DU11

OFF-LINE TRANSMITTER TESTS

CZDUDD0

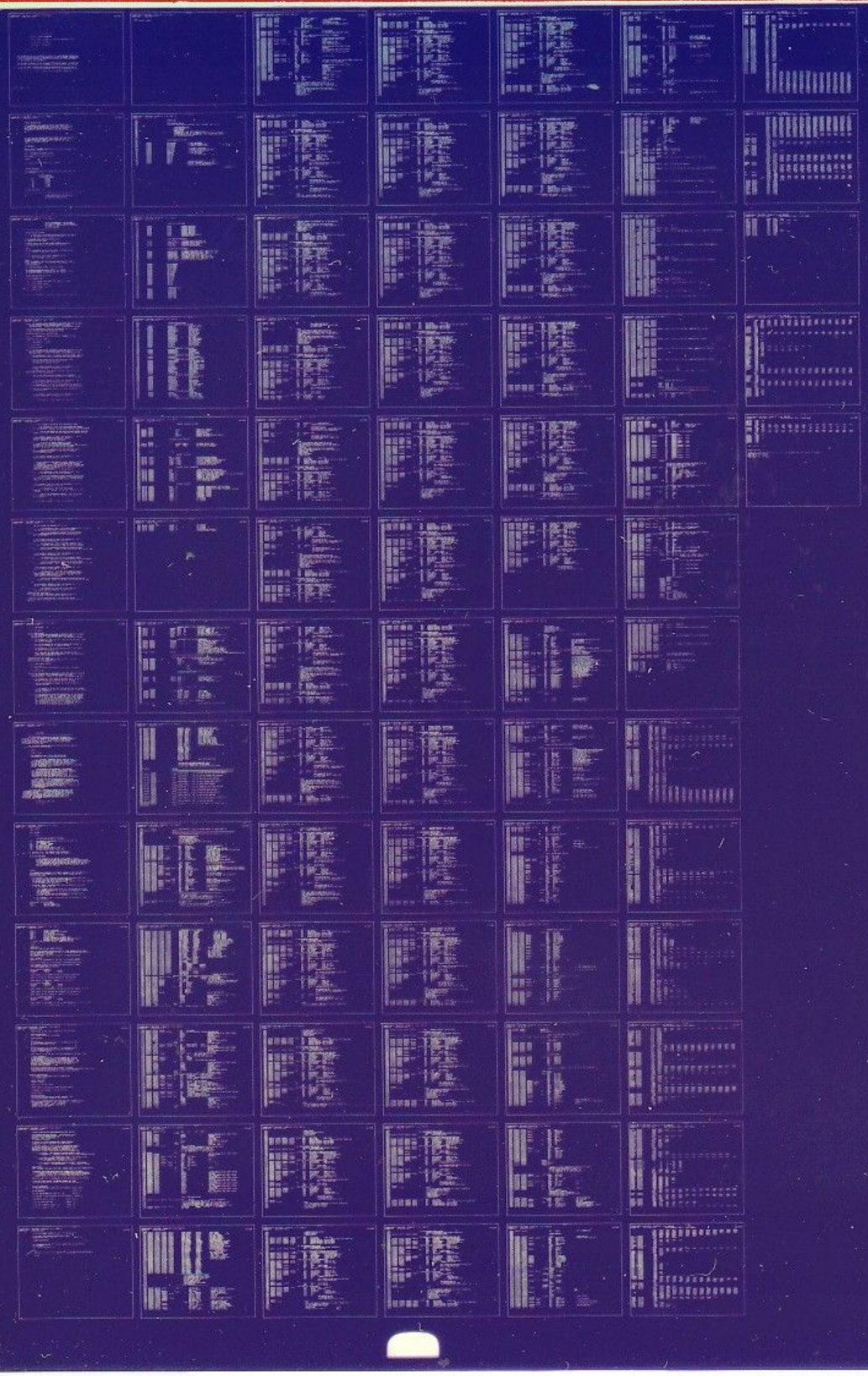
AH-8689D-MC

FICHE 1 OF 1

JAN 1979

digital

MADE IN USA



I D E N T I F I C A T I O N
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PRODUCT CODE: AC-8688D-MC

PRODUCT NAME: CZDUDDO DU11 OFFLINE TRANSMITTER TESTS

RELEASE DATE: JUN 1978

MAINTAINER : DIAGNOSTICS

GENERAL DESCRIPTION

THIS DIAGNOSTIC CAN CHAIN 16 DU11'S. THIS MEANS THAT
16 DEVICES CAN BE SEQUENTIALLY EXERCISED. THE DIAGNOSTIC
MAKES ONE PASS BEFORE PROCEEDING TO THE NEXT DEVICE,
AND CONTINUES EXERCISING ALL DEVICES IN THIS FASHION UNTIL
HALTED.

1. THE DU11 OFFLINE TRANSMITTER TESTS VERIFY THAT THE TRANSMITTER
SECTION PROVIDES THE CORRECT ERROR FLAGS,AND THAT IT
TRANSMITS CHARACTERS THRU THE BIT WINDOW AT THE CORRECT
NUMBER OF BITS PER CHARACTER.

2. REQUIREMENTS

PDP-11 FAMILY STANDARD COMPUTER WITH OR WITHOUT HARDWARE SWITCH
REGISTER (LOC. 177570)

DU11 SYNCRONOUS/ISOCRONOUS OPTION

ONE CONSOLE TELETYPE OR EQUIVALENT

2.2 STORAGE

THE PROGRAM LOADS AND RUNS IN 8K OF MEMORY.

3. LOADING PROCEDURE

THE STANDARD PROCEDURE FOR LOADING ABSOLUTE BINARY TAPES
IS TO BE USED.

	STARTING ADDRESS FOR ABSOLUTE LOADER
4K	017500
8K	037500
12K	057500
16K	077500
20K	117500
24K	137500
28K	157500

4. STARTING PROCEDURE

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NOTE: BEFORE PROCEEDING IT IS IMPORTANT TO
TO REALIZE IF ONE DOESNOT
HAVE THE DU11 SET UP TO THE

DEFAULT PARAMETERS (SEE SECTION
8 OF THIS DOCUMENT) , THEN ONE MUST
SET SW00 = 1, AND ANSWER THE PARAMETER
QUESTION ROUTINE.

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4.1 CONTROL SWITCH SETTINGS

NOTE: SOFTWARE SWITCH REGISTER IS DEFINED AS LOC. 176, WHILE
THE SOFTWARE DISPLAY REGISTER IS DEFINED AS LOC. 174.

4.1.1 AFTER PROGRAM LOAD (INITIAL PROGRAM START)
ALL CONSOLE SWITCHES DOWN

4.1.2 TO MODIFY DEVICE VECTOR AND CONTROL REGISTER ADDRESSES
AFTER PROGRAM RESTART OR TO RUN MULTIPLE DEVICES

SW00=1

4.1.3 TO START PROGRAM AT SELECTED TEST AFTER A PROGRAM RESTART
(ONLY IN SINGLE DEVICE TESTS)
SW01=1

4.1.4 TO LOCK ON SELECTED TEST AFTER A PROGRAM RESTART
(ONLY IN SINGLE DEVICE TESTS)

SW02=1
NOTE1: IN GENERAL SW01 WILL BE USED WHEN SW02=1 IS USED
NOTE2: WITHOUT SW01=1 'LOCK ON TEST'' WILL DEFAULT TO TEST 1

4.2 STARTING ADDRESS

THE STARTING ADDRESS FOR ALL TESTS IS 000200

THE RETARTING ADDRESS FOR ALL TESTS IS 000200
THE STARTING ADDRESS TO ENTER A SELECTED TEST IS 000200
THE STARTING ADDRESS TO LOCK ON TEST IS 000200

4.3 PROGRAM AND/OR OPERATOR ACTION

4.3.1 INITIAL PROGRAM START

4.3.1.1 LOAD PROGRAM INTO MEMORY WITH ABSOLUTE LOADER

4.3.1.2 LOAD ADDRESS 000200

4.3.1.3 CLEAR CONSOLE SWITCHES

4.3.1.4 PRESS START

4.3.1.5 THE PROGRAM WILL TYPE 'DU11 CZDUD-D TAPE D'' (ONCE ONLY)

NOTE:IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING
WILL BE TYPED AFTER THE PROGRAM IDENTIFIES ITSELF:
SWR=XXXXXX NEW= (REFER TO SECTION 5. FOR OPERATOR'S OPTION)

4.3.1.7 THE PROGRAM WILL TYPE 'R'' TO INDICATE THAT IT IS ABOUT
TO START TESTING ,AND THEN TESTING WILL BEGIN

4.3.2 PROGRAM RESTART WITH ALL SWITCHES DOWN

4.3.2.1 THE PROGRAM WILL TYPE 'R'' AND WILL COMMENCE TESTING

4.3.3 PROGRAM RESTART WITH SW00=1

4.3.3.1 LOAD ADDRESS 000200

4.3.3.2 SET SW00=1

4.3.3.3 PRESS START

NOTE:IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING
WILL BE TYPED AFTER THE PROGRAM IDENTIFIES ITSELF:
SWR=XXXXXX NEW= (REFER TO SECTION 5. FOR OPERATOR'S OPTION)

4.3.3.4 THE PROGRAM WILL TYPE '' 1ST DEVICE: RECEIVER CONTROL REGISTER
ADDRESS'' AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.5 TYPE IN THE ADDRESS OF THE FIRST RECEIVER CONTROL
REGISTER ADDRESS OF THE DU11 TO BE TESTED
FOLLOWED BY A <CARRIAGE RETURN>

IF AN INCORRECT ADDRESS IS TYPED ,THE PROGRAM WILL TYPE ''?''
AND WILL THEN REPEAT THE MESSAGE OF 4.3.3.4

4.3.3.6 THE PROGRAM WILL TYPE ''VECTOR ADDRESS-'' AND WAIT FOR AN
INPUT FROM THE TELETYPE KEYBOARD

4.3.3.7 TYPE IN THE BASE RECEIVER INTERRUPT VECTOR ADDRESS
FOR THE DU11 TO BE TESTED FOLLOWED BY A <CARRIAGE RETURN>

IF AN INCORRECT ADDRESS IS TYPED ,THE PROGRAM WILL TYPE ''?''
AND WILL THEN REPEAT THE MESSAGE OF 4.3.3.6

4.3.3.8 THE PROGRAM WILL TYPE ''ARE YOU RUNNING MULTIPLE DEVICES ?''
(Y OR N)-'' AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.9 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED BY A
<CARRIAGE RETURN>

IF AN INCORRECT ANSWER IS GIVEN, THE PROGRAM WILL TYPE ''?''
AND WILL THEN REPEAT THE MESSAGE OF 4.3.3.8

IF A ''NO'' ANSWER IS GIVEN: JUMP TO SECTION 4.3.3.12

IF A "YES" ANSWER IS GIVEN:THE NEXT QUESTION IS ASKED

4.3.3.10 THE PROGRAM WILL TYPE "LAST DEVICE:RECEIVER CONTROL REGISTER ADDRESS-" AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.11 TYPE IN THE ADDRESS OF THE LAST RECEIVER CONTROL REGISTER ADDRESS OF THE DU11 TO BE TESTED FOLLOWED BY A <CARRIAGE RETURN>

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE "?" AND WILL THEN REPEAT THE MESSAGE OF 4.3.3.10
NOTE:ALL ADDRESSES SHALL BE CONTIGUOUS

4.3.3.11.1 IF AN "OUT OF RANGE" ADDRESS IS TYPED
IE. MORE THAN 16 (10) DEVICES AWAY (UPWARDS).....THE PROGRAM WILL TYPE "OUT OF RANGE:RETYPE LAST DEVICE RXCSR ADDRESS-" AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.11.2 TYPE IN THE ADDRESS OF THE LAST RECEIVER CONTROL REGISTER ADDRESS OF THE DU11 TO BE TESTED FOLLOWED BY A <CARRIAGE RETURN>

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE "?" AND WILL REPEAT THE MESSAGE OF 4.3.3.11.1

IF A DEVICE ADDRESS LOWER THAN 1ST DEVICE ADDRESS IS TYPED.....
....SCHOOLS OUT.....THERE IS NO PROTECTION FOR THIS.
THE PROGRAM WILL DEFAULT TO TWO DEVICES ACTIVE (UPWARDS FROM 1ST DEVICE ADDRESS).THE SAME APPLIES TO IDENTICAL ADDRESSES TYPED FOR FIRST AND LAST DEVICE.
OBSERVE LOCATION @ ACTREG: SEE SECTION 7.2

4.3.3.12 THE PROGRAM WILL TYPE "DU PRIORITY LEVEL-" AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.13 TYPE IN THE APPROPRIATE DEVICE PRIORITY LEVEL OF THE DU11 OR DU11'S TO BE TESTED FOLLOWED BY A <CARRIAGE RETURN> (NOTE THAT ALL MULTIPLE DEVICES MUST BE AT THE SAME PRIORITY LEVEL). IE ."5"

IF AN INCORRECT LEVEL IS TYPED ,THE PROGRAM WILL TYPE "?" AND REPEAT THE MESSAGE OF 4.3.3.12

4.3.3.14 THE PROGRAM WILL TYPE "# OF SYNC CHARS SELECTED (1 OR 2)-" AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.15 TYPE IN THE APPROPRIATE ANSWER "1" OR "2" FOLLOWED BY A <CARRIAGE RETURN>.(NOTE:ALL MULTIPLE DEVICES MUST BE THE SAME)

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE "?"

AND WILL REPEAT THE MESSAGE OF 4.3.3.14

4.3.3.16 THE PROGRAM WILL TYPE '' IS SEC XMIT JUMPER #6 IN ? (Y OR N)-''
AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.17 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED
BY A <CARRIAGE RETURN>.(NOTE THAT ALL MULTIPLE DEVICES
MUST BE THE SAME)

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE ''?''
AND WILL REPEAT THE MESSAGE OF 4.3.3.16

4.3.3.18 THE PROGRAM WILL TYPE ''IS SEC REC JUMPER # 5 IN ?
(Y OR N)-'' AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.19 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED
BY A <CARRIAGE RETURN>. (NOTE: ALL MULTIPLE DEVICES MUST BE THE SAME)

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE ''?''
AND WILL REPEAT THE MESSAGE OF 4.3.3.18

4.3.3.20 THE PROGRAM WILL TYPE ''IS OPT CLR ENABLE JUMPER
4 IN ? (Y OR N)-'' AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.21 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED
BY A <CARRIAGE RETURN>. (NOTE: ALL MULTIPLE DEVICES MUST BE THE SAME)

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE ''?''
AND WILL REPEAT THE MESSAGE OF 4.3.3.20

4.3.3.22 THE PROGRAM WILL TYPE ''ARE YOU RUNNING IN MAINT.
MODE EXTERNAL ? AND .....DO YOU HAVE THE EXTERNAL MODEM
BYPASS JUMPER CONNECTOR ON ? (Y OR N)-'' AND WAIT FOR AN
INPUT FROM THE TELETYPE KEYBOARD

4.3.3.23 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED BY
A <CARRIAGE RETURN>. (NOTE: ALL MULTIPLE DEVICES MUST BE THE SAME)

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE ''?''
AND WILL REPEAT THE MESSAGE OF 4.3.3.22

4.3.3.24 THE PROGRAM WILL TYPE 'R'' TO INDICATE THAT IT
HAS STARTED AND WILL COMMENCE TESTING AT TEST 1

4.3.4 PROGRAM RESTART WITH SW01=1
NOTE: THIS WILL ONLY WORK WHEN A SINGLE DEVICE IS SELECTED
,,,IT WILL NOT WORK IF MULTIPLE DEVICES ARE SELECTED

IF MULTIPLE DEVICES WERE PREVIOUSLY SELECTED,LOAD 000200,
AND SELECT SW00=1 AND ANSWER 'NO'' TO THE MULTIPLE DEVICE QUESTION
SEE 4.3.3

4.3.4.1 LOAD 000200

4.3.4.2 SET SW01=1

4.3.4.3 PRESS START
NOTE:IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING
WILL BE TYPED AFTER THE PROGRAM IDENTIFIES ITSELF:
SWR=XXXXXX NEW= (REFER TO SECTION 5. FOR OPERATOR'S OPTION)

4.3.4.4 THE PROGRAM WILL TYPE 'TEST PC-'' AND WAIT FOR AN INPUT FROM
THE TELETYPE KEYBOARD

4.3.4.5 TYPE IN THE ADDRESS OF THE TEST AT WHICH THE PROGRAM IS TO
BE STARTED FOLLOWED BY A <CARRIAGE RETURN>

4.3.4.6 THE PROGRAM WILL TYPE 'R'' TO INDICATE THAT IT HAS STARTED
TESTING AT THE SELECTED TEST

NOTE: CARE MUST BE TAKEN WHEN THIS FEATURE IS USED
,SINCE THERE IS NO PROTECTION AGAINST SELECTING AN ADDRESS
THAT IS IN THE MIDDLE OF A TEST

4.3.5 PROGRAM RESTART WITH SW02 =1
NOTE: THIS WILL ONLY WORK WHEN A SINGLE DEVICE IS SELECTED
SEE NOTE IN 4.3.4 FOR MORE DETAILS

4.3.5.1 LOAD ADDRESS 000200

4.3.5.2 SET SW02 =1
NOTE: IT MAY BE ADVANTAGEOUS TO SET SW01=1 (OPTIONAL)

4.3.5.3 PRESS START

NOTE:IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING
WILL BE TYPED AFTER THE PROGRAM IDENTIFIES ITSELF:
SWR=XXXXXX NEW= (REFER TO SECTION 5. FOR OPERATOR'S OPTION)

4.3.5.4 THE PROGRAM WILL TYPE 'LOCK ON SELECTED TEST ? (Y OR N)-''
AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.5.5 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED BY A
<CARRIAGE RETURN>

IF A NO ANSWER IS GIVEN: THIS LOCK ON TEST WILL BE IGNORED
AND THE PROGRAM WILL TYPE 'R'' TO INDICATE THAT IT HAS STARTED
TESTING AT TEST 1

4.3.5.6 IF A YES ANSWER WAS GIVEN:THE PROGRAM WILL ACT AS FOLLOWS...
THE PROGRAM WILL TYPE 'R'' TO INDICATE THAT IT HAS STARTED
TESTING AT TEST 1 AND WILL REMAIN IN TEST 1 UNTIL HALTED
OR IF ANY KEY IS STRUCK ON THE TELETYPE ,THE PROGRAM
WILL FREEZE ON THE NEXT TEST UNTIL A KEY IS STRUCK ON
THE TELETYPE AND SO FORTH THRU THE PROGRAM. IF SW01 =1 IT
WILL PERFORM AS IN SECTION 4.3.4 ALLOWING ONE TO FREEZE
ON A SELECTED TEST RATHER THAN DEFAULTING TO TEST 1

4.4 STATUS MAP

THE STATUS MAP IS AN AREA OF THE DU11 DIAGNOSTICS, WHICH WILL ALLOW THE TRANSFER OF PARAMETERS BETWEEN DIAGNOSTICS. IF YOU WISH TO TEST A DU11 , WHICH IS NOT AT THE DEFAULT VALUES ,YOU NEED ONLY GO THROUGH THE TEDIOUS QUESTIONING AND ANSWERING ROUTINE ONCE.

THE FOLLOWING COMBINATIONS OF SWITCH REGISTER SETTINGS WILL ALLOW YOU ACCESS TO THE STATUS MAP.

1) SW07=1

2) START AT 200

3) THE DIAGNOSTIC WILL GO TO THE STATUS MAP AND BYPASS ALL OF THE QUESTIONING ROUTINE.

NOTE: IT IS EXTREMELY IMPORTANT THAT EITHER YOU HAVE JUST ANSWERED THESE QUESTIONS DURING A PRIOR DIAGNOSTIC OR THAT YOU HAVE MANUALLY ENTERED THE CORRECT VALUES FOR VECTOR ADDRESSES ETC.,IN THE AREA DESIGNATED FOR THE STATUS MAP. IT IS IMPORTANT THAT THIS BE PERFORMED BEFORE STARTING AT 200.

THE DIAGNOSTIC HAS NO METHOD TO DETERMINE THAT THE STATUS MAP HAS INDEED BEEN LOADED CORRECTLY. THE DIAGNOSTIC ASSUMES THAT WHEN SW07=1 THE VALUES IN THE STATUS MAP ARE THE VALUES TO BE USED . THESE VALUES CAN BE THE WRONG VALUES , BUT THE DIAGNOSTIC WILL NOT REALIZE THAT A MISTAKE HAS BEEN MADE.

IF BOTH SW07 AND SW00 (SWITCH REGISTER SWITCHES) ARE SET ,(EQUAL TO 1), THE PROGRAM WILL IGNORE SW00 AND SEEING SW07 SET, THE VALUES FROM THE STATUS MAP WILL BE USED. TO USE THE DEFAULT VALUES FOR THE DU11'S THE OPERATOR MUST SET SW00=0 AND SW07=0. THE USE OF SW00 IS EXPLAINED IN GREATER DETAIL IN SECTION 4.3 OF THIS DOCUMENT.

THE FIRST TIME A PROGRAM IS LOADED OR THE FIRST TIME A PROGRAM IS ALTERED VIA THE PARAMETER RESELECTION QUESTION AND ANSWER ROUTINE, A PARTIAL STATUS MAP WILL BE PRINTED. THIS MAP WILL BE PRINTED ONCE FOR ANY COMBINATION OF SWITCHES EXCEPT SW01. RESTARTING THE PROGRAM WILLNOT PRINT OUT A MAP UNLESS THE PROGRAM PARAMETERS ARE BEING RESELECTED BY PUTTING SW00=1.(ON)

THE MAP WILL LOOK LIKE:

STATUS MAP

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                1300/ 177777

                1302/ 000000

                1304/ 177777

                        THE BYTES ARE DEFINED AS FOLLOWS:

                1300    THE NUMBER OF SYNCHRONOUS CHARACTERS REQUIRED FOR
                        SYNCHRONIZATION.
                1301    SEC  TRANSMIT JUMPER
                1302    SEC RECEIVER JUMPER
                1303    OPTIONAL JUMPER
                1304    MULTIPLE DEVICES (NO=0 , YES=   1)
                1305    EXTERNAL MODEM BYPASS? (NO=0 ,YES=      1)

                IF THE BYTE IS 0 , THE JUMPER IS NOT CONNECTED
        AND IF THE BYTE IS 377 ETC. THE JUMPER SHOULD BE CONNECTED.

        5.      OPERATING PROCEDURE

                        IF THE DIAGNOSTIC IS RUN ON A CPU WITHOUT A SWITCH
                        REGISTER THEN A SOFTWARE SWITCH REGISTER IS USED WHICH ALLOWS
                        THE USER THE SAME SWITCH OPTIONS AS THE HARDWARE SWITCH REGISTER.
                        IF THE HARDWARE SWITCH REGISTER DOES NOT EXIST OR IF ONE DOES
                        AND IT CONTAINS ALL ONES (177777) THEN THE SOFTWARE SWITCH
                        REGISTER (LOC. 176) IS USED.


                CONTROL:

                THIS PROGRAM ALSO SUPPORTS THE DYNAMIC LOADING OF THE SOFTWARE SWITCH
                REGISTER (LOC. 176) FROM THE TTY. THIS CAN BE ACCOMPLISHED BY
                DOING THE FOLLOWING:

                1) TYPE CONTROL G <^G>; THIS WILL ALLOW THE TTY TO ENTER DATA INTO
                   LOC. 176 AT SELECTED POINTS WITHIN THE PROGRAM.
                2) THE MACHINE WILL THEN TYPE: SWR=XXXXXXNEW= (XXXXXX IS THE OCTAL CONTENTS
                   OF THE SOFTWARE SWITCH REGISTER.)

                3) AFTER THE ''NEW='' HAS BEEN TYPED THEN THE OPERATOR CAN DO ONE
                   OF THE FOLLOWING AT THE TTY:

                     A) TYPE A NUMBER TO BE LOADED INTO LOC. 176 FOLLOWED BY A <CR>.
                        (ONLY NUMBERS BETWEEN 0-7 WILL BE ACCEPTED AND ONLY 6 NUMBERS
                        WILL BE ALLOWED)
                        IF A <CR> IS THE FIRST KEY DEPRESSED THE SOFTWARE SWITCH
                        REGISTER CONTENTS WILL NOT BE CHANGED.

                     B) IF A CONTROL U <^U> IS DEPRESSED THEN THE PROGRAM WILL SEND YOU
                        BACK TO STEP 2.

        5.1     OPERATIONAL SWITCH SETTINGS
                SW15 =1         HALT ON ERROR
                SW14 =1         LOOP ON CURRENT TEST
                SW13 =1         INHIBIT ERROR TYPEOUT
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            SW11 =1         INHIBIT ITERATIONS
            SW10 =1         ESCAPE TO NEXT TEST ON ERROR
            SW08 =1         LOOP ON ERROR
            SW07 =1         USE STATUS MAP PARAMETERS
            SW02 =1         LOCK ON TEST
            SW01 =1         RESTART PROGRAM AT SELECTED TEST
            SW00 =1         RESELECT VECTOR AND CONTROL REGISTER ADRESSES
                            &PARAMETERS AFTER A PROGRAM RESTART
            TO INHIBIT 'END OF PASS'' TYPEOUT - TURN TELETYPE OFF

    6.      ERRORS

    6.1     ERROR HALTS
            THERE ARE FOUR DISTINCT ERROR TYPEOUTS

            NOTE: IF THE SOFTWARE SWITCH REGISTER IS TO BE CHANGED AFTER A HALT
            THE THE OPERATOR IS REQUIRED TO TYPE A <^G> BEFORE DEPRESSING CONTINUE.
            THE FOLLOWING WILL BE TYPED:
            SWR=XXXXXX  NEW=   (REFER TO SECTION 5. FOR OPERATOR OPTION)

    6.1.1   PC+2 = ERROR PC
            WHERE PC +2 IS THE ADDRESS OF THE CALL TO THE ERROR HANDLER +2

            REFER TO THE ABOVE 'HLT'' IN DIAGNOSTIC FOR ERROR DESCRIPTION

            CHECK ADDRESS @ RXCSR: TO LOCATE THE DEVICE PRESENTLY UNDER
            TEST WHEN RUNNING MULTIPLE DEVICES

    6.1.2   PC +2 = REGISTER ERROR PC
            REGISTER        EXPECTED        ACTUAL
            16XXXX          YYYYYY          ZZZZZZ

            WHERE 16XXXX IS THE ADDRESS OF THE FAILING DEVICE REGISTER

            WHERE YYYYYY IS THE EXPECTED CONTENTS OF THAT REGISTER

            WHERE ZZZZZZ IS THE ACTUAL CONTENTS OF THAT REGISTER

    6.1.3   PC +2 = RECEIVER ERROR PC
            REGISTER        EXPECTED        ACTUAL
            16XXXX          YYYYYY          ZZZZZZ

            WHERE 16XXXX IS THE ADDRESS OF THE FAILING RECEIVER (RXDBUF) REGISTER

            WHERE YYYYYY IS THE EXPECTED DATA CONTENTS OF THAT REGISTER

            WHERE ZZZZZZ IS THE ACTUAL DATA CONTENTS OF THAT REGISTER

    6.1.4   PC +2 = TRANSMITTER ERROR PC
            REGISTER        EXPECTED        ACTUAL
            16XXXX          YYYYYY          ZZZZZZ

            WHERE 16XXXX IS THE ADDRESS OF THE FAILING TRANSMITTER (TXCSR) REGISTER

            WHERE YYYYYY IS THE EXPECTED CONTENTS OF THAT REGISTER
```

WHERE ZZZZZZ IS THE ACTUAL CONTENTS OF THAT REGISTER

6.1.5 ERROR DESCRIPTIONS
SEE LISTINGS FOR DETAILS OF ERRORS

6.2 ERROR RECOVERY

6.2.1 SW15 =0
IF THE PROGRAM IS RUN WITH SW15 =0 ,NO OPERATOR ACTION IS
REQUIRED TO CONTINUE TESTING

6.2.2 SW15 =1
IF THE PROGRAM IS RUN WITH SW15 =1 ,TO CONTINUE TESTING
AFTER THE PROGRAM HAS HALTED ,PRESS THE PROCESSOR
CONSOLE ''CONTINUE SWITCH''

NOTE: THE PC + 2 OF THE ''HLT'' WILL BE DISPLAYED IN THE DATA LIGHTS

6.2.3 ILLEGAL INTERRUPTS
IF AN INTERRUPT OCCURS TO A VECTOR ADDRESS NOT SELECTED
DURING PROGRAM INITIALIZATION, THE PROGRAM WILL HALT IN
THE TRAPCATCHER. THE ADDRESS AT WHICH THE PROGRAM
HALTS IS 2 GREATER THAN THE ADDRESS TO WHICH THE INTERRUPT
OCCURED. THE PROGRAM MUST BE RESTARTED AT 000200 TO
RECOVER FROM THIS ERROR.

6.2.4 ADDITIONAL TROUBLESHOOTING AIDS ERRCNT: & PASCNT:
CHECK THESE TWO TAG LOCATIONS FOR TOTAL # OF ERRORS AND PASSES RESPECTIVELY.
LOADING 000200 AND RESTARTING WILL CLEAR THESE LOCATIONS.

6.3 END OF PASS ROUTINE
THIS TYPEOUT IS MENTIONED HERE FOR CONVENIENCE
IT IS IN THE FORM:

END OF PASS TAPE Y
16XXXX = DEVICE

WHERE Y IS THE TAPE LOADED

WHERE 16XXXX IS THE DEVICE'S BASE REGISTER ADDRESS

TO INHIBIT THIS TYPEOUT - TURN TELETYPE OFF

7. RESTRICTIONS

7.1 MULTIPLE DEVICES
UP TO 16(10) DEVICES MAY BE TESTED. HOWEVER, THEY
MUST HAVE CONTIGUOUS ADDRESSES AND VECTORS

NOTE: IF ALL DEVICES UNDER TEST HAVE THE SAME INTERRUPT VECTOR
YOU CAN CHANGE ''ZERO: ADD #10,BASEIV ;NEXT BLOCK
(VECTORS)'' TO ''ZERO: ADD #0,BASEIV'';
THEREBY THE VECTOR ADDRESSES WILL NOT BE
UPDATED AFTER EACH PASS.

7.2 DISQUALIFYING DEVICES WHEN RUNNING MULTIPLE DEVICES

WHEN RUNNING MULTIPLE DEVICES AN ACTIVE BIT IS SET
FOR EACH DEVICE RUNNING UNDER TEST IE. BIT 0 FOR
DEVICE 0 ,BIT 15 FOR DEVICE 15
TO DISQUALIFY DEVICES:

7.2.1 IF DEVICE 0 IS TO BE DISQUALIFIED ,SIMPLY RESTART
PROGRAM WITH SW00 =1 AND OMIT THE FIR$T DEVICE.

7.2.2 IF HOWEVER, DEVICES 1 THRU 15 OR ANY COMBINATION THEREOF
ARE TO BE DISQUALIFIED....LOAD THE LOCATION OF ACTREG:
OBSERVE THE ACTIVE BITS (ACTIVE =1, NONACTIVE = 0)
AND DEPOSIT 0 WHERE THOSE DEVICES ARE TO BE DISQUALIFIED

7.2.2.1 TO RESTART...LOAD 000200 IN SWR AND DEPRESS START....
THE PROGRAM WILL CONTINUE WITH THE DEVICE IT WAS IN BEFORE HALTING.

7.2.2.2 ....OR .....LOAD 000200 WITH SW00 =1 AND DEPRESS START....
ANSWER THE QUESTION :1ST DEVICE : ETC.....
....THE PROGRAM WILL CONTINUE WITH DEVICE 0

7.2.2.3 IF ALL DEVICES ARE DISQUALIFIED BY MISTAKE THE PROGRAM
WILL TYPEOUT AN ERROR MESSAGE.......LOAD & START AT 000200

7.3 CABLE DELAYS
NOTE: EXTERNAL LOOP BACK TESTS ONLY (MODEM CABLE WITH H315 CONNECTOR ON)

7.3.1 TO PROVIDE SUFFICIENT DELAY FOR CLOCK SIGNAL OVER THE CABLE,
LOCATION 'HOLD:' MUST BE MODIFIED TO ACCOMODATE FOR FASTER MACHINES.
PRESENTLY 'HOLD:' =20 IS SUFFICIENT TIME ON AN 11/20 MACHINE.
IF RUNNING ON AN 11/40 OR AN 11/45 'HOLD:' MUST BE PATCHED TO 40

BASICALLY DON'T TRY TO EXCEED 10K TO 12K RATE USING THE EIA DRIVERS

7.4 TO USE THE 'XOR' TESTER ,THE BRANCH AROUND THE 'XOR'
CODE MUST BE PATCHED TO A 'NOP'. (SEE LISTINGS FOR DETAILS)

8. DEFAULT PARAMETERS:

1ST DEVICE: RECEIVER CONTROL REGISTER ADDRESS-	RXCSR: 160040
VECTOR ADDRESS-	DURIV: 770
ARE YOU RUNNING MULTIPLE DEVICES ?- NO	MULTD: 0
LAST DEVICE: RECEIVER CONTROL REGISTER ADDRESS-	LASTADD: 0
DU PRIORITY LEVEL- LEVEL 5	DUPRT: LEVEL 5
# OF SYNC CHARS SELECTED - 2	SYNCNO: 377
IS SEC XMIT JUMPER # 6 IN ?- YES	SEXMIT: 377
IS SEC REC JUMPER # 5 IN ?- YES	SEREC: 377

IS OPT CLR ENABLE JUMPER # 4 IN ?- YES OPTCLR: 377

DO YOU HAVE THE EXTERNAL MODEM BYPASS JUMPER
CONNECTOR ON (H315)- YES JMRBY: 377

9. PROGRAM DESCRIPTION

9.1 THIS PROGRAM PERFORMS THE OFFLINE TRANSMITTER SECTION TESTING
OF THE DEVICE
SEE LISTING FOR DETAILS

10. FLOW CHARTS: RECEIVER FLOW,TRANSMITTER FLOW,TRANSMITTER & RECEIVER FLOW

11. LISTINGS

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  676
  677  000000' 000000G                    D
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                        .ENABLE ABS

                        ;DU11 CZDUD-D TAPE D
                        ;COPYRIGHT 1973, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754

                                ;STARTING PROCEDURE
                                ;LOAD PROGRAM
                                ;PRESS START
                                ;PROGRAM WILL TYPE 'DU11 CZDUD-D TAPE D ''
                                ;PROGRAM WILL TYPE 'R'' TO INDICATE THAT TESTING HAS STARTED
                                ;AT THE END OF A PASS, PROGRAM WILL TYPE 'END OF PASS TAPE D''
                                ;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
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, USE STATUS MAP
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 VECTOR AND CONTROL REGISTER
                                                ;ADDRESS AFTER PROGRAM RESTART
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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

177570                          DSWR=177570     ;HARDWARE SWITCH REGISTER LOC.
177570                          DLIGHTS=177570  ;HARDWARE DISPLAY REGISTER LOC.
177776                          PS=177776       ;PROCESSOR STATUS WORD
001100                          STACK=1100      ;START OF PROCESSOR STACK

                                ;INSTRUCTION DEFINITIONS

005746                          PUSH1SP=5746    ;DECREMENT PROCESSOR STACK 1 WORD =TST -(SP)
005726                          POP1SP=5726     ;INCREMENT PROCESSOR STACK 1 WORD =TST (SP)+
010046                          PUSHR0=10046    ;SAVE R0 ON STACK =MOV R0,-(SP)
012600                          POPR0=12600     ;RESTORE R0 FROM STACK =MOV (SP)+,R0
024646                          PUSH2SP=24646   ;DECREMENT STACK TWICE =CMP -(SP),-(SP)
022626                          POP2SP=22626    ;INCREMENT STACK TWICE =CMP (SP)+,(SP)+
                                .EQUIV  EMT,HLT ;BASIC DEFINITION OF ERROR CALL


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

                                ;PROCESSER LEVELS
000340                          LEVEL7=340
000300                          LEVEL6=300
000240                          LEVEL5=240
000200                          LEVEL4=200
000140                          LEVEL3=140
000100                          LEVEL2=100
000040                          LEVEL1=040
000000                          LEVEL0=000
```

```
                                ;REGISTER DEFINITIONS
                                        ;RXCSR BIT DEFINITIONS
100000                          DSC=BIT15               ;DATA SET CHANGE
040000                          RING=BIT14              ;RING
020000                          CTS=BIT13               ;CLR TO SEND
010000                          CARDET=BIT12            ;CARRIER DETECT
004000                          RECACT=BIT11            ;REC ACTIVE
002000                          SRD=BIT10               ;SEC REC DATA
001000                          DSR=BIT9                ;DATA SET RDY
000400                          STPSYN=BIT8             ;STRIP SYNC
000200                          RXDONE=BIT7             ;REC DONE
000100                          RINTEN=BIT6             ;REC INTR ENABLE
000040                          DSINTE=BIT5             ;DSC INTR ENABLE
000020                          SYNSCH=BIT4             ;SYNC SEARCH
000010                          STD=BIT3                ;SEC XMIT DATA
000004                          RTS=BIT2                ;REQ TO SEND
000002                          DTR=BIT1                ;DATA TERM RDY
000001                          VOID=BIT0
                                        ;RXDBUF BIT DEFINITIONS
100000                          RXERR=BIT15             ;REC ERROR
040000                          OVRRUN=BIT14            ;OVERRUN
020000                          FRMERR=BIT13            ;FRAME ERROR
010000                          PARER=BIT12             ;PARITY ERROR
                                        ;PARCSR BIT DEFINITIONS
001000                          PAREN=BIT9              ;PARITY ENABLE
000400                          EVPAR=BIT8              ;EVEN PARITY SENSE
                                        ;PARCSR WRD DEFINITIONS
030000                          SYNINT=30000            ;SYNC EXTERNAL MODE
020000                          SYNEXT=20000            ;SYNC INTERNAL MODE
000000                          ISYMOD=0                ;ISOC MODE
000000                          FIVE=0                  ;WORD LENGTH 5 BITS
002000                          SIX=2000                ;WORD LENGTH 6 BITS
004000                          SEVEN=4000              ;WORD LENGTH 7 BITS
006000                          EIGHT=6000              ;WORD LENGTH 8 BITS
000000                          NOPAR=0                 ;NO PARITY
001000                          ODDPAR=1000             ;ODD PARITY
001400                          EVEPAR=1400             ;EVEN PARITY
                                        ;TXCSR BIT DEFINITIONS
100000                          DNA=BIT15               ;DATA NOT AVAILABLE
040000                          MTDATA=BIT14            ;MAINT DATA
020000                          CLK=BIT13               ;CLK
002000                          BITW=BIT10              ;BIT WINDOW
000400                          MRESET=BIT8             ;MASTER RESET
000200                          TXDONE=BIT7             ;XMIT DONE
000100                          TXINTE=BIT6             ;XMIT INTR ENABLE
000040                          DNAINTE=BIT5            ;DNA INTR ENAB
000020                          SEND=BIT4               ;SEND
000010                          HDXEN=BIT3              ;HDX/FDX
000001                          BREAK=BIT0              ;BREAK
                                        ;TXCSR WRD DEFINITIONS
000000                          USER=0                  ;USER MODE
004000                          MINT=4000               ;MAINT INT MODE
010000                          MEXT=10000              ;MAINT EXT MODE
014000                          SYSTST=14000            ;SYSTEM TEST MODE
                                ;TRAPCATCHER FOR ILLEGAL INTERRUPTS
```

```
                                        ;STANDARD INTERRUPT VECTORS

                    000024              .=24
000024  016250                          .PFAIL              ;POWER FAIL HANDLER
000026  000340                          340                 ;SERVICE AT LEVEL 7
000030  016000                          .HLT                ;ERROR HANDLER
000032  000340                          340                 ;SERVICE AT LEVEL 7
000034  015746                          .TRPSRV             ;GENERAL HANDLER DISPATCH SERVICE
000036  000340                          340                 ;SERVICE AT LEVEL 7

                                        ;SOFTWARE SWITCH REGISTER

                    000174              .=174
000174  000000                  DISPREG:.WORD 0             ;SOFTWARE DISPLAY REG.
000176  000000                  SWREG:  .WORD 0             ;SOFTWARE SWITCH REGISTER
000200  000167  001214          JMP     .START              ;GO TO START OF PROGRAM


                    001100      .=1100

                                        ;INDIRECT POINTERS

001100  177570          SWR:    177570                      ;SWITCH REGISTER POINTER
001102  177570          LIGHTS:177570                       ;DISPLAY REGISTER POINTER
001104  177560          TKCSR:  177560                      ;TELETYPE KEYBOARD CONTROL REGISTER
001106  177562          TKDBR:  177562                      ;TELETYPE KEYBOARD DATA BUFFER
001110  177564          TPCSR:  177564                      ;TELEPRINTER CONTROL REGISTER
001112  177566          TPDBR:  177566                      ;TELEPRINTER DATA BUFFER

                                        ;PROGRAM CONTROL PARAMETERS

001114  000000          RTRN:   0                           ;SCOPE ADDRESS FOR LOOP ON TEST
001116  000000          NEXT:   0                           ;ADDRESS OF NEXT TEST TO BE EXECUTED
001120  000000          LOCK:   0                           ;ADDRESS FOR LOCK ON CURRENT DATA
001122  000000          ICOUNT: 0                           ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
001124  000000          LPCNT:  0                           ;NUMBER OF ITEREATIONS COMPLETED
001126  000000          TSTNO:  0                           ;NUMBER OF TEST IN PROGRESS
001130  000000          PASCNT: 0                           ;NUMBER OF PASSES COMPLETED
001132  000000          ERRCNT: 0                           ;TOTAL NUMBER OF ERRORS
001134  000000          LSTERR: 0                           ;PC OF LAST ERROR CALL

                                        ;PROGRAM VARIABLES

001136  000020          HOLD:   20                          ;TEMPORARY STORAGE=DELAY TIME FOR CABLES
001140  000000          SHIFT:  0                           ;TEMPORARY STORAGE= # OF SHIFTS PER CHAR
001142  000000          COUNT:  0                           ;TEMPORARY STORAGE= # OF TIMES A CHAR WILL BE SENT
001144  000000          TEMP1:  0                           ;TEMPORARY STORAGE
001146  000000          TEMP2:  0                           ;TEMPORARY STORAGE
001150  000000          TEMP3:  0                           ;TEMPORARY STORAGE
001152  000000          TEMP4:  0                           ;TEMPORARY STORAGE
001154  000000          TEMP5:  0                           ;TEMPORARY STORAGE
001156  000000          SAVR0:  0                           ;R0 STORAGE
001160  000000          SAVR1:  0                           ;R1 STORAGE
001162  000000          SAVR2:  0                           ;R2 STORAGE
```

```
  879  001164  000000                SAVR3:  0          ;R3 STORAGE
  880  001166  000000                SAVR4:  0          ;R4 STORAGE
  881  001170  000000                SAVR5:  0          ;R5 STORAGE
  882  001172  000000                SAVSP:  0          ;STACK POINTER STORAGE
  883  001174  000000                SAVPC:  0          ;PROGRAM COUNTER STORAGE
```

```
                                        ;PROGRAM CONVERSATIONAL PARAMETERS
001176    377           SYNCNO: .BYTE   377             ;# OF SYNC CHARS REQ'D FOR SYNC'ZATION
001177    377           SEXMIT: .BYTE   377             ;SEC XMIT JUMPER ''IN''
001200    377           SEREC:  .BYTE   377             ;SEC REC JUMPER ''IN''
001201    377           OPTCLR: .BYTE   377             ;OPTIONAL JUMPER CLR ''IN''
001202    000           MULTD:  .BYTE   0               ;NO MULTIPLE DEVICE FLAG
001203    377           JMRBY:  .BYTE   377             ;EXTERNAL MODEM BYPASS JUMPER ''IN''
                        .EVEN

                                        ;PROGRAM MULTIPLE DEVICE PARAMETERS
001204  000000          BASEADD:        0               ;PROG CONTROLLED 1ST DEVICE ADDR
001206  000000          KEEPADD:        0               ;SAVED 1ST DEVICE ADDR
001210  000000          LASTADD:        0               ;LAST DEVICE RXCSR ADDR
001212  000000          BASEIV:         0               ;PROG CONTROLLED IV
001214  000000          KEEPIV:         0               ;SAVED INTR VECTOR
001216  000000          ACTREG:         0               ;ACTIVE REGISTER ,,,MODIFY THIS
                                                        ;LOCATION TO DISQUALIFY OR QUALIFY
                                                        ;DEVICES (1= RUN,,,0= DON'T RUN)
001220  000000          ROTADD:         0               ;ROTATING POINTER FOR ACTREG..POINTS
                                                        ;TO DEVICE PRESENTLY UNDER TEST WHEN RUNNING MULTIPLE DE
                        ;*************************************

                        ; THESE ARE STORAGE FOR THE STATUS MAP PRINT OUT
001222  000000                FLAG:0          ; FLAGS FOR STATUS MAP PRINT OUT (SSP)
001224  000000                HOLD0: 0                ; HOLDS  R0 IN STATUS MAP PRINT
001226  000000                HOLD1:0                 ; R1 ETC.
001230  000000                COUNT1:0                ; FOR COUNTING 3 WORDS
001232  000002                TABLE   : 2             ; FOR CONVRT ROUTINE
001234  003006                          3006
001236  000000                          0
001240  003006                          3006
001242  000000                                  0
                                ;*********************************
                                ;PROGRAM CONTROL FLAGS


001244    000           INIFLG: .BYTE   0               ;PROGRAM INITIALIZATION FLAG
001245    000           STFLG:  .BYTE   0               ;TEST START FLAG
001246    000           ERRFLG: .BYTE   0               ;ERROR OCCURED FLAG
001247    000           LOKFLG: .BYTE   0               ;LOCK ON CURRENT TEST FLAG

                        .EVEN

                        ;*******    STATUS  MAP   *******

        001300          .=1300
001300  000001  STATUS: NOSYNC: .BLKB 1          ;SYNC CHARS
001301  000001          MITSEX: .BLKB 1         ;XMIT JUMPER
001302  000001          RESEC: .BLKB 1          ;REC SEC JUMPER
001303  000001          CLROPT: .BLKB 1         ;OPTIONAL JUMPER
001304  000001          DMULT: .BLKB 1          ;MULTIPLE DEVICE FLAG
001305  000001          BYJMR: .BLKB 1          ;EXTERNAL MODEM

                        ; MULTIPLE    DEVICE PARAMETERS

001306  000001          ADDBASE: .BLKW 1        ;PROG CONTROLLED 1ST DEVICE ADDR
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```
                                ADDKEEP: .BLKW 1        ;SAVED 1ST DEVICE ADDR
                                ADDLAST: .BLKW 1        ;LAST DEVICE  RXCSR  ADDR
                                IVBASE:  .BLKW 1        ;PROG CONTROLLED IV
                                IVKEEP:  .BLKW 1        ;SAVED INTR VECTOR
                                REGACT:  .BLKW 1        ;ACTIVE REGISTER
                                ADDROT:  .BLKW 1        ;ROTATING POINTER
                                PRTDU:   .BLKW 1        ;DU11 PRIORITY
                                RIVDU:   .BLKW 1        ;DU11 REC INTR VECTOR
                                TIVDU:   .BLKW 1        ;DU11 XMIT INTR VECTOR
                                TISDU:   .BLKW 1        ;DU11 XMIT INTR STATUS
                                RISDU:   .BLKW 1        ;DU11  REC INTR STATUS
                                L1ESS:  .BLKW 1         ;PRIORITY TO ALLOW INTR
                                CSRRX:  .BLKW 1         ; DEFAULT OR ALTERED PARAMETERS
                                CSRHRX:  .BLKW 1        ;
                                BUFRXD:  .BLKW 1
                                BUFHRXD:  .BLKW 1
                                CSRPAR:  .BLKW   1
                                CSRHPAR: .BLKW   1
                                CSRTX:  .BLKW 1
                                CSRHTX:  .BLKW 1
                                BUFTXD:  .BLKW 1
                                BUFHTXD: .BLKW 1
                                BASEDU:  .BLKW 1        ;DU11 RXCSR BASE ADDR
                                .EVEN

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

                        .TRPTAB:
                        ;*****************************************************************************
                        ;*****************************************************************************
                                SCOPE=TRAP+0    ;CALL TO SCOPE LOOP AND ITERATION HANDLER
                        .SCOPE
                                SCOP1=TRAP+1    ;CALL TO LOOP ON CURRENT DATA HANDLER
                        .SCOP1
                                TYPE=TRAP+2     ;CALL TO TELETYPE OUTPUT ROUTINE
                        .TYPE
                                INSTR=TRAP+3    ;CALL TO ASCII STRING INPUT ROUTINE
                        .INSTR
                                INSTER=TRAP+4   ;CALL TO INPUT ERROR HANDLER
                        .INSTER
                                PARAM=TRAP+5    ;CALL TO NUMERICAL DATA INPUT ROUTINE
                        .PARAM
                                SAV05=TRAP+6    ;CALL TO REGISTER SAVE ROUTINE
                        .SAV05
                                RES05=TRAP+7    ;CALL TO REGISTER RESTORE ROUTINE
                        .RES05
                                CONVRT=TRAP+10  ;CALL TO DATA OUTPUT ROUTINE
                        .CONVRT
                                CNVRT=TRAP+11   ;CALL TO DATA OUTPUT ROUTINE WITHOUT CR/LF
                        .CNVRT
                                SETFLG=TRAP+12  ;CALL TO FLAG SET ROUTINE
                        .SETFLG
                                CKSWR=TRAP+13   ;CALL TO ALLOW SWREG TO BE LOADED FROM TTY
                        .CKSWR
```

```
  996            104414                          CNTLU=TRAP+14   ;CALL TO ALLOW LOADING  OF SWREG FROM TTY
  997   001416   016470                  .CNTLU
  998                                    ;*************************************************************************
  999                                    ;*************************************************************************
 1000
 1001                                            ;PROGRAM INITIALIZATION
 1002                                            ;LOCK OUT INTERRUPTS
 1003                                            ;SET UP PROCESSOR STACK
 1004                                            ;SET UP POWER FAIL VECTOR
 1005                                            ;CLEAR PROGRAM CONTROL FLAGS AND COUNTS
 1006                                            ;TYPE TITLE MESSAGE
 1007
 1008   001420   012767   000340   176350  .START: MOV     #340,PS                 ;LOCK OUT INTERRUPTS
 1009   001426   012706   001100                  MOV     #STACK,SP               ;SET UP STACK
 1010   001432   012737   016250   000024        MOV     #.PFAIL,@#24            ;SET UP POWER FAIL VECTOR
 1011   001440   005067   177460                  CLR     LPCNT                   ;CLEAR # OF ITERATION COMPLETED LOCATION
 1012   001444   105067   177575                  CLRB    STFLG                   ;CLEAR START FLAG
 1013   001450   005067   177454                  CLR     PASCNT                  ;CLEAR PASS COUNT
 1014   001454   105067   177566                  CLRB    ERRFLG                  ;CLEAR ERROR FLAG
 1015   001460   005067   177446                  CLR     ERRCNT                  ;CLEAR ERROR COUNT
 1016   001464   005067   177444                  CLR     LSTERR                  ;CLEAR LAST ERROR POINTER
 1017   001470   012767   000001   177430        MOV     #1,TSTNO                ;SET UP FOR TEST 1
 1018   001476   012767   001420   177410        MOV     #.START,RTRN            ;SET UP FOR POWER FAIL BEFORE
 1019                                                                            ;TESTING STARTS
 1020   001504   105767   177534                  TSTB    INIFLG                  ;HAS INITIALIZATION BEEN PERFORMED
 1021   001510   001004                          BNE     ONCE
 1022   001512   104402   016570                  TYPE    ,MTITLE                 ;TYPE TITLE MESSAGE
 1023   001516   105167   177522                  COMB    INIFLG                  ;IF NOT SET FLAG AND DO
 1024   001522   012767   177570   177350  ONCE:   MOV     #DSWR,SWR               ;RELOAD HARDWARE SWITCH REGISTER INTO POINTER
 1025   001530   012767   177570   177344        MOV     #DLIGHTS,LIGHTS         ;RELOAD HARDWARE DISPLAY REGISTER INTO POINTER
 1026   001536   013746   000006                  MOV     @#6,-(SP)               ;SAVE VECTORS
 1027   001542   013746   000004                  MOV     @#4,-(SP)
 1028   001546   012737   001566   000004        MOV     #64$,@#4                ;SET UP FOR TIMEOUT
 1029   001554   022777   177777   177316        CMP     #-1,@SWR                ;REFERENCE HARDWARE SWITCH REGISTER
 1030   001562   001402                          BEQ     65$
 1031   001564   000407                          BR      66$
 1032   001566   022626                  64$:    CMP     (SP)+,(SP)+             ;ADJUST STACK
 1033   001570   012767   000176   177302  65$:    MOV     #SWREG,SWR              ;POINT TO SOFTWARE SWITCH REG
 1034   001576   012767   000174   177276        MOV     #DISPREG,LIGHTS         ;POINT TO SOFT DISPLAY REG
 1035   001604   012637   000004          66$:    MOV     (SP)+,@#4               ;RESTORE VECTORS
 1036   001610   012637   000006                  MOV     (SP)+,@#6
 1037   001614   005737   000042                  TST     @#42                    ;UNDER MONITOR
 1038   001620   001005                          BNE     MAP
 1039   001622   022767   000176   177250        CMP     #SWREG,SWR              ;IS SWREG USED
 1040   001630   001001                          BNE     MAP                       ; BRANCH TO CHECK FOR STATUS MAP
 1041   001632   104414                          CNTLU
 1042                                  ;*************************************************************
 1043                                          ; CODE FOR STATUS MAP
 1044                                          ; CODE ADDED FOR REV. E OF DIAGNOSTICS
 1045                                          ; IF SW07= 1 ,THEN YOU USE THE STATUS MAP PREVIOUSLY
 1046                                          ; SETUP, OR REENTER QUESTIONING ROUTINE
 1047
 1048   001634   032777   000200   177236  MAP:     BIT #SW07, @SWR                 ; IS SW07=1?
 1049   001642   001537                          BEQ $67                         ; IF NOT, GO TO TEST FOR SW00=1
 1050                                          ; NOW SET UP MAP VALUES FOR PROGRAM
 1051                                          ; THESE VALUES FROM THE STATUS MAP WILL BE USED IN THE
```

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1052
1053  001644  116767  177430  177324          ; OPERATION OF THIS  PROGRAM.
1054  001652  116767  177423  177317          MOVB NOSYNC      ,SYNCNO                ; SYNC CHAR
1055  001660  116767  177416  177312          MOVB MITSEX      ,SEXMIT                ; XMIT   JUMPER
1056  001666  116767  177411  177305          MOVB RESEC       ,SEREC                 ; SEC REC JUMPER
1057  001674  116767  177404  177300          MOVB CLROPT      ,OPTCLR                ;OPTIONAL JUMPER
1058  001702  116767  177377  177273          MOVB DMULT       ,MULTD                 ;MULTIPLE DEVICE
1059  001710  016767  177372  177266          MOVB BYJMR       ,JMRBY                 ;EXTERNAL MODEM
1060  001716  016767  177366  177262          MOV ADDBASE      ,BASEADD               ;PROG 1ST DEVICE ADDR
1061  001724  016767  177362  177256          MOV ADDKEEP      ,KEEPADD               ; SAVED 1ST DEVICE ADDR
1062  001732  016767  177360  177254          MOV  ADDLAST     ,LASTADD               ; LAST DEVICE RXCSR ADDR
1063  001740  016767  177354  177250          MOV IVKEEP       ,KEEPIV                ; SAVED INTR VECTOR
1064  001746  016767  177350  177244          MOV REGACT       ,ACTREG                ;ACTIVE REGISTER
1065  001754  016767  177334  177230          MOV ADDROT       ,ROTADD                ;ROTATING POINTER
1066  001762  016767  177220  177214          MOV IVBASE,      BASEIV         ; BASE INTR VECTOR
1067  001770  016767  177332  016736          MOV KEEPADD      , BASEADD              ;RELOAD BASEADD
1068  001776  016767  177332  016732          MOV RIVDU,       DURIV          ; REC INTR VECTOR
1069  002004  016767  177320  016726          MOV RISDU,       DURIS          ; REC INTR STATUS
1070  002012  016767  177314  016722          MOV TIVDU,       DUTIV          ; XMIT INTR VECTOR
1071  002020  016767  177312  016230          MOV TISDU,       DUTIS          ; XMIT INTR STATUS
1072  002026  013737  001324  020254          MOV L1ESS,       LESS1          ; PRIORITY TO ALLOW INTR
1073  002034  016767  177324  016350          MOV @#PRTDU,     @#DUPRT        ; PRIORITY RELOADED
1074  002042  016767  177272  016640          MOV     BASEDU,  DUBASE         ;'
1075  002050  016767  177266  016634          MOV CSRRX,       RXCSR
1076  002056  016767  177262  016630          MOV CSRHRX,      HRXCSR
1077  002064  016767  177256  016624          MOV     BUFRXD,  RXDBUF
1078  002072  016767  177252  016620          MOV     BUFHRXD,         HRXDBUF
1079  002100  016767  177246  016614          MOV     CSRPAR,          PARCSR
1080  002106  016767  177242  016610          MOV     CSRHPAR,         HPARCSR
1081  002114  016767  177236  016604          MOV     CSRTX,   TXCSR
1082  002122  016767  177232  016600          MOV     CSRHTX,          HTXCSR
1083  002130  016767  177226  016574          MOV BUFTXD,      TXDBUF
1084  002136  000167  000466                  MOV BUFHTXD,     HTXDBUF
1085                                          JMP .BEGIN                             ;BRANCH TO BEGIN TESTING
                                        ;*************************************************************
1086  002142  032777  000001  176730  $67:     BIT     #SW00    ,@SWR   ; RESELECT VECTOR $ CONTROL REG?
1087  002150  001002                          BNE     1$               ; BRANCH  TO QUESTIONING
1088  002152  000167  000452                  JMP .BEGIN               ; GO TO  LOAD STATUS MAP ETC.
1089  002156  005037  001222          1$:     CLR @#FLAG                       ; CLEAR FLAG SO STATUS MAP PRINTS OUT
1090  002162  012700  000300                  MOV     #300,R0                  ;RESTORE VECTOR AREA TO TRAPCATCHER
1091  002166  012701  000302                  MOV     #302,R1                  ;START AT LOCATION 300
1092  002172  012702  000004                  MOV     #4,R2
1093  002176  010110                  2$:     MOV     R1,(R0)
1094  002200  005011                          CLR     (R1)
1095  002202  060200                          ADD     R2,R0
1096  002204  060201                          ADD     R2,R1
1097  002206  022701  001000                  CMP     #1000,R1                 ;END AT LOCATION 776
1098  002212  002771                          BLT     2$
1099  002214  104403                          INSTR                            ;OUTPUT MESSAGE & GET INPUT STRING
1100  002216  016644                          MREGAD                           ;MESSAGE
1101  002220  104405                          PARAM                            ;CONVERT STRING
1102  002222  160000                          160000                           ;LOW LIMIT
1103  002224  167776                          167776                           ;HIGH LIMIT
1104  002226  020412                          DUBASE                           ;STORE AT THIS LOCATION
1105  002230     001                  .BYTE   1                                ;MASK
1106  002231     001                  .BYTE   1                                ;HOW MANY TIMES + 2
1107  002232  016767  016154  176746          MOV     DUBASE,KEEPADD   ;SAVE
```

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1108  002240  004767  016014                    JSR     PC,DUADDR
1109  002244  016767  176736  176732            MOV     KEEPADD,BASEADD ;RESTORE FOR ROTATION
1110  002252  104403                            INSTR                   ;OUTPUT MESSAGE & GET INPUT STRING
1111  002254  016622                            MVECTO                  ;MESSAGE
1112  002256  104405                            PARAM                   ;CONVERT STRING
1113  002260  000300                            300                     ;LOW LIMIT
1114  002262  000776                            776                     ;HIGH LIMIT
1115  002264  020734                            DURIV                   ;STORE AT THIS LOCATION
1116  002266     001                  .BYTE      1                       ;MASK
1117  002267     004                  .BYTE      4                       ;HOW MANY TIMES + 2
1118  002270  016767  016440  176716            MOV     DURIV,KEEPIV    ;SAVE
1119  002276  016767  016432  176706            MOV     DURIV,BASEIV    ;SET UP FOR ROTATION
1120  002304  104403                            INSTR                   ;OUTPUT MESSAGE & GET INPUT STRING
1121  002306  016725                            MMULT                   ;MESSAGE
1122  002310  104412                            SETFLG                  ;SET FLAG BASED UPON INPUT STRING
1123  002312  001202                            MULTD                   ;THIS FLAG
1124  002314  105767  176662                    TSTB    MULTD   ;ARE THERE MULTIPLE DEVICES
1125                                                            ;ON THE SYSTEM ?
1126  002320  100406                            BMI     BBB     ;YES,ASK NEXT QUESTION
1127  002322  005067  176670                    CLR     ACTREG
1128  002326  005067  176666                    CLR     ROTADD
1129  002332  000167  000140                    JMP     OUTMUL  ;JUMP AROUND NEXT QUESTION
1130  002336                        BBB:
1131  002336  104403                            INSTR                   ;OUTPUT MESSAGE & GET INPUT STRING
1132  002340  017004                            MLASTD                  ;MESSAGE
1133  002342  104405                            PARAM                   ;CONVERT STRING
1134  002344  160000                            160000                  ;LOW LIMIT
1135  002346  167776                            167776                  ;HIGH LIMIT
1136  002350  001210                            LASTADD                 ;STORE AT THIS LOCATION
1137  002352     001                  .BYTE      1                       ;MASK
1138  002353     001                  .BYTE      1                       ;HOW MANY TIMES + 2
1139                                ;THE FOLLOWING ROUTINE SETS UP ACTREG FOR THE FIRST TIME
1140  002354  012767  000001  176636  1$:     MOV     #1,ROTADD       ;SET UP POINTER
1141  002362  005067  176630                  CLR     ACTREG  ;CLR ACTIVE REGISTER
1142  002366  056767  176626  176622  2$:     BIS     ROTADD,ACTREG   ;MAKE THIS DEVICE ACTIVE
1143  002374  000241                          CLC
1144  002376  006167  176616                  ROL     ROTADD  ;SET UP POINTER
1145  002402  103421                          BCS     3$      ;ARE YOU OUT OF RANGE ?
1146  002404  062767  000010  176572          ADD     #10,BASEADD     ;SET UP BASE ADDRESS
1147  002412  026767  176572  176564          CMP     LASTADD,BASEADD ;IS THIS THE LAST DEVICE ?
1148  002420  101362                          BHI     2$      ;NO DO IT AGAIN
1149  002422  056767  176572  176566          BIS     ROTADD,ACTREG   ;THIS ASSUMES THAT THERE ARE AT
1150                                                          ;LEAST TWO DEVICES WHEN YOU ANSWER YES TO
1151                                                          ;MULTIPLE DEVICE QUESTION
1152  002430  012767  000001  176562  4$:     MOV     #1,ROTADD       ;SET UP FOR LATER USE IN END OF PASS ROUTINE
1153  002436  016767  176544  176540          MOV     KEEPADD,BASEADD ;DITTO
1154  002444  000414                          BR      OUTMUL  ;CONTINUE QUESTIONS
1155  002446  016767  176534  176530  3$:     MOV     KEEPADD,BASEADD ;RESTORE
1156  002454  104403                          INSTR                   ;OUTPUT MESSAGE & GET INPUT STRING
1157  002456  017167                          MRANGE                  ;MESSAGE
1158  002460  104405                          PARAM                   ;CONVERT STRING
1159  002462  160000                          160000                  ;LOW LIMIT
1160  002464  167776                          167776                  ;HIGH LIMIT
1161  002466  001210                          LASTADD                 ;STORE AT THIS LOCATION
1162  002470     001                  .BYTE      1                       ;MASK
1163  002471     001                  .BYTE      1                       ;HOW MANY TIMES + 2
```

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1164  002472  000167  177656          JMP     1$      ;DO IT AGAIN
1165  002476                  OUTMUL:
1166  002476  104403                  INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
1167  002500  017453                  MLEVEL                          ;MESSAGE
1168  002502  104405                  PARAM                           ;CONVERT STRING
1169  002504  000004                  4                               ;LOW LIMIT
1170  002506  000007                  7                               ;HIGH LIMIT
1171  002510  020254                  DUPRT                           ;STORE AT THIS LOCATION
1172  002512     000          .BYTE   0                               ;MASK
1173  002513     001          .BYTE   1                               ;HOW MANY TIMES + 2
1174  002514  004767  015464          JSR     PC,DULEV
1175                                  ;COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
1176                                  ;BUFFER TO THE CHARACTERS '1' AND '2'.
1177                                  ;IF THE CHARACTER IS '1' CLEAR THE FLAG
1178                                  ;IF THE CHARACTER IS '2' SET THE FLAG
1179  002520                  AAA:
1180  002520  104403                  INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
1181  002522  017500                  MSYNC                           ;MESSAGE
1182  002524  122767  000061  015312 3$:     CMPB    #'1,INBUF       ;IS IT '1' ?
1183  002532  001003                  BNE     1$
1184  002534  105067  176436          CLRB    SYNCNO                  ;000
1185  002540  000412                  BR      4$
1186  002542  122767  000062  015274 1$:     CMPB    #'2,INBUF       ;IS IT '2' ?
1187  002550  001004                  BNE     2$
1188  002552  112767  177777  176416          MOVB    #-1,SYNCNO              ;377
1189  002560  000402                  BR      4$
1190  002562  104404          2$:     INSTER                          ;RETRY
1191  002564  000757                  BR      3$
1192  002566  000240          4$:     NOP
1193  002570  104403                  INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
1194  002572  017546                  MWIRE6                          ;MESSAGE
1195  002574  104412                  SETFLG                          ;SET FLAG BASED UPON INPUT STRING
1196  002576  001177                  SEXMIT                          ;THIS FLAG
1197  002600  104403                  INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
1198  002602  017614                  MWIRE5                          ;MESSAGE
1199  002604  104412                  SETFLG                          ;SET FLAG BASED UPON INPUT STRING
1200  002606  001200                  SEREC                           ;THIS FLAG
1201  002610  104403                  INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
1202  002612  017661                  MWIRE4                          ;MESSAGE
1203  002614  104412                  SETFLG                          ;SET FLAG BASED UPON INPUT STRING
1204  002616  001201                  OPTCLR                          ;THIS FLAG
1205  002620  104403                  INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
1206  002622  017735                  MEXTJ                           ;MESSAGE
1207  002624  104412                  SETFLG                          ;SET FLAG BASED UPON INPUT STRING
1208  002626  001203                  JMRBY                           ;THIS FLAG
1209
1210
1211                                  ;TEST START AND RESTART
1212
1213  002630  012767  000340  175140 .BEGIN: MOV     #340,PS                 ;LOCK OUT INTERRUPTS
1214                                  ; ******   LOAD STATUS MAP ******
1215                                  ;THE VALUES NOW BEING LOADED INTO THE STATUS MAP WILL BE
1216                                  ; USED IN THIS PROGRAM AND   WILL BE  PASSED  TO ANY
1217                                  ;OTHER DU11 PROGRAMS LOADED IMMEDIATELY FOLLOWING THIS PROG.
1218  002636  032777  000200  176234  BIT #SW07          ,@SWR   ; SW07 SET , IF YES BRANCH
1219  002644  001132                  BNE HEREU
```

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1220  002646  116767  176324  176424          MOVB SYNCNO     ,NOSYNC         ;SYNC CHARS
1221  002654  116767  176317  176417          MOVB SEXMIT     ,MITSEX         ;XMIT JUMPER
1222  002662  116767  176312  176412          MOVB SEREC      ,RESEC          ;SEC REC JUMPER
1223  002670  116767  176305  176405          MOVB OPTCLR     ,CLROPT         ;OPTIONAL JUMPER
1224  002676  116767  176300  176400          MOVB MULTD      ,DMULT          ; MULTIPLE DEVICES
1225  002704  116767  176273  176373          MOVB JMRBY      ,BYJMR          ;EXTERNAL MODEM
1226  002712  016767  176266  176366          MOV  BASEADD    ,ADDBASE        ;PROG CONTROLLED 1ST ADDR
1227  002720  016767  176262  176362          MOV  KEEPADD    ,ADDKEEP        ;SAVED 1ST DEVICE ADDR
1228  002726  016767  176256  176356          MOV  LASTADD    ,ADDLAST        ;LAST DEVICE RXCSR ADDR
1229  002734  016767  176254  176354          MOV  KEEPIV     ,IVKEEP         ;SAVED INTR VECTOR
1230  002742  016767  176244  176344          MOV  BASEIV     ,IVBASE         ; RELOAD BASE INTR VECTOR
1231  002750  016767  176242  176342          MOV  ACTREG     ,REGACT         ;ACTIVE REGISTER
1232  002756  016767  176236  176336          MOV  ROTADD     ,ADDROT         ;ROTATING POINTER
1233  002764  013737  020254  001324          MOV  @#DUPRT    ,@#PRTDU                ;DU11 PRIORITY
1234  002772  016767  015736  176326          MOV  DURIV      ,RIVDU          ;REC INTR VECTOR
1235  003000  016767  015732  176326          MOV  DURIS      ,RISDU          ; REC INTR STATUS
1236  003006  016767  015726  176314          MOV  DUTIV      ,TIVDU          ; XMIT INTR     VECTOR
1237  003014  016767  015722  176310          MOV  DUTIS      ,TISDU          ; XMIT  INTR  STATUS
1238  003022  016767  015230  176306          MOV  LESS1      ,L1ESS          ; PRIORITY TO ALLOW INTR
1239  003030  016767  015356  176326          MOV  DUBASE     ,BASEDU         ;RXCSR BASE ADDRESS
1240  003036  016767  015646  176274          MOV  RXCSR,     CSRRX
1241  003044  016767  015642  176270          MOV  HRXCSR,    CSRHRX
1242  003052  016767  015636  176264          MOV  RXDBUF,    BUFRXD
1243  003060  016767  015632  176260          MOV  HRXDBUF,   BUFHRXD
1244  003066  016767  015626  176254          MOV  PARCSR,    CSRPAR
1245  003074  016767  015622  176250          MOV  HPARCSR,   CSRHPAR
1246  003102  016767  015616  176244          MOV  TXCSR,     CSRTX
1247  003110  016767  015612  176240          MOV  HTXCSR,    CSRHTX
1248  003116  016767  015606  176234          MOV  TXDBUF,    BUFTXD
1249  003124  016767  015602  176230          MOV  HTXDBUF,   BUFHTXD
1250                                  ;*****************************************
1251                                  ; THE FOLLOWING CODE WILL PRINT
1252                                  ; THE CONVERSATIONALLY SET JUMPER
1253                                  ; SETTINGS FROM THE STATUS MAP
1254                                  ; ON THE FIRST PASS OF
1255                                  ; THIS DIAGNOSTIC OR
1256                                  ; JUST AFTER THE QUESTIONING
1257                                  ; AND ANSWERING .
1258                                  ;*****************************************
1259
1260  003132  005737  001222          HEREU:          TST @#FLAG              ; TEST IF 1ST PASS
1261  003136  001402                                  BEQ     SETFG           ; IF FIRST PASS SET FLAG/PRINT
1262  003140  000167  000116                          JMP THRU                ; AROUND IF PASS > 1
1263  003144  104402  020012          SETFG:          TYPE ,  MSTATUS         ; PRINT 'STATUS MAP'
1264  003150  062737  000001  001222                  ADD #1, @#FLAG          ; SET FLAG ON 1ST PASS
1265  003156  010067  176042                          MOV R0, HOLD0           ; SAVE R0
1266  003162  010167  176040                          MOV R1, HOLD1           ; SAVE R1
1267  003166  012767  000003  176034                  MOV #3, COUNT1          ;COUNTER FOR WORDS PRINTED
1268  003174  012700  000002'                         MOV #BUFF1, R0
1269  003200  012701  001300                          MOV #STATUS, R1         ; (BUFF1)=STATUS  ETC.
1270  003204  010120                  FILBUF: MOV R1, (R0)+           ; LOAD BUFF AS ABOVE
1271  003206  062701  000002                          ADD #2 ,R1              ; PREPARE STATUS ADDRESS
1272  003212  020127  001306                          CMP R1, #STATUS+6       ; CHECK IF 3 WORDS LOADED
1273  003216  001372                                  BNE FILBUF              ; BACK  TO LOAD NEXT ADDRESS
1274  003220  012700  000002'                         MOV #BUFF1 ,R0          ; LOAD FOR PRINT OUT
1275  003224  010067  176006          UP:     MOV R0 , TABLE+4        ;LOAD ADDRESS TO PRINT
```

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1276  003230  012067  176006                        MOV (R0)+, TABLE+10             ; LOAD CONTENTS
1277  003234  104410  001232                        CONVRT , TABLE          ; PRINT ADDRESS/CONTENTS PAIR
1278  003240  104402  017254                        TYPE, MCRLF             ; CR AND LF
1279  003244  005367  175760                        DEC COUNT1              ;COUNT WORDS PRINTED
1280  003250  001365                                 BNE UP                  ; GO PRINT NEXT ADDRESS/CONTENTS
1281  003252  016700  175746                        MOV HOLD0,R0
1282  003256  016701  175744                        MOV HOLD1, R1
1283                                          ;**********************************
1284
1285  003262  012706  001100          THRU:  MOV     #STACK,SP               ;SET UP STACK
1286  003266  005737  000042                 TST     @#42                    ;IS PROGRAM UNDER MONITOR CONTROL
1287  003272  001056                         BNE     3$
1288  003274  105767  175702                TSTB    MULTD   ;DON'T ALLOW LOCK ON TEST IF RUNNING
1289                                                  ;MULTIPLE DEVICES
1290  003300  001407                         BEQ     5$                      ;IF NO,TEST FOR LOCK ON TEST
1291  003302  016767  011404  011304        MOV     BRW,TTST                ;RESTORE NORMAL SCOPE LOOP
1292  003310  016767  011400  011300        MOV     BRX,TTST+2              ;DITTO
1293  003316  000444                         BR      3$                      ;JUMP AROUND IF YES
1294  003320  032777  000004  175552  5$:    BIT     #BIT2,@SWR              ;CHECK FOR LOCK ON TEST
1295  003326  001416                         BEQ     1$
1296  003330  104403                         INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
1297  003332  017410                         MLOCK                           ;MESSAGE
1298  003334  104412                         SETFLG                          ;SET FLAG BASED UPON INPUT STRING
1299  003336  001247                         LOKFLG                          ;THIS FLAG
1300  003340  105767  175703                TSTB    LOKFLG                  ;IS LOCK ON TEST OPTION SELECTED
1301  003344  001407                         BEQ     1$
1302  003346  012767  000240  011240        MOV     #NOP,TTST
1303  003354  012767  000240  011234        MOV     #NOP,TTST+2             ;SET UP TO LOCK
1304  003362  000406                         BR      2$
1305  003364  016767  011322  011222  1$:    MOV     BRW,TTST
1306  003372  016767  011316  011216        MOV     BRX,TTST+2              ;LOCK NOT SELECTED, SET UP FOR NORMAL SCOPE LOOP
1307  003400  032777  000002  175472  2$:    BIT     #SW01,@SWR              ;IF SW01=1, GET STARTING PC
1308  003406  001410                         BEQ     3$
1309  003410  104403                         INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
1310  003412  017375                         MTSTPC                          ;MESSAGE
1311  003414  104405                         PARAM                           ;CONVERT STRING
1312  003416  003446                         TST1                            ;LOW LIMIT
1313  003420  013760                         TLAST                           ;HIGH LIMIT
1314  003422  001114                         RTRN                            ;STORE AT THIS LOCATION
1315  003424     001                  .BYTE   1                               ;MASK
1316  003425     001                  .BYTE   1                               ;HOW MANY TIMES + 2
1317  003426  000403                         BR      4$
1318  003430  012767  003446  175456  3$:    MOV     #TST1,RTRN              ;START AT TEST 1
1319  003436  104402  017371          4$:    TYPE    ,MR                     ;TYPE R
1320  003442  000177  175446                JMP     @RTRN                   ;START TESTING
1321
1322
1323                                          ;;THIS TEST VERIFYS WORD LENGTH SELECT OF
1324                                          ;;THE TRANSMITTER SECTION,IT USES THE DNA FLAG
1325                                          ;;AND BIT WINDOW TO DETERMINE THAT IT WAS SELECTED
1326                                          ;;CORRECTLY
1327                                          ;;NOTE: DNA COMES UP ON THE FIRST RISING BIT
1328                                          ;;EDGE OF THE NEXT CHARACTER IF NO NEW CHARACTER IS
1329                                          ;;LOADED INTO TXDBUF
1330                                          ;;MODE:SYNINT
1331                                          ;;PARITY:NO PARITY
                                             ;;LENGTH:FIVE
```

```
1332                                                    ;;
1333  003446  012767  000001  175452  TST1:   MOV     #1,TSTNO        ;SAVE THIS
1334  003454  012767  003700  175434          MOV     #TST2,NEXT              ;GO TO THIS TEST WHEN THRU
1335  003462  052777  000400  015234          BIS     #MRESET,@TXCSR  ;MASTER RESET
1336  003470  012777  030000  015222          MOV     #SYNINT,@PARCSR ;SET THE MODE
1337  003476  052777  000400  015220          BIS     #MRESET,@TXCSR  ;MASTER RESET
1338
1339                                  ;SET MAINTENANCE MODE & SEND
1340                                          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
1341  003504  012777  004020  015212          MOV     #MINT!SEND,@TXCSR
1342
1343                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
1344  003512  012777  030026  015200          MOV     #SYNINT!FIVE!NOPAR!26,@PARCSR
1345  003520  016703  015200                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
1346  003524  112777  000021  015176          MOVB    #21,@TXDBUF     ;LOAD CHAR
1347  003532  012767  000021  175404          MOV     #21,TEMP1       ;SHIFTED CHAR
1348  003540  012767  000005  175372          MOV     #5,SHIFT        ;# OF SHIFTS
1349                                  ;POKE CLK TO GET INTO SYNCRONIZATION
1350  003546  052777  020000  015150          BIS     #CLK,@TXCSR     ;POKE CLK UP
1351  003554  042777  020000  015142          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1352  003562  005000                  1$:     CLR     R0
1353  003564  006067  175354                  ROR     TEMP1   ;FORCE CARRY
1354  003570  103002                          BCC     2$
1355  003572  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BIT WINDOW
1356  003576                          2$:
1357  003576  052777  020000  015120          BIS     #CLK,@TXCSR     ;POKE CLK UP
1358  003604  042777  020000  015112          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1359  003612  017701  015106                  MOV     @TXCSR,R1       ;ACTUAL
1360  003616  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
1361  003622  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
1362  003624  001401                          BEQ     3$
1363  003626  104003                          HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
1364                                                                  ;BIT,....ALSO CHECK DNA
1365  003630                          3$:
1366  003630  005367  175304                  DEC     SHIFT   ;# OF SHIFTS
1367  003634  001352                          BNE     1$      ;DO IT AGAIN ?
1368                                  ;NOW POKE CLK TO SEE DNA
1369  003636  052777  020000  015060          BIS     #CLK,@TXCSR     ;POKE CLK
1370  003644  012700  100000                  MOV     #100000,R0      ;EXPECTED
1371  003650  017701  015050                  MOV     @TXCSR,R1       ;ACTUAL
1372  003654  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
1373  003660  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS ACTUAL
1374  003662  001401                          BEQ     4$
1375  003664  104003                          HLT     3               ;DNA SHOULD BE SET
1376                                                                  ;IF DNA DID NOT SET ,CHECK WORD LENGTH
1377                                                                  ;SELECT LOGIC OF THE TRANSMITTER
1378  003666                          4$:
1379  003666  005777  015032                  TST     @TXCSR  ;DNA ?
1380  003672  100001                          BPL     5$
1381  003674  104000                          HLT                     ;DNA SHOULD NOT BE SET
1382                                                                  ;IT SHOULD HAVE BEEN CLEARED FROM
1383                                                                  ;PREVIOUS READ
1384  003676                          5$:
1385  003676  104400                          SCOPE
1386                                          ;;THIS TEST VERIFYS WORD LENGTH SELECT OF
1387                                          ;;THE TRANSMITTER SECTION,IT USES THE DNA FLAG
```

```
                                        ;;AND BIT WINDOW TO DETERMINE THAT IT WAS SELECTED
                                        ;;CORRECTLY
                                        ;;NOTE: DNA COMES UP ON THE FIRST RISING BIT
                                        ;;EDGE OF THE NEXT CHARACTER IF NO NEW CHARACTER IS
                                        ;;LOADED INTO TXDBUF
                                        ;;MODE:SYNINT
                                        ;;PARITY:NO PARITY
                                        ;;LENGTH:SIX
                                        ;;
003700  012767  000002  175220  TST2:   MOV     #2,TSTNO        ;SAVE THIS
003706  012767  004132  175202          MOV     #TST3,NEXT              ;GO TO THIS TEST WHEN THRU
003714  052777  000400  015002          BIS     #MRESET,@TXCSR  ;MASTER RESET
003722  012777  030000  014770          MOV     #SYNINT,@PARCSR ;SET THE MODE
003730  052777  000400  014766          BIS     #MRESET,@TXCSR  ;MASTER RESET

                                    ;SET MAINTENANCE MODE & SEND
                                        ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
003736  012777  004020  014760          MOV     #MINT!SEND,@TXCSR

                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
003744  012777  032026  014746          MOV     #SYNINT!SIX!NOPAR!26,@PARCSR
003752  016703  014746                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
003756  112777  000021  014744          MOVB    #21,@TXDBUF     ;LOAD CHAR
003764  012767  000021  175152          MOV     #21,TEMP1       ;SHIFTED CHAR
003772  012767  000006  175140          MOV     #6,SHIFT        ;# OF SHIFTS

                                    ;POKE CLK TO GET INTO SYNCRONIZATION
004000  052777  020000  014716          BIS     #CLK,@TXCSR     ;POKE CLK UP
004006  042777  020000  014710          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
004014  005000                  1$:     CLR     R0
004016  006067  175122                  ROR     TEMP1   ;FORCE CARRY
004022  103002                          BCC     2$
004024  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BIT WINDOW
004030                          2$:
004030  052777  020000  014666          BIS     #CLK,@TXCSR     ;POKE CLK UP
004036  042777  020000  014660          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
004044  017701  014654                  MOV     @TXCSR,R1       ;ACTUAL
004050  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
004054  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
004056  001401                          BEQ     3$
004060  104003                          HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
                                                        ;BIT,....ALSO CHECK DNA
004062                          3$:
004062  005367  175052                  DEC     SHIFT   ;# OF SHIFTS
004066  001352                          BNE     1$      ;DO IT AGAIN ?
                                    ;NOW POKE CLK TO SEE DNA
004070  052777  020000  014626          BIS     #CLK,@TXCSR     ;POKE CLK
004076  012700  100000                  MOV     #100000,R0      ;EXPECTED
004102  017701  014616                  MOV     @TXCSR,R1       ;ACTUAL
004106  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
004112  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS ACTUAL
004114  001401                          BEQ     4$
004116  104003                          HLT     3       ;DNA SHOULD BE SET
                                                        ;IF DNA DID NOT SET ,CHECK WORD LENGTH
                                                        ;SELECT LOGIC OF THE TRANSMITTER
004120                          4$:
004120  005777  014600                  TST     @TXCSR  ;DNA ?
```

```
1444  004124  100001                          BPL     5$
1445  004126  104000                          HLT                     ;DNA SHOULD NOT BE SET
1446                                                                  ;IT SHOULD HAVE BEEN CLEARED FROM
1447                                                                  ;PREVIOUS READ
1448  004130                            5$:
1449  004130  104400                          SCOPE
1450                                          ;;THIS TEST VERIFYS WORD LENGTH SELECT OF
1451                                          ;;THE TRANSMITTER SECTION,IT USES THE DNA FLAG
1452                                          ;;AND BIT WINDOW TO DETERMINE THAT IT WAS SELECTED
1453                                          ;;CORRECTLY
1454                                          ;;NOTE: DNA COMES UP ON THE FIRST RISING BIT
1455                                          ;;EDGE OF THE NEXT CHARACTER IF NO NEW CHARACTER IS
1456                                          ;;LOADED INTO TXDBUF
1457                                          ;;MODE:SYNINT
1458                                          ;;PARITY:NO PARITY
1459                                          ;;LENGTH:SEVEN
1460                                          ;;
1461  004132  012767  000003  174766  TST3:   MOV     #3,TSTNO        ;SAVE THIS
1462  004140  012767  004364  174750          MOV     #TST4,NEXT              ;GO TO THIS TEST WHEN THRU
1463  004146  052777  000400  014550          BIS     #MRESET,@TXCSR  ;MASTER RESET
1464  004154  012777  030000  014536          MOV     #SYNINT,@PARCSR ;SET THE MODE
1465  004162  052777  000400  014534          BIS     #MRESET,@TXCSR  ;MASTER RESET
1466
1467                                    ;SET MAINTENANCE MODE & SEND
1468                                          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
1469  004170  012777  004020  014526          MOV     #MINT!SEND,@TXCSR
1470
1471                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
1472  004176  012777  034026  014514          MOV     #SYNINT!SEVEN!NOPAR!26,@PARCSR
1473  004204  016703  014514                 MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
1474  004210  112777  000021  014512          MOVB    #21,@TXDBUF     ;LOAD CHAR
1475  004216  012767  000021  174720          MOV     #21,TEMP1       ;SHIFTED CHAR
1476  004224  012767  000007  174706          MOV     #7,SHIFT        ;# OF SHIFTS
1477                                    ;POKE CLK TO GET INTO SYNCRONIZATION
1478  004232  052777  020000  014464          BIS     #CLK,@TXCSR     ;POKE CLK UP
1479  004240  042777  020000  014456          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1480  004246  005000                    1$:   CLR     R0
1481  004250  006067  174670                 ROR     TEMP1   ;FORCE CARRY
1482  004254  103002                          BCC     2$
1483  004256  052700  002000                 BIS     #BITW,R0        ;EQUIV OF BIT WINDOW
1484  004262                            2$:
1485  004262  052777  020000  014434          BIS     #CLK,@TXCSR     ;POKE CLK UP
1486  004270  042777  020000  014426          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1487  004276  017701  014422                 MOV     @TXCSR,R1       ;ACTUAL
1488  004302  042701  075777                 BIC     #075777,R1      ;SAVE BITW & DNA
1489  004306  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
1490  004310  001401                          BEQ     3$
1491  004312  104003                          HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
1492                                                                  ;BIT.....ALSO CHECK DNA
1493  004314                            3$:
1494  004314  005367  174620                 DEC     SHIFT   ;# OF SHIFTS
1495  004320  001352                          BNE     1$      ;DO IT AGAIN ?
1496                                    ;NOW POKE CLK TO SEE DNA
1497  004322  052777  020000  014374          BIS     #CLK,@TXCSR     ;POKE CLK
1498  004330  012700  100000                 MOV     #100000,R0      ;EXPECTED
1499  004334  017701  014364                 MOV     @TXCSR,R1       ;ACTUAL
```

```
1500  004340  042701  077777                    BIC     #77777,R1       ;SAVE DNA ONLY
1501  004344  020001                            CMP     R0,R1   ;COMPARE EXPECTED VS ACTUAL
1502  004346  001401                            BEQ     4$
1503  004350  104003                            HLT     3       ;DNA SHOULD BE SET
1504                                                              ;IF DNA DID NOT SET ,CHECK WORD LENGTH
1505                                                              ;SELECT LOGIC OF THE TRANSMITTER
1506  004352                            4$:
1507  004352  005777  014346                    TST     @TXCSR  ;DNA ?
1508  004356  100001                            BPL     5$
1509  004360  104000                            HLT             ;DNA SHOULD NOT BE SET
1510                                                              ;IT SHOULD HAVE BEEN CLEARED FROM
1511                                                              ;PREVIOUS READ
1512  004362                            5$:
1513  004362  104400                            SCOPE
1514                                              ;;THIS TEST VERIFYS WORD LENGTH SELECT OF
1515                                              ;;THE TRANSMITTER SECTION,IT USES THE DNA FLAG
1516                                              ;;AND BIT WINDOW TO DETERMINE THAT IT WAS SELECTED
1517                                              ;;CORRECTLY
1518                                              ;;NOTE: DNA COMES UP ON THE FIRST RISING BIT
1519                                              ;;EDGE OF THE NEXT CHARACTER IF NO NEW CHARACTER IS
1520                                              ;;LOADED INTO TXDBUF
1521                                              ;;MODE:SYNINT
1522                                              ;;PARITY:NO PARITY
1523                                              ;;LENGTH:EIGHT
1524                                              ;;
1525  004364  012767  000004  174534    TST4:   MOV     #4,TSTNO        ;SAVE THIS
1526  004372  012767  004616  174516            MOV     #TST5,NEXT              ;GO TO THIS TEST WHEN THRU
1527  004400  052777  000400  014316            BIS     #MRESET,@TXCSR  ;MASTER RESET
1528  004406  012777  030000  014304            MOV     #SYNINT,@PARCSR ;SET THE MODE
1529  004414  052777  000400  014302            BIS     #MRESET,@TXCSR  ;MASTER RESET
1530
1531                                    ;SET MAINTENANCE MODE & SEND
1532                                            ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
1533  004422  012777  004020  014274            MOV     #MINT!SEND,@TXCSR
1534
1535                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
1536  004430  012777  036026  014262            MOV     #SYNINT!EIGHT!NOPAR!26,@PARCSR
1537  004436  016703  014262                    MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
1538  004442  112777  000021  014260            MOVB    #21,@TXDBUF     ;LOAD CHAR
1539  004450  012767  000021  174466            MOV     #21,TEMP1       ;SHIFTED CHAR
1540  004456  012767  000010  174454            MOV     #8.,SHIFT       ;# OF SHIFTS
1541                                    ;POKE CLK TO GET INTO SYNCRONIZATION
1542  004464  052777  020000  014232            BIS     #CLK,@TXCSR     ;POKE CLK UP
1543  004472  042777  020000  014224            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1544  004500  005000                    1$:     CLR     R0
1545  004502  006067  174436                    ROR     TEMP1   ;FORCE CARRY
1546  004506  103002                            BCC     2$
1547  004510  052700  002000                    BIS     #BITW,R0        ;EQUIV OF BIT WINDOW
1548  004514                            2$:
1549  004514  052777  020000  014202            BIS     #CLK,@TXCSR     ;POKE CLK UP
1550  004522  042777  020000  014174            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1551  004530  017701  014170                    MOV     @TXCSR,R1       ;ACTUAL
1552  004534  042701  075777                    BIC     #075777,R1      ;SAVE BITW & DNA
1553  004540  020001                            CMP     R0,R1   ;COMPARE EXP VS ACT
1554  004542  001401                            BEQ     3$
1555  004544  104003                            HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
```

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1556
1557  004546                                3$:                     ;BIT,....ALSO CHECK DNA
1558  004546  005367  174366                      DEC     SHIFT   ;# OF SHIFTS
1559  004552  001352                              BNE     1$      ;DO IT AGAIN ?
1560                                        ;NOW POKE CLK TO SEE DNA
1561  004554  052777  020000  014142              BIS     #CLK,@TXCSR     ;POKE CLK
1562  004562  012700  100000                      MOV     #100000,R0      ;EXPECTED
1563  004566  017701  014132                      MOV     @TXCSR,R1       ;ACTUAL
1564  004572  042701  077777                      BIC     #77777,R1       ;SAVE DNA ONLY
1565  004576  020001                              CMP     R0,R1   ;COMPARE EXPECTED VS ACTUAL
1566  004600  001401                              BEQ     4$
1567  004602  104003                              HLT     3       ;DNA SHOULD BE SET
1568                                                              ;IF DNA DID NOT SET ,CHECK WORD LENGTH
1569                                                              ;SELECT LOGIC OF THE TRANSMITTER
1570  004604                                4$:
1571  004604  005777  014114                      TST     @TXCSR  ;DNA ?
1572  004610  100001                              BPL     5$
1573  004612  104000                              HLT             ;DNA SHOULD NOT BE SET
1574                                                              ;IT SHOULD HAVE BEEN CLEARED FROM
1575                                                              ;PREVIOUS READ
1576  004614                                5$:
1577  004614  104400                              SCOPE
1578                                                ;;THIS TEST VERIFYS WORD LENGTH SELECT OF
1579                                                ;;THE TRANSMITTER SECTION,IT USES THE DNA FLAG
1580                                                ;;AND BIT WINDOW TO DETERMINE THAT IT WAS SELECTED
1581                                                ;;CORRECTLY
1582                                                ;;NOTE: DNA COMES UP ON THE FIRST RISING BIT
1583                                                ;;EDGE OF THE NEXT CHARACTER IF NO NEW CHARACTER IS
1584                                                ;;LOADED INTO TXDBUF
1585                                                ;;MODE:SYNEXT
1586                                                ;;PARITY:NO PARITY
1587                                                ;;LENGTH:FIVE
1588                                                ;;
1589  004616  012767  000005  174302  TST5:       MOV     #5,TSTNO        ;SAVE THIS
1590  004624  012767  005050  174264              MOV     #TST6,NEXT              ;GO TO THIS TEST WHEN THRU
1591  004632  052777  000400  014064              BIS     #MRESET,@TXCSR  ;MASTER RESET
1592  004640  012777  020000  014052              MOV     #SYNEXT,@PARCSR ;SET THE MODE
1593  004646  052777  000400  014050              BIS     #MRESET,@TXCSR  ;MASTER RESET
1594
1595                                        ;SET MAINTENANCE MODE & SEND
1596                                              ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
1597  004654  012777  004020  014042              MOV     #MINT!SEND,@TXCSR
1598
1599                                        ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
1600  004662  012777  020026  014030              MOV     #SYNEXT!FIVE!NOPAR!26,@PARCSR
1601  004670  016703  014030                      MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
1602  004674  112777  000021  014026              MOVB    #21,@TXDBUF     ;LOAD CHAR
1603  004702  012767  000021  174234              MOV     #21,TEMP1       ;SHIFTED CHAR
1604  004710  012767  000005  174222              MOV     #5,SHIFT        ;# OF SHIFTS
1605                                        ;POKE CLK TO GET INTO SYNCRONIZATION
1606  004716  052777  020000  014000              BIS     #CLK,@TXCSR     ;POKE CLK UP
1607  004724  042777  020000  013772              BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1608  004732  005000                        1$:   CLR     R0
1609  004734  006067  174204                      ROR     TEMP1   ;FORCE CARRY
1610  004740  103002                              BCC     2$
1611  004742  052700  002000                      BIS     #BITW,R0        ;EQUIV OF BIT WINDOW
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1612  004746                                  2$:
1613  004746  052777  020000  013750                BIS     #CLK,@TXCSR     ;POKE CLK UP
1614  004754  042777  020000  013742                BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1615  004762  017701  013736                        MOV     @TXCSR,R1       ;ACTUAL
1616  004766  042701  075777                        BIC     #075777,R1      ;SAVE BITW & DNA
1617  004772  020001                                CMP     R0,R1   ;COMPARE EXP VS ACT
1618  004774  001401                                BEQ     3$
1619  004776  104003                                HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
1620                                                                ;BIT.....ALSO CHECK DNA
1621  005000                                  3$:
1622  005000  005367  174134                        DEC     SHIFT   ;# OF SHIFTS
1623  005004  001352                                BNE     1$      ;DO IT AGAIN ?
1624                                          ;NOW POKE CLK TO SEE DNA
1625  005006  052777  020000  013710                BIS     #CLK,@TXCSR     ;POKE CLK
1626  005014  012700  100000                        MOV     #100000,R0      ;EXPECTED
1627  005020  017701  013700                        MOV     @TXCSR,R1       ;ACTUAL
1628  005024  042701  077777                        BIC     #77777,R1       ;SAVE DNA ONLY
1629  005030  020001                                CMP     R0,R1   ;COMPARE EXPECTED VS ACTUAL
1630  005032  001401                                BEQ     4$
1631  005034  104003                                HLT     3       ;DNA SHOULD BE SET
1632                                                                ;IF DNA DID NOT SET ,CHECK WORD LENGTH
1633                                                                ;SELECT LOGIC OF THE TRANSMITTER
1634  005036                                  4$:
1635  005036  005777  013662                        TST     @TXCSR  ;DNA ?
1636  005042  100001                                BPL     5$
1637  005044  104000                                HLT             ;DNA SHOULD NOT BE SET
1638                                                                ;IT SHOULD HAVE BEEN CLEARED FROM
1639                                                                ;PREVIOUS READ
1640  005046                                  5$:
1641  005046  104400                                SCOPE
1642                                                ;;THIS TEST VERIFYS WORD LENGTH SELECT OF
1643                                                ;;THE TRANSMITTER SECTION,IT USES THE DNA FLAG
1644                                                ;;AND BIT WINDOW TO DETERMINE THAT IT WAS SELECTED
1645                                                ;;CORRECTLY
1646                                                ;;NOTE: DNA COMES UP ON THE FIRST RISING BIT
1647                                                ;;EDGE OF THE NEXT CHARACTER IF NO NEW CHARACTER IS
1648                                                ;;LOADED INTO TXDBUF
1649                                                ;;MODE:SYNEXT
1650                                                ;;PARITY:NO PARITY
1651                                                ;;LENGTH:SIX
1652                                                ;;
1653  005050  012767  000006  174050  TST6:        MOV     #6,TSTNO        ;SAVE THIS
1654  005056  012767  005302  174032                MOV     #TST7,NEXT              ;GO TO THIS TEST WHEN THRU
1655  005064  052777  000400  013632                BIS     #MRESET,@TXCSR  ;MASTER RESET
1656  005072  012777  020000  013620                MOV     #SYNEXT,@PARCSR ;SET THE MODE
1657  005100  052777  000400  013616                BIS     #MRESET,@TXCSR  ;MASTER RESET
1658
1659                                          ;SET MAINTENANCE MODE & SEND
1660                                                ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
1661  005106  012777  004020  013610                MOV     #MINT!SEND,@TXCSR
1662
1663                                          ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
1664  005114  012777  022026  013576                MOV     #SYNEXT!SIX!NOPAR!26,@PARCSR
1665  005122  016703  013576                        MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
1666  005126  112777  000021  013574                MOVB    #21,@TXDBUF     ;LOAD CHAR
1667  005134  012767  000021  174002                MOV     #21,TEMP1       ;SHIFTED CHAR
```

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1668  005142  012767  000006  173770          MOV     #6,SHIFT        ;# OF SHIFTS
1669                                  ;POKE CLK TO GET INTO SYNCRONIZATION
1670  005150  052777  020000  013546          BIS     #CLK,@TXCSR     ;POKE CLK UP
1671  005156  042777  020000  013540          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1672  005164  005000                  1$:     CLR     R0
1673  005166  006067  173752                  ROR     TEMP1   ;FORCE CARRY
1674  005172  103002                          BCC     2$
1675  005174  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BIT WINDOW
1676  005200                          2$:
1677  005200  052777  020000  013516          BIS     #CLK,@TXCSR     ;POKE CLK UP
1678  005206  042777  020000  013510          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1679  005214  017701  013504                  MOV     @TXCSR,R1       ;ACTUAL
1680  005220  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
1681  005224  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
1682  005226  001401                          BEQ     3$
1683  005230  104003                          HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
1684                                                                  ;BIT,....ALSO CHECK DNA
1685  005232                          3$:
1686  005232  005367  173702                  DEC     SHIFT   ;# OF SHIFTS
1687  005236  001352                          BNE     1$      ;DO IT AGAIN ?
1688                                  ;NOW POKE CLK TO SEE DNA
1689  005240  052777  020000  013456          BIS     #CLK,@TXCSR     ;POKE CLK
1690  005246  012700  100000                  MOV     #100000,R0      ;EXPECTED
1691  005252  017701  013446                  MOV     @TXCSR,R1       ;ACTUAL
1692  005256  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
1693  005262  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS ACTUAL
1694  005264  001401                          BEQ     4$
1695  005266  104003                          HLT     3       ;DNA SHOULD BE SET
1696                                                          ;IF DNA DID NOT SET ,CHECK WORD LENGTH
1697                                                          ;SELECT LOGIC OF THE TRANSMITTER
1698  005270                          4$:
1699  005270  005777  013430                  TST     @TXCSR  ;DNA ?.
1700  005274  100001                          BPL     5$
1701  005276  104000                          HLT             ;DNA SHOULD NOT BE SET
1702                                                          ;IT SHOULD HAVE BEEN CLEARED FROM
1703                                                          ;PREVIOUS READ
1704  005300                          5$:
1705  005300  104400                  SCOPE
1706                                  ;;THIS TEST VERIFYS WORD LENGTH SELECT OF
1707                                  ;;THE TRANSMITTER SECTION,IT USES THE DNA FLAG
1708                                  ;;AND BIT WINDOW TO DETEPMINE THAT IT WAS SELECTED
1709                                  ;;CORRECTLY
1710                                  ;;NOTE: DNA COMES UP ON THE FIRST RISING BIT
1711                                  ;;EDGE OF THE NEXT CHARACTER IF NO NEW CHARACTER IS
1712                                  ;;LOADED INTO TXDBUF
1713                                  ;;MODE:SYNEXT
1714                                  ;;PARITY:NO PARITY
1715                                  ;;LENGTH:SEVEN
1716                                  ;;
1717  005302  012767  000007  173616  TST7:   MOV     #7,TSTNO        ;SAVE THIS
1718  005310  012767  005534  173600          MOV     #TST8,NEXT              ;GO TO THIS TEST WHEN THRU
1719  005316  052777  000400  013400          BIS     #MRESET,@TXCSR  ;MASTER RESET
1720  005324  012777  020000  013366          MOV     #SYNEXT,@PARCSR ;SET THE MODE
1721  005332  052777  000400  013364          BIS     #MRESET,@TXCSR  ;MASTER RESET
1722
1723                                  ;SET MAINTENANCE MODE & SEND
```

```
1724
1725  005340  012777  004020  013356          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
                                              MOV     #MINT!SEND,@TXCSR
1726
1727
                                      ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
1728  005346  012777  024026  013344          MOV     #SYNEXT!SEVEN!NOPAR!26,@PARCSR
1729  005354  016703  013344                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
1730  005360  112777  000021  013342          MOVB    #21,@TXDBUF     ;LOAD CHAR
1731  005366  012767  000021  173550          MOV     #21,TEMP1       ;SHIFTED CHAR
1732  005374  012767  000007  173536          MOV     #7,SHIFT        ;# OF SHIFTS
1733                                  ;POKE CLK TO GET INTO SYNCRONIZATION
1734  005402  052777  020000  013314          BIS     #CLK,@TXCSR     ;POKE CLK UP
1735  005410  042777  020000  013306          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1736  005416  005000                  1$:     CLR     R0
1737  005420  006067  173520                  ROR     TEMP1   ;FORCE CARRY
1738  005424  103002                          BCC     2$
1739  005426  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BIT WINDOW
1740  005432                          2$:
1741  005432  052777  020000  013264          BIS     #CLK,@TXCSR     ;POKE CLK UP
1742  005440  042777  020000  013256          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1743  005446  017701  013252                  MOV     @TXCSR,R1       ;ACTUAL
1744  005452  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
1745  005456  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
1746  005460  001401                          BEQ     3$
1747  005462  104003                          HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
1748                                                          ;BIT,....ALSO CHECK DNA
1749  005464                          3$:
1750  005464  005367  173450                  DEC     SHIFT   ;# OF SHIFTS
1751  005470  001352                          BNE     1$      ;DO IT AGAIN ?
1752                                  ;NOW POKE CLK TO SEE DNA
1753  005472  052777  020000  013224          BIS     #CLK,@TXCSR     ;POKE CLK
1754  005500  012700  100000                  MOV     #100000,R0      ;EXPECTED
1755  005504  017701  013214                  MOV     @TXCSR,R1       ;ACTUAL
1756  005510  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
1757  005514  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS ACTUAL
1758  005516  001401                          BEQ     4$
1759  005520  104003                          HLT     3       ;DNA SHOULD BE SET
1760                                                          ;IF DNA DID NOT SET ,CHECK WORD LENGTH
1761                                                          ;SELECT LOGIC OF THE TRANSMITTER
1762  005522                          4$:
1763  005522  005777  013176                  TST     @TXCSR  ;DNA ?
1764  005526  100001                          BPL     5$
1765  005530  104000                          HLT             ;DNA SHOULD NOT BE SET
1766                                                          ;IT SHOULD HAVE BEEN CLEARED FROM
1767                                                          ;PREVIOUS READ
1768  005532                          5$:
1769  005532  104400                          SCOPE
1770                                          ;;THIS TEST VERIFYS WORD LENGTH SELECT OF
1771                                          ;;THE TRANSMITTER SECTION,IT USES THE DNA FLAG
1772                                          ;;AND BIT WINDOW TO DETERMINE THAT IT WAS SELECTED
1773                                          ;;CORRECTLY
1774                                          ;;NOTE: DNA COMES UP ON THE FIRST RISING BIT
1775                                          ;;EDGE OF THE NEXT CHARACTER IF NO NEW CHARACTER IS
1776                                          ;;LOADED INTO TXDBUF
1777                                          ;;MODE:SYNEXT
1778                                          ;;PARITY:NO PARITY
1779                                          ;;LENGTH:EIGHT
```

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1780                                                    ;;
1781  005534  012767  000010  173364  TST8:   MOV     #8,TSTNO        ;SAVE THIS
1782  005542  012767  005766  173346          MOV     #TST9,NEXT              ;GO TO THIS TEST WHEN THRU
1783  005550  052777  000400  013146          BIS     #MRESET,@TXCSR  ;MASTER RESET
1784  005556  012777  020000  013134          MOV     #SYNEXT,@PARCSR ;SET THE MODE
1785  005564  052777  000400  013132          BIS     #MRESET,@TXCSR  ;MASTER RESET
1786
1787                                          ;SET MAINTENANCE MODE & SEND
1788                                                  ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
1789  005572  012777  004020  013124          MOV     #MINT!SEND,@TXCSR
1790
1791                                          ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
1792  005600  012777  026026  013112          MOV     #SYNEXT!EIGHT!NOPAR!26,@PARCSR
1793  005606  016703  013112                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
1794  005612  112777  000021  013110          MOVB    #21,@TXDBUF     ;LOAD CHAR
1795  005620  012767  000021  173316          MOV     #21,TEMP1       ;SHIFTED CHAR
1796  005626  012767  000010  173304          MOV     #8.,SHIFT       ;# OF SHIFTS
1797                                          ;POKE CLK TO GET INTO SYNCRONIZATION
1798  005634  052777  020000  013062          BIS     #CLK,@TXCSR     ;POKE CLK UP
1799  005642  042777  020000  013054          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1800  005650  005000                  1$:     CLR     R0
1801  005652  006067  173266                  ROR     TEMP1   ;FORCE CARRY
1802  005656  103002                          BCC     2$
1803  005660  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BIT WINDOW
1804  005664                          2$:
1805  005664  052777  020000  013032          BIS     #CLK,@TXCSR     ;POKE CLK UP
1806  005672  042777  020000  013024          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1807  005700  017701  013020                  MOV     @TXCSR,R1       ;ACTUAL
1808  005704  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
1809  005710  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
1810  005712  001401                          BEQ     3$
1811  005714  104003                          HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
1812                                                                  ;BIT,....ALSO CHECK DNA
1813  005716                          3$:
1814  005716  005367  173216                  DEC     SHIFT   ;# OF SHIFTS
1815  005722  001352                          BNE     1$      ;DO IT AGAIN ?
1816                                          ;NOW POKE CLK TO SEE DNA
1817  005724  052777  020000  012772          BIS     #CLK,@TXCSR     ;POKE CLK
1818  005732  012700  100000                  MOV     #100000,R0      ;EXPECTED
1819  005736  017701  012762                  MOV     @TXCSR,R1       ;ACTUAL
1820  005742  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
1821  005746  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS ACTUAL
1822  005750  001401                          BEQ     4$
1823  005752  104003                          HLT     3               ;DNA SHOULD BE SET
1824                                                                  ;IF DNA DID NOT SET ,CHECK WORD LENGTH
1825                                                                  ;SELECT LOGIC OF THE TRANSMITTER
1826  005754                          4$:
1827  005754  005777  012744                  TST     @TXCSR  ;DNA ?
1828  005760  100001                          BPL     5$
1829  005762  104000                          HLT                     ;DNA SHOULD NOT BE SET
1830                                                                  ;IT SHOULD HAVE BEEN CLEARED FROM
1831                                                                  ;PREVIOUS READ
1832  005764                          5$:
1833  005764  104400                  SCOPE
1834                                  ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
1835                                  ;;OF THE TRANSMITTER SECTION.
```

```
1836                                        ;;IT ALSO CHECKS DNA TIMING
1837                                        ;;MODE:SYNINT
1838                                        ;;LENGTH:FIVE PLUS PARITY
1839                                        ;;PARITY:EVEPAR
1840                                        ;;CHARACTER:25
1841                                        ;;
1842  005766  012767  000011  173132  TST9:   MOV     #9,TSTNO          ;SAVE THIS
1843  005774  012767  006210  173114        MOV     #TST10,NEXT               ;GO TO THIS TEST WHEN THRU
1844  006002  052777  000400  012714        BIS     #MRESET,@TXCSR    ;MASTER RESET
1845  006010  012777  030000  012702        MOV     #SYNINT,@PARCSR   ;SET THE MODE
1846  006016  052777  000400  012700        BIS     #MRESET,@TXCSR    ;MASTER RESET
1847
1848                                    ;SET MAINTENANCE MODE & SEND
1849                                        ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
1850  006024  012777  004020  012672        MOV     #MINT!SEND,@TXCSR
1851
1852                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
1853  006032  012777  031426  012660        MOV     #SYNINT!FIVE!EVEPAR!26,@PARCSR
1854  006040  016703  012660               MOV     TXCSR,R3          ;SET UP FOR ERROR MSG
1855  006044  112777  000025  012656        MOVB    #25,@TXDBUF       ;LOAD DATA CHAR
1856  006052  012767  000065  173064        MOV     #65,TEMP1         ;TO BE SHIFTED CHAR
1857  006060  012767  000006  173052        MOV     #6,SHIFT          ;# OF SHIFTS
1858                                    ;POKE CLK TO GET INTO SYNCRONIZATION
1859  006066  052777  020000  012630        BIS     #CLK,@TXCSR       ;POKE CLK UP
1860  006074  042777  020000  012622        BIC     #CLK,@TXCSR       ;POKE CLK DOWN
1861  006102  005000                 1$:     CLR     R0
1862  006104  006067  173034               ROR     TEMP1   ;FORCE CARRY
1863  006110  103002                        BCC     2$      ;BR IF CARRY CLR
1864  006112  052700  002000               BIS     #BITW,R0          ;EQUIV OF BITW
1865  006116                         2$:
1866  006116  052777  020000  012600        BIS     #CLK,@TXCSR       ;POKE CLK UP
1867  006124  042777  020000  012572        BIC     #CLK,@TXCSR       ;POKE CLK DOWN
1868  006132  017701  012566               MOV     @TXCSR,R1         ;ACTUAL
1869  006136  042701  075777               BIC     #075777,R1        ;SAVE BITW & DNA
1870  006142  020001                        CMP     R0,R1   ;COMPARE EXP VS ACT
1871  006144  001401                        BEQ     3$
1872  006146  104003                        HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
1873                                                                ;BIT....ALSO CHECK DNA
1874  006150                         3$:
1875  006150  005367  172764               DEC     SHIFT   ;# OF SHIFTS
1876  006154  001352                        BNE     1$      ;DO IT AGAIN ?
1877                                  ;NOW POKE CLK TO SEE DNA
1878  006156  052777  020000  012540        BIS     #CLK,@TXCSR       ;POKE CLK
1879  006164  012700  100000               MOV     #100000,R0        ;EXPECTED
1880  006170  017701  012530               MOV     @TXCSR,R1         ;ACTUAL
1881  006174  042701  077777               BIC     #77777,R1         ;SAVE DNA ONLY
1882  006200  020001                        CMP     R0,R1             ;COMPARE EXP VS ACT
1883  006202  001401                        BEQ     4$
1884  006204  104003                        HLT     3               ;DNA SHOULD BE SET
1885                                                                ;IF DNA DID NOT SET
1886                                                                ;CHECK WORD LENGTH SELECT LOGIC
1887  006206                         4$:
1888  006206  104400                        SCOPE
1889                                        ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
1890                                        ;;OF THE TRANSMITTER SECTION.
1891                                        ;;IT ALSO CHECKS DNA TIMING
```

```
1892                                            ;;MODE:SYNINT
1893                                            ;;LENGTH:FIVE PLUS PARITY
1894                                            ;;PARITY:ODDPAR
1895                                            ;;CHARACTER:25
1896                                            ;;
1897  006210  012767  000012  172710  TST10:    MOV     #10,TSTNO       ;SAVE THIS
1898  006216  012767  006432  172672            MOV     #TST11,NEXT             ;GO TO THIS TEST WHEN THRU
1899  006224  052777  000400  012472            BIS     #MRESET,@TXCSR  ;MASTER RESET
1900  006232  012777  030000  012460            MOV     #SYNINT,@PARCSR ;SET THE MODE
1901  006240  052777  000400  012456            BIS     #MRESET,@TXCSR  ;MASTER RESET
1902
1903                                    ;SET MAINTENANCE MODE & SEND
1904                                        ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
1905  006246  012777  004020  012450            MOV     #MINT!SEND,@TXCSR
1906
1907                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
1908  006254  012777  031026  012436            MOV     #SYNINT!FIVE!ODDPAR!26,@PARCSR
1909  006262  016703  012436                    MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
1910  006266  112777  000025  012434            MOVB    #25,@TXDBUF     ;LOAD DATA CHAR
1911  006274  012767  000025  172642            MOV     #25,TEMP1       ;TO BE SHIFTED CHAR
1912  006302  012767  000006  172630            MOV     #6,SHIFT        ;# OF SHIFTS
1913                                    ;POKE CLK TO GET INTO SYNCRONIZATION
1914  006310  052777  020000  012406            BIS     #CLK,@TXCSR     ;POKE CLK UP
1915  006316  042777  020000  012400            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1916  006324  005000                    1$:     CLR     R0
1917  006326  006067  172612                    ROR     TEMP1   ;FORCE CARRY
1918  006332  103002                            BCC     2$      ;BR IF CARRY CLR
1919  006334  052700  002000                    BIS     #BITW,R0        ;EQUIV OF BITW
1920  006340                            2$:
1921  006340  052777  020000  012356            BIS     #CLK,@TXCSR     ;POKE CLK UP
1922  006346  042777  020000  012350            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1923  006354  017701  012344                    MOV     @TXCSR,R1       ;ACTUAL
1924  006360  042701  075777                    BIC     #075777,R1      ;SAVE BITW & DNA
1925  006364  020001                            CMP     R0,R1   ;COMPARE EXP VS ACT
1926  006366  001401                            BEQ     3$
1927  006370  104003                            HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
1928                                                                    ;BIT,...ALSO CHECK DNA
1929  006372                            3$:
1930  006372  005367  172542                    DEC     SHIFT   ;# OF SHIFTS
1931  006376  001352                            BNE     1$      ;DO IT AGAIN ?
1932                                    ;NOW POKE CLK TO SEE DNA
1933  006400  052777  020000  012316            BIS     #CLK,@TXCSR     ;POKE CLK
1934  006406  012700  100000                    MOV     #100000,R0      ;EXPECTED
1935  006412  017701  012306                    MOV     @TXCSR,R1       ;ACTUAL
1936  006416  042701  077777                    BIC     #77777,R1       ;SAVE DNA ONLY
1937  006422  020001                            CMP     R0,R1           ;COMPARE EXP VS ACT
1938  006424  001401                            BEQ     4$
1939  006426  104003                            HLT     3               ;DNA SHOULD BE SET
1940                                                                    ;IF DNA DID NOT SET
1941                                                                    ;CHECK WORD LENGTH SELECT LOGIC
1942  006430                            4$:
1943  006430  104400                            SCOPE
1944                                            ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
1945                                            ;;OF THE TRANSMITTER SECTION.
1946                                            ;;IT ALSO CHECKS DNA TIMING
1947                                            ;;MODE:ISYMOD
```

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1948                                            ;;LENGTH:FIVE PLUS PARITY
1949                                            ;;PARITY:EVEPAR
1950                                            ;;CHARACTER:25
1951                                            ;;
1952  006432  012767  000013  172466  TST11:    MOV     #11,TSTNO       ;SAVE THIS
1953  006440  012767  006654  172450            MOV     #TST12,NEXT             ;GO TO THIS TEST WHEN THRU
1954  006446  052777  000400  012250            BIS     #MRESET,@TXCSR  ;MASTER RESET
1955  006454  012777  000000  012236            MOV     #ISYMOD,@PARCSR ;SET THE MODE
1956  006462  052777  000400  012234            BIS     #MRESET,@TXCSR  ;MASTER RESET
1957
1958                                    ;SET MAINTENANCE MODE & SEND
1959                                            ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
1960  006470  012777  004020  012226            MOV     #MINT!SEND,@TXCSR
1961
1962                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
1963  006476  012777  001426  012214            MOV     #ISYMOD!FIVE!EVEPAR!26,@PARCSR
1964  006504  016703  012214                    MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
1965  006510  112777  000025  012212            MOVB    #25,@TXDBUF     ;LOAD DATA CHAR
1966  006516  012767  000352  172420            MOV     #352,TEMP1      ;TO BE SHIFTED CHAR
1967  006524  012767  000010  172406            MOV     #8.,SHIFT       ;# OF SHIFTS
1968                                    ;POKE CLK TO GET INTO SYNCRONIZATION
1969  006532  052777  020000  012164            BIS     #CLK,@TXCSR     ;POKE CLK UP
1970  006540  042777  020000  012156            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1971  006546  005000                    1$:     CLR     R0
1972  006550  006067  172370                    ROR     TEMP1   ;FORCE CARRY
1973  006554  103002                            BCC     2$      ;BR IF CARRY CLR
1974  006556  052700  002000                    BIS     #BITW,R0        ;EQUIV OF BITW
1975  006562                            2$:
1976  006562  052777  020000  012134            BIS     #CLK,@TXCSR     ;POKE CLK UP
1977  006570  042777  020000  012126            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
1978  006576  017701  012122                    MOV     @TXCSR,R1       ;ACTUAL
1979  006602  042701  075777                    BIC     #075777,R1      ;SAVE BITW & DNA
1980  006606  020001                            CMP     R0,R1   ;COMPARE EXP VS ACT
1981  006610  001401                            BEQ     3$
1982  006612  104003                            HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
1983                                                                    ;BIT,...ALSO CHECK DNA
1984  006614                            3$:
1985  006614  005367  172320                    DEC     SHIFT   ;# OF SHIFTS
1986  006620  001352                            BNE     1$      ;DO IT AGAIN ?
1987                                    ;NOW POKE CLK TO SEE DNA
1988  006622  052777  020000  012074            BIS     #CLK,@TXCSR     ;POKE CLK
1989  006630  012700  000000                    MOV     #0,R0   ;EXPECTED
1990  006634  017701  012064                    MOV     @TXCSR,R1       ;ACTUAL
1991  006640  042701  077777                    BIC     #77777,R1       ;SAVE DNA ONLY
1992  006644  020001                            CMP     R0,R1           ;COMPARE EXP VS ACT
1993  006646  001401                            BEQ     4$
1994  006650  104003                            HLT     3               ;DNA SHOULD BE SET
1995                                                                    ;IF DNA DID NOT SET
1996                                                                    ;CHECK WORD LENGTH SELECT LOGIC
1997  006652                            4$:
1998  006652  104400                            SCOPE
1999                                            ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2000                                            ;;OF THE TRANSMITTER SECTION.
2001                                            ;;IT ALSO CHECKS DNA TIMING
2002                                            ;;MODE:ISYMOD
2003                                            ;;LENGTH:FIVE PLUS PARITY
```

```
2004                                            ;;PARITY:ODDPAR
2005                                            ;;CHARACTER:25
2006                                            ;;
2007  006654  012767  000014  172244  TST12:    MOV     #12,TSTNO       ;SAVE THIS
2008  006662  012767  007076  172226            MOV     #TST13,NEXT             ;GO TO THIS TEST WHEN THRU
2009  006670  052777  000400  012026            BIS     #MRESET,@TXCSR  ;MASTER RESET
2010  006676  012777  000000  012014            MOV     #ISYMOD,@PARCSR ;SET THE MODE
2011  006704  052777  000400  012012            BIS     #MRESET,@TXCSR  ;MASTER RESET
2012
2013                                    ;SET MAINTENANCE MODE & SEND
2014                                            ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
2015  006712  012777  004020  012004            MOV     #MINT!SEND,@TXCSR
2016
2017                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2018  006720  012777  001026  011772            MOV     #ISYMOD!FIVE!ODDPAR!26,@PARCSR
2019  006726  016703  011772                    MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
2020  006732  112777  000025  011770            MOVB    #25,@TXDBUF     ;LOAD DATA CHAR
2021  006740  012767  000252  172176            MOV     #252,TEMP1      ;TO BE SHIFTED CHAR
2022  006746  012767  000010  172164            MOV     #8.,SHIFT       ;# OF SHIFTS
2023                                    ;POKE CLK TO GET INTO SYNCRONIZATION
2024  006754  052777  020000  011742            BIS     #CLK,@TXCSR     ;POKE CLK UP
2025  006762  042777  020000  011734            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2026  006770  005000                    1$:     CLR     R0
2027  006772  006067  172146                    ROR     TEMP1   ;FORCE CARRY
2028  006776  103002                            BCC     2$      ;BR IF CARRY CLR
2029  007000  052700  002000                    BIS     #BITW,R0        ;EQUIV OF BITW
2030  007004                            2$:
2031  007004  052777  020000  011712            BIS     #CLK,@TXCSR     ;POKE CLK UP
2032  007012  042777  020000  011704            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2033  007020  017701  011700                    MOV     @TXCSR,R1       ;ACTUAL
2034  007024  042701  075777                    BIC     #075777,R1      ;SAVE BITW & DNA
2035  007030  020001                            CMP     R0,R1   ;COMPARE EXP VS ACT
2036  007032  001401                            BEQ     3$
2037  007034  104003                            HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2038                                                            ;BIT,...ALSO CHECK DNA
2039  007036                            3$:
2040  007036  005367  172076                    DEC     SHIFT   ;# OF SHIFTS
2041  007042  001352                            BNE     1$      ;DO IT AGAIN ?
2042                                    ;NOW POKE CLK TO SEE DNA
2043  007044  052777  020000  011652            BIS     #CLK,@TXCSR     ;POKE CLK
2044  007052  012700  000000                    MOV     #0,R0   ;EXPECTED
2045  007056  017701  011642                    MOV     @TXCSR,R1       ;ACTUAL
2046  007062  042701  077777                    BIC     #77777,R1       ;SAVE DNA ONLY
2047  007066  020001                            CMP     R0,R1           ;COMPARE EXP VS ACT
2048  007070  001401                            BEQ     4$
2049  007072  104003                            HLT     3       ;DNA SHOULD BE SET
2050                                                            ;IF DNA DID NOT SET
2051                                                            ;CHECK WORD LENGTH SELECT LOGIC
2052  007074                            4$:
2053  007074  104400                    SCOPE
2054
2055                                    ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2056                                    ;;OF THE TRANSMITTER SECTION.
2057                                    ;;IT ALSO CHECKS DNA TIMING
2058                                    ;;MODE:SYNINT
2059                                    ;;LENGTH:SIX PLUS PARITY
```

```
                                        ;;PARITY:EVEPAR
                                        ;;CHARACTER:25
                                        ;;
007076  012767  000015  172022  TST13:  MOV     #13,TSTNO       ;SAVE THIS
007104  012767  007320  172004          MOV     #TST14,NEXT             ;GO TO THIS TEST WHEN THRU
007112  052777  000400  011604          BIS     #MRESET,@TXCSR  ;MASTER RESET
007120  012777  030000  011572          MOV     #SYNINT,@PARCSR ;SET THE MODE
007126  052777  000400  011570          BIS     #MRESET,@TXCSR  ;MASTER RESET

                                ;SET MAINTENANCE MODE & SEND
                                        ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
007134  012777  004020  011562          MOV     #MINT!SEND,@TXCSR

                                ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
007142  012777  033426  011550          MOV     #SYNINT!SIX!EVEPAR!26,@PARCSR
007150  016703  011550                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
007154  112777  000025  011546          MOVB    #25,@TXDBUF     ;LOAD DATA CHAR
007162  012767  000125  171754          MOV     #125,TEMP1      ;TO BE SHIFTED CHAR
007170  012767  000007  171742          MOV     #7,SHIFT        ;# OF SHIFTS

                                ;POKE CLK TO GET INTO SYNCRONIZATION
007176  052777  020000  011520          BIS     #CLK,@TXCSR     ;POKE CLK UP
007204  042777  020000  011512          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
007212  005000                  1$:     CLR     R0
007214  006067  171724                  ROR     TEMP1   ;FORCE CARRY
007220  103002                          BCC     2$      ;BR IF CARRY CLR
007222  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BITW
007226                          2$:
007226  052777  020000  011470          BIS     #CLK,@TXCSR     ;POKE CLK UP
007234  042777  020000  011462          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
007242  017701  011456                  MOV     @TXCSR,R1       ;ACTUAL
007246  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
007252  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
007254  001401                          BEQ     3$
007256  104003                          HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
                                                                ;BIT,...ALSO CHECK DNA
007260                          3$:
007260  005367  171654                  DEC     SHIFT   ;# OF SHIFTS
007264  001352                          BNE     1$      ;DO IT AGAIN ?
                                ;NOW POKE CLK TO SEE DNA
007266  052777  020000  011430          BIS     #CLK,@TXCSR     ;POKE CLK
007274  012700  100000                  MOV     #100000,R0      ;EXPECTED
007300  017701  011420                  MOV     @TXCSR,R1       ;ACTUAL
007304  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
007310  020001                          CMP     R0,R1           ;COMPARE EXP VS ACT
007312  001401                          BEQ     4$
007314  104003                          HLT     3       ;DNA SHOULD BE SET
                                                        ;IF DNA DID NOT SET
                                                        ;CHECK WORD LENGTH SELECT LOGIC
007316                          4$:
007316  104400                  SCOPE
                                ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
                                ;;OF THE TRANSMITTER SECTION.
                                ;;IT ALSO CHECKS DNA TIMING
                                ;;MODE:SYNINT
                                ;;LENGTH:SIX PLUS PARITY
                                ;;PARITY:ODDPAR
```

```
2116                                            ;;CHARACTER:25
2117                                            ;;
2118  007320  012767  000016  171600  TST14:    MOV     #14,TSTNO       ;SAVE THIS
2119  007326  012767  007542  171562            MOV     #TST15,NEXT             ;GO TO THIS TEST WHEN THRU
2120  007334  052777  000400  011362            BIS     #MRESET,@TXCSR  ;MASTER RESET
2121  007342  012777  030000  011350            MOV     #SYNINT,@PARCSR ;SET THE MODE
2122  007350  052777  000400  011346            BIS     #MRESET,@TXCSR  ;MASTER RESET
2123
2124                                    ;SET MAINTENANCE MODE & SEND
2125                                            ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
2126  007356  012777  004020  011340            MOV     #MINT!SEND,@TXCSR
2127
2128                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2129  007364  012777  033026  011326            MOV     #SYNINT!SIX!ODDPAR!26,@PARCSR
2130  007372  016703  011326                    MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
2131  007376  112777  000025  011324            MOVB    #25,@TXDBUF     ;LOAD DATA CHAR
2132  007404  012767  000025  171532            MOV     #25,TEMP1       ;TO BE SHIFTED CHAR
2133  007412  012767  000007  171520            MOV     #7,SHIFT        ;# OF SHIFTS
2134                                    ;POKE CLK TO GET INTO SYNCRONIZATION
2135  007420  052777  020000  011276            BIS     #CLK,@TXCSR     ;POKE CLK UP
2136  007426  042777  020000  011270            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2137  007434  005000                    1$:     CLR     R0
2138  007436  006067  171502                    ROR     TEMP1   ;FORCE CARRY
2139  007442  103002                            BCC     2$      ;BR IF CARRY CLR
2140  007444  052700  002000                    BIS     #BITW,R0        ;EQUIV OF BITW
2141  007450                            2$:
2142  007450  052777  020000  011246            BIS     #CLK,@TXCSR     ;POKE CLK UP
2143  007456  042777  020000  011240            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2144  007464  017701  011234                    MOV     @TXCSR,R1       ;ACTUAL
2145  007470  042701  075777                    BIC     #075777,R1      ;SAVE BITW & DNA
2146  007474  020001                            CMP     R0,R1   ;COMPARE EXP VS ACT
2147  007476  001401                            BEQ     3$
2148  007500  104003                            HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2149                                                            ;BIT,...ALSO CHECK DNA
2150  007502                            3$:
2151  007502  005367  171432                    DEC     SHIFT   ;# OF SHIFTS
2152  007506  001352                            BNE     1$      ;DO IT AGAIN ?
2153                                    ;NOW POKE CLK TO SEE DNA
2154  007510  052777  020000  011206            BIS     #CLK,@TXCSR     ;POKE CLK
2155  007516  012700  100000                    MOV     #100000,R0      ;EXPECTED
2156  007522  017701  011176                    MOV     @TXCSR,R1       ;ACTUAL
2157  007526  042701  077777                    BIC     #77777,R1       ;SAVE DNA ONLY
2158  007532  020001                            CMP     R0,R1           ;COMPARE EXP VS ACT
2159  007534  001401                            BEQ     4$
2160  007536  104003                            HLT     3       ;DNA SHOULD BE SET
2161                                                            ;IF DNA DID NOT SET
2162                                                            ;CHECK WORD LENGTH SELECT LOGIC
2163  007540                            4$:
2164  007540  104400                            SCOPE
2165                                            ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2166                                            ;;OF THE TRANSMITTER SECTION.
2167                                            ;;IT ALSO CHECKS DNA TIMING
2168                                            ;;MODE:ISYMOD
2169                                            ;;LENGTH:SIX PLUS PARITY
2170                                            ;;PARITY:EVEPAR
2171                                            ;;CHARACTER:25
```

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2172                                                    ;;
2173  007542  012767  000017  171356  TST15:  MOV     #15,TSTNO       ;SAVE THIS
2174  007550  012767  007764  171340          MOV     #TST16,NEXT             ;GO TO THIS TEST WHEN THRU
2175  007556  052777  000400  011140          BIS     #MRESET,@TXCSR  ;MASTER RESET
2176  007564  012777  000000  011126          MOV     #ISYMOD,@PARCSR ;SET THE MODE
2177  007572  052777  000400  011124          BIS     #MRESET,@TXCSR  ;MASTER RESET
2178
2179                                  ;SET MAINTENANCE MODE & SEND
2180                                      ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
2181  007600  012777  004020  011116          MOV     #MINT!SEND,@TXCSR
2182
2183                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2184  007606  012777  003426  011104          MOV     #ISYMOD!SIX!EVEPAR!26,@PARCSR
2185  007614  016703  011104                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
2186  007620  112777  000025  011102          MOVB    #25,@TXDBUF     ;LOAD DATA CHAR
2187  007626  012767  000652  171310          MOV     #652,TEMP1      ;TO BE SHIFTED CHAR
2188  007634  012767  000011  171276          MOV     #9.,SHIFT       ;# OF SHIFTS
2189                                  ;POKE CLK TO GET INTO SYNCRONIZATION
2190  007642  052777  020000  011054          BIS     #CLK,@TXCSR     ;POKE CLK UP
2191  007650  042777  020000  011046          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2192  007656  005000                  1$:     CLR     R0
2193  007660  006067  171260                  ROR     TEMP1   ;FORCE CARRY
2194  007664  103002                          BCC     2$      ;BR IF CARRY CLR
2195  007666  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BITW
2196  007672                          2$:
2197  007672  052777  020000  011024          BIS     #CLK,@TXCSR     ;POKE CLK UP
2198  007700  042777  020000  011016          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2199  007706  017701  011012                  MOV     @TXCSR,R1       ;ACTUAL
2200  007712  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
2201  007716  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
2202  007720  001401                          BEQ     3$
2203  007722  104003                          HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2204                                                          ;BIT,...ALSO CHECK DNA
2205  007724                          3$:
2206  007724  005367  171210                  DEC     SHIFT   ;# OF SHIFTS
2207  007730  001352                          BNE     1$      ;DO IT AGAIN ?
2208                                  ;NOW POKE CLK TO SEE DNA
2209  007732  052777  020000  010764          BIS     #CLK,@TXCSR     ;POKE CLK
2210  007740  012700  000000                  MOV     #0,R0   ;EXPECTED
2211  007744  017701  010754                  MOV     @TXCSR,R1       ;ACTUAL
2212  007750  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
2213  007754  020001                          CMP     R0,R1           ;COMPARE EXP VS ACT
2214  007756  001401                          BEQ     4$
2215  007760  104003                          HLT     3       ;DNA SHOULD BE SET
2216                                                          ;IF DNA DID NOT SET
2217                                                          ;CHECK WORD LENGTH SELECT LOGIC
2218  007762                          4$:
2219  007762  104400                  SCOPE
2220                                  ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2221                                  ;;OF THE TRANSMITTER SECTION.
2222                                  ;;IT ALSO CHECKS DNA TIMING
2223                                  ;;MODE:ISYMOD
2224                                  ;;LENGTH:SIX PLUS PARITY
2225                                  ;;PARITY:ODDPAR
2226                                  ;;CHARACTER:25
2227                                  ;;
```

```
2228  007764  012767  000020  171134  TST16:  MOV     #16,TSTNO       ;SAVE THIS
2229  007772  012767  010206  171116          MOV     #TST17,NEXT             ;GO TO THIS TEST WHEN THRU
2230  010000  052777  000400  010716          BIS     #MRESET,@TXCSR  ;MASTER RESET
2231  010006  012777  000000  010704          MOV     #ISYMOD,@PARCSR ;SET THE MODE
2232  010014  052777  000400  010702          BIS     #MRESET,@TXCSR  ;MASTER RESET
2233
2234                                  ;SET MAINTENANCE MODE & SEND
2235                                          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
2236  010022  012777  004020  010674          MOV     #MINT!SEND,@TXCSR
2237
2238                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2239  010030  012777  003026  010662          MOV     #ISYMOD!SIX!ODDPAR!26,@PARCSR
2240  010036  016703  010662                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
2241  010042  112777  000025  010660          MOVB    #25,@TXDBUF     ;LOAD DATA CHAR
2242  010050  012767  000452  171066          MOV     #452,TEMP1      ;TO BE SHIFTED CHAR
2243  010056  012767  000011  171054          MOV     #9.,SHIFT       ;# OF SHIFTS
2244                                  ;POKE CLK TO GET INTO SYNCRONIZATION
2245  010064  052777  020000  010632          BIS     #CLK,@TXCSR     ;POKE CLK UP
2246  010072  042777  020000  010624          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2247  010100  005000                  1$:     CLR     R0
2248  010102  006067  171036                  ROR     TEMP1   ;FORCE CARRY
2249  010106  103002                          BCC     2$      ;BR IF CARRY CLR
2250  010110  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BITW
2251  010114                          2$:
2252  010114  052777  020000  010602          BIS     #CLK,@TXCSR     ;POKE CLK UP
2253  010122  042777  020000  010574          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2254  010130  017701  010570                  MOV     @TXCSR,R1       ;ACTUAL
2255  010134  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
2256  010140  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
2257  010142  001401                          BEQ     3$
2258  010144  104003                          HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2259                                                          ;BIT,...ALSO CHECK DNA
2260  010146                          3$:
2261  010146  005367  170766                  DEC     SHIFT   ;# OF SHIFTS
2262  010152  001352                          BNE     1$      ;DO IT AGAIN ?
2263                                  ;NOW POKE CLK TO SEE DNA
2264  010154  052777  020000  010542          BIS     #CLK,@TXCSR     ;POKE CLK
2265  010162  012700  000000                  MOV     #0,R0   ;EXPECTED
2266  010166  017701  010532                  MOV     @TXCSR,R1       ;ACTUAL
2267  010172  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
2268  010176  020001                          CMP     R0,R1           ;COMPARE EXP VS ACT
2269  010200  001401                          BEQ     4$
2270  010202  104003                          HLT     3       ;DNA SHOULD BE SET
2271                                                          ;IF DNA DID NOT SET
2272                                                          ;CHECK WORD LENGTH SELECT LOGIC
2273  010204                          4$:
2274  010204  104400                  SCOPE
2275
2276                                  ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2277                                  ;;OF THE TRANSMITTER SECTION.
2278                                  ;;IT ALSO CHECKS DNA TIMING
2279                                  ;;MODE:SYNINT
2280                                  ;;LENGTH:SEVEN PLUS PARITY
2281                                  ;;PARITY:EVEPAR
2282                                  ;;CHARACTER:125
2283                                  ;;
```

```
2284  010206  012767  000021  170712  TST17:  MOV     #17,TSTNO       ;SAVE THIS
2285  010214  012767  010430  170674          MOV     #TST18,NEXT             ;GO TO THIS TEST WHEN THRU
2286  010222  052777  000400  010474          BIS     #MRESET,@TXCSR  ;MASTER RESET
2287  010230  012777  030000  010462          MOV     #SYNINT,@PARCSR ;SET THE MODE
2288  010236  052777  000400  010460          BIS     #MRESET,@TXCSR  ;MASTER RESET
2289
2290                                  ;SET MAINTENANCE MODE & SEND
2291                                          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
2292  010244  012777  004020  010452          MOV     #MINT!SEND,@TXCSR
2293
2294                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2295  010252  012777  035426  010440          MOV     #SYNINT!SEVEN!EVEPAR!26,@PARCSR
2296  010260  016703  010440                  MOV     TXCSR,R3                ;SET UP FOR ERROR MSG
2297  010264  112777  000125  010436          MOVB    #125,@TXDBUF    ;LOAD DATA CHAR
2298  010272  012767  000125  170644          MOV     #125,TEMP1      ;TO BE SHIFTED CHAR
2299  010300  012767  000010  170632          MOV     #8.,SHIFT       ;# OF SHIFTS
2300                                  ;POKE CLK TO GET INTO SYNCRONIZATION
2301  010306  052777  020000  010410          BIS     #CLK,@TXCSR     ;POKE CLK UP
2302  010314  042777  020000  010402          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2303  010322  005000                  1$:     CLR     R0
2304  010324  006067  170614                  ROR     TEMP1   ;FORCE CARRY
2305  010330  103002                          BCC     2$      ;BR IF CARRY CLR
2306  010332  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BITW
2307  010336                          2$:
2308  010336  052777  020000  010360          BIS     #CLK,@TXCSR     ;POKE CLK UP
2309  010344  042777  020000  010352          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2310  010352  017701  010346                  MOV     @TXCSR,R1       ;ACTUAL
2311  010356  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
2312  010362  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
2313  010364  001401                          BEQ     3$
2314  010366  104003                          HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2315                                                                  ;BIT,...ALSO CHECK DNA
2316  010370                          3$:
2317  010370  005367  170544                  DEC     SHIFT   ;# OF SHIFTS
2318  010374  001352                          BNE     1$      ;DO IT AGAIN ?
2319                                  ;NOW POKE CLK TO SEE DNA
2320  010376  052777  020000  010320          BIS     #CLK,@TXCSR     ;POKE CLK
2321  010404  012700  100000                  MOV     #100000,R0      ;EXPECTED
2322  010410  017701  010310                  MOV     @TXCSR,R1       ;ACTUAL
2323  010414  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
2324  010420  020001                          CMP     R0,R1           ;COMPARE EXP VS ACT
2325  010422  001401                          BEQ     4$
2326  010424  104003                          HLT     3               ;DNA SHOULD BE SET
2327                                                                  ;IF DNA DID NOT SET
2328                                                                  ;CHECK WORD LENGTH SELECT LOGIC
2329  010426                          4$:
2330  010426  104400                          SCOPE
2331                                          ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2332                                          ;;OF THE TRANSMITTER SECTION.
2333                                          ;;IT ALSO CHECKS DNA TIMING
2334                                          ;;MODE:SYNINT
2335                                          ;;LENGTH:SEVEN PLUS PARITY
2336                                          ;;PARITY:ODDPAR
2337                                          ;;CHARACTER:125
2338                                          ;;
2339  010430  012767  000022  170470  TST18:  MOV     #18,TSTNO       ;SAVE THIS
```

```
2340  010436  012767  010652  170452          MOV     #TST19,NEXT             ;GO TO THIS TEST WHEN THRU
2341  010444  052777  000400  010252          BIS     #MRESET,@TXCSR  ;MASTER RESET
2342  010452  012777  030000  010240          MOV     #SYNINT,@PARCSR ;SET THE MODE
2343  010460  052777  000400  010236          BIS     #MRESET,@TXCSR  ;MASTER RESET
2344
2345                                  ;SET MAINTENANCE MODE & SEND
2346                                      ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
2347  010466  012777  004020  010230          MOV     #MINT!SEND,@TXCSR
2348
2349                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2350  010474  012777  035026  010216          MOV     #SYNINT!SEVEN!ODDPAR!26,@PARCSR
2351  010502  016703  010216                  MOV     TXCSR,R3                ;SET UP FOR ERROR MSG
2352  010506  112777  000125  010214          MOVB    #125,@TXDBUF    ;LOAD DATA CHAR
2353  010514  012767  000325  170422          MOV     #325,TEMP1              ;TO BE SHIFTED CHAR
2354  010522  012767  000010  170410          MOV     #8.,SHIFT               ;# OF SHIFTS
2355                                  ;POKE CLK TO GET INTO SYNCRONIZATION
2356  010530  052777  020000  010166          BIS     #CLK,@TXCSR     ;POKE CLK UP
2357  010536  042777  020000  010160          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2358  010544  005000                  1$:     CLR     R0
2359  010546  006067  170372                  ROR     TEMP1   ;FORCE CARRY
2360  010552  103002                          BCC     2$      ;BR IF CARRY CLR
2361  010554  052700  002000                  BIS     #BITW,R0                ;EQUIV OF BITW
2362  010560                          2$:
2363  010560  052777  020000  010136          BIS     #CLK,@TXCSR     ;POKE CLK UP
2364  010566  042777  020000  010130          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2365  010574  017701  010124                  MOV     @TXCSR,R1               ;ACTUAL
2366  010600  042701  075777                  BIC     #075777,R1              ;SAVE BITW & DNA
2367  010604  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
2368  010606  001401                          BEQ     3$
2369  010610  104003                          HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2370                                                                  ;BIT,...ALSO CHECK DNA
2371  010612                          3$:
2372  010612  005367  170322                  DEC     SHIFT   ;# OF SHIFTS
2373  010616  001352                          BNE     1$      ;DO IT AGAIN ?
2374                                  ;NOW POKE CLK TO SEE DNA
2375  010620  052777  020000  010076          BIS     #CLK,@TXCSR     ;POKE CLK
2376  010626  012700  100000                  MOV     #100000,R0      ;EXPECTED
2377  010632  017701  010066                  MOV     @TXCSR,R1               ;ACTUAL
2378  010636  042701  077777                  BIC     #77777,R1               ;SAVE DNA ONLY
2379  010642  020001                          CMP     R0,R1                   ;COMPARE EXP VS ACT
2380  010644  001401                          BEQ     4$
2381  010646  104003                          HLT     3               ;DNA SHOULD BE SET
2382                                                                  ;IF DNA DID NOT SET
2383                                                                  ;CHECK WORD LENGTH SELECT LOGIC
2384  010650                          4$:
2385  010650  104400                          SCOPE
2386                                          ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2387                                          ;;OF THE TRANSMITTER SECTION.
2388                                          ;;IT ALSO CHECKS DNA TIMING
2389                                          ;;MODE:ISYMOD
2390                                          ;;LENGTH:SEVEN PLUS PARITY
2391                                          ;;PARITY:EVEPAR
2392                                          ;;CHARACTER:125
2393                                          ;;
2394  010652  012767  000023  170246  TST19:  MOV     #19,TSTNO               ;SAVE THIS
2395  010660  012767  011074  170230          MOV     #TST20,NEXT                     ;GO TO THIS TEST WHEN THRU
```

```
 2396  010666  052777  000400  010030          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2397  010674  012777  000000  010016          MOV     #ISYMOD,@PARCSR ;SET THE MODE
 2398  010702  052777  000400  010014          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2399
 2400                                  ;SET MAINTENANCE MODE & SEND
 2401                                          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
 2402  010710  012777  004020  010006          MOV     #MINT!SEND,@TXCSR
 2403
 2404                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
 2405  010716  012777  005426  007774          MOV     #ISYMOD!SEVEN!EVEPAR!26,@PARCSR
 2406  010724  016703  007774                  MOV     TXCSR,R3                ;SET UP FOR ERROR MSG
 2407  010730  112777  000125  007772          MOVB    #125,@TXDBUF            ;LOAD DATA CHAR
 2408  010736  012767  001252  170200          MOV     #1252,TEMP1             ;TO BE SHIFTED CHAR
 2409  010744  012767  000012  170166          MOV     #10.,SHIFT              ;# OF SHIFTS
 2410                                  ;POKE CLK TO GET INTO SYNCRONIZATION
 2411  010752  052777  020000  007744          BIS     #CLK,@TXCSR             ;POKE CLK UP
 2412  010760  042777  020000  007736          BIC     #CLK,@TXCSR             ;POKE CLK DOWN
 2413  010766  005000                  1$:     CLR     R0
 2414  010770  006067  170150                  ROR     TEMP1   ;FORCE CARRY
 2415  010774  103002                  BCC     2$      ;BR IF CARRY CLR
 2416  010776  052700  002000                  BIS     #BITW,R0                ;EQUIV OF BITW
 2417  011002                          2$:
 2418  011002  052777  020000  007714          BIS     #CLK,@TXCSR             ;POKE CLK UP
 2419  011010  042777  020000  007706          BIC     #CLK,@TXCSR             ;POKE CLK DOWN
 2420  011016  017701  007702                  MOV     @TXCSR,R1               ;ACTUAL
 2421  011022  042701  075777                  BIC     #075777,R1              ;SAVE BITW & DNA
 2422  011026  020001                  CMP     R0,R1   ;COMPARE EXP VS ACT
 2423  011030  001401                  BEQ     3$
 2424  011032  104003                  HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
 2425                                                          ;BIT....ALSO CHECK DNA
 2426  011034                          3$:
 2427  011034  005367  170100                  DEC     SHIFT   ;# OF SHIFTS
 2428  011040  001352                  BNE     1$      ;DO IT AGAIN ?
 2429                                  ;NOW POKE CLK TO SEE DNA
 2430  011042  052777  020000  007654          BIS     #CLK,@TXCSR     ;POKE CLK
 2431  011050  012700  000000                  MOV     #0,R0   ;EXPECTED
 2432  011054  017701  007644                  MOV     @TXCSR,R1               ;ACTUAL
 2433  011060  042701  077777                  BIC     #77777,R1               ;SAVE DNA ONLY
 2434  011064  020001                  CMP     R0,R1                   ;COMPARE EXP VS ACT
 2435  011066  001401                  BEQ     4$
 2436  011070  104003                  HLT     3               ;DNA SHOULD BE SET
 2437                                                          ;IF DNA DID NOT SET
 2438                                                          ;CHECK WORD LENGTH SELECT LOGIC
 2439  011072                          4$:
 2440  011072  104400                  SCOPE
 2441                                  ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
 2442                                  ;;OF THE TRANSMITTER SECTION.
 2443                                  ;;IT ALSO CHECKS DNA TIMING
 2444                                  ;;MODE:ISYMOD
 2445                                  ;;LENGTH:SEVEN PLUS PARITY
 2446                                  ;;PARITY:ODDPAR
 2447                                  ;;CHARACTER:125
 2448                                  ;;
 2449  011074  012767  000024  170024  TST20:  MOV     #20,TSTNO               ;SAVE THIS
 2450  011102  012767  011316  170006          MOV     #TST21,NEXT                     ;GO TO THIS TEST WHEN THRU
 2451  011110  052777  000400  007606          BIS     #MRESET,@TXCSR  ;MASTER RESET
```

```
2452  011116  012777  000000  007574          MOV     #ISYMOD,@PARCSR ;SET THE MODE
2453  011124  052777  000400  007572          BIS     #MRESET,@TXCSR  ;MASTER RESET
2454
2455                                  ;SET MAINTENANCE MODE & SEND
2456                                      ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
2457  011132  012777  004020  007564          MOV     #MINT!SEND,@TXCSR
2458
2459                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2460  011140  012777  005026  007552          MOV     #ISYMOD!SEVEN!ODDPAR!26,@PARCSR
2461  011146  016703  007552                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
2462  011152  112777  000125  007550          MOVB    #125,@TXDBUF    ;LOAD DATA CHAR
2463  011160  012767  001652  167756          MOV     #1652,TEMP1     ;TO BE SHIFTED CHAR
2464  011166  012767  000012  167744          MOV     #10.,SHIFT      ;# OF SHIFTS
2465                                  ;POKE CLK TO GET INTO SYNCRONIZATION
2466  011174  052777  020000  007522          BIS     #CLK,@TXCSR     ;POKE CLK UP
2467  011202  042777  020000  007514          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2468  011210  005000                  1$:     CLR     R0
2469  011212  006067  167726                  ROR     TEMP1   ;FORCE CARRY
2470  011216  103002                  BCC     2$      ;BR IF CARRY CLR
2471  011220  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BITW
2472  011224                          2$:
2473  011224  052777  020000  007472          BIS     #CLK,@TXCSR     ;POKE CLK UP
2474  011232  042777  020000  007464          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2475  011240  017701  007460                  MOV     @TXCSR,R1       ;ACTUAL
2476  011244  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
2477  011250  020001                  CMP     R0,R1   ;COMPARE EXP VS ACT
2478  011252  001401                  BEQ     3$
2479  011254  104003                  HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2480                                                  ;BIT,...ALSO CHECK DNA
2481  011256                          3$:
2482  011256  005367  167656                  DEC     SHIFT   ;# OF SHIFTS
2483  011262  001352                  BNE     1$      ;DO IT AGAIN ?
2484                                  ;NOW POKE CLK TO SEE DNA
2485  011264  052777  020000  007432          BIS     #CLK,@TXCSR     ;POKE CLK
2486  011272  012700  000000                  MOV     #0,R0   ;EXPECTED
2487  011276  017701  007422                  MOV     @TXCSR,R1       ;ACTUAL
2488  011302  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
2489  011306  020001                  CMP     R0,R1           ;COMPARE EXP VS ACT
2490  011310  001401                  BEQ     4$
2491  011312  104003                  HLT     3       ;DNA SHOULD BE SET
2492                                                  ;IF DNA DID NOT SET
2493                                                  ;CHECK WORD LENGTH SELECT LOGIC
2494  011314                          4$:
2495  011314  104400                  SCOPE
2496
2497                                  ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2498                                  ;;OF THE TRANSMITTER SECTION.
2499                                  ;;IT ALSO CHECKS DNA TIMING
2500                                  ;;MODE:SYNINT
2501                                  ;;LENGTH:EIGHT PLUS PARITY
2502                                  ;;PARITY:EVEPAR
2503                                  ;;CHARACTER:125
2504                                  ;;
2505  011316  012767  000025  167602  TST21:  MOV     #21,TSTNO       ;SAVE THIS
2506  011324  012767  011540  167564          MOV     #TST22,NEXT             ;GO TO THIS TEST WHEN THRU
2507  011332  052777  000400  007364          BIS     #MRESET,@TXCSR  ;MASTER RESET
```

```
2508  011340  012777  030000  007352          MOV     #SYNINT,@PARCSR ;SET THE MODE
2509  011346  052777  000400  007350          BIS     #MRESET,@TXCSR  ;MASTER RESET
2510
2511                                  ;SET MAINTENANCE MODE & SEND
2512                                      ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
2513  011354  012777  004020  007342          MOV     #MINT!SEND,@TXCSR
2514
2515                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2516  011362  012777  037426  007330          MOV     #SYNINT!EIGHT!EVEPAR!26,@PARCSR
2517  011370  016703  007330                  MOV     TXCSR,R3                ;SET UP FOR ERROR MSG
2518  011374  112777  000125  007326          MOVB    #125,@TXDBUF            ;LOAD DATA CHAR
2519  011402  012767  000125  167534          MOV     #125,TEMP1              ;TO BE SHIFTED CHAR
2520  011410  012767  000011  167522          MOV     #9.,SHIFT               ;# OF SHIFTS
2521                                  ;POKE CLK TO GET INTO SYNCRONIZATION
2522  011416  052777  020000  007300          BIS     #CLK,@TXCSR             ;POKE CLK UP
2523  011424  042777  020000  007272          BIC     #CLK,@TXCSR             ;POKE CLK DOWN
2524  011432  005000                  1$:     CLR     R0
2525  011434  006067  167504                  ROR     TEMP1   ;FORCE CARRY
2526  011440  103002                  BCC     2$      ;BR IF CARRY CLR
2527  011442  052700  002000                  BIS     #BITW,R0                ;EQUIV OF BITW
2528  011446                          2$:
2529  011446  052777  020000  007250          BIS     #CLK,@TXCSR             ;POKE CLK UP
2530  011454  042777  020000  007242          BIC     #CLK,@TXCSR             ;POKE CLK DOWN
2531  011462  017701  007236                  MOV     @TXCSR,R1               ;ACTUAL
2532  011466  042701  075777                  BIC     #075777,R1              ;SAVE BITW & DNA
2533  011472  020001                  CMP     R0,R1   ;COMPARE EXP VS ACT
2534  011474  001401                  BEQ     3$
2535  011476  104003                  HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2536                                                  ;BIT,...ALSO CHECK DNA
2537  011500                          3$:
2538  011500  005367  167434                  DEC     SHIFT   ;# OF SHIFTS
2539  011504  001352                  BNE     1$      ;DO IT AGAIN ?
2540                                  ;NOW POKE CLK TO SEE DNA
2541  011506  052777  020000  007210          BIS     #CLK,@TXCSR             ;POKE CLK
2542  011514  012700  100000                  MOV     #100000,R0              ;EXPECTED
2543  011520  017701  007200                  MOV     @TXCSR,R1               ;ACTUAL
2544  011524  042701  077777                  BIC     #77777,R1               ;SAVE DNA ONLY
2545  011530  020001                  CMP     R0,R1                   ;COMPARE EXP VS ACT
2546  011532  001401                  BEQ     4$
2547  011534  104003                  HLT     3       ;DNA SHOULD BE SET
2548                                                  ;IF DNA DID NOT SET
2549                                                  ;CHECK WORD LENGTH SELECT LOGIC
2550  011536                          4$:
2551  011536  104400                  SCOPE
2552                                  ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2553                                  ;;OF THE TRANSMITTER SECTION.
2554                                  ;;IT ALSO CHECKS DNA TIMING
2555                                  ;;MODE:SYNINT
2556                                  ;;LENGTH:EIGHT PLUS PARITY
2557                                  ;;PARITY:ODDPAR
2558                                  ;;CHARACTER:125
2559                                  ;;
2560  011540  012767  000026  167360  TST22:  MOV     #22,TSTNO               ;SAVE THIS
2561  011546  012767  011762  167342          MOV     #TST23,NEXT                     ;GO TO THIS TEST WHEN THRU
2562  011554  052777  000400  007142          BIS     #MRESET,@TXCSR  ;MASTER RESET
2563  011562  012777  030000  007130          MOV     #SYNINT,@PARCSR ;SET THE MODE
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 2564  011570  052777  000400  007126          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2565
 2566                                  ;SET MAINTENANCE MODE & SEND
 2567                                      ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
 2568  011576  012777  004020  007120          MOV     #MINT!SEND,@TXCSR
 2569
 2570                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
 2571  011604  012777  037026  007106          MOV     #SYNINT!EIGHT!ODDPAR!26,@PARCSR
 2572  011612  016703  007106                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
 2573  011616  112777  000125  007104          MOVB    #125,@TXDBUF    ;LOAD DATA CHAR
 2574  011624  012767  000525  167312          MOV     #525,TEMP1      ;TO BE SHIFTED CHAR ;
 2575  011632  012767  000011  167300          MOV     #9.,SHIFT       ;# OF SHIFTS
 2576                                  ;POKE CLK TO GET INTO SYNCRONIZATION
 2577  011640  052777  020000  007056          BIS     #CLK,@TXCSR     ;POKE CLK UP
 2578  011646  042777  020000  007050          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 2579  011654  005000                  1$:     CLR     R0
 2580  011656  006067  167262                  ROR     TEMP1   ;FORCE CARRY
 2581  011662  103002                  BCC     2$      ;BR IF CARRY CLR
 2582  011664  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BITW
 2583  011670                          2$:
 2584  011670  052777  020000  007026          BIS     #CLK,@TXCSR     ;POKE CLK UP
 2585  011676  042777  020000  007020          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 2586  011704  017701  007014                  MOV     @TXCSR,R1       ;ACTUAL
 2587  011710  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
 2588  011714  020001                  CMP     R0,R1   ;COMPARE EXP VS ACT
 2589  011716  001401                  BEQ     3$
 2590  011720  104003                  HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
 2591                                                          ;BIT,...ALSO CHECK DNA
 2592  011722                          3$:
 2593  011722  005367  167212                  DEC     SHIFT   ;# OF SHIFTS
 2594  011726  001352                  BNE     1$      ;DO IT AGAIN ?
 2595                                  ;NOW POKE CLK TO SEE DNA
 2596  011730  052777  020000  006766          BIS     #CLK,@TXCSR     ;POKE CLK
 2597  011736  012700  100000                  MOV     #100000,R0      ;EXPECTED
 2598  011742  017701  006756                  MOV     @TXCSR,R1       ;ACTUAL
 2599  011746  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
 2600  011752  020001                  CMP     R0,R1           ;COMPARE EXP VS ACT
 2601  011754  001401                  BEQ     4$
 2602  011756  104003                  HLT     3               ;DNA SHOULD BE SET
 2603                                                          ;IF DNA DID NOT SET
 2604                                                          ;CHECK WORD LENGTH SELECT LOGIC
 2605  011760                          4$:
 2606  011760  104400                          SCOPE
 2607                                          ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
 2608                                          ;;OF THE TRANSMITTER SECTION.
 2609                                          ;;IT ALSO CHECKS DNA TIMING
 2610                                          ;;MODE:ISYMOD
 2611                                          ;;LENGTH:EIGHT PLUS PARITY
 2612                                          ;;PARITY:EVEPAR
 2613                                          ;;CHARACTER:125
 2614                                          ;;
 2615  011762  012767  000027  167136  TST23:  MOV     #23,TSTNO       ;SAVE THIS
 2616  011770  012767  012204  167120          MOV     #TST24,NEXT             ;GO TO THIS TEST WHEN THRU
 2617  011776  052777  000400  006720          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2618  012004  012777  000000  006706          MOV     #;SYMOD,@PARCSR ;SET THE MODE
 2619  012012  052777  000400  006704          BIS     #MRESET,@TXCSR  ;MASTER RESET
```

```
2620
2621                                    ;SET MAINTENANCE MODE & SEND
2622                                        ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
2623  012020  012777  004020  006676          MOV     #MINT!SEND,@TXCSR
2624
2625                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2626  012026  012777  007426  006664          MOV     #ISYMOD!EIGHT!EVEPAR!26,@PARCSR
2627  012034  016703  006664                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
2628  012040  112777  000125  006662          MOVB    #125,@TXDBUF    ;LOAD DATA CHAR
2629  012046  012767  002252  167070          MOV     #2252,TEMP1     ;TO BE SHIFTED CHAR
2630  012054  012767  000013  167056          MOV     #11.,SHIFT      ;# OF SHIFTS
2631                                    ;POKE CLK TO GET INTO SYNCRONIZATION
2632  012062  052777  020000  006634          BIS     #CLK,@TXCSR     ;POKE CLK UP
2633  012070  042777  020000  006626          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2634  012076  005000                  1$:     CLR     R0
2635  012100  006067  167040                  ROR     TEMP1   ;FORCE CARRY
2636  012104  103002                  BCC     2$      ;BR IF CARRY CLR
2637  012106  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BITW
2638  012112                          2$:
2639  012112  052777  020000  006604          BIS     #CLK,@TXCSR     ;POKE CLK UP
2640  012120  042777  020000  006576          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2641  012126  017701  006572                  MOV     @TXCSR,R1       ;ACTUAL
2642  012132  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
2643  012136  020001                  CMP     R0,R1   ;COMPARE EXP VS ACT
2644  012140  001401                  BEQ     3$
2645  012142  104003                  HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2646                                                  ;BIT,...ALSO CHECK DNA
2647  012144                          3$:
2648  012144  005367  166770                  DEC     SHIFT   ;# OF SHIFTS
2649  012150  001352                  BNE     1$      ;DO IT AGAIN ?
2650                                  ;NOW POKE CLK TO SEE DNA
2651  012152  052777  020000  006544          BIS     #CLK,@TXCSR     ;POKE CLK
2652  012160  012700  000000                  MOV     #0,R0   ;EXPECTED
2653  012164  017701  006534                  MOV     @TXCSR,R1       ;ACTUAL
2654  012170  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
2655  012174  020001                  CMP     R0,R1           ;COMPARE EXP VS ACT
2656  012176  001401                  BEQ     4$
2657  012200  104003                  HLT     3       ;DNA SHOULD BE SET
2658                                                  ;IF DNA DID NOT SET
2659                                                  ;CHECK WORD LENGTH SELECT LOGIC
2660  012202                          4$:
2661  012202  104400                  SCOPE
2662                                  ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2663                                  ;;OF THE TRANSMITTER SECTION.
2664                                  ;;IT ALSO CHECKS DNA TIMING
2665                                  ;;MODE:ISYMOD
2666                                  ;;LENGTH:EIGHT PLUS PARITY
2667                                  ;;PARITY:ODDPAR
2668                                  ;;CHARACTER:125
2669                                  ;;
2670  012204  012767  000030  166714  TST24:  MOV     #24,TSTNO       ;SAVE THIS
2671  012212  012767  012426  166676          MOV     #TST25,NEXT             ;GO TO THIS TEST WHEN THRU
2672  012220  052777  000400  006476          BIS     #MRESET,@TXCSR  ;MASTER RESET
2673  012226  012777  000000  006464          MOV     #ISYMOD,@PARCSR ;SET THE MODE
2674  012234  052777  000400  006462          BIS     #MRESET,@TXCSR  ;MASTER RESET
2675
```

```
2676                                    ;SET MAINTENANCE MODE & SEND
2677                                        ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
2678  012242  012777  004020  006454        MOV     #MINT!SEND,@TXCSR
2679
2680                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2681  012250  012777  007026  006442        MOV     #ISYMOD!EIGHT!ODDPAR!26,@PARCSR
2682  012256  016703  006442                MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
2683  012262  112777  000125  006440        MOVB    #125,@TXDBUF    ;LOAD DATA CHAR
2684  012270  012767  003252  166646        MOV     #3252,TEMP1     ;TO BE SHIFTED CHAR
2685  012276  012767  000013  166634        MOV     #11.,SHIFT      ;# OF SHIFTS
2686                                    ;POKE CLK TO GET INTO SYNCRONIZATION
2687  012304  052777  020000  006412        BIS     #CLK,@TXCSR     ;POKE CLK UP
2688  012312  042777  020000  006404        BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2689  012320  005000                    1$: CLR     R0
2690  012322  006067  166616                ROR     TEMP1   ;FORCE CARRY
2691  012326  103002                        BCC     2$      ;BR IF CARRY CLR
2692  012330  052700  002000                BIS     #BITW,R0        ;EQUIV OF BITW
2693  012334                            2$:
2694  012334  052777  020000  006362        BIS     #CLK,@TXCSR     ;POKE CLK UP
2695  012342  042777  020000  006354        BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2696  012350  017701  006350                MOV     @TXCSR,R1       ;ACTUAL
2697  012354  042701  075777                BIC     #075777,R1      ;SAVE BITW & DNA
2698  012360  020001                        CMP     R0,R1   ;COMPARE EXP VS ACT
2699  012362  001401                        BEQ     3$
2700  012364  104003                        HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2701                                                                ;BIT,...ALSO CHECK DNA
2702  012366                            3$:
2703  012366  005367  166546                DEC     SHIFT   ;# OF SHIFTS
2704  012372  001352                        BNE     1$      ;DO IT AGAIN ?
2705                                    ;NOW POKE CLK TO SEE DNA
2706  012374  052777  020000  006322        BIS     #CLK,@TXCSR     ;POKE CLK
2707  012402  012700  000000                MOV     #0,R0   ;EXPECTED
2708  012406  017701  006312                MOV     @TXCSR,R1       ;ACTUAL
2709  012412  042701  077777                BIC     #77777,R1       ;SAVE DNA ONLY
2710  012416  020001                        CMP     R0,R1           ;COMPARE EXP VS ACT
2711  012420  001401                        BEQ     4$
2712  012422  104003                        HLT     3       ;DNA SHOULD BE SET
2713                                                        ;IF DNA DID NOT SET
2714                                                        ;CHECK WORD LENGTH SELECT LOGIC
2715  012424                            4$:
2716  012424  104400                        SCOPE
2717
2718                                        ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2719                                        ;;OF THE TRANSMITTER SECTION.
2720                                        ;;IT ALSO CHECKS DNA TIMING
2721                                        ;;MODE:SYNINT
2722                                        ;;LENGTH:EIGHT PLUS PARITY
2723                                        ;;PARITY:EVEPAR
2724                                        ;;CHARACTER:252
2725                                        ;;
2726  012426  012767  000031  166472  TST25: MOV     #25,TSTNO       ;SAVE THIS
2727  012434  012767  012650  166454        MOV     #TST26,NEXT             ;GO TO THIS TEST WHEN THRU
2728  012442  052777  000400  006254        BIS     #MRESET,@TXCSR  ;MASTER RESET
2729  012450  012777  030000  006242        MOV     #SYNINT,@PARCSR ;SET THE MODE
2730  012456  052777  000400  006240        BIS     #MRESET,@TXCSR  ;MASTER RESET
2731
```

```
                                        ;SET MAINTENANCE MODE & SEND
                                                ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
012464  012777  004020  006232                  MOV     #MINT!SEND,@TXCSR

                                        ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
012472  012777  037426  006220                  MOV     #SYNINT!EIGHT!EVEPAR!26,@PARCSR
012500  016703  006220                          MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
012504  112777  000252  006216                  MOVB    #252,@TXDBUF    ;LOAD DATA CHAR
012512  012767  000252  166424                  MOV     #252,TEMP1      ;TO BE SHIFTED CHAR
012520  012767  000011  166412                  MOV     #9.,SHIFT       ;# OF SHIFTS
                                        ;POKE CLK TO GET INTO SYNCRONIZATION
012526  052777  020000  006170                  BIS     #CLK,@TXCSR     ;POKE CLK UP
012534  042777  020000  006162                  BIC     #CLK,@TXCSR     ;POKE CLK DOWN
012542  005000                          1$:     CLR     R0
012544  006067  166374                          ROR     TEMP1   ;FORCE CARRY
012550  103002                                  BCC     2$      ;BR IF CARRY CLR
012552  052700  002000                          BIS     #BITW,R0        ;EQUIV OF BITW
012556                                  2$:
012556  052777  020000  006140                  BIS     #CLK,@TXCSR     ;POKE CLK UP
012564  042777  020000  006132                  BIC     #CLK,@TXCSR     ;POKE CLK DOWN
012572  017701  006126                          MOV     @TXCSR,R1       ;ACTUAL
012576  042701  075777                          BIC     #075777,R1      ;SAVE BITW & DNA
012602  020001                                  CMP     R0,R1   ;COMPARE EXP VS ACT
012604  001401                                  BEQ     3$
012606  104003                                  HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
                                                                        ;BIT,...ALSO CHECK DNA
012610                                  3$:
012610  005367  166324                          DEC     SHIFT   ;# OF SHIFTS
012614  001352                                  BNE     1$      ;DO IT AGAIN ?
                                        ;NOW POKE CLK TO SEE DNA
012616  052777  020000  006100                  BIS     #CLK,@TXCSR     ;POKE CLK
012624  012700  100000                          MOV     #100000,R0      ;EXPECTED
012630  017701  006070                          MOV     @TXCSR,R1       ;ACTUAL
012634  042701  077777                          BIC     #77777,R1       ;SAVE DNA ONLY
012640  020001                                  CMP     R0,R1           ;COMPARE EXP VS ACT
012642  001401                                  BEQ     4$
012644  104003                                  HLT     3       ;DNA SHOULD BE SET
                                                                ;IF DNA DID NOT SET
                                                                ;CHECK WORD LENGTH SELECT LOGIC
012646                                  4$:
012646  104400                                  SCOPE
                                                ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
                                                ;;OF THE TRANSMITTER SECTION.
                                                ;;IT ALSO CHECKS DNA TIMING
                                                ;;MODE:SYNINT
                                                ;;LENGTH:EIGHT PLUS PARITY
                                                ;;PARITY:ODDPAR
                                                ;;CHARACTER:252
                                                ;;
012650  012767  000032  166250  TST26:   MOV     #26,TSTNO       ;SAVE THIS
012656  012767  013072  166232                  MOV     #TST27,NEXT             ;GO TO THIS TEST WHEN THRU
012664  052777  000400  006032                  BIS     #MRESET,@TXCSR  ;MASTER RESET
012672  012777  030000  006020                  MOV     #SYNINT,@PARCSR ;SET THE MODE
012700  052777  000400  006016                  BIS     #MRESET,@TXCSR  ;MASTER RESET

                                        ;SET MAINTENANCE MODE & SEND
```

```
2788
2789  012706  012777  004020  006010          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
                      MOV     #MINT!SEND,@TXCSR
2790
2791                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2792  012714  012777  037026  005776          MOV     #SYNINT!EIGHT!ODDPAR!26,@PARCSR
2793  012722  016703  005776                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
2794  012726  112777  000252  005774          MOVB    #252,@TXDBUF    ;LOAD DATA CHAR
2795  012734  012767  000652  166202          MOV     #652,TEMP1      ;TO BE SHIFTED CHAR
2796  012742  012767  000011  166170          MOV     #9.,SHIFT       ;# OF SHIFTS
2797                  ;POKE CLK TO GET INTO SYNCRONIZATION
2798  012750  052777  020000  005746          BIS     #CLK,@TXCSR     ;POKE CLK UP
2799  012756  042777  020000  005740          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2800  012764  005000                  1$:     CLR     R0
2801  012766  006067  166152                  ROR     TEMP1   ;FORCE CARRY
2802  012772  103002                          BCC     2$      ;BR IF CARRY CLR
2803  012774  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BITW
2804  013000                  2$:
2805  013000  052777  020000  005716          BIS     #CLK,@TXCSR     ;POKE CLK UP
2806  013006  042777  020000  005710          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2807  013014  017701  005704                  MOV     @TXCSR,R1       ;ACTUAL
2808  013020  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
2809  013024  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
2810  013026  001401                          BEQ     3$
2811  013030  104003                          HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2812                                                          ;BIT,...ALSO CHECK DNA
2813  013032                  3$:
2814  013032  005367  166102                  DEC     SHIFT   ;# OF SHIFTS
2815  013036  001352                          BNE     1$      ;DO IT AGAIN ?
2816                  ;NOW POKE CLK TO SEE DNA
2817  013040  052777  020000  005656          BIS     #CLK,@TXCSR     ;POKE CLK
2818  013046  012700  100000                  MOV     #100000,R0      ;EXPECTED
2819  013052  017701  005646                  MOV     @TXCSR,R1       ;ACTUAL
2820  013056  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
2821  013062  020001                          CMP     R0,R1           ;COMPARE EXP VS ACT
2822  013064  001401                          BEQ     4$
2823  013066  104003                          HLT     3       ;DNA SHOULD BE SET
2824                                                          ;IF DNA DID NOT SET
2825                                                          ;CHECK WORD LENGTH SELECT LOGIC
2826  013070                  4$:
2827  013070  104400                  SCOPE
2828                                  ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2829                                  ;;OF THE TRANSMITTER SECTION.
2830                                  ;;IT ALSO CHECKS DNA TIMING
2831                                  ;;MODE:SYNINT
2832                                  ;;LENGTH:EIGHT PLUS PARITY
2833                                  ;;PARITY:EVEPAR
2834                                  ;;CHARACTER:0
2835                                  ;;
2836  013072  012767  000033  166026  TST27:  MOV     #27,TSTNO       ;SAVE THIS
2837  013100  012767  013314  166010          MOV     #TST28,NEXT             ;GO TO THIS TEST WHEN THRU
2838  013106  052777  000400  005610          BIS     #MRESET,@TXCSR  ;MASTER RESET
2839  013114  012777  030000  005576          MOV     #SYNINT,@PARCSR ;SET THE MODE
2840  013122  052777  000400  005574          BIS     #MRESET,@TXCSR  ;MASTER RESET
2841
2842                  ;SET MAINTENANCE MODE & SEND
2843                          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
```

```
 2844  013130  012777  004020  005566          MOV     #MINT!SEND,@TXCSR
 2845
 2846                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
 2847  013136  012777  037426  005554          MOV     #SYNINT!EIGHT!EVEPAR!26,@PARCSR
 2848  013144  016703  005554                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
 2849  013150  112777  000000  005552          MOVB    #0,@TXDBUF      ;LOAD DATA CHAR
 2850  013156  012767  000000  165760          MOV     #0,TEMP1        ;TO BE SHIFTED CHAR
 2851  013164  012767  000011  165746          MOV     #9.,SHIFT       ;# OF SHIFTS
 2852                                  ;POKE CLK TO GET INTO SYNCRONIZATION
 2853  013172  052777  020000  005524          BIS     #CLK,@TXCSR     ;POKE CLK UP
 2854  013200  042777  020000  005516          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 2855  013206  005000                  1$:     CLR     R0
 2856  013210  006067  165730                  ROR     TEMP1   ;FORCE CARRY
 2857  013214  103002                          BCC     2$      ;BR IF CARRY CLR
 2858  013216  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BITW
 2859  013222                          2$:
 2860  013222  052777  020000  005474          BIS     #CLK,@TXCSR     ;POKE CLK UP
 2861  013230  042777  020000  005466          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 2862  013236  017701  005462                  MOV     @TXCSR,R1       ;ACTUAL
 2863  013242  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
 2864  013246  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
 2865  013250  001401                          BEQ     3$
 2866  013252  104003                          HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
 2867                                                          ;BIT,...ALSO CHECK DNA
 2868  013254                          3$:
 2869  013254  005367  165660                  DEC     SHIFT   ;# OF SHIFTS
 2870  013260  001352                          BNE     1$      ;DO IT AGAIN ?
 2871                                  ;NOW POKE CLK TO SEE DNA
 2872  013262  052777  020000  005434          BIS     #CLK,@TXCSR     ;POKE CLK
 2873  013270  012700  100000                  MOV     #100000,R0      ;EXPECTED
 2874  013274  017701  005424                  MOV     @TXCSR,R1       ;ACTUAL
 2875  013300  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
 2876  013304  020001                          CMP     R0,R1           ;COMPARE EXP VS ACT
 2877  013306  001401                          BEQ     4$
 2878  013310  104003                          HLT     3       ;DNA SHOULD BE SET
 2879                                                          ;IF DNA DID NOT SET
 2880                                                          ;CHECK WORD LENGTH SELECT LOGIC
 2881  013312                          4$:
 2882  013312  104400                          SCOPE
 2883                                          ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
 2884                                          ;;OF THE TRANSMITTER SECTION.
 2885                                          ;;IT ALSO CHECKS DNA TIMING
 2886                                          ;;MODE:SYNINT
 2887                                          ;;LENGTH:EIGHT PLUS PARITY
 2888                                          ;;PARITY:ODDPAR
 2889                                          ;;CHARACTER:0
 2890                                          ;;
 2891  013314  012767  000034  165604  TST28:  MOV     #28,TSTNO       ;SAVE THIS
 2892  013322  012767  013536  165566          MOV     #TST29,NEXT             ;GO TO THIS TEST WHEN THRU
 2893  013330  052777  000400  005366          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2894  013336  012777  030000  005354          MOV     #SYNINT,@PARCSR ;SET THE MODE
 2895  013344  052777  000400  005352          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2896
 2897                                  ;SET MAINTENANCE MODE & SEND
 2898                                          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
 2899  013352  012777  004020  005344          MOV     #MINT!SEND,@TXCSR
```

```
2900
2901                                        ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2902  013360  012777  037026  005332              MOV     #SYNINT!EIGHT!ODDPAR!26,@PARCSR
2903  013366  016703  005332                    MOV     TXCSR,R3            ;SET UP FOR ERROR MSG
2904  013372  112777  000000  005330              MOVB    #0,@TXDBUF          ;LOAD DATA CHAR
2905  013400  012767  000400  165536              MOV     #400,TEMP1          ;TO BE SHIFTED CHAR
2906  013406  012767  000011  165524              MOV     #9.,SHIFT           ;# OF SHIFTS
2907                                        ;POKE CLK TO GET INTO SYNCRONIZATION
2908  013414  052777  020000  005302              BIS     #CLK,@TXCSR         ;POKE CLK UP
2909  013422  042777  020000  005274              BIC     #CLK,@TXCSR         ;POKE CLK DOWN
2910  013430  005000                      1$:     CLR     R0
2911  013432  006067  165506                    ROR     TEMP1   ;FORCE CARRY
2912  013436  103002                            BCC     2$      ;BR IF CARRY CLR
2913  013440  052700  002000                    BIS     #BITW,R0            ;EQUIV OF BITW
2914  013444                              2$:
2915  013444  052777  020000  005252              BIS     #CLK,@TXCSR         ;POKE CLK UP
2916  013452  042777  020000  005244              BIC     #CLK,@TXCSR         ;POKE CLK DOWN
2917  013460  017701  005240                    MOV     @TXCSR,R1           ;ACTUAL
2918  013464  042701  075777                    BIC     #075777,R1          ;SAVE BITW & DNA
2919  013470  020001                            CMP     R0,R1   ;COMPARE EXP VS ACT
2920  013472  001401                            BEQ     3$
2921  013474  104003                            HLT     3               ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2922                                                                      ;BIT,...ALSO CHECK DNA
2923  013476                              3$:
2924  013476  005367  165436                    DEC     SHIFT   ;# OF SHIFTS
2925  013502  001352                            BNE     1$      ;DO IT AGAIN ?
2926                                        ;NOW POKE CLK TO SEE DNA
2927  013504  052777  020000  005212              BIS     #CLK,@TXCSR         ;POKE CLK
2928  013512  012700  100000                    MOV     #100000,R0          ;EXPECTED
2929  013516  017701  005202                    MOV     @TXCSR,R1           ;ACTUAL
2930  013522  042701  077777                    BIC     #77777,R1           ;SAVE DNA ONLY
2931  013526  020001                            CMP     R0,R1               ;COMPARE EXP VS ACT
2932  013530  001401                            BEQ     4$
2933  013532  104003                            HLT     3               ;DNA SHOULD BE SET
2934                                                                      ;IF DNA DID NOT SET
2935                                                                      ;CHECK WORD LENGTH SELECT LOGIC
2936  013534                              4$:
2937  013534  104400                            SCOPE
2938                                            ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2939                                            ;;OF THE TRANSMITTER SECTION.
2940                                            ;;IT ALSO CHECKS DNA TIMING
2941                                            ;;MODE:SYNINT
2942                                            ;;LENGTH:EIGHT PLUS PARITY
2943                                            ;;PARITY:EVEPAR
2944                                            ;;CHARACTER:377
2945                                            ;;
2946  013536  012767  000035  165362  TST29:    MOV     #29,TSTNO           ;SAVE THIS
2947  013544  012767  013760  165344              MOV     #TST30,NEXT                 ;GO TO THIS TEST WHEN THRU
2948  013552  052777  000400  005144              BIS     #MRESET,@TXCSR      ;MASTER RESET
2949  013560  012777  030000  005132              MOV     #SYNINT,@PARCSR     ;SET THE MODE
2950  013566  052777  000400  005130              BIS     #MRESET,@TXCSR      ;MASTER RESET
2951
2952                                        ;SET MAINTENANCE MODE & SEND
2953                                            ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
2954  013574  012777  004020  005122              MOV     #SYNINT!SEND,@TXCSR
2955
```

```
2956                                        ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
2957  013602  012777  037426  005110              MOV     #SYNINT!EIGHT!EVEPAR!26,@PARCSR
2958  013610  016703  005110                    MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
2959  013614  112777  000377  005106            MOVB    #377,@TXDBUF    ;LOAD DATA CHAR
2960  013622  012767  000377  165314            MOV     #377,TEMP1      ;TO BE SHIFTED CHAR
2961  013630  012767  000011  165302            MOV     #9.,SHIFT       ;# OF SHIFTS
2962                                        ;POKE CLK TO GET INTO SYNCRONIZATION
2963  013636  052777  020000  005060            BIS     #CLK,@TXCSR     ;POKE CLK UP
2964  013644  042777  020000  005052            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2965  013652  005000                        1$: CLR     R0
2966  013654  006067  165264                    ROR     TEMP1   ;FORCE CARRY
2967  013660  103002                            BCC     2$      ;BR IF CARRY CLR
2968  013662  052700  002000                    BIS     #BITW,R0        ;EQUIV OF BITW
2969  013666                                2$:
2970  013666  052777  020000  005030            BIS     #CLK,@TXCSR     ;POKE CLK UP
2971  013674  042777  020000  005022            BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2972  013702  017701  005016                    MOV     @TXCSR,R1       ;ACTUAL
2973  013706  042701  075777                    BIC     #075777,R1      ;SAVE BITW & DNA
2974  013712  020001                            CMP     R0,R1   ;COMPARE EXP VS ACT
2975  013714  001401                            BEQ     3$
2976  013716  104003                            HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
2977                                                            ;BIT,...ALSO CHECK DNA
2978  013720                                3$:
2979  013720  005367  165214                    DEC     SHIFT   ;# OF SHIFTS
2980  013724  001352                            BNE     1$      ;DO IT AGAIN ?
2981                                        ;NOW POKE CLK TO SEE DNA
2982  013726  052777  020000  004770            BIS     #CLK,@TXCSR     ;POKE CLK
2983  013734  012700  100000                    MOV     #100000,R0      ;EXPECTED
2984  013740  017701  004760                    MOV     @TXCSR,R1       ;ACTUAL
2985  013744  042701  077777                    BIC     #77777,R1       ;SAVE DNA ONLY
2986  013750  020001                            CMP     R0,R1           ;COMPARE EXP VS ACT
2987  013752  001401                            BEQ     4$
2988  013754  104003                            HLT     3       ;DNA SHOULD BE SET
2989                                                            ;IF DNA DID NOT SET
2990                                                            ;CHECK WORD LENGTH SELECT LOGIC
2991  013756                                4$:
2992  013756  104400                            SCOPE
2993                                            ;;THIS TEST VERIFYS CHARACTER PLUS PARITY GENERATION
2994                                            ;;OF THE TRANSMITTER SECTION.
2995                                            ;;IT ALSO CHECKS DNA TIMING
2996                                            ;;MODE:SYNINT
2997                                            ;;LENGTH:EIGHT PLUS PARITY
2998                                            ;;PARITY:ODDPAR
2999                                            ;;CHARACTER:377
3000                                            ;;
3001  013760  012767  000036  165140  TST30:    MOV     #30,TSTNO       ;SAVE THIS
3002  013766  012767  014202  165122            MOV     #.EOP,NEXT              ;GO TO THIS TEST WHEN THRU
3003  013774  052777  000400  004722            BIS     #MRESET,@TXCSR  ;MASTER RESET
3004  014002  012777  030000  004710            MOV     #SYNINT,@PARCSR ;SET THE MODE
3005  014010  052777  000400  004706            BIS     #MRESET,@TXCSR  ;MASTER RESET
3006
3007                                        ;SET MAINTENANCE MODE & SEND
3008                                            ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
3009  014016  012777  004020  004700            MOV     #MINT!SEND,@TXCSR
3010
3011                                        ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
```

```
3012  014024  012777  037026  004666          MOV     #SYNINT!EIGHT!ODDPAR!26,@PARCSR
3013  014032  016703  004666                  MOV     TXCSR,R3        ;SET UP FOR ERROR MSG
3014  014036  112777  000377  004664          MOVB    #377,@TXDBUF    ;LOAD DATA CHAR
3015  014044  012767  000777  165072          MOV     #777,TEMP1      ;TO BE SHIFTED CHAR
3016  014052  012767  000011  165060          MOV     #9.,SHIFT       ;# OF SHIFTS
3017                                  ;POKE CLK TO GET INTO SYNCRONIZATION
3018  014060  052777  020000  004636          BIS     #CLK,@TXCSR     ;POKE CLK UP
3019  014066  042777  020000  004630          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
3020  014074  005000                  1$:     CLR     R0
3021  014076  006067  165042                  ROR     TEMP1   ;FORCE CARRY
3022  014102  103002                          BCC     2$      ;BR IF CARRY CLR
3023  014104  052700  002000                  BIS     #BITW,R0        ;EQUIV OF BITW
3024  014110                          2$:
3025  014110  052777  020000  004606          BIS     #CLK,@TXCSR     ;POKE CLK UP
3026  014116  042777  020000  004600          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
3027  014124  017701  004574                  MOV     @TXCSR,R1       ;ACTUAL
3028  014130  042701  075777                  BIC     #075777,R1      ;SAVE BITW & DNA
3029  014134  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
3030  014136  001401                          BEQ     3$
3031  014140  104003                          HLT     3       ;BIT WINDOW DID NOT MATCH ACTUAL DATA
3032                                          ;BIT....ALSO CHECK DNA
3033  014142                          3$:
3034  014142  005367  164772                  DEC     SHIFT   ;# OF SHIFTS
3035  014146  001352                          BNE     1$      ;DO IT AGAIN ?
3036                                  ;NOW POKE CLK TO SEE DNA
3037  014150  052777  020000  004546          BIS     #CLK,@TXCSR     ;POKE CLK
3038  014156  012700  100000                  MOV     #100000,R0      ;EXPECTED
3039  014162  017701  004536                  MOV     @TXCSR,R1       ;ACTUAL
3040  014166  042701  077777                  BIC     #77777,R1       ;SAVE DNA ONLY
3041  014172  020001                          CMP     R0,R1           ;COMPARE EXP VS ACT
3042  014174  001401                          BEQ     4$
3043  014176  104003                          HLT     3       ;DNA SHOULD BE SET
3044                                          ;IF DNA DID NOT SET
3045                                          ;CHECK WORD LENGTH SELECT LOGIC
3046  014200                          4$:
3047  014200  104400                          SCOPE
```

```
3048
3049                                        ;END OF PASS
3050                                        ;TYPE NAME OF TEST
3051                                        ;UPDATE PASS COUNT
3052                                        ;CHECK FOR EXIT TO ACT-11
3053                                        ;RESTART TEST
3054
3055  014202  104402              .EOP:     TYPE                        ;TYPE NAME OF TEST
3056  014204  017344                       MEPASS
3057  014206  104410  014440              CONVRT  ,OUTCRY
3058  014212  104402  017065              TYPE    ,DEVICE
3059  014216  105767  164760              TSTB    MULTD               ;ARE YOU RUNNING MULTIPLE DEVICES ?
3060  014222  001511                      BEQ     CCC                 ;NO,JUMP AROUND
3061  014224  005767  164766              TST     ACTREG              ;ARE ANY DEVICES ACTIVE ?
3062  014230  001007                      BNE     RUNIT               ;YES
3063  014232  104402  017077              TYPE    ,MCOW               ;NO
3064  014236  016700  164754              MOV     ACTREG,R0           ;DISPLAY ACTREG
3065  014242  000000                      HALT                        ;SELECT SOMETHING TO RUN @ ACTREG:
3066                                      ;SELECT SWITCHES & HIT CONTINUE (PUT SW00 =1)
3067  014244  000167  165150              JMP     .START              ;START OVER AGAIN.....YOU DESELECTED EVERYTHING
3068  014250  062767  000010  164726  RUNIT:  ADD     #10,BASEADD         ;NEXT BLOCK (ADDRESSES)
3069  014256  062767  000010  164726  ZERO:   ADD     #10,BASEIV          ;NEXT BLOCK (VECTORS)
3070  014264  000241                      CLC
3071  014266  006167  164726              ROL     ROTADD              ;UP DATE ROTATING POINTER
3072  014272  103410                      BCS     2$                  ;IS IT THE LAST DEVICE
3073                                                                  ;TO BE TESTED IN THIS PASS ?
3074  014274  036767  164720  164714      BIT     ROTADD,ACTREG       ;TEST THIS DEVICE FOR ACTIVE STATUS
3075  014302  001762                      BEQ     RUNIT               ;IF NOT ACTIVE, TRY NEXT ADDRESS
3076  014304  004767  000034              JSR     PC,REPLAY           ;CALCULATE NEW PARAMETERS
3077  014310  000167  000174              JMP     RESTRT              ;YES IT WAS ACTIVE,TEST THIS DEVICE
3078  014314  012767  000001  164676  2$:     MOV     #1,ROTADD           ;OK!,NOW SET UP  ROTATING
3079                                                                  ;POINTER FOR NEXT MULTIPLE PASS
3080  014322  016767  164660  164654          MOV     KEEPADD,BASEADD     ;RESTORE BASE ADDRESS
3081  014330  016767  164660  164654          MOV     KEEPIV,BASEIV       ;RESTORE BASE INTERRUPT VECTORS
3082  014336  004767  000002              JSR     PC,REPLAY           ;CALC NEW PARAMETERS
3083  014342  000441                      BR      CCC                 ;JUMP AROUND REPLAY
3084  014344  016767  164634  004040  REPLAY: MOV     BASEADD,DUBASE      ;SET UP FOR NEW ADDRESSES
3085  014352  004767  003702              JSR     PC,DUADDR           ;CREATE NEW ADDRESSES
3086  014356  016767  164630  004350          MOV     BASEIV,DURIV        ;CREATE DURIV
3087  014364  062767  000002  164620          ADD     #2,BASEIV
3088  014372  016767  164614  004336          MOV     BASEIV,DURIS        ;CREATE DURIS
3089  014400  062767  000002  164604          ADD     #2,BASEIV
3090  014406  016767  164600  004324          MOV     BASEIV,DUTIV        ;CREATE DUTIV
3091  014414  062767  000002  164570          ADD     #2,BASEIV
3092  014422  016767  164564  004312          MOV     BASEIV,DUTIS        ;CREATE DUTIS
3093  014430  016767  004300  164554          MOV     DURIV,BASEIV        ;RESTORE
3094  014436  000207                      RTS     PC
3095
3096  014440  000001              OUTCRY: 1
3097  014442      006     002             .BYTE   6,2
3098  014444  020710                      RXCSR
3099
3100  014446                      CCC:
3101  014446  005067  164462              CLR     LSTERR              ;CLEAR LAST ERROR PC
3102  014452  005067  164570              CLR     ERRFLG              ;CLEAR ERROR FLAG
3103  014456  005267  164446              INC     PASCNT              ;UPDATE PASS COUNT
```

```
3104  014462  016777  164442  164412          MOV     PASCNT,@LIGHTS          ;DISPLAY PASS COUNT
3105  014470  013701  000042                  MOV     @#42,R1                 ;CHECK FOR ACT-11 OR DDP
3106  014474  001405                          BEQ     RESTRT                  ;IF NOT, CONTINUE TESTING
3107  014476  000005                          RESET
3108  014500  004711                  LOGICAL:        JSR     PC,(R1)
3109  014502  000240                          NOP
3110  014504  000240                          NOP
3111  014506  000240                          NOP
3112  014510  012767  000340  163260  RESTRT: MOV     #340,PS                 ;PREVENT INTERRUPTS (PRIO: 7)
3113  014516  104413                          CKSWR                           ;CHECK FOR ^G
3114  014520  012767  003446  164366          MOV     #TST1,RTRN
3115  014526  000167  166714                  JMP     TST1
3116
3117                                          ;SCOPE LOOP AND INTERATION HANDLER
3118
3119  014532                          .SCOPE:
3120                                  ;**** START OF CODE FOR THE X OR TESTER ******
3121  014532  000424                          BR      4$                      ;IF RUNNING ON THE X OR TESTER CHANGE
3122                                                                          ;THIS INSTRUCTION TO A 'NOP''(NOP=240)
3123  014534  013746  000004                  MOV     @#4,-(SP)               ;SAVE CONTENTS OF ERROR VECTOR
3124  014540  012737  014560  000004          MOV     #1$,@#4                 ;SET FOR TIME OUT
3125  014546  005737  177060                  TST     @#177060                ;TIME OUT ON  X OR ?
3126  014552  012637  000004                  MOV     (SP)+,@#4               ;RESTORE ERROR VECTOR
3127  014556  000404                          BR      2$                      ;GO TO NEXT TEST
3128  014560  022626                  1$:     CMP     (SP)+,(SP)+             ;CLEAR THE STACK AFTER A TIMEOUT
3129  014562  012637  000004                  MOV     (SP)+,@#4               ;RESTORE ERROR VECTOR
3130  014566  000403                          BR      3$                      ;LOOP ON PRESENT TEST
3131  014570  016767  164322  164316  2$:     MOV     NEXT,RTRN               ;SET UP NEXT TEST IN RTRN
3132  014576  016716  164312          3$:     MOV     RTRN,(SP)               ;SET UP STACK FOR RTI
3133  014602  000002                          RTI
3134  014604                          4$:     ;**** END OF CODE FOR THE  X OR TESTER ******
3135  014604  104413                          CKSWR                           ;CHECK FOR ^G
3136  014606  032777  040000  164264          BIT     #SW14,@SWR              ;LOOP ON CURRENT TEST ?
3137  014614  001407                  TTST:   BEQ     1$
3138  014616  000432                          BR      3$
3139  014620  105777  164260                  TSTB    @TKCSR                  ;TEST TTY FLAG
3140  014624  100027                          BPL     3$
3141  014626  017700  164254                  MOV     @TKDBR,R0               ;CLR DONE BIT
3142  014632  000412                          BR      2$                      ;IF A TTY KEY IS STRUCK GO TO NEXT TST
3143  014634  032777  004000  164236  1$:     BIT     #SW11,@SWR              ;INHIBIT ITERATIONS ?
3144  014642  001006                          BNE     2$
3145  014644  005267  164254                  INC     LPCNT
3146  014650  026767  164250  164244          CMP     LPCNT,ICOUNT            ;CHECK FOR ITERATION CNT FINISH
3147  014656  101412                          BLOS    3$
3148  014660  105067  164362          2$:     CLRB    ERRFLG
3149  014664  005067  164234                  CLR     LPCNT
3150  014670  012767  000005  164224          MOV     #5,ICOUNT               ;SET UP ITERATION COUNT
3151  014676  016767  164214  164210          MOV     NEXT,RTRN               ;SET UP NEXT TEST IN RTRN
3152  014704  016716  164204          3$:     MOV     RTRN,(SP)               ;SET UP STACK FOR RTI
3153  014710  000002                          RTI
3154  014712  001407                  BRW:    1407                            ;RESTORE 'BEQ 1$'' INSTRUCTION
3155  014714  000432                  BRX:    432                             ;RESTORE 'BR 3$'' INSTRUCTION
3156
3157                                          ;CHECK FOR FREEZE ON CURRENT DATA
3158
3159  014716  104413                  .SCOP1: CKSWR                           ;CHECK  FOR ^G
```

```
3160  014720  032777  001000  164152          BIT     #SW09,@SWR
3161  014726  001402                          BEQ     1$
3162  014730  016716  164164                  MOV     LOCK,(SP)
3163  014734  000002                  1$:     RTI
3164
3165                                          ;TELETYPE OUTPUT ROUTINE
3166
3167  014736  010546                  .TYPE:  MOV     R5,-(SP)
3168  014740  017605  000002                  MOV     @2(SP),R5
3169  014744  062766  000002  000002          ADD     #2,2(SP)
3170  014752  105715                  1$:     TSTB    (R5)                    ;LOOK FOR '0'
3171  014754  001406                          BEQ     3$
3172  014756  105777  164126          2$:     TSTB    @TPCSR                  ;TEST DONE BIT
3173  014762  100375                          BPL     2$
3174  014764  112577  164122                  MOVB    (R5)+,@TPDBR            ;TYPE CHAR
3175  014770  000770                          BR      1$                      ;DO IT AGAIN UNTIL '0' IS SEEN
3176  014772  012605                  3$:     MOV     (SP)+,R5
3177  014774  000002                          RTI
3178
3179                                          ;ASCII STRING INPUT ROUTINE
3180
3181  014776  010346                  .INSTR: MOV     R3,-(SP)
3182  015000  010446                          MOV     R4,-(SP)
3183  015002  017667  000004  000010          MOV     @4(SP),.MSG
3184  015010  062766  000002  000004          ADD     #2,4(SP)
3185  015016  104402                  .INST1: TYPE
3186  015020  000000                  .MSG:   0
3187  015022  012704  020044                  MOV     #INBUF,R4
3188  015026  012703  000007                  MOV     #7,R3
3189  015032  105777  164046          1$:     TSTB    @TKCSR
3190  015036  100375                          BPL     1$
3191  015040  117714  164042                  MOVB    @TKDBR,(R4)
3192  015044  142714  000200                  BICB    #200,(R4)
3193  015050  121427  000025                  CMPB    (R4),#25                ;IS IT <^U>
3194  015054  001003                          BNE     200$
3195  015056  104402  017254                  TYPE,MCRLF
3196  015062  000755                          BR      .INST1
3197  015064  122427  000015          200$:   CMPB    (R4)+,#15
3198  015070  001423                          BEQ     INSTR2
3199  015072  117777  164010  164012          MOVB    @TKDBR,@TPDBR
3200  015100  105777  164004          2$:     TSTB    @TPCSR
3201  015104  100375                          BPL     2$
3202  015106  005303                          DEC     R3
3203  015110  001350                          BNE     1$
3204  015112  000402                          BR      .INSTG
3205  015114  010346                  .INSTE: MOV     R3,-(SP)
3206  015116  010446                          MOV     R4,-(SP)
3207  015120  104402                  .INSTG: TYPE
3208  015122  017250                          MQM
3209  015124  005737  016412                  TST     @#RDSW
3210  015130  001402                          BEQ     400$
3211  015132  104402  017254                  TYPE,MCRLF
3212  015136  000727                  400$:   BR      .INST1
3213  015140  012604                  INSTR2: MOV     (SP)+,R4
3214  015142  012603                          MOV     (SP)+,R3
3215  015144  000002                          RTI
```

```
                                        ;CONVERT ASCII STRING TO OCTAL

015146  010546          .PARAM: MOV     R5,-(SP)
015150  010446                  MOV     R4,-(SP)
015152  016605  000004          MOV     4(SP),R5
015156  012567  000170          MOV     (R5)+,LOLIM
015162  012567  000166          MOV     (R5)+,HILIM
015166  012567  000164          MOV     (R5)+,DEVADR
015172  112567  000162          MOVB    (R5)+,LOBITS
015176  112567  000157          MOVB    (R5)+,ADRCNT
015202  010566  000004          MOV     R5,4(SP)
015206  005005          PARAM1: CLR     R5
015210  012704  020044          MOV     #INBUF,R4
015214  122714  000015          CMPB    #15,(R4)
015220  001420                  BEQ     PARERR
015222  121427  000060  1$:     CMPB    (R4),#60
015226  002415                  BLT     PARERR
015230  121427  000067          CMPB    (R4),#67
015234  003012                  BGT     PARERR
015236  142714  000060          BICB    #60,(R4)
015242  152405                  BISB    (R4)+,R5
015244  122714  000015          CMPB    #15,(R4)
015250  001414                  BEQ     LIMITS
015252  006305                  ASL     R5
015254  006305                  ASL     R5
015256  006305                  ASL     R5
015260  000760                  BR      1$
015262  122714  000015  PARERR: CMPB    #15,(R4)        ;IS FIRST CHARACTER A <CR>
015266  001003                  BNE     120$
015270  005737  016412          TST     @#RDSW          ;IS CKSWR ROUTINE BEING USED
015274  001023                  BNE     PARTI
015276  104404          120$:   INSTER
015300  000742                  BR      PARAM1

                                        ;TEST TO SEE IF NUMBER IS WITHIN LIMITS

015302  020567  000046  LIMITS: CMP     R5,HILIM
015306  101365                  BHI     PARERR
015310  020567  000036          CMP     R5,LOLIM
015314  103762                  BLO     PARERR
015316  136705  000036          BITB    LOBITS,R5
015322  001357                  BNE     PARERR

                                        ;STORE NUMBER AT SPECIFIED ADDRESS

015324  016704  000026          MOV     DEVADR,R4
015330  010524          1$:     MOV     R5,(R4)+
015332  062705  000002          ADD     #2,R5
015336  105367  000017          DECB    ADRCNT
015342  001372                  BNE     1$
015344  012604          PARTI:  MOV     (SP)+,R4
015346  012605                  MOV     (SP)+,R5
015350  000002                  RTI
015352  000000          LOLIM:  0
015354  000000          HILIM:  0
```

```
3272  015356  000000                  DEVADR: 0
3273  015360  000000                  LOBITS: 0
3274          015361                  ADRCNT=LOBITS+1
3275
3276                                          ;SAVE PC OF TEST THAT FAILED AND R0-R5
3277
3278  015362  016667  000004  163604  .SAV05: MOV     4(SP),SAVPC
3279
3280                                          ;SAVE R0-R5
3281
3282  015370  010567  163574          SV05:   MOV     R5,SAVR5
3283  015374  010467  163566                  MOV     R4,SAVR4
3284  015400  010367  163560                  MOV     R3,SAVR3
3285  015404  010267  163552                  MOV     R2,SAVR2
3286  015410  010167  163544                  MOV     R1,SAVR1
3287  015414  010067  163536                  MOV     R0,SAVR0
3288  015420  000002                          RTI
3289
3290                                          ;RESTORE R0-R5
3291
3292  015422  016700  163530          .RES05: MOV     SAVR0,R0
3293  015426  016701  163526                  MOV     SAVR1,R1
3294  015432  016702  163524                  MOV     SAVR2,R2
3295  015436  016703  163522                  MOV     SAVR3,R3
3296  015442  016704  163520                  MOV     SAVR4,R4
3297  015446  016705  163516                  MOV     SAVR5,R5
3298  015452  000002                          RTI
3299
3300                                          ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
3301
3302  015454  104402                  .CONVR: TYPE
3303  015456  017254                          MCRLF
3304  015460  010046                  .CNVRT: MOV     R0,-(SP)
3305  015462  010146                          MOV     R1,-(SP)
3306  015464  010346                          MOV     R3,-(SP)
3307  015466  010446                          MOV     R4,-(SP)
3308  015470  010546                          MOV     R5,-(SP)
3309  015472  017601  000012                  MOV     @12(SP),R1
3310  015476  016767  002402  163444          MOV     TEMP,TEMP3
3311  015504  062766  000002  000012          ADD     #2,12(SP)
3312  015512  012167  000154                  MOV     (R1)+,WRDCNT
3313  015516  112167  000152          1$:     MOVB    (R1)+,CHRCNT
3314  015522  112167  000147                  MOVB    (R1)+,SPACNT
3315  015526  013167  000144                  MOV     @(R1)+,BINWRD
3316  015532  016704  000140          2$:     MOV     BINWRD,R4
3317  015536  116705  000132                  MOVB    CHRCNT,R5
3318  015542  012700  020104                  MOV     #TEMP,R0
3319  015546  010403                  3$:     MOV     R4,R3
3320  015550  042703  177770                  BIC     #177770,R3
3321  015554  062703  000060                  ADD     #060,R3
3322  015560  110320                          MOVB    R3,(R0)+
3323  015562  006204                          ASR     R4                      ;SHIFT FOR NEXT #
3324  015564  042704  100000                  BIC     #100000,R4              ;CLUGE TO STOP BIT 15 PROPAGATING.
3325  015570  006204                          ASR     R4                      ;DITTO
3326  015572  006204                          ASR     R4                      ;DITTO
3327  015574  005305                          DEC     R5
```

```
 3328  015576  001363                          BNE     3$
 3329  015600  012703  020144                  MOV     #MDATA,R3
 3330  015604  114023                  4$:     MOVB    -(R0),(R3)+
 3331  015606  105367  000062                  DECB    CHRCNT
 3332  015612  001374                          BNE     4$
 3333  015614  105767  000055                  TSTB    SPACNT
 3334  015620  001405                          BEQ     6$
 3335  015622  112723  000040          5$:     MOVB    #040,(R3)+
 3336  015626  105367  000043                  DECB    SPACNT
 3337  015632  001373                          BNE     5$
 3338  015634  105013                  6$:     CLRB    (R3)
 3339  015636  104402                          TYPE
 3340  015640  020144                          MDATA
 3341  015642  005367  000024                  DEC     WRDCNT
 3342  015646  001323                          BNE     1$
 3343  015650  016767  163274  002226          MOV     TEMP3,TEMP
 3344  015656  012605                          MOV     (SP)+,R5
 3345  015660  012604                          MOV     (SP)+,R4
 3346  015662  012603                          MOV     (SP)+,R3
 3347  015664  012601                          MOV     (SP)+,R1
 3348  015666  012600                          MOV     (SP)+,R0
 3349  015670  000002                          RTI
 3350  015672  000000                  WRDCNT: 0
 3351  015674  000000                  CHRCNT: 0
 3352          015675                  SPACNT=CHRCNT+1
 3353  015676  000000                  BINWRD: 0
 3354
 3355                                          ;COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
 3356                                          ;BUFFER TO THE CHARACTERS 'N' AND 'Y'.
 3357                                          ;IF THE CHARACTER IS 'N' CLEAR THE FLAG
 3358                                          ;IF THE CHARACTER IS 'Y' SET THE FLAG
 3359
 3360  015700  017605  000000          .SETFLG:MOV     @(SP),R5
 3361  015704  122767  000116  002132          CMPB    #'N,INBUF       ;IS IT 'N' ?
 3362  015712  001002                          BNE     1$
 3363  015714  105015                          CLRB    (R5)    ;000
 3364  015716  000406                          BR      2$
 3365  015720  122767  000131  002116  1$:     CMPB    #'Y,INBUF               ;IS IT 'Y' ?
 3366  015726  001005                          BNE     3$
 3367  015730  112715  177777                  MOVB    #-1,(R5)                ;377
 3368  015734  062716  000002          2$:     ADD     #2,(SP)
 3369  015740  000002                          RTI
 3370  015742  104404                  3$:     INSTER                          ;RETRY
 3371  015744  000755                          BR      .SETFLG
 3372                                          ;TRAP DISPATCH SERVICE
 3373                                          ;ARGUMENT OF TRAP IS EXTRACTED
 3374                                          ;AND USED AS OFFSET TO OBTAIN POINTER
 3375                                          ;TO SELECTED SUBROUTINE
 3376
 3377  015746  011646                  .TRPSR: MOV     (SP),-(SP)              ;GET PC OF RETURN
 3378  015750  162716  000002                  SUB     #2,(SP)                 ;=PC OF TRAP
 3379  015754  017616  000000                  MOV     @(SP),(SP)              ;GET TRP
 3380  015760  006316                  TRPOK:  ASL     (SP)                    ;MULTIPLY TRAP ARG BY 2
 3381  015762  042716  177001                  BIC     #177001,(SP)            ;CLEAR UNWANTED BITS
 3382  015766  062716  001366                  ADD     #.TRPTAB,(SP)           ;POINTER TO SUBROUTINE ADDRESS
 3383  015772  017616  000000                  MOV     @(SP),(SP)              ;SUBROUTINE ADDRESS
```

```
3384  015776  000136                        JMP     @(SP)+          ;GO TO SUBROUTINE
3385
3386                                        ;ERROR HANDLER
3387
3388  016000  104413                .HLT:   CKSWR                   ;CHECK FOR ^G
3389  016002  032777  020000  163070        BIT     #SW13,@SWR      ;INHIBIT ERROR TYPE OUT ?
3390  016010  001061                        BNE     HALTS
3391  016012  021667  163116                CMP     (SP),LSTERR
3392  016016  001404                        BEQ     1$
3393  016020  011667  163110                MOV     (SP),LSTERR
3394  016024  105067  163216                CLRB    ERRFLG
3395  016030  104406                1$:     SAV05
3396  016032  011605                        MOV     (SP),R5
3397  016034  162705  000002                SUB     #2,R5
3398  016040  011504                        MOV     (R5),R4
3399  016042  006304                        ASL     R4
3400  016044  061504                        ADD     (R5),R4
3401  016046  006304                        ASL     R4
3402  016050  042704  177001                BIC     #177001,R4
3403  016054  062704  020660                ADD     #.ERRTAB,R4
3404  016060  012467  000040                MOV     (R4)+,ERRMSG
3405  016064  012467  000046                MOV     (R4)+,DATAHD
3406  016070  011467  000054            -   MOV     (R4),DATABP
3407  016074  105767  163146                TSTB    ERRFLG
3408  016100  001403                        BEQ     TYPMSG
3409  016102  005767  000042                TST     DATABP
3410  016106  001014                        BNE     TYPDAT
3411  016110  104410            TYPMSG:     CONVRT
3412  016112  016242                        ERTABO
3413  016114  112767  177777  163124        MOVB    #-1,ERRFLG
3414  016122  104402                        TYPE
3415  016124  000000            ERRMSG:     0
3416  016126  005767  000004                TST     DATAHD
3417  016132  001402                        BEQ     TYPDAT
3418  016134  104402                        TYPE
3419  016136  000000            DATAHD:     0
3420  016140  005767  000004    TYPDAT:     TST     DATABP
3421  016144  001402                        BEQ     RESREG
3422  016146  104410                        CONVRT
3423  016150  000000            DATABP:     0
3424  016152  104407            RESREG:     RES05
3425  016154  005777  162720    HALTS:      TST     @SWR
3426  016160  100005                        BPL     EXITER
3427  016162  010046                        PUSHR0
3428  016164  016600  000002                MOV     2(SP),R0
3429  016170  000000                        HALT
3430  016172  012600                        POPR0
3431  016174  104413            EXITER:     CKSWR                   ;CHECK FOR ^G
3432  016176  005267  162730                INC     ERRCNT
3433  016202  032777  000400  162670        BIT     #SW08,@SWR      ;LOOP ON ERROR ?
3434  016210  001007                        BNE     1$
3435  016212  032777  002000  162660        BIT     #SW10,@SWR      ;ESCAPE TO NEXT ON ERROR ?
3436  016220  001407                        BEQ     2$
3437  016222  016767  162670  162664        MOV     NEXT,RTRN       ;SET UP FOR NEXT TEST
3438  016230  012706  001100            1$:     MOV     #STACK,SP       ;REINITIALIZE SP
3439  016234  000177  162654                JMP     @RTRN
```

```
3440  016240  000002                  2$:     RTI
3441  016242  000001                  ERTABO: 1
3442  016244     006      002                 .BYTE   6,2
3443  016246  001174                          SAVPC
3444                                          ;ENTER HERE ON POWER FAILURE
3445
3446
3447  016250  010046                  .PFAIL: MOV     R0,-(SP)                ;SAVE R0-R5 ON PROCESSOR STACK
3448  016252  010146                          MOV     R1,-(SP)
3449  016254  010246                          MOV     R2,-(SP)
3450  016256  010346                          MOV     R3,-(SP)
3451  016260  010446                          MOV     R4,-(SP)
3452  016262  010546                          MOV     R5,-(SP)
3453  016264  016746  161534                  MOV     24,-(SP)
3454  016270  010667  162676                  MOV     SP,SAVSP                ;SAVE STACK POINTER
3455  016274  012767  016306  161522          MOV     #RESTART,24             ;SET UP FOR POWER UP TRAP
3456  016302  000000                          HALT                            ;HALT ON POWER DOWN NORMAL
3457  016304  000777                  1$:     BR      1$
3458
3459                                          ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
3460
3461  016306  016706  162660          RESTAR: MOV     SAVSP,SP                ;RESTORE STACK POINTER
3462  016312  012605                          MOV     (SP)+,R5                ;RESTORE R0-R5
3463  016314  012604                          MOV     (SP)+,R4
3464  016316  012603                          MOV     (SP)+,R3
3465  016320  012602                          MOV     (SP)+,R2
3466  016322  012601                          MOV     (SP)+,R1
3467  016324  012600                          MOV     (SP)+,R0
3468  016326  012767  016250  161470          MOV     #.PFAIL,24              ;SET UP FOR POWER FAILURE
3469  016334  012767  000340  161434          MOV     #340,PS
3470  016342  012706  001100                  MOV     #STACK,SP
3471  016346  005067  001532                  CLR     TEMP
3472  016352  005267  001526          1$:     INC     TEMP
3473  016356  001375                          BNE     1$
3474  016360  104410                          CONVRT
3475  016362  016404                          PFTAB
3476  016364  104402                          TYPE
3477  016366  017257                          MPFAIL
3478  016370  005067  162652                  CLR     ERRFLG
3479  016374  005067  162534                  CLR     LSTERR
3480  016400  000177  162510                  JMP     @RTRN
3481  016404  000001                  PFTAB:  1
3482  016406     006      002                 .BYTE   6,2
3483  016410  001114                          RTRN
3484
3485
3486                                          ;CHECK SWITCH REGISTER ROUTINE. CHECKS FOR ^G TO ALLOW CHANGING
3487                                          ;OF LOC.176.
3488                                          ;LOCATIONS USED:
3489  016412  000000                          RDSW:   .WORD   0
3490
3491
3492  016414  005737  000042          .CKSWR: TST     @#42
3493  016420  001042                          BNE     OUT
3494  016422  022767  000176  162450          CMP     #SWREG,SWR              ;SOFTWARE SWITCH REGISTER PRESENT
3495  016430  001036                          BNE     OUT                     ;NO, GET OUT
```

```
 3496  016432  105777  162446                    TSTB    @TKCSR                  ;YES,WAIT FOR
 3497  016436  100033                            BPL     OUT                     ;READY, GET CHARACTER
 3498  016440  017767  162442  176352            MOV     @TKDBR,.MSG             ;AND STRIP OFF
 3499  016446  042767  177600  176344            BIC     #177600,.MSG            ;THE GARBAGE
 3500  016454  122767  000007  176336            CMPB    #7,.MSG                 ;IS IT A <^G>
 3501  016462  001021                            BNE     OUT
 3502  016464  104402  016542                    TYPE,$CNTG
 3503  016470  005137  016412          .CNTLU:   COM     @#RDSW
 3504  016474  104402  016547                    TYPE,$MSWR
 3505  016500  104411  016534                    CNVRT,SWREGC
 3506  016504  104403  016557                    INSTR,$MNEW
 3507  016510  104405                            PARAM
 3508  016512  000000                            0
 3509  016514  177777                            177777
 3510  016516  000176                            SWREG
 3511  016520     000     001          .BYTE             0,1
 3512  016522  104402  017254                    TYPE,MCRLF
 3513  016526  005037  016412          OUT:      CLR     @#RDSW
 3514  016532  000002                            RTI
 3515  016534  000001                  SWREGC:   1
 3516  016536     006     002          .BYTE     6,2
 3517  016540  000176                            SWREG
 3518  016542  005015  043536     000  $CNTG:    .ASCIZ  <15><12>/^G/
 3519  016547     015  051412  051127  $MSWR:    .ASCIZ  <15><12>/SWR= /
 3520  016554  020075     000
 3521  016557     040  047040  053505  $MNEW:    .ASCIZ  /  NEW= /
 3522  016564  020075     000
 3523          016570                  .EVEN
 3524  016570  005015  042012  030525  MTITLE:   .ASCIZ  <15><12><12>/DU11 CZDUD-D TAPE D /<15><12>
 3525  016576  020061  055103  052504
 3526  016604  026504  020104  040524
 3527  016612  042520  042040  006440
 3528  016620  000012
 3529  016622  005015  042526  052103  MVECTO:   .ASCIZ  <15><12>/VECTOR ADDRESS-/
 3530  016630  051117  040440  042104
 3531  016636  042522  051523  000055
 3532  016644  005015  051461  020124  MREGAD:   .ASCIZ  <15><12>/1ST DEVICE: RECEIVER CONTROL REGISTER ADDRESS-/
 3533  016652  042504  044526  042503
 3534  016660  020072  042522  042503
 3535  016666  053111  051105  041440
 3536  016674  047117  051124  046117
 3537  016702  051040  043505  051511
 3538  016710  042524  020122  042101
 3539  016716  051104  051505  026523
 3540  016724     000
 3541  016725     015  040412  042522  MMULT:    .ASCIZ  <15><12>/ARE YOU RUNNING MULTIPLE DEVICES ? (Y OR N)-/
 3542  016732  054440  052517  051040
 3543  016740  047125  044516  043516
 3544  016746  046440  046125  044524
 3545  016754  046120  020105  042504
 3546  016762  044526  042503  020123
 3547  016770  020077  054450  047440
 3548  016776  020122  024516  000055
 3549  017004  005015  040514  052123  MLASTD:   .ASCIZ  <15><12>/LAST DEVICE:RECEIVER CONTROL REGISTER ADDRESS-/
 3550  017012  042040  053105  041511
 3551  017020  035105  042522  042503
```

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3552  017026  053111  051105  041440
3553  017034  047117  051124  046117
3554  017042  051040  043505  051511
3555  017050  042524  020122  042101
3556  017056  051104  051505  026523
3557  017064     000
3558  017065     075  042504  044526  DEVICE: .ASCIZ  /=DEVICE  /
3559  017072  042503  020040     000
3560  017077     015  044012  053517  MCOW:   .ASCIZ  <15><12>/HOW NOW BROWN COW? ...SELECT SOMETHING TO RUN @ACTREG/
3561  017104  047040  053517  041040
3562  017112  047522  047127  041440
3563  017120  053517  020077  027056
3564  017126  051456  046105  041505
3565  017134  020124  047523  042515
3566  017142  044124  047111  020107
3567  017150  047524  051040  047125
3568  017156  040040  041501  051124
3569  017164  043505     000
3570  017167     015  047412  052125  MRANGE: .ASCIZ  <15><12>/OUT OF RANGE:RETYPE LAST DEVICE RXCSR ADDRESS-/
3571  017174  047440  020106  040522
3572  017202  043516  035105  042522
3573  017210  054524  042520  046040
3574  017216  051501  020124  042504
3575  017224  044526  042503  051040
3576  017232  041530  051123  040440
3577  017240  042104  042522  051523
3578  017246  000055
3579  017250  020040  000077          MQM:    .ASCIZ  /  ?/
3580  017254  005015     000          MCRLF:  .ASCIZ   <15><12>
3581  017257     040  050040  053517  MPFAIL: .ASCIZ  /  POWER FAILURE, PROGRAM RESTART AT TEST IN PROGRESS/
3582  017264  051105  043040  044501
3583  017272  052514  042522  020054
3584  017300  051120  043517  040522
3585  017306  020115  042522  052123
3586  017314  051101  020124  052101
3587  017322  052040  051505  020124
3588  017330  047111  050040  047522
3589  017336  051107  051505  000123
3590  017344  005015  047105  020104  MEPASS: .ASCIZ  <15><12>/END OF PASS TAPE D/
3591  017352  043117  050040  051501
3592  017360  020123  040524  042520
3593  017366  042040     000
3594  017371     015  051012     000  MR:     .ASCIZ  <15><12>/R/
3595  017375     015  052012  051505  MTSTPC: .ASCIZ  <15><12>/TEST PC-/
3596  017402  020124  041520  000055
3597  017410  005015  047514  045503  MLOCK:  .ASCIZ  <15><12>/LOCK ON SELECTED TEST? (Y OR N)-/
3598  017416  047440  020116  042523
3599  017424  042514  052103  042105
3600  017432  052040  051505  037524
3601  017440  024040  020131  051117
3602  017446  047040  026451     000
3603  017453     015  042012  020125  MLEVEL: .ASCIZ  <15><12>/DU PRIORITY LEVEL-/
3604  017460  051120  047511  044522
3605  017466  054524  046040  053105
3606  017474  046105  000055
3607  017500  005015  020043  043117  MSYNC:  .ASCIZ  <15><12>/# OF SYNC CHARS SELECTED ( 1 OR 2)-/
```

```
 3608  017506  051440  047131  020103
 3609  017514  044103  051101  020123
 3610  017522  042523  042514  052103
 3611  017530  042105  024040  030440
 3612  017536  047440  020122  024462
 3613  017544  000055
 3614  017546  005015  051511  051440  MWIRE6: .ASCIZ  <15><12>/IS SEC XMIT JUMPER #6 IN? (Y OR N)-/
 3615  017554  041505  054040  044515
 3616  017562  020124  052512  050115
 3617  017570  051105  021440  020066
 3618  017576  047111  020077  054450
 3619  017604  047440  020122  024516
 3620  017612  000055
 3621  017614  005015  051511  051440  MWIRE5: .ASCIZ  <15><12>/IS SEC REC JUMPER #5 IN? (Y OR N)-/
 3622  017622  041505  051040  041505
 3623  017630  045040  046525  042520
 3624  017636  020122  032443  044440
 3625  017644  037516  024040  020131
 3626  017652  051117  047040  026451
 3627  017660     000
 3628  017661     015  044412  020123  MWIRE4: .ASCIZ  <15><12>/IS OPT CLR ENABLE JUMPER #4 IN? (Y OR N)-/
 3629  017666  050117  020124  046103
 3630  017674  020122  047105  041101
 3631  017702  042514  045040  046525
 3632  017710  042520  020122  032043
 3633  017716  044440  037516  024040
 3634  017724  020131  051117  047040
 3635  017732  026451     000
 3636  017735     015  044412  020123  MEXTJ:  .ASCIZ  <15><12>/IS THE TEST CONNECTOR INSTALLED ?(Y OR N)-/
 3637  017742  044124  020105  042524
 3638  017750  052123  041440  047117
 3639  017756  042516  052103  051117
 3640  017764  044440  051516  040524
 3641  017772  046114  042105  037440
 3642  020000  054450  047440  020122
 3643  020006  024516  000055
 3644  020012  006412  020040  020040  MSTATUS: .ASCIZ  <12> <15>/    STATUS   MAP     / <12> <15>
 3645  020020  052123  052101  051525
 3646  020026  020040  046440  050101
 3647  020034  020040  020040  005040
 3648  020042  000015
 3649                                  .EVEN
 3650
 3651                                          ;BUFFERS FOR INPUT-OUTPUT
 3652
 3653  020044  000040                  INBUF:  .BLKB   40
 3654  020104  000040                  TEMP:   .BLKB   40
 3655  020144  000040                  MDATA:  .BLKB   40
 3656                                  ;*****************************************************************
 3657                                          ;UTILITIES
 3658                                  ;*****************************************************************
 3659
 3660                                  ;THIS UTILITY CALCULATES PRIORITY LEVEL
 3661  020204  006367  000044          DULEV:  ASL     DUPRT   ;SHIFT LEFT
 3662  020210  006367  000040                  ASL     DUPRT   ;
 3663  020214  006367  000034                  ASL     DUPRT   ;
```

```
3664  020220  006367  000030                  ASL     DUPRT   ;
3665  020224  006367  000024                  ASL     DUPRT   ;
3666  020230  016767  000020  000020          MOV     DUPRT,LESS1     ;MOVE THIS TO LESS1
3667  020236  162767  000001  000012          SUB     #1,LESS1        ;CREATE LESS1
3668  020244  042767  000037  000004          BIC     #37,LESS1       ;CLEAR TNZVC
3669  020252  000207                          RTS     PC
3670  020254  000240                  DUPRT:  LEVEL5
3671  020256  000200                  LESS1:  LEVEL4  ;LEVEL TO ALLOW INTERRUPTS
3672
3673                                          ;NEW DU ADDRESSES
3674  020260  016767  000126  000422  DUADDR: MOV     DUBASE,RXCSR    ;XXX0
3675  020266  005267  000120                  INC     DUBASE
3676  020272  016767  000114  000412          MOV     DUBASE,HRXCSR   ;XXX1
3677  020300  005267  000106                  INC     DUBASE
3678  020304  016767  000102  000402          MOV     DUBASE,RXDBUF   ;XXX2
3679  020312  016767  000074  000400          MOV     DUBASE,PARCSR   ;XXX2
3680  020320  005267  000066                  INC     DUBASE
3681  020324  016767  000062  000364          MOV     DUBASE,HRXDBUF  ;XXX3
3682  020332  016767  000054  000362          MOV     DUBASE,HPARCSR  ;XXX3
3683  020340  005267  000046                  INC     DUBASE
3684  020344  016767  000042  000352          MOV     DUBASE,TXCSR    ;XXX4
3685  020352  005267  000034                  INC     DUBASE
3686  020356  016767  000030  000342          MOV     DUBASE,HTXCSR   ;XXX5
3687  020364  005267  000022                  INC     DUBASE
3688  020370  016767  000016  000332          MOV     DUBASE,TXDBUF   ;XXX6
3689  020376  005267  000010                  INC     DUBASE
3690  020402  016767  000004  000322          MOV     DUBASE,HTXDBUF  ;XXX7
3691  020410  000207                          RTS     PC
3692  020412  000000                  DUBASE: 0
3693
3694                                          ;THIS UTILITY POKES THE MAINT DATA BASED UPON THE
3695                                          ;INFORMATION CONTAINED IN TEMP1 AND IT IS
3696                                          ;SHIFTED IN BY THE CONTENTS OF SHIFT
3697  020414  042777  040000  000302  RPOKE:  BIC     #MTDATA,@TXCSR
3698  020422  005067  160520                  CLR     TEMP2
3699  020426  006067  160512                  ROR     TEMP1   ;FORCE CARRY
3700  020432  006067  160510                  ROR     TEMP2   ;PICK UP CARRY IN BIT 15
3701  020436  006267  160504                  ASR     TEMP2   ;SHIFT INTO BIT 14
3702  020442  042767  100000  160476          BIC     #BIT15,TEMP2    ;CLR BIT 15
3703  020450  056777  160472  000246          BIS     TEMP2,@TXCSR    ;POKE MAINT DATA
3704  020456  042777  020000  000240          BIC     #CLK,@TXCSR     ;POKE CLK
3705  020464  052777  020000  000232          BIS     #CLK,@TXCSR     ;
3706  020472  005367  160442                  DEC     SHIFT
3707  020476  001346                          BNE     RPOKE
3708  020500  000207                          RTS     PC
3709
3710                                          ;THIS ROUTINE CALCULATES ODD PARITY FOR AN 8 BIT CHAR
3711  020502  016767  160436  160436  ODD8:   MOV     TEMP1,TEMP2     ;SAVE TEMP1
3712  020510  005067  160434                  CLR     TEMP3
3713  020514  012727  000010                  MOV     #8.,(PC)+
3714  020520  000000                  4$:     0
3715  020522  006067  160420          1$:     ROR     TEMP2
3716  020526  005567  160416                  ADC     TEMP3
3717  020532  005367  177762                  DEC     4$
3718  020536  001371                          BNE     1$
3719  020540  006067  160404                  ROR     TEMP3
```

```
3720  020544  103404                        BCS     2$
3721  020546  052767  000400  160370        BIS     #BIT8,TEMP1     ;SET ODD PARITY
3722  020554  000403                        BR      3$
3723  020556  042767  000400  160360  2$:   BIC     #BIT8,TEMP1     ;CLR EVEN PARITY
3724                                        ;TEMP1 NOW HAS ODD PARITY CHARACTER
3725  020564  000207                  3$:   RTS     PC
3726
3727                                        ;THIS ROUTINE CALCULATES EVEN PARITY FOR AN 8 BIT CHARACTER
3728  020566  016767  160352  160352  EVEN8: MOV    TEMP1,TEMP2     ;SAVE TEMP1
3729  020574  005067  160350                CLR     TEMP3
3730  020600  012727  000010                MOV     #8.,(PC)+
3731  020604  000000                  4$:   0
3732  020606  006067  160334            1$:   ROR     TEMP2
3733  020612  005567  160332                ADC     TEMP3
3734  020616  005367  177762                DEC     4$
3735  020622  001371                        BNE     1$
3736  020624  006067  160320                ROR     TEMP3
3737  020630  103004                        BCC     2$
3738  020632  052767  000400  160304        BIS     #BIT8,TEMP1     ;SET EVEN PARITY
3739  020640  000403                        BR      3$
3740  020642  042767  000400  160274  2$:   BIC     #BIT8,TEMP1     ;CLR ODD PARITY
3741                                        ;TEMP1 NOW HAS EVEN PARITY CHARACTER
3742  020650  000207                  3$:   RTS     PC
3743  020652  062716  000002            TRPREG: ADD     #2,(SP) ;ALLOW IT TO ''CRUNCH'' INTO HLT BACK
3744                                                        ;IN MAIN PART OF THE PROGRAM
3745  020656  000002                        RTI
3746                                        ;ERROR HLT TABLE
3747  020660  020744                  .ERRTAB:      EM0     ;HLT 0  BIT ERROR (GENERAL)
3748  020662  000000                                0
3749  020664  000000                                0
3750  020666  020760                                EM1     ;HLT 1  REGISTER ERROR
3751  020670  021131                                DH1
3752  020672  021152                                DT1
3753  020674  021022                                EM2     ;HLT 2  RECEIVER ERROR
3754  020676  021131                                DH1
3755  020700  021152                                DT1
3756  020702  021064                                EM3     ;HLT 3  TRANSMITTER ERROR
3757  020704  021131                                DH1
3758  020706  021152                                DT1
3759                                        ;DEFAULT DU ADDRESSES
3760  020710  160040                  RXCSR:  160040
3761  020712  160041                  HRXCSR: 160041
3762  020714  160042                  RXDBUF: 160042
3763  020716  160043                  HRXDBUF:        160043
3764  020720  160042                  PARCSR: 160042
3765  020722  160043                  HPARCSR:        160043
3766  020724  160044                  TXCSR:  160044
3767  020726  160045                  HTXCSR: 160045
3768  020730  160046                  TXDBUF: 160046
3769  020732  160047                  HTXDBUF:        160047
3770                                        ;DEFAULT DU VECTORS
3771  020734  000770                  DURIV:  770     ;REC INTR VECTOR
3772  020736  000772                  DURIS:  772     ;REC INTR STATUS
3773  020740  000774                  DUTIV:  774     ;XMIT INTR VECTOR
3774  020742  000776                  DUTIS:  776     ;XMIT INTR STATUS
3775                                        ;ERROR MESSAGES
```

```
3776  020744  036440  042440  051122  EM0:    .ASCIZ  / = ERROR PC/
3777  020752  051117  050040  000103
3778  020760  036440  051040  043505  EM1:    .ASCIZ  / = REGISTER ERROR PC/<15><12><1>/REGISTER  /
3779  020766  051511  042524  020122
3780  020774  051105  047522  020122
3781  021002  041520  005015  051001
3782  021010  043505  051511  042524
3783  021016  020122  000040
3784  021022  036440  051040  041505  EM2:    .ASCIZ  / = RECEIVER ERROR PC/<15><12><1>/REGISTER  /
3785  021030  044505  042526  020122
3786  021036  051105  047522  020122
3787  021044  041520  005015  051001
3788  021052  043505  051511  042524
3789  021060  020122  000040
3790  021064  036440  052040  040522  EM3:    .ASCIZ  / = TRANSMITTER ERROR PC/<15><12><1>/REGISTER  /
3791  021072  051516  044515  052124
3792  021100  051105  042440  051122
3793  021106  051117  050040  006503
3794  021114  000412  042522  044507
3795  021122  052123  051105  020040
3796  021130     000
3797                                  ;DATA HEADERS FOR ERROR MESSAGES
3798  021131     105  050130  041505  DH1:    .ASCIZ  /EXPECTED  ACTUAL/
3799  021136  042524  020104  040440
3800  021144  052103  040525  000114
3801                          .EVEN
3802                                  ;DATA TABLES FOR ERROR MESSAGES
3803  021152  000003          DT1:    3
3804  021154     006     004          .BYTE   6,4
3805  021156  001164                  SAVR3   ;REGISTER
3806  021160     006     004          .BYTE   6,4
3807  021162  001156                  SAVR0   ;EXPECTED DATA
3808  021164     006     002          .BYTE   6,2
3809  021166  001160                  SAVR1   ;ACTUAL DATA
3810     000001          .END
```

```
AAA     002520          1179#
ACTREG  001216           899#  1063*  1127*  1141*  1142*  1149*  1231   3061   3064   3074
ADDBAS  001306           939#  1059   1226*
ADDKEE  001310           940#  1060   1227*
ADDLAS  001312           941#  1061   1228*
ADDROT  001322           945#  1064   1232*
ADRCNT= 015361          3226*  3265*  3274#
A10010= ****** GX        678
BASEAD  001204           894#  1059*  1066*  1109*  1146*  1147   1153*  1155*  1226   3068*  3080*  3084
BASEDU  001364           962#  1073   1239*
BASEIV  001212           897#  1065*  1119*  1230   3069*  3081*  3086   3087*  3088   3089*  3090   3091*  3092
                        3093*
BBB     002336          1126   1130#
BINWRD  015676          3315*  3316   3353#
BITW  = 002000           809#  1355   1419   1483   1547   1611   1675   1739   1803   1864   1919   1974   2029
                        2085   2140   2195   2250   2306   2361   2416   2471   2527   2582   2637   2692   2748
                        2803   2858   2913   2968   3023
BIT0  = 000001           757#   785    816
BIT1  = 000002           756#   784
BIT10 = 002000           747#   775    809
BIT11 = 004000           746#   774
BIT12 = 010000           745#   773    790
BIT13 = 020000           744#   772    789    808
BIT14 = 040000           743#   771    788    807
BIT15 = 100000           742#   770    787    806    3702
BIT2  = 000004           755#   783   1294
BIT3  = 000010           754#   782    815
BIT4  = 000020           753#   781    814
BIT5  = 000040           752#   780    813
BIT6  = 000100           751#   779    812
BIT7  = 000200           750#   778    811
BIT8  = 000400           749#   777    793    810    3721   3723   3738   3740
BIT9  = 001000           748#   776    792
BREAK = 000001           816#
BRW     014712          1291   1305   3154#
BRX     014714          1292   1306   3155#
BUFF1   000002R          678#  1268   1274
BUFHRX  001346           955#  1077   1243*
BUFHTX  001362           961#  1083   1249*
BUFRXD  001344           954#  1076   1242*
BUFTXD  001360           960#  1082   1248*
BYJMR   001305           935#  1058   1225*
CARDET= 010000           773#
CCC     014446          3060   3083   3100#
CHRCNT  015674          3313*  3317   3331*  3351#  3352
CKSWR = 104413           994#  3113   3135   3159   3388   3431
CLK   = 020000           808#  1350   1351   1357   1358   1369   1414   1415   1421   1422   1433   1478   1479
                        1485   1486   1497   1542   1543   1549   1550   1561   1606   1607   1613   1614   1625
                        1670   1671   1677   1678   1689   1734   1735   1741   1742   1753   1798   1799   1805
                        1806   1817   1859   1860   1866   1867   1878   1914   1915   1921   1922   1933   1969
                        1970   1976   1977   1988   2024   2025   2031   2032   2043   2080   2081   2087   2088
                        2099   2135   2136   2142   2143   2154   2190   2191   2197   2198   2209   2245   2246
                        2252   2253   2264   2301   2302   2308   2309   2320   2356   2357   2363   2364   2375
                        2411   2412   2418   2419   2430   2466   2467   2473   2474   2485   2522   2523   2529
                        2530   2541   2577   2578   2584   2585   2596   2632   2633   2639   2640   2651   2687
                        2688   2694   2695   2706   2743   2744   2750   2751   2762   2798   2799   2805   2806
```

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                    2817    2853    2854    2860    2861    2872    2908    2909    2915    2916    2927    2963    2964
                    2970    2971    2982    3018    3019    3025    3026    3037    3704    3705
CLROPT  001303       933#    1056    1223*
CNTLU = 104414       996#    1041
CNVRT = 104411       990#    3505
CONVRT= 104410       988#    1277    3057    3411    3422    3474
COUNT   001142       870#
COUNT1  001230       910#    1267*   1279*
CSRHPA  001352       957#    1079    1245*
CSRHRX  001342       953#    1075    1241*
CSRHTX  001356       959#    1081    1247*
CSRPAR  001350       956#    1078    1244*
CSRRX   001340       952#    1074    1240*
CSRTX   001354       958#    1080    1246*
CTS   = 020000       772#
D     = ****** GX    677
DATABP  016150      3406*    3409    3420    3423#
DATAHD  016136      3405*    3416    3419#
DEVADR  015356      3224*    3262    3272#
DEVICE  017065      3058     3558#
DH1     021131      3751     3754    3757    3798#
DISPRE  000174       837#    1034
DLIGHT= 177570       727#    1025
DMULT   001304       934#    1057    1224*
DNA   = 100000       806#
DNAINT= 000040       813#
DSC   = 100000       770#
DSINTE= 000040       780#
DSR   = 001000       776#
DSWR  = 177570       726#    1024
DTR   = 000002       784#
DT1     021152      3752     3755    3758    3803#
DUADDR  020260      1108     3085    3674#
DUBASE  020412      1073*    1104    1107    1239    3084*   3674    3675*   3676    3677*   3678    3679    3680*   3681
                    3682     3683*   3684    3685*   3686    3687*   3688    3689*   3690    3692#
DULEV   020204      1174     3661#
DUPRT   020254      1072*    1171    1233    3661*   3662*   3663*   3664*   3665*   3666    3670#
DURIS   020736      1068*    1235    3088*   3772#
DURIV   020734      1067*    1115    1118    1119    1234    3086*   3093    3771#
DUTIS   020742      1070*    1237    3092*   3774#
DUTIV   020740      1069*    1236    3090*   3773#
EIGHT = 006000       801#    1536    1792    2516    2571    2626    2681    2737    2792    2847    2902    2957    3012
EM0     020744      3747     3776#
EM1     020760      3750     3778#
EM2     021022      3753     3784#
EM3     021064      3756     3790#
ERRCNT  001132       863#    1015*   3432*
ERRFLG  001246       922#    1014*   3102*   3148*   3394*   3407    3413*   3478*
ERRMSG  016124      3404*    3415#
ERTABO  016242      3412     3441#
EVENB   020566      3728#
EVEPAR= 001400       804#    1853    1963    2074    2184    2295    2405    2516    2626    2737    2847    2957
EVPAR = 000400       793#
EXITER  016174      3426     3431#
FILBUF  003204      1270#    1273
FIVE  = 000000       798#    1344    1600    1853    1908    1963    2018
```

```
FLAG    001222            907#  1089*  1260  1264*
FRMERR= 020000            789#
HALTS   016154           3390  3425#
HDXEN = 000010            815#
HEREU   003132           1219  1260#
HILIM   015354           3223*  3253  3271#
HOLD    001136            868#
HOLD0   001224            908#  1265*  1281
HOLD1   001226            909#  1266*  1282
HPARCS  020722           1079*  1245  3682*  3765#
HRXCSR  020712           1075*  1241  3676*  3761#
HRXDBU  020716           1077*  1243  3681*  3763#
HTXCSR  020726           1081*  1247  3686*  3767#
HTXDBU  020732           1083*  1249  3690*  3769#
ICOUNT  001122            859#  3146  3150*
INBUF   020044           1182  1186  3187  3229  3361  3365  3653#
INIFLG  001244            920#  1020  1023*
INSTER= 104404            980#  1190  3248  3370
INSTR = 104403            978#  1099  1110  1120  1131  1156  1166  1180  1193  1197  1201  1205  1296
                         1309  3506
INSTR2  015140           3198  3213#
ISYMOD= 000000            797#  1955  1963  2010  2018  2176  2184  2231  2239  2397  2405  2452  2460
                         2618  2626  2673  2681
IVBASE  001314            942#  1065  1230*
IVKEEP  001316            943#  1062  1229*
JMRBY   001203            890#  1058*  1208  1225
KEEPAD  001206            895#  1060*  1066  1107*  1109  1153  1155  1227  3080
KEEPIV  001214            898#  1062*  1118*  1229  3081
LASTAD  001210            896#  1061*  1136  1147  1161  1228
LESS1   020256           1071*  1238  3666*  3667*  3668*  3671#
LEVEL0= 000000            767#
LEVEL1= 000040            766#
LEVEL2= 000100            765#
LEVEL3= 000140            764#
LEVEL4= 000200            763#  3671
LEVEL5= 000240            762#  3670
LEVEL6= 000300            761#
LEVEL7= 000340            760#
LIGHTS  001102            848#  1025*  1034*  3104*
LIMITS  015302           3239  3253#
LOBITS  015360           3225*  3257  3273#  3274
LOCK    001120            858#  3162
LOGICA  014500           3108#
LOKFLG  001247            923#  1299  1300
LOLIM   015352           3222*  3255  3270#
LPCNT   001124            860#  1011*  3145*  3146  3149*
LSTERR  001134            864#  1016*  3101*  3391  3393*  3479*
L1ESS   001336            951#  1071  1238*
MAP     001634           1038  1040  1048#
MCOW    017077           3063  3560#
MCRLF   017254           1278  3195  3211  3303  3512  3580#
MDATA   020144           3329  3340  3655#
MEPASS  017344           3056  3590#
MEXT  = 010000            820#
MEXTJ   017735           1206  3636#
MINT  = 004000            819#  1341  1405  1469  1533  1597  1661  1725  1789  1850  1905  1960  2015
```

```
                    2071    2126    2181    2236    2292    2347    2402    2457    2513    2568    2623    2678    2734
                    2789    2844    2899    2954    3009
MITSEX  001301       931#   1054    1221*
MLASTD  017004      1132    3549#
MLEVEL  017453      1167    3603#
MLOCK   017410      1297    3597#
MMULT   016725      1121    3541#
MPFAIL  017257      3477    3581#
MQM     017250      3208    3579#
MR      017371      1319    3594#
MRANGE  017167      1157    3570#
MREGAD  016644      1100    3532#
MRESET= 000400       810#   1335    1337    1399    1401    1463    1465    1527    1529    1591    1593    1655    1657
                    1719    1721    1783    1785    1844    1846    1899    1901    1954    1956    2009    2011    2065
                    2067    2120    2122    2175    2177    2230    2232    2286    2288    2341    2343    2396    2398
                    2451    2453    2507    2509    2562    2564    2617    2619    2672    2674    2728    2730    2783
                    2785    2838    2840    2893    2895    2948    2950    3003    3005
MSTATU  020012      1263    3644#
MSYNC   017500      1181    3607#
MTDATA= 040000       807#   3697
MTITLE  016570      1022    3524#
MTSTPC  017375      1310    3595#
MULTD   001202       889#   1057*   1123    1124    1224    1288    3059
MVECTO  016622      1111    3529#
MWIRE4  017661      1202    3628#
MWIRE5  017614      1198    3621#
MWIRE6  017546      1194    3614#
NEXT    001116       857#   1334*   1398*   1462*   1526*   1590*   1654*   1718*   1782*   1843*   1898*   1953*   2008*
                    2064*   2119*   2174*   2229*   2285*   2340*   2395*   2450*   2506*   2561*   2616*   2671*   2727*
                    2782*   2837*   2892*   2947*   3002*   3131    3151    3437
NOPAR = 000000       802#   1344    1408    1472    1536    1600    1664    1728    1792
NOSYNC  001300       930#   1053    1220*
ODDPAR= 001000       803#   1908    2018    2129    2239    2350    2460    2571    2681    2792    2902    3012
ODD8    020502      3711#
ONCE    001522      1021    1024#
OPTCLR  001201       888#   1056*   1204    1223
OUT     016526      3493    3495    3497    3501    3513#
OUTCRY  014440      3057    3096#
OUTMUL  002476      1129    1154    1165#
OVRRUN= 040000       788#
PARAM = 104405       982#   1101    1112    1133    1158    1168    1311    3507
PARAM1  015206      3228#   3249
PARCSR  020720      1078*   1244    1336*   1344*   1400*   1408*   1464*   1472*   1528*   1536*   1592*   1600*   1656*
                    1664*   1720*   1728*   1784*   1792*   1845*   1853*   1900*   1908*   1955*   1963*   2010*   2018*
                    2066*   2074*   2121*   2129*   2176*   2184*   2231*   2239*   2287*   2295*   2342*   2350*   2397*
                    2405*   2452*   2460*   2508*   2516*   2563*   2571*   2618*   2626*   2673*   2681*   2729*   2737*
                    2784*   2792*   2839*   2847*   2894*   2902*   2949*   2957*   3004*   3012*   3679*   3764#
PAREN = 001000       792#
PARER = 010000       790#
PARERR  015262      3231    3233    3235    3244#   3254    3256    3258
PARTI   015344      3247    3267#
PASCNT  001130       862#   1013*   3103*   3104
PFTAB   016404      3475    3481#
POPR0 = 012600       736#   3430
POP1SP= 005726       734#
POP2SP= 022626       738#
```

```
PRTDU   001324          946#  1072  1233*
PS    = 177776          728#  1008* 1213*  3112*  3469*
PUSHR0= 010046          735#  3427
PUSH1S= 005746          733#
PUSH2S= 024646          737#
RDSW    016412         3209   3246  3489#  3503*  3513*
RECACT= 004000          774#
REGACT  001320          944#  1063  1231*
REPLAY  014344         3076   3082  3084#
RESEC   001302          932#  1055  1222*
RESREG  016152         3421   3424#
RESTAR  016306         3455   3461#
RESTRT  014510         3077   3106  3112#
RES05 = 104407          986#  3424
RING  = 040000          771#
RINTEN= 000100          779#
RISDU   001334          950#  1068  1235*
RIVDU   001326          947#  1067  1234*
ROTADD  001220          902#  1064* 1128*  1140*  1142  1144*  1149  1152*  1232  3071*  3074  3078*
RPOKE   020414         3697#  3707
RTRN    001114          856#  1018* 1314   1318*  1320  3114*  3131* 3132  3151*  3152  3437*  3439  3480
                       3483
RTS   = 000004          783#
RUNA  = ****** U          1     53    71     149    665
RUNB  = ****** U          1     53    71     149    665
RUNC  = ****** U          1     53    71     149    665
RUND  = 000000            1     53    71     149    665
RUNE  = ****** U         21     59    74     152    670
RUNF  = ****** U         21     59    74     152    670
RUNIT   014250         3062   3068# 3075
RXCSR   020710         1074*  1240  3098   3674*  3760#
RXDBUF  020714         1076*  1242  3678*  3762#
RXDONE= 000200          778#
RXERR = 100000          787#
SAVPC   001174          883#  3278* 3443
SAVR0   001156          876#  3287* 3292   3807
SAVR1   001160          877#  3286* 3293   3809
SAVR2   001162          878#  3285* 3294
SAVR3   001164          879#  3284* 3295   3805
SAVR4   001166          880#  3283* 3296
SAVR5   001170          881#  3282* 3297
SAVSP   001172          882#  3454* 3461
SAV05 = 104406          984#  3395
SCOPE = 104400          972#  1385  1449   1513   1577  1641  1705  1769  1833  1888  1943  1998  2053
                       2109   2164  2219   2274   2330  2385  2440  2495  2551  2606  2661  2716  2772
                       2827   2882  2937   2992   3047
SCOP1 = 104401          974#
SEND  = 000020          814#  1341  1405   1469   1533  1597  1661  1725  1789  1850  1905  1960  2015
                       2071   2126  2181   2236   2292  2347  2402  2457  2513  2568  2623  2678  2734
                       2789   2844  2899   2954   3009
SEREC   001200          887#  1055* 1200   1222
SETFG   003144         1261   1263#
SETFLG= 104412          992#  1122  1195   1199   1203  1207  1298
SEVEN = 004000          800#  1472  1728   2295   2350  2405  2460
SEXMIT  001177          886#  1054* 1196   1221
SHIFT   001140          869#  1348* 1366*  1412*  1430* 1476* 1494* 1540* 1558* 1604* 1622* 1668* 1686*
```

```
                    1732*  1750*  1796*  1814*  1857*  1875*  1912*  1930*  1967*  1985*  2022*  2040*  2078*
                    2096*  2133*  2151*  2188*  2206*  2243*  2261*  2299*  2317*  2354*  2372*  2409*  2427*
                    2464*  2482*  2520*  2538*  2575*  2593*  2630*  2648*  2685*  2703*  2741*  2759*  2796*
                    2814*  2851*  2869*  2906*  2924*  2961*  2979*  3016*  3034*  3706*
SIX    = 002000      799#  1408   1664   2074   2129   2184   2239
SPACNT= 015675     3314*  3333   3336*  3352#
SRD    = 002000      775#
STACK  = 001100      729#  1009   1285   3438   3470
STATUS  001300       930#  1269   1272
STD    = 000010      782#
STFLG   001245       921#  1012*
STPSYN= 000400       777#
SV05    015370     3282#
SWR     001100       847#  1024*  1029   1033*  1039   1048   1086   1218   1294   1307   3136   3143   3160
                    3389   3425   3433   3435   3494
SWREG   000176       838#  1033   1039   3494   3510   3517
SWREGC  016534     3505    3515#
SW00   = 000001      709#  1086
SW01   = 000002      708#  1307
SW02   = 000004      707#
SW03   = 000010      706#
SW04   = 000020      705#
SW05   = 000040      704#
SW06   = 000100      703#
SW07   = 000200      702#  1048   1218
SW08   = 000400      701#  3433
SW09   = 001000      700#  3160
SW10   = 002000      699#  3435
SW11   = 004000      698#  3143
SW12   = 010000      697#
SW13   = 020000      696#  3389
SW14   = 040000      695#  3136
SW15   = 100000      694#
SYNCNO  001176       885#  1053*  1184*  1188*  1220
SYNEXT= 020000       796#  1592   1600   1656   1664   1720   1728   1784   1792
SYNINT= 030000       795#  1336   1344   1400   1408   1464   1472   1528   1536   1845   1853   1900   1908
                    2066   2074   2121   2129   2287   2295   2342   2350   2508   2516   2563   2571   2729
                    2737   2784   2792   2839   2847   2894   2902   2949   2957   3004   3012
SYNSCH= 000020       781#
SYSTST= 014000       821#
TABLE   001232       911#  1275*  1276*  1277
TEMP    020104     3310    3318   3343*  3471*  3472*  3654#
TEMP1   001144       871#  1347*  1353*  1411*  1417*  1475*  1481*  1539*  1545*  1603*  1609*  1667*  1673*
                    1731*  1737*  1795*  1801*  1856*  1862*  1911*  1917*  1966*  1972*  2021*  2027*  2077*
                    2083*  2132*  2138*  2187*  2193*  2242*  2248*  2298*  2304*  2353*  2359*  2408*  2414*
                    2463*  2469*  2519*  2525*  2574*  2580*  2629*  2635*  2684*  2690*  2740*  2746*  2795*
                    2801*  2850*  2856*  2905*  2911*  2960*  2966*  3015*  3021*  3699*  3711   3721*  3723*
                    3728   3738*  3740*
TEMP2   001146       872#  3698*  3700*  3701*  3702*  3703   3711*  3715*  3728*  3732*
TEMP3   001150       873#  3310*  3343   3712*  3716*  3719*  3729*  3733*  3736*
TEMP4   001152       874#
TEMP5   001154       875#
THRU    003262     1262    1285#
TISDU   001332       949#  1070   1237*
TIVDU   001330       948#  1069   1236*
TKCSR   001104       849#  3139   3189   3496
```

```
TKDBR   001106          850#  3141  3191  3199  3498
TLAST = 013760         1313  3049#
TPCSR   001110          851#  3172  3200
TPDBR   001112          852#  3174* 3199*
TRPOK   015760         3380#
TRPREG  020652         3743#
TSTNO   001126          861#  1017* 1333* 1397* 1461* 1525* 1589* 1653* 1717* 1781* 1842* 1897* 1952*
                       2007* 2063* 2118* 2173* 2228* 2284* 2339* 2394* 2449* 2505* 2560* 2615* 2670*
                       2726* 2781* 2836* 2891* 2946* 3001*
TST1    003446         1312  1318  1333# 3114  3115
TST10   006210         1843  1897#
TST11   006432         1898  1952#
TST12   006654         1953  2007#
TST13   007076         2008  2063#
TST14   007320         2064  2118#
TST15   007542         2119  2173#
TST16   007764         2174  2228#
TST17   010206         2229  2284#
TST18   010430         2285  2339#
TST19   010652         2340  2394#
TST2    003700         1334  1397#
TST20   011074         2395  2449#
TST21   011316         2450  2505#
TST22   011540         2506  2560#
TST23   011762         2561  2615#
TST24   012204         2616  2670#
TST25   012426         2671  2726#
TST26   012650         2727  2781#
TST27   013072         2782  2836#
TST28   013314         2837  2891#
TST29   013536         2892  2946#
TST3    004132         1398  1461#
TST30   013760         2947  3001#  3049
TST31 = ****** U       3002
TST4    004364         1462  1525#
TST5    004616         1526  1589#
TST6    005050         1590  1653#
TST7    005302         1654  1717#
TST8    005534         1718  1781#
TST9    005766         1782  1842#
TTST    014614         1291* 1292* 1302* 1303* 1305* 1306* 3137#
TXCSR   020724         1080* 1246  1335* 1337* 1341* 1345  1350* 1351* 1357* 1358* 1359  1369* 1371
                       1379  1399* 1401* 1405* 1409  1414* 1415* 1421* 1422* 1423  1433* 1435  1443
                       1463* 1465* 1469* 1473  1478* 1479* 1485* 1486* 1487  1497* 1499  1507  1527*
                       1529* 1533* 1537  1542* 1543* 1549* 1550* 1551  1561* 1563  1571  1591* 1593*
                       1597* 1601  1606* 1607* 1613* 1614* 1615  1625* 1627  1635  1655* 1657* 1661*
                       1665  1670* 1671* 1677* 1678* 1679  1689* 1691  1699  1719* 1721* 1725* 1729
                       1734* 1735* 1741* 1742* 1743  1753* 1755  1763  1783* 1785* 1789* 1793  1798*
                       1799* 1805* 1806* 1807  1817* 1819  1827  1844* 1846* 1850* 1854  1859* 1860*
                       1866* 1867* 1868  1878* 1880  1899* 1901* 1905* 1909  1914* 1915* 1921* 1922*
                       1923  1933* 1935  1954* 1956* 1960* 1964  1969* 1970* 1976* 1977* 1978  1988*
                       1990  2009* 2011* 2015* 2019  2024* 2025* 2031* 2032* 2033  2043* 2045  2065*
                       2067* 2071* 2075  2080* 2081* 2087* 2088* 2089  2099* 2101  2120* 2122* 2126*
                       2130  2135* 2136* 2142* 2143* 2144  2154* 2156  2175* 2177* 2181* 2185  2190*
                       2191* 2197* 2198* 2199  2209* 2211  2230* 2232* 2236* 2240  2245* 2246* 2252*
                       2253* 2254  2264* 2266  2286* 2288* 2292* 2296  2301* 2302* 2308* 2309* 2310
```

```
                        2320*   2322    2341*   2343*   2347*   2351    2356*   2357*   2363*   2364*   2365    2375*   2377
                        2396*   2398*   2402*   2406    2411*   2412*   2418*   2419*   2420    2430*   2432    2451*   2453*
                        2457*   2461    2466*   2467*   2473*   2474*   2475    2485*   2487    2507*   2509*   2513*   2517
                        2522*   2523*   2529*   2530*   2531    2541*   2543    2562*   2564*   2568*   2572    2577*   2578*
                        2584*   2585*   2586    2596*   2598    2617*   2619*   2623*   2627    2632*   2633*   2639*   2640*
                        2641    2651*   2653    2672*   2674*   2678*   2682    2687*   2688*   2694*   2695*   2696    2706*
                        2708    2728*   2730*   2734*   2738    2743*   2744*   2750*   2751*   2752    2762*   2764    2783*
                        2785*   2789*   2793    2798*   2799*   2805*   2806*   2807    2817*   2819    2838*   2840*   2844*
                        2848    2853*   2854*   2860*   2861*   2862    2872*   2874    2893*   2895*   2899*   2903    2908*
                        2909*   2915*   2916*   2917    2927*   2929    2948*   2950*   2954*   2958    2963*   2964*   2970*
                        2971*   2972    2982*   2984    3003*   3005*   3009*   3013    3018*   3019*   3025*   3026*   3027
                        3037*   3039    3684*   3697*   3703*   3704*   3705*   3766#
TXDBUF  020730          1082*   1248    1346*   1410*   1474*   1538*   1602*   1666*   1730*   1794*   1855*   1910*   1965*
                        2020*   2076*   2131*   2186*   2241*   2297*   2352*   2407*   2462*   2518*   2573*   2628*   2683*
                        2739*   2794*   2849*   2904*   2959*   3014*   3688*   3768#
TXDONE= 000200           811#
TXINTE= 000100           812#
TYPDAT  016140          3410    3417    3420#
TYPE  = 104402           976#   1022    1263    1278    1319    3055    3058    3063    3185    3195    3207    3211    3302
                        3339    3414    3418    3476    3502    3504    3512
TYPMSG  016110          3408    3411#
UP      003224          1275#   1280
USER  = 000000           818#
VOID  = 000001           785#
WRDCNT  015672          3312*   3341*   3350#
ZERO    014256          3069#
$CNTG   016542          3502    3518#
$E    = 000040           678#   1334    1335#   1398    1399#   1462    1463#   1526    1527#   1590    1591#   1654    1655#
                        1718    1719#   1782    1783#   1843    1844#   1898    1899#   1953    1954#   2008    2009#   2064
                        2065#   2119    2120#   2174    2175#   2229    2230#   2285    2286#   2340    2341#   2395    2396#
                        2450    2451#   2506    2507#   2561    2562#   2616    2617#   2671    2672#   2727    2728#   2782
                        2783#   2837    2838#   2892    2893#   2947    2948#   3002    3003#
$MNEW   016557          3506    3521#
$MSWR   016547          3504    3519#
$N    = 000036           678#   1333    1335#   1397    1399#   1461    1463#   1525    1527#   1589    1591#   1653    1655#
                        1717    1719#   1781    1783#   1842    1844#   1897    1899#   1952    1954#   2007    2009#   2063
                        2065#   2118    2120#   2173    2175#   2228    2230#   2284    2286#   2339    2341#   2394    2396#
                        2449    2451#   2505    2507#   2560    2562#   2615    2617#   2670    2672#   2726    2728#   2781
                        2783#   2836    2838#   2891    2893#   2946    2948#   3001    3003#   3049#
$Y    = 000015           964#    972     974#    976#    978#    980#    982#    984#    986#    988#    990#    992#    994#
                         996#    998#
$67     002142          1049    1086#
.     = 021170           823#    826#    836#    843#    929#    930#    931#    932#    933#    934#    935#    939#    940#
                         941#    942#    943#    944#    945#    946#    947#    948#    949#    950#    951#    952#    953#
                         954#    955#    956#    957#    958#    959#    960#    961#    962#   3523#   3653#   3654#   3655#
.BEGIN  002630          1084    1088    1213#
.CKSWR  016414           995    3492#
.CNTLU  016470           997    3503#
.CNVRT  015460           991    3304#
.CONVR  015454           989    3302#
.EOP    014202          3002    3055#
.ERRTA  020660          3403    3747#
.HLT    016000           829    3388#
.INSTE  015114           981    3205#
.INSTG  015120          3204    3207#
.INSTR  014776           979    3181#
```

```
.INST1  015016          3185#   3196    3212
.MSG    015020          3183*   3186#   3498*   3499*   3500
.PARAM  015146           983    3219#
.PFAIL  016250           827    1010    3447#   3468
.RES05  015422           987    3292#
.SAV05  015362           985    3278#
.SCOPE  014532           973    3119#
.SCOP1  014716           975    3159#
.SETFL  015700           993    3360#   3371
.START  001420           839    1008#   1018    3067
.TRPSR  015746           831    3377#
.TRPTA  001366           969#   3382
.TYPE   014736           977    3167#
```

```
HLT      739#  1363  1375  1381  1427  1439  1445  1491  1503  1509  1555  1567  1573  1619  1631
        1637  1683  1695  1701  1747  1759  1765  1811  1823  1829  1872  1884  1927  1939  1982
        1994  2037  2049  2093  2105  2148  2160  2203  2215  2258  2270  2314  2326  2369  2381
        2424  2436  2479  2491  2535  2547  2590  2602  2645  2657  2700  2712  2756  2768  2811
        2823  2866  2878  2921  2933  2976  2988  3031  3043
PRGEND   678#  3048
PRGFRT   678#   679
PUSSYF   678#
RSETUP   678#
TSETUP   678#  1335  1399  1463  1527  1591  1655  1719  1783  1844  1899  1954  2009  2065  2120
        2175  2230  2286  2341  2396  2451  2507  2562  2617  2672  2728  2783  2838  2893  2948
        3003
$BEGIN   678#  1209
$BINAR   678#
$BUFFE   678#  3650
$CABLE   678#
$CATCH   678#   822
$CLRVE   678#  1024
$CONVR   678#  3299
$DNA     678#  1322  1386  1450  1514  1578  1642  1706  1770
$EOP     678#  3048
$GETFL   678#  1120  1193  1197  1201  1205  1296
$GETPA   678#  1099  1110  1130  1156  1165  1309
$GETSY   678#  1175
$HEADE   678#   679
$HLT     678#  3385
$INSTR   678#  3178
$ISOB    678#
$MATCH   678#
$MRR     678#
$MRRW    678#
$MRW     678#
$MSG     678#  3524
$PARAM   678#  3216
$PFAIL   678#  3444
$POKE    678#  1350  1356  1414  1420  1478  1484  1542  1548  1606  1612  1670  1676  1734  1740
        1798  1804  1859  1865  1914  1920  1969  1975  2024  2030  2080  2086  2135  2141  2190
        2196  2245  2251  2301  2307  2356  2362  2411  2417  2466  2472  2522  2528  2577  2583
        2632  2638  2687  2693  2743  2749  2798  2804  2853  2859  2908  2914  2963  2969  3018
        3024
$POKER   678#
$RCNET   678#
$RECAC   678#
$REG     678#  3275
$RESET   678#  1335  1337  1399  1401  1463  1465  1527  1529  1591  1593  1655  1657  1719  1721
        1783  1785  1844  1846  1899  1901  1954  1956  2009  2011  2065  2067  2120  2122  2175
        2177  2230  2232  2286  2288  2341  2343  2396  2398  2451  2453  2507  2509  2562  2564
        2617  2619  2672  2674  2728  2730  2783  2785  2838  2840  2893  2895  2948  2950  3003
        3005
$RXACT   678#
$SCOPE   678#  3116
$SCOP1   678#  3156
$SETFL   678#  3354
$SETVE   678#   823
$START   678#  1000
$STRIP   678#
```

```
$SYMBO    678#    691
$SYNCR    678#
$TRAPS    678#    964
$TRPAR    678#   1834    1889    1944    1999    2055    2110    2165    2220    2276    2331    2386    2441    2497    2552
          2607   2662    2718    2773    2828    2883    2938    2993
$TRPDE    678#    972     974     976     978     980     982     984     986     988     990     992     994     996
$TRPSR    678#   3372
$TSTNO    678#   1333    1397    1461    1525    1589    1653    1717    1781    1842    1897    1952    2007    2063    2118
          2173   2228    2284    2339    2394    2449    2505    2560    2615    2670    2726    2781    2836    2891    2946
          3001
$TYPE     678#   3164
$UNIBU    678#
$VARIA    678#    842
$WORDF    678#
$WORDO    678#
$WORDP    678#


. ABS.  021170     000

 ERRORS DETECTED:  0

 CZDUDD.BIN,CZDUDD.SEQ/CRF/SOL/NL:TOC=CZDU11.HLO/EQ:RUND,CZDU11.PAR,CZDU11.KET,CZDUDD.P11
 RUN-TIME: 8 12 1 SECONDS
 RUN-TIME RATIO: 132/22=5.9
 CORE USED:  19K  (37 PAGES)
```