB    @DVSCR          ;ANY MORE CHARS?
5975  026042  100001                          BPL     .+4             ;BR IF NO
5976  026044  104000                          HLT                     ;TOO MANY CHARS IN SILO (S/B ONLY 1)
5977  026046  005200                          INC     R0              ;UPDATE LINE NO.
5978  026050  005337  032314                  DEC     COUNT           ;ALL 4 LINES DONE?
5979  026054  001274                          BNE     1$              ;BR IF NO
5980  026056  000207                          RTS     PC              ;EXIT TEST.
5981
5982
5983                                          ;************************ TEST 40 ******************************
5984                                          ;*HALF DUPLEX TESTS
5985                                          ;IN THIS TEST THE HALF DUPLEX BIT IS SET UP.
5986                                          ;THE TX XMITS MORE CHARS THAN THE RX IS TO RECEIVE
5987                                          ;WHEN THE TX IS DONE A TEST IS MADE TO VERIFY THAT
5988                                          ;THE RX DIDN'T RECEIVE ANY CHARS AT ALL.
5989                                          ;IF IT DID; THIS IS CONSIDERED AN ERROR!
5990                                          ;*
5991                                          ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
5992                                          ;:**************************************************************
5993
5994                                  ;  TEST 40
5995                                  ;--------------
5996  026060  012737  000040  001226  TST40:  MOV     #40,TSTNO
5997  026066  012737  026434  001216          MOV     #TST41,NEXT
5998  026074  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
5999  026100  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
6000  026106  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
```

```
 6001  026110  004737  026176                 JSR     PC,105$          ;GO DO THE TEST FOR LINE CARD 1
 6002  026114  012700  000004          100$:  MOV     #4.,R0           ;PLACE LINE NUMBER INTO R0
 6003  026120  013737  001420  001236         MOV     L04.07,STAT      ;LOAD LINE CARD STATUS INTO STAT
 6004  026126  100402                         BMI     101$             ;BR IF LINE CARD NOT TO BE TESTED
 6005  026130  004737  026176                 JSR     PC,105$          ;GO DO THE TEST FOR LINE CARD 2
 6006  026134  012700  000010          101$:  MOV     #8.,R0           ;LOAD LINE NUMBER
 6007  026140  013737  001422  001236         MOV     L08.11,STAT      ;LOAD LINE CARD STATUS INTO STAT
 6008  026146  100402                         BMI     102$             ;BR IF LINE CARD NOT TO BE TESTED
 6009  026150  004737  026176                 JSR     PC,105$          ;DO THE TEST FOR LINE CARD 3
 6010  026154  012700  000014          102$:  MOV     #12.,R0          ;LOAD LINE NO.
 6011  026160  013737  001424  001236         MOV     L12.15,STAT      ;LOAD LINE CARD STATUS
 6012  026156  100402                         BMI     103$             ;BR IF LINE CARD NOT TO BE TESTED
 6013  026170  004737  026176                 JSR     PC,105$          ;DO THE TESTS FOR LINE CARD 4
 6014  026174  104400                  103$:  SCOPE                    ;SCOPE THIS TEST.
 6015  026176                           105$:                           ;TEST ENTRANCE.
 6016  026176  012737  002436  001216         MOV     #.EOP,NEXT       ;ADJUST TO GO TO END-PASS
 6017  026204  012737  000004  032314         MOV     #4,COUNT         ;SET TO TEST 4 LINES
 6018  026212  032737  004000  001236         BIT     #ASYNC,STAT      ;IS THIS AN ASYNC LINE CARD?
 6019  026220  001001                         BNE     1$               ;BR IF YES
 6020  026222  000207                         RTS     PC               ;EXIT TEST
 6021  026224  104413                   1$:   RAMCLR                   ;CLEAR ALL DV11
 6022  026226  012737  125125  033340         MOV     #<252*400>+125,TXBAP    ;SET DATA CHARS
 6023  026234  010077  153132                 MOV     R0,@DVSRS        ;LOAD LINE NO.
 6024  026240  004537  033156                 PERFORM ,SETREG          ;SET REGISTERS
 6025  026244     000     001                 .BYTE   000,001          ;TXBAP  ,TXBC
 6026  026246  033340                         TXBAP                    ;BA
 6027  026250  077730                         <-50>-BIT15              ;BC (MARKED.
 6028  026252  004537  033156                 PERFORM ,SETREG          ;SET REGISTERS
 6029  026256     004     005                 .BYTE   004,005          ;RXBA  ,RXBC
 6030  026260  033740                         RXBA                     ;BA
 6031  026262  077740                         <-40>-BIT15              ;BC (MARKED)
 6032  026264  004537  033156                 PERFORM ,SETREG          ;SET REGISTERS
 6033  026270     012     013                 .BYTE   012,013          ;
 6034  026272  000140                         BIT6+BIT5                ;TXDDCMP  ,RXDDCMP
 6035  026274  000004                         BIT2                     ;TX GO.
 6036  026276  004537  033222                 PERFORM ,LOAD.MODE       ;LOAD MODES
 6037  026302  024000                         BIT13+BIT11              ;RX ENABLE AND HALF/DUPLEX.
 6038  026304  004537  033222                 PERFORM ,LOAD.MODE       ;LOAD MODES.
 6039  026310  015000                         BIT12+BIT11+BIT9         ;8 BITS/PER/CHAR
 6040  026312  004537  033222                 PERFORM ,LOAD.MODE       ;LOAD MODES
 6041  026316  072000                         BIT14+BIT13+BIT12+BIT10  ;9600 BAUD.
 6042  026320  005277  153036                 INC     @DVSCR           ;SET UCPU GO.
 6043  026324  005004                         CLR     R4               ;SET TIMER
 6044  026326  005777  153030           2$:   TST     @DVSCR           ;TX DONE?
 6045  026332  100404                         BMI     3$               ;BR IF YES
 6046  026334  104414                         DELAY                    ;WASTE TIME
 6047  026336  005204                         INC     R4               ;UPDATE DELAY
 6048  026340  001372                         BNE     2$               ;BR IF NOT DONE.
 6049  026342  104005                         HLT     5                ;DVSCR15<>1. TX NOT DONE.
 6050  026344  105777  153012           3$:   TSTB    @DVSCR           ;RX DONE (DVSCR07=1)
 6051  026350  100001                         BPL     .+4              ;BR IF NO
 6052  026352  104000                         HLT                      ;NO CHARS S/B REVEIVED.
 6053  026354  012705  033740                 MOV     #RXBA,R5         ;SET EXPECTED RX BA
 6054  026360  112777  000004  153006         MOVB    #4,@DVSRSH       ;SEL RXBA
 6055  026366  017704  153004                 MOV     @DVSRA,R4        ;READ RXBA
 6056  026372  020504                         CMP     R5,R4            ;DID RXBA CHANGE?
```

```
 6057  026374  001401                BEQ     .+4                 ;BR IF NO CHANGE.
 6058  026376  104000                HLT                         ;RX SHOULD NOT HAVE ANY CHARS.
 6059  026400  012705  077740        MOV     #<-40>-BIT15,R5     ;SET EXPECTED RXBC
 6060  026404  105277  152764        INCB    @DVSRSH             ;SEL RXBC
 6061  026410  017704  152762        MOV     @DVSRA,R4           ;READ RXBC
 6062  026414  020504                CMP     R5,R4               ;DID BC CHANGE?
 6063  026416  001401                BEQ     .+4                 ;BR IF NO
 6064  026420  104000                HLT                         ;RXBC WRONG VALUE.
 6065  026422  005200                INC     R0                  ;UPDATE LINE NO.
 6066  026424  005337  032314        DEC     COUNT               ;ALL 4 LINES DONE?
 6067  026430  001275                BNE     1$                  ;BR IF NO
 6068  026432  000207                RTS     PC                  ;EXIT TEST.
 6069
 6070
```

```
                                ;************************ TEST 41 *********************************
                                ;*FIELD SERVICE TEST
                                ;*TEST TO INPUT PARAMETERS FOR TWO LINES
                                ;*FROM USER OF THE DIAGNOSTIC AND ATTEMPT
                                ;*TO EXERCISE THE DV11 ASYNC LINE CARD.
                                ;*WHEN DVSCR07 SETS OR A TIMER WAITING FOR IT TO
                                ;*SETS TIMES OUT; ALL PRIMARY REGISTES WILL BE PRINTED
                                ;*AND THEN ALL SECONDARY REGISTERS FOR THE 2 SECECTED LINES WILL BE PRINTED
                                ;*IT WILL BE UP TO THE USER TO DETERMINE IF WHAT
                                ;*WAS EXPECTED AGGREES WITH WHAT WAS FOUND.
                                ;*<CR> FOR INPUT DEFAULTS TO ALL ZEROS FOR ANSWER.
                                ;*EXAMPLE:
                                ;*
                                ;*ERRORS MAY OCCUR IF PARAMETERS ARE DIFFERENT PER LINE.
                                ;*SUPPLY INFO FOR 1ST LINE UNDER TEST
                                ;*LINE NO. (IN OCTAL): 3          ;SELECT LINE 3
                                ;*PRIMARY REG PARAMETERS (IN OCTAL): 30000      ;RX ENABLE AND PARITY SENCE
                                ;*FORMAT REG PARAMETERS (IN OCTAL): 40000      ;PARITY ON 5 B/P/C
                                ;*BAUD RATE REG PARAMETERS (IN OCTAL):  70000  ;9600 BAUD
                                ;*MAINTAINCE REG PARAMETERS (IN OCTAL):        ;HIT <CR> EXTERNAL MODE
                                ;*
                                ;*SUPPLY INFO FOR 2ND LINE UNDER TEST
                                ;*LINE NO. (IN OCTAL): 4          ;SELECT LINE 4
                                ;*PRIMARY REG PARAMETERS (IN OCTAL): 20000      ;RX ENABLE AND PARITY SENCE
                                ;*FORMAT REG PARAMETERS (IN OCTAL): 40000      ;PARITY ON 5 B/P/C
                                ;*BAUD RATE REG PARAMETERS (IN OCTAL):  70000  ;9600 BAUD
                                ;*MAINTAINCE REG PARAMETERS (IN OCTAL):        ;HIT <CR> EXTERNAL MODE
                                ;*
                                ;*TEST NO: 041  PC: XXXXXX
                                ;*
                                ;*PARITY ERROR OCCURED!
                                ;*
                                ;*PRIMARY REGISTER ARE:
                                ;*DVSCR   DVRIC   .....ETC
                                ;*000200  011400  .....ETC
                                ;*
                                ;*SECONDARY REGISTERS ARE:
                                ;*REG00   REG01   REG02  .....ETC
                                ;*   REG10   REG11   REG12   .....ETC
                                ;*XXXXXX  XXXXX   XXXXX  .....ETC
                                ;*   XXXXX   XXXXXX   XXXXX   ....ETC
                                ;:*****************************************************************
                                
                                ;  TEST 41
                                ;--------------
026434  012737  000041  001226  TST41:  MOV     #41,TSTNO
026442  012737  002436  001216          MOV     #.EOP,NEXT
026450  104402  031047                  TYPE    ,FS1            ;SUPPLY INFO FOR 1ST LINE UNDER TEST
                                                                ;LINE NO. (IN OCTAL):
026454  005037  027632                  CLR     1$              ;CLEAR HOLDER LOCATION.
026460  105777  152520          64$:    TSTB    @TKCSR          ;WAIT FOR TTY DONE
026464  100375                  BPL     64$                     ;BR IF NOT DONE.
026466  017746  152514                  MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
026472  105777  152512                  TSTB    @TPCSR          ;TTY READY?
026476  100375                  BPL     .-4                     ;BR IF NO.
026500  011677  152506                  MOV     (SP),@TPDBR     ;ECHO CHAR.
```

```
 6127  026504  042716  177760                BIC     #^C<17>,(SP)    ;STRIP ASCII
 6128  026510  022716  000015                CMP     #15,(SP)        ;WAS IT CR?
 6129  026514  001412                        BEQ     65$             ;BR IF YES
 6130  026516  000241                        CLC                     ;CLEAR CARRY
 6131  026520  006137  027632                ROL     1$              ;
 6132  026524  006137  027632                ROL     1$              ;
 6133  026530  006137  027632                ROL     1$              ;BUILD CHAR.
 6134  026534  052637  027632                BIS     (SP)+,1$        ;
 6135  026540  000747                        BR      64$             ;GET MODE CHARS.
 6136  026542  005726              65$:      TST     (SP)+           ;POP SP
 6137  026544  104402  031323                TYPE    ,FS2            ;PRIMARY REGISTER PARAMETERS (IN OCTAL) :
 6138  026550  005037  027646                CLR     2$              ;CLEAR HOLDER LOCATION.
 6139  026554  105777  152424          66$:  TSTB    @TKCSR          ;WAIT FOR TTY DONE
 6140  026560  100375                        BPL     66$             ;BR IF NOT DONE.
 6141  026562  017746  152420                MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
 6142  026566  105777  152416                TSTB    @TPCSR          ;TTY READY?
 6143  026572  100375                        BPL     .-4             ;BR IF NO.
 6144  026574  011677  152412                MOV     (SP),@TPDBR     ;ECHO CHAR.
 6145  026600  042716  177760                BIC     #^C<17>,(SP)    ;STRIP ASCII
 6146  026604  022716  000015                CMP     #15,(SP)        ;WAS IT CR?
 6147  026610  001412                        BEQ     67$             ;BR IF YES
 6148  026612  000241                        CLC                     ;CLEAR CARRY
 6149  026614  006137  027646                ROL     2$              ;
 6150  026620  006137  027646                ROL     2$              ;
 6151  026624  006137  027646                ROL     2$              ;BUILD CHAR.
 6152  026630  052637  027646                BIS     (SP)+,2$        ;
 6153  026634  000747                        BR      66$             ;GET MODE CHARS.
 6154  026636  005726              67$:      TST     (SP)+           ;POP SP
 6155  026640  104402  031367                TYPE    ,FS3            ;FORMAT REGISTER PARAMETERS (IN OCTAL) :
 6156  026644  005037  027670                CLR     3$              ;CLEAR HOLDER LOCATION.
 6157  026650  105777  152330          68$:  TSTB    @TKCSR          ;WAIT FOR TTY DONE
 6158  026654  100375                        BPL     68$             ;BR IF NOT DONE.
 6159  026656  017746  152324                MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
 6160  026662  105777  152322                TSTB    @TPCSR          ;TTY READY?
 6161  026666  100375                        BPL     .-4             ;BR IF NO.
 6162  026670  011677  152316                MOV     (SP),@TPDBR     ;ECHO CHAR.
 6163  026674  042716  177760                BIC     #^C<17>,(SP)    ;STRIP ASCII
 6164  026700  022716  000015                CMP     #15,(SP)        ;WAS IT CR?
 6165  026704  001412                        BEQ     69$             ;BR IF YES
 6166  026706  000241                        CLC                     ;CLEAR CARRY
 6167  026710  006137  027670                ROL     3$              ;
 6168  026714  006137  027670                ROL     3$              ;
 6169  026720  006137  027670                ROL     3$              ;BUILD CHAR.
 6170  026724  052637  027670                BIS     (SP)+,3$        ;
 6171  026730  000747                        BR      68$             ;GET MODE CHARS.
 6172  026732  005726              69$:      TST     (SP)+           ;POP SP
 6173  026734  104402  031433                TYPE    ,FS4            ;BAUD RATE REGISTER PARAMETERS (IN OCTAL) :
 6174  026740  005037  027712                CLR     4$              ;CLEAR HOLDER LOCATION.
 6175  026744  105777  152234          70$:  TSTB    @TKCSR          ;WAIT FOR TTY DONE
 6176  026750  100375                        BPL     70$             ;BR IF NOT DONE.
 6177  026752  017746  152230                MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
 6178  026756  105777  152226                TSTB    @TPCSR          ;TTY READY?
 6179  026762  100375                        BPL     .-4             ;BR IF NO.
 6180  026764  011677  152222                MOV     (SP),@TPDBR     ;ECHO CHAR.
 6181  026770  042716  177760                BIC     #^C<17>,(SP)    ;STRIP ASCII
 6182  026774  022716  000015                CMP     #15,(SP)        ;WAS IT CR?
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6183  027000  001412                        BEQ     71$             ;BR IF YES
6184  027002  000241                        CLC                     ;CLEAR CARRY
6185  027004  006137  027712                ROL     4$              ;
6186  027010  006137  027712                ROL     4$              ;
6187  027014  006137  027712                ROL     4$              ;BUILD CHAR.
6188  027020  052637  027712                BIS     (SP)+,4$        ;
6189  027024  000747                        BR      70$             ;GET MODE CHARS.
6190  027026  005726              71$:      TST     (SP)+           ;POP SP
6191  027030  104402  031503                TYPE    ,FS5            ;MAINTAINCE REGISTER PARAMTERS (IN OCTAL) :
6192  027034  005037  027726                CLR     5$              ;CLEAR HOLDER LOCATION.
6193  027040  105777  152140      72$:      TSTB    @TKCSR          ;WAIT FOR TTY DONE
6194  027044  100375                        BPL     72$             ;BR IF NOT DONE.
6195  027046  017746  152134                MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
6196  027052  105777  152132                TSTB    @TPCSR          ;TTY READY?
6197  027056  100375                        BPL     .-4             ;BR IF NO.
6198  027060  011677  152126                MOV     (SP),@TPDBR     ;ECHO CHAR.
6199  027064  042716  177760                BIC     #^C<17>,(SP)    ;STRIP ASCII
6200  027070  022716  000015                CMP     #15,(SP)        ;WAS IT CR?
6201  027074  001412                        BEQ     73$             ;BR IF YES
6202  027076  000241                        CLC                     ;CLEAR CARRY
6203  027100  006137  027726                ROL     5$              ;
6204  027104  006137  027726                ROL     5$              ;
6205  027110  006137  027726                ROL     5$              ;BUILD CHAR.
6206  027114  052637  027726                BIS     (SP)+,5$        ;
6207  027120  000747                        BR      72$             ;GET MODE CHARS.
6208  027122  005726              73$:      TST     (SP)+           ;POP SP
6209  027124  104402  031230                TYPE    ,FS6            ;SUPPLY INFO FOR 2ND LINE UNDER TEST
6210                                                                ;LINE NO. (IN OCTAL):
6211  027130  005037  030010                CLR     6$              ;CLEAR HOLDER LOCATION.
6212  027134  105777  152044      74$:      TSTB    @TKCSR          ;WAIT FOR TTY DONE
6213  027140  100375                        BPL     74$             ;BR IF NOT DONE.
6214  027142  017746  152040                MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
6215  027146  105777  152036                TSTB    @TPCSR          ;TTY READY?
6216  027152  100375                        BPL     .-4             ;BR IF NO.
6217  027154  011677  152032                MOV     (SP),@TPDBR     ;ECHO CHAR.
6218  027160  042716  177760                BIC     #^C<17>,(SP)    ;STRIP ASCII
6219  027164  022716  000015                CMP     #15,(SP)        ;WAS IT CR?
6220  027170  001412                        BEQ     75$             ;BR IF YES
6221  027172  000241                        CLC                     ;CLEAR CARRY
6222  027174  006137  030010                ROL     6$              ;
6223  027200  006137  030010                ROL     6$              ;
6224  027204  006137  030010                ROL     6$              ;BUILD CHAR.
6225  027210  052637  030010                BIS     (SP)+,6$        ;
6226  027214  000747                        BR      74$             ;GET MODE CHARS.
6227  027216  005726              75$:      TST     (SP)+           ;POP SP
6228  027220  104402  031323                TYPE    ,FS2            ;PRIMARY REG PARAMETERS (IN OCTAL) :
6229  027224  005037  030024                CLR     7$              ;CLEAR HOLDER LOCATION.
6230  027230  105777  151750      76$:      TSTB    @TKCSR          ;WAIT FOR TTY DONE
6231  027234  100375                        BPL     76$             ;BR IF NOT DONE.
6232  027236  017746  151744                MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
6233  027242  105777  151742                TSTB    @TPCSR          ;TTY READY?
6234  027246  100375                        BPL     .-4             ;BR IF NO.
6235  027250  011677  151736                MOV     (SP),@TPDBR     ;ECHO CHAR.
6236  027254  042716  177760                BIC     #^C<17>,(SP)    ;STRIP ASCII
6237  027260  022716  000015                CMP     #15,(SP)        ;WAS IT CR?
6238  027264  001412                        BEQ     77$             ;BR IF YES
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 6239  027266  000241                          CLC     ;CLEAR CARRY
 6240  027270  006137  030024                  ROL     7$      ;
 6241  027274  006137  030024                  ROL     7$      ;
 6242  027300  006137  030024                  ROL     7$      ;BUILD CHAR.
 6243  027304  052637  030024                  BIS     (SP)+,7$        ;
 6244  027310  000747                          BR      76$     ;GET MODE CHARS.
 6245  027312  005726                  77$:    TST     (SP)+   ;POP SP
 6246  027314  104402  031367                  TYPE    ,FS3    ;FORMAT REG PARAMETERS (IN OCTAL) :
 6247  027320  005037  030046                  CLR     8$      ;CLEAR HOLDER LOCATION.
 6248  027324  105777  151654          78$:    TSTB    @#TKCSR ;WAIT FOR TTY DONE
 6249  027330  100375                          BPL     78$     ;BR IF NOT DONE.
 6250  027332  017746  151650                  MOV     @#TKDBR,-(SP)   ;PREPARE TO STRIP ASCII
 6251  027336  105777  151646                  TSTB    @#TPCSR ;TTY READY?
 6252  027342  100375                          BPL     .-4     ;BR IF NO.
 6253  027344  011677  151642                  MOV     (SP),@#TPDBR    ;ECHO CHAR.
 6254  027350  042716  177760                  BIC     #^C<17>,(SP)    ;STRIP ASCII
 6255  027354  022716  000015                  CMP     #15,(SP)        ;WAS IT CR?
 6256  027360  001412                          BEQ     79$     ;BR IF YES
 6257  027362  000241                          CLC             ;CLEAR CARRY
 6258  027364  006137  030046                  ROL     8$      ;
 6259  027370  006137  030046                  ROL     8$      ;
 6260  027374  006137  030046                  ROL     8$      ;BUILD CHAR.
 6261  027400  052637  030046                  BIS     (SP)+,8$        ;
 6262  027404  000747                          BR      78$     ;GET MODE CHARS.
 6263  027406  005726                  79$:    TST     (SP)+   ;POP SP
 6264  027410  104402  031433                  TYPE    ,FS4    ;BAUD RATE REG PARAMETERS (IN OCTAL) :
 6265  027414  005037  030070                  CLR     9$      ;CLEAR HOLDER LOCATION.
 6266  027420  105777  151560          80$:    TSTB    @#TKCSR ;WAIT FOR TTY DONE
 6267  027424  100375                          BPL     80$     ;BR IF NOT DONE.
 6268  027426  017746  151554                  MOV     @#TKDBR,-(SP)   ;PREPARE TO STRIP ASCII
 6269  027432  105777  151552                  TSTB    @#TPCSR ;TTY READY?
 6270  027436  100375                          BPL     .-4     ;BR IF NO.
 6271  027440  011677  151546                  MOV     (SP),@#TPDBR    ;ECHO CHAR.
 6272  027444  042716  177760                  BIC     #^C<17>,(SP)    ;STRIP ASCII
 6273  027450  022716  000015                  CMP     #15,(SP)        ;WAS IT CR?
 6274  027454  001412                          BEQ     81$     ;BR IF YES
 6275  027456  000241                          CLC             ;CLEAR CARRY
 6276  027460  006137  030070                  ROL     9$      ;
 6277  027464  006137  030070                  ROL     9$      ;
 6278  027470  006137  030070                  ROL     9$      ;BUILD CHAR.
 6279  027474  052637  030070                  BIS     (SP)+,9$        ;
 6280  027500  000747                          BR      80$     ;GET MODE CHARS.
 6281  027502  005726                  81$:    TST     (SP)+   ;POP SP
 6282  027504  104402  031503                  TYPE    ,FS5    ;MAINTAINCE REG PARAMTERS (IN OCTAL) :
 6283  027510  005037  030104                  CLR     10$     ;CLEAR HOLDER LOCATION.
 6284  027514  105777  151464          82$:    TSTB    @#TKCSR ;WAIT FOR TTY DONE
 6285  027520  100375                          BPL     82$     ;BR IF NOT DONE.
 6286  027522  017746  151460                  MOV     @#TKDBR,-(SP)   ;PREPARE TO STRIP ASCII
 6287  027526  105777  151456                  TSTB    @#TPCSR ;TTY READY?
 6288  027532  100375                          BPL     .-4     ;BR IF NO.
 6289  027534  011677  151452                  MOV     (SP),@#TPDBR    ;ECHO CHAR.
 6290  027540  042716  177760                  BIC     #^C<17>,(SP)    ;STRIP ASCII
 6291  027544  022716  000015                  CMP     #15,(SP)        ;WAS IT CR?
 6292  027550  001412                          BEQ     83$     ;BR IF YES
 6293  027552  000241                          CLC             ;CLEAR CARRY
 6294  027554  006137  030104                  ROL     10$     ;
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6295  027560  006137  030104                 ROL     10$                ;
6296  027564  006137  030104                 ROL     10$                ;BUILD CHAR.
6297  027570  052637  030104                 BIS     (SP)+,10$          ;
6298  027574  000747                         BR      82$                ;GET MODE CHARS.
6299  027576  005726                 83$:    TST     (SP)+              ;POP SP
6300  027600  104413                 40$:    RAMCLR                     ;CLEAR ALL DV11
6301  027602  012701  033340                 MOV     #TXBAP,R1          ;SETUP TX DATA
6302  027606  005002                         CLR     R2                 ;SET COUNTER TO ZERO
6303  027610  110221                         MOVB    R2,(R1)+           ;LOAD TX DATA
6304  027612  005202                         INC     R2                 ;UPDATE DAT AND COUNTER
6305  027614  022702  000012                 CMP     #10.,R2            ;DONE?
6306  027620  001373                         BNE     .-10               ;BR IF NO
6307  027622  013777  027632  151542         MOV     1$,@DVSRS          ;LOAD LINE NO.
6308  027630  000401                         BR      .+4                ;BR OVER STORAGE AREA.
6309  027632  000001                 1$:     .BLKW   1                  ;LINE UNDER TEST (1ST)
6310  027634  042737  003000  027646         BIC     #BIT10+BIT9,2$     ;SET FOR PRIMARY REGISTER
6311  027642  004537  033222                 PERFORM ,LOAD.MODE         ;
6312  027646  000001                 2$:     .BLKW 1                    ;LOAD PARAMETERS
6313  027650  042737  003000  027670         BIC     #BIT10+BIT9,3$     ;SET FOR FORMAT REG
6314  027656  052737  001000  027670         BIS     #BIT9,3$           ;
6315  027664  004537  033222                 PERFORM ,LOAD.MODE         ;
6316  027670  000001                 3$:     .BLKW 1                    ;LOAD FORMAT REGISTER
6317  027672  042737  003000  027712         BIC     #BIT10+BIT9,4$     ;SET FOR BAUD RATE REG
6318  027700  052737  002000  027712         BIS     #BIT10,4$          ;
6319  027706  004537  033222                 PERFORM ,LOAD.MODE         ;
6320  027712  000001                 4$:     .BLKW   1                  ;LOAD BAUD RATE REG
6321  027714  052737  003000  027726         BIS     #BIT10+BIT9,5$     ;SET FOR MAINT REGISTER
6322  027722  004537  033222                 PERFORM ,LOAD.MODE         ;
6323  027726  000001                 5$:     .BLKW   1                  ;LOAD MAINT REG
6324  027730  004537  033156                 PERFORM ,SETREG            ;
6325  027734     000     001                 .BYTE   000,001            ;TXBA,TXBC
6326  027736  033340                         TXBAP                      ;DATA POINTER
6327  027740  077766                         <-10.>-BIT15               ;DATA COUNT
6328  027742  004537  033156                 PERFORM ,SETREG            ;
6329  027746     004     005                 .BYTE   004,005            ;RXBA,RXBC
6330  027750  033740                         RXBA                       ;RX BUFFER
6331  027752  077766                         <-10.>-BIT15               ;DATA COUNT
6332  027754  004537  033156                 PERFORM ,SETREG            ;
6333  027760     012     013                 .BYTE   012,013            ;
6334  027762  000140                         BIT6+BIT5                  ;RX,TX DDCMP MODE
6335  027764  002004                         BIT10+BIT2                 ;EXP/SND BCC TX GO
6336  027766  004537  033156                 PERFORM ,SETREG            ;
6337  027772     016     017                 .BYTE   16,17              ;
6338  027774  002000                         BIT10                      ;EXP/SND BCC
6339  027776  000000                         0                          ;0
6340  030000  013777  030010  151364         MOV     6$,@DVSRS          ;LOAD LINE #
6341  030006  000401                         BR      .+4                ;BR OVER STAORAGE AREA.
6342  030010  000001                 6$:     .BLKW   1                  ;LINE #
6343  030012  042737  003000  030024         BIC     #BIT10+BIT9,7$     ;SET PRIM REG
6344  030020  004537  033222                 PERFORM ,LOAD.MODE         ;
6345  030024  000001                 7$:     .BLKW 1                    ;LOAD PRIMARY REG
6346  030026  042737  003000  030046         BIC     #BIT10+BIT9,8$     ;SET FOR FORMAT REG
6347  030034  052737  001000  030046         BIS     #BIT9,8$           ;
6348  030042  004537  033222                 PERFORM ,LOAD.MODE         ;
6349  030046  000001                 8$:     .BLKW 1                    ;LOAD FORMAT REG.
6350  030050  042737  003000  030070         BIC     #BIT10+BIT9,9$     ;SET FOR BAUD RATE REG
```

```
6351  030056  052737  002000  030070          BIS     #BIT10,9$       ;
6352  030064  004537  033222                  PERFORM ,LOAD.MODE      ;
6353  030070  000001                  9$:     .BLKW   1               ;LOAD BAUD RATE REG
6354  030072  052737  003000  030104          BIS     #BIT10+BIT9,10$ ;
6355  030100  004537  033222                  PERFORM ,LOAD.MODE      ;
6356  030104  000001                  10$:    .BLKW   1               ;LOAD MAINT REG
6357  030106  004537  033156                  PERFORM ,SETREG         ;
6358  030112     000     001                  .BYTE   000,001         ;TXBA,TXBC
6359  030114  033340                          TXBAP                   ;POINTER
6360  030116  077766                          <-10.>-BIT15            ;COUNT
6361  030120  004537  033156                  PERFORM ,SETREG         ;
6362  030124     004     005                  .BYTE   004,005         ;RXBA,RXBC
6363  030126  033740                          RXBA                    ;BUFFER
6364  030130  077766                          <-10.>-BIT15            ;COUNT
6365  030132  004537  033156                  PERFORM ,SETREG         ;
6366  030136     012     013                  .BYTE   012,013         ;
6367  030140  000140                          BIT6+BIT5               ;DDCMP
6368  030142  002004                          BIT10+BIT2              ;TXGO BCCEXPSND
6369  030144  004537  033156                  PERFORM ,SETREG         ;
6370  030150     016     017                  .BYTE   16,17           ;
6371  030152  002000                          BIT10                   ;BCCEXPSND
6372  030154  000000                          0                       ;0
6373  030156  005277  151200                  INC     @DVSCR          ;SET U CPU
6374  030162  005002                          CLR     R2              ;TIMMER
6375  030164  105777  151172          18$:    TSTB    @DVSCR          ;DONE OR ERROR?
6376  030170  100403                          BMI     19$             ;BR IF YES
6377  030172  104414                          DELAY                   ;STALL
6378  030174  005202                          INC     R2              ;COUNTER
6379  030176  001372                          BNE     18$             ;B IF NOT DONE
6380  030200  042777  000001  151154  19$:    BIC     #BIT0,@DVSCR            ;DISABLE UCPU FROM CHANGING REGISTERS.
6381  030206  017737  151150  030444          MOV     @DVSCR,20$      ;STORE REGISTERS FOR TYPEOUT
6382  030214  017737  151146  030446          MOV     @DVRIC,21$      ;
6383  030222  017737  151142  030450          MOV     @DVLCR,22$      ;
6384  030230  017737  151136  030452          MOV     @DVSRS,23$      ;
6385  030236  017737  151134  030454          MOV     @DVSRA,24$      ;
6386  030244  017737  151130  030456          MOV     @DVSFR,25$      ;
6387  030252  017737  151124  030460          MOV     @DVNSR,26$      ;
6388  030260  017737  151120  030462          MOV     @RESV16,27$     ;
6389  030266  013700  030446                  MOV     21$,R0          ;CHECK FOR ERROR
6390  030272  042700  007777                  BIC     #^C<BIT15+BIT14+BIT13+BIT12>,R0
6391  030276  022700  010000                  CMP     #BIT12,R0       ;
6392  030302  001001                          BNE     .+4             ;
6393  030304  104007                          HLT     7               ;PARITY ERROR
6394  030306  022700  030000                  CMP     #BIT13+BIT12,R0 ;
6395  030312  001001                          BNE     .+4             ;
6396  030314  104010                          HLT     10              ;FRAMING ERROR
6397  030316  022700  050000                  CMP     #BIT14+BIT12,R0
6398  030322  001004                          BNE     .+12            ;
6399  030324  105737  030446                  TSTB    21$             ;LOW BYTE =0
6400  030330  001401                          BEQ     .+4             ;BR IF YES
6401  030332  104011                          HLT     11              ;BCC ERROR
6402  030334  104402  031553                  TYPE    ,FS7            ;PRIMARY REGISTERS ARE:
6403                                                                  ;DVSCR   DVRIC   DVLCR   DVSRS
6404  030340  104410  030504                  CONVRT  ,98$
6405  030344  104402  031703                  TYPE    ,FS8            ;SECONDARY REGISTERS ARE:
6406                                                                  ;REG00   REG01   REG02   REG03
```

```
6407  030350  012700  000002                    MOV     #2,R0           ;SET FOR 2 SETS OF REGISTERS
6408  030354  013777  027632  151010            MOV     1$,@DVSRS       ;LINE # 1
6409  030362  000403                            BR      50$             ;
6410  030364  013777  030010  151000  52$:      MOV     6$,@DVSRS       ;LINE # 2
6411  030372  005001                    50$:    CLR     R1              ;SEC REG
6412  030374  012702  030444                    MOV     #20$,R2         ;STASH POINTER
6413  030400  110177  150770            51$:    MOVB    R1,@DVSRSH      ;SEC REG
6414  030404  017722  150766                    MOV     @DVSRA,(R2)+    ;READ
6415  030410  005201                            INC     R1              ;SEC REG+1
6416  030412  022701  000020                    CMP     #16.,R1         ;ALL DONE?
6417  030416  001370                            BNE     51$             ;BR IF NO.
6418  030420  104410  030504                    CONVRT  ,98$            ;PRINT REGISTERS
6419  030424  104402  032136                    TYPE    ,FS9            ;<377>/   /
6420  030430  104411  030546                    CNVRT   ,99$
6421  030434  005300                            DEC     R0              ;2 REGS DONE?
6422  030436  001352                            BNE     52$             ;BR IF NO.
6423  030440  000137  027600                    JMP     40$             ;CONTINUE TEST
6424  030444  000001                    20$:    .BLKW 1
6425  030446  000001                    21$:    .BLKW 1
6426  030450  000001                    22$:    .BLKW 1
6427  030452  000001                    23$:    .BLKW 1
6428  030454  000001                    24$:    .BLKW 1
6429  030456  000001                    25$:    .BLKW 1
6430  030460  000001                    26$:    .BLKW 1
6431  030462  000001                    27$:    .BLKW 1
6432  030464  000001                    28$:    .BLKW 1
6433  030466  000001                    29$:    .BLKW 1
6434  030470  000001                    30$:    .BLKW 1
6435  030472  000001                    31$:    .BLKW 1
6436  030474  000001                    32$:    .BLKW 1
6437  030476  000001                    33$:    .BLKW 1
6438  030500  000001                    34$:    .BLKW 1
6439  030502  000001                    35$:    .BLKW 1
6440
6441  030504  000010                    98$:    8.
6442  030506     006  002                        .BYTE   6,2
6443  030510  030444                             20$
6444  030512     006  002                        .BYTE   6,2
6445  030514  030446                             21$
6446  030516     006  002                        .BYTE   6,2
6447  030520  030450                             22$
6448  030522     006  002                        .BYTE   6,2
6449  030524  030452                             23$
6450  030526     006  002                        .BYTE   6,2
6451  030530  030454                             24$
6452  030532     006  002                        .BYTE   6,2
6453  030534  030456                             25$
6454  030536     006  002                        .BYTE   6,2
6455  030540  030460                             26$
6456  030542     006  002                        .BYTE   6,2
6457  030544  030462                             27$
6458  030546  000010                    99$:    8.
6459  030550     006  002                        .BYTE   6,2
6460  030552  030464                             28$
6461  030554     006  002                        .BYTE   6,2
6462  030556  030466                             29$
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  6463  030560     006     002                  .BYTE   6,2
  6464  030562  030470                          30$
  6465  030564     006     002                  .BYTE   6,2
  6466  030566  030472                          31$
  6467  030570     006     002                  .BYTE   6,2
  6468  030572  030474                          32$
  6469  030574     006     002                  .BYTE   6,2
  6470  030576  030476                          33$
  6471  030600     006     002                  .BYTE   6,2
  6472  030602  030500                          34$
  6473  030604     006     002                  .BYTE   6,2
  6474  030606  030502                          35$
  6475  030610                          MNOASYN:
        030610  025212  051120  043517           .ASCII  <212>/*PROGRAM INDICATES NO ASYNC LINE CARDS/
        030657     377  047117  052040           .ASCII  <377>/ON THIS DV11 UNDER TEST; THEREFORE NO/
        030725     377  040510  042122           .ASCII  <377>/HARDWARE WAS CHECKED ON THIS DV11 WITH/
        030774  052377  044510  020123           .ASCII  <377>/THIS PROGRAM (DZDVF)./
        031022  042377  051526  051103           .ASCII  <377>/DVSCR UNDER TEST:  /<0>
        031047     212  051105  047522  FS1:     .ASCII  <212>/ERRORS MAY OCCUR IF PARAMETRS ARE DIFFERENT PER LINE./
        031135     377  052523  050120           .ASCII <377>/SUPPLY INFO FOR 1ST LINE UNDER TEST/
        031201     377  044514  042516           .ASCIZ <377>/LINE NO. (IN OCTAL): /
        031230  051612  050125  046120  FS6:     .ASCII <212>/SUPPLY INFO FOR 2ND LINE UNDER TEST/
        031274  046377  047111  020105           .ASCIZ <377>/LINE NO. (IN OCTAL): /
        031323     377  051120  046511  FS2:     .ASCIZ <377>/PRIMARY REG PARAMTERS (IN OCTAL): /
        031367     377  047506  046522  FS3:     .ASCIZ <377>/FORMAT REG PARAMETERS (IN OCTAL): /
        031433     377  040502  042125  FS4:     .ASCIZ <377>/BAUD RATE REG PARAMETERS (IN OCTAL ): /
        031503     377  040515  047111  FS5:     .ASCIZ <377>/MAINTAINCE REG PARAMETERS (IN OCTAL): /
        031553     212  051120  046511  FS7:     .ASCII <212>/PRIMARY REGISTERS ARE:/
        031602  042377  051526  051103           .ASCIZ <377>/DVSCR   DVRIC   DVLCR   DVSRS   DVSRA   DVSFR   DVNSR   RES16  /
        031703     212  042523  047503  FS8:     .ASCII <212>/SECONDARY REGISTERS ARE:/
        031734  051377  043505  030060           .ASCII <377>/REG00   REG01   REG02   REG03   REG04   REG05   REG06   REG07/
        032032  020377  020040  051040           .ASCIZ <377>/    REG10   REG11   REG12   REG13   REG14   REG15   REG 16   REG17/
        032135  020377  020040  000040  FS9:     .ASCIZ <377>/    /
                                                .EVEN
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                                        ;*SUBROUTINE "TURNON"

                                        ;*THIS USES INTERNAL LOOP BACK,
                                        ;*9600 BAUD AND DIFFERNT CHAR
                                        ;*LENGHTS AS SPECIFIED BY ARG OF JSR CALL.

032144  104413          TURNON: RAMCLR                  ;CLEAR ALL DV11
032146  012702  033740          MOV     #RXBA,R2        ;PREPARE TO ZERO RX BUFFER
032152  012703  033340          MOV     #TXBAP,R3       ;PREPARE TO LOAD TX BUFFER
032156  005004                  CLR     R4              ;DATA CHAR
032160  110423          1$:     MOVB    R4,(R3)+        ;LOAD DATA
032162  105022                  CLRB    (R2)+           ;CLEAR BUFFER
032164  105204                  INCB    R4              ;UPDATE DATA
032166  001374                  BNE     1$              ;BR IF NOT DONE
032170  010077  147176          MOV     R0,@DVSRS       ;LOAD LINE NO.
032174  004537  033156          PERFORM ,SETREG         ;SET UP REGISTERS
032200     000     001          .BYTE   000,001         ;TXBAP, TXBC
032202  033340                  TXBAP                   ;
032204  077400                  <-400>-BIT15            ;MARKED BYTE COUNT
032206  004537  033156          PERFORM ,SETREG         ;
032212     004     005          .BYTE   004,005         ;RXBA, RXBC
032214  033740                  RXBA                    ;
032216  077400                  <-400>-BIT15            ;MARKED BYTE COUNT
032220  004537  033156          PERFORM ,SETREG         ;
032224     012     013          .BYTE   012,013         ;LINE PROTOCOL,LINE STATE
032226  000140                  BIT6+BIT5               ;TX+RX DDCMP
032230  000004                  BIT2                    ;TX GO
032232  004537  033222          PERFORM ,LOAD.MODE      ;
032236  020000          2$:     BIT13                   ;RTX ENABLE
032240  012537  032250          MOV     (R5)+,3$        ;
032244  004537  033222          PERFORM ,LOAD.MODE      ;LOAD FORMAT REG
032250  000001          3$:     .BLKW   1               ;PARAMETERS FOR FORMAT
032252  004537  033222          PERFORM ,LOAD.MODE      ;
032256  072000          4$:     <BIT14+BIT13+BIT12>+BIT10 ;9600 BAUD
032260  004537  033222          PERFORM ,LOAD.MODE      ;
032264  007000                  <BIT11>+BIT10+BIT9      ;MAINT INTERNAL MODE
032266  005277  147070          INC     @DVSCR          ;SET UCPU GO
032272  005004                  CLR     R4              ;ZERO TIMMER
032274  105777  147062          TSTB    @DVSCR          ;DONE?
032300  100404                  BMI     6$              ;BR IF YES
032302  104414                  DELAY                   ;STALL
032304  005204                  INC     R4              ;COUNT DONE?
032306  001372                  BNE     5$              ;
032310  104002                  HLT     2               ;NO DVSCR07 SET.
032312  000205          6$:     RTS     R5              ;EXIT ROUTINE
032314  000000          COUNT:  0

032316                  TIME.PAR:
032316  010537  032774                  MOV     R5,JSRPC        ;SAVE JSR PC FOR PRINT OUT
032322  162737  000004  032774          SUB     #4,JSRPC        ;POINT TO CALL
032330  104413                          RAMCLR                  ;CLEAR ALL DV11
032332  012577  147034                  MOV     (R5)+,@DVSRS    ;LOAD LINE #
032336  012537  032346                  MOV     (R5)+,2$        ;GET PRIMARY PARAMETERS
032342  004537  033222                  PERFORM ,LOAD.MODE      ;
032346  000001          2$:     .BLKW 1                         ;LOAD PRI PARAMETERS
032350  012537  032360                  MOV     (R5)+,3$        ;GET FORMAT PARAM
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 6531  032354  004537  033222                 PERFORM ,LOAD.MODE          ;
 6532  032360  000001                  3$:     .BLKW 1                     ;LOAD FORMAT PARAMETERS
 6533  032362  012537  032372                 MOV     (R5)+,4$            ;BAUD RATE PARAM
 6534  032366  004537  033222                 PERFORM ,LOAD.MODE          ;
 6535  032372  000001                  4$:     .BLKW   1                   ;LOAD BAUD RATE PARAM
 6536  032374  004537  033156                 PERFORM ,SETREG             ;
 6537  032400     000     001                 .BYTE   000,001             ;TXBA,TXBC
 6538  032402  033340                         TXBAP                       ;DATA POINTER
 6539  032404  077766                         <-10.>-BIT15                ;DATA COUNT
 6540  032406  004537  033156                 PERFORM ,SETREG             ;
 6541  032412     004     005                 .BYTE   004,005             ;RXBA,RXBC
 6542  032414  033740                         RXBA                        ;BUFFER
 6543  032416  077766                         <-10.>-BIT15                ;COUNT
 6544  032420  004537  033156                 PERFORM ,SETREG             ;
 6545  032424     012     013                 .BYTE   012,013             ;
 6546  032426  000140                         BIT6+BIT5                   ;DDCMP MODE
 6547  032430  002004                         BIT10+BIT2                  ;BCCEXPSND TXGOP
 6548  032432  004537  033156                 PERFORM ,SETREG             ;
 6549  032436     016     017                 .BYTE   16,17               ;
 6550  032440  002000                         BIT10                       ;BCCEXPSND
 6551  032442  000000                         0                           ;0
 6552  032444  012577  146722                 MOV     (R5)+,@DVSRS        ;LOAD LINE #
 6553  032450  012537  032460                 MOV     (R5)+,5$            ;PRIMARY PARAM
 6554  032454  004537  033222                 PERFORM ,LOAD.MODE          ;
 6555  032460  000001                  5$:     .BLKW 1                     ;LOAD PRI PARAM
 6556  032462  012537  032472                 MOV     (R5)+,6$            ;FORMAT PARAM
 6557  032466  004537  033222                 PERFORM ,LOAD.MODE          ;
 6558  032472  000001                  6$:     .BLKW 1                     ;LOAD FORMAT PARAM
 6559  032474  012537  032504                 MOV     (R5)+,7$            ;BAUD RATE PARAM
 6560  032500  004537  033222                 PERFORM ,LOAD.MODE          ;
 6561  032504  000001                  7$:     .BLKW   1                   ;BAUD RATE PARAM
 6562  032506  004537  033156                 PERFORM ,SETREG             ;
 6563  032512     000     001                 .BYTE   000,001             ;TXBA,TXBC
 6564  032514  033340                         TXBAP                       ;DATA POINTER
 6565  032516  077766                         <-10.>-BIT15                ;COUNT
 6566  032520  004537  033156                 PERFORM ,SETREG             ;
 6567  032524     004     005                 .BYTE   004,005             ;RXBA,RXBC
 6568  032526  033740                         RXBA                        ;BUFFER
 6569  032530  077766                         <-10.>-BIT15                ;COUNT
 6570  032532  004537  033156                 PERFORM ,SETREG             ;
 6571  032536     012     013                 .BYTE   012,013             ;
 6572  032540  000140                         BIT6+BIT5                   ;DDCMP MODE
 6573  032542  002004                         BIT10+BIT2                  ;BCCEXPSND TXGO
 6574  032544  004537  033156                 PERFORM ,SETREG             ;
 6575  032550     016     017                 .BYTE   16,17               ;
 6576  032552  002000                         BIT10                       ;BCCEXPSND
 6577  032554  000000                         0                           ;0
 6578  032556  005277  146600                 INC     @DVSCR              ;GO
 6579  032562  005002                         CLR     R2                  ;TIMMER
 6580  032564  105777  146572          8$:    TSTB    @DVSCR              ;DONE?
 6581  032570  100404                         BMI     9$                  ;BR IF YES
 6582  032572  104414                         DELAY                       ;STALL
 6583  032574  005202                         INC     R2                  ;COUNT
 6584  032576  001372                         BNE     8$                  ;
 6585  032600  104002                         HLT     2                   ;DVSCR07 NOT SET.
 6586  032602  017737  146560  032770  9$:    MOV     @DVRIC,100$         ;SET RIC
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 6587  032610  052777  000400  146544          BIS     #BIT8,@DVSCR    ;SET TO GET NEXT LINE
 6588  032616  005002                          CLR     R2              ;TIMER
 6589  032620  105777  146536          10$:    TSTB    @DVSCR          ;2ND LINE DONE?
 6590  032624  100404                          BMI     11$             ;BR IF YES
 6591  032626  104414                          DELAY                   ;STALL
 6592  032630  005202                          INC     R2              ;COUNT
 6593  032632  001372                          BNE     10$             ;
 6594  032634  104002                          HLT     2               ;2ND LINE NOT DOE
 6595  032636  017737  146524  032772  11$:    MOV     @DVRIC,101$     ;GET 2ND LINE
 6596  032644  013704  032770                  MOV     100$,R4         ;GET FASTEST LINE
 6597  032650  010403                          MOV     R4,R3           ;SAVE
 6598  032652  042703  170377                  BIC     #^C<BIT11+BIT10+BIT9+BIT8>,R3
 6599  032656  052703  050000                  BIS     #BIT14+BIT12,R3 ;SET BCC CONDITION
 6600  032662  020304                          CMP     R3,R4           ;BCC OK (DATA GOOD?
 6601  032664  001401                          BEQ     12$             ;
 6602  032666  104003                          HLT     3               ;BCC ERROR OR ERROR SOMEWHERE
 6603  032670  013704  032772          12$:    MOV     101$,R4         ;GET SLOWER LINE.
 6604  032674  010403                          MOV     R4,R3           ;CHECK BCC
 6605  032676  042703  170377                  BIC     #^C<BIT11+BIT10+BIT9+BIT8>,R3
 6606  032702  052703  050000                  BIS     #BIT14+BIT12,R3 ;
 6607  032706  020304                          CMP     R3,R4           ;BCC OK?
 6608  032710  001401                          BEQ     13$             ;
 6609  032712  104003                          HLT     3               ;SLOW LINE BCC ERROR
 6610  032714  011503                  13$:    MOV     (R5),R3         ;GET EXP LINE
 6611  032716  013704  032770                  MOV     100$,R4         ;GET FAST LINE
 6612  032722  042704  170377                  BIC     #^C<BIT11+BIT10+BIT9+BIT8>,R4
 6613  032726  000304                          SWAB    R4              ;LINE IN LOW BYTE
 6614  032730  020304                          CMP     R3,R4           ;DO LINES MATCH
 6615  032732  001401                          BEQ     14$             ;BR IF YES
 6616  032734  104004                          HLT     4               ;RX 1ST LINE WRONG ENTRY
 6617  032736  005777  146420          14$:    TST     @DVSCR          ;TX DONE?
 6618  032742  100401                          BMI     15$             ;BR IF YES
 6619  032744  104005                          HLT     5               ;WHY IS TX NOT DONE?
 6620  032746  017704  146430          15$:    MOV     @DVNSR,R4       ;GET XT LINE NO.
 6621  032752  042704  177760                  BIC     #^C<BIT3+BIT2+BIT1+BIT0>,R4
 6622  032756  012503                          MOV     (R5)+,R3        ;
 6623  032760  020304                          CMP     R3,R4           ;WAS TX LINE IN CORRECT ORDER
 6624  032762  001401                          BEQ     16$             ;YES
 6625  032764  104006                          HLT     6               ;TX 1ST LINE NOT RIGHT (FAST)
 6626  032766  000205                  16$:    RTS     R5              ;EXIT ROUTINE
 6627  032770  000001                  100$:   .BLKW 1
 6628  032772  000001                  101$:   .BLKW 1
 6629  032774  000000                  JSRPC:  0
 6630
 6631  032776  010046                  SIMBCC: MOV     R0,-(SP)
 6632  033000  010146                          MOV     R1,-(SP)
 6633  033002  010246                          MOV     R2,-(SP)
 6634  033004  012537  001246                  MOV     (R5)+,TEMP1
 6635  033010  012537  001250                  MOV     (R5)+,TEMP2
 6636  033014  012537  001252                  MOV     (R5)+,TEMP3
 6637  033020  005037  033152          1$:     CLR     BCCFBK
 6638  033024  013700  001252                  MOV     TEMP3,R0
 6639  033030  006037  001250                  ROR     TEMP2
 6640  033034  005500                          ADC     R0
 6641  033036  032700  000001                  BIT     #BIT0,R0
 6642  033042  001402                          BEQ     2$
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 6643  033044  005137  033152                    COM     BCCFBK
 6644  033050  013700  033150          2$:       MOV     XPOLY,R0
 6645  033054  005100                            COM     R0
 6646  033056  040037  033152                    BIC     R0,BCCFBK
 6647  033062  000241                            CLC
 6648  033064  006037  001252                    ROR     TEMP3
 6649  033070  013700  033152                    MOV     BCCFBK,R0
 6650  033074  013701  001252                    MOV     TEMP3,R1
 6651  033100  010102                            MOV     R1,R2
 6652  033102  040100                            BIC     R1,R0
 6653  033104  043702  033152                    BIC     BCCFBK,R2
 6654  033110  050200                            BIS     R2,R0
 6655  033112  043737  033150  001252            BIC     XPOLY,TEMP3
 6656  033120  050037  001252                    BIS     R0,TEMP3
 6657  033124  005337  001246                    DEC     TEMP1
 6658  033130  001333                            BNE     1$
 6659  033132  013737  001252  033154            MOV     TEMP3,CALBCC
 6660  033140  012602                            MOV     (SP)+,R2
 6661  033142  012601                            MOV     (SP)+,R1
 6662  033144  012600                            MOV     (SP)+,R0
 6663  033146  000205                            RTS     R5
 6664  033150  000000                  XPOLY:    0
 6665  033152  000000                  BCCFBK:   0
 6666  033154  000000                  CALBCC:   0
 6667          000200                  LRCB=200
 6668          120001                  CRC16=120001
 6669          102010                  CRC.CCITT=102010
 6670
 6671
 6672  033156  010046                  SETREG:   MOV     R0,-(SP)
 6673  033160  010146                            MOV     R1,-(SP)
 6674  033162  112500                            MOVB    (R5)+,R0
 6675  033164  112501                            MOVB    (R5)+,R1
 6676  033166  110077  146202                    MOVB    R0,@DVSRSH
 6677  033172  012577  146200                    MOV     (R5)+,@DVSRA
 6678  033176  042777  000060  146156            BIC     #BIT5+BIT4,@DVSCR
 6679  033204  110177  146164                    MOVB    R1,@DVSRSH
 6680  033210  012577  146162                    MOV     (R5)+,@DVSRA
 6681  033214  012601                            MOV     (SP)+,R1
 6682  033216  012600                            MOV     (SP)+,R0
 6683  033220  000205                            EXIT
 6684
 6685  033222                          LOAD.MODE:
 6686  033222  012577  146142                    MOV     (R5)+,@DVLCR
 6687  033226  052777  100000  146134            BIS     #BIT15,@DVLCR
 6688  033234  010046                            MOV     R0,-(SP)
 6689  033236  005000                            CLR     R0
 6690  033240  005777  146124          1$:       TST     @DVLCR
 6691  033244  100004                            BPL     2$
 6692  033246  104414                            DELAY
 6693  033250  005200                            INC     R0
 6694  033252  001372                            BNE     1$
 6695  033254  104000                            HLT     0                       ;BIT 15 FAILED TO CLEAR
 6696  033256  012600                  2$:       MOV     (SP)+,R0
 6697  033260  000205                            EXIT
 6698
```

```
6699
6700
6701  033262                                SETSCAN:
6702  033262  010346                              MOV     R3,-(SP)
6703  033264  052777  000010  146070              BIS     #BIT3,@DVSCR
6704  033272  012503                              MOV     (R5)+,R3
6705  033274  001414                              BEQ     2$
6706  033276  012777  050102  146074  1$:         MOV     #BIT14+BIT12+BIT6+BIT1,@DVSFR
6707  033304  104415                              ROMCLK
6708  033306  005201                              INC     R1
6709  033310  012777  050102  146062              MOV     #BIT14+BIT12+BIT6+BIT1,@DVSFR
6710  033316  104415                              ROMCLK
6711  033320  005201                              INC     R1
6712  033322  005303                              DEC     R3
6713  033324  001364                              BNE     1$
6714  033326  012603                        2$:   MOV     (SP)+,R3
6715  033330  010100                              MOV     R1,R0
6716  033332  000241                              CLC
6717  033334  006000                              ROR     R0
6718  033336  000205                              EXIT
6719
6720  033340  000400                        TXBAP:  .BLKB   400
6721  033740  000400                        RXBA:   .BLKB   400
6722  034340  000400                        RXBA1:  .BLKB   400
6723  034740  000400                        RXBA2:  .BLKB   400
6724  035340  000400                        RXBA3:  .BLKB   400
```

```
                                        .ERRTAB:
035740  000000                                  0
035742  000000                                  0
035744  000000                                  0
035746  036034                                  EM1
035750  036432                                  DH1
035752  036552                                  DT1

035754  036064                                  EM2
035756  000000                                  0
035760  000000                                  0

035762  036132                                  EM3
035764  036465                                  DH2
035766  036570                                  DT2

035770  036177                                  EM4
035772  036506                                  DH3
035774  036602                                  DT3


035776  036241                                  EM5
036000  000000                                  0
036002  000000                                  0

036004  036263                                  EM6
036006  036506                                  DH3
036010  036602                                  DT3

036012  036327                                  EM7
036014  000000                                  0
036016  000000                                  0

036020  036356                                  EM8
036022  000000                                  0
036024  000000                                  0

036026  036406                                  EM9
036030  000000                                  0
036032  000000                                  0
036034  042377  052101  020101  EM1:    .ASCIZ  <377>/DATA COMPARISON ERROR./
036064  051377  041505  044505  EM2:    .ASCIZ  <377>/RECEIVER INTERUPT (DVSCR07) NOT SET./
036132  041377  041503  042440  EM3:    .ASCIZ  <377>/BCC ERROR OR UNEXPECTED ERROR CODE./
036177     377  042522  042503  EM4:    .ASCIZ  <377>/RECEIVER RELATIVE TIMMING ERROR./
036241     377  053104  041523  EM5:    .ASCIZ  <377>/DVSCR15 NOT SET./
036263     377  051124  047101  EM6:    .ASCIZ  <377>/TRANSMITTER RELATIVE TIMING ERROR./
036327     377  040520  044522  EM7:    .ASCIZ  <377>/PARITY ERROR OCCURED!/
036356  043377  040522  044515  EM8:    .ASCIZ  <377>/FRAMING ERROR OCCURED!/
036406  041377  041503  042440  EM9:    .ASCIZ  <377>/BCC ERROR OCCURED!/

036432  042777  050130  041505  DH1:    .ASCIZ  <377>/EXPECTED  FOUND   LINE(8)/
036465     377  054105  042520  DH2:    .ASCIZ  <377>/EXPECTED  FOUND/
036506  045377  051123  050040  DH3:    .ASCIZ  <377>/JSR PC  EXPECTED LINE  FOUND LINE/
        036552                  .EVEN
```

```
 6767  036552  000003                  DT1:    3
 6768  036554     006     004                  .BYTE   6,4
 6769  036556  001272                          $AVR5
 6770  036560     006     002                  .BYTE   6,2
 6771  036562  001270                          $AVR4
 6772  036564     002     002                  .BYTE   2,2
 6773  036566  001260                          $AVR0
 6774  036570  000002                  DT2:    2
 6775  036572     002     010                  .BYTE   2,8.
 6776  036574  001266                          $AVR3
 6777  036576     002     002                  .BYTE   2,2
 6778  036600  001270                          $AVR4
 6779  036602  000003                  DT3:    3
 6780  036604     006     002                  .BYTE   6,2
 6781  036606  032774                          JSRPC
 6782  036610     002     015                  .BYTE   2,13.
 6783  036612  001266                          $AVR3
 6784  036614     002     002                  .BYTE   2,2
 6785  036616  001270                          $AVR4
 6786
 6787                                  ;;*****************************************************************
 6788  036620                          CORMAX:
 6789          000001                  .END
```

```
ADRCNT= 003443   1151*  1187*  1196#
ALU   = 010000    607#
ASYNC = 004000    615#  1778  1780  1782  1784  1801  1858  1915  1972  2034  2189  2338  2487
                 2536  2785  2934  3083  3232  3381  3530  3680  3830  3980  4130  4280  4430
                 4580  4730  4880  5030  5180  5330  5480  5630  5780  5928  6018
AUTO.S  006622   1661#
BCC   = 060000    612#
BCCFBK  033152   6637*  6643*  6646*  6649  6653  6665#
BINWRD  003746   1237*  1238  1275#
BIT0  = 000001    605#  1418  6380  6621  6641
BIT1  = 000002    604#  1418  1429  6621  6706  6709
BIT10 = 002000    595#  1418  2070  2208  2213  2234  2239  2258  2263  2284  2289  2357  2362
                 2383  2388  2407  2412  2433  2438  2506  2511  2532  2537  2556  2561  2582
                 2587  2655  2660  2681  2686  2705  2710  2731  2736  2804  2809  2830  2835
                 2854  2859  2880  2885  2953  2958  2979  2984  3003  3008  3029  3034  3102
                 3107  3128  3133  3152  3157  3178  3183  3251  3256  3277  3282  3301  3306
                 3327  3332  3400  3405  3426  3431  3450  3455  3476  3481  3549  3554  3575
                 3580  3599  3604  3625  3630  3699  3704  3725  3730  3749  3754  3775  3780
                 3849  3854  3875  3880  3899  3904  3925  3930  3999  4004  4025  4030  4049
                 4054  4075  4080  4149  4154  4175  4180  4199  4204  4225  4230  4299  4304
                 4325  4330  4349  4354  4375  4380  4449  4454  4475  4480  4499  4504  4525
                 4530  4599  4604  4625  4630  4649  4654  4675  4680  4749  4754  4775  4780
                 4799  4804  4825  4830  4899  4904  4925  4930  4949  4954  4975  4980  5049
                 5054  5075  5080  5099  5104  5125  5130  5199  5204  5225  5230  5249  5254
                 5275  5280  5349  5354  5375  5380  5399  5404  5425  5430  5499  5504  5525
                 5530  5549  5554  5575  5580  5649  5654  5675  5680  5699  5704  5725  5730
                 5799  5804  5825  5830  5849  5854  5875  5880  5951  6041  6310  6313  6317
                 6318  6321  6335  6338  6343  6346  6350  6351  6354  6368  6371  6508  6510
                 6547  6550  6573  6576  6598  6605  6612
BIT11 = 004000    594#  1418  1862  1976  2033  2070  2128  2505  2510  2531  2536  2555  2560
                 2581  2586  2654  2659  2680  2685  2704  2709  2730  2735  3101  3106  3127
                 3132  3151  3156  3177  3182  3250  3255  3276  3281  3300  3305  3326  3331
                 3399  3404  3425  3430  3449  3454  3475  3480  3548  3553  3574  3579  3598
                 3603  3624  3629  3698  3699  3703  3724  3729  3730  3748  3749  3753  3774
                 3779  3780  3848  3853  3854  3874  3875  3879  3898  3903  3904  3924  3925
                 3929  3998  3999  4003  4024  4029  4030  4048  4049  4053  4074  4079  4080
                 4148  4153  4154  4174  4175  4179  4198  4203  4204  4224  4225  4229  4298
                 4299  4303  4324  4329  4330  4348  4349  4353  4374  4379  4380  4448  4453
                 4454  4474  4475  4479  4498  4503  4504  4524  4525  4529  4598  4599  4603
                 4624  4629  4630  4648  4649  4653  4674  4679  4680  4748  4753  4754  4774
                 4775  4779  4798  4803  4804  4824  4825  4829  4898  4899  4903  4924  4929
                 4930  4948  4949  4953  4974  4979  4980  5048  5053  5054  5074  5075  5079
                 5098  5103  5104  5124  5125  5129  5198  5199  5203  5224  5229  5230  5248
                 5249  5253  5274  5279  5280  5348  5353  5354  5374  5375  5379  5398  5403
                 5404  5424  5425  5429  5498  5499  5503  5524  5529  5530  5548  5549  5553
                 5574  5579  5580  5648  5653  5654  5674  5675  5679  5698  5703  5704  5724
                 5725  5729  5798  5799  5803  5824  5829  5830  5848  5849  5853  5874  5879
                 5880  5949  6037  6039  6510  6598  6605  6612
BIT12 = 010000    593#   607   609   611   613  1919  1976  2033  2070  2208  2213  2234  2239
                 2258  2263  2284  2289  2357  2362  2383  2388  2407  2412  2433  2438  2506
                 2511  2532  2537  2556  2561  2582  2587  2655  2660  2681  2686  2705  2710
                 2731  2736  2803  2804  2808  2809  2829  2830  2834  2835  2853  2854  2858
                 2859  2879  2880  2884  2885  2952  2953  2957  2958  2978  2979  2983  2984
                 3002  3003  3007  3008  3028  3029  3033  3034  3101  3102  3106  3107  3127
                 3128  3132  3133  3151  3152  3156  3157  3177  3178  3182  3183  3250  3251
                 3255  3256  3276  3277  3281  3282  3300  3301  3305  3306  3326  3327  3331
```

```
                    3332  3398  3399  3400  3403  3404  3405  3424  3425  3426  3429  3430  3431
                    3448  3449  3450  3453  3454  3455  3474  3475  3478  3479  3480  3481  3547
                    3549  3550  3553  3554  3573  3574  3575  3578  3579  3580  3588  3597  3598
                    3599  3602  3603  3623  3624  3625  3628  3629  3630  3688  3703  3708  3723
                    3729  3753  3777  3848  3849  3852  3853  3874  3879  3880  3914  3930  3997
                    3998  3999  4003  4004  4024  4025  4029  4030  4073  4074  4075  4079  4080
                    4148  4153  4154  4174  4175  4178  4180  4197  4198  4199  4202  4203  4224
                    4225  4229  4298  4303  4324  4329  4330  4347  4348  4349  4352  4353  4354
                    4373  4447  4448  4449  4453  4454  4473  4474  4475  4478  4479  4480  4497
                    4498  4499  4503  4524  4525  4528  4530  4553  4554  4597  4598  4599  4602
                    4603  4604  4624  4625  4629  4630  4647  4648  4652  4654  4673  4674  4675
                    4678  4680  4747  4748  4752  4753  4754  4774  4775  4778  4798  4799  4802
                    4803  4804  4823  4825  4828  4897  4902  4903  4923  4924  4928  4929  4948
                    4949  4953  4973  4974  5047  5052  5073  5078  5097  5098  5099  5102  5103
                    5123  5124  5128  5129  5130  5197  5202  5223  5228  5252  5253  5254  5273
                    5274  5278  5347  5348  5349  5352  5353  5373  5374  5378  5379  5380  5397
                    5398  5399  5402  5423  5424  5428  5429  5498  5499  5502  5503  5504  5523
                    5524  5525  5528  5529  5530  5547  5548  5549  5554  5573  5574  5575  5578
                    5579  5580  5647  5648  5649  5652  5653  5654  5673  5674  5675  5679  5680
                    5697  5699  5702  5703  5704  5723  5724  5725  5728  5729  5730  5797  5798
                    5799  5802  5803  5804  5824  5825  5828  5829  5830  5841  5847  5848  5849
                    5852  5853  5854  5874  5875  5879  5880  5925  5947  5949  5951  5966  6037
BIT13 = 020000       592#  608   609   612   613  2065  2070  2206  2208  2211  2213  2232  2234
                    6039  6041  6390  6394  6397  6503  6508  6509  6599  6606  6706  6709  2237
                    2239  2256  2258  2261  2263  2282  2284  2357  2360  2361  2362  2381  2382
                    2383  2386  2388  2405  2407  2410  2411  2431  2433  2436  2438  2504  2506
                    2509  2511  2530  2532  2535  2537  2553  2555  2558  2559  2560  2561  2580
                    2582  2585  2587  2653  2655  2658  2660  2662  2663  2664  2665  2666  2667
                    2668  2669  2670  2671  2672  2673  2674  2675  2676  2677  2678  2679  2680
                    2681  2683  2684  2685  2703  2705  2708  2709  2710  2729  2730  2731  2734
                    2735  2736  2737  2738  2739  2740  2741  2742  2743  2744  2745  2746  2747
                    2748  2749  2750  2751  2752  2753  2754  2755  2756  2757  2758  2759  2760
                    2761  2762  2763  2764  2765  2766  2767  2768  2769  2770  2771  2772  2773
                    2774  2775  2776  2777  2778  2779  2780  2781  2782  2783  2784  2785  2786
                    2787  2788  2789  2790  2791  2792  2793  2794  2795  2796  2797  2798  2799
                    2800  2801  2802  2804  2807  2809  2828  2830  2833  2835  2852  2854  2855
                    2856  2857  2858  2859  2860  2861  2862  2863  2864  2865  2866  2867  2868
                    2869  2870  2871  2872  2873  2874  2875  2876  2877  2878  2879  2880  2881
                    2882  2883  2884  2885  2886  2887  2888  2889  2890  2891  2892  2893  2894
                    2895  2896  2897  2898  2899  2900  2901  2902  2903  2904  2905  2906  2907
                    2908  2909  2910  2911  2912  2913  2914  2915  2916  2917  2918  2919  2920
                    2921  2922  2923  2924  2925  2926  2927  2928  2929  2930  2931  2932  2933
                    2934  2935  2936  2937  2938  2939  2940  2941  2942  2943  2944  2945  2946
                    2947  2948  2949  2950  2951  2953  2956  2957  2958  2977  2978  2979  3000
                    3001  3003  3006  3007  3008  3027  3028  3029  3030  3031  3032  3034  3100
                    3102  3106  3107  3126  3127  3128  3131  3133  3150  3152  3153  3154  3155
                    3156  3157  3176  3178  3183  3249  3251  3254  3255  3256  3275  3276  3277
                    3280  3282  3299  3301  3304  3305  3306  3325  3326  3327  3330  3332  3398
                    3400  3403  3404  3405  3424  3425  3426  3429  3431  3448  3450  3453  3454
                    3455  3474  3475  3478  3479  3481  3547  3549  3552  3553  3554  3573  3574
BIT14 = 040000       591#  610   611   612   613  1058  2070  2208  2212  2213  2232  2234  2239
                    2357  2362  2383  2389  2407  2412  2433  2438  2504  2506  2510  2511  2531
                    2532  2537  2556  2560  2561  2580  2582  2585  2587  2655  2660  2661  2686
                    2705  2710  2731  2736  2804  2808  2809  2847  2880  2885  2953  2958  2979
                    2984  3003  3007  3027  3030  3031  3034  3102  3106  3107  3127  3128  3133
                    3152  3156  3157  3176  3183  3251  3256  3277  3282  3301  3306  3327  3332
                    3399  3400  3404  3405
```

```
                    3425    3426    3430    3431    3449    3450    3454    3455    3475    3476    3480    3481    3549
                    3553    3554    3574    3575    3580    3599    3603    3604    3624    3625    3630    4749    4780
                    4799    4830    4899    4904    4925    4930    4949    4954    4975    4980    5049    5054    5075
                    5080    5099    5104    5125    5130    5199    5204    5225    5230    5249    5254    5275    5280
                    5349    5354    5375    5380    5399    5404    5425    5430    5499    5504    5525    5530    5549
                    5554    5575    5580    5649    5654    5675    5680    5699    5704    5725    5730    5799    5804
                    5825    5830    5849    5854    5875    5880    5947    5951    6041    6330    6397    6508    6539
                    6606    6706    6709
BIT:5  =  100000     590#   2054    2057    5937    5941    6027    6031    6059    6327    6331    6360    6364    6390
                    6493    6497    6539    6543    6565    6569    6687
BIT2   =  000004     603#    985    1418    2063    5945    6035    6335    6368    6501    6547    6573    6621
BIT3   =  000010     602#   1418    6621    6703
BIT4   =  000020     601#   6678
BIT5   =  000040     600#   2062    5944    6034    6334    6367    6500    6546    6572    6678
BIT6   =  000100     599#   1729    2062    5944    6034    6334    6367    6500    6546    6572    6706    6709
BIT7   =  000200     598#   1052    1299    1456    1477    1729
BIT8   =  000400     597#   1418    1435    2084    2092    2100    5970    6587    6599    6605    6612
BIT9   =  001000     596#   1419    1729    1734    1805    1862    1919    1976    2033    2207    2212    2233    2238
                    2257    2262    2283    2288    2356    2361    2382    2387    2406    2411    2432    2437    2505
                    2510    2531    2536    2555    2560    2581    2586    2654    2659    2680    2685    2704    2709
                    2730    2735    2803    2808    2829    2834    2853    2858    2879    2884    2952    2957    2978
                    2983    3002    3007    3028    3033    3101    3106    3127    3132    3151    3156    3177    3182
                    3250    3255    3276    3281    3300    3305    3326    3331    3399    3404    3425    3430    3449
                    3454    3475    3480    3548    3553    3574    3579    3598    3603    3624    3629    3698    3703
                    3724    3729    3748    3753    3774    3779    3848    3853    3874    3879    3898    3903    3924
                    3929    3998    4003    4024    4029    4048    4053    4074    4079    4148    4153    4174    4179
                    4198    4203    4224    4229    4298    4303    4324    4329    4348    4353    4374    4379    4448
                    4453    4474    4479    4498    4503    4524    4529    4598    4603    4624    4629    4648    4653
                    4674    4679    4748    4753    4774    4779    4798    4803    4824    4829    4898    4903    4924
                    4929    4948    4953    4974    4979    5048    5053    5074    5079    5098    5103    5124    5129
                    5198    5203    5224    5229    5248    5253    5274    5279    5348    5353    5374    5379    5398
                    5403    5424    5429    5498    5503    5524    5529    5548    5553    5574    5579    5648    5653
                    5674    5679    5698    5703    5724    5729    5798    5803    5824    5829    5848    5953    5974
                    5879    5949    6039    6310    6313    6314    6317    6321    6343    6346    6347    6350    6354
                    6510    6598    6605    6612
BRB    =  070000     613#
BRW       003014     991    1080#
BRX       003016     992    1081#
CALBCC    033154    6659*   6666#
CHAR.S    011334    2033*   2066    2128*   2144#
CHRCNT    003744    1235*   1239    1255*   1273#   1274
CLKX      001242     684#
CLK.A     001412     784#   1579
CLK.B     001413     785#   1584
CLK.C     001414     786#   1589
CLK.D     001415     787#   1594
CNVRT  =  104411     743#   1010    1012    1014    1016    1336    1338    1394    1451    1787    6420
CONVRT =  104410     741#    950    1352    6404    6418
CORMAX    036620    6788#   6789
COUNT     032314    1800*   1821*   1857*   1878*   1914*   1935*   1971*   1992*   5927*   5978*   6017*   6066*   6520#
CRC.CC=   102010    6669#
CRC16  =  120001    6668#
CREAM     001306     705#    919*   1526*   1527    1529*   1534    1535*   1536    1539*
CSRMAP    006624     944    1663#
CYCLE     005666     994    1030    1031    1516#   1797    1798
DATABP    004276    1325*   1328    1350    1353#
```

```
DATACL= 104416           753#
DATAHD  004264          1324*   1346    1349#
DELAY = 104414           749#   2080    2088    2096    2104    5956    6046    6377    6515    6582    6591    6692
DEVADR  003440          1149*   1184    1194#
DH1     036432          6731    6766#
DH2     036466          6739    6766#
DH3     036506          6743    6752    6766#
DT1     036552          6732    6767#
DT2     036570          6740    6774#
DT3     036602          6744    6753    6779#
DVACTV  001300           699#    966*    967    1516    1521    1695*   1701*   1702*   1706    1725
DVCR00  001500           815#
DVCR01  001524           826#
DVCR02  001550           837#
DVCR03  001574           848#
DVCR04  001620           859#
DVCR05  001644           870#
DVCR06  001670           881#
DVCR07  001714           892#
DVLCR   001370           767#   1435*   1436    1555*   1556*   1557    6383    6686*   6687*   6690
DVNSR   001402           772#   1565*   1566*   1567    6387    6620
DVNUM   001301           700#    915    1020    1667*   1688*   1689    1696    1698    1793
DVRIC   001366           766#   1553*   1554*   1555    5963    6382    6586    6595
DVRLVL  001354           761#   1570*   1571*   1572
DVRVEC  001352           760#   1037    1541*   1570
DVSCR   001362           764#   1034    1412*   1425*   1429*   1540*   1551    2076*   2078    2084*   2086    2092*   2094
                        2100*   2102    5952*   5954    5960    5970*   5974    6042*   6044    6050    6373*   6375    6380*
                        6381    6511*   6513    6578*   6580    6587*   6589    6617    6678*   6703*
DVSCRH  001364           765#   1551*   1552*   1553
DVSFR   001400           771#   1563*   1564*   1565    6386    6706*   6709*
DVSRA   001376           770#   1416    1561*   1562*   1563    2059*   6055    6061    6385    6414    6677*   6680*
DVSRS   001372           768#   1415    1557*   1558*   1559    2050*   2072*   5933*   6023*   6307*   6340*   6384    6408*
                        6410*   6489*   6526*   6552*
DVSRSH  001374           769#   1559*   1560*   1561    6054*   6060*   6413*   6676*   6679*
DVTLVL  001360           763#   1574*   1575*
DVTR00  001502           816#
DVTR01  001526           827#
DVTR02  001552           838#
DVTR03  001576           849#
DVTR04  001622           860#
DVTR05  001646           871#
DVTR06  001672           882#
DVTR07  001716           893#
DVTVEC  001366           762#   1572*   1573*   1574
DV.END  001740           903#   1527    1536    1665
DV.MAP  001500           705     814#    919     946    1529    1539    1663    1668    1717
DV00.A  001504           817#
DV00.B  001510           819#
DV00.C  001514           821#
DV00.D  001520           823#
DV01.A  001530           828#
DV01.B  001534           830#
DV01.C  001540           832#
DV01.D  001544           834#
DV02.A  001554           839#
DV02.B  001560           841#
```

DZDVFA.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
DV02.C  001564          843#
DV02.D  001570          845#
DV03.A  001600          850#
DV03.B  001604          852#
DV03.C  001610          854#
DV03.D  001614          856#
DV04.A  001624          861#
DV04.B  001630          863#
DV04.C  001634          865#
DV04.D  001640          867#
DV05.A  001650          872#
DV05.B  001654          874#
DV05.C  001660          876#
DV05.D  001664          878#
DV06.A  001674          883#
DV06.B  001700          885#
DV06.C  001704          887#
DV06.D  001710          889#
DV07.A  001720          894#
DV07.B  001724          896#
DV07.C  001730          898#
DV07.D  001734          900#
EM1     036034        6730    6766#
EM2     036064        6734    6766#
EM3     036132        6738    6766#
EM4     036177        6742    6766#
EM5     036241        6747    6766#
EM6     036263        6751    6766#
EM7     036327        6755    6766#
EM8     036356        6759    6766#
EM9     036406        6763    6766#
ERRCNT  001232         676#    921*   1043    1361*
ERRFLG  001311         711#    917*   1005*   1072*   1313*   1326    1340*   1395*   1789*
ERRMSG  004252        1323*   1341    1344#
ERTABO  004366        1338    1370#
EXIT  = 000205         615#   6683    6697    6718
EXITER  004322        1356    1361#
FIX.OO  006516        1580    1585    1590    1595    1629#
FS1     031047        6118    6475#
FS2     031323        6137    6228    6475#
FS3     031367        6155    6246    6475#
FS4     031433        6173    6264    6475#
FS5     031503        6191    6282    6475#
FS6     031230        6209    6475#
FS7     031553        6402    6475#
FS8     031703        6405    6475#
FS9     032136        6419    6475#
HALTS   004302        1309    1355#
HILIM   003436        1148*   1175    1193#
ICOUNT  001222         672#   1070    1075*
INBUF   005520        1118    1154    1501#
INIFLG  001310         710#    926     941*
INSTER= 104404         733#   1169
INSTR = 104403         731#   1602
INSTR2  003236        1125    1137#
JSRPC   032774        6523*   6524*   6629#   6781
```

```
LIGHT   000174            644#    936
LIGHTS  001200            655#    936*   1007*
LIMITS  003364           1164    1175#
LOAD.M  033222           2064    2067    2069    5946    5948    5950    6036    6038    6040    6311    6315    6319    6323
                         6344    6348    6352    6355    6502    6505    6507    6509    6528    6531    6534    6554    6557
                         6560    6685#
LOBITS  003442           1150*   1179    1195#   1196
LOCK    001220            671#   1074*   1088    1090    1332
LOGICA  002560            641    1024#   1796
LOKFLG  001312            712#
LOLIM   003434           1147*   1177    1192#
LPCNT   001224            673#   1069*   1070    1073*
LRCB  = 000200           6667#
LSTERR  001234            677#    922*   1004*   1056*   1310    1312*   1396*   1788*
LO0.03  001416            789#   1542*   1577    1761    1778    1840    1897    1954    2014    2172    2321    2470    2619
                         2768    2917    3066    3215    3364    3513    3663    3813    3963    4113    4263    4413    4563
                         4713    4863    5013    5163    5313    5463    5613    5763    5910    5999
LO4.07  001420            790#   1544*   1582    1765    1780    1844    1901    1958    2018    2176    2325    2474    2623
                         2772    2921    3070    3219    3368    3517    3667    3817    3967    4117    4267    4417    4567
                         4717    4867    5017    5167    5317    5467    5617    5767    5914    6003
LO8.11  001422            791#   1546*   1587    1769    1782    1848    1905    1962    2022    2180    2329    2478    2627
                         2776    2925    3074    3223    3372    3521    3671    3821    3971    4121    4271    4421    4571
                         4721    4871    5021    5171    5321    5471    5621    5771    5918    6007
L12.15  001424            792#   1548*   1592    1773    1784    1852    1909    1966    2026    2184    2333    2482    2631
                         2780    2929    3078    3227    3376    3525    3675    3825    3975    4125    4275    4425    4575
                         4725    4875    5025    5175    5325    5475    5625    5775    5922    6011
MASK    011332           2032*   2117    2130*   2136    2143#
MASKX   001244            685#
MASK.A  001406            779#   1578
MASK.B  001407            780#   1583
MASK.C  001410            781#   1588
MASK.D  001411            782#   1593
MASTEK  005400           1334    1492#
MCRLF   005104           1103    1226    1330    1331    1339    1480    1492#   1601    1619
MCSRX   005330           1009    1492#
MDATA   005624           1253    1263    1505#
MEPASS  005145           1008    1492#
MERRPC  005454           1337    1492#
MERRX   005355           1015    1492#
MERR2   005174           1492#   1518    1708
MERR3   005243            963    1492#
MLOCK   005301            987    1492#
MNEW    005402            958    1492#
MNOASY  030610           1786    6475#
MPASSX  005344           1013    1492#
MPFAIL  005107           1393    1492#
MQM     005100           1133    1492#   1624
MR      005171            995    1492#
MRESET= 004000            615#   1412    1425
MSTCLR= 104412            745#   1397
MTITLE  001000            653#    940
MTSTN   005366           1335    1492#   1603
MTSTPC  005267           1492#
MVECX   005336           1011    1492#
NEXT    001216            670#   1076    1366    1759*   1838*   1895*   1952*   2012*   2170*   2319*   2468*   2617*   2766*
                         2915*   3064*   3213*   3362*   3511*   3661*   3811*   3961*   4111*   4261*   4411*   4561*   4711*
```

```
                    4861*   5011*   5161*   5311*   5461*   5611*   5761*   5908*   5997*   6016*   6117*
NOLIST= ****** U     535
NPR    = 040000      610#
PARAM  = 104405      735#   1604
PARAM1   003204     1153#   1170
PARBIT= 040000       615#   1648
PARERR   003360     1156    1158    1160    1169#   1176    1178    1180
PASCNT   001230      675#    916*   1006*   1007    1040
PC     =.000007      582#    944*   1025*   1055*   1302*   1481*   1580*   1585*   1590*   1595*   1611    1612*   1651*
                    1743*   1763*   1767*   1771*   1775*   1803*   1823*   1842*   1846*   1850*   1854*   1860*   1880*
                    1899*   1903*   1907*   1911*   1917*   1937*   1956*   1960*   1964*   1968*   1974*   1994*   2016*
                    2020*   2024*   2028*   2036*   2139*   2174*   2178*   2182*   2186*   2191*   2294*   2323*   2327*
                    2331*   2335*   2340*   2443*   2472*   2476*   2480*   2484*   2489*   2592*   2621*   2625*   2629*
                    2633*   2638*   2741*   2770*   2774*   2778*   2782*   2787*   2890*   2919*   2923*   2927*   2931*
                    2936*   3039*   3068*   3072*   3076*   3080*   3085*   3188*   3217*   3221*   3225*   3229*   3234*
                    3337*   3366*   3370*   3374*   3378*   3383*   3486*   3515*   3519*   3523*   3527*   3532*   3635*
                    3665*   3669*   3673*   3677*   3682*   3785*   3815*   3819*   3823*   3827*   3832*   3935*   3965*
                    3969*   3973*   3977*   3982*   4085*   4115*   4119*   4123*   4127*   4132*   4235*   4265*   4269*
                    4273*   4277*   4282*   4385*   4415*   4419*   4423*   4427*   4432*   4535*   4565*   4569*   4573*
                    4577*   4582*   4685*   4715*   4719*   4723*   4727*   4732*   4835*   4865*   4869*   4873*   4877*
                    4882*   4985*   5015*   5019*   5023*   5027*   5032*   5135*   5165*   5169*   5173*   5177*   5182*
                    5285*   5315*   5319*   5323*   5327*   5332*   5435*   5465*   5469*   5473*   5477*   5482*   5585*
                    5615*   5619*   5623*   5627*   5632*   5735*   5765*   5769*   5773*   5777*   5782*   5885*   5912*
                    5916*   5920*   5924*   5930*   5980*   6001*   6005*   6009*   6013*   6020*   6068*
PERFOR= 004537       615#   2051    2055    2060    2064    2067    2069    5934    5938    5942    5946    5948    5950
                    6024    6028    6032    6036    6038    6040    6311    6315    6319    6322    6324    6328    6332
                    6336    6344    6348    6352    6355    6357    6361    6365    6369    6490    6494    6498    6502
                    6505    6507    6509    6528    6531    6534    6536    6540    6544    6548    6554    6557    6560
                    6562    6566    6570    6574
PFTAB    004470     1394    1400#
POPRO  = 012600      589#   1360
POP1SP= 005726       589#
POP2SP= 022626       589#   1078
PS     = 177776      587#    912*    981*   1728*
PUSHRO= 010046       589#   1357
PUSH1S= 005746       589#
PUSH2S= 024646       589#
OV.FLG   001313      713#    918*   1019*   1067    1792*
RAM    = 020000      608#
RAMCLR= 104413       747#   1398    2037    5931    6021    6300    6481    6525
RESREG   004300     1351    1354#
RESTAR   004414     1381    1387#
RESTRT   002572     1018    1022    1030#
RESV16   001404      773#   1567*   1568*   6388
RESOS  = 104407      739#   1354
RETURN   001214      669#    924*    994*    996    1030*   1076*   1079    1366*   1368    1399    1618*   1626*   1627
                    1797*
ROMCLK= 104415       751#   6707    6710
RUN      001304      703#    920*   1521    1524*   1525*   1532*   1533*
RXBA     033740     1808    1865    1922    1979    2038    2058    2111    5940    6030    6053    6330    6363    6482
                    6496    6542    6568    6721#
RXBA1    034340     6722#
RXBA2    034740     6723#
RXBA3    035340     6724#
RO     =.000000      575#    959*    967*    968*    970*    972*    974     975     1057    1063*   1077*   1210    1215*
                    1227    1240*   1244*   1254    1270*   1358*   1403    1404*   1405*   1407*   1433    1434*   1439*
```

```
R4      =%000004        579#  1113   1118*  1122*  1123*  1124   1131*  1135   1137*  1145   1154*  1155   1157
                       1159   1161*  1162   1163   1184*  1185*  1189*  1206   1219*  1230   1238*  1241   1246*
                       1248*  1250*  1267*  1317*  1318*  1319*  1320*  1321*  1322*  1323   1324   1325   1414
                       1416*  1417*  1420*  1809*  1812*  1814*  1815   1866*  1869*  1871*  1872   1923*  1926*
                       1928*  1929   1980*  1983*  1985*  1986   2115*  2116*  2118   5953*  5957*  5963*  5967
                       6043*  6047*  6055*  6056   6061*  6062   6484*  6485   6487*  6512*  6516*  6596*  6597
                       6600   6603*  6604   6607   6611*  6612*  6613*  6614   6620*  6621*  6623
R5      =%000005        580#  1096   1097*  1101   1106   1108*  1144   1146*  1147   1148   1149   1150   1151
                       1152   1153*  1162*  1165*  1166*  1167*  1175   1177   1179   1185   1186*  1190*  1205
                       1220*  1231   1239*  1251*  1266*  1315*  1316*  1317   1319   1804*  1810*  1811*  1813*
                       1815   1861*  1867*  1868*  1870*  1872   1918*  1924*  1925*  1927*  1929   1975*  1981*
                       1982*  1984*  1986   2114*  2117*  2118   2204*  2230*  2254*  2280*  2353*  2379*  2403*
                       2429*  2502*  2528*  2552*  2578*  2651*  2677*  2701*  2727*  2800*  2826*  2850*  2876*
                       2949*  2975*  2999*  3025*  3098*  3124*  3148*  3174*  3247*  3273*  3297*  3323*  3396*
                       3422*  3446*  3472*  3545*  3571*  3595*  3621*  3695*  3721*  3745*  3771*  3845*  3871*
                       3895*  3921*  3995*  4021*  4045*  4071*  4145*  4171*  4195*  4221*  4295*  4321*  4345*
                       4371*  4445*  4471*  4495*  4521*  4595*  4621*  4645*  4671*  4745*  4771*  4795*  4821*
                       4895*  4921*  4945*  4971*  5045*  5071*  5095*  5121*  5195*  5221*  5245*  5271*  5345*
                       5371*  5395*  5421*  5495*  5521*  5545*  5571*  5645*  5671*  5695*  5721*  5795*  5821*
                       5845*  5871*  5964*  5965*  5966*  5967   5971*  5972*  6053*  6056   6059*  6062   6504
                       6519*  6523   6526   6527   6530   6533   6552   6553   6556   6559   6610   6622   6626*
                       6634   6635   6636   6663*  6674   6675   6677   6680   6686   6704
SAVACT  001302          701#   961   1706*
SAVNUM  001303          702#   915*  1017*  1020*  1699*  1790*  1793*
SAVPC   001276          698#  1201*  1372
SAVR0   001260          691#  1210*  1215   6773
SAVR1   001262          692#  1209*  1216
SAVR2   001264          693#  1208*  1217
SAVR3   001266          694#  1207*  1218   6776   6783
SAVR4   001270          695#  1206*  1219   6771   6778   6785
SAVR5   001272          696#  1205*  1220   6769
SAVSP   001274          697#
SAVOS = 104406          737#  1314
SCOPE = 104400          725#  1776   1855   1912   1969   2029   2187   2336   2485   2634   2783   2932   3081
                       3230   3379   3528   3678   3828   3978   4128   4278   4428   4578   4728   4879   5028
                       5178   5328   5478   5628   5778   5925   6014
SCOP1 = 104401          727#
SERV.G  004640         1055   1302   1446#  1447
SETREG  033156         2051   2055   2060   5934   5938   5942   6024   6028   6032   6324   6328   6332   6336
                       6357   6361   6365   6369   6490   6494   6498   6536   6540   6544   6548   6562   6566
                       6570   6574   6672*
SETSCA  033262         6701#
SIMBOO  032776         6631#
SP      =%000006        581#   913*   928*   929*   935    938    939    982*  1051*  1052*  1053   1057*  1077
                       1030*  1096*  1097   1098*  1108   1112*  1113*  1114   1115*  1131   1132   1134*  1135*
                       1137   1138   1144*  1145*  1146   1152*  1189   1190   1201   1227*  1228*  1229*  1230*
                       1231*  1232   1233*  1266   1267   1268   1269   1270   1283*  1284*  1285*  1286*  1287*
                       1288*  1289*  1290   1298*  1299*  1300   1310   1312   1315   1358   1367*  1389*  1403*
                       1407   1413*  1414*  1420   1421   1433*  1442   1455*  1456*  1457   1462   1468   1470
                       1472*  1473   1476*  1477*  1478   1712*  1738   1740   1741*  6123*  6126   6127*  6128
                       6134   6136   6141*  6144   6145*  6146   6152   6154   6159*  6162   6163*  6164   6170
                       6172   6177*  6180   6181*  6182   6188   6190   6195*  6198   6199*  6200   6206   6208
                       6214*  6217   6218*  6219   6225   6227   6232*  6235   6236*  6237   6243   6245   6250*
                       6253   6254*  6255   6261   6263   6268*  6271   6272*  6273   6279   6291   6286*  6289
                       6290*  6291   6297   6299   6631*  6632*  6633*  6660   6661   6662   6672*  6673*  6691
                       6682   6688*  6696   6702*  6714
```

```
SPACNT= 003745          1236*   1257    1260*   1274#
SSWR    000176           646#    937
STACK = 001200           588#    913     982     1367    1389
STAT    001236           682#   1761*   1765*   1769*   1773*   1801    1840*   1844*   1848*   1852*   1858    1897*   1901*
                        1905*   1909*   1915    1954*   1958*   1962*   1966*   1972    2014*   2018*   2022*   2026*   2034
                        2172*   2176*   2180*   2184*   2189    2321*   2325*   2329*   2333*   2338    2470*   2474*   2479*
                        2482*   2487    2619*   2623*   2627*   2631*   2636    2768*   2772*   2776*   2780*   2785    2917*
                        2921*   2925*   2929*   2934    3066*   3070*   3074*   3078*   3083    3215*   3219*   3223*   3227*
                        3232    3364*   3368*   3372*   3376*   3381    3513*   3517*   3521*   3525*   3530    3663*   3667*
                        3671*   3675*   3680    3813*   3817*   3821*   3825*   3830    3963*   3967*   3971*   3975*   3980
                        4113*   4117*   4121*   4125*   4130    4263*   4267*   4271*   4275*   4280    4413*   4417*   4421*
                        4425*   4430    4563*   4567*   4571*   4575*   4580    4713*   4717*   4721*   4725*   4730    4863*
                        4867*   4871*   4875*   4880    5013*   5017*   5021*   5025*   5030    5163*   5167*   5171*   5175*
                        5180    5313*   5317*   5321*   5325*   5330    5463*   5467*   5471*   5475*   5480    5613*   5617*
                        5621*   5625*   5630    5763*   5767*   5771*   5775*   5780    5910*   5914*   5918*   5922*   5928
                        5999*   6003*   6007*   6011*   6018
SVOS    003452          1205#
SWR     001202           657#    932     937*    942     956     961     966     985     1049    1058    1065    1086    1099
                        1296    1303    1308    1355    1362    1364    1448    1449*   1459*   1464*   1465*   1466*   1473*
                        1596
SW00  = 000001           568#    956
SW01  = 000002           567#   1596
SW02  = 000004           566#
SW03  = 000010           565#
SW04  = 000020           564#
SW05  = 000040           563#
SW06  = 000100           562#
SW07  = 000200           561#
SW08  = 000400           560#   1362
SW09  = 001000           559#   1086
SW10  = 002000           558#   1364
SW11  = 004000           557#   1065
SW12  = 010000           556#   1099    1303
SW13  = 020000           555#   1308
SW14  = 040000           554#
SW15  = 100000           553#
SYNA00  001506           818#
SYNA01  001532           829#
SYNA02  001556           840#
SYNA03  001602           851#
SYNA04  001626           862#
SYNA05  001652           873#
SYNA06  001676           884#
SYNA07  001722           895#
SYNB00  001512           820#
SYNB01  001536           831#
SYNB02  001562           842#
SYNB03  001606           853#
SYNB04  001632           864#
SYNB05  001656           875#
SYNB06  001702           886#
SYNB07  001726           897#
SYNCX   001240           683#
SYNC00  001516           822#
SYNC01  001542           833#
SYNC02  001566           844#
```

DZDVFA.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
SYNC03  001612          855#
SYNC04  001636          866#
SYNC05  001662          877#
SYNC06  001706          888#
SYNC07  001732          899#
SYNC2A  001426          794#   1543*
SYNC2B  001430          795#   1545*
SYNC2C  001432          796#   1547*
SYNC2D  001434          797#   1549*
SYND00  001522          824#
SYND01  001546          835#
SYND02  001572          846#
SYND03  001616          857#
SYND04  001642          868#
SYND05  001666          879#
SYND06  001712          890#
SYND07  001736          901#
S.C   = 050000          611#
TEMP    005562         1240    1390*   1391*   1503#
TEMP1   001246          686#    946*    947     952*   1494   1725*  1726*  6634*  6657*
TEMP2   001250          687#    947*    948     1496   6635*  6639*
TEMP3   001252          688#   6636*   6638     6640*  6650   6655*  6656*  6659
TEMP4   001254          689#
TEMP5   001256          690#
TIME.P  032316         2204    2230    2254    2280   2353   2379   2403   2429   2502   2528   2552   2578   2651
                       2677    2701    2727    2800   2826   2850   2876   2949   2975   2999   3025   3098   3124
                       3148    3174    3247    3273   3297   3323   3396   3422   3446   3472   3545   3571   3595
                       3621    3695    3721    3745   3771   3845   3871   3895   3921   3995   4021   4045   4071
                       4145    4171    4195    4221   4295   4321   4345   4371   4445   4471   4495   4521   4595
                       4621    4645    4671    4745   4771   4795   4821   4895   4921   4945   4971   5045   5071
                       5095    5121    5195    5221   5245   5271   5345   5371   5395   5421   5495   5521   5545
                       5571    5645    5671    5695   5721   5795   5821   5845   5871   6522#
TKCSR   001204           661#   1061    1120    1446   1453   1474   6121   6139   6157   6175   6193   6212   6230
                       6248    6266    6284
TKDBR   001206           662#   1051    1063    1122   1128   1298   1455   1476   6123   6141   6159   6177   6195
                       6214    6232    6250    6268   6286
TLAST = 026434         1622    6725#
TPCSR   001210           663#   1104    1126    1305   1460   6124   6142   6160   6178   6196   6215   6233   6251
                       6269    6287
TPDBR   001212           664#   1106*   1128*   1307*  1462*  6126*  6144*  6162*  6180*  6198*  6217*  6235*  6253*
                       6271*   6289*
TRPOK   003762         1286#
TSTNO   001226           674#    923*   1375    1402   1607   1614   1616   1758*  1837*  1894*  1951*  2011*  2169*
                       2318*   2467*   2616*   2765*  2914*  3063*  3212*  3361*  3510*  3660*  3810*  3960*  4110*
                       4260*   4410*   4560*   4710*  4860*  5010*  5160*  5310*  5460*  5610*  5760*  5907*  5996*
                       6116*
TST1    007256         1610    1626    1758#
TST10   012322         2319    2467#
TST11   012714         2468    2616#
TST12   013306         2617    2765#
TST13   013700         2766    2914#
TST14   014272         2915    3063#
TST15   014664         3064    3212#
TST16   015256         3213    3361#
TST17   015650         3362    3510#
TST2    007626         1759    1837#
```

DZDVFA.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
TST20   016242          3511    3660#
TST21   016634          3661    3810#
TST22   017226          3811    3960#
TST23   017620          3961    4110#
TST24   020212          4111    4260#
TST25   020604          4261    4410#
TST26   021176          4411    4560#
TST27   021570          4561    4710#
TST3    010050          1838    1894#
TST30   022162          4711    4860#
TST31   022554          4861    5010#
TST32   023146          5011    5160#
TST33   023540          5161    5310#
TST34   024132          5311    5460#
TST35   024524          5461    5610#
TST36   025116          5611    5760#
TST37   025510          5761    5907#
TST4    010272          1895    1951#
TST40   026060          5908    5996#
TST41   026434          5997    6116#   6725
TST42 = ****** U        6117
TST5    010514          1952    2011#
TST6    011336          2012    2169#
TST7    011730          2170    2318#
TTST    002702           988*    989*    991*    992*   1059#
TURNON  032144          1804    1861    1918    1975   6481#
TWOSYN= 010000           615#
TXBAP   033340          1807    1864    1921    1978   2044   2053   2110   5932*  5936   6022*  6026   6301   6326
                        6359    6483    6492    6538   6564   6720#
TYPDAT  004266          1329    1347    1350#
TYPE  = 104402           729#    940     945     958    963    987    995   1008   1009   1011   1013   1015   1103
                        1116    1133    1226    1263   1330   1331   1334   1335   1337   1339   1343   1348   1393
                        1450    1452    1480    1518   1601   1619   1624   1708   1786   6118   6137   6155   6173
                        6191    6209    6228    6246   6264   6282   6402   6405   6419
TYPMSG  004166          1327    1330#
VECMAP  007102          1707    1715#
WRDCNT  003742          1234*   1264*   1272#
WRKO.F  004254          1342    1345#
XBX     004060          1304    1306    1308#
XCSR    002604          1010    1032#   1787
XERR    002626          1016    1041#
XFR   = 030000           609#
XHEAD   005461           945    1492#
XPASS   002620          1014    1038#
XPOLY   033150          6644    6655    6664#
XSTATQ  005506           951    1492#
XTSTN   004374          1336    1373#
XVEC    002612          1012    1035#
$CRAP = 177777             1#   1747#   1754#   1826#  1833#  1883#  1890#  1940#  1947#  1997#  2007#  2148#  2165#
                        2297#   2314#   2446#   2463#  2595#  2612#  2744#  2761#  2893#  2910#  3042#  3059#  3191#
                        3208#   3340#   3357#   3489#  3506#  3638#  3656#  3788#  3806#  3938#  3956#  4088#  4106#
                        4238#   4256#   4388#   4406#  4538#  4556#  4688#  4706#  4838#  4856#  4988#  5006#  5139#
                        5156#   5288#   5306#   5438#  5456#  5588#  5606#  5738#  5756#  5888#  5903#  5983#  5992#
                        6071#   6112#
$E    = 000043             1#   1759    1760#   1838   1839#  1895   1896#  1952   1953#  2012   2013#  2170   2171#
                        2319    2320#   2468    2469#  2617   2618#  2766   2767#  2915   2916#  3064   3065#  3213
```

```
                    3214#   3362    3363#   3511    3512#   3661    3662#   3811    3812#   3961    3962#   4111    4112#
                    4261    4262#   4411    4412#   4561    4562#   4711    4712#   4861    4862#   5011    5012#   5161
                    5162#   5311    5312#   5461    5462#   5611    5612#   5761    5762#   5908    5909#   5997    5998#
                    6117    6118#
$N      = 000041       1#   1747    1756    1760#   1826    1835    1839#   1883    1892    1896#   1940    1949    1953#
                    1997    2009    2013#   2148    2167    2171#   2297    2316    2320#   2446    2465    2469#   2595
                    2614    2618#   2744    2763    2767#   2893    2912    2916#   3042    3061    3065#   3191    3210
                    3214#   3340    3359    3363#   3489    3508    3512#   3638    3658    3662#   3788    3808    3812#
                    3938    3958    3962#   4088    4108    4112#   4238    4258    4262#   4388    4408    4412#   4538
                    4558    4562#   4688    4708    4712#   4838    4858    4862#   4988    5008    5012#   5138    5158
                    5162#   5288    5308    5312#   5438    5458    5462#   5588    5608    5612#   5738    5758    5762#
                    5888    5905    5909#   5983    5994    5998#   6071    6114    6118#   6725#
$Y      = 000017       1#    716#    725     727#    729#    731#    733#    735#    737#    739#    741#    743#    745#
                     747#    749#    751#    753#    755#
.       = 036620     626#    627     630#    637#    638#    639#    640#    643#    645#    648#    652#    654#    699#
                     700#    701#    702#    703#    704#    813#    815#    816#    817#    818#    819#    820#    821#
                     822#    823#    824#    826#    827#    828#    829#    830#    831#    832#    833#    834#    835#
                     837#    838#    839#    840#    841#    842#    843#    844#    845#    846#    848#    849#    850#
                     851#    852#    853#    854#    855#    856#    857#    859#    860#    861#    862#    863#    864#
                     865#    866#    867#    868#    870#    871#    872#    873#    874#    875#    876#    877#    878#
                     879#    881#    882#    883#    884#    885#    886#    887#    888#    889#    890#    892#    893#
                     894#    895#    896#    897#    898#    899#    900#    901#    965    1054    1301    1383    1392
                    1406    1444#   1454    1461    1475    1502#   1504#   1506#   1520    1711    1732    2042    2047
                    2068#   2119    2137    2205#   2210#   2214#   2231#   2236#   2240#   2255#   2260#   2264#   2281#
                    2286#   2290#   2354#   2359#   2363#   2380#   2385#   2389#   2404#   2409#   2413#   2430#   2435#
                    2439#   2503#   2508#   2512#   2529#   2534#   2538#   2553#   2558#   2562#   2579#   2584#   2588#
                    2652#   2657#   2661#   2678#   2683#   2687#   2702#   2707#   2711#   2728#   2733#   2737#   2801#
                    2806#   2810#   2827#   2832#   2836#   2851#   2856#   2860#   2877#   2882#   2886#   2950#   2955#
                    2959#   2976#   2981#   2985#   3000#   3005#   3009#   3026#   3031#   3035#   3099#   3104#   3108#
                    3125#   3130#   3134#   3149#   3154#   3158#   3175#   3180#   3184#   3248#   3253#   3257#   3274#
                    3279#   3283#   3298#   3303#   3307#   3324#   3329#   3333#   3397#   3402#   3406#   3423#   3428#
                    3432#   3447#   3452#   3456#   3473#   3478#   3482#   3546#   3551#   3555#   3572#   3577#   3581#
                    3596#   3601#   3605#   3622#   3627#   3631#   3696#   3701#   3705#   3722#   3727#   3731#   3746#
                    3751#   3755#   3772#   3777#   3781#   3846#   3851#   3855#   3872#   3877#   3881#   3896#   3901#
                    3905#   3922#   3927#   3931#   3996#   4001#   4005#   4022#   4027#   4031#   4046#   4051#   4055#
                    4072#   4077#   4081#   4146#   4151#   4155#   4172#   4177#   4181#   4196#   4201#   4205#   4222#
                    4227#   4231#   4296#   4301#   4305#   4322#   4327#   4331#   4346#   4351#   4355#   4372#   4377#
                    4381#   4446#   4451#   4455#   4472#   4477#   4481#   4496#   4501#   4505#   4522#   4527#   4531#
                    4596#   4601#   4605#   4622#   4627#   4631#   4646#   4651#   4655#   4672#   4677#   4681#   4746#
                    4751#   4755#   4772#   4777#   4781#   4796#   4801#   4805#   4822#   4827#   4831#   4896#   4901#
                    4905#   4922#   4927#   4931#   4946#   4951#   4955#   4972#   4977#   4981#   5046#   5051#   5055#
                    5072#   5077#   5081#   5096#   5101#   5105#   5122#   5127#   5131#   5196#   5201#   5205#   5222#
                    5227#   5231#   5246#   5251#   5255#   5272#   5277#   5281#   5346#   5351#   5355#   5372#   5377#
                    5381#   5396#   5401#   5405#   5422#   5427#   5431#   5496#   5501#   5505#   5522#   5527#   5531#
                    5546#   5551#   5555#   5572#   5577#   5581#   5646#   5651#   5655#   5672#   5677#   5681#   5696#
                    5701#   5705#   5722#   5727#   5731#   5796#   5801#   5805#   5822#   5827#   5831#   5846#   5851#
                    5855#   5872#   5877#   5881#   5961    5973    5975    6051    6057    6063    6125    6143    6161
                    6179    6197    6216    6234    6252    6270    6288    6306    6308    6309#   6312#   6316#   6320#
                    6323#   6341    6342#   6345#   6349#   6353#   6356#   6392    6395    6398    6400    6424#   6425#
                    6426#   6427#   6428#   6429#   6430#   6431#   6432#   6433#   6434#   6435#   6436#   6437#   6438#
                    6439#   6506#   6529#   6532#   6535#   6555#   6558#   6561#   6627#   6628#   6720#   6721#   6722#
                    6723#   6724#   6766#
.BEGIN  002332       981#
.CNVRT  003542       744     1227#
.CONVR  003536       742     1226#
.DATAC  004576       754     1432#
```

```
.DELAY  004476            750    1403#
.EOP    002436           1003#   6016    6117
.ERRTA  035740           1322    6726#
.HLT    004002            633    1295#
.INSTE  003224            734    1133#
.INSTR  003120            732    1112#
.INST1  003140           1116#   1136
.MSG    003142           1114*   1117#
.MSTCL  004556            746    1424#
.PARAM  003244            736    1144#
.PFAIL  004402            631     914    1380#   1388
.RAMCL  004516            748    1411#
.RESOS  003504            740    1215#
.ROMCL  004566            752    1428#
.SAVOS  003444            738    1201#
.SCOPE  002634            726    1048#
.SCOP1  003020            728    1086#
.START  001742            649     912#    924
.TRPSR  003750            635    1283#
.TRPTA  001314            724#   1288
.TYPE   003044            730    1096#
```

DZDVFA.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

```
ADC     6640
ADCB    1526#  1533
ADD      952   1095  1115  1186  1233  1243  1288  1319  1322  1418  1526  1535  1556  1558  1564
        1566  1569  1571  1573  1575  1691  1736  2059  2071  2112  2123  2243  2392  2541  2630
        2839  2989  3134  3286  3435  3594  3734  3884  4034  4184  4334  4484  4634  4784  4934
        5084  5234  5384  5534  5684  5834
ASL     1165  1166  1167  1286  1318  1320
BCC     1438  1727
BCS     1467
BEQ      949   957   986  1022  1050  1059  1068  1087  1089  1125  1156  1164  1258  1297  1304
        1311  1337  1333  1342  1347  1351  1365  1458  1597  1649  1690  1697  1795  1916  1973
        1930  1987  2119  2137  5968  6057  6063  6129  6147  6165  6183  6201  6220  6238  6256
        6274  6292  6400  6601  6608  6615  6624  6642  6705
BGT     1160  1471
BHI     1176#
BIC      968  1052  1242  1287  1299  1321  1456  1472  1477  1630  1734  1739  1813  1914  1870
        1871  1927  1928  1984  1985  2116  2117  6127  6145  6163  6181  6199  6218  6236  6254
        6272  6290  6310  6313  6317  6343  6346  6350  6380  6390  6598  6605  6612  6621  6646
        6650  6653  6655  6678
BICB    1123#  1161
BIS     1428#  1435  1473  1680  1681  1682  1683  1684  1685  1686  1687  1733  1738  2084  2092
        2100  5966  5970  6134  6152  6170  6188  6206  6225  6243  6261  6279  6297  6314  6318
        6321  6347  6351  6354  6587  6599  6606  6654  6656  6687  6703
BISB    1162#
BIT      966#   985  1058  1065  1086  1099  1303  1308  1362  1364  1446  1596  1648  1778  1780
        1782  1784  1801  1858  1915  1972  2034  2189  2338  2487  2636  2785  2934  3083  3232
        3381  3530  3680  3830  3980  4130  4280  4430  4580  4730  4880  5030  5180  5330  5480
        5630  5780  5928  6018  6641
BITB    1179#  1521
BLO     1178#
BLOS     962#  1724
BMI     1158#  1469
BNE      943#  1762  1766  1770  1774  1841  1845  1849  1853  1898  1902  1906  1910  1955  1959
        1963  1967  2015  2019  2023  2027  2079  2097  2095  2103  2173  2177  2191  2195  2332
        2326  2330  2334  2471  2475  2479  2483  2630  2624  2628  2632  2769  2773  2777  2781
        2918  2922  2926  2930  3067  3071  3075  3079  3216  3220  3224  3228  3365  3369  3373
        3377  3521  3518  3522  3526  3664  3668  3672  3676  3814  3818  3822  3826  3964  3968
        3972  3976  4114  4118  4122  4126  4264  4268  4272  4276  4414  4418  4422  4426  4564
        4568  4572  4576  4714  4718  4722  4726  4864  4868  4872  4876  5014  5018  5022  5026
        5164  5168  5172  5176  5314  5318  5322  5326  5464  5468  5472  5476  5614  5618  5622
        5626  5764  5768  5772  5776  5911  5915  5919  5923  5955  5961  6000  6004  6008  6012
        6045  6376  6514  6581  6590  6618
BNE      927   955   976   984  1018  1054  1066  1071  1100  1107  1130  1180  1189  1252  1256
        1261  1265  1301  1309  1329  1363  1392  1406  1419  1440  1447  1479  1517  1522  1528
        1538  1600  1613  1615  1617  1623  1632  1637  1642  1666  1672  1674  1676  1693  1704
        1732  1779  1781  1783  1785  1791  1802  1819  1822  1859  1876  1879  1916  1933  1936
        1973  1990  1993  2035  2042  2047  2074  2082  2090  2098  2106  2122  2126  2190  2339
        2488  2637  2786  2935  3084  3233  3382  3531  3681  3831  3981  4131  4281  4431  4581
        4731  4881  5031  5181  5331  5481  5631  5781  5929  5958  5973  5979  6019  6048  6067
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ERRORS DETECTED:  0
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CORE USED:  22K  (43 PAGES)
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Spooler runtime 25 Seconds, 108 KCS, 725 disk reads, 3 disk writes, 151 pages