DV11

ASYNCHRONOUS

MD-11-DZDVF-A

EP-DZDVF-A-DL-A

OCT 1976

digital

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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)

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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 8.4,9.5 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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F01


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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.
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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   INTERMITTENT
                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
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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.
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                    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.
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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  HAND
        (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
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                        ;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
                        ;--------------------------------


```

B02


```
                                     ;;*******************************************************************
                                     ;-----------------------------------------------------------------
                                             ;TRAPCATCHER 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>
                 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              LOOK:   0                       ;ADDRESS FOR LOOK ON CURRENT DATA
```

```
001222  000003          ICOUNT: 3               ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
001224  000000          LPCNT:  0               ;NUMBER OF ITEREATIONS COMPLETED
001226  000000          TSTNO:  0               ;NUMBER OF TEST IN PROGRESS
001230  000000          PASCNT: 0               ;NUMBER OF PASSES COMPLETED
001232  000000          ERRCNT: 0               ;TOTAL NUMBER OF ERRORS
001234  000000          LSTERR: 0               ;PC OF LAST ERROR CALL

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

001236  000000          STAT:   0               ;DV STATUS WORD STORAGE
001240  000000          SYNCX:  0
001242  000000          CLKX:   0
001244  000000          MASKX:  0
001246  000000          TEMP1:  0               ;TEMPORARY STORAGE
001250  000000          TEMP2:  0               ;TEMPORARY STORAGE
001252  000000          TEMP3:  0               ;TEMPORARY STORAGE
001254  000000          TEMP4:  0               ;TEMPORARY STORAGE
001256  000000          TEMP5:  0               ;TEMPORARY STORAGE
001260  000000          SAVR0:  0               ;R0 STORAGE
001262  000000          SAVR1:  0               ;R1 STORAGE
001264  000000          SAVR2:  0               ;R2 STORAGE
001266  000000          SAVR3:  0               ;R3 STORAGE
001270  000000          SAVR4:  0               ;R4 STORAGE
001272  000000          SAVR5:  0               ;R5 STORAGE
001274  000000          SAVSP:  0               ;STACK POINTER STORAGE
001276  000000          SAVPC:  0               ;PROGRAM COUNTER STORAGE
001300  000001          DVACTV: .BLKB 1         ;DV11'S SELECTED ACTIVE.
001301  000001          DVNUM:  .BLKB 1         ;OCTAL NUMBER OF DV11'S.
001302  000001          SAVACT: .BLKB 1         ;ORIGINAL ACTV.  DEVICES.
001303  000001          SAVNUM: .BLKB 1         ;WORKABLE NUMBER.
001304  000001          RUN:    .BLKB 1         ;POINTER ONE PAST RUNNING DEVICE.
        001306          .EVEN
001306  001500          CREPM:  DV.MAP          ;TABLE POINTER.
```

```
                                        ;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                 QVLFLG: .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              SAV05=TRAP+6            ;CALL TO REGISTER SAVE ROUTINE
 001330     003444                      .SAV05
            104407              RES05=TRAP+7            ;CALL TO REGISTER RESTORE ROUTINE
 001332     003504                      .RES05
            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
                                                ;-----------------------------------------

                000000  001500          .=1500
        001500                          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
```

```
001636  000001          SYNC04: .BLKW 1         ;SYNC TWO
001640  000001          DV04.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 04
001642  000001          SYND04: .BLKW 1         ;SYNC TWO

001644  000001          DVCR05: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 05
001646  000001          DVTR05: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 05
001650  000001          DV05.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 05
001652  000001          SYNA05: .BLKW 1         ;SYNC TWO
001654  000001          DV05.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 05
001656  000001          SYNB05: .BLKW 1         ;SYNC TWO
001660  000001          DV05.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 05
001662  000001          SYNC05: .BLKW 1         ;SYNC TWO
001664  000001          DV05.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 05
001666  000001          SYND05: .BLKW 1         ;SYNC TWO

001670  000001          DVCR06: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 06
001672  000001          DVTR06: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 06
001674  000001          DV06.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 06
001676  000001          SYNA06: .BLKW 1         ;SYNC TWO
001700  000001          DV06.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 06
001702  000001          SYNB06: .BLKW 1         ;SYNC TWO
001704  000001          DV06.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 06
001706  000001          SYNC06: .BLKW 1         ;SYNC TWO
001710  000001          DV06.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 06
001712  000001          SYND06: .BLKW 1         ;SYNC TWO

001714  000001          DVCR07: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 07
001716  000001          DVTR07: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 07
001720  000001          DV07.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 07
001722  000001          SYNA07: .BLKW 1         ;SYNC TWO
001724  000001          DV07.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 07
001726  000001          SYNB07: .BLKW 1         ;SYNC TWO
001730  000001          DV07.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 07
001732  000001          SYNC07: .BLKW 1         ;SYNC TWO
001734  000001          DV07.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 07
001736  000001          SYND07: .BLKW 1         ;SYNC TWO

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
```

```
002244  000000                                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  176522                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    SAVNUM          ;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
```

```
002654  122726  000007                   CMPB    #7,(SP)+         ;WAS IT CNTRL 'G' ?
002660  001002                           BNE     .+6              ;BR IF NO.
002662  004737  004640                   JSR     PC,SERV.G        ;SERVICE "CNTRL 'G'".
002666  005037  001234          64$:     CLR     LSTERR           ;CLEAR LAST ERROR PC.
002672  010016                           MOV     R0,(SP)          ;SAVE R0 ON THE STACK
002674  032777  040000  176300           BIT     #BIT14,@SWR      ;"LOOP ON THIS TEST"?
002702  001407                  TTST:    BEQ     1$               ;BR IF NO.  (IF LOCK SW01=1; THIS LOC =240)
002704  000437                           BR      3$               ;GOTO 3$    (IF LOCK SW01=1; THIS LOC =240)
002706  105777  176272                   TSTB    @TKCSR           ;KEYBOAD DONE?
002712  100034                           BPL     3$               ;BR IF NO. (LOCK: HIT KEY TO GOTO NEXT TEST)
002714  017700  176266                   MOV     @TKDBR,R0        ;CLEAR DONE BIT
002720  000415                           BR      2$               ;CONTINUE
002722  032777  004000  176252  1$:      BIT     #SW11,@SWR       ;DELETE ITERATION?  (QUICK PASS)
002730  001011                           BNE     2$               ;BR IF YES
002732  105737  001313                   TSTB    QV.FLG           ;HAVE PASSES BEECOMPLETED?
002736  001406                           BEQ     2$               ;BR IF QUICK PASS.
002740  005237  001224                   INC     LPCNT            ;UPDATE ITERATION COUNTER
002744  023737  001224  001222           CMP     LPCNT,ICOUNT     ;ARE ALL ITERATIONS DONE??
002752  001014                           BNE     3$               ;BR IF NOT YET
002754  105037  001311          2$:      CLRB    ERRFLG           ;PREPARE FOR NEW TEST
002760  005037  001224                   CLR     LPCNT            ;START ICOUNTER AT 0
002764  005037  001220                   CLR     LOCK
002770  012737  000004  001222           MOV     #4.,ICOUNT       ;RESET ITERATIONS
002776  013737  001216  001214           MOV     NEXT,RETURN      ;GET NEXT TEST
003004  011600                  3$:      MOV     (SP),R0          ;POP R0 OFF OF THE STACK
003006  022626                           POP2SP                   ;FAKE AN "RTI"
003010  000177  176200                   JMP     @RETURN          ;GO DO THE TEST
003014  001407                  BRW:     1407
003016  000437                  BRX:     437

                                         ;CHECK FOR FREEZE ON CURRENT DATA
                                         ;--------------------------------

003020  032777  001000  176154  .SCOP1:  BIT     #SW09,@SWR       ;IS SW09=1(SET)?
003026  001405                           BEQ     1$               ;BR IF NOT SET.
003030  005737  001220                   TST     LOCK
003034  001402                           BEQ     1$
003036  013716  001220                   MOV     LOCK,(SP)        ;GOTO THE ADDRESS IN LOCK.
003042  000002                  1$:      RTI                      ;GO BACK.

                                         ;TELETYPE OUTPUT ROUTINE
                                         ;-----------------------

003044  010546                  .TYPE:   MOV     R5,-(SP)         ;SAVE R5 ON THE STACK.
003046  017605  000002                   MOV     @2(SP),R5        ;GET ADDRESS OF MESSAGE.
003052  062766  000002  000002           ADD     #2,2(SP)         ;POP OVER ADDRESS.
003060  032777  010000  176114  1$:      BIT     #SW12,@SWR       ;INHIBIT ALL PRINT OUT??
003066  001012                           BNE     3$               ;BR IF NO PRINT OUT WANTED (SW12=1)
003070  105715                           TSTB    (R5)             ;IS NUMBER MINUS? (MSB=1(BIT7))
003072  100002                           BPL     2$               ;BR IF NUMBER IS PLUS
003074  104402  005104                   TYPE    ,MCRLF           ;TYPE A CR/LF!
003100  105777  176104          2$:      TSTB    @TPCSR           ;TTY READY?
003104  100375                           BPL     2$               ;BR IF NO.
003106  112577  176100                   MOVB    (R5)+,@TPDBR     ;PRINT CURRENT CHAR.
003112  001362                           BNE     1$               ;IF NOT ZERO KEEP PRINTING!
003114  012605                  3$:      MOV     (SP)+,R5         ;END OF OUTPUT. RESTORE R5
```

```
003116  000002                             RTI                          ;GO HOME
                                           ;--------------------------

003120  010346                    .INSTR:  MOV     R3,-(SP)             ;SAVE R3 ON STACK
003122  010446                             MOV     R4,-(SP)             ;SAVE R4 ON STACK
003124  017637  000004  003142             MOV     @4(SP),.MSG
003132  062766  000002  000004             ADD     #2,4(SP)
003140  104402                    .INST1:  TYPE
003142  000000                    .MSG:    0
003144  012704  005520                     MOV     #INBUF,R4
003150  012703  000007                     MOV     #7,R3
003154  105777  176024            1$:      TSTB    @TKCSR
003160  100375                             BPL     1$
003162  117714  176020                     MOVB    @TKDBR,(R4)
003166  142714  000200                     BICB    #200,(R4)
003172  122427  000015                     CMPB    (R4)+,#15
003176  001417                             BEQ     INSTR2
003200  105777  176004            2$:      TSTB    @TPCSR
003204  100375                             BPL     2$
003206  017777  175774  175776             MOV     @TKDBR,@TPDBR
003214  005303                             DEC     R3
003216  001356                             BNE     1$
003220  012604                             MOV     (SP)+,R4
003222  012603                             MOV     (SP)+,R3
003224  104402  005100            .INSTE:  TYPE    ,MQM
003230  010346                             MOV     R3,-(SP)
003232  010446                             MOV     R4,-(SP)
003234  000741                             BR      .INST1
003236  012604                    INSTR2:  MOV     (SP)+,R4             ;RESTORE R4
003240  012603                             MOV     (SP)+,R3             ;RESTORE R3
003242  000002                             RTI

                                           ;CONVERT ASCII STRING TO OCTAL
                                           ;-----------------------------

003244  010546                    .PARAM:  MOV     R5,-(SP)
003246  010446                             MOV     R4,-(SP)
003250  016605  000004                     MOV     4(SP),R5
003254  012537  003434                     MOV     (R5)+,LOLIM
003260  012537  003436                     MOV     (R5)+,HILIM
003264  012537  003440                     MOV     (R5)+,DEVADR
003270  112537  003442                     MOVB    (R5)+,LOBITS
003274  112537  003443                     MOVB    (R5)+,ADRCNT
003300  010566  000004                     MOV     R5,4(SP)
003304  005005                    PARAM1:  CLR     R5
003306  012704  005520                     MOV     #INBUF,R4
003312  122714  000015                     CMPB    #15,(R4)
003316  001420                             BEQ     PARERR
003320  121427  000060            1$:      CMPB    (R4),#60
003324  002415                             BLT     PARERR
003326  121427  000067                     CMPB    (R4),#67
003332  003012                             BGT     PARERR
003334  142714  000060                     BICB    #60,(R4)
003340  152405                             BISB    (R4)+,R5
003342  122714  000015                     CMPB    #15,(R4)
003346  001406                             BEQ     LIMITS
```

```
003350	006305				ASL	R5
003352	006305				ASL	R5
003354	006305				ASL	R5
003356	000760				BR	1$
003360	104404			PARERR:	INSTER
003362	000750				BR	PARAM1

						;TEST TO SEE IF NUMBER IS WITHIN LIMITS
						;-------------------------------------

003364	020537	003436		LIMITS:	CMP	R5,HILIM
003370	101373				BHI	PARERR
003372	020537	003434			CMP	R5,LOLIM
003376	103770				BLO	PARERR
003400	133705	003442			BITB	LOBITS,R5
003404	001365				BNE	PARERR

						;STORE NUMBER AT SPECIFIED ADDRESS

003406	013704	003440			MOV	DEVADR,R4
003412	010524			1$:	MOV	R5,(R4)+
003414	062705	000002			ADD	#2,R5
003420	105337	003443			DECB	ADRCNT
003424	001372				BNE	1$
003426	012604				MOV	(SP)+,R4
003430	012605				MOV	(SP)+,R5
003432	000002				RTI
003434	000000			LOLIM:	0
003436	000000			HILIM:	0
003440	000000			DEVADR:	0
003442	000000			LOBITS:	0
	003443			ADRCNT=LOBITS+1

						;SAVE PC OF TEST THAT FAILED AND R0-R5
						;-------------------------------------

003444	016637	000004	001276	.SAV05:	MOV	4(SP),SAVPC	;SAVE R7 (PC)

						;SAVE R0-R5

003452	010537	001272		SV05:	MOV	R5,SAVR5	;SAVE R5
003456	010437	001270			MOV	R4,SAVR4	;SAVE R4
003462	010337	001266			MOV	R3,SAVR3	;SAVE R3
003466	010237	001264			MOV	R2,SAVR2	;SAVE R2
003472	010137	001262			MOV	R1,SAVR1	;SAVE R1
003476	010037	001260			MOV	R0,SAVR0	;SAVE R0
003502	000002				RTI			;LEAVE.

						;RESTORE R0-R5

003504	013700	001260		.RES05:	MOV	SAVR0,R0	;RESTORE R0
003510	013701	001262			MOV	SAVR1,R1	;RESTORE R1
003514	013702	001264			MOV	SAVR2,R2	;RESTORE R2
003520	013703	001266			MOV	SAVR3,R3	;RESTORE R3
003524	013704	001270			MOV	SAVR4,R4	;RESTORE R4
003530	013705	001272			MOV	SAVR5,R5	;RESTORE R5
```

```
003534  000002                            RTI                          ;LEAVE

                                          ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
                                          ;-------------------------------------------------------

003536  104402  005104            .CONVR: TYPE    ,MCRLF
003542  010046                    .CNVRT: MOV     R0,-(SP)
003544  010146                            MOV     R1,-(SP)
003546  010346                            MOV     R3,-(SP)
003550  010446                            MOV     R4,-(SP)
003552  010546                            MOV     R5,-(SP)
003554  017601  000012                    MOV     @12(SP),R1
003560  062766  000002  000012            ADD     #2,12(SP)
003566  012137  003742                    MOV     (R1)+,WRDCNT
003572  112137  003744            1$:     MOVB    (R1)+,CHRCNT
003576  112137  003745                    MOVB    (R1)+,SPACNT
003602  013137  003746                    MOV     @(R1)+,BINWRD
003606  013704  003746            2$:     MOV     BINWRD,R4
003612  113705  003744                    MOVB    CHRCNT,R5
003616  012700  005562                    MOV     #TEMP,R0
003622  010403                    3$:     MOV     R4,R3
003624  042703  177770                    BIC     #177770,R3
003630  062703  000060                    ADD     #060,R3
003634  110320                            MOVB    R3,(R0)+
003636  000241                            CLC
003640  006004                            ROR     R4
003642  000241                            CLC
003644  006004                            ROR     R4
003646  000241                            CLC
003650  006004                            ROR     R4
003652  005305                            DEC     R5
003654  001362                            BNE     3$
003656  012703  005624                    MOV     #MDATA,R3
003662  114023                    4$:     MOVB    -(R0),(R3)+
003664  105337  003744                    DECB    CHRCNT
003670  001374                            BNE     4$
003672  105737  003745                    TSTB    SPACNT
003676  001405                            BEQ     6$
003700  112723  000040            5$:     MOVB    #040,(R3)+
003704  105337  003745                    DECB    SPACNT
003710  001373                            BNE     5$
003712  105013                    6$:     CLRB    (R3)
003714  104402  005624                    TYPE    ,MDATA
003720  005337  003742                    DEC     WRDCNT
003724  001322                            BNE     1$
003726  012605                            MOV     (SP)+,R5
003730  012604                            MOV     (SP)+,R4
003732  012603                            MOV     (SP)+,R3
003734  012601                            MOV     (SP)+,R1
003736  012600                            MOV     (SP)+,R0
003740  000002                            RTI
003742  000000                    WRDCNT: 0
003744  000000                    CHRCNT: 0
        003745                    SPACNT=CHRCNT+1
003746  000000                    BINWRD: 0
```

```
                                               ;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$:     SAV.05                     ;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
```

```
004202  001402                                  BEQ     1$
004204  104402  005400                          TYPE    ,MASTEK
004210  104402  005366                  1$:     TYPE    ,MTSTN
004214  104411  004374                          CNVRT   ,XTSTN          ;SHOW IT
004220  104402  005454                          TYPE    ,MERRPC         ;TYPE PC.
004224  104411  004366                          CNVRT   ,ERTABO         ;SHOW IT
004230  104402  005104                          TYPE    ,MCRLF          ;GIVE A CR/LF
004234  112737  177777  001311                  MOVB    #-1,ERRFLG      ;NO MORE HEADER UNLESS NO DATA TABLE.
004242  005737  004252                          TST     ERRMSG          ;IS THERE AN ERROR MESSAGE?
004246  001402                                  BEQ     WRKO.FM         ;BR IF NO.
004250  104402                                  TYPE                    ;TYPE
004252  000000                          ERRMSG: 0                       ;    ERROR MESSAGE
004254                                  WRKO.FM:                        ;
004254  005737  004264                          TST     DATAHD          ;DATA HEADER?
004260  001402                                  BEQ     TYPDAT          ;BR IF NO
004262  104402                                  TYPE                    ;TYPE
004264  000000                          DATAHD: 0                       ;    DATA HEADER
004266  005737  004276                  TYPDAT: TST     DATABP          ;DATA TABLE?
004272  001402                                  BEQ     RESREG          ;BR IF NO.
004274  104410                                  CONVRT                  ;SHOW
004276  000000                          DATABP: 0                       ;    DATA TABLE
004300  104407                          RESREG: RES05                   ;RESTORE PROC REGISTERS
004302  005777  174674                  HALTS:  TST     @SWR            ;HALT ON ERROR?
004306  100005                                  BPL     EXITER          ;BR IF NO HALT ON ERROR
004310  010046                                  PUSHR0                  ;SAVE R0
004312  016600  000002                          MOV     2(SP),R0        ;SHOW ERROR PC IN DATA LIGHTS
004316  000000                                  HALT                    ;HALT
004320  012600                                  POPR0                   ;GET R0
004322  005237  001232                  EXITER: INC     ERRCNT          ;UPDATE ERROR COUNT
004326  032777  000400  174646                  BIT     #SW08,@SWR      ;GOTO TOP OF TEST?
004334  001007                                  BNE     1$              ;BR IF YES
004336  032777  002000  174636                  BIT     #SW10,@SWR      ;GOTO NEXT TEST?
004344  001407                                  BEQ     2$              ;BR IF NO
004346  013737  001216  001214                  MOV     NEXT,RETURN     ;SET FOR NEXT TEST
004354  012706  001200                  1$:     MOV     #STACK,SP       ;RESET SP
004360  000177  174630                          JMP     @RETURN         ;GOTO SPECIFIED TEST
004364  000002                          2$:     RTI                     ;RETURN
004366  000001                          ERTABO: 1
004370     006     002                          .BYTE   6,2
004372  001276                                  SAVPC
004374  000001                          XTSTN:  1
004376     003     002                          .BYTE   3,2
004400  001226                                  TSTNO
                                                ;ENTER HERE ON POWER FAILURE
                                                ;--------------------------



004402                                  .PFAIL:
004402  012737  004414  000024                  MOV     #RESTART,24             ;SET UP FOR POWER UP TRAP
004410  000000                                  HALT                            ;HALT ON POWER DOWN NORMAL
004412  000777                                  BR      .

                                                ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED

004414                                  RESTAR:
004414  012737  004402  000024                  MOV     #.PFAIL,24      ;SET UP FOR POWER FAILURE
```

```
004422  012706  001200                    MOV     #STACK,SP        ;RESET THE STACK POINTER
004426  005037  005562                    CLR     TEMP             ;READY FOR TIMMER
004432  005237  005562                    INC     TEMP             ;PLUS ONE TO THE TIMER!
004436  001375                            BNE     .-4              ;BR IF MORE TO GO
004440  104402  005107                    TYPE    ,MPFAIL          ;TYPE THE MESSAGE
004444  104411  004470                    CNVRT   ,FFTAB           ;TELL WHAT TEST TO RETURN TO.
004450  105037  001311                    CLRB    ERRFLG           ;START CLEAN
004454  005037  001234                    CLR     LSTERR           ;****************
004460  104412                            MSTCLR                   ;START CLEAN UP OF DEVICE
004462  104413                            RAMCLR                   ;CLEAR IT ALL!
004464  000177  174524                    JMP     @RETURN          ;START DOING THAT TEST AGAIN.
004470  000001                    FFTAB:  1
004472     003     002            .BYTE   3,2
004474  001226                            TSTNO
004476  010046                    .DELAY: MOV     R0,-(SP)
004500  013700  004514                    MOV     1$,R0
004504  005300                            DEC     R0
004506  001376                            BNE     .-2
004510  012600                            MOV     (SP)+,R0
004512  000002                            RTI
004514  000036                    1$:     30.

004516                            .RAMCLR:
004516  012777  004000  174636            MOV     #MRESET,@DVSCR   ;ISSUE A MASTER CLEAR
004524  010146                            MOV     R1,-(SP)         ;SAVE R1 ON THE STACK
004526  010446                            MOV     R4,-(SP)         ;SAVE R4 ON THE STACK
004530  013701  001372                    MOV     DVSRS,R1         ;GET SECONDARY SEL. REG.
004534  013704  001376                    MOV     DVSRA,R4         ;GET SECONDARY REGISTER ACCESS REG.
004540  005014                    1$:     CLR     (R4)             ;ZERO THE SECONDARY REGISTER.
004542  062711  170361                    ADD     #↑C<BIT11+BIT10+BIT9+BIT8+BIT3+BIT2+BIT1+BIT0>+BIT0,(R1)
004546  001374                            BNE     1$
004550  012604                            MOV     (SP)+,R4         ;RESTORE R4
004552  012601                            MOV     (SP)+,R1         ;RESTORE R1
004554  000002                            RTI

004556                            .MSTCLR:
004556  012777  004000  174576            MOV     #MRESET,@DVSCR   ;ISSUE MASTER CLEAR.
004564  000002                            RTI

004566                            .ROMCLK:
004566  052777  000002  174566            BIS     #BIT1,@DVSCR
004574  000002                            RTI

004576                            .DATACLK:
004576  010046                            MOV     R0,-(SP)
004600  005000                            CLR     R0
004602  052777  000400  174560            BIS     #BIT8,@DVLCR
004610  017737  174554  004636    1$:     MOV     @DVLCR,3$
004616  106037  004637                    RORB    3$+1
004622  103003                            BCC     2$
004624  005200                            INC     R0
004626  001370                            BNE     1$
004630  104000                            HLT     0
004632  012600                    2$:     MOV     (SP)+,R0
004634  000002                            RTI
004636  000001                    3$:     .BLKW   1
```

```

     004640  032777  004000  174336  SERV.G:  BIT     #4000,@TKCSR       ;RX BUSY?
     004646  001374                           BNE     SERV.G             ;BR IF YES
     004650  017737  174326  005072           MOV     @SWR,90$           ;SAVE (SWR).
     004656  013777  005072  174316  1$:      MOV     90$,@SWR           ;
     004664  104402  005052                   TYPE    ,89$               ;
     004670  104411  005064                   CNVRT   ,88$               ;
     004674  104402  005074                   TYPE    ,91$               ;
     004700  105777  174300                   TSTB    @TKCSR             ;WAIT FOR DONE.
     004704  100375                           BPL     .-4
     004706  017746  174274                   MOV     @TKDBR,-(SP)       ;
     004712  042716  000200                   BIC     #BIT7,(SP)         ;
     004716  122726  000015                   CMPB    #15,(SP)+          ;
     004722  001450                           BEQ     5$                 ;
     004724  005077  174252                   CLR     @SWR               ;
     004730  105777  174254          2$:      TSTB    @TPCSR             ;
     004734  100375                           BPL     .-4
     004736  016677  177776  174246           MOV     -2(SP),@TPDBR      ;
     004744  000241                           CLC                        ;
     004746  006177  174230                   ROL     @SWR               ;
     004752  006177  174224                   ROL     @SWR               ;
     004756  006177  174220                   ROL     @SWR               ;
     004762  103735                           BCS     1$                 ;ERROR
     004764  026627  177776  000060           CMP     -2(SP),#60         ;
     004772  002731                           BLT     1$                 ;
     004774  026627  177776  000067           CMP     -2(SP),#67         ;
     005002  003325                           BGT     1$                 ;
     005004  042766  177770  177776           BIC     #^C<7>,-2(SP)      ;
     005012  056677  177776  174162           BIS     -2(SP),@SWR        ;
     005020  105777  174160                   TSTB    @TKCSR             ;
     005024  100375                           BPL     .-4                ;
     005026  017746  174154                   MOV     @TKDBR,-(SP)
     005032  042716  000200                   BIC     #BIT7,(SP)
     005036  122726  000015                   CMPB    #15,(SP)+
     005042  001332                           BNE     2$                 ;
     005044  104402  005104          5$:      TYPE    ,MCRLF             ;
     005050  000207                           RTS     PC

     005052  020377  051450  051127  89$:     .ASCIZ  <377>" (SWR)= "
     005060  036451  000057
                                     .EVEN
     005064  000001                  88$:     1
     005066     006     000                   .BYTE   6,0
     005070  005072                           90$
     005072  000000                  90$:     .WORD   0
     005074  036457  000057          91$:     .ASCIZ  "/=/"
                                     .EVEN
     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/
```

```
(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>
(2)                              .EVEN
(2)  005506 000002               XSTATQ:  2
     005510    006    003                 .BYTE    6,3
     005512 001246                        TEMP1
     005514    006    002                 .BYTE    6,2
     005516 001250                        TEMP2
                                 .EVEN

                                          ;BUFFERS FOR INPUT-OUTPUT

     005520 000000               INBUF:   0
            005562               .=.+40
     005562 000000               TEMP:    0
            005624               .=.+40
     005624 000000               MDATA:   0
            005666               .=.+40
```

```

                                                        ;
                                                        ;ROUTINE USED TO "CYCLE" THROUGH UP TO EIGHT DV11'S
                                                        ;THIS ROUTINE SETS UP THE CONTROL ADDRESS FOR THE DIAGNOSTIC
                                                        ;AND RUNS THE SPECIFIED DV11'S.   THIS ROUTINE *MUST*
                                                        ;BE RUN FIRST BEFORE ENTERING THE DIAGNOSTIC FOR THE
                                                        ;SETUP NECESSARY.
                                                        ;

005666  105737  001300          CYCLE:  TSTB    DVACTV          ;ARE ANY DV11'S TO BE TESTED?
005672  001004                          BNE     1$              ;BR IF OK.
005674  104402  005174                  TYPE    ,MERR2          ;NO DV11'S SELECTED!!
005700  000000                          HALT                    ;STOP THE SHOW.
005702  000776                          BR      .-2             ;DISQUALIFY CONT. SW.
005704  133737  001304  001300  1$:     BITB    RUN,DVACTV      ;IS THIS ONE "ACTIVE"
005712  001020                          BNE     2$              ;BR IF GOOD ONE FOUND.
005714  000241                          CLC                     ;CLEAR PROC. CARRY BIT.
005716  106137  001304                  ROLB    RUN             ;UPDATE POINTER
005722  105537  001304                  ADCB    RUN             ;CATCH CARRY FROM RUN
005726  062737  000024  001306          ADD     #24,CREAM       ;UPDATE ADDRESS POINTER.
005734  022737  001740  001306          CMP     #DV.END,CREAM
005742  001360                          BNE     1$              ;KEEP GOING; NOT ALL TESTED FOR.
005744  012737  001500  001306          MOV     #DV.MAP,CREAM   ;RESET ADDRESS POINTER.
005752  000754                          BR      1$              ;KEEP LOOKING FOR ACTIVE DV11
005754  000241                  2$:     CLC                     ;CLEAR PROC. CARRY.
005756  106137  001304                  ROLB    RUN             ;UPDATE POINTER.
005762  105537  001304                  ADCB    RUN             ;CATCH CARRY.
005766  013700  001306                  MOV     CREAM,R0        ;GET ADDRESS POINTER.
005772  062737  000024  001306          ADD     #24,CREAM       ;UPDATE.
006000  022737  001740  001306          CMP     #DV.END,CREAM
                                                                ;ALL DONE?
006006  001003                          BNE     3$              ;BR IF NO.
006010  012737  001500  001306          MOV     #DV.MAP,CREAM   ;RESTORE POINTER.
006016  012037  001362          3$:     MOV     (R0)+,DVSCR     ;LOAD SYSTEM CTRL. REG
006022  012037  001352                  MOV     (R0)+,DVRVEC    ;LOAD VECTOR
006026  012037  001416                  MOV     (R0)+,L00.03    ;GET LINE PARAMETERS. 00-03
006032  012037  001426                  MOV     (R0)+,SYNC2A    ;
006036  012037  001420                  MOV     (R0)+,L04.07    ;                     04-07
006042  012037  001430                  MOV     (R0)+,SYNC2B    ;
006046  012037  001422                  MOV     (R0)+,L08.11    ;                     08-11
006052  012037  001432                  MOV     (R0)+,SYNC2C    ;
006056  012037  001424                  MOV     (R0)+,L12.15    ;                     12-15
006062  012037  001434                  MOV     (R0)+,SYNC2D    ;
006066  012700  000002                  MOV     #2,R0           ;SAVE CORE THIS WAY!
006072  013737  001362  001364          MOV     DVSCR,DVSCRH    ;GET SYS CTRL. REG HIGH BYTE.
006100  005237  001364                  INC     DVSCRH          ;GOT IT.
006104  013737  001364  001366          MOV     DVSCRH,DVRIC    ;GET NXT REC. CHAR REG.
006112  005237  001366                  INC     DVRIC           ;GOT IT
006116  013737  001366  001370          MOV     DVRIC,DVLCR     ;GET LN. PAR.REG.
006124  060037  001370                  ADD     R0,DVLCR        ;GOT IT
006130  013737  001370  001372          MOV     DVLCR,DVSRS     ;GET SEC. REG. SEL. REG.
006136  060037  001372                  ADD     R0,DVSRS        ;GOT IT
006142  013737  001372  001374          MOV     DVSRS,DVSRSH    ;GET HIGH BYTE.
006150  005237  001374                  INC     DVSRSH          ;GOT IT
006154  013737  001374  001376          MOV     DVSRSH,DVSRA    ;SEC. REG. ACCESS.
006162  005237  001376                  INC     DVSRA           ;GOT IT
```

```
006166  013737  001376  001400          MOV     DVSRA,DVSFR     ;SPEC. FUN. REG.
006174  060037  001400                  ADD     R0,DVSFR        ;
006200  013737  001400  001402          MOV     DVSFR,DVNSR     ;NPR STAT. REG.
006206  060037  001402                  ADD     R0,DVNSR        ;
006212  013737  001402  001404          MOV     DVNSR,RESV16    ;RESERVED REG
006220  060037  001404                  ADD     R0,RESV16       ;

006224  013737  001352  001354          MOV     DVRVEC,DVRLVL   ;PTY LVL
006232  060037  001354                  ADD     R0,DVRLVL       ;
006236  013737  001354  001356          MOV     DVRLVL,DVTVEC   ;TX VEC
006244  060037  001356                  ADD     R0,DVTVEC       ;
006250  013737  001356  001360          MOV     DVTVEC,DVTLVL   ;TX LVL
006256  060037  001360                  ADD     R0,DVTLVL

006262  012700  001416                  MOV     #L00.03,R0      ;LOAD STAUS 00-03
006266  012701  001405                  MOV     #MASK.A,R1      ;PREPARE MASK.
006272  012702  001412                  MOV     #CLK.A,R2       ;PREPARE CLOCKS
006276  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.

006302  012700  001420                  MOV     #L04.07,R0      ;LOAD STAUS 00-03
006306  012701  001407                  MOV     #MASK.B,R1      ;PREPARE MASK.
006312  012702  001413                  MOV     #CLK.B,R2       ;PREPARE CLOCKS
006316  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.

006322  012700  001422                  MOV     #L08.11,R0      ;LOAD STAUS 00-03
006326  012701  001410                  MOV     #MASK.C,R1      ;PREPARE MASK.
006332  012702  001414                  MOV     #CLK.C,R2       ;PREPARE CLOCKS
006336  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.

006342  012700  001424                  MOV     #L12.15,R0      ;LOAD STAUS 00-03
006346  012701  001411                  MOV     #MASK.D,R1      ;PREPARE MASK.
006352  012702  001415                  MOV     #CLK.D,R2       ;PREPARE CLOCKS
006356  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
006362  032777  000002  172612          BIT     #SW01,@SWR
006370  001445                          BEQ     7$
006372                          4$:
006372  005737  000042                  TST     @#42
006376  001042                          BNE     7$
006400  104402  005104                  TYPE    ,MCRLF
006404  104403                          INSTR
006406  005366                          MTSTN
006410  104405                          PARAM
006412  000001                          1
006414  001000                          1000
006416  001226                          TSTNO
006420     000                  .BYTE   0
006421     001                  .BYTE   1
006422  012700  007256                  MOV     #TST1,R0
006426  022710                  5$:     CMP     (PC)+,(R0)
006430  012737                          MOV     (PC)+,@(PC)+
006432  001015                          BNE     6$
006434  023760  001226  000002          CMP     TSTNO,2(R0)
006442  001011                          BNE     6$
006444  022760  001226  000004          CMP     #TSTNO,4(R0)
006452  001005                          BNE     6$
006454  010037  001214                  MOV     R0,RETURN
```

```
006460  104402  005104                    TYPE    ,MCRLF
006464  000412                            BR      9$
006466  005720                    6$:     TST     (R0)+
006470  020027  026444                    CMP     R0,#TLAST+10
006474  001354                            BNE     5$
006476  104402  005100                    TYPE    ,MQM
006502  000733                            BR      4$
006504  012737  007256  001214    7$:     MOV     #TST1,RETURN          ;PREPARE RETURN ADDRESS
006512  000177  172476            9$:     JMP     @RETURN               ;GO START TESTING.

006516  011003                    FIX.00: MOV     (R0),R3               ;GET PARAMETERS.
006520  042703  176377                    BIC     #^C<1400>,R3          ;CLEAR JUNK.
006524  005703                            TST     R3                    ;TEST FOR EIGHT BITS.
006526  001004                            BNE     1$                    ;BR IF NOT 8 BITS.
006530  105011                            CLRB    (R1)                  ;SET
006532  112712  000010                    MOVB    #8.,(R2)              ;
006536  000424                            BR      4$
006540  022703  000400            1$:     CMP     #400,R3               ;CHECK FOR SEVEN BITS.
006544  001005                            BNE     2$                    ;BR IF NOT 7 BITS.
006546  112711  000200                    MOVB    #200,(R1)             ;
006552  112712  000007                    MOVB    #7,(R2)               ;
006556  000414                            BR      4$
006560  022703  001000            2$:     CMP     #1000,R3              ;CHECK FOR SIX BITS.
006564  001005                            BNE     3$                    ;BR IF NOT SIX BITS.
006566  112711  000300                    MOVB    #300,(R1)             ;
006572  112712  000006                    MOVB    #6,(R2)               ;
006576  000404                            BR      4$
006600  112711  000340            3$:     MOVB    #340,(R1)             ;IF NONE OF THE ABOVE; MUST BE 5 BITS.
006604  112712  000005                    MOVB    #5,(R2)               ;
006610  032710  040000            4$:     BIT     #PARBIT,(R0)          ;PARITY ENABLED?
006614  001401                            BEQ     5$                    ;IF =0; THEN NO PARITY.
006616  105212                            INCB    (R2)                  ;PLUS ONE TO THE CLOCK!
006620  000207                    5$:     RTS     PC                    ;

                                          ;*ROUTINE USED TO "AUTO SIZE" THE DV11
                                          ;*CSR AND VECTOR.
                                          ;*NOTE: THE CSR MAY BE ANY WHERE IN THE FLOATING
                                          ;*       ADDRESS RANGE (175000:175400)
                                          ;*       AND THE VECTOR MAY BE ANY WHERE IN THE
                                          ;*       FLOATING VECTOR RANGE (300:770)
                                          ;*

006622                            AUTO.SIZE:
006622  000005                            RESET                         ;INSURE A BUS INIT.
006624  012702  001500            CSRMAP: MOV     #DV.MAP,R2            ;LOAD MAP POINTER.
006630  005022                    1$:     CLR     (R2)+                 ;ZERO ENTIRE MAP
006632  022702  001740                    CMP     #DV.END,R2            ;ALL DONE?
006636  001374                            BNE     1$                    ;BR IF NO
006640  105037  001301                    CLRB    DVNUM                 ;SET OCTAL NUMBER OF DV11'S TO 0
006644  012702  001500                    MOV     #DV.MAP,R2
006650  012701  175000                    MOV     #175000,R1            ;SET FOR FIRST ADDRESS TO BE TESTED
006654  012737  007074  000004            MOV     #6$,@#4               ;SET FOR NON-EXISTANT DEVICE TIME OUT
006662  005711                    2$:     TST     (R1)                  ;IF DV11 DVSCR S/B 0
006664  001037                            BNE     3$                    ;IF NO DEV ; TRAP TO 4. IF NO BIT 9 THEN NO DV11
006666  022761  177777  000012            CMP     #177777,12(R1)        ;IF DV11 THEN DVSFR S/B ALL 1'S ON INIT!
006674  001033                            BNE     3$                    ;BR IF NOT DV11
```

```
006676  005761  000016                      TST     16(R1)              ;IF DV11 THEN RESV16 S/B ALL 0'S
006702  001030                              BNE     3$                  ;BR IF NOT DV11
                            ;AT THIS POINT IT IS ASSUMED THAT R1 HOLDS A DV11 CSR ADDRESS.
006704  010122                              MOV     R1,(R2)+            ;STORE CSR IN CORE TABLE.
006706  005722                              TST     (R2)+               ;POP OVER VECTOR STORE AREA
006710  052722  000226                      BIS     #226,(R2)+          ;SET LINE CARD 1 STAT AND SYNC
006714  052722  000062                      BIS     #62,(R2)+           ;
006720  052722  000226                      BIS     #226,(R2)+          ;SET LINE CARD 2 STAT AND SYNC
006724  052722  000062                      BIS     #62,(R2)+           ;
006730  052722  000226                      BIS     #226,(R2)+          ;SET LINE CARD 3 STAT AND SYNC
006734  052722  000062                      BIS     #62,(R2)+           ;
006740  052722  000226                      BIS     #226,(R2)+          ;SET LINE CARD 4 STAT AND SYNC
006744  052722  000062                      BIS     #62,(R2)+           ;
006750  105237  001301                      INCB    DVNUM               ;UPDATE DEVICE COUNTER
006754  122737  000010  001301              CMPB    #10,DVNUM           ;ARE MAX. NO. OF DEV FOUND?
006762  001405                              BEQ     100$                ;YES DON'T LOOK FOR ANY MORE.
006764  062701  000010          3$:         ADD     #10,R1              ;UPDATE CSR POINTER ADDRESS
006770  022701  175400                      CMP     #175400,R1
006774  001332                              BNE     2$                  ;BR IF MORE ADDRESS TO CHECK.
006776  012722  177777          100$:       MOV     #177777,(R2)+       ;TERMINATER.
007002  105037  001300                      CLRB    DVACTV
007006  105737  001301                      TSTB    DVNUM               ;WERE ANY DV11'S FOUND AT ALL?
007012  001423                              BEQ     5$                  ;ERROR AUTO SIZER FOUND NO DV11'S IN THIS SYS.
007014  113701  001301                      MOVB    DVNUM,R1
007020  110137  001303                      MOVB    R1,SAVNUM           ;SAVE NUMBER OF DEVICES
007024  000241                  4$:         CLC
007026  106137  001300                      ROLB    DVACTV              ;GENERATE ACTIVE REGISTER OF DEVICES.
007032  105237  001300                      INCB    DVACTV              ;SET THE BIT
007036  005301                              DEC     R1
007040  001371                              BNE     4$                  ;BR IF MORE TO GENERATE
007042  012737  000006  000004              MOV     #6,@#4              ;RESTORE TRAP VECTOR
007050  113737  001300  001302              MOVB    DVACTV,SAVACT       ;SAVE ACTIVE REGISTER
007056  000137  007102                      JMP     VECMAP              ;GO FIND THE VECTOR NOW.
007062  104402  005174          5$:         TYPE    ,MERR2              ;NOTIFY OPR THAT NO DV11'S FOUND.
007066  005000                              CLR     R0                  ;MAKE DATA LIGHTS ZERO
007070  000000                              HALT                        ;STOP THE SHOW
007072  000776                              BR      .-2                 ;DISABLE CONT. SW.
007074  012716  006764          6$:         MOV     #3$,(SP)            ;ENTERED BY NON-EXISTANT TIME-OUT.
007100  000002                              RTI                         ;RETURN TO MAINSTREAM

007102  012737  000340  000022  VECMAP:     MOV     #340,@#22           ;SET IOT TRAP PRIO TO 7
007110  012737  007232  000020              MOV     #4$,@#20            ;SET IOT TRAP VECTOR
007116  012702  001500                      MOV     #DV.MAP,R2          ;SET SOFTWARE POINTER
007122  012700  000300                      MOV     #300,R0             ;FLOATING VECTORS START HERE.
007126  012701  000302                      MOV     #302,R1             ;PC OF IOT INSTR.
007132  010120                  1$:         MOV     R1,(R0)+            ;START FILLING VECTOR AREA
007134  012721  000004                      MOV     #4,(R1)+            ;WITH .+2: IOT
007140  022021                              CMP     (R0)+,(R1)+         ;ADD 2 TO R0 +R1
007142  020127  001000                      CMP     R1,#1000
007146  101771                              BLOS    1$                  ;BR IF MORE TO FILL
007150  113737  001300  001246              MOVB    DVACTV,TEMP1        ;STORE TEMPORALLY
007156  006037  001246          2$:         ROR     TEMP1               ;BRING OUT A BIT
007162  103034                              BCC     5$                  ;BR IF ALL DONE
007164  005037  177776                      CLR     PS                  ;ZERO CPU PRIO
007170  012772  001300  000000              MOV     #BIT9+BIT7+BIT6,@(R2)
007176  005000                              CLR     R0                  ;ATTEMPT TO FORCE AN INTERUPT
```

K03


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

```



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

```
007530  032737  004000  001236          BIT     #ASYNC,STAT             ;IS THIS AN ASYNC LINE CARD?
007536  001001                          BNE     1$                      ;BR IF YES
007540  000207                          RTS     PC                      ;EXIT TEST.
007542  004537  032144          1$:     JSR     R5,TURNON               ;TURN ON DV11 AND SETUP PARAMETERS
007546  001000                          <000>+BIT9                      ;PARAMETERS AND CHAR LENGTH (5 B/P/C)
007550  005001                          CLR     R1                      ;CHAR COUNTER.
007552  012702  033340                  MOV     #TXBAP,R2               ;GET TRANSMITTER BUFFER.
007556  012703  033740                  MOV     #RXBA,R3                ;GET RECEIVER BUFFER
007562  005004                          CLR     R4                      ;GET STORAGE OF DATA
007564  005005                          CLR     R5                      ;
007566  112205                  2$:     MOVB    (R2)+,R5                ;LOAD GOOD DATA
007570  112304                          MOVB    (R3)+,R4                ;LOAD RECEIVED DATA
007572  042705  177740                  BIC     #<377*400>!340,R5               ;CLEAR HIBYTE AND MASK.
007576  042704  177400                  BIC     #<377*400>,R4                   ;CLEAR HIGH BYTE
007602  020504                          CMP     R5,R4                   ;DATA OK?
007604  001401                          BEQ     3$                      ;BR IF YES
007606  104001                          HLT     1                       ;DATA COMPARE ERROR.
007610  105201                  3$:     INCB    R1                      ;UPDATE COUNTER.
007612  001365                          BNE     2$                      ;ALL CHAR CHECKED?
007614  005200                          INC     R0                      ;UPDATE LINE NO.
007616  005337  032314                  DEC     COUNT                   ;4 LINES DONE?
007622  001347                          BNE     1$                      ;BR IF NO
007624  000207                          RTS     PC                      ;EXIT TEST.


                                        ;*********************** TEST 2 ******************************
                                        ;*TEST OF CHARACTER LENGTH FUNCTIONS
                                        ;*ON THE ASYNC LINE CARD.
                                        ;*THIS TEST WILL TRANSMIT 256 CHARS AT 6 BITS PER CHAR.
                                        ;DATA IN THE TRANSMITTER BUFFER WILL BE
                                        ;*FROM 000 TO 377(8).
                                        ;*NOTE: THIS TEST USES "INTERNAL LOOPBACK" MODE.
                                        ;;**********************************************************

                                ;  TEST 2
                                ;--------------
007626  012737  000002  001226  TST2:   MOV     #2,TSTNO
007634  012737  010050  001216          MOV     #TST3,NEXT
007642  012700  000000                  MOV     #0.,R0                  ;PLACE LINE NUMBER INTO R0
007646  013737  001416  001236          MOV     L00.03,STAT             ;LOAD LINE CARD STATUS INTO STAT
007654  100402                          BMI     100$                    ;BR IF LINE CARD NOT TO BE TESTED
007656  004737  007744                  JSR     PC,105$                 ;GO DO THE TEST FOR LINE CARD 1
007662  012700  000004          100$:   MOV     #4.,R0                  ;PLACE LINE NUMBER INTO R0
007666  013737  001420  001236          MOV     L04.07,STAT             ;LOAD LINE CARD STATUS INTO STAT
007674  100402                          BMI     101$                    ;BR IF LINE CARD NOT TO BE TESTED
007676  004737  007744                  JSR     PC,105$                 ;GO DO THE TEST FOR LINE CARD 2
007702  012700  000010          101$:   MOV     #8.,R0                  ;LOAD LINE NUMBER
007706  013737  001422  001236          MOV     L08.11,STAT             ;LOAD LINE CARD STATUS INTO STAT
007714  100402                          BMI     102$                    ;BR IF LINE CARD NOT TO BE TESTED
007716  004737  007744                  JSR     PC,105$                 ;DO THE TEST FOR LINE CARD 3
007722  012700  000014          102$:   MOV     #12.,R0                 ;LOAD LINE NO.
007726  013737  001424  001236          MOV     L12.15,STAT             ;LOAD LINE CARD STATUS
007734  100402                          BMI     103$                    ;BR IF LINE CARD NOT TO BE TESTED
007736  004737  007744                  JSR     PC,105$                 ;DO THE TESTS FOR LINE CARD 4
007742  104400                  103$:   SCOPE                           ;SCOPE THIS TEST.
007744                          105$:                                   ;TEST ENTRANCE.
```

```
007744  012737  000004  032314              MOV     #4,COUNT          ;SET TO DO 4 LINES
007752  032737  004000  001236              BIT     #ASYNC,STAT       ;IS THIS AN ASYNC LINE CARD?
007760  001001                              BNE     1$                ;BR IF YES
007762  000207                              RTS     PC                ;EXIT TEST.
007764  004537  032144              1$:     JSR     R5,TURNON         ;TURN ON DV11 AND SETUP PARAMETERS
007770  005000                              <BIT11>+BIT9              ;PARAMETERS AND CHAR LENGTH (6 B/P/C)
007772  005001                              CLR     R1                ;CHAR COUNTER.
007774  012702  033340                      MOV     #TXBAP,R2         ;GET TRANSMITTER BUFFER.
010000  012703  033740                      MOV     #RXBA,R3          ;GET RECEIVER BUFFER
010004  005004                              CLR     R4                ;GET STORAGE OF DATA
010006  005005                              CLR     R5                ;
010010  112205                      2$:     MOVB    (R2)+,R5          ;LOAD GOOD DATA
010012  112304                              MOVB    (R3)+,R4          ;LOAD RECEIVED DATA
010014  042705  177700                      BIC     #<377*400>!300,R5        ;CLEAR HIBYTE AND MASK.
010020  042704  177400                      BIC     #<377*400>,R4            ;CLEAR HIGH BYTE
010024  020504                              CMP     R5,R4             ;DATA OK?
010026  001401                              BEQ     3$                ;BR IF YES
010030  104001                              HLT     1                 ;DATA COMPARE ERROR.
010032  105201                      3$:     INCB    R1                ;UPDATE COUNTER.
010034  001365                              BNE     2$                ;ALL CHAR CHECKED?
010036  005200                              INC     R0                ;UPDATE LINE NO.
010040  005337  032314                      DEC     COUNT             ;4 LINES DONE?
010044  001347                              BNE     1$                ;BR IF NO
010046  000207                              RTS     PC                ;EXIT TEST.


                                            ;************************ TEST 3 *****************************
                                            ;*TEST OF CHARACTER LENGTH FUNCTIONS
                                            ;*ON THE ASYNC LINE CARD.
                                            ;*THIS TEST WILL TRANSMIT 256 CHARS AT 7 BITS PER CHAR.
                                            ;DATA IN THE TRANSMITTER BUFFER WILL BE
                                            ;*FROM 000 TO 377(8).
                                            ;*NOTE: THIS TEST USES "INTERNAL LOOPBACK" MODE.
                                            ;;*****************************************************************

                                    ;   TEST 3
                                    ;---------------
010050  012737  000003  001226      TST3:   MOV     #3,TSTNO
010056  012737  010272  001216              MOV     #TST4,NEXT
010064  012700  000000                      MOV     #0.,R0            ;PLACE LINE NUMBER INTO R0
010070  013737  001416  001236              MOV     L00.03,STAT       ;LOAD LINE CARD STATUS INTO STAT
010076  100402                              BMI     100$              ;BR IF LINE CARD NOT TO BE TESTED
010100  004737  010166                      JSR     PC,105$           ;GO DO THE TEST FOR LINE CARD 1
010104  012700  000004              100$:   MOV     #4.,R0            ;PLACE LINE NUMBER INTO R0
010110  013737  001420  001236              MOV     L04.07,STAT       ;LOAD LINE CARD STATUS INTO STAT
010116  100402                              BMI     101$              ;BR IF LINE CARD NOT TO BE TESTED
010120  004737  010166                      JSR     PC,105$           ;GO DO THE TEST FOR LINE CARD 2
010124  012700  000010              101$:   MOV     #8.,R0            ;LOAD LINE NUMBER
010130  013737  001422  001236              MOV     L08.11,STAT       ;LOAD LINE CARD STATUS INTO STAT
010136  100402                              BMI     102$              ;BR IF LINE CARD NOT TO BE TESTED
010140  004737  010166                      JSR     PC,105$           ;DO THE TEST FOR LINE CARD 3
010144  012700  000014              102$:   MOV     #12.,R0           ;LOAD LINE NO.
010150  013737  001424  001236              MOV     L12.15,STAT       ;LOAD LINE CARD STATUS
010156  100402                              BMI     103$              ;BR IF LINE CARD NOT TO BE TESTED
010160  004737  010166                      JSR     PC,105$           ;DO THE TESTS FOR LINE CARD 4
010164  104400                      103$:   SCOPE                     ;SCOPE THIS TEST.
```

```
010166                             105$:                           ;TEST ENTRANCE.
010166  012737  000004  032314             MOV     #4,COUNT        ;SET TO DO 4 LINES
010174  032737  004000  001236             BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
010202  001001                             BNE     1$              ;BR IF YES
010204  000207                             RTS     PC              ;EXIT TEST.
010206  004537  032144             1$:     JSR     R5,TURNON       ;TURN ON DV11 AND SETUP PARAMETERS
010212  011000                             BIT12!BIT9              ;PARAMETERS AND CHAR LENGTH 7 8
010214  005001                             CLR     R1              ;CHAR COUNTER.
010216  012702  033340                     MOV     #TXBAP,R2       ;GET TRANSMITTER BUFFER.
010222  012703  033740                     MOV     #RXBA,R3        ;GET RECEIVER BUFFER
010226  005004                             CLR     R4              ;GET STORAGE OF DATA
010230  005005                             CLR     R5              ;
010232  112205                     2$:     MOVB    (R2)+,R5        ;LOAD GOOD DATA
010234  112304                             MOVB    (R3)+,R4        ;LOAD RECEIVED DATA
010236  042705  177600                     BIC     #<377*400>!200,R5       ;CLEAR HIBYTE AND MASK.
010242  042704  177400                     BIC     #<377*400>,R4           ;CLEAR HIGH BYTE
010246  020504                             CMP     R5,R4           ;DATA OK?
010250  001401                             BEQ     3$              ;BR IF YES
010252  104001                             HLT     1               ;DATA COMPARE ERROR.
010254  105201                     3$:     INCB    R1              ;UPDATE COUNTER.
010256  001365                             BNE     2$              ;ALL CHAR CHECKED?
010260  005200                             INC     R0              ;UPDATE LINE NO.
010262  005337  032314                     DEC     COUNT           ;4 LINES DONE?
010266  001347                             BNE     1$              ;BR IF NO
010270  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
                                   ;---------------
010272  012737  000004  001226     TST4:   MOV     #4,TSTNO
010300  012737  010514  001216             MOV     #TST5,NEXT
010306  012700  000000                     MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
010312  013737  001416  001236             MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
010320  100402                             BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
010322  004737  010410                     JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
010326  012700  000004             100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
010332  013737  001420  001236             MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
010340  100402                             BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
010342  004737  010410                     JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
010346  012700  000010             101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
010352  013737  001422  001236             MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
010360  100402                             BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
010362  004737  010410                     JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
010366  012700  000014             102$:   MOV     #12.,R0         ;LOAD LINE NO.
010372  013737  001424  001236             MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
010400  100402                             BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
010402  004737  010410                     JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
```

```
010406  104400                   103$:   SCOPE                   ;SCOPE THIS TEST.
010410                           105$:                           ;TEST ENTRANCE.
010410  012737  000004  032314           MOV     #4,COUNT        ;SET TO DO 4 LINES
010416  032737  004000  001236           BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
010424  001001                           BNE     1$              ;BR IF YES
010426  000207                           RTS     PC              ;EXIT TEST.
010430  004537  032144           1$:     JSR     R5,TURNON       ;TURN ON DV11 AND SETUP PARAMETERS
010434  015000                           <BIT12+BIT11>+BIT9              ;PARAMETERS AND CHAR LENGTH 8 8 P/C.
010436  005001                           CLR     R1              ;CHAR COUNTER.
010440  012702  033340                   MOV     #TXBAP,R2       ;GET TRANSMITTER BUFFER.
010444  012703  033740                   MOV     #RXBA,R3        ;GET RECEIVER BUFFER
010450  005004                           CLR     R4              ;GET STORAGE OF DATA
010452  005005                           CLR     R5              ;
010454  112205                   2$:     MOVB    (R2)+,R5        ;LOAD GOOD DATA
010456  112304                           MOVB    (R3)+,R4        ;LOAD RECEIVED DATA
010460  042705  177400                   BIC     #<377*400>!000,R5       ;CLEAR HIBYTE AND MASK.
010464  042704  177400                   BIC     #<377*400>,R4           ;CLEAR HIGH BYTE
010470  020504                           CMP     R5,R4           ;DATA OK?
010472  001401                           BEQ     3$              ;BR IF YES
010474  104001                           HLT     1               ;DATA COMPARE ERROR.
010476  105201                   3$:     INCB    R1              ;UPDATE COUNTER.
010500  001365                           BNE     2$              ;ALL CHAR CHECKED?
010502  005200                           INC     R0              ;UPDATE LINE NO.
010504  005337  032314                   DEC     COUNT           ;4 LINES DONE?
010510  001347                           BNE     1$              ;BR IF NO
010512  000207                           RTS     PC              ;EXIT TEST.


                                         ;************************ TEST 5 *****************************
                                         ;*THIS TEST WILL CYCLE THROUGH A LINE CARD
                                         ;*AT SPEED SEL 17(8)(38.4 K BAUD) AT
                                         ;*VARIOUS CHAR LENGHTS (8,7,6,5) AND TRANSFER
                                         ;*400(8) CHARS FROM TRANSMITTER TO REVEIVER.
                                         ;*IT IS IMPORTANT TO NOTE THAT ALL 4 LINES
                                         ;*OF A GIVEN LINE CARD ARE TURNED ON AT THE
                                         ;*SAME TIME!.
                                         ;*
                                         ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                         ;;**********************************************************-*******

                                 ;   TEST 5
                                 ;---------------
010514  012737  000005  001226   TST5:   MOV     #5,TSTNO
010522  012737  011336  001216           MOV     #TST6,NEXT
010530  012700  000000                   MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
010534  013737  001416  001236           MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
010542  100402                           BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
010544  004737  010632                   JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
010550  012700  000004           100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
010554  013737  001420  001236           MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
010562  100402                           BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
010564  004737  010632                   JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
010570  012700  000010           101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
010574  013737  001422  001236           MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
010602  100402                           BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
010604  004737  010632                   JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
```

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

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

```
011314  001402                                  BEQ     .+6             ;BR IF ALL CHAR SIZES DONE.
011316  000137  010664                          JMP     1$              ;CONTINUE WITH NEW SIZE
011322  000207                                  RTS     PC
011324  000000                          79$:    0
011326  000000                          80$:    0
011330  000000                          81$:    0
011332  000000                          MASK:   0
011334                                  CHAR.SIZE:
011334  000000                                  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$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
 011630  004537  032316                         JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 011634  000001                         10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16 (8).
 011636  020000                                 BIT13                   ;RECEIVER ENABLE.
 011640  001000                                 <000>+BIT9              ;PARAMETERS FOR REG 1
 011642  072000                                 BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

 011644  000001                         11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
 011646  020000                                 BIT13                   ;RECEIVER ENABLE.
 011650  041000                                 <BIT14>+BIT9            ;PARAMETERS FOR REG 1.
 011652  072000                                 BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 011654  000001                         12$:    .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$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
 011700  004537  032316                         JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 011704  000001                         14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
 011706  020000                                 BIT13                   ;RECEIVER ENABLE.
 011710  041000                                 <BIT14>+BIT9            ;PARAMETER FOR REG 1.
 011712  072000                                 BIT14+BIT13+BIT12+BIT10 ;9600 BAUD

 011714  000001                         15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
 011716  020000                                 BIT13                   ;RECEIVER ENABLE.
 011720  001000                                 <000>+BIT9              ;PARAMETERS FOR REG 1.
 011722  072000                                 BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 011724  000001                         16$:    .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
```

```
                                                       ;*   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,2ST,9600 BAUD.
                                                       ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                                       ;;*********************************************************

                                              ;  TEST 7
                                              ;--------------
011730  012737  000007  001226        TST7:   MOV     #7,TSTNO
011736  012737  012322  001216                MOV     #TST10,NEXT
011744  012700  000000                        MOV     #0,,R0            ;PLACE LINE NUMBER INTO R0
011750  013737  001416  001236                MOV     L00.03,STAT       ;LOAD LINE CARD STATUS INTO STAT
011756  100402                                BMI     100$              ;BR IF LINE CARD NOT TO BE TESTED
011760  004737  012046                        JSR     PC,105$           ;GO DO THE TEST FOR LINE CARD 1
011764  012700  000004                100$:   MOV     #4,,R0            ;PLACE LINE NUMBER INTO R0
011770  013737  001420  001236                MOV     L04.07,STAT       ;LOAD LINE CARD STATUS INTO STAT
011776  100402                                BMI     101$              ;BR IF LINE CARD NOT TO BE TESTED
012000  004737  012046                        JSR     PC,105$           ;GO DO THE TEST FOR LINE CARD 2
012004  012700  000010                101$:   MOV     #8,,R0            ;LOAD LINE NUMBER
012010  013737  001422  001236                MOV     L08.11,STAT       ;LOAD LINE CARD STATUS INTO STAT
012016  100402                                BMI     102$              ;BR IF LINE CARD NOT TO BE TESTED
012020  004737  012046                        JSR     PC,105$           ;DO THE TEST FOR LINE CARD 3
012024  012700  000014                102$:   MOV     #12,,R0           ;LOAD LINE NO.
012030  013737  001424  001236                MOV     L12.15,STAT       ;LOAD LINE CARD STATUS
012036  100402                                BMI     103$              ;BR IF LINE CARD NOT TO BE TESTED
012040  004737  012046                        JSR     PC,105$           ;DO THE TESTS FOR LINE CARD 4
012044  104400                        103$:   SCOPE                     ;SCOPE THIS TEST.
012046                                105$:                             ;TEST ENTRANCE.
012046  032737  004000  001236                BIT     #ASYNC,STAT       ;IS THIS AN ASYNC LINE CARD?
012054  001001                                BNE     1$                ;BR IF YES
012056  000207                                RTS     PC                ;EXIT TEST
012060  010037  012104                1$:     MOV     R0,2$             ;GET LINE UNDER TEST
                                                                        ;LINE 0 OR 4 OR 10 OR 14(8)
012064  010037  012124                        MOV     R0,4$             ;SAVE SAME LINE
012070  010037  012114                        MOV     R0,3$             ;PREPARE FOR LINE+1
012074  005237  012114                        INC     3$                ;MAKE LINE = LINE+1
                                                                        ;LINE 1 OR 5 OR 11 OR 15(8)
                                              ; ***********************************************
                                              ;               PART 1
                                              ;       IN THIS ROUTINE LOCATION "2$"
                                              ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                              ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                              ;
012100  004537  032316                        JSR     R5,TIME.PAR       ;GOTO SUBROUTINE
012104  000001                        2$:     .BLKW 1                   ;LINE 0 OR 4 OR 10 OR 14(8)
012106  020000                                BIT13                     ;RECEIVER ENABLE
012110  001000                                <000>+BIT9                ;PARAMETERS FOR REG 1.
012112  072000                                BIT14+BIT13+BIT12+BIT10   ;9600 BAUD.

012114  000001                        3$:     .BLKW 1                   ;LINE 1 OR 5 OR 11 OR 15(8).
012116  020000                                BIT13                     ;RECEIVER ENABLE
```

```
012120  021000                                  <BIT13>+BIT9                 ;PARAMETERS FOR REG 1.
012122  072000                                  BIT14+BIT13+BIT12+BIT10      ;9600 BAUD.
012124  000001                          4$:     .BLKW 1                      ;LINE EXPECTED TO FINISH FIRST.
                                                                             ;LINE 0 OR 4 OR 10 OR 14(8).
                                        ; ***************************************************

012126  010037  012154                  5$:     MOV     R0,6$                ;GET INITAL LINE NO.
012132  010037  012164                          MOV     R0,7$                ;STORE FOR NEXT TEST.
012136  005237  012164                          INC     7$                   ;MAKE LINE=LINE+1.
012142  013737  012164  012174                  MOV     7$,8$                ;STORE LINE+1 FOR NEXT TESTS.
                                        ; ***************************************************
                                        ;               PART 2
                                        ;       IN THIS ROUTINE LOCATION "7$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
012150  004537  032316                          JSR     R5,TIME.PAR          ;GOTO SUBROUTINE.
012154  000001                          6$:     .BLKW 1                      ;LINE 0 OR 4 OR 10 OR 14(8).
012156  020000                                  BIT13                        ;RECEIVER ENABLE.
012160  021000                                  <BIT13>+BIT9                 ;PARAMETERS FOR REG 1.
012162  072000                                  BIT14+BIT13+BIT12+BIT10      ;9600 BAUD.

012164  000001                          7$:     .BLKW 1                      ;LINE 1 OR 5 OR 11 OR 15(8).
012166  020000                                  BIT13                        ;RECEIVER ENABLE.
012170  001000                                  <000>+BIT9                   ;PARAMETERS FOR REG 1.
012172  072000                                  BIT14+BIT13+BIT12+BIT10      ;9600 BAUD.
012174  000001                          8$:     .BLKW 1                      ;LINE 1 OR 5 OR 11 OR 15(8).
                                        ; ***************************************************

012176  062700  000002                          ADD     #2,R0                ;PREPARE FOR NEXT GROUP OF LINES.
012202  010037  012226                  9$:     MOV     R0,10$               ;SAVE LINE NO. FOR TEST.
012206  010037  012246                          MOV     R0,12$               ;SAVE NO.
012212  010037  012236                          MOV     R0,11$               ;
012216  005237  012236                          INC     11$                  ;MAKE LINE=LINE+1.
                                        ; ***************************************************
                                        ;               PART 1A
                                        ;       IN THIS ROUTINE LOCATION "10$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
012222  004537  032316                          JSR     R5,TIME.PAR          ;GOTO SUBROUTINE.
012226  000001                          10$:    .BLKW 1                      ;LINE 2 OR 6 OR 12 OR 16(8).
012230  020000                                  BIT13                        ;RECEIVER ENABLE.
012232  001000                                  <000>+BIT9                   ;PARAMETERS FOR REG 1
012234  072000                                  BIT14+BIT13+BIT12+BIT10      ;9600 BAUD.

012236  000001                          11$:    .BLKW 1                      ;LINE 3 OR 7 OR 13 OR 17(8).
012240  020000                                  BIT13                        ;RECEIVER ENABLE.
012242  021000                                  <BIT13>+BIT9                 ;PARAMETERS FOR REG 1.
012244  072000                                  BIT14+BIT13+BIT12+BIT10      ;9600 BAUD.
012246  000001                          12$:    .BLKW 1                      ;LINE EXPECTED TO FINISH FIRST
                                                                             ;LINE 2 OR 6 OR 12 OR 16(8).
                                        ; ***************************************************
```

```
012250  010037  012276          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
012254  010037  012306                  MOV     R0,15$          ;STORE LINE.
012260  005237  012306                  INC     15$             ;LINE =LINE+1.
012264  013737  012306  012316          MOV     15$,16$         ;SET FASTEST LINE.
                                ; ************************************************
                                ;                PART 2A
                                ;       IN THIS ROUTINE LOCATION "14$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
012272  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
012276  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
012300  020000                          BIT13                   ;RECEIVER ENABLE.
012302  021000                          <BIT13>+BIT9            ;PARAMETER FOR REG 1.
012304  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD

012306  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
012310  020000                          BIT13                   ;RECEIVER ENABLE.
012312  001000                          <000>+BIT9              ;PARAMETERS FOR REG 1.
012314  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
012316  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 3 OR 7 OR 13 OR 17(8).
                                ; ************************************************

012320  000207                          RTS     PC              ;EXIT TEST.


                                        ;*********************** TEST 10 ******************************
                                        ;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:    6 B/P/C,1ST,9600 BAUD.
                                        ;*LINE X+1:  6 B/P/C,1ST,9600 BAUD,PARITY(EVEN).
                                        ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                        ;:*********************************************************

                                ;  TEST 10
                                ;---------------
012322  012737  000010  001226  TST10:  MOV     #10,TSTNO
012330  012737  012714  001216          MOV     #TST11,NEXT
012336  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
012342  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
012350  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
012352  004737  012440                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
```

```
012356 012700 000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
012362 013737 001420 001236           MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
012370 100402                         BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
012372 004737 012440                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
012376 012700 000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
012402 013737 001422 001236           MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
012410 100402                         BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
012412 004737 012440                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
012416 012700 000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
012422 013737 001424 001236           MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
012430 100402                         BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
012432 004737 012440                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
012436 104400                 103$:   SCOPE                   ;SCOPE THIS TEST.
012440                        105$:                           ;TEST ENTRANCE.
012440 032737 004000 001236           BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
012446 001001                         BNE     1$              ;BR IF YES
012450 000207                         RTS     PC              ;EXIT TEST
012452 010037 012476          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                              ;LINE 0 OR 4 OR 10 OR 14(8)
012456 010037 012516                  MOV     R0,4$           ;SAVE SAME LINE
012462 010037 012506                  MOV     R0,3$           ;PREPARE FOR LINE+1
012466 005237 012506                  INC     3$              ;MAKE LINE = LINE+1
                                                              ;LINE 1 OR 5 OR 11 OR 15(8)
                              ; ************************************************
                              ;               PART 1
                              ;       IN THIS ROUTINE LOCATION "2$"
                              ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                              ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                              ;
012472 004537 032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
012476 000001                 2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
012500 020000                         BIT13                   ;RECEIVER ENABLE
012502 005000                         <BIT11>+BIT9            ;PARAMETERS FOR REG 1.
012504 072000                         BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

012506 000001                 3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
012510 020000                         BIT13                   ;RECEIVER ENABLE
012512 045000                         <BIT14+BIT11>+BIT9              ;PARAMETERS FOR REG 1.
012514 072000                         BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
012516 000001                 4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                              ;LINE 0 OR 4 OR 10 OR 14(8).
                              ; ************************************************

012520 010037 012546          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
012524 010037 012556                  MOV     R0,7$           ;STORE FOR NEXT TEST.
012530 005237 012556                  INC     7$              ;MAKE LINE=LINE+1.
012534 013737 012556 012566           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.
                              ;
012542 004537 032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
```

```
 012546  000001                     5$:     .BLKW 1                     ;LINE 0 OR 4 OR 10 OR 14(8).
 012550  020000                             BIT13                       ;RECEIVER ENABLE.
 012552  045000                             <BIT14+BIT11>+BIT9                  ;PARAMETERS FOR REG 1.
 012554  072000                             BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

 012556  000001                     7$:     .BLKW 1                     ;LINE 1 OR 5 OR 11 OR 15(8..
 012560  020000                             BIT13                       ;RECEIVER ENABLE.
 012562  005000                             <BIT11>+BIT9                ;PARAMETERS FOR REG 1.
 012564  072000                             BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 012566  000001                     8$:     .BLKW 1                     ;LINE 1 OR 5 OR 11 OR 15(8).
                                    ; ************************************************************

 012570  062700  000002                     ADD     #2,R0               ;PREPARE FOR NEXT GROUP OF LINES.
 012574  010037  012620             9$:     MOV     R0,10$              ;SAVE LINE NO. FOR TEST.
 012600  010037  012640                     MOV     R0,12$              ;SAVE NO.
 012604  010037  012630                     MOV     R0,11$              ;
 012610  005237  012630                     INC     11$                 ;MAKE LINE=LINE+1.
                                    ; ************************************************************
                                    ;               PART 1A
                                    ;       IN THIS ROUTINE LOCATION "10$"
                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                    ;
 012614  004537  032316                     JSR     R5,TIME.PAR         ;GOTO SUBROUTINE.
 012620  000001                     10$:    .BLKW 1                     ;LINE 2 OR 6 OR 12 OR 16(8).
 012622  020000                             BIT13                       ;RECEIVER ENABLE.
 012624  005000                             <BIT11>+BIT9                ;PARAMETERS FOR REG 1
 012626  072000                             BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

 012630  000001                     11$:    .BLKW 1                     ;LINE 3 OR 7 OR 13 OR 17(8).
 012632  020000                             BIT13                       ;RECEIVER ENABLE.
 012634  045000                             <BIT14+BIT11>+BIT9                  ;PARAMETERS FOR REG 1.
 012636  072000                             BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
 012640  000001                     12$:    .BLKW 1                     ;LINE EXPECTED TO FINISH FIRST
                                                                        ;LINE 2 OR 6 OR 12 OR 16(8).
                                    ; ************************************************************

 012642  010037  012670             13$:    MOV     R0,14$              ;STORE LINE FOR NEXT TEST.
 012646  010037  012700                     MOV     R0,15$              ;STORE LINE.
 012652  005237  012700                     INC     15$                 ;LINE =LINE+1.
 012656  013737  012700  012710             MOV     15$,16$             ;SET FASTEST LINE.
                                    ; ************************************************************
                                    ;               PART 2A
                                    ;       IN THIS ROUTINE LOCATION "14$"
                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                    ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                    ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                    ;
 012664  004537  032316                     JSR     R5,TIME.PAR         ;GOTO SUBROUTINE.
 012670  000001                     14$:    .BLKW 1                     ;LINE 2 OR 6 OR 12 OR 16(8)
 012672  020000                             BIT13                       ;RECEIVER ENABLE.
 012674  045000                             <BIT14+BIT11>+BIT9                  ;PARAMETER FOR REG 1.
 012676  072000                             BIT14+BIT13+BIT12+BIT10 ;9600 BAUD

 012700  000001                     15$:    .BLKW 1                     ;LINE 3 OR 7 OR 13 OR 17(8).
```

```
012702  020000                         BIT13                         ;RECEIVER ENABLE.
012704  005000                         <BIT11>+BIT9                  ;PARAMETERS FOR REG 1.
012706  072000                         BIT14+BIT13+BIT12+BIT10       ;9600 BAUD.
012710  000001                 16$:    .BLKW 1                       ;LINE EXPECTED TO FINISH FIRST.
                                                                     ;LINE 3 OR 7 OR 13 OR 17(8).
                               ; ***************************************************

012712  000207                         RTS     PC                    ;EXIT TEST.


                                       ;*********************** TEST 11 ******************************
                                       ;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:   6 B/P/C,1ST,9600 BAUD.
                                       ;*LINE X+1: 6 B/P/C,2ST,9600 BAUD.
                                       ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                       ;:*************************************************************

                               ;  TEST 11
                               ;--------------
012714  012737  000011  001226 TST11:  MOV     #11,TSTNO
012722  012737  013306  001216         MOV     #TST12,NEXT
012730  012700  000000                 MOV     #0.,R0           ;PLACE LINE NUMBER INTO R0
012734  013737  001416  001236         MOV     L00.03,STAT      ;LOAD LINE CARD STATUS INTO STAT
012742  100402                         BMI     100$             ;BR IF LINE CARD NOT TO BE TESTED
012744  004737  013032                 JSR     PC,105$          ;GO DO THE TEST FOR LINE CARD 1
012750  012700  000004         100$:   MOV     #4.,R0           ;PLACE LINE NUMBER INTO R0
012754  013737  001420  001236         MOV     L04.07,STAT      ;LOAD LINE CARD STATUS INTO STAT
012762  100402                         BMI     101$             ;BR IF LINE CARD NOT TO BE TESTED
012764  004737  013032                 JSR     PC,105$          ;GO DO THE TEST FOR LINE CARD 2
012770  012700  000010         101$:   MOV     #8.,R0           ;LOAD LINE NUMBER
012774  013737  001422  001236         MOV     L08.11,STAT      ;LOAD LINE CARD STATUS INTO STAT
013002  100402                         BMI     102$             ;BR IF LINE CARD NOT TO BE TESTED
013004  004737  013032                 JSR     PC,105$          ;DO THE TEST FOR LINE CARD 3
013010  012700  000014         102$:   MOV     #12.,R0          ;LOAD LINE NO.
013014  013737  001424  001236         MOV     L12.15,STAT      ;LOAD LINE CARD STATUS
013022  100402                         BMI     103$             ;BR IF LINE CARD NOT TO BE TESTED
013024  004737  013032                 JSR     PC,105$          ;DO THE TESTS FOR LINE CARD 4
013030  104400                 103$:   SCOPE                    ;SCOPE THIS TEST.
013032                         105$:                            ;TEST ENTRANCE.
013032  032737  004000  001236         BIT     #ASYNC,STAT      ;IS THIS AN ASYNC LINE CARD?
013040  001001                         BNE     1$               ;BR IF YES
013042  000207                         RTS     PC               ;EXIT TEST
013044  010037  013070         1$:     MOV     R0,2$            ;GET LINE UNDER TEST
                                                                ;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)
013464  020000                          BIT13                   ;RECEIVER ENABLE
013466  011000                          <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).
013474  020000                          BIT13                   ;RECEIVER ENABLE
013476  051000                           BIT14+BIT12 +BIT9              ;PARAMETERS FOR REG 1.
```

```
013500  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
013502  000001                          4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                        ;LINE 0 OR 4 OR 10 OR 14(8).
                                        ; ****************************************************

013504  010037  013532                  5$:     MOV     R0,6$           ;GET INITAL LINE NO.
013510  010037  013542                          MOV     R0,7$           ;STORE FOR NEXT TEST.
013514  005237  013542                          INC     7$              ;MAKE LINE=LINE+1.
013520  013737  013542  013552                  MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
                                        ; ****************************************************
                                        ;                       PART 2
                                        ;       IN THIS ROUTINE LOCATION "7$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
013526  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
013532  000001                          6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
013534  020000                                  BIT13                   ;RECEIVER ENABLE.
013536  051000                                  <BIT14+BIT12>+BIT9              ;PARAMETERS FOR REG 1.
013540  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

013542  000001                          7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
013544  020000                                  BIT13                   ;RECEIVER ENABLE.
013546  011000                                  <BIT12>+BIT9            ;PARAMETERS FOR REG 1.
013550  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
013552  000001                          8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                        ; ****************************************************

013554  062700  000002                          ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
013560  010037  013604                  9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
013564  010037  013624                          MOV     R0,12$          ;SAVE NO.
013570  010037  013614                          MOV     R0,11$          ;
013574  005237  013614                          INC     11$             ;MAKE LINE=LINE+1.
                                        ; ****************************************************
                                        ;                       PART 1A
                                        ;       IN THIS ROUTINE LOCATION "10$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
013600  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
013604  000001                          10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
013606  020000                                  BIT13                   ;RECEIVER ENABLE.
013610  011000                                  <BIT12>+BIT9            ;PARAMETERS FOR REG 1
013612  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

013614  000001                          11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
013616  020000                                  BIT13                   ;RECEIVER ENABLE.
013620  051000                                  <BIT14+BIT12>+BIT9              ;PARAMETERS FOR REG 1.
013622  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
013624  000001                          12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                        ;LINE 2 OR 6 OR 12 OR 16(8).
                                        ; ****************************************************

013626  010037  013654                  13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
```

```
013632  010037  013664                   MOV     R0,15$           ;STORE LINE.
013636  005237  013664                   INC     15$              ;LINE =LINE+1.
013642  013737  013664  013674           MOV     15$,16$          ;SET FASTFST LINE.
                                 ; ***********************************************
                                 ;               PART 2A
                                 ;       IN THIS ROUTINE LOCATION "14$"
                                 ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                 ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                 ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                 ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                 ;
013650  004537  032316                   JSR     R5,TIME.PAR      ;GOTO SUBROUTINE.
013654  000001                   14$:    .BLKW 1                  ;LINE 2 OR 6 OR 12 OR 16(8)
013656  020000                           BIT13                    ;RECEIVER ENABLE.
013660  051000                           <BIT14+BIT12>+BIT9              ;PARAMETER FOR REG 1.
013662  072000                           BIT14+BIT13+BIT12+BIT10 ;9600 BAUD

013664  000001                   15$:    .BLKW 1                  ;LINE 3 OR 7 OR 13 OR 17(8 .
013666  020000                           BIT13                    ;RECEIVER ENABLE.
013670  011000                           <BIT12>+BIT9             ;PARAMETERS FOR REG 1.
013672  072000                           BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
013674  000001                   16$:    .BLKW 1                  ;LINE EXPECTED TO FINISH FIRST.
                                                                  ;LINE 3 OR 7 OR 13 OR 17(8).
                                 ; ***********************************************

013676  000207                           RTS     PC               ;EXIT TEST.



                                         ;************************ TEST 13 ********************************
                                         ;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,2ST,9600 BAUD.
                                         ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                         ;;*****************************************************************

                                 ;  TEST 13
                                 ;---------------

013700  012737  000013  001226   TST13:  MOV     #13,TSTNO
013706  012737  014272  001216           MOV     #TST14,NEXT
013714  012700  000000                   MOV     #0.,R0           ;PLACE LINE NUMBER INTO R0
013720  013737  001416  001236           MOV     L00.03,STAT      ;LOAD LINE CARD STATUS INTO STAT
013726  100402                           BMI     100$             ;BR IF LINE CARD NOT TO BE TESTED
013730  004737  014016                   JSR     PC,105$          ;GO DO THE TEST FOR LINE CARD !
013734  012700  000004           100$:   MOV     #4.,R0           ;PLACE LINE NUMBER INTO R0
```

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013740  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
013746  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
013750  004737  014016                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
013754  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
013760  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
013766  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
013770  004737  014016                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
013774  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
014000  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
014006  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
014010  004737  014016                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
014014  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
014016                          105$:                           ;TEST ENTRANCE.
014016  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
014024  001001                          BNE     1$              ;BR IF YES
014026  000207                          RTS     PC              ;EXIT TEST
014030  010037  014054          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                ;LINE 0 OR 4 OR 10 OR 14(8).
014034  010037  014074                  MOV     R0,4$           ;SAVE SAME LINE
014040  010037  014064                  MOV     R0,3$           ;PREPARE FOR LINE+1
014044  005237  014064                  INC     3$              ;MAKE LINE = LINE+1
                                                                ;LINE 1 OR 5 OR 11 OR 15(8).
                                ; **************************************************
                                ;                PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
014050  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
014054  000001                  2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
014056  020000                          BIT13                   ;RECEIVER ENABLE
014060  011000                          <BIT12>+BIT9            ;PARAMETERS FOR REG 1.
014062  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

014064  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
014066  020000                          BIT13                   ;RECEIVER ENABLE
014070  031000                          <BIT13+BIT12>+BIT9              ;PARAMETERS FOR REG 1.
014072  072000                          BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
014074  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; **************************************************

014076  010037  014124          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
014102  010037  014134                  MOV     R0,7$           ;STORE FOR NEXT TEST.
014106  005237  014134                  INC     7$              ;MAKE LINE=LINE+1.
014112  013737  014134  014144          MOV     7$,9$           ;STORE LINE+1 FOR NEXT TESTS.
                                ; **************************************************
                                ;                PART 2
                                ;       IN THIS ROUTINE LOCATION "7$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
014120  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
014124  000001                  6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
```

```
014126	020000				BIT13				;RECEIVER ENABLE.
014130	031000				<BIT13+BIT12>+BIT9			;PARAMETERS FOR REG 1.
014132	072000				BIT14+BIT13+BIT12+BIT10		;9600 BAUD.

014134	000001			7$:	.BLKW 1				;LINE 1 OR 5 OR 11 OR 15(8).
014136	020000				BIT13				;RECEIVER ENABLE.
014140	011000				<BIT12>+BIT9			;PARAMETERS FOR REG 1.
014142	072000				BIT14+BIT13+BIT12+BIT10		;9600 BAUD.
014144	000001			8$:	.BLKW 1				;LINE 1 OR 5 OR 11 OR 15(8).
					; ************************************************

014146	062700	000002			ADD	#2,R0			;PREPARE FOR NEXT GROUP OF LINES.
014152	010037	014176		9$:	MOV	R0,10$			;SAVE LINE NO. FOR TEST.
014156	010037	014216			MOV	R0,12$			;SAVE NO.
014162	010037	014206			MOV	R0,11$			;
014166	005237	014206			INC	11$			;MAKE LINE=LINE+1.
					; ************************************************
					;		PART 1A
					;	IN THIS ROUTINE LOCATION "10$"
					;	HOLDS WHAT IS EXPECTED TO BE THE FASTEST
					;	LINE DUE TO THE PARAMETERS LOADED INTO IT.
					;
014172	004537	032316			JSR	R5,TIME.PAR		;GOTO SUBROUTINE.
014176	000001			10$:	.BLKW 1				;LINE 2 OR 6 OR 12 OR 16(8).
014200	020000				BIT13				;RECEIVER ENABLE.
014202	011000				<BIT12>+BIT9			;PARAMETERS FOR REG 1
014204	072000				BIT14+BIT13+BIT12+BIT10		;9600 BAUD.

014206	000001			11$:	.BLKW 1				;LINE 3 OR 7 OR 13 OR 17(8).
014210	020000				BIT13				;RECEIVER ENABLE.
014212	031000				<BIT13+BIT12>+BIT9			;PARAMETERS FOR REG 1.
014214	072000				BIT14+BIT13+BIT12+BIT10		;9600 BAUD.
014216	000001			12$:	.BLKW 1				;LINE EXPECTED TO FINISH FIRST
									;LINE 2 OR 6 OR 12 OR 16(8).
					; ************************************************

014220	010037	014246		13$:	MOV	R0,14$			;STORE LINE FOR NEXT TEST.
014224	010037	014256			MOV	R0,15$			;STORE LINE.
014230	005237	014256			INC	15$			;LINE =LINE+1.
014234	013737	014256	014266		MOV	15$,16$			;SET FASTEST LINE.
					; ************************************************
					;		PART 2A
					;	IN THIS ROUTINE LOCATION "14$"
					;	HOLDS WHAT IS EXPECTED TO BE THE FASTEST
					;	LINE DUE TO THE PARAMETERS LOADED INTO IT.
					;	THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
					;	FOR THE TWO LINES HAVE BEEN SWAPPED.
					;
014242	004537	032316			JSR	R5,TIME.PAR		;GOTO SUBROUTINE.
014246	000001			14$:	.BLKW 1				;LINE 2 OR 6 OR 12 OR 16(8)
014250	020000				BIT13				;RECEIVER ENABLE.
014252	031000				<BIT13+BIT12>+BIT9			;PARAMETER FOR REG 1.
014254	072000				BIT14+BIT13+BIT12+BIT10		;9600 BAUD

014256	000001			15$:	.BLKW 1				;LINE 3 OR 7 OR 13 OR 17(8).
014260	020000				BIT13				;RECEIVER ENABLE.
```

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014262  011000                              <BIT12>+BIT9                  ;PARAMETERS FOR REG 1.
014264  072000                              BIT14+BIT13+BIT12+BIT10       ;9600 BAUD.
014266  000001                      16$:    .BLKW 1                       ;LINE EXPECTED TO FINISH FIRST.
                                                                          ;LINE 3 OR 7 OR 13 OR 17(8).
                                    ; ****************************************************

014270  000207                              RTS     PC                    ;EXIT TEST.



                                            ;************************ TEST 14 ******************************
                                            ;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,1ST,9600 BAUD.
                                            ;*LINE X+1:  8 B/P/C,1ST,9600 BAUD,PARITY(EVEN).
                                            ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                            ;:*************************************************************

                                    ;  TEST 14
                                    ;---------------
014272  012737  000014  001226      TST14:  MOV     #14,TSTNO
014300  012737  014664  001216              MOV     #TST15,NEXT
014306  012700  000000                      MOV     #0.,R0        ;PLACE LINE NUMBER INTO R0
014312  013737  001416  001236              MOV     L00.03,STAT   ;LOAD LINE CARD STATUS INTO STAT
014320  100402                              BMI     100$          ;BR IF LINE CARD NOT TO BE TESTED
014322  004737  014410                      JSR     PC,105$       ;GO DO THE TEST FOR LINE CARD 1
014326  012700  000004              100$:   MOV     #4.,R0        ;PLACE LINE NUMBER INTO R0
014332  013737  001420  001236              MOV     L04.07,STAT   ;LOAD LINE CARD STATUS INTO STAT
014340  100402                              BMI     101$          ;BR IF LINE CARD NOT TO BE TESTED
014342  004737  014410                      JSR     PC,105$       ;GO DO THE TEST FOR LINE CARD 2
014346  012700  000010              101$:   MOV     #8.,R0        ;LOAD LINE NUMBER
014352  013737  001422  001236              MOV     L08.11,STAT   ;LOAD LINE CARD STATUS INTO STAT
014360  100402                              BMI     102$          ;BR IF LINE CARD NOT TO BE TESTED
014362  004737  014410                      JSR     PC,105$       ;DO THE TEST FOR LINE CARD 3
014366  012700  000014              102$:   MOV     #12.,R0       ;LOAD LINE NO.
014372  013737  001424  001236              MOV     L12.15,STAT   ;LOAD LINE CARD STATUS
014400  100402                              BMI     103$          ;BR IF LINE CARD NOT TO BE TESTED
014402  004737  014410                      JSR     PC,105$       ;DO THE TESTS FOR LINE CARD 4
014406  104400                      103$:   SCOPE                 ;SCOPE THIS TEST.
014410                              105$:                         ;TEST ENTRANCE.
014410  032737  004000  001236              BIT     #ASYNC,STAT   ;IS THIS AN ASYNC LINE CARD?
014416  001001                              BNE     1$            ;BR IF YES
014420  000207                              RTS     PC            ;EXIT TEST
014422  010037  014446              1$:     MOV     R0,2$         ;GET LINE UNDER TEST
                                                                  ;LINE 0 OR 4 OR 10 OR 14(S)
014426  010037  014466                      MOV     R0,4$         ;SAVE SAME LINE
```

```
014432 010037 014456                    MOV     R0,3$                   ;PREPARE FOR LINE+1
014436 005237 014456                    INC     3$                      ;MAKE LINE = LINE+1
                                                                        ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***************************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
014442 004537 032316                    JSR     R5,TIME.PAR             ;GOTO SUBROUTINE
014446 000001                   2$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8)
014450 020000                           BIT13                           ;RECEIVER ENABLE
014452 015000                           <BIT12+BIT11>+BIT9                      ;PARAMETERS FOR REG 1.
014454 072000                           BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

014456 000001                   3$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
014460 020000                           BIT13                           ;RECEIVER ENABLE
014462 055000                           <BIT14+BIT12+BIT11>+BIT9                        :PARAMETERS FOR REG 1.
014464 072000                           BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
014466 000001                   4$:     .BLKW 1                         ;LINE EXPECTED TO FINISH FIRST.
                                                                        ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; ***************************************************

014470 010037 014516            5$:     MOV     R0,6$                   ;GET INITAL LINE NO.
014474 010037 014526                    MOV     R0,7$                   ;STORE FOR NEXT TEST.
014500 005237 014526                    INC     7$                      ;MAKE LINE=LINE+1.
014504 013737 014526 014536             MOV     7$,8$                   ;STORE LINE+1 FOR NEXT TESTS.
                                ; ***************************************************
                                ;               PART 2
                                ;       IN THIS ROUTINE LOCATION "7$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
014512 004537 032316                    JSR     R5,TIME.PAR             ;GOTO SUBROUTINE.
014516 000001                   6$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8).
014520 020000                           BIT13                           ;RECEIVER ENABLE.
014522 055000                           <BIT14+BIT12+BIT11>+BIT9                        ;PARAMETERS FOR REG 1.
014524 072000                           BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

014526 000001                   7$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
014530 020000                           BIT13                           ;RECEIVER ENABLE.
014532 015000                           <BIT12+BIT11>+BIT9                      ;PARAMETERS FOR REG 1.
014534 072000                           BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
014536 000001                   8$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
                                ; ***************************************************

014540 062700 000002                    ADD     #2,R0                   ;PREPARE FOR NEXT GROUP OF LINES.
014544 010037 014570            9$:     MOV     R0,10$                  ;SAVE LINE NO. FOR TEST.
014550 010037 014610                    MOV     R0,12$                  ;SAVE NO.
014554 010037 014600                    MOV     R0,11$                  ;
014560 005237 014600                    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.
                                        ;
014564  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
014570  000001                          10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
014572  020000                                  BIT13                   ;RECEIVER ENABLE.
014574  015000                                  (BIT12+BIT11)+BIT9              ;PARAMETERS FOR REG 1
014576  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

014600  000001                          11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
014602  020000                                  BIT13                   ;RECEIVER ENABLE.
014604  055000                                  (BIT14+BIT12+BIT11)+BIT9                ;PARAMETERS FOR REG 1.
014606  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
014610  000001                          12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                        ;LINE 2 OR 6 OR 12 OR 16(8).
                                        ; ***************************************************

014612  010037  014640                  13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
014616  010037  014650                          MOV     R0,15$          ;STORE LINE.
014622  005237  014650                          INC     15$             ;LINE =LINE+1.
014626  013737  014650  014660                  MOV     15$,16$         ;SET FASTEST LINE.
                                        ; ***************************************************
                                        ;               PART 2A
                                        ;       IN THIS ROUTINE LOCATION "14$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
014634  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
014640  000001                          14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
014642  020000                                  BIT13                   ;RECEIVER ENABLE.
014644  055000                                  (BIT14+BIT12+BIT11)+BIT9                ;PARAMETER FOR REG 1.
014646  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD

014650  000001                          15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
014652  020000                                  BIT13                   ;RECEIVER ENABLE.
014654  015000                                  (BIT12+BIT11)+BIT9              ;PARAMETERS FOR REG 1.
014656  072000                                  BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
014660  000001                          16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                        ;LINE 3 OR 7 OR 13 OR 17(8).
                                        ; ***************************************************

014662  000207                                  RTS     PC              ;EXIT TEST.



                                                ;*********************** TEST 15 ******************************
                                                ;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,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.
```

```
015060 000001                   4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; ************************************************

015062 010037 015110            5$:     MOV     R0,6$           ;GET INITAL LINE NO.
015066 010037 015120                    MOV     R0,7$           ;STORE FOR NEXT TEST.
015072 005237 015120                    INC     7$              ;MAKE LINE=LINE+1.
015076 013737 015120 015130             MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
                                ; ************************************************
                                ;               PART 2
                                ;       IN THIS ROUTINE LOCATION "7$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
015104 004537 032316                    JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
015110 000001                   6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
015112 020000                           BIT13                   ;RECEIVER ENABLE.
015114 035000                           <BIT13+BIT12+BIT11>+BIT9                ;PARAMETERS FOR REG 1.
015116 072000                           BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

015120 000001                   7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
015122 020000                           BIT13                   ;RECEIVER ENABLE.
015124 015000                           <BIT12+BIT11>+BIT9              ;PARAMETERS FOR REG 1.
015126 072000                           BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
015130 000001                   8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                ; ************************************************

015132 062700 000002                    ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
015136 010037 015162            9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
015142 010037 015202                    MOV     R0,12$          ;SAVE NO.
015146 010037 015172                    MOV     R0,11$          ;
015152 005237 015172                    INC     11$             ;MAKE LINE=LINE+1.
                                ; ************************************************
                                ;               PART 1A
                                ;       IN THIS ROUTINE LOCATION "10$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
015156 004537 032316                    JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
015162 000001                   10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
015164 020000                           BIT13                   ;RECEIVER ENABLE.
015166 015000                           <BIT12+BIT11>+BIT9              ;PARAMETERS FOR REG 1
015170 072000                           BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

015172 000001                   11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
015174 020000                           BIT13                   ;RECEIVER ENABLE.
015176 035000                           <BIT13+BIT12+BIT11>+BIT9                ;PARAMETERS FOR REG 1.
015200 072000                           BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
015202 000001                   12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
                                ; ************************************************

015204 010037 015232            13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
015210 010037 015242                    MOV     R0,15$          ;STORE LINE.
```

```
015214  005237  015242                        INC     15$              ;LINE =LINE+1.
015220  013737  015242  015252                MOV     15$,16$          ;SET FASTEST LINE.
                                      ; ************************************************
                                      ;                 PART 2A
                                      ;         IN THIS ROUTINE LOCATION "14$"
                                      ;         HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                      ;         LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                      ;         THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                      ;         FOR THE TWO LINES HAVE BEEN SWAPPED.
                                      ;
015226  004537  032316                        JSR     R5,TIME.PAR      ;GOTO SUBROUTINE.
015232  000001                        14$:    .BLKW 1                  ;LINE 2 OR 6 OR 12 OR 16(8)
015234  020000                                BIT13                    ;RECEIVER ENABLE.
015236  035000                                <BIT13+BIT12+BIT11>+BIT9                  ;PARAMETER FOR REG 1.
015240  072000                                BIT14+BIT13+BIT12+BIT10 ;9600 BAUD

015242  000001                        15$:    .BLKW 1                  ;LINE 3 OR 7 OR 13 OR 17(8).
015244  020000                                BIT13                    ;RECEIVER ENABLE.
015246  015000                                <BIT12+BIT11>+BIT9             ;PARAMETERS FOR REG 1.
015250  072000                                BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
015252  000001                        16$:    .BLKW 1                  ;LINE EXPECTED TO FINISH FIRST.
                                                                       ;LINE 3 OR 7 OR 13 OR 17(8).
                                      ; ************************************************

015254  000207                                RTS     PC               ;EXIT TEST.



                                              ;*********************** TEST 16 ******************************
                                              ;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,1ST,9600 BAUD,PARITY(ODD).
                                              ;*LINE X+1: 8 B/P/C,2ST,9600 BAUD,PARITY(ODD).
                                              ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                              ;:***********************************************************

                                      ;  TEST 16
                                      ;---------------
015256  012737  000016  001226        TST16:  MOV     #16,TSTNO
015264  012737  015650  001216                MOV     #TST17,NEXT
015272  012700  000000                        MOV     #0.,R0           ;PLACE LINE NUMBER INTO R0
015276  013737  001416  001236                MOV     L00.03,STAT      ;LOAD LINE CARD STATUS INTO STAT
015304  100402                                BMI     100$             ;BR IF LINE CARD NOT TO BE TESTED
015306  004737  015374                        JSR     PC,105$          ;GO DO THE TEST FOR LINE CARD 1
015312  012700  000004                100$:   MOV     #4.,R0           ;PLACE LINE NUMBER INTO R0
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.
```

```
015506 075000                       <BIT14+BIT13+BIT12+BIT11>+BIT9          ;PARAMETERS FOR REG 1.
015510 072000                       BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

015512 000001               7$:     .BLKW 1                     ;LINE 1 OR 5 OR 11 OR 15(8).
015514 030000                       BIT13+BIT12                          ;PARAMETERS FOR REG 0.
015516 055000                       <BIT14+BIT12+BIT11>+BIT9                ;PARAMETERS FOR REG 1.
015520 072000                       BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
015522 000001               8$:     .BLKW 1                     ;LINE 1 OR 5 OR 11 OR 15(8).
                            ; ****************************************************

015524 062700 000002                ADD     #2,R0               ;PREPARE FOR NEXT GROUP OF LINES.
015530 010037 015554        9$:     MOV     R0,10$              ;SAVE LINE NO. FOR TEST.
015534 010037 015574                MOV     R0,12$              ;SAVE NO.
015540 010037 015564                MOV     R0,11$              ;
015544 005237 015564                INC     11$                 ;MAKE LINE=LINE+1.
                            ; ****************************************************
                            ;               PART 1A
                            ;       IN THIS ROUTINE LOCATION "10$"
                            ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                            ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                            ;
015550 004537 032316                JSR     R5,TIME.PAR         ;GOTO SUBROUTINE.
015554 000001               10$:    .BLKW 1                     ;LINE 2 OR 6 OR 12 OR 16(8).
015556 030000                       BIT13+BIT12                         ;PARAMETERS FOR REG 0.
015560 055000                       <BIT14+BIT12+BIT11>+BIT9                ;PARAMETERS FOR REG 1
015562 072000                       BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.

015564 000001               11$:    .BLKW 1                     ;LINE 3 OR 7 OR 13 OR 17(8).
015566 030000                       BIT13+BIT12                         ;PARAMETERS FOR REG 0.
015570 075000                       <BIT14+BIT13+BIT12+BIT11>+BIT9          ;PARAMETERS FOR REG 1.
015572 072000                       BIT14+BIT13+BIT12+BIT10 ;9600 BAUD.
015574 000001               12$:    .BLKW 1                     ;LINE EXPECTED TO FINISH FIRST
                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
                            ; ****************************************************

015576 010037 015624        13$:    MOV     R0,14$              ;STORE LINE FOR NEXT TEST.
015602 010037 015624                MOV     R0,15$              ;STORE LINE.
015606 005237 015634                INC     15$                 ;LINE =LINE+1.
015612 013737 015634 015644         MOV     15$,16$             ;SET FASTEST LINE.
                            ; ****************************************************
                            ;               PART 2A
                            ;       IN THIS ROUTINE LOCATION "14$"
                            ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                            ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                            ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                            ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                            ;
015620 004537 032316                JSR     R5,TIME.PAR         ;GOTO SUBROUTINE.
015624 000001               14$:    .BLKW 1                     ;LINE 2 OR 6 OR 12 OR 16(8)
015626 030000                       BIT13+BIT12                         ;PARAMETER FOR REG 0.
015630 075000                       <BIT14+BIT13+BIT12+BIT11>+BIT9          ;PARAMETER FOR REG 1.
015632 072000                       BIT14+BIT13+BIT12+BIT10 ;9600 BAUD

015634 000001               15$:    .BLKW 1                     ;LINE 3 OR 7 OR 13 OR 17(8).
015636 030000                       BIT13+BIT12                         ;PARAMETERS FOR REG 0.
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
```

```
016014  005237  016034                     INC     3$                  ;MAKE LINE = LINE+1
                                                                       ;LINE 1 OR 5 OR 11 OR 15(8)
                                   ; ***************************************************
                                   ;               PART 1
                                   ;       IN THIS ROUTINE LOCATION "2$"
                                   ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                   ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                   ;
016020  004537  032316                     JSR     R5,TIME.PAR         ;GOTO SUBROUTINE
016024  000001                     2$:     .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$"
                                   ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                   ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                   ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                   ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                   ;
016070  004537  032316                     JSR     R5,TIME.PAR         ;GOTO SUBROUTINE.
016074  000001                     6$:     .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
```

F06


```
                                          ;       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  016426                  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$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
016430  020000                          BIT13                   ;RECEIVER ENABLE
016432  015000                          <BIT12+BIT11 +BIT9      ;8 BITS PER CHAR
016434  002000                          <000>+BIT10             ;PARAMETERS FOR REG 2
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016436  000001                      4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                    ;LINE 0 OR 4 OR 10 OR 14(8).
                                    ; ****************************************************
016440  010037  016466              5$:     MOV     R0,6$           ;GET INITAL LINE NO.
016444  010037  016476                      MOV     R0,7$           ;STORE FOR NEXT TEST.
016450  005237  016476                      INC     7$              ;MAKE LINE=LINE+1.
016454  013737  016476  016506              MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
                                    ; ****************************************************
                                    ;               PART 2
                                    ;       IN THIS ROUTINE LOCATION "7$"
                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                    ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                    ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                    ;
016462  004537  032316                      JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
016466  000001                      6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
016470  020000                              BIT13                   ;RECEIVER ENABLE.
016472  015000                              <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
016474  002000                              <000>+BIT10             ;PARAMETERS FOR REG 2.

016476  000001                      7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
016500  020000                              BIT13                   ;RECEIVER ENABLE.
016502  015000                              <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
016504  006000                              <BIT11>+BIT10           ;PARAMETERS FOR REG 2.
016506  000001                      8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                    ; ****************************************************

016510  062700  000002                      ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
016514  010037  016540              9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
016520  010037  016560                      MOV     R0,12$          ;SAVE NO.
016524  010037  016550                      MOV     R0,11$          ;
016530  005237  016550                      INC     11$             ;MAKE LINE=LINE+1.
                                    ; ****************************************************
                                    ;               PART 1A
                                    ;       IN THIS ROUTINE LOCATION "10$"
                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                    ;
016534  004537  032316                      JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
016540  000001                      10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
016542  020000                              BIT13                   ;RECEIVER ENABLE.
016544  015000                              <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
016546  006000                              <BIT11>+BIT10           ;PARAMETERS FOR REG 2.

016550  000001                      11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
016552  020000                              BIT13                   ;RECEIVER ENABLE.
016554  015000                              <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
016556  002000                              <000>+BIT10             ;PARAMETERS FOR LINE 2.
016560  000001                      12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                    ;LINE 2 OR 6 OR 12 OR 16(8).
                                    ; ****************************************************

016562  010037  016610              13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
016566  010037  016620                      MOV     R0,15$          ;STORE LINE.
```

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016572 005237 016620                     INC     15$              ;LINE =LINE+1.
016576 013737 016620 016630              MOV     15$,16$          ;SET FASTEST LINE.
                                ; ***********************************************
                                ;                 PART 2A
                                ;        IN THIS ROUTINE LOCATION "14$"
                                ;        HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;        LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;        THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;        FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
016604 004537 032316                     JSR     R5,TIME.PAR      ;GOTO SUBROUTINE.
016610 000001                   14$:     .BLKW 1                  ;LINE 2 OR 6 OR 12 OR 16(9)
016612 020000                            BIT13                    ;RECEIVER ENABLE.
016614 015000                            <BIT12+BIT11>+BIT9       ;8 BITS/PER/CHAR.
016616 002000                            <000>+BIT10              ;PARAMETER FOR REG 2.

016620 000001                   15$:     .BLKW 1                  ;LINE 3 OR 7 OR 13 OR 17(8).
016622 020000                            BIT13                    ;RECEIVER ENABLE.
016624 015000                            <BIT12+BIT11>+BIT9       ;8 BITS/PER/CHAR.
016626 006000                            <BIT11>+BIT10            ;PARAMETERS FOR REG 1.
016630 000001                   16$:     .BLKW 1                  ;LINE EXPECTED TO FINISH FIRST.
                                                                  ;LINE 3 OR 7 OR 13 OR 17(8).
                                ; ***********************************************

016632 000207                            RTS     PC               ;EXIT TEST.


                                         ;*********************** TEST 21 ********************************
                                         ;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.  110 BAUD.
                                         ;*LINE X+1: 8 B/P/C,1ST.   75 BAUD.
                                         ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                         ;;***************************************************************

                                ;  TEST 21
                                ;---------------

016634 012737 000021 001226     TST21:   MOV     #21,TSTNO
016642 012737 017226 001216              MOV     #TST22,NEXT
016650 012700 000000                     MOV     #0.,R0           ;PLACE LINE NUMBER INTO R0
016654 013737 001416 001236              MOV     LG0.03,STAT      ;LOAD LINE CARD STATUS INTO STAT
016662 100402                            BMI     100$             ;BR IF LINE CARD NOT TO BE TESTED
016664 004737 016752                     JSR     PC,105$          ;GO DO THE TEST FOR LINE CARD 1
016670 012700 000004            100$:    MOV     #4.,R0           ;PLACE LINE NUMBER INTO R0
```

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 016674  013737  001420  001236             MOV     L04.07,STAT          ;LOAD LINE CARD STATUS INTO STAT
 016702  100402                             BMI     101$                 ;BR IF LINE CARD NOT TO BE TESTED
 016704  004737  016752                     JSR     PC,105$              ;GO DO THE TEST FOR LINE CARD 2
 016710  012700  000010             101$:   MOV     #8.,R0               ;LOAD LINE NUMBER
 016714  013737  001422  001236             MOV     L08.11,STAT          ;LOAD LINE CARD STATUS INTO STAT
 016722  100402                             BMI     102$                 ;BR IF LINE CARD NOT TO BE TESTED
 016724  004737  016752                     JSR     PC,105$              ;DO THE TEST FOR LINE CARD 3
 016730  012700  000014             102$:   MOV     #12.,R0              ;LOAD LINE NO.
 016734  013737  001424  001236             MOV     L12.15,STAT          ;LOAD LINE CARD STATUS
 016742  100402                             BMI     103$                 ;BR IF LINE CARD NOT TO BE TESTED
 016744  004737  016752                     JSR     PC,105$              ;DO THE TESTS FOR LINE CARD 4
 016750  104400                     103$:   SCOPE                        ;SCOPE THIS TEST.
 016752                             105$:                                ;TEST ENTRANCE.
 016752  032737  004000  001236             BIT     #ASYNC,STAT          ;IS THIS AN ASYNC LINE CARD?
 016760  001001                             BNE     1$                   ;BR IF YES
 016762  000207                             RTS     PC                   ;EXIT TEST
 016764  010037  017010             1$:     MOV     R0,2$                ;GET LINE UNDER TEST
                                                                         ;LINE 0 OR 4 OR 10 OR 14(8).
 016770  010037  017030                     MOV     R0,4$                ;SAVE SAME LINE
 016774  010037  017020                     MOV     R0,3$                ;PREPARE FOR LINE+1
 017000  005237  017020                     INC     3$                   ;MAKE LINE = LINE+1
                                                                         ;LINE 1 OR 5 OR 11 OR 15(8)
                                    ; ***********************************************************
                                    ;                 PART 1
                                    ;       IN THIS ROUTINE LOCATION "2$"
                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                    ;
 017004  004537  032316                     JSR     R5,TIME.PAR          ;GOTO SUBROUTINE
 017010  000001                     2$:     .BLKW 1                      ;LINE 0 OR 4 OR 10 OR 14(8)
 017012  020000                             BIT13                        ;RECEIVER ENABLE
 017014  015000                             <BIT12+BIT11>+BIT9           ;PARAMETERS: 8 BITS PER/CHAR
 017016  012000                             <BIT12>+BIT10                ;PARAMETERS FOR REG 2

 017020  000001                     3$:     .BLKW 1                      ;LINE 1 OR 5 OR 11 OR 15(8).
 017022  020000                             BIT13                        ;RECEIVER ENABLE
 017024  015000                             <BIT12+BIT11>+BIT9           ;8 BITS PER CHAR
 017026  006000                             <BIT11>+BIT10                ;PARAMETERS FOR REG 2
 017030  000001                     4$:     .BLKW 1                      ;LINE EXPECTED TO FINISH FIRST.
                                                                         ;LINE 0 OR 4 OR 10 OR 14(8).
                                    ; ***********************************************************

 017032  010037  017060             5$:     MOV     R0,6$                ;GET INITAL LINE NO.
 017036  010037  017070                     MOV     R0,7$                ;STORE FOR NEXT TEST.
 017042  005237  017070                     INC     7$                   ;MAKE LINE=LINE+1.
 017046  013737  017070  017100             MOV     7$,8$                ;STORE LINE+1 FOR NEXT TESTS.
                                    ; ***********************************************************
                                    ;                 PART 2
                                    ;       IN THIS ROUTINE LOCATION "7$"
                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                    ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                    ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                    ;
 017054  004537  032316                     JSR     R5,TIME.PAR          ;GOTO SUBROUTINE.
 017060  000001                     6$:     .BLKW 1                      ;LINE 0 OR 4 OR 10 OR 14(8).
```

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017062  020000                                  BIT13                   ;RECEIVER ENABLE.
017064  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
017066  006000                                  <BIT11>+BIT10           ;PARAMETERS FOR REG 2.

017070  000001                          7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
017072  020000                                  BIT13                   ;RECEIVER ENABLE.
017074  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
017076  012000                                  <BIT12>+BIT10           ;PARAMETERS FOR REG 2.
017100  000001                          8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                        ; ************************************************

017102  062700  000002                          ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
017106  010037  017132                  9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
017112  010037  017152                          MOV     R0,12$          ;SAVE NO.
017116  010037  017142                          MOV     R0,11$          ;
017122  005237  017142                          INC     11$             ;MAKE LINE=LINE+1.
                                        ; ************************************************
                                        ;                       PART 1A
                                        ;       IN THIS ROUTINE LOCATION "10$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
017126  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
017132  000001                          10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
017134  020000                                  BIT13                   ;RECEIVER ENABLE.
017136  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
017140  012000                                  <BIT12>+BIT10           ;PARAMETERS FOR REG 2.

017142  000001                          11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
017144  020000                                  BIT13                   ;RECEIVER ENABLE.
017146  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
017150  006000                                  <BIT11>+BIT10           ;PARAMETERS FOR LINE 2.
017152  000001                          12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                        ;LINE 2 OR 6 OR 12 OR 16(8).
                                        ; ************************************************

017154  010037  017202                  13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
017160  010037  017212                          MOV     R0,15$          ;STORE LINE.
017164  005237  017212                          INC     15$             ;LINE =LINE+1.
017170  013737  017212  017222                  MOV     15$,16$         ;SET FASTEST LINE.
                                        ; ************************************************
                                        ;                       PART 2A
                                        ;       IN THIS ROUTINE LOCATION "14$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
017176  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
017202  000001                          14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
017204  020000                                  BIT13                   ;RECEIVER ENABLE.
017206  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
017210  006000                                  <BIT11>+BIT10           ;PARAMETER FOR REG 2.

017212  000001                          15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
017214  020000                                  BIT13                   ;RECEIVER ENABLE.
```

```
017216  015000                                  <BIT12+BIT11>+BIT9          ;8 BITS/PER/CHAR.
017220  012000                                  <BIT12>+BIT10               ;PARAMETERS FOR REG 1.
017222  000001                          16$:    .BLKW 1                     ;LINE EXPECTED TO FINISH FIRST.
                                                                            ;LINE 3 OR 7 OR 13 OR 17(8).
                                        ; *************************************************

017224  000207                                  RTS     PC                  ;EXIT TEST.


                                                ;*********************** TEST 22 ******************************
                                                ;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, 134.5 BAUD.
                                                ;*LINE X+1: 8 B/P/C,1ST, 110 BAUD.
                                                ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                                ;:*************************************************************

                                        :  TEST 22
                                        :---------------
017226  012737  000022  001226          TST22:  MOV     #22,TSTNO
017234  012737  017620  001216                  MOV     #TST23,NEXT
017242  012700  000000                          MOV     #0.,R0              ;PLACE LINE NUMBER INTO R0
017246  013737  001416  001236                  MOV     L00.03,STAT         ;LOAD LINE CARD STATUS INTO STAT
017254  100402                                  BMI     100$                ;BR IF LINE CARD NOT TO BE TESTED
017256  004737  017344                          JSR     PC,105$             ;GO DO THE TEST FOR LINE CARD 1
017262  012700  000004                  100$:   MOV     #4.,R0              ;PLACE LINE NUMBER INTO R0
017266  013737  001420  001236                  MOV     L04.07,STAT         ;LOAD LINE CARD STATUS INTO STAT
017274  100402                                  BMI     101$                ;BR IF LINE CARD NOT TO BE TESTED
017276  004737  017344                          JSR     PC,105$             ;GO DO THE TEST FOR LINE CARD 2
017302  012700  000010                  101$:   MOV     #8.,R0              ;LOAD LINE NUMBER
017306  013737  001422  001236                  MOV     L08.11,STAT         ;LOAD LINE CARD STATUS INTO STAT
017314  100402                                  BMI     102$                ;BR IF LINE CARD NOT TO BE TESTED
017316  004737  017344                          JSR     PC,105$             ;DO THE TEST FOR LINE CARD 3
017322  012700  000014                  102$:   MOV     #12.,R0             ;LOAD LINE NO.
017326  013737  001424  001236                  MOV     L12.15,STAT         ;LOAD LINE CARD STATUS
017334  100402                                  BMI     103$                ;BR IF LINE CARD NOT TO BE TESTED
017336  004737  017344                          JSR     PC,105$             ;DO THE TESTS FOR LINE CARD 4
017342  104400                          103$:   SCOPE                       ;SCOPE THIS TEST.
017344                                  105$:                               ;TEST ENTRANCE.
017344  032737  004000  001236                  BIT     #ASYNC,STAT         ;IS THIS AN ASYNC LINE CARD?
017352  001001                                  BNE     1$                  ;BR IF YES
017354  000207                                  RTS     PC                  ;EXIT TEST
017356  010037  017402                  1$:     MOV     R0,2$               ;GET LINE UNDER TEST
                                                                            ;LINE 0 OR 4 OR 10 OR 14(8)
```

```
017362 010037 017422                  MOV     R0,4$                 ;SAVE SAME LINE
017366 010037 017412                  MOV     R0,3$                 ;PREPARE FOR LINE+1
017372 005237 017412                  INC     3$                    ;MAKE LINE = LINE+1
                                                                    ;LINE 1 OR 5 OR 11 OR 15(8)
                              ; ***********************************************
                              ;               PART 1
                              ;       IN THIS ROUTINE LOCATION "2$"
                              ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                              ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                              ;
017376 004537 032316                  JSR     R5,TIME.PAR           ;GOTO SUBROUTINE
017402 000001                 2$:     .BLKW 1                       ;LINE 0 OR 4 OR 10 OR 14(8)
017404 020000                         BIT13                         ;RECEIVER ENABLE
017406 015000                         <BIT12+BIT11>+BIT9            ;PARAMETERS: 8 BITS PER/CHAR
017410 016000                         <BIT12+BIT11>+BIT10                   ;PARAMETERS FOR REG 2

017412 000001                 3$:     .BLKW 1                       ;LINE 1 OR 5 OR 11 OR 15(8).
017414 020000                         BIT13                         ;RECEIVER ENABLE
017416 015000                         <BIT12+BIT11>+BIT9            ;8 BITS PER CHAR
017420 012000                         <BIT12>+BIT10                 ;PARAMETERS FOR REG 2
017422 000001                 4$:     .BLKW 1                       ;LINE EXPECTED TO FINISH FIRST.
                                                                    ;LINE 0 OR 4 OR 10 OR 14(8).
                              ; ***********************************************

017424 010037 017452          5$:     MOV     R0,6$                 ;GET INITAL LINE NO.
017430 010037 017462                  MOV     R0,7$                 ;STORE FOR NEXT TEST.
017434 005237 017462                  INC     7$                    ;MAKE LINE=LINE+1.
017440 013737 017462 017472           MOV     7$,8$                 ;STORE LINE+1 FOR NEXT TESTS.
                              ; ***********************************************
                              ;               PART 2
                              ;       IN THIS ROUTINE LOCATION "7$"
                              ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                              ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                              ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                              ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                              ;
017446 004537 032316                  JSR     R5,TIME.PAR           ;GOTO SUBROUTINE.
017452 000001                 6$:     .BLKW 1                       ;LINE 0 OR 4 OR 10 OR 14(8).
017454 020000                         BIT13                         ;RECEIVER ENABLE.
017456 015000                         <BIT12+BIT11>+BIT9            ;8 BITS/PER/CHAR.
017460 012000                         <BIT12>+BIT10                 ;PARAMETERS FOR REG 2.

017462 000001                 7$:     .BLKW 1                       ;LINE 1 OR 5 OR 11 OR 15(8).
017464 020000                         BIT13                         ;RECEIVER ENABLE.
017466 015000                         <BIT12+BIT11>+BIT9            ;8 BITS/PER/CHAR.
017470 016000                         <BIT12+BIT11>+BIT10                   ;PARAMETERS FOR REG 2.
017472 000001                 8$:     .BLKW 1                       ;LINE 1 OR 5 OR 11 OR 15(8).
                              ; ***********************************************

017474 062700 000002                  ADD     #2,R0                 ;PREPARE FOR NEXT GROUP OF LINES.
017500 010037 017524          9$:     MOV     R0,10$                ;SAVE LINE NO. FOR TEST.
017504 010037 017544                  MOV     R0,12$                ;SAVE NO.
017510 010037 017534                  MOV     R0,11$                ;
017514 005237 017534                  INC     11$                   ;MAKE LINE=LINE+1.
                              ; ***********************************************
                              ;               PART 1A
```

```
                                        ;       IN THIS ROUTINE LOCATION "10$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
017520  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
017524  000001                          10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
017526  020000                                  BIT13                   ;RECEIVER ENABLE.
017530  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
017532  016000                                  <BIT12+BIT11>+BIT10             ;PARAMETERS FOR REG 2.

017534  000001                          11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
017536  020000                                  BIT13                   ;RECEIVER ENABLE.
017540  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
017542  012000                                  <BIT12>+BIT10           ;PARAMETERS FOR LINE 2.
017544  000001                          12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                        ;LINE 2 OR 6 OR 12 OR 16(8).
                                        ; ************************************************

017546  010037  017574                  13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
017552  010037  017604                          MOV     R0,15$          ;STORE LINE.
017556  005237  017604                          INC     15$             ;LINE =LINE+1.
017562  013737  017604  017614                  MOV     15$,16$         ;SET FASTEST LINE.
                                        ; ************************************************
                                        ;               PART 2A
                                        ;       IN THIS ROUTINE LOCATION "14$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
017570  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
017574  000001                          14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
017576  020000                                  BIT13                   ;RECEIVER ENABLE.
017600  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
017602  012000                                  <BIT12>+BIT10           ;PARAMETER FOR REG 2.

017604  000001                          15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
017606  020000                                  BIT13                   ;RECEIVER ENABLE.
017610  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
017612  016000                                  <BIT12+BIT11>+BIT10             ;PARAMETERS FOR REG 1.
017614  000001                          16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                        ;LINE 3 OR 7 OR 13 OR 17(8).
                                        ; ************************************************

017616  000207                                  RTS     PC              ;EXIT TEST.


                                                ;************************ TEST 23 ******************************
                                                ;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
```

B07


```
                                                        ;*  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$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
017770  004537  032316                  JSR     R5,TIME.PAR             ;GOTO SUBROUTINE
017774  000001                  2$:     .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
```

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020010  015000                          <BIT12+BIT11>+BIT9       ;8 BITS PER CHAR
020012  016000                          <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).
                                ; ***************************************************

020016  010037  020044          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).
                                ; ***************************************************
```

D07


```
020140  010037  020166             13$:    MOV     R0,14$               ;STORE LINE FOR NEXT TEST.
020144  010037  020176                     MOV     R0,15$               ;STORE LINE.
020150  005237  020176                     INC     15$                  ;LINE =LINE+1.
020154  013737  020176  020206             MOV     15$,16$              ;SET FASTEST LINE.
                                   ; ************************************************
                                   ;               PART 2A
                                   ;       IN THIS ROUTINE LOCATION "14$"
                                   ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                   ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                   ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                   ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                   ;
020162  004537  032316                     JSR     R5,TIME.PAR          ;GOTO SUBROUTINE.
020166  000001                     14$:    .BLKW 1                      ;LINE 2 OR 6 OR 12 OR 16(8)
020170  020000                             BIT13                        ;RECEIVER ENABLE.
020172  015000                             (BIT12+BIT11)+BIT9           ;8 BITS/PER/CHAR.
020174  016000                             (BIT12+BIT11)+BIT10                  ;PARAMETER FOR REG 2.

020176  000001                     15$:    .BLKW 1                      ;LINE 3 OR 7 OR 13 OR 17(8).
020200  020000                             BIT13                        ;RECEIVER ENABLE.
020202  015000                             (BIT12+BIT11)+BIT9           ;8 BITS/PER/CHAR.
020204  022000                             (BIT13)+BIT10                ;PARAMETERS FOR REG 1.
020206  000001                     16$:    .BLKW 1                      ;LINE EXPECTED TO FINISH FIRST.
                                                                        ;LINE 3 OR 7 OR 13 OR 17(8).
                                   ; ************************************************

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

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020242  004737  020330                          JSR     PC,105$                 ;GO DO THE TEST FOR LINE CARD 1
020246  012700  000004                  100$:   MOV     #4.,R0                  ;PLACE LINE NUMBER INTO R0
020252  013737  001420  001236                  MOV     L04.07,STAT             ;LOAD LINE CARD STATUS INTO STAT
020260  100402                                  BMI     101$                    ;BR IF LINE CARD NOT TO BE TESTED
020262  004737  020330                          JSR     PC,105$                 ;GO DO THE TEST FOR LINE CARD 2
020266  012700  000010                  101$:   MOV     #8.,R0                  ;LOAD LINE NUMBER
020272  013737  001422  001236                  MOV     L08.11,STAT             ;LOAD LINE CARD STATUS INTO STAT
020300  100402                                  BMI     102$                    ;BR IF LINE CARD NOT TO BE TESTED
020302  004737  020330                          JSR     PC,105$                 ;DO THE TEST FOR LINE CARD 3
020306  012700  000014                  102$:   MOV     #12.,R0                 ;LOAD LINE NO.
020312  013737  001424  001236                  MOV     L12.15,STAT             ;LOAD LINE CARD STATUS
020320  100402                                  BMI     103$                    ;BR IF LINE CARD NOT TO BE TESTED
020322  004737  020330                          JSR     PC,105$                 ;DO THE TESTS FOR LINE CARD 4
020326  104400                          103$:   SCOPE                           ;SCOPE THIS TEST.
020330                                  105$:                                   ;TEST ENTRANCE.
020330  032737  004000  001236                  BIT     #ASYNC,STAT             ;IS THIS AN ASYNC LINE CARD?
020336  001001                                  BNE     1$                      ;BR IF YES
020340  000207                                  RTS     PC                      ;EXIT TEST
020342  010037  020366                  1$:     MOV     R0,2$                   ;GET LINE UNDER TEST
                                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
020346  010037  020406                          MOV     R0,4$                   ;SAVE SAME LINE
020352  010037  020376                          MOV     R0,3$                   ;PREPARE FOR LINE+1
020356  005237  020376                          INC     3$                      ;MAKE LINE = LINE+1
                                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
                                        ; ************************************************************
                                        ;                       PART 1
                                        ;       IN THIS ROUTINE LOCATION "2$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
020362  004537  032316                          JSR     R5,TIME.PAR             ;GOTO SUBROUTINE
020366  000001                          2$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8)
020370  020000                                  BIT13                           ;RECEIVER ENABLE
020372  015000                                  <BIT12+BIT11>+BIT9              ;PARAMETERS: 8 BITS PER/CHAR
020374  026000                                  <BIT13+BIT11>+BIT10                     ;PARAMETERS FOR REG 2

020376  000001                          3$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
020400  020000                                  BIT13                           ;RECEIVER ENABLE
020402  015000                                  <BIT12+BIT11>+BIT9              ;8 BITS PER CHAR
020404  022000                                  <BIT13>+BIT10                   ;PARAMETERS FOR REG 2
020406  000001                          4$:     .BLKW 1                         ;LINE EXPECTED TO FINISH FIRST.
                                                                                ;LINE 0 OR 4 OR 10 OR 14(8).
                                        ; ************************************************************

020410  010037  020436                  5$:     MOV     R0,6$                   ;GET INITAL LINE NO.
020414  010037  020446                          MOV     R0,7$                   ;STORE FOR NEXT TEST.
020420  005237  020446                          INC     7$                      ;MAKE LINE=LINE+1.
020424  013737  020446  020456                  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.
                                        ;
```

```
020432  004537  032316                          JSR     R5,TIME.PAR         ;GOTO SUBROUTINE.
020436  000001                          6$:     .BLKW 1                     ;LINE 0 OR 4 OR 10 OR 14(8).
020440  020000                                  BIT13                       ;RECEIVER ENABLE.
020442  015000                                  <BIT12+BIT11>+BIT9          ;8 BITS/PER/CHAR.
020444  022000                                  <BIT13>+BIT10               ;PARAMETERS FOR REG 2.
020446  000001                          7$:     .BLKW 1                     ;LINE 1 OR 5 OR 11 OR 15(8).
020450  020000                                  BIT13                       ;RECEIVER ENABLE.
020452  015000                                  <BIT12+BIT11>+BIT9          ;8 BITS/PER/CHAR.
020454  026000                                  <BIT13+BIT11>+BIT10                 ;PARAMETERS FOR REG 2.
020456  000001                          8$:     .BLKW 1                     ;LINE 1 OR 5 OR 11 OR 15(8).
                                        ; ****************************************************
020460  062700  000002                          ADD     #2,R0               ;PREPARE FOR NEXT GROUP OF LINES.
020464  010037  020510                  9$:     MOV     R0,10$              ;SAVE LINE NO. FOR TEST.
020470  010037  020530                          MOV     R0,12$              ;SAVE NO.
020474  010037  020520                          MOV     R0,11$              ;
020500  005237  020520                          INC     11$                 ;MAKE LINE=LINE+1.
                                        ; ****************************************************
                                        ;               PART 1A
                                        ;       IN THIS ROUTINE LOCATION "10$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
020504  004537  032316                          JSR     R5,TIME.PAR         ;GOTO SUBROUTINE.
020510  000001                          10$:    .BLKW 1                     ;LINE 2 OR 6 OR 12 OR 16(8).
020512  020000                                  BIT13                       ;RECEIVER ENABLE.
020514  015000                                  <BIT12+BIT11>+BIT9          ;8 BITS/PER/CHAR.
020516  026000                                  <BIT13+BIT11>+BIT10                 ;PARAMETERS FOR REG 2.
020520  000001                          11$:    .BLKW 1                     ;LINE 3 OR 7 OR 13 OR 17(8).
020522  020000                                  BIT13                       ;RECEIVER ENABLE.
020524  015000                                  <BIT12+BIT11>+BIT9          ;8 BITS/PER/CHAR.
020526  022000                                  <BIT13>+BIT10               ;PARAMETERS FOR LINE 2.
020530  000001                          12$:    .BLKW 1                     ;LINE EXPECTED TO FINISH FIRST
                                                                            ;LINE 2 OR 6 OR 12 OR 16(8).
                                        ; ****************************************************
020532  010037  020560                  13$:    MOV     R0,14$              ;STORE LINE FOR NEXT TEST.
020536  010037  020570                          MOV     R0,15$              ;STORE LINE.
020542  005237  020570                          INC     15$                 ;LINE =LINE+1.
020546  013737  020570  020600                  MOV     15$,16$             ;SET FASTEST LINE.
                                        ; ****************************************************
                                        ;               PART 2A
                                        ;       IN THIS ROUTINE LOCATION "14$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
020554  004537  032316                          JSR     R5,TIME.PAR         ;GOTO SUBROUTINE.
020560  000001                          14$:    .BLKW 1                     ;LINE 2 OR 6 OR 12 OR 16(8)
020562  020000                                  BIT13                       ;RECEIVER ENABLE.
020564  015000                                  <BIT12+BIT11>+BIT9          ;8 BITS/PER/CHAR.
020566  022000                                  <BIT13>+BIT10               ;PARAMETER FOR REG 2.
```

```
020570 000001                    15$:    .BLKW 1                      ;LINE 3 OR 7 OR 13 OR 17(8).
020572 020000                            BIT13                        ;RECEIVER ENABLE.
020574 015000                            <BIT12+BIT11>+BIT9           ;8 BITS/PER/CHAR.
020576 026000                            <BIT13+BIT11>+BIT10                  ;PARAMETERS FOR REG 1.
020600 000001                    16$:    .BLKW 1                      ;LINE EXPECTED TO FINISH FIRST.
                                                                      ;LINE 3 OR 7 OR 13 OR 17(8).
                                 ; ***********************************************************

020602 000207                            RTS     PC                   ;EXIT TEST.


                                         ;************************* TEST 25 ********************************
                                         ;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.
                                         ;*  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, 600 BAUD.
                                         ;*LINE X+1: 8 B/P/C,1ST, 300 BAUD.
                                         ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                         ;;****************************************************************

                                 ;  TEST 25
                                 ;---------------
020604 012737 000025 001226      TST25:  MOV     #25,TSTNO
020612 012737 021176 001216              MOV     #TST26,NEXT
020620 012700 000000                     MOV     #0.,R0               ;PLACE LINE NUMBER INTO R0
020624 013737 001416 001236              MOV     L00.03,STAT          ;LOAD LINE CARD STATUS INTO STAT
020632 100402                            BMI     100$                 ;BR IF LINE CARD NOT TO BE TESTED
020634 004737 020722                     JSR     PC,105$              ;GO DO THE TEST FOR LINE CARD 1
020640 012700 000004             100$:   MOV     #4.,R0               ;PLACE LINE NUMBER INTO R0
020644 013737 001420 001236              MOV     L04.07,STAT          ;LOAD LINE CARD STATUS INTO STAT
020652 100402                            BMI     101$                 ;BR IF LINE CARD NOT TO BE TESTED
020654 004737 020722                     JSR     PC,105$              ;GO DO THE TEST FOR LINE CARD 2
020660 012700 000010             101$:   MOV     #8.,R0               ;LOAD LINE NUMBER
020664 013737 001422 001236              MOV     L08.11,STAT          ;LOAD LINE CARD STATUS INTO STAT
020672 100402                            BMI     102$                 ;BR IF LINE CARD NOT TO BE TESTED
020674 004737 020722                     JSR     PC,105$              ;DO THE TEST FOR LINE CARD 3
020700 012700 000014             102$:   MOV     #12.,R0              ;LOAD LINE NO.
020704 013737 001424 001236              MOV     L12.15,STAT          ;LOAD LINE CARD STATUS
020712 100402                            BMI     103$                 ;BR IF LINE CARD NOT TO BE TESTED
020714 004737 020722                     JSR     PC,105$              ;DO THE TESTS FOR LINE CARD 4
020720 104400                    103$:   SCOPE                        ;SCOPE THIS TEST.
020722                           105$:                                ;TEST ENTRANCE.
020722 032737 004000 001236              BIT     #ASYNC,STAT          ;IS THIS AN ASYNC LINE CARD
020730 001001                            BNE     1$                   ;BR IF YES
020732 000207                            RTS     PC                   ;EXIT TEST
```

H07


```
020734  010037  020760          1$:     MOV     R0,2$                   ;GET LINE UNDER TEST
                                                                        ;LINE 0 OR 4 OR 10 OR 14(8)
020740  010037  021000                  MOV     R0,4$                   ;SAVE SAME LINE
020744  010037  020770                  MOV     R0,3$                   ;PREPARE FOR LINE+1
020750  005237  020770                  INC     3$                      ;MAKE LINE = LINE+1
                                                                        ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ************************************************
                                ;                       PART 1
                                ;               IN THIS ROUTINE LOCATION "2$"
                                ;               HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;               LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
020754  004537  032316                  JSR     R5,TIME.PAR             ;GOTO SUBROUTINE
020760  000001                  2$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8)
020762  020000                          BIT13                           ;RECEIVER ENABLE
020764  015000                          <BIT12+BIT11>+BIT9              ;PARAMETERS: 8 BITS PER/CHAR
020766  032000                          <BIT13+BIT12>+BIT10                     ;PARAMETERS FOR REG 2

020770  000001                  3$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
020772  020000                          BIT13                           ;RECEIVER ENABLE
020774  015000                          <BIT12+BIT11>+BIT9              ;8 BITS PER CHAR
020776  026000                          <BIT13+BIT11>+BIT10                     ;PARAMETERS FOR REG 2
021000  000001                  4$:     .BLKW 1                         ;LINE EXPECTED TO FINISH FIRST.
                                                                        ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; ************************************************

021002  010037  021030          5$:     MOV     R0,6$                   ;GET INITAL LINE NO.
021006  010037  021040                  MOV     R0,7$                   ;STORE FOR NEXT TEST.
021012  005237  021040                  INC     7$                      ;MAKE LINE=LINE+1.
021016  013737  021040  021050          MOV     7$,8$                   ;STORE LINE+1 FOR NEXT TESTS.
                                ; ************************************************
                                ;                       PART 2
                                ;               IN THIS ROUTINE LOCATION "7$"
                                ;               HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;               LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;               THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;               FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
021024  004537  032316                  JSR     R5,TIME.PAR             ;GOTO SUBROUTINE.
021030  000001                  6$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8).
021032  020000                          BIT13                           ;RECEIVER ENABLE.
021034  015000                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
021036  026000                          <BIT13+BIT11>+BIT10                     ;PARAMETERS FOR REG 2.

021040  000001                  7$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
021042  020000                          BIT13                           ;RECEIVER ENABLE.
021044  015000                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
021046  032000                          <BIT13+BIT12>+BIT10                     ;PARAMETERS FOR REG 2.
021050  000001                  8$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
                                ; ************************************************

021052  062700  000002                  ADD     #2,R0                   ;PREPARE FOR NEXT GROUP OF LINES.
021056  010037  021102          9$:     MOV     R0,10$                  ;SAVE LINE NO. FOR TEST.
021062  010037  021122                  MOV     R0,12$                  ;SAVE NO.
021066  010037  021112                  MOV     R0,11$                  ;
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 2
```

```
021362  000001                          3$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
021364  020000                                  BIT13                           ;RECEIVER ENABLE
021366  015000                                  <BIT12+BIT11>+BIT9              ;8 BITS PER CHAR
021370  032000                                  <BIT13+BIT12>+BIT10                     ;PARAMETERS FOR REG 2
021372  000001                          4$:     .BLKW 1                         ;LINE EXPECTED TO FINISH FIRST.
                                                                                ;LINE 0 OR 4 OR 10 OR 14(8).
                                        ; ***********************************************************

021374  010037  021422                  5$:     MOV     R0,6$                   ;GET INITAL LINE NO.
021400  010037  021432                          MOV     R0,7$                   ;STORE FOR NEXT TEST.
021404  005237  021432                          INC     7$                      ;MAKE LINE=LINE+1.
021410  013737  021432  021442                  MOV     7$,8$                   ;STORE LINE+1 FOR NEXT TESTS.
                                        ; ***********************************************************
                                        ;               PART 2
                                        ;       IN THIS ROUTINE LOCATION "7$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
021416  004537  032316                          JSR     R5,TIME.PAR             ;GOTO SUBROUTINE.
021422  000001                          6$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8).
021424  020000                                  BIT13                           ;RECEIVER ENABLE.
021426  015000                                  <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
021430  032000                                  <BIT13+BIT12>+BIT10                     ;PARAMETERS FOR REG 2.

021432  000001                          7$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
021434  020000                                  BIT13                           ;RECEIVER ENABLE.
021436  015000                                  <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
021440  036000                                  <BIT13+BIT12+BIT11>+BIT10                ;PARAMETERS FOR REG 2.
021442  000001                          8$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
                                        ; ***********************************************************

021444  062700  000002                          ADD     #2,R0                   ;PREPARE FOR NEXT GROUP OF LINES.
021450  010037  021474                  9$:     MOV     R0,10$                  ;SAVE LINE NO. FOR TEST.
021454  010037  021514                          MOV     R0,12$                  ;SAVE NO.
021460  010037  021504                          MOV     R0,11$                  ;
021464  005237  021504                          INC     11$                     ;MAKE LINE=LINE+1.
                                        ; ***********************************************************
                                        ;               PART 1A
                                        ;       IN THIS ROUTINE LOCATION "10$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
021470  004537  032316                          JSR     R5,TIME.PAR             ;GOTO SUBROUTINE.
021474  000001                          10$:    .BLKW 1                         ;LINE 2 OR 6 OR 12 OR 16(8).
021476  020000                                  BIT13                           ;RECEIVER ENABLE.
021500  015000                                  <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
021502  036000                                  <BIT13+BIT12+BIT11>+BIT10                ;PARAMETERS FOR REG 2.

021504  000001                          11$:    .BLKW 1                         ;LINE 3 OR 7 OR 13 OR 17(8).
021506  020000                                  BIT13                           ;RECEIVER ENABLE.
021510  015000                                  <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
021512  032000                                  <BIT13+BIT12>+BIT10                     ;PARAMETERS FOR LINE 2.
021514  000001                          12$:    .BLKW 1                         ;LINE EXPECTED TO FINISH FIRST
                                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
```

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

021516  010037  021544                  13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
021522  010037  021554                          MOV     R0,15$          ;STORE LINE.
021526  005237  021554                          INC     15$             ;LINE =LINE+1.
021532  013737  021554  021564                  MOV     15$,16$         ;SET FASTEST LINE.
                                        ; ***********************************************
                                        ;               PART 2A
                                        ;       IN THIS ROUTINE LOCATION "14$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
021540  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
021544  000001                          14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
021546  020000                                  BIT13                   ;RECEIVER ENABLE.
021550  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
021552  032000                                  <BIT13+BIT12>+BIT10             ;PARAMETER FOR REG 2.

021554  000001                          15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
021556  020000                                  BIT13                   ;RECEIVER ENABLE.
021560  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
021562  036000                                  <BIT13+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 1.
021564  000001                          16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                        ;LINE 3 OR 7 OR 13 OR 17(8).
                                        ; ***********************************************

021566  000207                                  RTS     PC              ;EXIT TEST.


                                                ;*********************** TEST 27 ******************************
                                                ;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,1800 BAUD.
                                                ;*LINE X+1: 8 B/P/C,1ST,1200 BAUD.
                                                ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                                ;;**********************************************************

                                        ;  TEST 27
                                        ;---------------
021570  012737  000027  001226          TST27:  MOV     #27,TSTNO
021576  012737  022162  001216                  MOV     #TST30,NEXT
021604  012700  000000                          MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
```

```
021610  013737  001416  001236          MOV     L00.03,STAT        ;LOAD LINE CARD STATUS INTO STAT
021616  100402                          BMI     100$               ;BR IF LINE CARD NOT TO BE TESTED
021620  004737  021706                  JSR     PC,105$            ;GO DO THE TEST FOR LINE CARD 1
021624  012700  000004          100$:   MOV     #4.,R0             ;PLACE LINE NUMBER INTO R0
021630  013737  001420  001236          MOV     L04.07,STAT        ;LOAD LINE CARD STATUS INTO STAT
021636  100402                          BMI     101$               ;BR IF LINE CARD NOT TO BE TESTED
021640  004737  021706                  JSR     PC,105$            ;GO DO THE TEST FOR LINE CARD 2
021644  012700  000010          101$:   MOV     #8.,R0             ;LOAD LINE NUMBER
021650  013737  001422  001236          MOV     L08.11,STAT        ;LOAD LINE CARD STATUS INTO STAT
021656  100402                          BMI     102$               ;BR IF LINE CARD NOT TO BE TESTED
021660  004737  021706                  JSR     PC,105$            ;DO THE TEST FOR LINE CARD 3
021664  012700  000014          102$:   MOV     #12.,R0            ;LOAD LINE NO.
021670  013737  001424  001236          MOV     L12.15,STAT        ;LOAD LINE CARD STATUS
021676  100402                          BMI     103$               ;BR IF LINE CARD NOT TO BE TESTED
021700  004737  021706                  JSR     PC,105$            ;DO THE TESTS FOR LINE CARD 4
021704  104400                  103$:   SCOPE                      ;SCOPE THIS TEST.
021706                          105$:                              ;TEST ENTRANCE.
021706  032737  004000  001236          BIT     #ASYNC,STAT        ;IS THIS AN ASYNC LINE CARD?
021714  001001                          BNE     1$                 ;BR IF YES
021716  000207                          RTS     PC                 ;EXIT TEST
021720  010037  021744          1$:     MOV     R0,2$              ;GET LINE UNDER TEST
                                                                   ;LINE 0 OR 4 OR 10 OR 14(8)
021724  010037  021764                  MOV     R0,4$              ;SAVE SAME LINE
021730  010037  021754                  MOV     R0,3$              ;PREPARE FOR LINE+1
021734  005237  021754                  INC     3$                 ;MAKE LINE = LINE+1
                                                                   ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ************************************************
                                ;                       PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
021740  004537  032316                  JSR     R5,TIME.PAR        ;GOTO SUBROUTINE
021744  000001                  2$:     .BLKW 1                    ;LINE 0 OR 4 OR 10 OR 14(8)
021746  020000                          BIT13                      ;RECEIVER ENABLE
021750  015000                          <BIT12+BIT11>+BIT9         ;PARAMETERS: 8 BITS PER/CHAR
021752  042000                          <BIT14>+BIT10              ;PARAMETERS FOR REG 2

021754  000001                  3$:     .BLKW 1                    ;LINE 1 OR 5 OR 11 OR 15(8).
021756  020000                          BIT13                      ;RECEIVER ENABLE
021760  015000                          <BIT12+BIT11>+BIT9         ;8 BITS PER CHAR
021762  036000                          <BIT13+BIT12+BIT11>+BIT10          ;PARAMETERS FOR REG 2
021764  000001                  4$:     .BLKW 1                    ;LINE EXPECTED TO FINISH FIRST.
                                                                   ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; ************************************************

021766  010037  022014          5$:     MOV     R0,6$              ;GET INITAL LINE NO.
021772  010037  022024                  MOV     R0,7$              ;STORE FOR NEXT TEST.
021776  005237  022024                  INC     7$                 ;MAKE LINE=LINE+1.
022002  013737  022024  022034          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
```

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                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
022010  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
022014  000001                          6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
022016  020000                                  BIT13                   ;RECEIVER ENABLE.
022020  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
022022  036000                                  <BIT13+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2.

022024  000001                          7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
022026  020000                                  BIT13                   ;RECEIVER ENABLE.
022030  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
022032  042000                                  <BIT14>+BIT10           ;PARAMETERS FOR REG 2.
022034  000001                          8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                        ; ***************************************************

022036  062700  000002                          ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
022042  010037  022066                  9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
022046  010037  022106                          MOV     R0,12$          ;SAVE NO.
022052  010037  022076                          MOV     R0,11$          ;
022056  005237  022076                          INC     11$             ;MAKE LINE=LINE+1.
                                        ; ***************************************************
                                        ;               PART 1A
                                        ;       IN THIS ROUTINE LOCATION "10$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;
022062  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
022066  000001                          10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
022070  020000                                  BIT13                   ;RECEIVER ENABLE.
022072  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
022074  042000                                  <BIT14>+BIT10           ;PARAMETERS FOR REG 2.

022076  000001                          11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
022100  020000                                  BIT13                   ;RECEIVER ENABLE.
022102  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
022104  036000                                  <BIT13+BIT12+BIT11>+BIT10               ;PARAMETERS FOR LINE 2.
022106  000001                          12$.    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                        ;LINE 2 OR 6 OR 12 OR 16(8).
                                        ; ***************************************************

022110  010037  022136                  13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
022114  010037  022146                          MOV     R0,15$          ;STORE LINE.
022120  005237  022146                          INC     15$             ;LINE =LINE+1.
022124  013737  022146  022156                  MOV     15$,16$         ;SET FASTEST LINE.
                                        ; ***************************************************
                                        ;               PART 2A
                                        ;       IN THIS ROUTINE LOCATION "14$"
                                        ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                        ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                        ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                        ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                        ;
022132  004537  032316                          JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
022136  000001                          14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
022140  020000                                  BIT13                   ;RECEIVER ENABLE.
022142  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
```

B08


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022144  036000                                   <BIT13+BIT12+BIT11+BIT10>            ;PARAMETER FOR REG 2.

022146  000001                          15$:     .BLKW 1                              ;LINE 3 OR 7 OR 13 OR 17 8..
022150  020000                                   BIT13                                ;RECEIVER ENABLE.
022152  015000                                   <BIT12+BIT11+BIT9>                   ;8 BITS/PER/CHAR.
022154  042000                                   <BIT14+BIT10>                        ;PARAMETERS FOR REG 1.
022156  000001                          16$:     .BLKW 1                              ;LINE EXPECTED TO FINISH FIRST.
                                                                                      ;LINE 3 OR 7 OR 13 OR 17 9 .
                                        ; ***********************************************************

022160  000207                                   RTS     PC                           ;EXIT TEST.


                                                 ;************************* TEST 30 *******************************
                                                 ;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.2000 BAUD.
                                                 ;*LINE X+1: 8 B/P/C.1ST.1800 BAUD.
                                                 ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                                 ;;**************************************************************

                                        ;  TEST 30
                                        ;---------------
022162  012737  000030  001226          TST30:   MOV     #30,TSTNO
022170  012737  022554  001216                   MOV     #TST31,NEXT
022176  012700  000000                           MOV     #0.,R0               ;PLACE LINE NUMBER INTO R0
022202  013737  001416  001236                   MOV     L00.03,STAT          ;LOAD LINE CARD STATUS INTO STAT
022210  100402                                   BMI     100$                 ;BR IF LINE CARD NOT TO BE TESTED
022212  004737  022300                           JSR     PC,105$              ;GO DO THE TEST FOR LINE CARD 1
022216  012700  000004                  100$:    MOV     #4.,R0               ;PLACE LINE NUMBER INTO R0
022222  013737  001420  001236                   MOV     L04.07,STAT          ;LOAD LINE CARD STATUS INTO STAT
022230  100402                                   BMI     101$                 ;BR IF LINE CARD NOT TO BE TESTED
022232  004737  022300                           JSR     PC,105$              ;GO DO THE TEST FOR LINE CARD 2
022236  012700  000010                  101$:    MOV     #8.,R0               ;LOAD LINE NUMBER
022242  013737  001422  001236                   MOV     L08.11,STAT          ;LOAD LINE CARD STATUS INTO STAT
022250  100402                                   BMI     102$                 ;BR IF LINE CARD NOT TO BE TESTED
022252  004737  022300                           JSR     PC,105$              ;DO THE TEST FOR LINE CARD 3
022256  012700  000014                  102$:    MOV     #12.,R0              ;LOAD LINE NO.
022262  013737  001424  001236                   MOV     L12.15,STAT          ;LOAD LINE CARD STATUS
022270  100402                                   BMI     103$                 ;BR IF LINE CARD NOT TO BE TESTED
022272  004737  022300                           JSR     PC,105$              ;DO THE TESTS FOR LINE CARD 4
022276  104400                          103$:    SCOPE                        ;SCOPE THIS TEST.
022300                                  105$:                                 ;TEST ENTRANCE.
022300  032737  004000  001236                   BIT     #ASYNC,STAT          ;IS THIS AN ASYNC LINE CARD?
```

```
022306  001001                          BNE     1$              ;BR IF YES
022310  000207                          RTS     PC              ;EXIT TEST
022312  010037  022336          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
022316  010037  022356                  MOV     R0,4$           ;SAVE SAME LINE
022322  010037  022346                  MOV     R0,3$           ;PREPARE FOR LINE+1
022326  005237  022346                  INC     3$              ;MAKE LINE = LINE+1
                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***********************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
022332  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
022336  000001                  2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
022340  020000                          BIT13                   ;RECEIVER ENABLE
022342  015000                          <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
022344  046000                          <BIT14+BIT11>+BIT10             ;PARAMETERS FOR REG 2

022346  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
022350  020000                          BIT13                   ;RECEIVER ENABLE
022352  015000                          <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
022354  042000                          <BIT14>+BIT10           ;PARAMETERS FOR REG 2
022356  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; ***********************************************

022360  010037  022406          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
022364  010037  022416                  MOV     R0,7$           ;STORE FOR NEXT TEST.
022370  005237  022416                  INC     7$              ;MAKE LINE=LINE+1.
022374  013737  022416  022426          MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
                                ; ***********************************************
                                ;               PART 2
                                ;       IN THIS ROUTINE LOCATION "7$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
022402  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
022406  000001                  6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
022410  020000                          BIT13                   ;RECEIVER ENABLE.
022412  015000                          <BIT12+BIT11>+BIT9      ;8 BITS PER/CHAR.
022414  042000                          <BIT14>+BIT10           ;PARAMETERS FOR REG 2.

022416  000001                  7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
022420  020000                          BIT13                   ;RECEIVER ENABLE.
022422  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
022424  046000                          <BIT14+BIT11>+BIT10             ;PARAMETERS FOR REG 2.
022426  000001                  8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                ; ***********************************************

022430  062700  000002                  ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
022434  010037  022460          9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
022440  010037  022500                  MOV     R0,12$          ;SAVE NO.
```

```
022444 010037 022470                 MOV     R0,11$               ;
022450 005237 022470                 INC     11$                  ;MAKE LINE=LINE+1.
                            ; ****************************************************
                            ;                PART 1A
                            ;        IN THIS ROUTINE LOCATION "10$"
                            ;        HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                            ;        LINE DUE TO THE PARAMETERS LOADED INTO IT.
                            ;
022454 004537 032316                 JSR     R5,TIME.PAR          ;GOTO SUBROUTINE.
022460 000001               10$:     .BLKW 1                      ;LINE 2 OR 6 OR 12 OR 16(8).
022462 020000                        BIT13                        ;RECEIVER ENABLE.
022464 015000                        <BIT12+BIT11>+BIT9           ;8 BITS/PER/CHAR.
022466 046000                        <BIT14+BIT11>+BIT10                  ;PARAMETERS FOR REG 2.

022470 000001               11$:     .BLKW 1                      ;LINE 3 OR 7 OR 13 OR 17(9).
022472 020000                        BIT13                        ;RECEIVER ENABLE.
022474 015000                        <BIT12+BIT11>+BIT9           ;8 BITS/PER/CHAR.
022476 042000                        <BIT14>+BIT10                ;PARAMETERS FOR LINE 2.
022500 000001               12$:     .BLKW 1                      ;LINE EXPECTED TO FINISH FIRST
                                                                  ;LINE 2 OR 6 OR 12 OR 16(8).
                            ; ****************************************************

022502 010037 022530        13$:     MOV     R0,14$               ;STORE LINE FOR NEXT TEST.
022506 010037 022540                 MOV     R0,15$               ;STORE LINE.
022512 005237 022540                 INC     15$                  ;LINE =LINE+1.
022516 013737 022540 022550          MOV     15$,16$              ;SET FASTEST LINE.
                            ; ****************************************************
                            ;                PART 2A
                            ;        IN THIS ROUTINE LOCATION "14$"
                            ;        HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                            ;        LINE DUE TO THE PARAMETERS LOADED INTO IT.
                            ;        THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                            ;        FOR THE TWO LINES HAVE BEEN SWAPPED.
                            ;
022524 004537 032316                 JSR     R5,TIME.PAR          ;GOTO SUBROUTINE.
022530 000001               14$:     .BLKW 1                      ;LINE 2 OR 6 OR 12 OR 16(8)
022532 020000                        BIT13                        ;RECEIVER ENABLE.
022534 015000                        <BIT12+BIT11>+BIT9           ;8 BITS/PER/CHAR.
022536 042000                        <BIT14>+BIT10                ;PARAMETER FOR REG 2.

022540 000001               15$:     .BLKW 1                      ;LINE 3 OR 7 OR 13 OR 17(9).
022542 020000                        BIT13                        ;RECEIVER ENABLE.
022544 015000                        <BIT12+BIT11>+BIT9           ;8 BITS/PER/CHAR.
022546 046000                        <BIT14+BIT11>+BIT10                  ;PARAMETERS FOR REG 1.
022550 000001               16$:     .BLKW 1                      ;LINE EXPECTED TO FINISH FIRST.
                                                                  ;LINE 3 OR 7 OR 13 OR 17(9).
                            ; ****************************************************

022552 000207                        RTS     PC                   ;EXIT TEST.


                                     ;************************ TEST 31 ******************************
                                     ;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,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$:   MOV     #8.,R0          ;LOAD LINE NUMBER
        022634  013737  001422  001236          MOV     L09.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
        022642  100402                          BMI     102$            ;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)
        022732  020000                          BIT13                   ;RECEIVER ENABLE
        022734  015000                          (BIT12+BIT11 +BIT9      ;PARAMETERS: 8 BITS PER CHAR
```

```
022736  052000                          <BIT14+BIT12>+BIT10             ;PARAMETERS FOR REG 2

022740  000001                  3$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
022742  020000                          BIT13                           ;RECEIVER ENABLE
022744  015000                          <BIT12+BIT11>+BIT9              ;8 BITS PER CHAR
022746  046000                          <BIT14+BIT11>+BIT10                     ;PARAMETERS FOR REG 2
022750  000001                  4$:     .BLKW 1                         ;LINE EXPECTED TO FINISH FIRST.
                                                                        ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; ************************************************

022752  010037  023000          5$:     MOV     R0,6$                   ;GET INITAL LINE NO.
022756  010037  023010                  MOV     R0,7$                   ;STORE FOR NEXT TEST.
022762  005237  023010                  INC     7$                      ;MAKE LINE=LINE+1.
022766  013737  023010  023020          MOV     7$,8$                   ;STORE LINE+1 FOR NEXT TESTS.
                                ; ************************************************
                                ;               PART 2
                                ;       IN THIS ROUTINE LOCATION "7$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
022774  004537  032316                  JSR     R5,TIME.PAR             ;GOTO SUBROUTINE.
023000  000001                  6$:     .BLKW 1                         ;LINE 0 OR 4 OR 10 OR 14(8).
023002  020000                          BIT13                           ;RECEIVER ENABLE.
023004  015000                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
023006  046000                          <BIT14+BIT11>+BIT10                     ;PARAMETERS FOR REG 2.

023010  000001                  7$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
023012  020000                          BIT13                           ;RECEIVER ENABLE.
023014  015000                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
023016  052000                          <BIT14+BIT12>+BIT10                     ;PARAMETERS FOR REG 2.
023020  000001                  8$:     .BLKW 1                         ;LINE 1 OR 5 OR 11 OR 15(8).
                                ; ************************************************

023022  062700  000002                  ADD     #2,R0                   ;PREPARE FOR NEXT GROUP OF LINES.
023026  010037  023052          9$:     MOV     R0,10$                  ;SAVE LINE NO. FOR TEST.
023032  010037  023072                  MOV     R0,12$                  ;SAVE NO.
023036  010037  023062                  MOV     R0,11$                  ;
023042  005237  023062                  INC     11$                     ;MAKE LINE=LINE+1.
                                ; ************************************************
                                ;               PART 1A
                                ;       IN THIS ROUTINE LOCATION "10$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
023046  004537  032316                  JSR     R5,TIME.PAR             ;GOTO SUBROUTINE.
023052  000001                  10$:    .BLKW 1                         ;LINE 2 OR 6 OR 12 OR 16(8).
023054  020000                          BIT13                           ;RECEIVER ENABLE.
023056  015000                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
023060  052000                          <BIT14+BIT12>+BIT10                     ;PARAMETERS FOR REG 2.

023062  000001                  11$:    .BLKW 1                         ;LINE 3 OR 7 OR 13 OR 17(8).
023064  020000                          BIT13                           ;RECEIVER ENABLE.
023066  015000                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
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
```

```
023154  012737  023540  001216          MOV     #TST33,NEXT
023162  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
023166  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
023174  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
023176  004737  023264                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
023202  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
023206  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
023214  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
023216  004737  023264                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
023222  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
023226  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
023234  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
023236  004737  023264                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
023242  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
023246  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
023254  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
023256  004737  023264                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
023262  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
023264                          105$:                           ;TEST ENTRANCE.
023264  032737  004000  001236          BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
023272  001001                          BNE     1$              ;BR IF YES
023274  000207                          RTS     PC              ;EXIT TEST
023276  010037  023322          1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                ;LINE 0 OR 4 OR 10 OR 14(8)
023302  010037  023342                  MOV     R0,4$           ;SAVE SAME LINE
023306  010037  023332                  MOV     R0,3$           ;PREPARE FOR LINE+1
023312  005237  023332                  INC     3$              ;MAKE LINE = LINE+1
                                                                ;LINE 1 OR 5 OR 11 OR 15(8)
                                ; ***************************************************
                                ;               PART 1
                                ;       IN THIS ROUTINE LOCATION "2$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
023316  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
023322  000001                  2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
023324  020000                          BIT13                   ;RECEIVER ENABLE
023326  015000                          <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
023330  056000                          <BIT14+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2

023332  000001                  3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
023334  020000                          BIT13                   ;RECEIVER ENABLE
023336  015000                          <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
023340  052000                          <BIT14+BIT12>+BIT10             ;PARAMETERS FOR REG 2
023342  000001                  4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 0 OR 4 OR 10 OR 14(8).
                                ; ***************************************************

023344  010037  023372          5$:     MOV     R0,6$           ;GET INITAL LINE NO.
023350  010037  023402                  MOV     R0,7$           ;STORE FOR NEXT TEST.
023354  005237  023402                  INC     7$              ;MAKE LINE=LINE+1.
023360  013737  023402  023412          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.
                                        ;
023366  004537  032316                          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.

023402  000001                          7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
023404  020000                                  BIT13                   ;RECEIVER ENABLE.
023406  015000                                  <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
023410  056000                                  <BIT14+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 2.
023412  000001                          8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                        ; ***********************************************************

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
```

```
023516  020000                                          BIT13                           ;RECEIVER ENABLE.
023520  015000                                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
023522  052000                                          <BIT14+BIT12>+BIT10                     ;PARAMETER FOR REG 2.

023524  000001                                  15$:    .BLKW 1                         ;LINE 3 OR 7 OR 13 OR 17(8).
023526  020000                                          BIT13                           ;RECEIVER ENABLE.
023530  015000                                          <BIT12+BIT11>+BIT9              ;8 BITS/PER/CHAR.
023532  056000                                          <BIT14+BIT12+BIT11>+BIT10               ;PARAMETERS FOR REG 1.
023534  000001                                  16$:    .BLKW 1                         ;LINE EXPECTED TO FINISH FIRST.
                                                                                        ;LINE 3 OR 7 OR 13 OR 17(8).
                                                ; ***************************************************

023536  000207                                          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.
```

```
023656                            105$:                             ;TEST ENTRANCE.
023656  032737  004000  001236           BIT     #ASYNC,STAT        ;IS THIS AN ASYNC LINE CARD?
023664  001001                           BNE     1$                 ;BR IF YES
023666  000207                           RTS     PC                 ;EXIT TEST
023670  010037  023714            1$:    MOV     R0,2$              ;GET LINE UNDER TEST
                                                                    ;LINE 0 OR 4 OR 10 OR 14(8)
023674  010037  023734                   MOV     R0,4$              ;SAVE SAME LINE
023700  010037  023724                   MOV     R0,3$              ;PREPARE FOR LINE+1
023704  005237  023724                   INC     3$                 ;MAKE LINE = LINE+1
                                                                    ;LINE 1 OR 5 OR 11 OR 15(8)
                                  ; ***************************************************
                                  ;              PART 1
                                  ;      IN THIS ROUTINE LOCATION "2$"
                                  ;      HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                  ;      LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                  ;
023710  004537  032316                   JSR     R5,TIME.PAR        ;GOTO SUBROUTINE
023714  000001                    2$:    .BLKW 1                    ;LINE 0 OR 4 OR 10 OR 14(8)
023716  020000                           BIT13                      ;RECEIVER ENABLE
023720  015000                           <BIT12+BIT11>+BIT9         ;PARAMETERS: 8 BITS PER/CHAR
023722  062000                           <BIT14+BIT13>+BIT10                ;PARAMETERS FOR REG 2

023724  000001                    3$:    .BLKW 1                    ;LINE 1 OR 5 OR 11 OR 15(8).
023726  020000                           BIT13                      ;RECEIVER ENABLE
023730  015000                           <BIT12+BIT11>+BIT9         ;8 BITS PER CHAR
023732  056000                           <BIT14+BIT12+BIT11>+BIT10          ;PARAMETERS FOR REG 2
023734  000001                    4$:    .BLKW 1                    ;LINE EXPECTED TO FINISH FIRST.
                                                                    ;LINE 0 OR 4 OR 10 OR 14(8).
                                  ; ***************************************************

023736  010037  023764            5$:    MOV     R0,6$              ;GET INITAL LINE NO.
023742  010037  023774                   MOV     R0,7$              ;STORE FOR NEXT TEST.
023746  005237  023774                   INC     7$                 ;MAKE LINE=LINE+1.
023752  013737  023774  024004           MOV     7$,8$              ;STORE LINE+1 FOR NEXT TESTS.
                                  ; ***************************************************
                                  ;              PART 2
                                  ;      IN THIS ROUTINE LOCATION "7$"
                                  ;      HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                  ;      LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                  ;      THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                  ;      FOR THE TWO LINES HAVE BEEN SWAPPED.
                                  ;
023760  004537  032316                   JSR     R5,TIME.PAR        ;GOTO SUBROUTINE.
023764  000001                    6$:    .BLKW 1                    ;LINE 0 OR 4 OR 10 OR 14(8).
023766  020000                           BIT13                      ;RECEIVER ENABLE.
023770  015000                           <BIT12+BIT11>+BIT9         ;8 BITS/PER/CHAR.
023772  056000                           <BIT14+BIT12+BIT11>+BIT10          ;PARAMETERS FOR REG 2.

023774  000001                    7$:    .BLKW 1                    ;LINE 1 OR 5 OR 11 OR 15(8).
023776  020000                           BIT13                      ;RECEIVER ENABLE.
024000  015000                           <BIT12+BIT11>+BIT9         ;8 BITS/PER/CHAR.
024002  062000                           <BIT14+BIT13>+BIT10                ;PARAMETERS FOR REG 2.
024004  000001                    8$:    .BLKW 1                    ;LINE 1 OR 5 OR 11 OR 15(8).
                                  ; ***************************************************

024006  062700  000002                   ADD     #2,R0              ;PREPARE FOR NEXT GROUP OF LINES.
```

```
024012 010037 024036         9$:     MOV     R0,10$           ;SAVE LINE NO. FOR TEST.
024016 010037 024056                 MOV     R0,12$           ;SAVE NO.
024022 010037 024046                 MOV     R0,11$           ;
024026 005237 024046                 INC     11$              ;MAKE LINE=LINE+1.
                             ; ***********************************************************
                             ;                PART 1A
                             ;       IN THIS ROUTINE LOCATION "10$"
                             ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                             ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                             ;
024032 004537 032316                 JSR     R5,TIME.PAR      ;GOTO SUBROUTINE.
024036 000001                10$:    .BLKW 1                  ;LINE 2 OR 6 OR 12 OR 16(8).
024040 020000                        BIT13                    ;RECEIVER ENABLE.
024042 015000                        <BIT12+BIT11>+BIT9       ;8 BITS/PER/CHAR.
024044 062000                        <BIT14+BIT13>+BIT10              ;PARAMETERS FOR PEG 2.

024046 000001                11$:    .BLKW 1                  ;LINE 3 OR 7 OR 13 OR 17(8).
024050 020000                        BIT13                    ;RECEIVER ENABLE.
024052 015000                        <BIT12+BIT11>+BIT9       ;8 BITS/PER/CHAR.
024054 056000                        <BIT14+BIT12+BIT11>+BIT10          ;PARAMETERS FOR LINE 2.
024056 000001                12$:    .BLKW 1                  ;LINE EXPECTED TO FINISH FIRST
                                                              ;LINE 2 OR 6 OR 12 OR 16(8).
                             ; ***********************************************************

024060 010037 024106         13$:    MOV     R0,14$           ;STORE LINE FOR NEXT TEST.
024064 010037 024116                 MOV     R0,15$           ;STORE LINE.
024070 005237 024116                 INC     15$              ;LINE =LINE+1.
024074 013737 024116 024126          MOV     15$,16$          ;SET FASTEST LINE.
                             ; ***********************************************************
                             ;                PART 2A
                             ;       IN THIS ROUTINE LOCATION "14$"
                             ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                             ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                             ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                             ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                             ;
024102 004537 032316                 JSR     R5,TIME.PAR      ;GOTO SUBROUTINE.
024106 000001                14$:    .BLKW 1                  ;LINE 2 OR 6 OR 12 OR 16(8)
024110 020000                        BIT13                    ;RECEIVER ENABLE.
024112 015000                        <BIT12+BIT11>+BIT9       ;8 BITS/PER/CHAR.
024114 056000                        <BIT14+BIT12+BIT11>+BIT10          ;PARAMETER FOR REG 2.

024116 000001                15$:    .BLKW 1                  ;LINE 3 OR 7 OR 13 OR 17(8).
024120 020000                        BIT13                    ;RECEIVER ENABLE.
024122 015000                        <BIT12+BIT11>+BIT9       ;8 BITS/PER/CHAR.
024124 062000                        <BIT14+BIT13>+BIT10              ;PARAMETERS FOR REG 1.
024126 000001                16$:    .BLKW 1                  ;LINE EXPECTED TO FINISH FIRST.
                                                              ;LINE 3 OR 7 OR 13 OR 17(8).
                             ; ***********************************************************

024130 000207                        RTS     PC               ;EXIT TEST.


                                     ;*********************** TEST 34 ******************************
                                     ;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,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)
```

```
 024310  020000                           BIT13                   ;RECEIVER ENABLE
 024312  015000                           <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
 024314  066000                           <BIT14+BIT13+BIT11>+BIT10         ;PARAMETERS FOR REG 2

 024316  000001                   3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 024320  020000                           BIT13                   ;RECEIVER ENABLE
 024322  015000                           <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
 024324  062000                           <BIT14+BIT13>+BIT10          ;PARAMETERS FOR REG 2
 024326  000001                   4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                  ;LINE 0 OR 4 OR 10 OR 14(8).
                                  ; ************************************************

 024330  010037  024356           5$:     MOV     R0,6$           ;GET INITAL LINE NO.
 024334  010037  024366                   MOV     R0,7$           ;STORE FOR NEXT TEST.
 024340  005237  024366                   INC     7$              ;MAKE LINE=LINE+1.
 024344  013737  024366  024376           MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
                                  ; ************************************************
                                  ;               PART 2
                                  ;       IN THIS ROUTINE LOCATION "7$"
                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                  ;
 024352  004537  032316                   JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 024356  000001                   6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
 024360  020000                           BIT13                   ;RECEIVER ENABLE.
 024362  015000                           <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 024364  062000                           <BIT14+BIT13>+BIT10          ;PARAMETERS FOR REG 2.

 024366  000001                   7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
 024370  020000                           BIT13                   ;RECEIVER ENABLE.
 024372  015000                           <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 024374  066000                           <BIT14+BIT13+BIT11>+BIT10    ;PARAMETERS FOR REG 2.
 024376  000001                   8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                  ; ************************************************

 024400  062700  000002                   ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
 024404  010037  024430           9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
 024410  010037  024450                   MOV     R0,12$          ;SAVE NO.
 024414  010037  024440                   MOV     R0,11$          ;
 024420  005237  024440                   INC     11$             ;MAKE LINE=LINE+1.
                                  ; ************************************************
                                  ;               PART 1A
                                  ;       IN THIS ROUTINE LOCATION "10$"
                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                  ;
 024424  004537  032316                   JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 024430  000001                   10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
 024432  020000                           BIT13                   ;RECEIVER ENABLE.
 024434  015000                           <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
 024436  066000                           <BIT14+BIT13+BIT11>+BIT10    ;PARAMETERS FOR REG 2.

 024440  000001                   11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
 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$"
                                 ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                 ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                 ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                 ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                 ;
 024474  004537  022316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
 024500  000001                  14$:    .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$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
024674  004537  032316                  JSR     R5,TIME.PAR             ;GOTO SUBROUTINE
024700  000001                  2$:     .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$"
                                    ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                    ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                    ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                    ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                    ;
024744  004537  032316                      JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
024750  000001                      5$:     .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(9).
                               ; *************************************************


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
```

```
025226 004737 025234                      JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
025232 104400                     103$:   SCOPE                   ;SCOPE THIS TEST.
025234                            105$:                           ;TEST ENTRANCE.
025234 032737 004000 001236               BIT     #ASYNC,STAT     ;IS THIS AN ASYNC LINE CARD?
025242 001001                             BNE     1$              ;BR IF YES
025244 000207                             RTS     PC              ;EXIT TEST
025246 010037 025272              1$:     MOV     R0,2$           ;GET LINE UNDER TEST
                                                                  ;LINE 0 OR 4 OR 10 OR 14(8)
025252 010037 025312                      MOV     R0,4$           ;SAVE SAME LINE
025256 010037 025302                      MOV     R0,3$           ;PREPARE FOR LINE+1
025262 005237 025302                      INC     3$              ;MAKE LINE = LINE+1
                                                                  ;LINE 1 OR 5 OR 11 OR 15(8)
                                  ; ***********************************************
                                  ;               PART 1
                                  ;       IN THIS ROUTINE LOCATION "2$"
                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                  ;
025266 004537 032316                      JSR     R5,TIME.PAR     ;GOTO SUBROUTINE
025272 000001                     2$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8)
025274 020000                             BIT13                   ;RECEIVER ENABLE
025276 015000                             <BIT12+BIT11>+BIT9      ;PARAMETERS: 8 BITS PER/CHAR
025300 076000                             <BIT14+BIT13+BIT12+BIT11>+BIT10         ;PARAMETERS FOR REG 2

025302 000001                     3$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
025304 020000                             BIT13                   ;RECEIVER ENABLE
025306 015000                             <BIT12+BIT11>+BIT9      ;8 BITS PER CHAR
025310 072000                             <BIT14+BIT13+BIT12>+BIT10               ;PARAMETERS FOR REG 2
025312 000001                     4$:     .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                  ;LINE 0 OR 4 OR 10 OR 14(8).
                                  ; ***********************************************

025314 010037 025342              5$:     MOV     R0,6$           ;GET INITAL LINE NO.
025320 010037 025352                      MOV     R0,7$           ;STORE FOR NEXT TEST.
025324 005237 025352                      INC     7$              ;MAKE LINE=LINE+1.
025330 013737 025352 025362               MOV     7$,8$           ;STORE LINE+1 FOR NEXT TESTS.
                                  ; ***********************************************
                                  ;               PART 2
                                  ;       IN THIS ROUTINE LOCATION "7$"
                                  ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                  ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                  ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                  ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                  ;
025336 004537 032316                      JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
025342 000001                     6$:     .BLKW 1                 ;LINE 0 OR 4 OR 10 OR 14(8).
025344 020000                             BIT13                   ;RECEIVER ENABLE.
025346 015000                             <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
025350 072000                             <BIT14+BIT13+BIT12>+BIT10               ;PARAMETERS FOR REG 2.

025352 000001                     7$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
025354 020000                             BIT13                   ;RECEIVER ENABLE.
025356 015000                             <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
025360 076000                             <BIT14+BIT13+BIT12+BIT11>+BIT10         ;PARAMETERS FOR REG 2.
025362 000001                     8$:     .BLKW 1                 ;LINE 1 OR 5 OR 11 OR 15(8).
                                  ; ***********************************************
```

```
025364  062700  000002                  ADD     #2,R0           ;PREPARE FOR NEXT GROUP OF LINES.
025370  010037  025414          9$:     MOV     R0,10$          ;SAVE LINE NO. FOR TEST.
025374  010037  025434                  MOV     R0,12$          ;SAVE NO.
025400  010037  025424                  MOV     R0,11$          ;
025404  005237  025424                  INC     11$             ;MAKE LINE=LINE+1.
                                ; ***************************************************
                                ;               PART 1A
                                ;       IN THIS ROUTINE LOCATION "10$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;
025410  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
025414  000001                  10$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8).
025416  020000                          BIT13                   ;RECEIVER ENABLE.
025420  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
025422  076000                          <BIT14+BIT13+BIT12+BIT11>+BIT10        ;PARAMETERS FOR REG 2.

025424  000001                  11$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
025426  020000                          BIT13                   ;RECEIVER ENABLE.
025430  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
025432  072000                          <BIT14+BIT13+BIT12>+BIT10              ;PARAMETERS FOR LINE 2.
025434  000001                  12$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST
                                                                ;LINE 2 OR 6 OR 12 OR 16(8).
                                ; ***************************************************

025436  010037  025464          13$:    MOV     R0,14$          ;STORE LINE FOR NEXT TEST.
025442  010037  025474                  MOV     R0,15$          ;STORE LINE.
025446  005237  025474                  INC     15$             ;LINE =LINE+1.
025452  013737  025474  025504          MOV     15$,16$         ;SET FASTEST LINE.
                                ; ***************************************************
                                ;               PART 2A
                                ;       IN THIS ROUTINE LOCATION "14$"
                                ;       HOLDS WHAT IS EXPECTED TO BE THE FASTEST
                                ;       LINE DUE TO THE PARAMETERS LOADED INTO IT.
                                ;       THIS IS THE SAME TEST AS ABOVE ONLY THE PARAMETERS
                                ;       FOR THE TWO LINES HAVE BEEN SWAPPED.
                                ;
025460  004537  032316                  JSR     R5,TIME.PAR     ;GOTO SUBROUTINE.
025464  000001                  14$:    .BLKW 1                 ;LINE 2 OR 6 OR 12 OR 16(8)
025466  020000                          BIT13                   ;RECEIVER ENABLE.
025470  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
025472  072000                          <BIT14+BIT13+BIT12>+BIT10              ;PARAMETER FOR REG 2.

025474  000001                  15$:    .BLKW 1                 ;LINE 3 OR 7 OR 13 OR 17(8).
025476  020000                          BIT13                   ;RECEIVER ENABLE.
025500  015000                          <BIT12+BIT11>+BIT9      ;8 BITS/PER/CHAR.
025502  076000                          <BIT14+BIT13+BIT12+BIT11>+BIT10        ;PARAMETERS FOR REG 2.
025504  000001                  16$:    .BLKW 1                 ;LINE EXPECTED TO FINISH FIRST.
                                                                ;LINE 3 OR 7 OR 13 OR 17(8).
                                ; ***************************************************

025506  000207                          RTS     PC              ;EXIT TEST.


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

```
025716  000004                                BIT2                          ;TX GO.
025720  004537  033222                        PERFORM  LOAD.MODE            ;LOAD MODES
025724  060000                                BIT14+BIT13                   ;BREAK AND RX ENABLE.
025726  004537  033222                        PERFORM  LOAD.MODE            ;LOAD MODES.
025732  015000                                BIT12+BIT11+BIT9              ;8 BITS/PER/CHAR
025734  004537  033222                        PERFORM  LOAD.MODE            ;LOAD MODES
025740  072000                                BIT14+BIT13+BIT12+BIT10       ;9600 BAUD.
025742  005277  153414                        INC      @DVSCR               ;SET UCPU GO.
025746  005004                                CLR      R4                   ;SET TIMER
025750  005777  153406            2$:         TST      @DVSCR               ;TX DONE?
025754  100404                                BMI      3$                   ;BR IF YES
025756  104414                                DELAY                         ;WASTE TIME
025760  005204                                INC      R4                   ;UPDATE DELAY
025762  001372                                BNE      2$                   ;BR IF NOT DONE.
025764  104005                                HLT      5                    ;DVSCR15<>1. TX NOT DONE.
025766  105777  153370            3$:         TSTB     @DVSCR               ;RX DONE (DVSCR07=1)
025772  100401                                BMI      .+4                  ;BR IF YES
025774  104002                                HLT      2                    ;DVSCR07<>1 (RX NOT DONE)
025776  017704  153364                        MOV      @DVRIC,R4            ;READ RX CHAR.
026002  010005                                MOV      R0,R5                ;GET GOOD LINE NO.
026004  000305                                SWAB     R5                   ;PUT LINE IN HIGH BYTE
026006  052705  030000                        BIS      #BIT13+BIT12,R5      ;SET FRAMING ERROR CONDITION.
026012  020504                                CMP      R5,R4                ;DID RICR GE CORRECT ENTRY
026014  001401                                BEQ      4$                   ;BR IF OK
026016  104000                                HLT                           ;DVRIC INCORRECT!
026020  052777  000400  153334    4$:         BIS      #BIT8,@DVSCR         ;CHECK THAT ONLY ONE CHAR IS IN SILO
026026  012705  000017                        MOV      #15.,R5              ;SET TIMER FOR CHAR TO FALL INTO RIC
026032  005305                                DEC      R5                   ;WAIST TIME
026034  001376                                BNE      .-2                  ;
026036  105777  153320                        TSTB     @DVSCR               ;ANY MORE CHARS?
026042  100001                                BPL      .+4                  ;BR IF NO
026044  104000                                HLT                           ;TOO MANY CHARS IN SILO (S/B ONLY 1)
026046  005200                                INC      R0                   ;UPDATE LINE NO.
026050  005337  032314                        DEC      COUNT                ;ALL 4 LINES DONE?
026054  001274                                BNE      1$                   ;BR IF NO
026056  000207                                RTS      PC                   ;EXIT TEST.


                                              ;************************ TEST 40 ******************************
                                              ;*HALF DUPLEX TESTS
                                              ;IN THIS TEST THE HALF DUPLEX BIT IS SET UP.
                                              ;THE TX XMITS MORE CHARS THAN THE RX IS TO RECEIVE
                                              ;WHEN THE TX IS DONE A TEST IS MADE TO VERIFY THAT
                                              ;THE RX DIDN'T RECEIVE ANY CHARS AT ALL.
                                              ;IF IT DID; THIS IS CONSIDERED AN ERROR!
                                              ;*
                                              ;*THIS TEST IS FOR ASYNC LINE CARDS ONLY.
                                              ;:*******************************************************

                                  ;  TEST 40
                                  ;--------------
026060  012737  000040  001226    TST40:      MOV      #40,TSTNO
026066  012737  026434  001216                MOV      #TST41,NEXT
026074  012700  000000                        MOV      #0.,R0               ;PLACE LINE NUMBER INTO R0
026100  013737  001416  001236                MOV      L00.03,STAT          ;LOAD LINE CARD STATUS INTO STAT
026106  100402                                BMI      100$                 ;BR IF LINE CARD NOT TO BE TESTED
```

```
026110  004737  026176                   JSR     PC,105$           ;GO DO THE TEST FOR LINE CARD 1
026114  012700  000004           100$:   MOV     #4.,R0            ;PLACE LINE NUMBER INTO R0
026120  013737  001420  001236           MOV     L04.07,STAT       ;LOAD LINE CARD STATUS INTO STAT
026126  100402                           BMI     101$              ;BR IF LINE CARD NOT TO BE TESTED
026130  004737  026176                   JSR     PC,105$           ;GO DO THE TEST FOR LINE CARD 2
026134  012700  000010           101$:   MOV     #8.,R0            ;LOAD LINE NUMBER
026140  013737  001422  001236           MOV     L08.11,STAT       ;LOAD LINE CARD STATUS INTO STAT
026146  100402                           BMI     102$              ;BR IF LINE CARD NOT TO BE TESTED
026150  004737  026176                   JSR     PC,105$           ;DO THE TEST FOR LINE CARD 3
026154  012700  000014           102$:   MOV     #12.,R0           ;LOAD LINE NO.
026160  013737  001424  001236           MOV     L12.15,STAT       ;LOAD LINE CARD STATUS
026166  100402                           BMI     103$              ;BR IF LINE CARD NOT TO BE TESTED
026170  004737  026176                   JSR     PC,105$           ;DO THE TESTS FOR LINE CARD 4
026174  104400                   103$:   SCOPE                     ;SCOPE THIS TEST.
026176                           105$:                             ;TEST ENTRANCE.
026176  012737  002436  001216           MOV     #.EOP,NEXT        ;ADJUST TO GO TO END-PASS
026204  012737  000004  032314           MOV     #4,COUNT          ;SET TO TEST 4 LINES
026212  032737  004000  001236           BIT     #ASYNC,STAT       ;IS THIS AN ASYNC LINE CARD?
026220  001001                           BNE     1$                ;BR IF YES
026222  000207                           RTS     PC                ;EXIT TEST
026224  104413                   1$:     RAMCLR                    ;CLEAR ALL DV11
026226  012737  125125  033340           MOV     #<252*400>+125,TXBAP     ;SET DATA CHARS
026234  010077  153132                   MOV     R0,@DVSRS         ;LOAD LINE NO.
026240  004537  033156                   PERFORM ,SETREG           ;SET REGISTERS
026244     000     001                   .BYTE   000,001           ;TXBAP  ,TXBC
026246  033340                           TXBAP                     ;BA
026250  077730                           <-50>-BIT15               ;BC (MARKED.
026252  004537  033156                   PERFORM ,SETREG           ;SET REGISTERS
026256     004     005                   .BYTE   004,005           ;RXBA  ,RXBC
026260  033740                           RXBA                      ;BA
026262  077740                           <-40>-BIT15               ;BC (MARKED)
026264  004537  033156                   PERFORM ,SETREG           ;SET REGISTERS
026270     012     013                   .BYTE   012,013           ;
026272  000140                           BIT6+BIT5                 ;TXDDCMP  ,RXDDCMP
026274  000004                           BIT2                      ;TX GO.
026276  004537  033222                   PERFORM ,LOAD.MODE        ;LOAD MODES
026302  024000                           BIT13+BIT11               ;RX ENABLE AND HALF DUPLEX.
026304  004537  033222                   PERFORM ,LOAD.MODE        ;LOAD MODES.
026310  015000                           BIT12+BIT11+BIT9          ;8 BITS/PER/CHAR
026312  004537  033222                   PERFORM ,LOAD.MODE        ;LOAD MODES
026316  072000                           BIT14+BIT13+BIT12+BIT10   ;9600 BAUD.
026320  005277  153036                   INC     @DVSCR            ;SET UCPU GO.
026324  005004                           CLR     R4                ;SET TIMER
026326  005777  153030           2$:     TST     @DVSCR            ;TX DONE?
026332  100404                           BMI     3$                ;BR IF YES
026334  104414                           DELAY                     ;WASTE TIME
026336  005204                           INC     R4                ;UPDATE DELAY
026340  001372                           BNE     2$                ;BR IF NOT DONE.
026342  104005                           HLT     5                 ;DVSCR15<>1. TX NOT DONE.
026344  105777  153012           3$:     TSTB    @DVSCR            ;RX DONE (DVSCR07=1)
026350  100001                           BPL     .+4               ;BR IF NO
026352  104000                           HLT                       ;NO CHARS S/B REVEIVED.
026354  012705  033740                   MOV     #RXBA,R5          ;SET EXPECTED RX BA
026360  112777  000004  153006           MOVB    #4,@DVSRSH        ;SEL RXBA
026366  017704  153004                   MOV     @DVSRA,R4         ;READ RXBA
026372  020504                           CMP     R5,R4             ;DID RXBA CHANGE?
```

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

```
                                                ;************************ 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 SELECTED 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.
```

```
026504  042716  177760            BIC     #↑C<17>,(SP)    ;STRIP ASCII
026510  022716  000015            CMP     #15,(SP)        ;WAS IT CR?
026514  001412                    BEQ     65$             ;BR IF YES
026516  000241                    CLC                     ;CLEAR CARRY
026520  006137  027632            ROL     1$              ;
026524  006137  027632            ROL     1$              ;
026530  006137  027632            ROL     1$              ;BUILD CHAR.
026534  052637  027632            BIS     (SP)+,1$        ;
026540  000747                    BR      64$             ;GET MODE CHARS.
026542  005726            65$:    TST     (SP)+           ;POP SP
026544  104402  031323            TYPE    ,FS2            ;PRIMARY REGISTER PARAMETEPS (IN OCTAL) :
026550  005037  027646            CLR     2$              ;CLEAR HOLDER LOCATION.
026554  105777  152424    66$:    TSTB    @TKCSR          ;WAIT FOR TTY DONE
026560  100375                    BPL     66$             ;BR IF NOT DONE.
026562  017746  152420            MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
026566  105777  152416            TSTB    @TPCSR          ;TTY READY?
026572  100375                    BPL     .-4             ;BR IF NO.
026574  011677  152412            MOV     (SP),@TPDBR     ;ECHO CHAR.
026600  042716  177760            BIC     #↑C<17>,(SP)    ;STRIP ASCII
026604  022716  000015            CMP     #15,(SP)        ;WAS IT CR?
026610  001412                    BEQ     67$             ;BR IF YES
026612  000241                    CLC                     ;CLEAR CARRY
026614  006137  027646            ROL     2$              ;
026620  006137  027646            ROL     2$              ;
026624  006137  027646            ROL     2$              ;BUILD CHAR.
026630  052637  027646            BIS     (SP)+,2$        ;
026634  000747                    BR      66$             ;GET MODE CHARS.
026636  005726            67$:    TST     (SP)+           ;POP SP
026640  104402  031367            TYPE    ,FS3            ;FORMAT REGISTER PARAMETERS (IN OCTAL) :
026644  005037  027670            CLR     3$              ;CLEAR HOLDER LOCATION.
026650  105777  152330    68$:    TSTB    @TKCSR          ;WAIT FOR TTY DONE
026654  100375                    BPL     68$             ;BR IF NOT DONE.
026656  017746  152324            MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
026662  105777  152322            TSTB    @TPCSR          ;TTY READY?
026666  100375                    BPL     .-4             ;BR IF NO.
026670  011677  152316            MOV     (SP),@TPDBR     ;ECHO CHAR.
026674  042716  177760            BIC     #↑C<17>,(SP)    ;STRIP ASCII
026700  022716  000015            CMP     #15,(SP)        ;WAS IT CR?
026704  001412                    BEQ     69$             ;BR IF YES
026706  000241                    CLC                     ;CLEAR CARRY
026710  006137  027670            ROL     3$              ;
026714  006137  027670            ROL     3$              ;
026720  006137  027670            ROL     3$              ;BUILD CHAR.
026724  052637  027670            BIS     (SP)+,3$        ;
026730  000747                    BR      68$             ;GET MODE CHARS.
026732  005726            69$:    TST     (SP)+           ;POP SP
026734  104402  031433            TYPE    ,FS4            ;BAUD RATE REGISTER PARAMETERS (IN OCTAL) :
026740  005037  027712            CLR     4$              ;CLEAR HOLDER LOCATION.
026744  105777  152234    70$:    TSTB    @TKCSR          ;WAIT FOR TTY DONE
026750  100375                    BPL     70$             ;BR IF NOT DONE.
026752  017746  152230            MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
026756  105777  152226            TSTB    @TPCSR          ;TTY READY?
026762  100375                    BPL     .-4             ;BR IF NO.
026764  011677  152222            MOV     (SP),@TPDBR     ;ECHO CHAR.
026770  042716  177760            BIC     #↑C<17>,(SP)    ;STRIP ASCII
026774  022716  000015            CMP     #15,(SP)        ;WAS IT CR?
```

```
027000  001412                  BEQ     71$             ;BR IF YES
027002  000241                  CLC                     ;CLEAR CARRY
027004  006137  027712          ROL     4$              ;
027010  006137  027712          ROL     4$              ;
027014  006137  027712          ROL     4$              ;BUILD CHAR.
027020  052637  027712          BIS     (SP)+,4$        ;
027024  000747                  BR      70$             ;GET MODE CHARS.
027026  005726          71$:    TST     (SP)+           ;POP SP
027030  104402  031503          TYPE    ,FS5            ;MAINTAINCE REGISTER PARAMTERS (IN OCTAL) :
027034  005037  027726          CLR     5$              ;CLEAR HOLDER LOCATION.
027040  105777  152140  72$:    TSTB    @TKCSR          ;WAIT FOR TTY DONE
027044  100375                  BPL     72$             ;BR IF NOT DONE.
027046  017746  152134          MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
027052  105777  152132          TSTB    @TPCSR          ;TTY READY?
027056  100375                  BPL     .-4             ;BR IF NO.
027060  011677  152126          MOV     (SP),@TPDBR     ;ECHO CHAR.
027064  042716  177760          BIC     #↑C<17>,(SP)    ;STRIP ASCII
027070  022716  000015          CMP     #15,(SP)        ;WAS IT CR?
027074  001412                  BEQ     73$             ;BR IF YES
027076  000241                  CLC                     ;CLEAR CARRY
027100  006137  027726          ROL     5$              ;
027104  006137  027726          ROL     5$              ;
027110  006137  027726          ROL     5$              ;BUILD CHAR.
027114  052637  027726          BIS     (SP)+,5$        ;
027120  000747                  BR      72$             ;GET MODE CHARS.
027122  005726          73$:    TST     (SP)+           ;POP SP
027124  104402  031230          TYPE    ,FS6            ;SUPPLY INFO FOR 2ND LINE UNDER TEST
                                                        ;LINE NO. (IN OCTAL):
027130  005037  030010          CLR     6$              ;CLEAR HOLDER LOCATION.
027134  105777  152044  74$:    TSTB    @TKCSR          ;WAIT FOR TTY DONE
027140  100375                  BPL     74$             ;BR IF NOT DONE.
027142  017746  152040          MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
027146  105777  152036          TSTB    @TPCSR          ;TTY READY?
027152  100375                  BPL     .-4             ;BR IF NO.
027154  011677  152032          MOV     (SP),@TPDBR     ;ECHO CHAR.
027160  042716  177760          BIC     #↑C<17>,(SP)    ;STRIP ASCII
027164  022716  000015          CMP     #15,(SP)        ;WAS IT CR?
027170  001412                  BEQ     75$             ;BR IF YES
027172  000241                  CLC                     ;CLEAR CARRY
027174  006137  030010          ROL     6$              ;
027200  006137  030010          ROL     6$              ;
027204  006137  030010          ROL     6$              ;BUILD CHAR.
027210  052637  030010          BIS     (SP)+,6$        ;
027214  000747                  BR      74$             ;GET MODE CHARS.
027216  005726          75$:    TST     (SP)+           ;POP SP
027220  104402  031323          TYPE    ,FS2            ;PRIMARY REG PARAMETERS (IN OCTAL) :
027224  005037  030024          CLR     7$              ;CLEAR HOLDER LOCATION.
027230  105777  151750  76$:    TSTB    @TKCSR          ;WAIT FOR TTY DONE
027234  100375                  BPL     76$             ;BR IF NOT DONE.
027236  017746  151744          MOV     @TKDBR,-(SP)    ;PREPARE TO STRIP ASCII
027242  105777  151742          TSTB    @TPCSR          ;TTY READY?
027246  100375                  BPL     .-4             ;BR IF NO.
027250  011677  151736          MOV     (SP),@TPDBR     ;ECHO CHAR.
027254  042716  177760          BIC     #↑C<17>,(SP)    ;STRIP ASCII
027260  022716  000015          CMP     #15,(SP)        ;WAS IT CR?
027264  001412                  BEQ     77$             ;BR IF YES
```

```
027266  000241                           CLC                      ;CLEAR CARRY
027270  006137  030024                   ROL     7$               ;
027274  006137  030024                   ROL     7$               ;
027300  006137  030024                   ROL     7$               ;BUILD CHAR.
027304  052637  030024                   BIS     (SP)+,7$         ;
027310  000747                           BR      76$              ;GET MODE CHARS.
027312  005726                   77$:    TST     (SP)+            ;POP SP
027314  104402  031367                   TYPE    ,FS3             ;FORMAT REG PARAMETERS (IN OCTAL) :
027320  005037  030046                   CLR     8$               ;CLEAR HOLDER LOCATION.
027324  105777  151654           78$:    TSTB    @TKCSR           ;WAIT FOR TTY DONE
027330  100375                           BPL     78$              ;BR IF NOT DONE.
027332  017746  151650                   MOV     @TKDBR,-(SP)     ;PREPARE TO STRIP ASCII
027336  105777  151646                   TSTB    @TPCSR           ;TTY READY?
027342  100375                           BPL     .-4              ;BR IF NO.
027344  011677  151642                   MOV     (SP),@TPDBR      ;ECHO CHAR.
027350  042716  177760                   BIC     #↑C<17>,(SP)     ;STRIP ASCII
027354  022716  000015                   CMP     #15,(SP)         ;WAS IT CR?
027360  001412                           BEQ     79$              ;BR IF YES
027362  000241                           CLC                      ;CLEAR CARRY
027364  006137  030046                   ROL     8$               ;
027370  006137  030046                   ROL     8$               ;
027374  006137  030046                   ROL     8$               ;BUILD CHAR.
027400  052637  030046                   BIS     (SP)+,8$         ;
027404  000747                           BR      78$              ;GET MODE CHARS.
027406  005726                   79$:    TST     (SP)+            ;POP SP
027410  104402  031433                   TYPE    ,FS4             ;BAUD RATE REG PARAMETERS (IN OCTAL) :
027414  005037  030070                   CLR     9$               ;CLEAR HOLDER LOCATION.
027420  105777  151560           80$:    TSTB    @TKCSR           ;WAIT FOR TTY DONE
027424  100375                           BPL     80$              ;BR IF NOT DONE.
027426  017746  151554                   MOV     @TKDBR,-(SP)     ;PREPARE TO STRIP ASCII
027432  105777  151552                   TSTB    @TPCSR           ;TTY READY?
027436  100375                           BPL     .-4              ;BR IF NO.
027440  011677  151546                   MOV     (SP),@TPDBR      ;ECHO CHAR.
027444  042716  177760                   BIC     #↑C<17>,(SP)     ;STRIP ASCII
027450  022716  000015                   CMP     #15,(SP)         ;WAS IT CR?
027454  001412                           BEQ     81$              ;BR IF YES
027456  000241                           CLC                      ;CLEAR CARRY
027460  006137  030070                   ROL     9$               ;
027464  006137  030070                   ROL     9$               ;
027470  006137  030070                   ROL     9$               ;BUILD CHAR.
027474  052637  030070                   BIS     (SP)+,9$         ;
027500  000747                           BR      80$              ;GET MODE CHARS.
027502  005726                   81$:    TST     (SP)+            ;POP SP
027504  104402  031503                   TYPE    ,FS5             ;MAINTAINCE REG PARAMTERS (IN OCTAL) :
027510  005037  030104                   CLR     10$              ;CLEAR HOLDER LOCATION.
027514  105777  151464           82$:    TSTB    @TKCSR           ;WAIT FOR TTY DONE
027520  100375                           BPL     82$              ;BR IF NOT DONE.
027522  017746  151460                   MOV     @TKDBR,-(SP)     ;PREPARE TO STRIP ASCII
027526  105777  151456                   TSTB    @TPCSR           ;TTY READY?
027532  100375                           BPL     .-4              ;BR IF NO.
027534  011677  151452                   MOV     (SP),@TPDBR      ;ECHO CHAR.
027540  042716  177760                   BIC     #↑C<17>,(SP)     ;STRIP ASCII
027544  022716  000015                   CMP     #15,(SP)         ;WAS IT CR?
027550  001412                           BEQ     83$              ;BR IF YES
027552  000241                           CLC                      ;CLEAR CARRY
027554  006137  030104                   ROL     10$              ;
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```
027560 006137 030104               ROL     10$             ;
027564 006137 030104               ROL     10$             ;BUILD CHAR.
027570 052637 030104               BIS     (SP)+,10$       ;
027574 000747                      BR      82$             ;GET MODE CHARS.
027576 005726               83$:   TST     (SP)+           ;POP SP
027600 104413               40$:   RAMCLR                  ;CLEAR ALL DV11
027602 012701 033340               MOV     #TXBAP,R1       ;SETUP TX DATA
027606 005002                      CLR     R2              ;SET COUNTER TO ZERO
027610 110221                      MOVB    R2,(R1)+        ;LOAD TX DATA
027612 005202                      INC     R2              ;UPDATE DAT AND COUNTER
027614 022702 000012               CMP     #10.,R2         ;DONE?
027620 001373                      BNE     .-10            ;BR IF NO
027622 013777 027632 151542        MOV     1$,@DVSRS       ;LOAD LINE NO.
027630 000401                      BR      .+4             ;BR OVER STORAGE AREA.
027632 000001               1$:    .BLKW   1               ;LINE UNDER TEST (1ST)
027634 042737 003000 027646        BIC     #BIT10+BIT9,2$  ;SET FOR PRIMARY REGISTER
027642 004537 033222               PERFORM ,LOAD.MODE      ;
027646 000001               2$:    .BLKW 1                 ;LOAD PARAMETERS
027650 042737 003000 027670        BIC     #BIT10+BIT9,3$  ;SET FOR FORMAT REG
027656 052737 001000 027670        BIS     #BIT9,3$        ;
027664 004537 033222               PERFORM ,LOAD.MODE
027670 000001               3$:    .BLKW 1                 ;LOAD FORMAT REGISTER
027672 042737 003000 027712        BIC     #BIT10+BIT9,4$  ;SET FOR BAUD RATE REG
027700 052737 002000 027712        BIS     #BIT10,4$       ;
027706 004537 033222               PERFORM ,LOAD.MODE      ;
027712 000001               4$:    .BLKW   1               ;LOAD BAUD RATE REG
027714 052737 003000 027726        BIS     #BIT10+BIT9,5$  ;SET FOR MAINT REGISTER
027722 004537 033222               PERFORM ,LOAD.MODE      ;
027726 000001               5$:    .BLKW   1               ;LOAD MAINT REG
027730 004537 033156               PERFORM ,SETREG
027734    000    001               .BYTE   000,001         ;TXBA,TXBC
027736 033340                      TXBAP                   ;DATA POINTER
027740 077766                      <-10.>-BIT15            ;DATA COUNT
027742 004537 033156               PERFORM ,SETREG
027746    004    005               .BYTE   004,005         ;RXBA,RXBC
027750 033740                      RXBA                    ;RX BUFFER
027752 077766                      <-10.>-BIT15            ;DATA COUNT
027754 004537 033156               PERFORM ,SETREG
027760    012    013               .BYTE   012,013
027762 000140                      BIT6+BIT5               ;RX,TX DDCMP MODE
027764 002004                      BIT10+BIT2              ;EXP/SND BCC TX GO
027766 004537 033156               PERFORM ,SETREG         ;
027772    016    017               .BYTE   16,17
027774 002000                      BIT10                   ;EXP/SND BCC
027776 000000                      0                       ;0
030000 013777 030010 151364        MOV     6$,@DVSRS       ;LOAD LINE #
030006 000401                      BR      .+4             ;BR OVER STAORAGE AREA.
030010 000001               6$:    .BLKW   1               ;LINE #
030012 042737 003000 030024        BIC     #BIT10+BIT9,7$  ;SET PRIM REG
030020 004537 033222               PERFORM ,LOAD.MODE
030024 000001               7$:    .BLKW 1                 ;LOAD PRIMARY REG
030026 042737 003000 030046        BIC     #BIT10+BIT9,8$  ;SET FOR FORMAT REG
030034 052737 001000 030046        BIS     #BIT9,8$        ;
030042 004537 033222               PERFORM ,LOAD.MODE      ;
030046 000001               8$:    .BLKW 1                 ;LOAD FORMAT REG.
030050 042737 003000 030070        BIC     #BIT10+BIT9,9$  ;SET FOR BAUD RATE REG
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030056  052737  002000  030070          BIS     #BIT10,9$               ;
030064  004537  033222                  PERFORM ,LOAD.MODE              ;
030070  000001                  9$:     .BLKW   1                       ;LOAD BAUD RATE REG
030072  052737  003000  030104          BIS     #BIT10+BIT9,10$         ;
030100  004537  033222                  PERFORM ,LOAD.MODE              ;
030104  000001                  10$:    .BLKW   1                       ;LOAD MAINT REG
030106  004537  033156                  PERFORM ,SETREG                 ;
030112     000     001                  .BYTE   000,001                 ;TXBA,TXBC
030114  033340                          TXBAP                           ;POINTER
030116  077766                          <-10.>-BIT15                    ;COUNT
030120  004537  033156                  PERFORM ,SETREG                 ;
030124     004     005                  .BYTE   004,005                 ;RXBA,RXBC
030126  033740                          RXBA                            ;BUFFER
030130  077766                          <-10.>-BIT15                    ;COUNT
030132  004537  033156                  PERFORM ,SETREG                 ;
030136     012     013                  .BYTE   012,013                 ;
030140  000140                          BIT6+BIT5                       ;DDCMP
030142  002004                          BIT10+BIT2                      ;TXGO BCCEXPSND
030144  004537  033156                  PERFORM ,SETREG                 ;
030150     016     017                  .BYTE   16,17                   ;
030152  002000                          BIT10                           ;BCCEXPSND
030154  000000                          0                               ;0
030156  005277  151200                  INC     @DVSCR                  ;SET U CPU
030162  005002                          CLR     R2                      ;TIMMER
030164  105777  151172          18$:    TSTB    @DVSCR                  ;DONE OR ERROR?
030170  100403                          BMI     19$                     ;BR IF YES
030172  104414                          DELAY                           ;STALL
030174  005202                          INC     R2                      ;COUNTER
030176  001372                          BNE     19$                     ;B IF NOT DONE
030200  042777  000001  151154  19$:    BIC     #BIT0,@DVSCR                    ;DISABLE UCPU FROM CHANGING REGISTERS.
030206  017737  151150  030444          MOV     @DVSCR,20$              ;STORE REGISTERS FOR TYPEOUT
030214  017737  151146  030446          MOV     @DVRIC,21$              ;
030222  017737  151142  030450          MOV     @DVLCR,22$              ;
030230  017737  151136  030452          MOV     @DVSRS,23$              ;
030236  017737  151134  030454          MOV     @DVSRA,24$              ;
030244  017737  151130  030456          MOV     @DVSFR,25$              ;
030252  017737  151124  030460          MOV     @DVNSR,26$              ;
030260  017737  151120  030462          MOV     @RESV16,27$             ;
030266  013700  030446                  MOV     21$,R0                  ;CHECK FOR ERROR
030272  042700  007777                  BIC     #^C<BIT15+BIT14+BIT13+BIT12>,R0
030276  022700  010000                  CMP     #BIT12,R0               ;
030302  001001                          BNE     .+4                     ;
030304  104007                          HLT     7                       ;PARITY ERROR
030306  022700  030000                  CMP     #BIT13+BIT12,R0         ;
030312  001001                          BNE     .+4                     ;
030314  104010                          HLT     10                      ;FRAMING ERROR
030316  022700  050000                  CMP     #BIT14+BIT12,R0
030322  001004                          BNE     .+12                    ;
030324  105737  030446                  TSTB    21$                     ;LOW BYTE =0
030330  001401                          BEQ     .+4                     ;BR IF YES
030332  104011                          HLT     11                      ;BCC ERROR
030334  104402  031553                  TYPE    ,FS7                    ;PRIMARY REGISTERS ARE:
                                                                        ;DVSCR   DVRIC   DVLCR   DVSRS
030340  104410  030504                  CONVRT  ,98$
030344  104402  031703                  TYPE    ,FS8                    ;SECONDARY REGISTERS ARE:
                                                                        ;REG00   REG01   REG02   REG03
```

```
030350  012700  000002                        MOV     #2,R0                  ;SET FOR 2 SETS OF REGISTERS
030354  013777  027632  151010                MOV     1$,@DVSRS              ;LINE # 1
030362  000403                                BR      50$                    ;
030364  013777  030010  151000  52$:          MOV     6$,@DVSRS              ;LINE # 2
030372  005001                          50$:  CLR     R1                     ;SEC REG
030374  012702  030444                        MOV     #20$,R2                ;STASH POINTER
030400  110177  150770          51$:          MOVB    R1,@DVSRSH             ;SEC REG
030404  017722  150766                        MOV     @DVSRA,(R2)+           ;READ
030410  005201                                INC     R1                     ;SEC REG+1
030412  022701  000020                        CMP     #16.,R1                ;ALL DONE?
030416  001370                                BNE     51$                    ;BR IF NO.
030420  104410  030504                        CONVRT  ,98$                   ;PRINT REGISTERS
030424  104402  032136                        TYPE    ,FS9                   ;<377>/    /
030430  104411  030546                        CNVRT   ,99$
030434  005300                                DEC     R0                     ;2 REGS DONE?
030436  001352                                BNE     52$                    ;BR IF NO.
030440  000137  027600                        JMP     40$                    ;CONTINUE TEST
030444  000001                          20$:  .BLKW 1
030446  000001                          21$:  .BLKW 1
030450  000001                          22$:  .BLKW 1
030452  000001                          23$:  .BLKW 1
030454  000001                          24$:  .BLKW 1
030456  000001                          25$:  .BLKW 1
030460  000001                          26$:  .BLKW 1
030462  000001                          27$:  .BLKW 1
030464  000001                          28$:  .BLKW 1
030466  000001                          29$:  .BLKW 1
030470  000001                          30$:  .BLKW 1
030472  000001                          31$:  .BLKW 1
030474  000001                          32$:  .BLKW 1
030476  000001                          33$:  .BLKW 1
030500  000001                          34$:  .BLKW 1
030502  000001                          35$:  .BLKW 1

030504  000010                          98$:  8.
030506     006     002                        .BYTE   6,2
030510  030444                                20$
030512     006     002                        .BYTE   6,2
030514  030446                                21$
030516     006     002                        .BYTE   6,2
030520  030450                                22$
030522     006     002                        .BYTE   6,2
030524  030452                                23$
030526     006     002                        .BYTE   6,2
030530  030454                                24$
030532     006     002                        .BYTE   6,2
030534  030456                                25$
030536     006     002                        .BYTE   6,2
030540  030460                                26$
030542     006     002                        .BYTE   6,2
030544  030462                                27$
030546  000010                          99$:  8.
030550     006     002                        .BYTE   6,2
030552  030464                                28$
030554     006     002                        .BYTE   6,2
030556  030466                                29$
```

F10


```
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:        .ASCIZ  <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
     032126 020377  020040  020040  FS9:        .ASCIZ  <377>/
                                    .EVEN
```

```
                                                   ;*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             5$:     TSTB    @DVSCR              ;DONE?
032300  100404                             BMI     6$                  ;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
```

```
032354  004537  033222                 PERFORM .LOAD.MODE     ;
032360  000001                 3$:     .BLKW 1                ;LOAD FORMAT PARAMETERS
032362  012537  032372                 MOV     (R5)+,4$       ;BAUD RATE PARAM
032366  004537  033222                 PERFORM .LOAD.MODE     ;
032372  000001                 4$:     .BLKW   1              ;LOAD BAUD RATE PARAM
032374  004537  033156                 PERFORM .SETREG        ;
032400     000     001                 .BYTE   000,001        ;TXBA,TXBC
032402  033340                         TXBAP                  ;DATA POINTER
032404  077766                         <-10.>-BIT15           ;DATA COUNT
032406  004537  033156                 PERFORM .SETREG        ;
032412     004     005                 .BYTE   004,005        ;RXBA,RXBC
032414  033740                         RXBA                   ;BUFFEE
032416  077766                         <-10.>-BIT15           ;COUNT
032420  004537  033156                 PERFORM .SETREG
032424     012     013                 .BYTE   012,013
032426  000140                         BIT6+BIT5              ;DDCMP MODE
032430  002004                         BIT10+BIT2             ;BCCEXPSND TXGOP
032432  004537  033156                 PERFORM .SETREG        ;
032436     016     017                 .BYTE   16,17          ;
032440  002000                         BIT10                  ;BCCEXPSND
032442  000000                         0                      ;0
032444  012577  146722                 MOV     (R5)+,@DVSRS   ;LOAD LINE #
032450  012537  032460                 MOV     (R5)+,5$       ;PRIMARY PARAM
032454  004537  033222                 PERFORM .LOAD.MODE     ;
032460  000001                 5$:     .BLKW 1                ;LOAD PRI PARAM
032462  012537  032472                 MOV     (R5)+,6$       ;FORMAT PARAM
032466  004537  033222                 PERFORM .LOAD.MODE     ;
032472  000001                 6$:     .BLKW 1                ;LOAD FORMAT PARAM
032474  012537  032504                 MOV     (R5)+,7$       ;BAUD RATE PARAM
032500  004537  033222                 PERFORM .LOAD.MODE     ;
032504  000001                 7$:     .BLKW   1              ;BAUD RATE PARAM
032506  004537  033156                 PERFORM .SETREG        ;
032512     000     001                 .BYTE   000,001        ;TXBA,TXBC
032514  033340                         TXBAP                  ;DATA POINTER
032516  077766                         <-10.>-BIT15           ;COUNT
032520  004537  033156                 PERFORM .SETREG        ;
032524     004     005                 .BYTE   004,005        ;RXBA,RXBC
032526  033740                         RXBA                   ;BUFFER
032530  077766                         <-10.>-BIT15           ;COUNT
032532  004537  033156                 PERFORM .SETREG        ;
032536     012     013                 .BYTE   012,013        ;
032540  000140                         BIT6+BIT5              ;DDCMP MODE
032542  002004                         BIT10+BIT2             ;BCCEXPSND TXGO
032544  004537  033156                 PERFORM .SETREG        ;
032550     016     017                 .BYTE   16,17          ;
032552  002000                         BIT10                  ;BCCEXPSND
032554  000000                         0                      ;0
032556  005277  146600                 INC     @DVSCR         ;GO
032562  005002                         CLR     R2             ;TIMMER
032564  105777  146572         8$:     TSTB    @DVSCR         ;DONE?
032570  100404                         BMI     9$             ;BR IF YES
032572  104414                         DELAY                  ;STALL
032574  005202                         INC     R2             ;COUNT
032576  001372                         BNE     8$             ;
032600  104002                         HLT     2              ;DVSCR07 NOT SET.
032602  017737  146560  032770 9$:     MOV     @DVRIC,100$    ;SET RIC
```

```
032610 052777 000400 146544          BIS     #BIT8,@DVSCR      ;SET TO GET NEXT LINE
032616 005002                        CLR     R2                ;TIMER
032620 105777 146536          10$:   TSTB    @DVSCR            ;2ND LINE DONE?
032624 100404                        BMI     11$               ;BR IF YES
032626 104414                        DELAY                     ;STALL
032630 005202                        INC     R2                ;COUNT
032632 001372                        BNE     10$               ;
032634 104002                        HLT     2                 ;2ND LINE NOT DOE
032636 017737 146524 032772   11$:   MOV     @DVRIC,101$       ;GET 2ND LINE
032644 013704 032770                 MOV     100$,R4           ;GET FASTEST LINE
032650 010403                        MOV     R4,R3             ;SAVE
032652 042703 170377                 BIC     #↑C<BIT11+BIT10+BIT9+BIT8>,R3
032656 052703 050000                 BIS     #BIT14+BIT12,R3   ;SET BCC CONDITION
032662 020304                        CMP     R3,R4             ;BCC OK (DATA GOOD?
032664 001401                        BEQ     12$               ;
032666 104003                        HLT     3                 ;BCC ERROR OR ERROR SOMEWHERE
032670 013704 032772          12$:   MOV     101$,R4           ;GET SLOWER LINE.
032674 010403                        MOV     R4,R3             ;CHECK BCC
032676 042703 170377                 BIC     #↑C<BIT11+BIT10+BIT9+BIT8>,R3
032702 052703 050000                 BIS     #BIT14+BIT12,R3   ;
032706 020304                        CMP     R3,R4             ;BCC OK?
032710 001401                        BEQ     13$               ;
032712 104003                        HLT     3                 ;SLOW LINE BCC ERROR
032714 011503                 13$:   MOV     (R5),R3           ;GET EXP LINE
032716 013704 032770                 MOV     100$,R4           ;GET FAST LINE
032722 042704 170377                 BIC     #↑C<BIT11+BIT10+BIT9+BIT8>,R4
032726 000304                        SWAB    R4                ;LINE IN LOW BYTE
032730 020304                        CMP     R3,R4             ;DO LINES MATCH
032732 001401                        BEQ     14$               ;BR IF YES
032734 104004                        HLT     4                 ;RX 1ST LINE WRONG ENTRY
032736 005777 146420          14$:   TST     @DVSCR            ;TX DONE?
032742 100401                        BMI     15$               ;BR IF YES
032744 104005                        HLT     5                 ;WHY IS TX NOT DONE?
032746 017704 146430          15$:   MOV     @DVNSR,R4         ;GET XT LINE NO.
032752 042704 177760                 BIC     #↑C<BIT3+BIT2+BIT1+BIT0>,R4
032756 012503                        MOV     (R5)+,R3          ;
032760 020304                        CMP     R3,R4             ;WAS TX LINE IN CORRECT ORDER
032762 001401                        BEQ     16$               ;YES
032764 104006                        HLT     6                 ;TX 1ST LINE NOT RIGHT (FAST)
032766 000205                 16$:   RTS     R5                ;EXIT ROUTINE
032770 000001                 100$:  .BLKW 1
032772 000001                 101$:  .BLKW 1
032774 000000                 JSRPC: 0

032776 010046                 SIMBCC: MOV    R0,-(SP)
033000 010146                        MOV     R1,-(SP)
033002 010246                        MOV     R2,-(SP)
033004 012537 001246                 MOV     (R5)+,TEMP1
033010 012537 001250                 MOV     (R5)+,TEMP2
033014 012537 001252                 MOV     (R5)+,TEMP3
033020 005037 033152          1$:    CLR     BCCFBK
033024 013700 001252                 MOV     TEMP3,R0
033030 006037 001250                 ROR     TEMP2
033034 005500                        ADC     R0
033036 032700 000001                 BIT     #BIT0,R0
033042 001402                        BEQ     2$
```

```
033044  005137  033152                    COM     BCCFBK
033050  013700  033150          2$:       MOV     XPOLY,R0
033054  005100                            COM     R0
033056  040037  033152                    BIC     R0,BCCFBK
033062  000241                            CLC
033064  006037  001252                    ROR     TEMP3
033070  013700  033152                    MOV     BCCFBK,R0
033074  013701  001252                    MOV     TEMP3,R1
033100  010102                            MOV     R1,R2
033102  040100                            BIC     R1,R0
033104  043702  033152                    BIC     BCCFBK,R2
033110  050200                            BIS     R2,R0
033112  043737  033150  001252            BIC     XPOLY,TEMP3
033120  050037  001252                    BIS     R0,TEMP3
033124  005337  001246                    DEC     TEMP1
033130  001333                            BNE     1$
033132  013737  001252  033154            MOV     TEMP3,CALBCC
033140  012602                            MOV     (SP)+,R2
033142  012601                            MOV     (SP)+,R1
033144  012600                            MOV     (SP)+,R0
033146  000205                            RTS     R5
033150  000000                  XPOLY:  0
033152  000000                  BCCFBK: 0
033154  000000                  CALBCC: 0
        000200                  LRC8=200
        120001                  CRC16=120001
        102010                  CRC.CCITT=102010


033156  010046                  SETREG: MOV     R0,-(SP)
033160  010146                          MOV     R1,-(SP)
033162  112500                          MOVB    (R5)+,R0
033164  112501                          MOVB    (R5)+,R1
033166  110077  146202                  MOVB    R0,@DVSRSH
033172  012577  146200                  MOV     (R5)+,@DVSRA
033176  042777  000060  146156          BIC     #BIT5+BIT4,@DVSCR
033204  110177  146164                  MOVB    R1,@DVSRSH
033210  012577  146162                  MOV     (R5)+,@DVSRA
033214  012601                          MOV     (SP)+,R1
033216  012600                          MOV     (SP)+,R0
033220  000205                          EXIT

033222                          LOAD.MODE:
033222  012577  146142                  MOV     (R5)+,@DVLCR
033226  052777  100000  146134          BIS     #BIT15,@DVLCR
033234  010046                          MOV     R0,-(SP)
033236  005000                          CLR     R0
033240  005777  146124          1$:     TST     @DVLCR
033244  100004                          BPL     2$
033246  104414                          DELAY
033250  005200                          INC     R0
033252  001372                          BNE     1$
033254  104000                          HLT     0               ;BIT 15 FAILED TO CLEAR
033256  012600                  2$:     MOV     (SP)+,R0
033260  000205                          EXIT
```

```
        033262                                  SETSCAN:
        033262  010346                                  MOV     R3,-(SP)
        033264  052777  000010  146070                  BIS     #BIT3,@DVSCR
        033272  012503                                  MOV     (R5)+,R3
        033274  001414                                  BEQ     2$
        033276  012777  050102  146074          1$:     MOV     #BIT14+BIT12+BIT6+BIT1,@DVSFR
        033304  104415                                  ROMCLK
        033306  005201                                  INC     R1
        033310  012777  050102  146062                  MOV     #BIT14+BIT12+BIT6+BIT1,@DVSFR
        033316  104415                                  ROMCLK
        033320  005201                                  INC     R1
        033322  005303                                  DEC     R3
        033324  001364                                  BNE     1$
        033326  012603                          2$:     MOV     (SP)+,R3
        033330  010100                                  MOV     R1,R0
        033332  000241                                  CLC
        033334  006000                                  ROR     R0
        033336  000205                                  EXIT

        033340  000400                          TXBAF:  .BLKB   400
        033740  000400                          RXBA:   .BLKB   400
        034340  000400                          RXBA1:  .BLKB   400
        034740  000400                          RXBA2:  .BLKB   400
        035340  000400                          RXBA3:  .BLKB   400
```

```

 035740                                      .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
```

```
036552  000003                  DT1:    3
036554     006       004                .BYTE   6,4
036556  001272                          SAVR5
036560     006       002                .BYTE   6,2
036562  001270                          SAVR4
036564     002       002                .BYTE   2,2
036566  001260                          SAVR0
036570  000002                  DT2:    2
036572     002       010                .BYTE   2,8.
036574  001266                          SAVR3
036576     002       002                .BYTE   2,2
036600  001270                          SAVR4
036602  000003                  DT3:    3
036604     006       002                .BYTE   6,2
036606  032774                          JSRPC
036610     002       015                .BYTE   2,13.
036612  001266                          SAVR3
036614     002       002                .BYTE   2,2
036616  001270                          SAVR4

                                ;;*******************************************************************
036620                          CORMAX:
        000001                  .END
```

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DZDVF   MACY11 27(732)  17-SEP-76  13:54  PAGE 133
DZDVFA.P11      CROSS REFERENCE TABLE -- USER SYMBOLS

ADRCNT= 003443       1151*  1187*  1196#
ALU    = 010000       607#
ASYNC  = 004000       615#  1778   1780   1782   1784   1801   1858   1915   1972   2034   2189   2339   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
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   3979   3998   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   2398   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
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B11


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                     3338  3399  3399  3400  3403  3404  3405  3424  3425  3426  3429  3430  3431
                     3448  3449  3450  3453  3454  3455  3474  3475  3475  3479  3480  3481  3547
                     3548  3549  3552  3553  3554  3573  3574  3575  3578  3579  3580  3597  3599
                     3599  3602  3603  3604  3623  3624  3625  3628  3629  3630  3698  3703  3724
                     3729  3748  3753  3754  3779  3848  3849  3853  3874  3879  3880  3898  3899
                     3903  3924  3929  3930  3998  3999  4003  4004  4024  4025  4029  4030  4048
                     4049  4053  4054  4074  4075  4079  4080  4148  4153  4154  4174  4175  4179
                     4198  4203  4204  4224  4225  4229  4298  4303  4324  4329  4348  4353  4374
                     4379  4448  4449  4453  4474  4479  4480  4498  4499  4503  4524  4529  4530
                     4598  4599  4603  4604  4624  4625  4629  4630  4648  4649  4653  4654  4674
                     4675  4679  4680  4748  4753  4754  4774  4775  4779  4798  4803  4804  4824
                     4825  4829  4898  4903  4924  4929  4949  4953  4974  4979  5048  5049  5053
                     5074  5079  5080  5098  5099  5103  5124  5129  5130  5198  5199  5203  5204
                     5224  5225  5229  5230  5248  5249  5253  5254  5274  5275  5279  5280  5349
                     5353  5354  5374  5375  5379  5398  5403  5404  5424  5425  5429  5498  5503
                     5524  5529  5548  5553  5574  5579  5648  5649  5653  5674  5679  5680  5698
                     5699  5703  5724  5729  5730  5798  5799  5803  5804  5824  5825  5829  5830
                     5848  5849  5853  5854  5874  5875  5879  5880  5949  5951  5966  6039  6041
                     6390  6391  6394  6397  6508  6599  6606  6706  6709
BIT13 = 020000        592#   609   609   612   613  2065  2070  2206  2208  2211  2213  2232  2234
                     2237  2239  2256  2259  2261  2263  2282  2284  2287  2289  2355  2357  2360
                     2361  2362  2381  2382  2383  2386  2388  2405  2407  2410  2411  2412  2431
                     2432  2433  2436  2438  2504  2506  2509  2511  2530  2532  2535  2537  2554
                     2556  2559  2561  2590  2592  2595  2597  2653  2655  2658  2659  2660  2679
                     2680  2681  2684  2695  2703  2705  2708  2709  2710  2729  2730  2731  2734
                     2736  2802  2804  2807  2809  2828  2830  2833  2835  2852  2854  2857  2859
                     2878  2880  2883  2885  2951  2953  2956  2957  2959  2977  2978  2979  2982
                     2984  3001  3003  3006  3007  3008  3027  3028  3029  3032  3034  3100  3102
                     3105  3107  3126  3128  3131  3133  3150  3152  3155  3157  3176  3178  3181
                     3183  3249  3251  3254  3255  3256  3275  3276  3277  3280  3292  3299  3301
                     3304  3305  3306  3325  3326  3327  3330  3332  3398  3400  3403  3404  3405
                     3424  3425  3426  3429  3431  3449  3450  3453  3454  3455  3474  3475  3476
                     3479  3481  3547  3548  3549  3552  3553  3554  3573  3574  3575  3578  3579
                     3580  3597  3598  3599  3602  3603  3604  3623  3624  3625  3628  3629  3630
                     3697  3702  3723  3729  3747  3752  3773  3778  3847  3852  3873  3879  3897
                     3902  3923  3928  3997  4002  4023  4028  4047  4052  4073  4078  4147  4149
                     4152  4173  4178  4180  4197  4199  4202  4223  4228  4230  4297  4299  4302
                     4304  4323  4325  4328  4330  4347  4349  4352  4354  4373  4375  4378  4380
                     4447  4449  4452  4454  4473  4475  4478  4480  4497  4499  4502  4504  4523
                     4525  4528  4530  4597  4599  4602  4604  4623  4625  4629  4630  4647  4649
                     4652  4654  4673  4675  4678  4680  4747  4752  4754  4773  4775  4778  4797
                     4802  4804  4823  4825  4828  4897  4902  4923  4929  4947  4952  4973  4979
                     5047  5052  5073  5078  5097  5102  5123  5128  5197  5202  5223  5228  5247
                     5252  5273  5278  5347  5349  5352  5373  5379  5390  5397  5399  5402  5423
                     5428  5430  5497  5499  5502  5504  5523  5525  5528  5530  5547  5549  5552
                     5554  5573  5575  5578  5580  5647  5649  5652  5654  5673  5675  5679  5680
                     5697  5699  5702  5704  5723  5725  5728  5730  5797  5799  5802  5804  5823
                     5825  5828  5830  5847  5849  5852  5854  5873  5875  5878  5880  5947  5951
                     5966  6037  6041  6390  6394  6503  6508
BIT14 = 040000        591#   610   611   612   613  1058  2070  2208  2212  2213  2233  2234  2239
                     2258  2262  2263  2283  2284  2289  2357  2362  2393  2399  2407  2412  2433
                     2438  2506  2510  2511  2531  2532  2537  2556  2560  2561  2591  2592  2597
                     2655  2660  2681  2686  2705  2710  2731  2736  2804  2808  2809  2829  2830
                     2835  2854  2858  2859  2879  2880  2885  2953  2959  2979  2984  3003  3029
                     3033  3034  3102  3106  3107  3127  3129  3133  3152  3156  3157  3177  3179
                     3183  3251  3256  3277  3282  3301  3306  3327  3332  3399  3400  3404  3405
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C11

		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	6390	6397	6508	6539
		6606	6706	6709										
BIT15	= 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#	6679											
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	2979
		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	3749	3753	3774	3779	3849	3853	3874	3879	3898	3903	3924
		3929	3948	4003	4024	4029	4048	4053	4074	4079	4148	4153	4174	4179
		4198	4203	4224	4229	4298	4303	4324	4329	4349	4353	4374	4379	4449
		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	5049	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	5649	5653
		5674	5679	5698	5703	5724	5729	5798	5803	5824	5829	5848	5853	5874
		5879	5949	6039	6310	6313	6314	6317	6321	6343	6346	6347	6353	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	2129*	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	1797	6420		
CONVRT	= 104410	741#	950	1352	6404	6418								
CORMAX	036620	6798#	6799											
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							
DATASP	004276	1325*	1328	1350	1353#									

D11

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DZDVF    MACY11 27(732)  17-SEP-76  13:54  PAGE 136
DZDVFA.P11       CROSS REFERENCE TABLE -- USER SYMBOLS

DATACL= 104416             753#
DATAHD  004264            1324*     1346      1349#
DELAY = 104414             749#     2090      2098      2096      2104      5956      6046      6377      6515      6582      6591      6692
DEVADR  003440            1149*     1194      1194#
DH1     036432            6731      6755#
DH2     036465            6739      6766#
DH3     036506            6743      6752      6766#
DT1     036552            6732      6767#
DT2     036570            6740      6774#
DT3     036602            6744      6753      6779#
DVACTV  001300             699#      965*      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      6392      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*     6599      6617      6679*     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      6395      6414      6677*     6680*
DVSRS   001372             768#     1415      1557*     1558*     1559      2050*     2072*     5933*     6023*     6307*     6340*     6384      6403*
                          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  001356             762#     1572*     1573*     1574
DV.END  001740             903#     1527      1536      1665
DV.MAP  001500             705       814#      919       946      1529      1539      1663      1669      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#
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DZDVF    MACY11 27(732)  17-SEP-76  13:54  PAGE 137
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#
ERTABC   004366           1338     1370#
EXIT   = 000205            615#    6683     6697     6718
EXITER   004322           1356     1361#
FIX.00   006516           1580     1585     1590     1595     1629#
FS1      031047           6119     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#    6791
```

```
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*
LRC8  = 000200     6667#
LSTERR  001234      677#   922*  1004*  1056*  1310   1312*  1396*  1798*
LOO.03  001416      789#  1542*  1577   1761   1778   1840   1897   1954   2014   2172   2321   2470   2619
                   2768   2917   3066   3215   3364   3513   3663   3913   3963   4113   4263   4413   4563
                   4713   4863   5013   5163   5313   5463   5613   5763   5910   5999
LO4.07  001420      790#  1544*  1582   1765   1790   1844   1901   1958   2018   2176   2325   2474   2623
                   2772   2921   3070   3219   3368   3517   3667   3917   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   3921   3971   4121   4271   4421   4571
                   4721   4871   5021   5171   5321   5471   5621   5771   5918   6007
L12.15  001424      792#  1548*  1592   1773   1794   1852   1909   1966   2026   2184   2333   2482   2631
                   2780   2929   3079   3227   3376   3525   3675   3925   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   1490   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*
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G11

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DZDVF   MACY11 27(732)  17-SEP-76  13:54  PAGE 139
DZDVFA.P11      CROSS REFERENCE TABLE -- USER SYMBOLS

                            4861*  5011*  5161*  5311*  5461*  5611*  5761*  5908*  5997*  6016*  6117*
NOLIST= ****** U             535
NFR    = 040000              610#
PARAM  = 104405              735#  1604
PARAM1   003304             1153#  1170
PARBIT= C40000               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*  2639*  2741*  2770*  2774*  2778*  2782*  2797*  2890*  2919*  2923*  2927*  2931*
                            2936*  3035*  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*  3932*  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*  6063*
PERFOR= 004537               615#  2051   2055   2060   2064   2067   2069   5934   5938   5942   5946   5948   5950
                            6024   6028   6032   6036   6039   6040   6311   6315   6319   6322   6324   6328   6332
                            6336   6344   6348   6352   6355   6357   6361   6365   6369   6490   6494   6499   6502
                            6505   6507   6509   6528   6531   6534   6536   6540   6544   6549   6554   6557   6560
                            6562   6566   6570   6574
PFTAB    004470             1394   1400#
POPRO  = 012600              589#  1360
POP1SP= 005726               589#
POP2SP= 022626               599#  1078
PS     = 177776              597#   912*   981*  1728*
PUSHRO= 010046               589#  1357
PUSH1S= 005746               589#
PUSH2S= 024646               589#
QV.FLG   001313              713#   918*  1019*  1067   1792*
RAM    = 020000              609#
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*  6398
RESOS  = 104407              739#  1354
RETURN   001214              669#   924*   994*   996   1030*  1076*  1079   1366*  1368   1399   1619*  1626*  1627
                            1797*
ROMCLK= 104415               751#  6707   6710
RUN      001304              703#   920*  1521   1524*  1525*  1532*  1533*
RXBA     033740             1808   1965   1922   1979   2038   2058   2111   5940   6030   6053   6330   6363   6492
                            6496   6542   6568   6721#
RXBA1    034340             6722#
RXBA2    034740             6723#
RXBA3    035340             6724#
R0     =%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*
```

		1442*	1534*	1540	1541	1542	1543	1544	1545	1546	1547	1548	1549	1550*
		1556	1559	1564	1566	1568	1571	1573	1575	1577*	1582*	1587*	1592*	1610*
		1611	1614	1616	1618	1621	1622	1629	1648	1709*	1718*	1720*	1722	1730*
		1731*	1760*	1764*	1768*	1772*	1820*	1839*	1843*	1847*	1851*	1877*	1896*	1900*
		1904*	1908*	1934*	1953*	1957*	1961*	1965*	1991*	2013*	2017*	2021*	2025*	2031
		2050	2124*	2127*	2171*	2175*	2179*	2183*	2192	2194	2.35	2218	2219	2243*
		2244	2245	2246	2268	2269	2320*	2324*	2328*	2332*	2341	2343	2344	2367
		2368	2392*	2393	2394	2395	2417	2418	2469*	2473*	2477*	2481*	2490	2492
		2493	2516	2517	2541*	2542	2543	2544	2566	2567	2618*	2622*	2626*	2620*
		2639	2641	2642	2665	2666	2690*	2691	2692	2693	2715	2716	2767*	2771*
		2775*	2779*	2788	2790	2791	2814	2915	2839*	2840	2841	2842	2864	2965
		2916*	2920*	2924*	2928*	2937	2939	2940	2963	2964	2988*	2999	2990	2991
		3013	3014	3065*	3069*	3073*	3077*	3086	3088	3089	3112	3113	3137*	3139
		3139	3140	3162	3163	3214*	3218*	3222*	3226*	3235	3237	3238	3261	3262
		3286*	3297	3298	3289	3311	3312	3363*	3367*	3371*	3375*	3384	3386	3287
		3410	3411	3435*	3436	3437	3439	3460	3461	3512*	3516*	3520*	3524*	3533
		3535	3536	3559	3560	3584*	3585	3586	3587	3609	3610	3662*	3656*	3670*
		3674*	3683	3685	3686	3709	3710	3734*	3735	3736	3737	3759	3760	3812*
		3916*	3920*	3824*	3833	3835	3836	3859	3860	3984*	3995	3886	3887	3909
		3910	3962*	3966*	3970*	3974*	3983	3985	3986	4009	4010	4034*	4035	4036
		4037	4059	4060	4112*	4116*	4120*	4124*	4133	4135	4136	4159	4160	4184*
		4185	4186	4187	4209	4210	4262*	4266*	4270*	4274*	4283	4285	4286	4309
		4310	4334*	4335	4336	4337	4359	4360	4412*	4416*	4420*	4424*	4433	4435
		4436	4459	4460	4484*	4485	4486	4487	4509	4510	4562*	4566*	4570*	4574*
		4583	4585	4586	4609	4610	4634*	4635	4636	4637	4659	4660	4712*	4716*
		4720*	4724*	4733	4735	4736	4759	4760	4784*	4785	4786	4787	4809	4910
		4862*	4866*	4870*	4874*	4883	4885	4896	4909	4910	4934*	4935	4936	4937
		4959	4960	5012*	5016*	5020*	5024*	5033	5035	5036	5059	5060	5084*	5085
		5086	5087	5109	5110	5162*	5166*	5170*	5174*	5183	5185	5186	5209	5210
		5234*	5235	5236	5237	5259	5260	5312*	5316*	5320*	5324*	5333	5335	5336
		5359	5360	5384*	5385	5386	5387	5409	5410	5462*	5466*	5470*	5474*	5483
		5485	5486	5509	5510	5534*	5535	5536	5537	5559	5560	5612*	5616*	5620*
		5624*	5633	5635	5636	5659	5660	5684*	5685	5686	5687	5709	5710	5762*
		5766*	5770*	5774*	5783	5785	5796	5809	5810	5934*	5935	5836	5937	5859
		5860	5909*	5913*	5917*	5921*	5933	5964	5977*	5998*	6002*	6006*	6010*	6023
		6065*	6389*	6390*	6391	6394	6397	6407*	6421*	6489	6631	6639*	6640*	6641
		6644*	6645*	6646	6649*	6652*	6654*	6656	6662*	6672	6674*	6676	6682*	6689
		6689*	6693*	6696*	6715*	6717*								
R1	=%000001	576#	971*	972	973*	974	1021*	1025	1209	1216*	1228	1232*	1234	1235
		1236	1237	1269*	1413	1415*	1418*	1421*	1579*	1583*	1589*	1593*	1633*	1639*
		1643*	1646*	1669*	1671	1673	1675	1678	1691*	1692	1698*	1699	1703*	1719*
		1720	1721*	1722	1723	1794*	1806*	1818*	1863*	1975*	1920*	1932*	1977*	1989*
		2110*	2114	6301*	6303*	6411*	6413	6415*	6416	6632	6650*	6651	6652	6661*
		6673	6675*	6679	6681*	6709*	6711*	6715						
R2	=%000002	577#	1208	1217*	1579*	1584*	1589*	1594*	1634*	1639*	1644*	1647*	1650*	1663*
		1664*	1665	1668*	1678*	1679	1680*	1681*	1682*	1683*	1694*	1685*	1686*	1697*
		1694*	1717*	1729*	1733*	1734*	1735*	1736*	1738*	1739*	1907*	1811	1864*	1969
		1921*	1925	1978*	1982	2039*	2040*	2044*	2045*	2048*	2073*	2077*	2081*	2085*
		2089*	2093*	2097*	2101*	2105*	2111*	2112*	2115	6302*	6303	6304*	6305	6374*
		6378*	6412*	6414*	6482*	6486*	6579*	6583*	6598*	6592*	6633	6651*	6653*	6654
		6660*												
R3	=%000003	578#	1112	1119*	1129*	1132*	1134	1138*	1207	1218*	1229	1241*	1242*	1243*
		1244	1253*	1254*	1259*	1262*	1269*	1629*	1630*	1631	1636	1641	1809*	1912
		1865*	1869	1922*	1926	1979*	1983	2039*	2041*	2043*	2045	2046*	2049*	2059
		2071*	2075*	2113*	2121*	6483*	6485*	6597*	6599*	6599*	6600	6604*	6605*	6606*
		6607	6610*	6614	6622*	6623	6702	6704*	6712*	6714*				

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R4      =%000004      579#   1113   1118*  1122*  1123*  1124   1131*  1135   1137*  1145   1154*  1155   1157
                      1159   1161*  1162   1163   1184*  1195*  1193*  1206   1213*  1230   1238*  1241   1246*
                      1249*  1250*  1257*  1317*  1318*  1319*  1320*  1321*  1322*  1323   1324   1325   1414
                      1416*  1417*  1420*  1809*  1812*  1814*  1815   1866*  1869*  1871*  1872   1923*  1926*
                      1929*  1929   1980*  1983*  1985*  1986   2115*  2116*  2119   5953*  5957*  5963*  5967
                      6043*  6047*  6055*  6056   6061*  6062   6484*  6485   6497*  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*
                      1915   1961*  1967*  1968*  1970*  1972   1919*  1924*  1925*  1927*  1929   1975*  1981*
                      1982*  1984*  1986   2114*  2117*  2118   2204*  2230*  2254*  2280*  2353*  2379*  2403*
                      2429*  2502*  2529*  2552*  2578*  2651*  2677*  2701*  2727*  2800*  2826*  2850*  2875*
                      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   6779   6785
SAVR5   001272        696#   1205*  1220   6769
SAVSP   001274        697#
SAVOS = 104406        737#   1314
SCOPE = 104400        725#   1776   1855   1912   1969   2029   2197   2336   2495   2634   2793   2932   3081
                      3230   3379   3528   3678   3828   3978   4129   4278   4428   4578   4728   4879   5028
                      5178   5328   5479   5628   5778   5925   6014
SCOP1 = 104401        727#
SERV.G  004640        1055   1302   1446#  1447
SETREG  033156        2051   2055   2063   5934   5938   5942   6024   6028   6032   6324   6328   6332   6336
                      6357   6361   6365   6369   6490   6494   6498   6536   6540   6544   6548   6552   6556
                      6570   6574   6672#
SETSCA  033262        6701#
SIMBCC  032776        6631#
SP      =%000006      561#   913*   928*   929*   935    938    939    992*   1051*  1052*  1053   1057*  1077
                      1090*  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   6209
                      6214*  6217   6218*  6219   6225   6227   6232*  6235   6236*  6237   6243   6245   6250*
                      6253   6254*  6255   6261   6263   6268*  6271   6272*  6273   6279   6291   6285*  6299
                      6290*  6291   6297   6299   6631*  6632*  6633*  6660   6661   6662   6672*  6673*  6691
                      6682   6698*  6696   6702*  6714
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DZDVF   MACY11 27(732)  17-SEP-76  13:54  PAGE 142
DZDVFA.P11      CROSS REFERENCE TABLE -- USER SYMBOLS

SPACNT= 003745          1236*   1257    1260*   1274*
SSWR    000176           646*    937
STACK = 001200           588*    913     992    1367    1389
STAT    001236           692*   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*   5929
                        5999*   6003*   6007*   6011*   6018
SW05    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           918*
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*
```

```
SYNC03   001612        955#
SYNC04   001636        956#
SYNC05   001662        877#
SYNC06   001706        988#
SYNC07   001732        999#
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   2579   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   6179   6196   6215   6233   6251
                      6269    6287
TPDBR    001212        664#   1106*  1128*  1307*  1462*  6126*  6144*  6162*  6180*  6198*  6217*  6235*  6253*
                      6271*   6289*
TRPCK    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#
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DZDVF    MACY11 27(732)  17-SEP-76  13:54  PAGE 144
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           1938     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#
TWCSYN=  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     1709     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
```

M11


```
                                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       = 000241                  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#	1289		
.TYPE	003044	730	1096#		

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CCCVF   MACV11 27.732   17-SEP-76 13:54  PAGE 148
CCCVFA.P11       CROSS REFERENCE TABLE -- MACRO NAMES

..VEND        1#      997
..VPRNT       1#      535
ALT         589#     1441    1817    1874    1931    1935    2083    2091    2099    2107    2120    5959    5962    5969    5976
           6049      6052    6058    6064    6093    6096    6401    6518    6585    6594    6602    6609    6616    6619    6625
           6695
.38400      529#     1996
$AL001      529#     1746    1825    1882    1939
$AL002      535#     2147    2296    2445    2594    2743    2892    3041    3190    3339    3488    3637    3787    3937    4087
           4237      4387    4537    4687    4837    4987    5137    5287    5437    5587    5737
$AL003      535#     5597    5982
$BUFFE        1#     1498
$..S          1#
$..SD         1#
$....         1#
$CYCLE        1#     1507
$EOF          1#      997
$FINI         1#     6725
$GETF.        1#
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           4237#     4252    4387#   4402    4537#   4552    4687#   4702    4837#   4852    4987#   5002    5137#   5152    5287#
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           5758      5905    5994
$SETSC        1#     5700
$SETSY        1#
$SET..        1#
$S.LO.        1#
$SYMBO        1#     6631
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$.ARIA        1#      651
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DZDVF      MACY11 27(732)   17-SEP-76  13:54  PAGE 150
DZDVFA.P11        CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

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D12

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DZDVFA.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

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	6592	6693	6708	6711											
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E12

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DDDVFA.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

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	1979	2011	2012	2013	2014	2017	2018	2021	2022	2025	2026	2031	2032	2033	2038
	2039	2044	2048	2050	2066	2075	2108	2110	2111	2127	2159	2170	2171	2172	2175
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	5625	5633	5635	5636	5659	5660	5662	5685	5686	5687	5709	5710	5712	5760	5761
	5762	5763	5766	5767	5770	5771	5774	5775	5783	5795	5796	5909	5810	5812	5835
	5836	5837	5859	5860	5862	5907	5908	5909	5910	5913	5914	5917	5918	5921	5922
	5927	5932	5933	5963	5964	5971	5996	5997	5998	5999	6002	6003	6006	6007	6010
	6011	6016	6017	6022	6023	6053	6055	6059	6061	6116	6117	6123	6126	6141	6144
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	6635	6636	6638	6644	6649	6650	6651	6659	6660	6661	6662	6672	6673	6677	6680
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RESET	1003	1023	1662												
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	6294	6295	6296												
ROLB	1524	1532	1701												
ROR	1246	1248	1250	1726	2130	6639	6648	6717							
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I12

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J12

Spooler runtime 25 Seconds, 108 KCS, 725 disk reads, 3 disk writes, 151 pages

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