DUP11

REC CONTR&INTERRUPT

MD-11-DZDPC-A

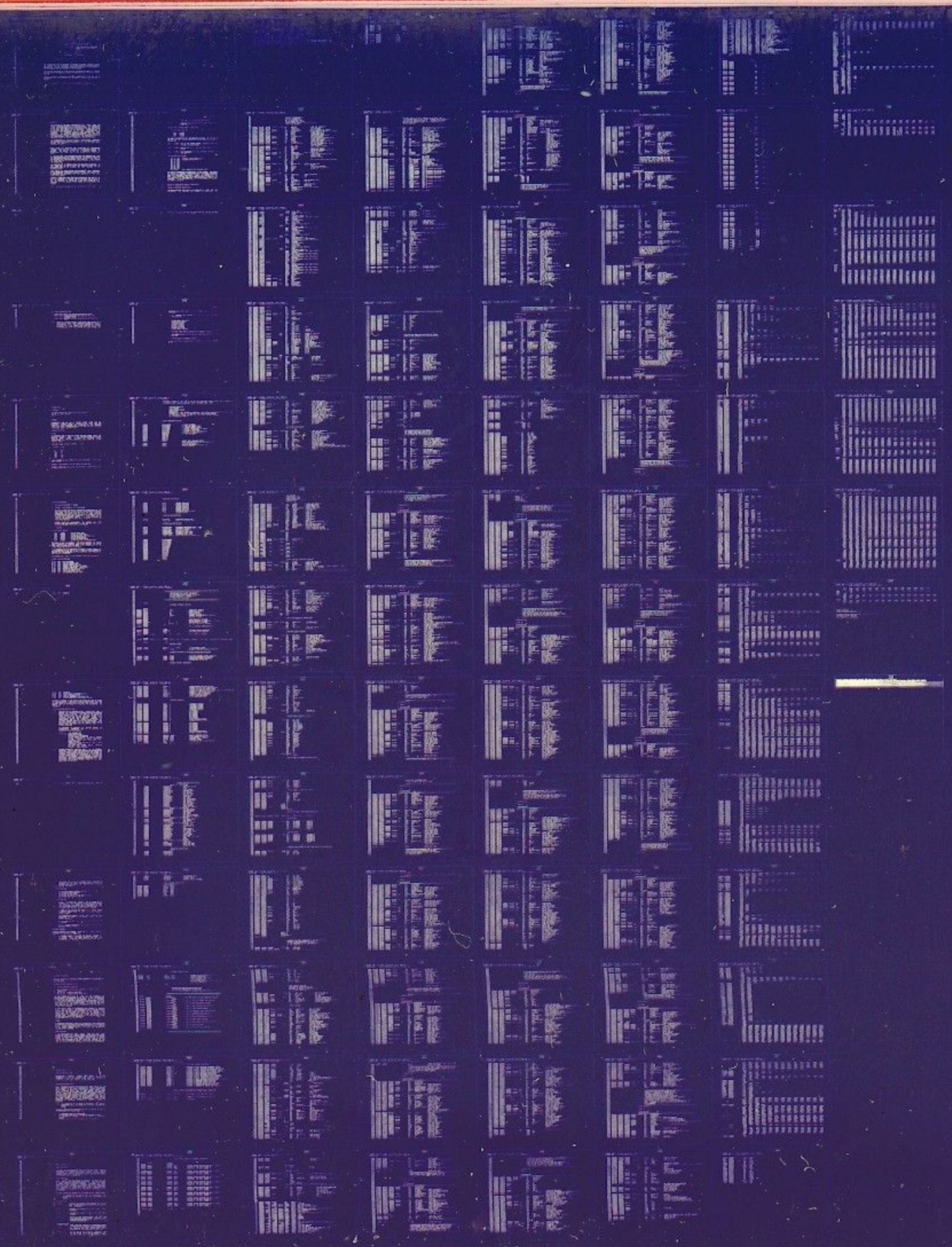
EP-DZDPC-A-DL-A

FICHE 1 OF 1

NOV 1976

digital

MADE IN USA



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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZDPC-A-D

PRODUCT NAME: DUP11 OFFLINE SDLC RECEIVER, MODEM CONTROL AND INTERRUPT TESTS

DATE: DEC 75

MAINTAINER: DIAGNOSTICS

1.0 ABSTRACT

THE FUNCTION OF THE DUP11 DIAGNOSTICS IS TO VERIFY THAT THE OPTION OPERATES ACCORDING TO SPECIFICATIONS. THE DIAGNOSTICS VERFIY THAT THERE ARE NO MALFUNCTIONS AND THAT ALL OPERATIONS OF THE DUP11 ARE CORRECT IN ITS ENVIROMENT. PARAMETERS MAY BE SET TO ALERT DIAGNOSTICS AS TO THE DUP11 CONFIGURATION BY ANSWERING THE PARAMETER DIALOG (LOAD ADDRESS=200, START ADDRESS=1). ALL QUESTIONS SHOULD BE ANSWERED AND THEN EACH DIAGNOSTIC WILL "OVERLAY" THESE PARAMETERS WHICH ARE STORED IN THE "STATUS TABLE" (SEE SECTION 8.4). THE ALTERNATIVE TO THE PARAMETER DIALOG IS DEFAULT PARAMETERS (SEE SECTION 8.5).

THE DIAGNOSTICS WILL RUN UP TO EIGHT CONSECUTIVELY ADDRESSED AND CONSECUTIVELY VECTORED DUP11'S IN A CHAIN MODE, I.E., RUNNING THE DIAGNOSTIC COMPLETELY FOR ONE DEVICE BEFORE STARTING THE NEXT.

DZDPC TESTS ALL RECEIVER SDLC FUNCTIONS IN MAINTENANCE INTERNAL MODE, THAT IS, CLOCKING OF THE DEVICE IS DONE BY THE PROGRAM. THE DEVICE IS SET UP, A SPECIFIC NUMBER OF HALF-CLOCKS ARE DONE, AND A TEST IS MADE FOR A SIGNIFICANT EVENT.

IN CHECKING DATA, THE SOFTWARE EMULATES THE HARDWARE AND USES THE PROCESSOR CARRY BIT AFTER A ROTATE TO PROVIDE AN INPUT TO THE RECEIVER VIA THE MAINTENANCE INPUT DATA BIT. THE PROGRAM CAN THEN LOAD THE RECEIVER DATA BUFFER SERIALLY,WITHOUT USING THE TRANSMITTER.

THE RECEIVER BCC IS CHECKED USING THE CRC.CCITT POLYNOMIAL IN THE SAME WAY AS DATA, WITH ONE EXCEPTION--THE BCC IS CALCULATED FIRST BY THE PROGRAM AND THEN COMPARED TO THE RECEIVER OUTPUT.

DZDPC CHECKS ALL MODEM CONTROL AND INTERRUPT LOGIC DEPENDING ON THE PARAMETER INFORMATION SUPPLIED THROUGH THE OVERLAY MAP. IN ADDITION, ALL EIA GATES, WITH THE EXCEPTION OF THE DATA GATES, ARE CHECKED.

CURRENTLY THERE ARE THREE OFF-LINE DIAGNOSTICS THAT ARE TO BE RUN IN SEQUENCE TO ENSURE THAT IF AN ERROR SHOULD OCCUR IT WILL BE DETECTED AT AN EARLY STAGE AND ESTABLISH THAT DIAGNOSIS OF THE ERROR WILL BE IMMEDIATE TO DISCOVERING THE PROBLEM.

NOTE: ADDITIONAL DIAGNOSTICS MAY BE ADDED IN THE FUTURE.

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  102
  103
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THE THREE DIAGNOSTICS ARE:

1. DZDPB [REV] BASIC AND OFFLINE TRANSMITTER TESTS
2. DZDPC [REV] OFFLINE RECEIVER AND MODEM CONTROL AND INTERRUPT TESTS
3. DZDPD [REV] OFFLINE SDLC AND DECMODE DATA AND FUNCTION TESTS

NOTE: THERE IS A FOURTH MAINDEC, TAPE DZDPE [REV] WHICH IS A QUICK-VERIFY TAPE THAT REQUIRES ANSWERING A DIALOG. ITS FUNCTION IS TO ENABLE THE OPERATOR TO QUICKLY DETERMINE IF THERE IS A PROBLEM WITH THE DEVICE. SEE THE DOCUMENTATION IN THAT LISTING FOR MORE INFORMATION.

2.0 REQUIREMENTS

2.1 EQUIPMENT

ANY PDP11 FAMILY CPU (WITH MINIMUM 8K MEMORY)
ASR 33 (OR EQUILIVALENT)
DUP11

2.2 STORAGE

PROGRAM WILL USE ALL 8K OF MEMORY EXCEPT WHERE ABS AND BOOTSTRAP LOADER RESIDE. LOCATION 1500 THRU 1560 ARE ESPECIALLY TO BE NOTED AND LEFT UNTOUCHED BY THE OPERATOR AFTER THE DUP11 PARAMETER DIALOG HAS BEEN EXECUTED OR AFTER THE DEFAULT SETUP HAS BEEN DONE.

3.0 LOADING PROCEDURE

3.1 METHOD

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

ABSOLUTE LOADER STARTING ADDRESS = *+500

MEMORY	SIZE (*)=
8K	37
12K	57
16K	77
20K	117
24K	137
28K	157

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

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

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

4.0 STARTING PROCEEDURE

A. SET SWITCH REGISTER TO 000200

B. DEPRESS 'LOAD ADDRESS' KEY AND RELEASE

C. SET SWR TO ZERO FOR DEFAULT PARAMETERS ESTABLISHED IN THE TAPE (SEE SECTION 8.5.3 FOR FULL EXPLANATION OF DEFAULT PARAMETERS) OR LEAVE SWR BIT 7=1 TO USE EXISTING PARAMETERS PREVIOUSLY SET UP BY THE DUP11 PARAMETER DIALOG OR A PREVIOUSLY RUN DUP11 DIAGNOSTIC. SET SWR=1 TO GO THROUGH THE PARAMETER DIALOG. (IT IS NOT NECESSARY TO INPUT NEW PARAMETERS FOR EACH TAPE.) (SECTION 7.2, 8.4 AND 8.5 MAY BE HELPFUL)

D. DEPRESS 'START KEY' AND RELEASE. THE PROGRAM WILL TYPE MAINDEC NAME AND PROGRAM NAME (IF THIS WAS THE FIRST START UP OF THE PROGRAM) AND ALSO THE FOLLOWING:

'EXAMPLE'

'MAP OF DUP11 STATUS'

1500	160050	CSR OF FIRST DUP11
1502	000300	VECTOR OF FIRST DUP11
1504	140026	STATUS AND SYNC FOR FIRST DUP11
1506	160060	CSR OF SECOND DUP11
1510	000310	VECTOR OF SECOND DUP11
1512	140026	STATUS AND SYNC FOR SECOND DUP11

THE ABOVE IS ONLY AN EXAMPLE! THIS WOULD INDICATE THE STATUS TABLE STARTING AT ADDRESS 1500 IN THE PROGRAM. THE STATUS TABLE MUST BE VERIFIED BY THE USER. FOR INFORMATION ON THE STATUS TABLE SEE SECTION 8.4 FOR HELP.

IT IS POSSIBLE FOR THE OPERATOR TO MANUALLY CHANGE (TOGGLE IN) THE INFORMATION IN THE MAP TO SUIT A SPECIFIC CONFIGURATION OF DEVICES, BUT THE RESPONSIBILITY FOR VERIFYING THAT INFORMATION RESTS WITH THE OPERATOR.

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

4.1 CONTROL SWITCH SETTINGS

SW 15	SET:	HALT ON ERROR
SW 14	SET:	LOOP ON CURRENT TEST
SW 13	SET:	INHIBIT ERROR PRINT OUT
SW 12	SET:	INHIBIT TYPE OUT/BELL ON ERROR.
SW 11	SET:	INHIBIT ITERATIONS. (QUICK PASS)
SW 10	SET:	ESCAPE TO NEXT TEST ON ERROR
SW 09	SET:	LOOP WITH CURRENT DATA
SW 08	SET:	CATCH ERROR AND LOOP ON IT
SW 07	SET:	USE PREVIOUS STATUS TABLE.

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   224                                          SW 06   SET:  RESERVED
   225                                          SW 05   SET:  RESERVED
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SW 04 SET: RESERVED
SW 03 SET: SELECT DUP11'S DESIRED ACTIVE
SW 02 SET: LOCK ON SELECTED TEST
SW 01 SET: RESTART PROGRAM AT SELECTED TEST
SW 00 SET: ENTER PARAMETERS USING MANUAL DIALOG

SWITCHES 8 THROUGH 15 ARE DYNAMIC AND SHOULD BE USED AS NEEDED IN THE DIAGNOSTIC. SWITCHES 0 THROUGH 3 ARE STATIC (ONLY ARE OPERABLE WHEN THE MONITOR PORTION OF THE TAPE IS RUNNING) AND SHOULD BE SET UP PRIOR TO STARTING OR RESTARTING THE DIAGNOSTIC.

4.1.2 SWITCH REGISTER RESTRICTIONS

SW 03 RESELECT DUP11'S DESIRED ACTIVE. PLEASE NOTE THAT A MESSAGE IS TYPED OUT FOR SETTING THE SWITCH REGISTER EQUAL TO DUP11'S ACTIVE. THIS MEANS IF THE SYSTEM HAS THREE DUP11S BITS 00, 01, 02 WILL BE SET IN LOC 'DUPACTV' FROM THE SWITCH REGISTER. USING THIS SWITCH(SW03) ALTERS THAT LOCATION. THEREFORE, IF THREE DUP11S ARE IN THE SYSTEM ***DO NOT*** SET SWITCHES GREATER THAN SW 02 IN THE UP POSITION. THIS WOULD BE A FATAL ERROR. DO NOT SELECT MORE ACTIVE DUP11S THAN HAS BEEN GIVEN INFORMATION ABOUT IN THE PARAMETER PROGRAM.

AS EXPLAINED IN SECTION 1.0, DEVICES SHOULD BE CONSECUTIVELY ADDRESSED, AND CAN BE SELECTED OR DESELECTED USING THIS SWITCH.

METHOD:
A. LOAD ADDRESS 200
B. START WITH SW 03=1
C. PROGRAM WILL TYPE MESSAGE
D. SET THE BINARY NUMBER OF DUP11S DESIRED ACTIVE. EXAMPLE: 1=1 DUP11; 3=2 DUP11; 7=3 DUP11; 17=4 DUP11 37=5 DUP11 ETC. PRESS CONTINUE.
E. NUMBER (IF VALID) WILL BE IN DATA LIGHTS (EXCLUDING 11/05)
F. SET WITH ANY OTHER SWITCH SETTINGS DESIRED. PRESS CONTINUE.

SW 01 RESTART PROGRAM AT SELECTED TEST. IT IS STRONGLY SUGGESTED THAT AT LEAST ONE PASS HAS BEEN MADE BEFORE TRYING TO SELECT A TEST THAT IS NOT IN THE ORDER OF SEQUENCE. THE REASON FOR THIS IS THAT THE PROGRAM HAS TO CLEAR AREAS AND SET UP PARAMETERS IN THE MONITOR PORTION OF THE PROGRAM. IT IS POSSIBLE TO LD200, AND RAISE SW01, THEN START, PROVIDED PARAMETERS HAVE BEEN PREVIOUSLY SET UP AS DESCRIBED IN SECTION 4.0. ALSO, WHEN A TEST IS SELECTED, ALWAYS START AT THE VERY BEGINNING OF THAT TEST.

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   282                                          SW 09   LOOP ON CURRENT DATA.  THIS SWITCH WILL ONLY  WORK  IF
   283                                                  CALL 'SCOPI' IS IN THAT TEST.  THE REASON IS THAT MOST
```

TESTS DEAL WITH BLOCKS OF DIFFERENT DATA TO BE SENT OR RECEIVED ALL AT ONCE, THUS KNOWN AS BLOCK DATA--ONE PATTERN CAN'T BE SINGLED OUT. (SEE SECTION 4.1.3.B.1)

4.1.3 SWITCH REGISTER PRIORITIES

A) ERROR SWITCHES

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

B) SCOPE SWITCHES

1. SW 09 - (IF ENABLED BY 'SCOP1') ON AN ERROR.IF AN ASTERISK '*' IS PRINTED IN FRONT OF THE TEST NUMBER (EX. *TEST NO. 10), SW09 IS INCORPORATED IN THAT TEST AND THEREFORE SW09 IS USUALLY THE BEST SWITCH FOR THE SCOPE LOOP (SW14=0, SW10=0, SW09=1, SW08=0).

   IF SW09 IS NOT ENABELED AND THERE IS A *HARD* ERROR (CONSTANT ERROR) SW08 IS BEST. (SW14=0, SW10=0, SW09=0, SW08=1).

   FOR INTERMITTENT ERRORS, SW14=1 WILL LOOP ON TEST REGARDLESS OF ERROR OR NO ERROR. (SW14=1, SW10=0, SW09=0, SW08=1,0)

2. SW 14 - LOOP ON TEST. WILL LOOP ON TEST UNTIL SWITCH IS LOWERED.

3. SW 11 - INHIBIT ITERATIONS (QUICK PASS). ALLOWS ONLY ONE PASS THROJGH A TEST.

4.2 STARTING ADDRESS

STARTING ADDRESS IS AT 000200. THERE ARE NO OTHER STARTING ADDRESSES FOR THE DUP11 DIAGNOSTICS.

NOTE: IF ADDRESS 000042 IS NON-ZERO THE PROGRAM ASSUMES IT IS UNDER ACT11 OR XXDP CONTROL AND WILL ACT ACCORDINGLY. AFTER *ALL* AVAILABLE DUP11'S ARE TESTED THE PROGRAM WILL RETURN TO 'XXDP' OR 'ACT-11'.

5.0 OPERATING PROCEDURE

WHEN THE PROGRAM IS INITIALLY STARTED MESSAGES AS DESCRIBED IN SECTION FOUR WILL BE PRINTED AND PROGRAM WILL BEGIN RUNNING THE DIAGNOSTIC.

5.1 PROGRAM AND/OR OPERATOR ACTION

THE TYPICAL APPROACH SHOULD BE

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

THE TEST NUMBER AND PC WILL BE TYPED OUT AND POSSIBILY AN ERROR MESSAGE (THIS DEPENDS ON THE TEST), TO GIVE THE OPERATOR AN IDEA AS TO THE SOURCE OF THE PROBLEM. IF IT IS NECESSARY TO KNOW MORE INFORMATION CONCERNING THE ERROR REPORT, LOOK IN THE LISTING FOR THAT TEST NUMBER WHICH WAS TYPED OUT AND THEN NOTE THE PC OF THE ERROR REPORT. IN THIS WAY THE EXACT FUNCTIONING OF THE TEST CAN BE INTERPRETED SINCE THE ERROR PC IS THE HLT+2 LOCATION.

IN SOME TESTS, THERE IS A SUBROUTINE CALL THROUGH A REGISTER (E.G., JSR R1,FLAG). THE SUBROUTINE DOES THE DATA CHECKING FOR THE TEST AND WILL REPORT AN ERROR IF ONE OCCURS. THIS MEANS THAT THE FAILING TEST COULD BE IN ONE PART OF THE LISTING WHILE THE SUBROUTINE THAT FOUND THE ERROR IS IN ANOTHER PART. TO DETERMINE THE PC OF THE FAILING TEST, CHECK THE REGISTER USED BY THE SUBROUTINE. IT WILL CONTAIN THE RETURN ADDRESS OF THE FAILING TEST.

6.0 ERRORS

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

6.1 ERROR RECOVERY

IF FOR SOME REASON THE DUP11 SHOULD 'HANG THE BUS' (GAIN CONTROL OF BUS SO THAT CONSOLE MANUAL FUNCTIONS ARE INHIBITED) AN INIT OR POWER DOWN/UP IS NECESSARY FOR OPERATOR TO REGAIN CONTROL OF CPU. IF THIS SHOULD HAPPEN LOOK IN LOCATION 'TSTNO' FOR THE NUMBER OF THE TEST THAT WAS RUNNING AT THE TIME OF THE CATASTROPHIC ERROR. THIS GIVES THE OPERATOR SOME IDEA AS TO WHAT THE DUP11 WAS DOING AT THE TIME OF THE ERROR.

7.0 RESTRICTIONS

7.1 STARTING RESTRICTIONS

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

7.2 OPERATING RESTRICTIONS

DUP11 "PARAMETER DIALOG" MUST BE RUN ONLY ONCE PRIOR TO THE FIRST RUNNING OF ANY DUP11 DIAGNOSTIC IF "DEFAULT PARAMETERS" ARE NOT USED. IF ONLY DUP11 DIAGNOSTICS WERE LOADED AFTER DUP11 PARAMETER SETUP, AND IF CORE MEMORY HAS NOT BEEN CHANGED, I.E.,USE OF DIAGNOSTICS OTHER THAN DUP11 DIAGNOSTICS, AND IF THERE WERE NO DUP11 CONFIGURATION CHANGES, THE DUP11 PARAMETER SETUP NEED NEVER BE RUN AGAIN. HOWEVER, IF ANY OF THE ABOVE HAVE BEEN VIOLATED THE DUP11 PARAMETER SETUP MUST BE RUN AGAIN BEFORE RUNNING THE DIAGNOSTICS. UNDER NORMAL OPERATING CONDITIONS IT SHOULD NOT BE NECESSARY TO INPUT NEW PARAMETERS TO SUSSEQUENT DIAGNOSTICS, UNLESS A CHANGE IS REQUIRED.

NOTE: AN ALTERNATIVE TO THE ABOVE IS ATTEMPTING THE DEFAULT PARAMETERS WHEN THE PROGRAM IS INITIALLY STARTED WITH SWR=0.

7.3 HARDWARE CONFIGURATION RESTRICTIONS FOR THE PURPOSE OF RUNNING MULTIPLE DUP11'S IN CHAIN MODE.

1. CSR ADDRESSES MUST BE CONSECUTIVE.
2. VECTORS ARE CONSECUTIVE IF PARAMETER PROGRAM IS USED.
3. ALL JUMPERS ARE ASSUMED TO BE AS SETUP IN PARAMETER DIALOG.
4. PRIORITY LEVEL MUST BE THE SAME FOR ALL DEVICES.

8.0 MISCELLANEOUS

8.1 EXECUTION TIME

ALL DUP11 DEVICE DIAGNOSTICS WILL GIVE AN 'END PASS' MESSAGE (PROVIDING NO ERRORS AND SW12=0) WITHIN 4 MINS. THIS IS ASSUMING SW11=1 (DELETE ITERATIONS) IS SET TO GIVE THE FASTEST POSSIBLE EXECUTION. THE ACTUAL EXECUTION TIME DEPENDS GREATLY ON THE PDP11 CPU CONFIGURATION.

8.2 PASS COMPLETE

NOTE: *EVERY* TIME THE PROGRAM IS STARTED, THE TESTS WILL RUN AS IF SW11 (DELETE ITERATIONS) WAS UP (=1). THIS IS TO VERIFY NO *HARD* ERRORS AS SOON AS POSSIBLE. THEREFORE THE FIRST PASS--EACH TIME PROGRAM IS STARTED--WILL BE A 'QUICK PASS' UNTIL ALL DUP11'S IN SYSTEM ARE TESTED. WHEN THE DIAGNOSTIC HAS COMPLETED A PASS WITH THE NORMAL ITERATION COUNT (ICOUNT=50), THE FOLLOWING IS AN EXAMPLE OF THE PRINT OUT TO BE EXPECTED.

END PASS DZDPBA CSR:160050 VEC:300 PASSES:000001 ERRORS:000000

NOTE: THE NUMBERS FOR CSR AND VEC ARE NOT NECESSARILY THE VALUES FOR THE DEVICE. THEY ARE ONLY FOR THIS EXAMPLE.

8.3 KEY LOCATIONS

RETURN	CONTAINS THE ADDRESS WHERE PROGRAM WILL RETURN WHEN ITERATION COUNT IS REACHED OR IF LOOP ON TEST IS ASSERTED.
NEXT	CONTAINS THE ADDRESS OF THE NEXT TEST TO BE PERFORMED.
TSTNO	CONTAINS THE NUMBER OF THE TEST NOW BEING PERFORMED.
RUN	THE BIT IN 'RUN' ALWAYS POINTS ONE PAST THE DUP11 CURRENTLY BEING TESTED. EXAMPLE: (RUN) /0000000001000000 MEANS THAT DUP11 NO.05 IS THE DUP11 NOW RUNNING.
DUPCR00-DUPCR07 (1500)-(1560)	THESE LOCATIONS CONTAIN THE INFORMATION NEEDED TO TEST UP TO 8 (DECIMAL) DUP11S SEQUENTIALY. THEY CONTAIN THE CSR, VECTOR AND STATUS CONCERNING THE CONFIGURATION OF EACH DUP11.
DUPACTV	EACH BIT SET IN THIS LOCATION INDICATES THAT THE ASSOCIATED DUP11 WILL BE TESTED IN TURN. EXAMPLE: (DUPACTV) /0000000000011111 MEANS

```
                                                THAT DUP11 NO.  00,01,02,03,04 WILL BE TESTED.
                                                EXAMPLE:    (DUPACTV)  /0000000000010001  MEANS
```

THAT DUP11 NO. 00,04 WILL BE TESTED.

RXCSR — CONTAINS THE RECEIVER CSR OF THE CURRENT DUP11 UNDER TEST.

8.4 MORE ON THAT 'STATUS TABLE' (1500-1560)

'MAP OF DUP11 STATUS'

```
1500    160050
1502    000300
1504    140000
```

THE ABOVE INFORMATION WILL BE REPEATED FOR EACH OF UP TO 8 DUP11'S IN THE SYSTEM (THESE WILL FOLLOW UNDER THIS TABLE).
EXPLANATION:

1500 160050 THIS IS THE SYSTEM CONTROL REGISTER FOR THE 1ST DUP11 IN THE SYSTEM.

1502 000300 THIS IS VECTOR 'A' FOR THE FIRST DUP11 IN THE SYSTEM.

1504 140026 THIS REPRESENTS SYNC AND SOFTWARE STATUS FOR THE FIRST DUP.

THE BITS ARE AS FOLLOWS:

```
BIT 15  SET:  OPTIONAL CLEAR JUMPER IN
BIT 14  SET:  TURNAROUND CONNECTOR ON
BIT 13  SET:
BIT 12  SET:
BIT 11  SET:
BIT 10  SET:
BIT 09  SET:
BIT 08  SET:
BIT 07-00     SYNC CHARACTER FOR DECMODE TESTS.
```

THE ABOVE IS REPEATED FOR EACH DUP11 IN THE SYSTEM. THE TABLE IS FILLED BY DEFAULT PARAMETERS OR BY THE MANUAL PARAMETER INPUT AS DESCRIBED PREVIOUSLY. ALSO, IF DESIRED BY THE USER - THE LOCATIONS MAY BE ALTERED BY HAND (TOGGLED IN) TO SUIT THE SPECIFIC CONFIGURATION, THUS MAKING EACH DEVICE MAP DIFFERENT. IT IS THE RESPONSIBILITY OF THE OPERATOR TO VERIFY THE DATA IN THE MAP.

8.5 METHOD OF DEVELOPING DEFAULT PARAMETERS

8.5.1 DEFAULT PARAMETER ASSUMPTIONS

TOO MUCH HARDWARE WOULD HAVE TO BE ANALYZED TO SIZE THE THE PARAMETERS. THE PROGRAM MUST ASSUME THE VARIATIONS. THE

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   538                                  RESULT, IF NOT TO YOUR SPECIFIC CONFIGURATION, MAY BE  ALTERED
   539                                  BY  HAND  (TOGGLE  IN)  AS  DESIRED.   IN  THIS WAY 95% OF THE
```

PARAMETER SETUP WAS DONE BY THE PROGRAM AND 5% BY YOU.
THEREFORE:

1) ALL JUMPERS ARE ASSUMED TO BE IN THE FOLLOWING CONFIGURATION.

	IN	OUT
W1=SECONDARY REC ENABLE	X	
W2=SEC REC DISABLE		X
W3=CLEAR OPTION	X	
W4=SEC TX ENABLE	X	
W5=DSC A CONTROL		X
W6=A+B DS CONTROL	X	
W7=BUS GRANT CONTROL	X	

2) THE H325 TURN AROUND CONNECTOR IS ASSUMED TO BE ON.

3) THE MANUFACTURING OPTION CSR OF 160050 AND VECTOR OF 770 ARE USED.

4) THE BR LEVEL IS ASSUMED TO BE 5.

IN ALL ADJUSTMENTS PLEASE REFER TO SECTION 8.4 FOR GREATER DETAIL.

```
                                ;*MAINDEC-11-DZDPC-A /(377)/DUP-11 OFFLINE SDLC RECEIVER, MODEM CONTROL AND INTERRUPT TE
                                ;*COPYRIGHT 1975, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
                                ;*-------------------------------------------------------------------

                                        ;STARTING PROCEDURE
                                        ;LOAD PROGRAM
                                        ;LOAD ADDRESS 000200
                                        ;PRESS START
                                        ;PROGRAM WILL TYPE "MAINDEC-11-DZDPC-A /(377)/DUP-11 OFFLINE SDLC RECEIVER, MODE
                                        ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED
                                        ;AT THE END OF A PASS, PROGRAM WILL TYPE PASS COMPLETE MESSAGE
                                        ;AND THEN RESUME TESTING


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

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

```
                                ;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           ;PROCESSOR STACK POINTER
000006                          SP=%6           ;PROGRAM COUNTER
000007                          PC=%7

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

177776                          PS=177776       ;PROCESSOR STATUS WORD
001150                          STACK=1150      ;START OF PROCESSOR STACK

                                ;INSTRUCTION DEFINITIONS
                                ;-----------------------

005746                          PUSH1SP=5746    ;DECREMENT PROCESSOR STACK 1 WORD
005726                          POP1SP=5726     ;INCREMENT PROCESSOR STACK 1 WORD
010046                          PUSHR0=10046    ;SAVE R0 ON STACK
012600                          POPR0=12600     ;RESTORE R0 FROM STACK
024646                          PUSH2SP=24646   ;DECREMENT STACK TWICE
022626                          POP2SP=22626    ;INCREMENT STACK TWICE
                                .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
```

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

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

        000024                  .=24
000024  004776                          .PFAIL                  ;POWER FAIL HANDLER
000026  000340                          340                     ;SERVICE AT LEVEL 7
000030  004350                          .HLT                    ;ERROR HANDLER
000032  000340                          340                     ;SERVICE AT LEVEL 7
000034  004316                          .TRPSRV                 ;GENERAL HANDLER DISPATCH SERVICE
000036  000340                          340                     ;SERVICE AT LEVEL 7
        000040                  .=40
000040  000000                          0                       ;SAVE FOR ACT-11 OR DDP2
000042  000000                          0                       ;RETURN ADDRESS IF UNDER ACT-11 OR DDP2
000044  000000                          0                       ;SAVE FOR ACT-11 OR DDP2
000046  003104                          $ENDAD                  ;FOR USE WITH ACT-11 OR DDP2
        000052                  .=52
000052  000000                          0                       ;ACT-11 PROGRAM CHARACTERISTICS

        000174                  .=174
000174  000000                  DISPREG:0                       ;SOFTWARE DISPLAY REGISTER
000176  000000                  SWREG:  0                       ;SOFTWARE SWITCH REGISTER
        000200                  .=200
000200  000137  001562                  JMP     .START          ;GO TO START OF PROGRAM


        001000                  .=1000
001000  005377  040515  047111  MTITLE: .ASCIZ  <377><12>/MAINDEC-11-DZDPC-A /<377>/DUP-11 OFFLINE SDLC RECEIVER, MODEM
(2)
        001200                  .=1200
                                        ;SWR AND LIGHTS
                                        ;--------------

001200  177570                  DISPLAY:        177570          ;11/45 CONSOLE LIGHTS
001202  177570                  SWR:    177570                  ;INDIRECT POINTER TO SWITCH REGISTER

                                        ;INDIRECT POINTERS TO TELETYPE VECTORS AND REGISTERS
                                        ;--------------------------------------------------

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

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

```
                                RETURN: 0                       ;SCOPE ADDRESS FOR LOOP ON TEST
                                NEXT:   0                       ;ADDRESS OF NEXT TEST TO BE EXECUTED
                                LOCK:   0                       ;ADDRESS FOR LOCK ON CURRENT DATA
                                ICOUNT: 1                       ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
                                LPCNT:  0                       ;NUMBER OF ITEREATIONS COMPLETED
                                TSTNO:  0                       ;NUMBER OF TEST IN PROGRESS
                                PASCNT: 0                       ;NUMBER OF PASSES COMPLETED
                                ERRCNT: 0                       ;TOTAL NUMBER OF ERRORS
                                LSTERR: 0                       ;PC OF LAST ERROR CALL

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

                                TEMP1:  0                       ;TEMPORARY STORAGE
                                TEMP2:  0                       ;TEMPORARY STORAGE
                                TEMP3:  0                       ;TEMPORARY STORAGE
                                TEMP4:  0                       ;TEMPORARY STORAGE
                                TEMP5:  0                       ;TEMPORARY STORAGE
                                SAVR0:  0                       ;R0 STORAGE
                                SAVR1:  0                       ;R1 STORAGE
                                SAVR2:  0                       ;R2 STORAGE
                                SAVR3:  0                       ;R3 STORAGE
                                SAVR4:  0                       ;R4 STORAGE
                                SAVR5:  0                       ;R5 STORAGE
                                SAVSP:  0                       ;STACK POINTER STORAGE
                                SAVPC:  0                       ;PROGRAM COUNTER STORAGE

                                SAVR0A: 0                       ;R0 STORAGE
                                SAVR1A: 0                       ;R1 STORAGE
                                SAVR2A: 0                       ;R2 STORAGE
                                SAVR3A: 0                       ;R3 STORAGE
                                SAVR4A: 0                       ;R4 STORAGE
                                SAVR5A: 0                       ;R5 STORAGE
                                SAVSPA: 0                       ;STACK POINTER STORAGE
                                SAVPCA: 0                       ;PROGRAM COUNTER STORAGE

                                DUPACTV: .BLKB  1               ;DUP11'S SELECTED ACTIVE.
                                DUPNUM: .BLKB   1               ;OCTAL NUMBER OF DUP11'S.
                                SAVACT: .BLKB   1               ;ORIGINAL ACTV.  DEVICES.
                                SAVNUM: .BLKB   1               ;WORKABLE NUMBER.
                                RUN:    .BLKB   1               ;POINTER ONE PAST RUNNING DEVICE.
                                        .EVEN
                                CREAM:  DUP.MAP                 ;TABLE POINTER.
```

```
                                        ;CONTROL REGISTER DEFINITIONS
                                        ;----------------------------
                                ;RXCSR BIT DEFINITIONS
100000                  DSCA=BIT15              ;DATA SET CHANGE A
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                  RCVEN=BIT4              ;REC ENABLE
000010                  STD=BIT3                ;SEC XMIT DATA
000004                  RTS=BIT2                ;REQ TO SEND
000002                  DTR=BIT1                ;DATA TERM RDY
000001                  DSCB=BIT0               ;DATA SET CHANGE B
                                ;RXDBUF BIT DEFINITIONS
100000                  RXDERR=BIT15            ;REC DATA ERROR
040000                  OVRRUN=BIT14            ;OVERRUN ERROR
010000                  CRCERR=BIT12            ;CRC ERROR
002000                  RABORT=BIT10            ;REC ABORT
001000                  REOM=BIT9               ;REC END OF MESSAGE
000400                  RSOM=BIT8               ;REC START OF MESSAGE
                                ;PARCSR BIT DEFINITIONS
100000                  DECMOD=BIT15            ;DEC MODE (DDCMP)
001000                  CRCEN=BIT9              ;CRC ENABLE
010000                  PRISEC=BIT12            ;PRI/SEC SELECT
                                ;TXCSR BIT DEFINITIONS
100000                  TXDLAT=BIT15            ;TX DATA LATE
040000                  MTDATA=BIT14            ;MAINT DATA OUT
020000                  CLK=BIT13               ;CLK
010000                  MMODEB=BIT12            ;MAINT MODE B
004000                  MMODEA=BIT11            ;MAINT MODE A
002000                  BITW=BIT10              ;BIT WINDOW INPUT
001000                  TXACT=BIT9              ;TX ACTIVE
000400                  MRESET=BIT8             ;MASTER RESET
000200                  TXDONE=BIT7             ;XMIT DONE
000100                  TXINTE=BIT6             ;XMIT DONE INTR ENABLE
000020                  SEND=BIT4               ;SEND
000010                  HDXEN=BIT3              ;HDX/FDX
                                ;TXCSR WRD DEFINITIONS
000000                  USER=0                  ;USER MODE
014000                  MMODE=14000             ;MAINT INT MODE
010000                  MEXT=10000              ;MAINT EXT MODE
004000                  SYSTST=4000             ;SYSTEM TEST MODE

                                ;TXDBUF BIT DEFINITIONS
                                ;----------------------
100000                  RCRC7T=BIT15
040000                  RCRCIN=BIT14
020000                  TCRC7T=BIT13
010000                  TCRCIN=BIT12
```

```
 806                    004000                  TIMER=BIT11             ;MAINTENANCE TIMER
 807                    002000                  TABORT=BIT10            ;TRANSMIT ABORT
 808                    001000                  TEOM=BIT9               ;TRANSMIT END OF MESSAGE
 809                    000400                  TSOM=BIT8               ;TRANSMIT START OF MESSAGE
 810
 811                                            ;MISC. PROGRAM DEFINITIONS
 812                                            ;-------------------------
 813  001320  000000                           PRIRTY:.WORD 0
 814  001322  000001                           TCNFLG: .BLKB 1
 815  001323  000001                           OPCLRJ: .BLKB 1
 816  001324  000000                           DATA:   .WORD   0
 817  001326  000000                           SHIFTS: .WORD   0
 818  001330  000000                           MIND:   .WORD   0
 819  001332  000000                           FLAG:   .WORD   0
 820  001334  000001                           STJMFL: .BLKW 1
 821  001336  000001                           SRJMFL: .BLKW 1
 822
 823
```

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

001340  000                     INIFLG: .BYTE   0               ;PROGRAM INITIALIZATION FLAG
001341  000                     ERRFLG: .BYTE   0               ;ERROR OCCURED FLAG
001342  000                     LOKFLG: .BYTE   0               ;LOCK ON CURRENT TEST FLAG
001343  000                     QV.FLG: .BYTE   0               ;QUICK VERIFY FLAG.
                                                                ;ON FIRST PASS OF EACH DUP11 ITERATIONS
                                                                ;WILL BE SUPPRESSED
                                .EVEN
000000                          $Y=0

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

                                ;;**********************************************************************
                                ;----------------------------------------------------------------------
001344                          .TRPTAB:
        104400                  SCOPE=TRAP+0            ;CALL TO SCOPE LOOP AND ITERATION HANDLER
001344  003160                          .SCOPE
        104401                  SCOP1=TRAP+1            ;CALL TO LOOP ON CURRENT DATA HANDLER
001346  003312                          .SCOP1
        104402                  TYPE=TRAP+2             ;CALL TO TELETYPE OUTPUT ROUTINE
001350  003336                          .TYPE
        104403                  INSTR=TRAP+3            ;CALL TO ASCII STRING INPUT ROUTINE
001352  003412                          .INSTR
        104404                  INSTER=TRAP+4           ;CALL TO INPUT ERROR HANDLER
001354  003516                          .INSTER
        104405                  PARAM=TRAP+5            ;CALL TO NUMERICAL DATA INPUT ROUTINE
001356  003536                          .PARAM
        104406                  SAVOS=TRAP+6            ;CALL TO REGISTER SAVE ROUTINE
001360  003736                          .SAVOS
        104407                  RESOS=TRAP+7            ;CALL TO REGISTER RESTORE ROUTINE
001362  003776                          .RESOS
        104410                  CONVRT=TRAP+10          ;CALL TO DATA OUTPUT ROUTINE
001364  004030                          .CONVRT
        104411                  CNVRT=TRAP+11           ;CALL TO DATA OUTPUT ROUNTINE WITHOUT CR/LF.
001366  004034                          .CNVRT
        104412                  PKCLK=TRAP+12           ;CALL TO CLOCK ROUTINE
001370  004734                          .PKCLK
        104413                  SETFLG=TRAP+13          ;CALL TO TELETYPE INPUT ROUTINE
001372  004242                          .SETFLG

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

```
                                        ;DUP11 VECTOR AND REGISTER INDIRECT POINTERS

001374  000000          DUPRVC: 0             ;POINTER TO DUP11 RECEIVER INTERRUPT VECTOR
001376  000000          DUPRPS: 0             ;POINTER TO DUP11 RECEIVER INTERRUPT SERVICE PS
001400  000000          DUPTVC: 0             ;POINTER TO DUP11 TRANSMITTER INTERRUPT VECTOR
001402  000000          DUPTPS: 0             ;POINTER TO DUP11 TRANSMITTER INTERRUPT SERVICE PS
001404  000000          RXCSR: 0              ;POINTER TO DUP11 RECEIVER STATUS REGISTER
001406  000000          RXDBUF: 0             ;POINTER TO DUP11 RECEIVER DATA BUFFER
001410  000000          PARCSR: 0             ;POINTER TO DUP11 PARAMETER STATUS REGISTER
001412  000000          TXCSR: 0              ;POINTER TO DUP11 TRANSMITTER STATUS REGISTER
001414  000000          TXDBUF: 0             ;POINTER TO DUP11 TRANSMITTER DATA BUFFER
001416  000000          DUPSEC: 0             ;POINTER TO DUP11 SECONDARY REGISTER SELECT REGISTER
001420  000000          HUPPSR: 0             ;POINTER TO PARAMETER STATUS HIGH BYTE
001422  000000          HUPRBF: 0             ;POINTER TO RECEIVER BUFFER HIGH BYTE
001424  000000          HUPRCR: 0             ;POINTER TO RECEIVER CONTROL REG HIGH BYTE
001426  000000          HUPTBF: 0             ;POINTER TO TRANSMITTER BUFFER HIGH BYTE
001430  000000          HUPTCR: 0             ;POINTER TO TRANSMITTER CONTROL REG HIGH BYTE


                                        ;DUP11 CONTROL INDICATORS FOR CURRENT DUP11 UNDER TEST
                                        ;-----------------------------------------------

001432      000         MASK.A: .BYTE 000     ;LAST CHAR TO TEST AND PARITY MASK

001433      010         CLK.A:  .BYTE 8.      ;NUMBER OF CLOCKS NEEDED FOR ONE CHAR

001434  000000          LOO.00: 000000        ;PARAMETERS
```

```
                                        ;DUP11 STATUS TABLE AND ADDRESS ASSIGNMENTS
                                        ;------------------------------------------

            001500              .=1500
001500                          DUP.MAP:
001500  000001                 DUPCR0: .BLKW 1         ;CONTROL STATUS REGISTER FOR DUP11 NUMBER 0
001502  000001                 DUPTR0: .BLKW 1         ;VECTOR "A" FOR DUP11 NUMBER 0
001504  000001                 DUP0.A: .BLKW 1         ;PARAMETER  FOR DUP11 NUMBER 0

001506  000001                 DUPCR1: .BLKW 1         ;CONTROL STATUS REGISTER FOR DUP11 NUMBER 1
001510  000001                 DUPTR1: .BLKW 1         ;VECTOR "A" FOR DUP11 NUMBER 1
001512  000001                 DUP1.A: .BLKW 1         ;PARAMETER  FOR DUP11 NUMBER 1

001514  000001                 DUPCR2: .BLKW 1         ;CONTROL STATUS REGISTER FOR DUP11 NUMBER 2
001516  000001                 DUPTR2: .BLKW 1         ;VECTOR "A" FOR DUP11 NUMBER 2
001520  000001                 DUP2.A: .BLKW 1         ;PARAMETER  FOR DUP11 NUMBER 2

001522  000001                 DUPCR3: .BLKW 1         ;CONTROL STATUS REGISTER FOR DUP11 NUMBER 3
001524  000001                 DUPTR3: .BLKW 1         ;VECTOR "A" FOR DUP11 NUMBER 3
001526  000001                 DUP3.A: .BLKW 1         ;PARAMETER  FOR DUP11 NUMBER 3

001530  000001                 DUPCR4: .BLKW 1         ;CONTROL STATUS REGISTER FOR DUP11 NUMBER 4
001532  000001                 DUPTR4: .BLKW 1         ;VECTOR "A" FOR DUP11 NUMBER 4
001534  000001                 DUP4.A: .BLKW 1         ;PARAMETER  FOR DUP11 NUMBER 4

001536  000001                 DUPCR5: .BLKW 1         ;CONTROL STATUS REGISTER FOR DUP11 NUMBER 5
001540  000001                 DUPTR5: .BLKW 1         ;VECTOR "A" FOR DUP11 NUMBER 5
001542  000001                 DUP5.A: .BLKW 1         ;PARAMETER  FOR DUP11 NUMBER 5

001544  000001                 DUPCR6: .BLKW 1         ;CONTROL STATUS REGISTER FOR DUP11 NUMBER 6
001546  000001                 DUPTR6: .BLKW 1         ;VECTOR "A" FOR DUP11 NUMBER 6
001550  000001                 DUP6.A: .BLKW 1         ;PARAMETER  FOR DUP11 NUMBER 6

001552  000001                 DUPCR7: .BLKW 1         ;CONTROL STATUS REGISTER FOR DUP11 NUMBER 7
001554  000001                 DUPTR7: .BLKW 1         ;VECTOR "A" FOR DUP11 NUMBER 7
001556  000001                 DUP7.A: .BLKW 1         ;PARAMETER  FOR DUP11 NUMBER 7

001560  000000                 DUP.END:        000000
```

B03

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
C	O	N	T	R	O	L		R	E	G	I	S	T	E	R
							*	V	E	C	T	O	R	*	
A	B	C	D	E	F	G	H	*	*	S	Y	N	C	*	*

DEFINITIONS

A- OPTIONAL CLEAR JUMPER IN=1
B- TURNAROUND CONNECTOR ON=1
C-
D-

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

001562  012737  000340  177776  .START: MOV     #340,PS                 ;LOCK OUT INTERRUPTS
001570  012706  001150                  MOV     #STACK,SP               ;SET UP STACK
001574  012737  004776  000024          MOV     #.PFAIL,@#24            ;SET UP POWER FAIL VECTOR
001602  113737  001311  001313          MOVB    DUPNUM,SAVNUM           ;SAVE NUMBER OF DEVICES IN SYSTEM
001610  005037  001230                  CLR     PASCNT                  ;CLEAR PASS COUNT
001614  105037  001341                  CLRB    ERRFLG                  ;CLEAR ERROR FLAG
001620  105037  001343                  CLRB    QV.FLG                  ;ZERO QUICK VERIFY FLAG
001624  012737  001500  001316          MOV     #DUP.MAP,CREAM          ;GET MAP POINTER.
001632  112737  000001  001314          MOVB    #1,RUN                  ;POINT POINTER TO FIRST DEVICE.
001640  005037  001232                  CLR     ERRCNT                  ;CLEAR ERROR COUNT
001644  005037  001234                  CLR     LSTERR                  ;CLEAR LAST ERROR POINTER
001650  012737  000001  001226          MOV     #1,TSTNO                ;SET UP FOR TEST 1
001656  012737  001562  001214          MOV     #.START,RETURN          ;SET UP FOR POWER FAIL BEFORE
                                                                        ;TESTING STARTS
001664  013746  000006                  MOV     @#6,-(SP)               ;SAVE CURRENT VECTORS
001670  013746  000004                  MOV     @#4,-(SP)               ;
001674  012737  001710  000004          MOV     #12$,@#4                ;SETUP FOR TIMEOUT
001702  005777  177274                  TST     @SWR                    ;REFERENCE HARDWARE SWITCH REG
001706  000407                          BR      13$                     ;BR IF IT EXISTS
001710  012737  000176  001202  12$:    MOV     #SWREG,SWR      ;POINT TO SOFT SWR
001716  012737  000174  001200          MOV     #DISPREG,DISPLAY        ;POINT TO SOFT DISPLAY REG
001724  022626                          CMP     (SP)+,(SP)+             ;ADJUST STACK
001726  012637  000004          13$:    MOV     (SP)+,@#4               ;RESTORE VECTORS
001732  012637  000006                  MOV     (SP)+,@#6               ;
001736  105737  001340                  TSTB    INIFLG                  ;HAS INITIALIZATION BEEN PERFORMED
001742  001401                          BEQ     11$
001744  000410                          BR      6$
001746  022737  003104  000042  11$:    CMP     #$ENDAD,@#42    ;IF ACT-11 AUTO MODE,
001754  001404                          BEQ     6$              ;DON'T TYPE ID
001756  104402  001000                  TYPE    ,MTITLE                 ;TYPE TITLE MESSAGE
001762  105137  001340                  COMB    INIFLG                  ;IF NOT SET FLAG AND DO
001766  105777  177210          6$:     TSTB    @SWR                    ;BIT7=1??
001772  100002                          BPL     10$
001774  000137  002520                  JMP     1$
002000                          10$:
002000  032777  000001  177174          BIT     #SW00,@SWR      ;ENTER PARAMETERS
002006  001002                          BNE     .+6             ;YES
002010  000137  002360                  JMP     21$             ;NO
002014  105137  001332                  COMB    FLAG
002020  112737  000001  001340          MOVB    #1,INIFLG       ;SET TO MANUAL ENTRY
002026  012700  001500                  MOV     #DUP.MAP,R0     ;CLR MAP
002032  005020                  68$:    CLR     (R0)+
002034  020027  001560                  CMP     R0,#DUP.END     ;DONE WITH MAP?
002040  001374                          BNE     68$             ;BR IF NO
002042  104403                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
002044  005421                          MCSR    ;MESSAGE
002046  104405                          PARAM   ;CONVERT STRING
002050  160000                          160000  ;LOW LIMIT
```

```
1017  002052  175500                                    175500  ;HIGH LIMIT
1018  002054  001500                                    DUPCR0  ;STORE AT THIS LOCATION
1019  002056     001                    .BYTE   1       ;MASK
1020  002057     001                    .BYTE   1       ;HOW MANY TIMES + 2
1021  002060  104403                                    INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
1022  002062  005440                                    MVEC    ;MESSAGE
1023  002064  104405                                    PARAM   ;CONVERT STRING
1024  002066  000300                                    300     ;LOW LIMIT
1025  002070  000770                                    770     ;HIGH LIMIT
1026  002072  001502                                    DUPTR0  ;STORE AT THIS LOCATION
1027  002074     001                    .BYTE   1       ;MASK
1028  002075     001                    .BYTE   1       ;HOW MANY TIMES + 2
1029  002076  104403                                    INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
1030  002100  005630                                    MPAR    ;MESSAGE
1031  002102  104405                                    PARAM   ;CONVERT STRING
1032  002104  000004                                    4       ;LOW LIMIT
1033  002106  000007                                    7       ;HIGH LIMIT
1034  002110  001240                                    TEMP2   ;STORE AT THIS LOCATION
1035  002112     000                    .BYTE   0       ;MASK
1036  002113     001                    .BYTE   1       ;HOW MANY TIMES + 2
1037  002114  013737  001240  001320                    MOV     TEMP2,PRIRTY    ;SAVE PRIORITY
1038  002122  104403                                    INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
1039  002124  005575                                    MTOTAL  ;MESSAGE
1040  002126  104405                                    PARAM   ;CONVERT STRING
1041  002130  000001                                    1       ;LOW LIMIT
1042  002132  000010                                    8.      ;HIGH LIMIT
1043  002134  001236                                    TEMP1   ;STORE AT THIS LOCATION
1044  002136     000                    .BYTE   0       ;MASK
1045  002137     001                    .BYTE   1       ;HOW MANY TIMES + 2
1046  002140  104403                                    INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
1047  002142  005453                                    MJMPR   ;MESSAGE
1048  002144  104413                                    SETFLG  ;SET FLAG BASED UPON INPUT STRING
1049  002146  001323                                    OPCLRJ  ;THIS FLAG
1050  002150  104403                                    INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
1051  002152  005526                                    MTCN    ;MESSAGE
1052  002154  104413                                    SETFLG  ;SET FLAG BASED UPON INPUT STRING
1053  002156  001322                                    TCNFLG  ;THIS FLAG
1054  002160  105737  001322                            TSTB    TCNFLG
1055  002164  001410                                    BEQ     71$
1056  002166  104403                                    INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
1057  002170  005654                                    MSTJM   ;MESSAGE
1058  002172  104413                                    SETFLG  ;SET FLAG BASED UPON INPUT STRING
1059  002174  001334                                    STJMFL  ;THIS FLAG
1060  002176  104403                                    INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
1061  002200  005707                                    MSRJM   ;MESSAGE
1062  002202  104413                                    SETFLG  ;SET FLAG BASED UPON INPUT STRING
1063  002204  001336                                    SRJMFL  ;THIS FLAG
1064  002206  105737  001323            71$:    TSTB    OPCLRJ
1065  002212  001403                                    BEQ     69$
1066  002214  052737  100000  001504                    BIS     #BIT15,DUPO.A
1067  002222  105737  001322            69$:    TSTB    TCNFLG
1068  002226  001403                                    BEQ     70$
1069  002230  052737  040000  001504                    BIS     #BIT14,DUPO.A
1070  002236  112737  000001  001312    70$:    MOVB    #1,SAVACT
1071  002244  113737  001236  001311                    MOVB    TEMP1,DUPNUM
1072  002252  113737  001236  001313                    MOVB    TEMP1,SAVNUM
```

```
1073  002260  005337  001236          55$:    DEC     TEMP1
1074  002264  001404                          BEQ     64$
1075  002266  000261                          SEC
1076  002270  106137  001312                  ROLB    SAVACT
1077  002274  000771                          BR      65$
1078  002276  113737  001312  001240  64$:    MOVB    SAVACT,TEMP2    ;# OF TIMES
1079  002304  113737  001312  001310          MOVB    SAVACT,DUPACTV
1080  002312  000241                          CLC
1081  002314  106037  001240                  RORB    TEMP2
1082  002320  012700  001500                  MOV     #DUPCR0,R0
1083  002324  012701  001506                  MOV     #DUPCR1,R1
1084  002330  000241                  67$:    CLC
1085  002332  106037  001240                  RORB    TEMP2
1086  002336  103051                          BCC     66$
1087  002340  012011                          MOV     (R0)+,(R1)
1088  002342  062721  000010                  ADD     #10,(R1)+       ;CSR
1089  002346  012011                          MOV     (R0)+,(R1)
1090  002350  062721  000010                  ADD     #10,(R1)+       ;VECTOR
1091  002354  012021                          MOV     (R0)+,(R1)+     ;PARAMETERS
1092  002356  000764                          BR      67$
1093  002360  012700  001500          21$:    MOV     #DUP.MAP,R0     ;SETUP TO CLEAR MAP
1094  002364  005020                  20$:    CLR     (R0)+           ;CLEAR
1095  002366  020027  001560                  CMP     R0,#DUP.END     ;CHECK FOR FINISH
1096  002372  001374                          BNE     20$             ;BR IF MORE TO GO
1097  002374  012700  001500                  MOV     #DUP.MAP,R0     ;SETUP TO DEFAULT
1098  002400  012710  160050                  MOV     #160050,(R0)    ;LOAD CSR
1099  002404  012760  000770  000002          MOV     #770,2(R0)      ;LOAD VECTOR
1100  002412  012760  140026  000004          MOV     #140026,4(R0)   ;LOAD PARAMETERS AND SYNC
1101  002420  112737  000005  001320          MOVB    #5,PRIRTY       ;LOAD PRIORITY
1102  002426  012700  000001                  MOV     #1,R0           ;SAVE CORE THIS WAY
1103  002432  110037  001310                  MOVB    R0,DUPACTV      ;PRESET PROGRAM CONTROLS
1104  002436  110037  001311                  MOVB    R0,DUPNUM       ;DITTO
1105  002442  110037  001312                  MOVB    R0,SAVACT       ;DITTO
1106  002446  110037  001313                  MOVB    R0,SAVNUM       ;DITTO
1107  002452  110037  001322                  MOVB    R0,TCNFLG       ;DITTO
1108  002456  110037  001323                  MOVB    R0,OPCLRJ       ;DITTO
1109  002462                          66$:
1110  002462  104402  005742          16$:    TYPE    ,XHEAD                  ;TYPE HEADER
1111  002466  012737  001500  001236          MOV     #DUP.MAP,TEMP1          ;SET POINTER
1112  002474  017737  176536  001240  5$:     MOV     @TEMP1,TEMP2            ;SET DATA
1113  002502  001406                          BEQ     1$                      ;ALL DONE WITH DATA
1114  002504  104410                          CONVRT                          ;
1115  002506  005770                          XSTATQ                          ;
1116  002510  062737  000002  001236          ADD     #2,TEMP1                ;UPDATE POINTER
1117  002516  000766                          BR      5$
1118  002520  032777  000001  176454  1$:     BIT     #SW00,@SWR
1119  002526  001405                          BEQ     7$
1120  002530  005737  001332                  TST     FLAG
1121  002534  001002                          BNE     7$
1122  002536  000137  002000                  JMP     10$
1123  002542  005037  001332          7$:     CLR     FLAG
1124  002546  005737  000042                  TST     @#42                    ;IS PROGRAM RUNNING UNDER MONITOR
1125  002552  001030                          BNE     3$                      ;BR IF YES
1126  002554  032777  000010  176420          BIT     #SW03,@SWR              ;SELECT SPECIFIC DEVICES??
1127  002562  001424                          BEQ     3$                      ;BR IF NO.
1128  002564  104402  005341                  TYPE    ,MNEW                   ;TYPE THE MESSAGE.
```

```
1129  002570  005000                          CLR     R0              ;ZERO DATA LIGHTS
1130  002572  000000                          HALT                    ;WAIT FOR USER TO TELL WHAT DEVICES TO RUN
1131  002574  127737  176402  001312          CMPB    @SWR,SAVACT     ;IS THE NUMBER VALID?
1132  002602  101404                          BLOS    2$              ;BR IF NUMBER IS OK.
1133  002604  104402  005202                  TYPE    .MERR3          ;TELL USER OF INVALID NUMBER.
1134  002610  000000                          HALT                    ;STOP EVERY THING.
1135  002612  000776                          BR      .-2             ;RESTART THE PROGRAM AGAIN.
1136  002614  117737  176362  001310  2$:     MOVB    @SWR,DUPACTV    ;GET NEW DEVICE PATTERN
1137  002622  113700  001310                  MOVB    DUPACTV,R0      ;SHOW THE USER WHAT HE SELECTED.
1138  002626  042700  177400                  BIC     #^C<377>,R0     ;USE ONLY LOW BYTE.
1139  002632  000000                          HALT                    ;CONTINUE DYNAMIC SWITCHES.
1140  002634  012700  000300          3$:     MOV     #300,R0         ;PREPARE TO CLEAR THE FLOATING
1141  002640  012701  000302                  MOV     #302,R1         ;VECTOR AREA. 300-776
1142  002644  010120                  4$:     MOV     R1,(R0)+        ;START PUTTING "PC+2 - HALT"
1143  002646  005021                          CLR     (R1)+           ;IN VECTOR AREA.
1144  002650  022021                          CMP     (R0)+,(R1)+     ;POP POINTERS
1145  002652  022700  001000                  CMP     #1000,R0        ;ALL DONE??
1146  002656  001372                          BNE     4$              ;BR IF NO.
1147
1148                                          ;TEST START AND RESTART
1149                                          ;----------------------
1150
1151  002660  012737  000340  177776  .BEGIN: MOV     #340,PS         ;LOCK OUT INTERRUPTS
1152  002666  012706  001150                  MOV     #STACK,SP       ;SET UP STACK
1153  002672  005737  000042                  TST     @#42            ;IS PROGRAM UNDER MONITOR CONTROL
1154  002676  001023                          BNE     2$              ;BR IF YES
1155  002700  032777  000004  176274          BIT     #BIT2,@SWR      ;CHECK FOR LOCK ON TEST
1156  002706  001411                          BEQ     1$              ;BR IF NO LOCK DESIRED.
1157  002710  104402  005240                  TYPE    ,MLOCK          ;TYPE LOCK SELECTED.
1158  002714  012737  000240  003174          MOV     #NOP,TTST       ;ADJUST SCOPE ROUTINE.
1159  002722  012737  000240  003176          MOV     #NOP,TTST+2     ;SET UP TO LOCK
1160  002730  000406                          BR      2$              ;CONTINUE ALONG.
1161  002732  013737  003306  003174  1$:     MOV     BRW,TTST        ;PREPARE NORMAL SCOPE ROUTINE
1162  002740  013737  003310  003176          MOV     BRX,TTST+2      ;LOCK NOT SELECTED, SET UP FOR NORMAL SCOPE LOOP
1163  002746  012737  006152  001214  2$:     MOV     #CYCLE,RETURN   ;START AT "CYCLE" FIND WHICH DEVICE TO TEST
1164  002754  104402  005130                  TYPE    ,MR             ;TYPE R
1165  002760  000177  176230                  JMP     @RETURN         ;START TESTING
```

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

002764  005037  001234          .EOP:   CLR     LSTERR          ;CLEAR LAST ERROR PC
002770  105037  001341                  CLRB    ERRFLG          ;CLEAR ERROR FLAG
002774  005237  001230                  INC     PASCNT          ;UPDATE PASS COUNT
003000  013777  001230  176172          MOV     PASCNT,@DISPLAY ;DISPLAY PASS COUNT
003006  104402  005105                  TYPE    ,MEPASS         ;TYPE END PASS
003012  104402  005267                  TYPE    ,MCSRX          ;TYPE CSR
003016  104411  003130                  CNVRT   ,XCSR           ;SHOW IT
003022  104402  005275                  TYPE    ,MVECX          ;TYPE VECTOR
003026  104411  003136                  CNVRT   ,XVEC           ;SHOW IT
003032  104402  005303                  TYPE    ,MPASSX         ;TYPE PASSES
003036  104411  003144                  CNVRT   ,XPASS          ;SHOW IT
003042  104402  005314                  TYPE    ,MERRX          ;TYPE ERRORS
003046  104411  003152                  CNVRT   ,XERR           ;SHOW IT
003052  105337  001313                  DECB    SAVNUM          ;ARE ALL DEVICES TESTED?
003056  001017                          BNE     RESTRT          ;BR IF NO.
003060  112737  000377  001343          MOVB    #377,QV.FLG     ;SET THE QUICK VERIFY FLAG.
003066  113737  001311  001313          MOVB    DUPNUM,SAVNUM   ;RESTORE THE COUNT
003074  013701  000042                  MOV     @#42,R1         ;CHECK FOR ACT-11 OR DDP
003100  001406                          BEQ     RESTRT          ;IF NOT, CONTINUE TESTING
003102  000005                          RESET                   ;STOP THE SHOW--CLEAR THE WORLD
003104                          $ENDAD:
003104  004711                          JSR     PC,(R1)
003106  000240                          NOP
003110  000240                          NOP
003112  000240                          NOP
003114  000240                          NOP
003116  012737  006152  001214  RESTRT: MOV     #CYCLE,RETURN
003124  000137  006152                  JMP     CYCLE
003130  000001                  XCSR:   1
003132     006     002                  .BYTE   6,2
003134  001404                          RXCSR
003136  000001                  XVEC:   1
003140     003     002                  .BYTE   3,2
003142  001374                          DUPRVC
003144  000001                  XPASS:  1
003146     006     002                  .BYTE   6,2
003150  001230                          PASCNT
003152  000001                  XERR:   1
003154     006     002                  .BYTE   6,2
003156  001232                          ERRCNT

                                        ;SCOPE LOOP AND INTERATION HANDLER

003160  005037  001234          .SCOPE: CLR     LSTERR          ;CLEAR LAST ERROR PC
003164  010016                          MOV     R0,(SP)         ;SAVE R0 ON STACK
003166  032777  040000  176006          BIT     #BIT14,@SWR     ;LOOP ON TEST?
003174  001407                  TTST:   BEQ     1$              ;BR IF NO (IF LOCK SW01 = 1;THIS LOCATION  = 240)
003176  000437                          BR      3$              ;GO TO 3$       (DITTO)
003200  105777  176000                  TSTB    @TKCSR          ;KYBD DONE?
003204  100034                          BPL     3$              ;BR IF NO (LOCK:  HIT A KEY ON TTY TO GO TO NEXT TEST)
```

```
1222  003206  017700  175774                MOV     @TKDBR,R0       ;CLR DONE BIT
1223  003212  000415                       BR      2$              ;CONTINUE
1224  003214  032777  004000  175760  1$:   BIT     #SW11,@SWR      ;DELETE ITERATION (QUICK PASS)?
1225  003222  001011                       BNE     2$              ;BR IF YES
1226  003224  105737  001343                TSTB    QV.FLG          ;HAS FIRST PASS BEEN COMPLETED?
1227  003230  001406                       BEQ     2$              ;BR IF QUICK VERIFY
1228  003232  005237  001224                INC     LPCNT           ;UPDATE ITERATION COUNTER
1229  003236  023737  001224  001222        CMP     LPCNT,ICOUNT    ;ALL ITERATIONS DONE?
1230  003244  001014                       BNE     3$              ;BR IF NOT YET
1231  003246  105037  001341          2$:   CLRB    ERRFLG          ;PREPARE FOR NEW TEST
1232  003252  005037  001224                CLR     LPCNT           ;START ICOUNT AT ZERO
1233  003256  005037  001220                CLR     LOCK
1234  003262  012737  000050  001222        MOV     #50,ICOUNT      ;RESET ITERATIONS
1235  003270  013737  001216  001214        MOV     NEXT,RETURN     ;GET NEXT TEST
1236  003276  011600                 3$:   MOV     (SP),R0         ;POP R0 OFF STACK
1237  003300  022626                       POP2SP                  ;FAKE AN RTI
1238  003302  000177  175706                JMP     @RETURN         ;GO DO THE TEST
1239  003306  001407                 BRW:  1407
1240  003310  000437                 BRX:  437
1241
1242                                        ;CHECK FOR FREEZE ON CURRENT DATA
1243                                        ;----- ------------------------
1244
1245  003312  032777  001000  175662  .SCOP1: BIT     #SW09,@SWR      ;IS SW09=1(SET)?
1246  003320  001405                       BEQ     1$              ;BR IF NOT SET.
1247  003322  005737  001220                TST     LOCK
1248  003326  001402                       BEQ     1$
1249  003330  013716  001220                MOV     LOCK,(SP)       ;GOTO THE ADDRESS IN LOCK.
1250  003334  000002                 1$:   RTI                     ;GO BACK.
1251
1252                                        ;TELETYPE OUTPUT ROUTINE
1253                                        ;----------------------
1254
1255  003336  010546                 .TYPE: MOV     R5,-(SP)        ;SAVE R5 ON THE STACK.
1256  003340  017605  000002                MOV     @2(SP),R5       ;GET ADDRESS OF MESSAGE.
1257  003344  062766  000002  000002        ADD     #2,2(SP)        ;POP OVER ADDRESS.
1258  003352  032777  010000  175622  1$:   BIT     #SW12,@SWR      ;INHIBIT ALL PRINT OUT??
1259  003360  001012                       BNE     3$              ;BR IF NO PRINT OUT WANTED (SW12=1)
1260  003362  105715                       TSTB    (R5)            ;IS NUMBER MINUS? (MSB=1(BIT7))
1261  003364  100002                       BPL     2$              ;BR IF NUMBER IS PLUS
1262  003366  104402  005064                TYPE    ,MCRLF          ;TYPE A CR/LF!
1263  003372  105777  175612          2$:   TSTB    @TPCSR          ;TTY READY?
1264  003376  100375                       BPL     2$              ;BR IF NO.
1265  003400  112577  175606                MOVB    (R5)+,@TPDBR    ;PRINT CURRENT CHAR.
1266  003404  001362                       BNE     1$              ;IF NOT ZERO KEEP PRINTING!
1267  003406  012605                 3$:   MOV     (SP)+,R5        ;END OF OUTPUT. RESTORE R5
1268  003410  000002                       RTI                     ;GO HOME
1269                                        ;-------------------------
1270
1271  003412  010346                 .INSTR: MOV    R3,-(SP)        ;SAVE R3 ON STACK
1272  003414  010446                       MOV     R4,-(SP)        ;SAVE R4 ON STACK
1273  003416  017637  000004  003434        MOV     @4(SP),.MSG
1274  003424  062766  000002  000004        ADD     #2,4(SP)
1275  003432  104402                 .INST1: TYPE
1276  003434  000000                 .MSG:  0
1277  003436  012704  006106                MOV     #INBUF,R4
```

```
1278  003442  012703  000007                MOV     #7,R3
1279  003446  105777  175532        1$:     TSTB    @TKCSR
1280  003452  100375                        BPL     1$
1281  003454  117714  175526                MOVB    @TKDBR,(R4)
1282  003460  142714  000200                BICB    #200,(R4)
1283  003464  122427  000015                CMPB    (R4)+,#15
1284  003470  001417                        BEQ     INSTR2
1285  003472  105777  175512        2$:     TSTB    @TPCSR
1286  003476  100375                        BPL     2$
1287  003500  017777  175502  175504        MOV     @TKDBR,@TPDBR
1288  003506  005303                        DEC     R3
1289  003510  001356                        BNE     1$
1290  003512  012604                        MOV     (SP)+,R4
1291  003514  012603                        MOV     (SP)+,R3
1292  003516  010346                .INSTE: MOV     R3,-(SP)
1293  003520  010446                        MOV     R4,-(SP)
1294  003522  104402  005060                TYPE    ,MQM
1295  003526  000741                        BR      .INST1
1296  003530  012604                INSTR2: MOV     (SP)+,R4        ;RESTORE R4
1297  003532  012603                        MOV     (SP)+,R3        ;RESTORE R3
1298  003534  000002                        RTI
1299
1300                                        ;CONVERT ASCII STRING TO OCTAL
1301                                        ;----------------------------
1302
1303  003536  010546                .PARAM: MOV     R5,-(SP)
1304  003540  010446                        MOV     R4,-(SP)
1305  003542  016605  000004                MOV     4(SP),R5
1306  003546  012537  003726                MOV     (R5)+,LOLIM
1307  003552  012537  003730                MOV     (R5)+,HILIM
1308  003556  012537  003732                MOV     (R5)+,DEVADR
1309  003562  112537  003734                MOVB    (R5)+,LOBITS
1310  003566  112537  003735                MOVB    (R5)+,ADRCNT
1311  003572  010566  000004                MOV     R5,4(SP)
1312  003576  005005                PARAM1: CLR     R5
1313  003600  012704  006106                MOV     #INBUF,R4
1314  003604  122714  000015                CMPB    #15,(R4)
1315  003610  001420                        BEQ     PARERR
1316  003612  121427  000060        1$:     CMPB    (R4),#60
1317  003616  002415                        BLT     PARERR
1318  003620  121427  000067                CMPB    (R4),#67
1319  003624  003012                        BGT     PARERR
1320  003626  142714  000060                BICB    #60,(R4)
1321  003632  152405                        BISB    (R4)+,R5
1322  003634  122714  000015                CMPB    #15,(R4)
1323  003640  001406                        BEQ     LIMITS
1324  003642  006305                        ASL     R5
1325  003644  006305                        ASL     R5
1326  003646  006305                        ASL     R5
1327  003650  000760                        BR      1$
1328  003652  104404                PARERR: INSTER
1329  003654  000750                        BR      PARAM1
1330
1331                                        ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
1332                                        ;--------------------------------------
1333
```

```
 1334  003656  020537  003730          LIMITS: CMP     R5,HILIM
 1335  003662  101373                          BHI     PARERR
 1336  003664  020537  003726                  CMP     R5,LOLIM
 1337  003670  103770                          BLO     PARERR
 1338  003672  133705  003734                  BITB    LOBITS,R5
 1339  003676  001365                          BNE     PARERR
 1340
 1341                                          ;STORE NUMBER AT SPECIFIED ADDRESS
 1342
 1343  003700  013704  003732                  MOV     DEVADR,R4
 1344  003704  010524                  1$:     MOV     R5,(R4)+
 1345  003706  062705  000002                  ADD     #2,R5
 1346  003712  105337  003735                  DECB    ADRCNT
 1347  003716  001372                          BNE     1$
 1348  003720  012604                          MOV     (SP)+,R4
 1349  003722  012605                          MOV     (SP)+,R5
 1350  003724  000002                          RTI
 1351  003726  000000                  LOLIM:  0
 1352  003730  000000                  HILIM:  0
 1353  003732  000000                  DEVADR: 0
 1354  003734  000000                  LOBITS: 0
 1355          003735                  ADRCNT=LOBITS+1
 1356
 1357                                          ;SAVE PC OF TEST THAT FAILED AND R0-R5
 1358                                          ;-------------------------------------
 1359
 1360  003736  016637  000004  001266  .SAV05: MOV     4(SP),SAVPC     ;SAVE R7 (PC)
 1361
 1362                                          ;SAVE R0-R5
 1363
 1364  003744  010537  001262          SV05:   MOV     R5,SAVR5        ;SAVE R5
 1365  003750  010437  001260                  MOV     R4,SAVR4        ;SAVE R4
 1366  003754  010337  001256                  MOV     R3,SAVR3        ;SAVE R3
 1367  003760  010237  001254                  MOV     R2,SAVR2        ;SAVE R2
 1368  003764  010137  001252                  MOV     R1,SAVR1        ;SAVE R1
 1369  003770  010037  001250                  MOV     R0,SAVR0        ;SAVE R0
 1370  003774  000002                          RTI                     ;LEAVE.
 1371
 1372                                          ;RESTORE R0-R5
 1373
 1374  003776  013700  001250          .RES05: MOV     SAVR0,R0        ;RESTORE R0
 1375  004002  013701  001252                  MOV     SAVR1,R1        ;RESTORE R1
 1376  004006  013702  001254                  MOV     SAVR2,R2        ;RESTORE R2
 1377  004012  013703  001256                  MOV     SAVR3,R3        ;RESTORE R3
 1378  004016  013704  001260                  MOV     SAVR4,R4        ;RESTORE R4
 1379  004022  013705  001262                  MOV     SAVR5,R5        ;RESTORE R5
 1380  004026  000002                          RTI                     ;LEAVE
 1381
 1382
 1383                                          ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
 1384                                          ;-----------------------------------------------------
 1385
 1386  004030  104402  005064          .CONVR: TYPE    ,MCRLF
 1387  004034  010046                  .CNVRT: MOV     R0,-(SP)
 1388  004036  010146                          MOV     R1,-(SP)
 1389  004040  010346                          MOV     R3,-(SP)
```

```
 1390  004042  010446                          MOV     R4,-(SP)
 1391  004044  010546                          MOV     R5,-(SP)
 1392  004046  017601  000012                  MOV     @12(SP),R1
 1393  004052  062766  000002  000012          ADD     #2,12(SP)
 1394  004060  012137  004234                  MOV     (R1)+,WRDCNT
 1395  004064  112137  004236          1$:     MOVB    (R1)+,CHRCNT
 1396  004070  112137  004237                  MOVB    (R1)+,SPACNT
 1397  004074  013137  004240                  MOV     @(R1)+,BINWRD
 1398  004100  013704  004240          2$:     MOV     BINWRD,R4
 1399  004104  113705  004236                  MOVB    CHRCNT,R5
 1400  004110  012700  006002                  MOV     #TEMP,R0
 1401  004114  010403                  3$:     MOV     R4,R3
 1402  004116  042703  177770                  BIC     #177770,R3
 1403  004122  062703  000060                  ADD     #060,R3
 1404  004126  110320                          MOVB    R3,(R0)+
 1405  004130  000241                          CLC
 1406  004132  006004                          ROR     R4
 1407  004134  000241                          CLC
 1408  004136  006004                          ROR     R4
 1409  004140  000241                          CLC
 1410  004142  006004                          ROR     R4
 1411  004144  005305                          DEC     R5
 1412  004146  001362                          BNE     3$
 1413  004150  012703  006044                  MOV     #MDATA,R3
 1414  004154  114023                  4$:     MOVB    -(R0),(R3)+
 1415  004156  105337  004236                  DECB    CHRCNT
 1416  004162  001374                          BNE     4$
 1417  004164  105737  004237                  TSTB    SPACNT
 1418  004170  001405                          BEQ     6$
 1419  004172  112723  000040          5$:     MOVB    #040,(R3)+
 1420  004176  105337  004237                  DECB    SPACNT
 1421  004202  001373                          BNE     5$
 1422  004204  105013                  6$:     CLRB    (R3)
 1423  004206  104402  006044                  TYPE    ,MDATA
 1424  004212  005337  004234                  DEC     WRDCNT
 1425  004216  001322                          BNE     1$
 1426  004220  012605                          MOV     (SP)+,R5
 1427  004222  012604                          MOV     (SP)+,R4
 1428  004224  012603                          MOV     (SP)+,R3
 1429  004226  012601                          MOV     (SP)+,R1
 1430  004230  012600                          MOV     (SP)+,R0
 1431  004232  000002                          RTI
 1432  004234  000000                  WRDCNT: 0
 1433  004236  000000                  CHRCNT: 0
 1434          004237                  SPACNT=CHRCNT+1
 1435  004240  000000                  BINWRD: 0
 1436
 1437
 1438                                          ;COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
 1439                                          ;BUFFER TO THE CHARACTERS "N" AND "Y".
 1440                                          ;IF THE CHARACTER IS "N" CLEAR THE FLAG
 1441                                          ;IF THE CHARACTER IS "Y" SET THE FLAG
 1442
 1443  004242  017605  000000          .SETFLG:MOV     @(SP),R5
 1444  004246  042737  000040  006106          BIC     #40,INBUF
 1445  004254  122737  000116  006106          CMPB    #'N,INBUF       ;IS IT "N" ?
```

```
1446  004262  001002                          BNE     1$
1447  004264  105015                          CLRB    (R5)    ;0C0
1448  004266  000406                          BR      2$
1449  004270  122737  000131  006106  1$:     CMPB    #'Y,INBUF       ;IS IT "Y" ?
1450  004276  001005                          BNE     3$
1451  004300  112715  177777                  MOVB    #-1,(R5)        ;377
1452  004304  062716  000002          2$:     ADD     #2,(SP)
1453  004310  000002                          RTI
1454  004312  104404                  3$:     INSTER  ;RETRY
1455  004314  000752                          BR      .SETFLG
1456
1457
1458                                          ;TRAP DISPATCH SERVICE
1459                                          ;ARGUMENT OF TRAP IS EXTRACTED
1460                                          ;AND USED AS OFFSET TO OBTAIN POINTER
1461                                          ;TO SELECTED SUBROUTINE
1462
1463  004316  011646                  .TRPSR: MOV     (SP),-(SP)              ;GET PC OF RETURN
1464  004320  162716  000002                  SUB     #2,(SP)                 ;=PC OF TRAP
1465  004324  017616  000000                  MOV     @(SP),(SP)              ;GET TRP
1466  004330  006316                  TRPOK:  ASL     (SP)                    ;MULTIPLY TRAP ARG BY 2
1467  004332  042716  177001                  BIC     #177001,(SP)            ;CLEAR UNWANTED BITS
1468  004336  062716  001344                  ADD     #.TRPTAB,(SP)           ;POINTER TO SUBROUTINE ADDRESS
1469  004342  017616  000000                  MOV     @(SP),(SP)              ;SUBROUTINE ADDRESS
1470  004346  000136                          JMP     @(SP)+                  ;GO TO SUBROUTINE
1471
1472                                          ;ERROR HANDLER
1473                                          ;-------------
1474
1475  004350  032777  010000  174624  .HLT:   BIT     #SW12,@SWR      ;BELL ON ERROR?
1476  004356  001406                          BEQ     XBX             ;BR IF NO BELL
1477  004360  105777  174624                  TSTB    @TPCSR          ;TTY READY.
1478  004364  100003                          BPL     XBX             ;DON'T WAIT IF TTY NOT READY.
1479  004366  112777  000207  174616          MOVB    #207,@TPDBR     ;PUSH A BELL AT THE TTY.
1480  004374  032777  020000  174600  XBX:    BIT     #SW13,@SWR      ;DELETE ERROR PRINT OUT?
1481  004402  001105                          BNE     HALTS           ;BR IF NO PRINT OUT WANTED.
1482  004404  021637  001234                  CMP     (SP),LSTERR     ;WAS THIS ERROR FOUND LAST TIME?
1483  004410  001404                          BEQ     1$              ;BR IF YES
1484  004412  011637  001234                  MOV     (SP),LSTERR     ;RECORD BEING HERE
1485  004416  105037  001341                  CLRB    ERRFLG          ;PREPARE HEADER
1486  004422  104406                  1$:     SAVOS                   ;SAVE ALL PROC REGISTERS
1487  004424  011605                          MOV     (SP),R5         ;GET THE PC OF ERROR
1488  004426  162705  000002                  SUB     #2,R5           ;GET ADDRESS OF TRAP CALL
1489  004432  011504                          MOV     (R5),R4         ;GET HLT INSTRUCTION
1490  004434  006304                          ASL     R4              ;MULT BY TWO
1491  004436  061504                          ADD     (R5),R4         ;DOUBLE IT
1492  004440  006304                          ASL     R4              ;MULT AGAIN
1493  004442  042704  177001                  BIC     #177001,R4      ;CLEAR JUNK
1494  004446  062704  023146                  ADD     #.ERRTAB,R4     ;GET POINTER
1495  004452  012437  004566                  MOV     (R4)+,ERRMSG    ;GET ERROR MESSAGE
1496  004456  012437  004600                  MOV     (R4)+,DATAHD    ;GET DATA HEADRER
1497  004462  011437  004612                  MOV     (R4),DATABP     ;GET DATA TABLE
1498  004466  105737  001341                  TSTB    ERRFLG          ;TYPE HEADREER
1499  004472  001403                          BEQ     TYPMSG          ;BR IF YES
1500  004474  005737  004612                  TST     DATABP          ;DOES DATA TABLE EXIST?
1501  004500  001040                          BNE     TYPDAT          ;BR IF YES.
```

```
1502  004502  104402  005064          TYPMSG: TYPE    ,MCRLF
1503  004506  104402  005064                  TYPE    ,MCRLF
1504  004512  005737  001220                  TST     LOCK
1505  004516  001402                          BEQ     1$
1506  004520  104402  005337                  TYPE    ,MASTEK
1507  004524  104402  005325          1$:     TYPE    ,MTSTN
1508  004530  104411  004726                  CNVRT   ,XTSTN          ;SHOW IT
1509  004534  104402  005414                  TYPE    ,MERRPC         ;TYPE PC.
1510  004540  104411  004720                  CNVRT   ,ERTABO         ;SHOW IT
1511  004544  104402  005064                  TYPE    ,MCRLF          ;GIVE A CR/LF
1512  004550  112737  177777  001341          MOVB    #-1,ERRFLG      ;NO MORE HEADER UNLESS NO DATA TABLE.
1513  004556  005737  004566                  TST     ERRMSG          ;IS THERE AN ERROR MESSAGE?
1514  004562  001402                          BEQ     WRKO.FM         ;BR IF NO.
1515  004564  104402                          TYPE                    ;TYPE
1516  004566  000000          ERRMSG: 0                               ;    ERROR MESSAGE
1517  004570                  WRKO.FM:                                ;
1518  004570  005737  004600                  TST     DATAHD          ;DATA HEADER?
1519  004574  001402                          BEQ     TYPDAT          ;BR IF NO
1520  004576  104402                          TYPE                    ;TYPE
1521  004600  000000          DATAHD: 0                               ;    DATA HEADER
1522  004602  005737  004612  TYPDAT: TST     DATABP          ;DATA TABLE?
1523  004606  001402                          BEQ     RESREG          ;BR IF NO.
1524  004610  104410                          CONVRT                  ;SHOW
1525  004612  000000          DATABP: 0                               ;    DATA TABLE
1526  004614  104407          RESREG: RESOS                           ;RESTORE PROC REGISTERS
1527  004616  022737  003104  000042  HALTS:  CMP     #$ENDAD,@#42    ;IF ACT-11 AUTO MODE--HALT!!
1528  004624  001403                          BEQ     1$
1529  004626  005777  174350                  TST     @SWR            ;HALT ON ERROR?
1530  004632  100010                          BPL     EXITER          ;BR IF NO HALT ON ERROR
1531  004634  010046          1$:     PUSHRO                          ;SAVE R0
1532  004636  016600  000002                  MOV     2(SP),R0        ;SHOW ERROR PC IN DATA LIGHTS
1533  004642  042777  014000  174542          BIC     #SYSTST!MEXT,@TXCSR
1534  004650  000000                          HALT                    ;HALT
1535  004652  012600                          POPRO                   ;GET R0
1536  004654  005237  001232  EXITER: INC     ERRCNT          ;UPDATE ERROR COUNT
1537  004660  032777  000400  174314          BIT     #SW08,@SWR      ;GOTO TOP OF TEST?
1538  004666  001007                          BNE     1$              ;BR IF YES
1539  004670  032777  002000  174304          BIT     #SW10,@SWR      ;GOTO NEXT TEST?
1540  004676  001407                          BEQ     2$              ;BR IF NO
1541  004700  013737  001216  001214          MOV     NEXT,RETURN     ;SET FOR NEXT TEST
1542  004706  012706  001150          1$:     MOV     #STACK,SP       ;RESET SP
1543  004712  000177  174276                  JMP     @RETURN         ;GOTO SPECIFIED TEST
1544  004716  000002          2$:     RTI                             ;RETURN
1545  004720  000001          ERTABO: 1
1546  004722      006     002                 .BYTE   6,2
1547  004724  001266                          SAVPC
1548  004726  000001          XTSTN:  1
1549  004730      003     002                 .BYTE   3,2
1550  004732  001226                          TSTNO
1551  004734  017600  000000          .PKCLK: MOV     @(SP),R0        ;GET THE # OF TICKS TO POKE
1552  004740  062716  000002                  ADD     #2,(SP)         ;POP OVER THE #
1553  004744                          1$:
1554  004744  052777  020000  174440          BIS     #CLK,@TXCSR     ;POKE CLOCK UP
1555  004752  005300                          DEC     R0              ;ARE WE DONE?
1556  004754  001405                          BEQ     2$              ;YES-GO TO 2$
1557  004756  042777  020000  174426          BIC     #CLK,@TXCSR             ;POKE CLOCK DOWN
```

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1558  004764  005300                        DEC     R0              ;ARE WE DONE?
1559  004766  001366                        BNE     1$              ;NO-REPEAT
1560  004770  000002              2$:       RTI                     ;RETURN
1561
1562
1563                                ;WAIT ROUTINE
1564  004772  000240              $MALL:    NOP                     ;STALL
1565  004774  000207                        RTS     PC              ;RETURN
1566
1567                                ;POWER FAIL ROUTINE
1568
1569  004776  012737  005006  000024  .PFAIL: MOV     #PWRUP,24       ;LOAD PFAIL VECTOR FOR POWER UP
1570  005004  000000                        HALT                    ;
1571  005006  000005              PWRUP:    RESET                   ;WAIT TTY TO COME UP
1572  005010  012706  001150                MOV     #STACK,SP       ;REINIT STACK POINTER
1573  005014  012737  004776  000024        MOV     #.PFAIL,24      ;LOAD PFAIL VECTOR FOR POWER DOWN
1574  005022  104402                        TYPE
1575  005024  005067                        MPOWER
1576  005026  000177  174162                JMP     @RETURN
1577                              ;CLRVEC,ROUTINE TO FILL COMMUNICATION VECTOR AREA WITH .+2,HALT
1578
1579  005032  012702  000300        CLRVEC: MOV     #300,R2                 ;R2 COMM VECTOR AREA ADRS
1580  005036  012701  000302                MOV     #302,R1                 ;INIT R1 WITH ADRS OF HALT
1581  005042  010122              1$:       MOV     R1,(R2)+                ;MOV .+2 TO PC
1582  005044  005022                        CLR     (R2)+                   ;MOV HALT TO PC
1583  005046  022121                        CMP     (R1)+,(R1)+             ;INC TO NEXT VECTOR AREA
1584  005050  022701  000776                CMP     #776,R1                 ;END OF VECTOR AREA
1585  005054  001372                        BNE     1$                      ;NO
1586  005056  000207                        RTS     PC                      ;RETURN
1587
1588
1589
1590  005060  020040  000077        MQM:    .ASCIZ  /  ?/
 (2)  005064  005015     000        MCRLF:  .ASCIZ  <15><12>
 (2)  005067     377  053520  020122 MPOWER: .ASCIZ  <377>/PWR FAILED. /
 (2)  005105     015  042777  042116 MEPASS: .ASCIZ  <15><377>/END PASS DZDPCA /
 (2)  00513C  051377     000        MR:     .ASCIZ  <377>/R/
 (2)  005133     377  051120  043517 MERR2:  .ASCIZ  <377>/PROGRAM INDICATES NO DEVICES PRESENT./
 (2)  005202  044777  051516  043125 MERR3:  .ASCIZ  <377>/INSUFFICIENT DATA!/
 (2)  005226  052377  051505  020124 MTSTPC: .ASCIZ  <377>/TEST PC-/
 (2)  005240  046377  041517  020113 MLOCK:  .ASCIZ  <377>/LOCK ON SELECTED TEST/
 (2)  005267     103  051123  020072 MCSRX:  .ASCIZ   /CSR: /
 (2)  005275     126  041505  020072 MVECX:  .ASCIZ  /VEC: /
 (2)  005303     120  051501  042523 MPASSX: .ASCIZ  /PASSES: /
 (2)  005314  051105  047522  051522 MERRX:  .ASCIZ  /ERRORS: /
 (2)  005325     124  051505  020124 MTSTN:  .ASCIZ  /TEST NO: /
 (2)  005337     052     000        MASTEK: .ASCIZ  /*/
 (2)  005341     377  042523  020124 MNEW:   .ASCIZ  <377>/SET SWITCH REG TO DUP11'S DESIRED ACTIVE./
 (2)  005414  041520  020072     000 MERRPC: .ASCIZ  /PC: /
 (2)  005421     377  042522  020103 MCSR:   .ASCIZ  <377>/REC CSR ADRS /
 (2)  005440  053377  041505  040440 MVEC:   .ASCIZ  <377>/VEC ADRS /
 (2)  005453     377  051511  052040 MJMPR:  .ASCIZ  <377>/IS THE OPTIONAL CLR JMPR IN?  (Y OR N)   /
 (2)  005526  044777  020123  044124 MTCN:   .ASCIZ  <377>/IS THE H325 CONNECTOR ON? (Y OR N)   /
 (2)  005575     377  020043  043117 MTOTAL: .ASCIZ  <377>/# OF DUP'S (IN OCTAL)    /
 (2)  005630  050377  044522  051117 MPAR:   .ASCIZ  <377>/PRIORITY (4 TO 7) /
 (2)  005654  051777  041505  052040 MSTJM:  .ASCIZ  <377>/SEC TX JMPR IN? (Y OR N) /
```

```
    (2)  005707     377  042523  020103  MSRJM:  .ASCIZ  <377>/SEC RX JMPR IN? (Y OR N) /
    (2)  005742  046777  050101  047440  XHEAD:  .ASCIZ  <377>/MAP OF DUP11 STATUS/<377>
    (2)                                  .EVEN
    (2)  005770  000002                  XSTATQ: 2
1591     005772     006     003                  .BYTE   6,3
1592     005774  001236                          TEMP1
1593     005776     006     002                  .BYTE   6,2
1594     006000  001240                          TEMP2
1595                                  .EVEN
1596
1597     006002  000000                  TEMP:   0
1598             006044                  .=.+40
1599     006044  000000                  MDATA:  0
1600             006106                  .=.+40
1601     006106  000000                  INBUF:  0
1602             006150                  .=.+40
1603     006150  000001                  TRP.PC: .BLKW 1
1604
```

```
1605
1606                                                    ;
1607                                                    ;ROUTINE USED TO "CYCLE" THROUGH UP TO EIGHT DUP11'S
1608                                                    ;THIS ROUTINE SETS UP THE CONTROL ADDRESS FOR THE DIAGNOSTIC
1609                                                    ;AND RUNS THE SPECIFIED DUP11'S.   THIS ROUTINE *MUST*
1610                                                    ;BE RUN FIRST BEFORE ENTERING THE DIAGNOSTIC FOR THE
1611                                                    ;SETUP NECESSARY.
1612                                                    ;
1613
1614  006152  105737  001310          CYCLE:  TSTB    DUPACTV         ;ARE ANY DUP11'S TO BE TESTED?
1615  006156  001004                          BNE     1$              ;BR IF OK.
1616  006160  104402  005133                  TYPE    ,MERR2          ;NO DUP11'S SELECTED!!
1617  006164  000000                          HALT                    ;STOP THE SHOW.
1618  006166  000776                          BR      .-2             ;DISQUALIFY CONT. SW.
1619  006170  133737  001314  001310  1$:     BITB    RUN,DUPACTV     ;IS THIS ONE "ACTIVE"
1620  006176  001020                          BNE     2$              ;BR IF GOOD ONE FOUND.
1621  006200  000241                          CLC                     ;CLEAR PROC. CARRY BIT.
1622  006202  106137  001314                  ROLB    RUN             ;UPDATE POINTER
1623  006206  105537  001314                  ADCB    RUN             ;CATCH CARRY FROM RUN
1624  006212  062737  000006  001316          ADD     #6,CREAM        ;UPDATE ADDRESS POINTER.
1625  006220  022737  001560  001316          CMP     #DUP.END,CREAM
1626  006226  001360                          BNE     1$              ;KEEP GOING; NOT ALL TESTED FOR.
1627  006230  012737  001500  001316          MOV     #DUP.MAP,CREAM  ;RESET ADDRESS POINTER.
1628  006236  000754                          BR      1$              ;KEEP LOOKING FOR ACTIVE DUP11
1629  006240  000241                  2$:     CLC                     ;CLEAR PROC. CARRY.
1630  006242  106137  001314                  ROLB    RUN             ;UPDATE POINTER.
1631  006246  105537  001314                  ADCB    RUN             ;CATCH CARRY.
1632  006252  013700  001316                  MOV     CREAM,R0        ;GET ADDRESS POINTER.
1633  006256  062737  000006  001316          ADD     #6,CREAM        ;UPDATE.
1634  006264  022737  001560  001316          CMP     #DUP.END,CREAM
1635                                                                  ;ALL DONE?
1636  006272  001003                          BNE     3$              ;BR IF NO.
1637  006274  012737  001500  001316          MOV     #DUP.MAP,CREAM  ;RESTORE POINTER.
1638  006302  012037  001404          3$:     MOV     (R0)+,RXCSR     ;LOAD SYSTEM CTRL. REG
1639  006306  012037  001374                  MOV     (R0)+,DUPRVC    ;LOAD VECTOR
1640  006312  012037  001434                  MOV     (R0)+,LOO.OO    ;GET PARAMETERS
1641  006316  012700  000002                  MOV     #2,R0           ;SAVE CORE THIS WAY!
1642  006322  013737  001404  001424          MOV     RXCSR,HUPRCR    ;GET CONTROL REG HIGH BYTE
1643  006330  005237  001424                  INC     HUPRCR          ;GOT IT
1644  006334  013737  001424  001406          MOV     HUPRCR,RXDBUF   ;GET RX CONTROL REG BUFFER
1645  006342  005237  001406                  INC     RXDBUF          ;GOT IT
1646  006346  013737  001406  001416          MOV     RXDBUF,DUPSEC   ;GOT SECONDARY REG SELECT REG
1647  006354  013737  001406  001410          MOV     RXDBUF,PARCSR   ;GOT PARAMETER STATUS REGISTER
1648  006362  013737  001406  001422          MOV     RXDBUF,HUPRBF   ;GET RX BUFFER HIGH BYTE
1649  006370  005237  001422                  INC     HUPRBF          ;GOT IT
1650  006374  013737  001422  001420          MOV     HUPRBF,HUPPSR   ;GOT PAR STATUS REG HIGH BYTE
1651  006402  013737  001420  001412          MOV     HUPPSR,TXCSR    ;GET TX CONTROL REGISTER
1652  006410  005237  001412                  INC     TXCSR           ;GOT IT
1653  006414  013737  001412  001430          MOV     TXCSR,HUPTCR    ;GET TX CONTROL REG HIGH BYTE
1654  006422  005237  001430                  INC     HUPTCR          ;GOT IT
1655  006426  013737  001430  001414          MOV     HUPTCR,TXDBUF   ;BET TX BUFFER
1656  006434  005237  001414                  INC     TXDBUF          ;GOT IT
1657  006440  013737  001414  001426          MOV     TXDBUF,HUPTBF   ;GET TX BUFFER HIGH BYTE
1658  006446  005237  001426                  INC     HUPTBF          ;GOT IT
1659
1660  006452  013737  001374  001376          MOV     DUPRVC,DUPRPS   ;RX VECTOR
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```
1661  006460  060037  001376                  ADD     R0,DUPRPS       ;RX PRIORITY LEVEL
1662  006464  013737  001376  001400          MOV     DUPRPS,DUPTVC
1663  006472  060037  001400                  ADD     R0,DUPTVC       ;TX VECTOR
1664  006476  013737  001400  001402          MOV     DUPTVC,DUPTPS
1665  006504  060037  001402                  ADD     R0,DUPTPS       ;TX PRIORITY LEVEL
1666
1667
1668  006510  012700  001434                  MOV     #L00.00,R0      ;LOAD STAUS 00-00
1669  006514  012701  001432                  MOV     #MASK.A,R1      ;PREPARE MASK.
1670  006520  012702  001433                  MOV     #CLK.A,R2       ;PREPARE CLOCKS
1671  006524  004737  006670                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1672  006530  005737  000042                  TST     @#42
1673  006534  001050                          BNE     4$
1674  006536  032777  000002  172436          BIT     #SW01,@SWR      ;IF SW01=1,GET STARTING TEST #
1675  006544  001444                          BEQ     4$
1676  006546  104402  005064          7$:     TYPE    ,MCRLF
1677  006552  104403                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
1678  006554  005325                          MTSTN   ;MESSAGE
1679  006556  104405                          PARAM   ;CONVERT STRING
1680  006560  000001                          1       ;LOW LIMIT
1681  006562  001000                          1000    ;HIGH LIMIT
1682  006564  001226                          TSTNO   ;STORE AT THIS LOCATION
1683  006566     000                  .BYTE   0       ;MASK
1684  006567     001                  .BYTE   1       ;HOW MANY TIMES + 2
1685  006570  012700  007304                  MOV     #TST1,R0
1686  006574  022710  012737          5$:     CMP     #12737,(R0)
1687  006600  001017                          BNE     6$
1688  006602  023760  001226  000002          CMP     TSTNO,2(R0)
1689  006610  001013                          BNE     6$
1690  006612  022760  001226  000004          CMP     #TSTNO,4(R0)
1691  006620  001007                          BNE     6$
1692  006622  010037  001214                  MOV     R0,RETURN       ;SAVE PC
1693  006626  104402  005064                  TYPE    ,MCRLF
1694  006632  104402  005130                  TYPE    ,MR
1695  006636  000412                          BR      8$
1696  006640  005720                  6$:     TST     (R0)+
1697  006642  020027  021522                  CMP     R0,#TLAST+10
1698  006646  001352                          BNE     5$
1699  006650  104402  005060                  TYPE    ,MQM
1700  006654  000734                          BR      7$
1701
1702  006656  012737  007304  001214  4$:     MOV     #TST1,RETURN    ;PREPARE RETURN ADDRESS
1703  006664  000177  172324          8$:     JMP     @RETURN         ;GO START TESTING.
1704
1705  006670  011003                  FIX.00: MOV     (R0),R3         ;GET PARAMETERS.
1706  006672  000207                  5$:     RTS     PC              ;
```

```
1707
1708
1709
1710
1711                                        ;ROUTINE TO DETERMINE IF BIT STUFFING IS REQUIRED
1712                                        ;-----------------------------------------------
1713
1714  006674  012737  000010  001326  STUFCK: MOV     #8.,SHIFTS
1715  006702  013700  001324                 MOV     DATA,R0
1716  006706  012701  000200                 MOV     #200,R1
1717  006712  006000                  1$:    ROR     R0
1718  006714  005537  001330                 ADC     MIND
1719  006720  022737  000005  001330         CMP     #5,MIND
1720  006726  003004                         BGT     2$
1721  006730  005037  001330                 CLR     MIND
1722  006734  005237  001326                 INC     SHIFTS
1723  006740  006001                  2$:    ROR     R1
1724  006742  103363                         BCC     1$
1725  006744  000207                         RTS     PC
1726
1727
1728                                        ;THIS ROUTINE POKES THE RECEIVER BIT WINDOW
1729                                        ;BASED ON THE INFORMATION IN DATA AND SHIFTS
1730                                        ;-----------------------------------------------
1731
1732  006746  042777  002000  172436  RPOKE:  BIC     #BITW,@TXCSR
1733  006754  006037  001324                 ROR     DATA
1734  006760  103003                         BCC     1$
1735  006762  052777  002000  172422         BIS     #BITW,@TXCSR
1736  006770  000240                  1$:    NOP
1737  006772  104412  000002                 PKCLK   ,2
1738  006776  005337  001326                 DEC     SHIFTS
1739  007002  001361                         BNE     RPOKE
1740  007004  000201                         RTS     R1
1741
1742
1743  007006  012137  001244          RFLG:  MOV     (R1)+,TEMP4     ;GET THE # OF FLAGS
1744  007012  005037  001246          1$:    CLR     TEMP5           ;CLEAR ONES COUNT
1745  007016  042777  002000  172366         BIC     #BITW,@TXCSR    ;SET FIRST BIT
1746  007024  104412  000002                 PKCLK   ,2              ;PUSH OUT THE BIT
1747  007030  052777  002000  172354  2$:    BIS     #BITW,@TXCSR    ;LOAD THE BIT
1748  007036  104412  000002                 PKCLK   ,2              ;PUSH OUT THE BIT
1749  007042  005237  001246                 INC     TEMP5           ;INCREMENT 1'S COUNTER
1750  007046  022737  000006  001246         CMP     #6,TEMP5        ;DID WE PUSH OUT 6 ONES
1751  007054  001365                         BNE     2$              ;NO-GO BACK
1752  007056  042777  002000  172326         BIC     #BITW,@TXCSR    ;SET THE LAST BIT
1753  007064  104412  000002                 PKCLK   ,2              ;PUSH OUT THE BIT
1754  007070  005337  001244                 DEC     TEMP4           ;ARE WE DONE WITH FLAGS?
1755  007074  001346                         BNE     1$              ;BR IF NO
1756  007076  000201                         RTS     R1
1757
1758
1759  007100  012137  001244          SFLG:  MOV     (R1)+,TEMP4     ;GET THE # OF FLAGS
1760  007104  005037  001246          1$:    CLR     TEMP5           ;CLEAR ONES COUNT
1761  007110  052777  002000  172274  2$:    BIS     #BITW,@TXCSR    ;LOAD THE BIT
1762  007116  104412  000002                 PKCLK   ,2              ;PUSH OUT THE BIT
```

```
1763  007122  005237  001246          INC     TEMP5           ;INCREMENT 1'S COUNTER
1764  007126  022737  000006  001246  CMP     #6,TEMP5        ;DID WE PUSH OUT 6 ONES
1765  007134  001365                  BNE     2$              ;NO-GO BACK
1766  007136  042777  002000  172246  BIC     #BITW,@TXCSR    ;SET THE LAST BIT
1767  007144  104412  000002          PKCLK   2               ;PUSH OUT THE BIT
1768  007150  005337  001244          DEC     TEMP4           ;ARE WE DONE WITH FLAGS?
1769  007154  001353                  BNE     1$              ;BR IF NO
1770  007156  000201                  RTS     R1
1771
1772  007160  012577  172210  SETVEC: MOV     (R5)+,@DUPRVC
1773  007164  012577  172210          MOV     (R5)+,@DUPTVC
1774  007170  112577  172202          MOVB    (R5)+,@DUPRPS
1775  007174  112577  172202          MOVB    (R5)+,@DUPTPS
1776  007200  000205                  RTS     R5
1777  007202                  NO.ATRAP:
1778  007202  104025                  HLT     25
1779  007204  000002                  RTI
1780
1781  007206                  NO.BTRAP:
1782  007206  104026                  HLT     26
1783  007210  000002                  RTI
1784
1785                                  ;THIS ROUTINE PICKS UP THE ADDRESS OF
1786                                  ;THE JUMPER TABLE AND LOADS R5 WITH
1787                                  ;THE CORRECT DATA BASED ON THE STATE
1788                                  ;OF THE JUMPER AND CONNECTOR FLAGS.
1789                                  ;-----------------------------------
1790
1791  007212  012100          JUMPER: MOV     (R1)+,R0        ;GET THE TABLE ADDRESS
1792  007214  105737  001322          TSTB    TCNFLG          ;TEST THE TURN AROUND CONNECTOR FLAG
1793  007220  001406                  BEQ     2$              ;BRANCH IF CONNECTOR IS MISSING
1794  007222  105737  001323          TSTB    OPCLRJ          ;TEST CLEAR JMPER FLAG
1795  007226  001403                  BEQ     2$              ;BRANCH IF JMPER IS MISSING
1796  007230  011005                  MOV     (R0),R5         ;MOVE THE DATA TO R5, BOTH JUMPER
1797                                                          ;AND CONNECTOR ARE THERE
1798  007232  000137  007256          JMP     5$
1799  007236  022020          2$:     CMP     (R0)+,(R0)+     ;POP POINTER
1800  007240  105737  001323          TSTB    OPCLRJ          ;TEST CLEAR JMPER FLAG
1801  007244  001403                  BEQ     3$              ;BRANCH IF MISSING
1802  007246  011005                  MOV     (R0),R5         ;MOVE DATA- JUMPER IN, CONNECTOR OFF
1803  007250  000137  007256          JMP     5$
1804  007254  012005          3$:     MOV     (R0)+,R5        ;NO CONNECTOR OR JUMPER
1805  007256  000201          5$:     RTS     R1              ;RETURN
1806
1807  007260  012100          OJUMPER:MOV     (R1)+,R0        ;GET THE POINTER ADDRESS
1808  007262  105737  001322          TSTB    TCNFLG          ;CHECK FOR TURNAROUND CONNECTOR
1809  007266  001403                  BEQ     4$              ;BR IF MISSING
1810  007270  011005                  MOV     (R0),R5         ;MOVE THE INFO TO R5
1811  007272  000137  007302          JMP     6$              ;GO BACK
1812  007276  022020          4$:     CMP     (R0)+,(R0)+     ;POP POINTER
1813  007300  011005                  MOV     (R0),R5         ;LOAD DATA TO R5
1814  007302  000201          6$:     RTS     R1              ;RETUN
1815
```

```
1816                                    ;*************************** TEST 1 ****************************
1817                                    ;*TEST TO PROVE THE INTERACTION OF RECEIVER ENABLE
1818                                    ;*WITH RECEIVER ACTIVE AND RECEIVE START
1819                                    ;*OF MESSAGE IN PRIMARY MODE.
1820                                    ;:***********************************************************************
1821
1822
1823                                ;:************
1824                                ;            *
1825                                ; TEST 1
1826                                ;            *
1827                                ;:************
1828                                ;:***********************************************************************
1829  007304  012737  000001  001226 TST1:   MOV     #1,@#TSTNO
1830  007312  012737  007472  001216         MOV     #TST2,NEXT
1831  007320  052777  000400  172064         BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
1832  007326  004737  004772                JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
1833  007332  013703  001404                MOV     RXCSR,R3        ;GRT THE RECEIVER CONTROL REGISTER
1834  007336  052777  001000  172044         BIS     #CRCEN,@PARCSR  ;TURN OFF CRC
1835  007344  052713  000020                BIS     #RCVEN,(R3)     ;TURN ON THE RECEIVER
1836  007350  052777  014000  172034         BIS     #MMODE,@TXCSR   ;ENTER M/MODE
1837  007356  004137  007006                JSR     R1,RFLG         ;PUSH OUT A FLAG
1838  007362  000001                        1
1839  007364  032713  004000                BIT     #RECACT,(R3)    ;CHECK RECEIVER ACTIVE
1840
1841  007370  001401                        BEQ     1$              ;BRANCH IF BIT IS OFF
1842  007372  104006                        HLT     6               ;BIT WAS SET - SHOULD BE CLEAR
1843  007374  005037  001324         1$:    CLR     DATA            ;SETUP FOR CHAR
1844  007400  012737  000011  001326         MOV     #9.,SHIFTS      ;POKE CLOCK SETUP
1845  007406  004137  006746                JSR     R1,RPOKE        ;PUSH DATA INTO RECEIVER
1846  007412  032713  000200                BIT     #RXDONE,(R3)    ;TEST DONE
1847  007416  001004                        BNE     2$              ;BR IF SET
1848  007420  012705  000200                MOV     #RXDONE,R5      ;ERROR MSG SETUP
1849  007424  011304                        MOV     (R3),R4         ;SET UP FOUND
1850  007426  104003                        HLT     3               ;RXDONE FAILED TO SET
1851  007430  032777  000400  171750 2$:    BIT     #RSOM,@RXDBUF   ;TEST FOR START OF MSG
1852  007436  001006                        BNE     10$             ;BR IF OK
1853  007440  012705  000400                MOV     #RSOM,R5        ;SET EXPECTED
1854  007444  013703  001406                MOV     RXDBUF,R3       ;SET UP ERROR MSG
1855  007450  011304                        MOV     (R3),R4         ;SET FOUND
1856  007452  104003                        HLT     3               ;RSOM FAILED TO SET
1857
1858  007454  013703  001404         10$:   MOV     RXCSR,R3
1859  007460  032713  004000                BIT     #RECACT,(R3)
1860  007464  001001                        BNE     11$
1861  007466  104014                        HLT     14
1862  007470  104400                 11$:   SCOPE
1863
1864                                    ;*************************** TEST 2 ****************************
1865                                    ;*TEST TO PROVE THE INTERACTION OF RECEIVER ENABLE
1866                                    ;*WITH RECEIVER ACTIVE AND RECEIVE
1867                                    ;*START OF MESSAGE IN SECONDARY MODE.
1868                                    ;:***********************************************************************
1869
1870                                ;:************
1871                                ;            *
```

```
1872                                        ; TEST 2
1873                                        ;          *
1874                                        ;;**********
1875                                        ;;*************************************************************************
1876  007472  012737  000002  001226  TST2:  MOV   #2,@#TSTNO
1877  007500  012737  007762  001216        MOV   #TST3,NEXT
1878  007506  052777  000400  171676        BIS   #MRESET,@TXCSR  ;RESET THE DEVICE
1879  007514  004737  004772               JSR   PC,SMALL        ;WAIT FOR RESET TO FINISH
1880  007520  013703  001404               MOV   RXCSR,R3        ;GRT THE RECEIVER CONTROL REGISTER
1881  007524  052777  001000  171656        BIS   #CRCEN,@PARCSR  ;TURN OFF CRC
1882  007532  052713  000020               BIS   #RCVEN,(R3)     ;TURN ON THE RECEIVER
1883  007536  052777  010000  171644  BIS   #PRISEC,@PARCSR ;ENTER SECONDARY MODE
1884  007544  052777  014000  171640        BIS   #MMODE,@TXCSR   ;ENTER M/MODE
1885  007552  004137  007006               JSR   R1,RFLG         ;PUSH OUT A FLAG
1886  007556  000001                       1
1887  007560  032713  004000               BIT   #RECACT,(R3)    ;CHECK RECEIVER ACTIVE
1888
1889  007564  001403                       BEQ   3$              ;BR IF OFF
1890  007566  005005                       CLR   R5              ;SET EXPECTED
1891  007570  011304                       MOV   (R3),R4         ;SET FOUND
1892  007572  104003                       HLT   3               ;BIT WAS SET AND SHOULD BE CLEARED
1893                                                             ;WE ARE IN SECONDARY MODE
1894  007574  032713  000200          3$:  BIT   #RXDONE,(R3)    ;TEST DONE
1895  007600  001401                       BEQ   4$              ;BR IF CLEAR
1896  007602  104003                       HLT   3               ;DONE IS SET - SHOULD NOT BE BECAUSE
1897                                                             ;WE ARE IN SECONDARY MODE AND HAVE NOT PUSHED DATA
1898  007604  005037  001324          4$:  CLR   DATA            ;CLEAR DATA CHAR
1899  007610  012737  000011  001326       MOV   #9.,SHIFTS      ;LOAD THE # OF BITS TO PUSH
1900  007615  004137  006746               JSR   R1,RPOKE        ;PUSH DATA TO RECEIVER
1901  007622  032713  004000               BIT   #RECACT,(R3)    ;TEST ACTIVE
1902  007626  001004                       BNE   5$              ;BR IF CLEAR
1903  007630  012705  004000               MOV   #RECACT,R5      ;SET EXPECTED
1904  007634  011304                       MOV   (R3),R4         ;SET FOUND
1905  007636  104003                       HLT   3               ;ACTIVE FAILED TO SET
1906  007640  032713  000200          5$:  BIT   #RXDONE,(R3)    ;TEST DONE
1907  007644  001404                       BEQ   6$              ;BR IF NOT SET - THE CHAR WAS
1908                                                             ;THE SECONDARY ADRS
1909  007646  012705  000200               MOV   #RXDONE,R5      ;SET EXPECTED
1910  007652  011304                       MOV   (R3),R4         ;SET FOUND
1911  007654  104003                       HLT   3               ;DONE WAS SET AND SHOULDN'T BE - THE FIRST
1912                                                             ;DATA WAS SECONDARY ADRS, NOT DATA TO THE BUFFER
1913  007656  032777  000400  171522  6$:  BIT   #RSOM,@RXDBUF   ;CHECK START OF MSG
1914  007664  001401                       BEQ   7$              ;BR IF NOT SET
1915  007666  104020                       HLT   20              ;START OF MSG SHOULD BE CLEAR
1916  007670  112737  000252  001324  7$:  MOVB  #252,DATA       ;LOAD DATA CHAR
1917  007676  012737  000010  001326       MOV   #8.,SHIFTS      ;LOAD CLOCK COUNT
1918  007704  004137  006746               JSR   R1,RPOKE        ;PUSH OUT DATA
1919  007710  104412  000002               PKCLK 2               ;POKE ANOTHER FULL CLOCK
1920  007714  032713  000200               BIT   #RXDONE,(R3)    ;TEST DONE
1921  007720  001011                       BNE   10$             ;BR IF SET
1922  007722  012705  000200               MOV   #RXDONE,R5      ;SET EXPECTED
1923  007726  011304                       MOV   (R3),R4         ;SET FOUND
1924  007730  104003                       HLT   3               ;DONE FAILED TO SET AFTER PUSHING
1925                                                             ;OUT A CHAR IN SEC. MODE
1926  007732  032777  000400  171446       BIT   #RSOM,@RXDBUF
1927  007740  001001                       BNE   10$
```

```
1928  007742  104021                          HLT     21
1929  007744  013703  001404          10$:    MOV     RXCSR,R3
1930  007750  032713  004000                  BIT     #RECACT,(R3)
1931  007754  001001                          BNE     11$
1932  007756  104014                          HLT     14
1933  007760  104400                  11$:    SCOPE
1934
1935                                          ;*************************** TEST 3 ****************************
1936                                          ;*TEST TO PROVE THE INTERACTION OF REOM
1937                                          ;*WITH DONE IN PRIMARY MODE
1938
1939                                          ;;*****************************************************************
1940                                  ;:*************
1941                                  ;               *
1942                                  ; TEST 3
1943                                  ;               *
1944                                  ;:*************
1945                                  ;:*****************************************************************
1946  007762  012737  000003  001226  TST3:   MOV     #3,@#TSTNO
1947  007770  012737  010210  001216          MOV     #TST4,NEXT
1948  007776  052777  000400  171406          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
1949  010004  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
1950  010010  052777  000020  171366          BIS     #RCVEN,@RXCSR   ;TURN ON RECEIVER
1951  010016  052777  001000  171364          BIS     #CRCEN,@PARCSR  ;TURN OFF CRC
1952  010024  005037  001236                  CLR     TEMP1           ;BIT COUNTER
1953  010030  052777  014000  171354          BIS     #MMODE,@TXCSR   ;ENTER MAINT MODE
1954  010036  004137  007006                  JSR     R1,RFLG         ;PUSH OUT A FLAG
1955  010042  000001                          1                       ;ONE FLAG
1956  010044  012737  000125  001324  MOV     #125,DATA       ;CLEAR OUT CHAR
1957  010052  012737  000010  001326          MOV     #8.,SHIFTS      ;LOAD THE # OF  CLOCKS
1958  010060  004137  006746                  JSR     R1,RPOKE        ;PUSH OUT THE DATA
1959  010064  042777  002000  171320          BIC     #BITW,@TXCSR    ;CLEAR THE DATA WINDOW
1960  010072  104412  000002                  PKCLK   ,2              ;PUSH OUT THE BIT
1961  010076  032777  000200  171300          BIT     #RXDONE,@RXCSR  ;CHECK FOR DONE
1962  010104  001001                  BNE     5$      ;BR IF SET
1963  010106  104000                          HLT                     ;DONE BIT ERROR
1964  010110  105777  171272          5$:     TSTB    @RXDBUF         ;READ THE BUFFER
1965  010114  052777  002000  171270  64$:    BIS     #BITW,@TXCSR    ;PUT A 1 IN THE WINDOW
1966  010122  104412  000002                  PKCLK   ,2              ;PUSH IT OUT
1967  010126  005237  001236                  INC     TEMP1           ;INC THE #  O DO
1968  010132  022737  000006  001236          CMP     #6,TEMP1        ;CHECK FOR FINISH
1969  010140  001365                          BNE     64$             ;BR IF MORE TO GO
1970  010142  042777  002000  171242          BIC     #BITW,@TXCSR    ;CLEAR THE WINDOW
1971  010150  104412  000004                  PKCLK,  4               ;PUSH OUT 2 BINTS
1972  010154  017737  171224  001240          MOV     @RXCSR,TEMP2    ;GET THE CSR
1973  010162  032777  001000  171216          BIT     #REOM,@RXDBUF   ;TEST FOR END OF MSG
1974  010170  001001                          BNE     1$              ;BR IF SET
1975  010172  104001                          HLT     1               ;BIT FAILED TO SET
1976  010174  032737  000200  001240  1$:     BIT     #RXDONE,TEMP2   ;TEST DONE
1977  010202  001001                          BNE     4$              ;BR IF SET
1978  010204  104002                          HLT     2               ;DONE FAILED TO SET
1979
1980  010206  104400                  4$:     SCOPE                   ;SCOPE THIS TEST
1981
1982                                          ;*************************** TEST 4 ****************************
1983                                          ;*TEST TO PROVE THE INTERACTION OF REOM
```

```
                                        ;*WITH DONE IN PRIMARY MODE
                                        ;*USING A COMMON ZERO BIT IN FLAGS.
                                        ;;*****************************************************************
                                    ;;**********
                                    ;          *
                                    ; TEST 4
                                    ;          *
                                    ;;**********
                                    ;;*****************************************************************
010210  012737  000004  001226  TST4:  MOV     #4,@#TSTNO
010216  012737  010460  001216        MOV     #TST5,NEXT
010224  052777  000400  171160        BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
010232  004737  004772                JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
010236  052777  000020  171140        BIS     #RCVEN,@RXCSR   ;TURN ON RECEIVER
010244  052777  001000  171136        BIS     #CRCEN,@PARCSR  ;TURN OFF CRC
010252  005037  001236                CLR     TEMP1           ;BIT COUNTER
010256  052777  014000  171126        BIS     #MMODE,@TXCSR   ;ENTER MAINT MODE
010264  004137  007006                JSR     R1,RFLG         ;PUSH OUT A FLAG
010270  000001                        1                       ;ONE FLAG
010272  004137  007100                JSR     R1,SFLG         ;PUSH OUT SPECIAL FLAGS
010276  000004                        4                       ;THE # TO DO
010300  012737  000125  001324  MOV   #125,DATA       ;CLEAR OUT CHAR
010306  012737  000010  001326        MOV     #8.,SHIFTS      ;LOAD THE # OF  CLOCKS
010314  004137  006746                JSR     R1,RPOKE        ;PUSH OUT THE DATA
010320  042777  002000  171064        BIC     #BITW,@TXCSR    ;CLEAR THE DATA WINDOW
010326  104412  000002                PKCLK   ,2              ;PUSH OUT THE BIT
010332  032777  000200  171044        BIT     #RXDONE,@RXCSR  ;CHECK FOR DONE
010340  001001                BNE     5$      ;BR IF SET
010342  104000                        HLT                     ;DONE BIT ERROR
010344  117737  171036  006002  5$:   MOVB    @RXDBUF,TEMP    ;GET DATA
010352  122737  000125  006002        CMPB    #125,TEMP       ;CHECK IT
010360  001401                        BEQ     64$             ;BR IF A MATCH
010362  104010                        HLT     10              ;DATA COMPARE ERROR
010364  052777  002000  171020  64$:  BIS     #BITW,@TXCSR    ;PUT A 1 IN THE WINDOW
010372  104412  000002                PKCLK   ,2              ;PUSH IT OUT
010376  005237  001236                INC     TEMP1           ;INC THE # TO DO
010402  022737  000006  001236        CMP     #6,TEMP1        ;CHECK FOR FINISH
010410  001365                        BNE     64$             ;BR IF MORE TO GO
010412  042777  002000  170772        BIC     #BITW,@TXCSR    ;CLEAR THE WINDOW
010420  104412  000004                PKCLK,  4               ;PUSH OUT 2 BINTS
010424  017737  170754  001240        MOV     @RXCSR,TEMP2    ;GET THE CSR
010432  032777  001000  170746        BIT     #REOM,@RXDBUF   ;TEST FOR END OF MSG
010440  001001                        BNE     1$              ;BR IF SET
010442  104001                        HLT     1               ;BIT FAILED TO SET
010444  032737  000200  001240  1$:   BIT     #RXDONE,TEMP2   ;TEST DONE
010452  001001                        BNE     4$              ;BR IF SET
010454  104002                        HLT     2               ;DONE FAILED TO SET

010456  104400                4$:     SCOPE                   ;SCOPE THIS TEST

                                    ;*************************** TEST 5 ****************************
                                    ;*TEST TO PROVE THE INTERACTION OF REOM
                                    ;*WITH DONE IN SECONDARY MODE. TEST FOR REOM
                                    ;*AT THE WRONG ADDRESS, THEN AT THE CORRECT
                                    ;*SECONDARY ADDRESS.
```

```
2040                                    ;:*****************************************************************
2041                                ;:************
2042                                ;            *
2043                                ; TEST 5
2044                                ;            *
2045                                ;:************
2046                                ;:*****************************************************************
2047  010460  012737  000005  001226 TST5:   MOV     #5,@#TSTNO
2048  010466  012737  011066  001216         MOV     #TST6,NEXT
2049  010474  052777  000400  170710         BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
2050  010502  004737  004772                 JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
2051  010506  052777  000020  170670         BIS     #RCVEN,@RXCSR   ;TURN ON RECEIVER
2052  010514  052777  001000  170666         BIS     #CRCEN,@PARCSR  ;TURN OFF CRC
2053  010522  005037  001236                 CLR     TEMP1           ;BIT COUNTER
2054  010526  052777  010000  170654 BIS     #PRISEC,@PAPCSR ;ENTER SECONDARY MODE
2055  010534  052777  014000  170650         BIS     #MMODE,@TXCSR   ;ENTER MAINT MODE
2056  010542  004137  007006                 JSR     R1,RFLG         ;PUSH OUT A FLAG
2057  010546  000001                         1                       ;ONE FLAG
2058  010550  012737  000001  001324 MOV     #1,DATA ;LOAD A CHAR
2059  010556  012737  000010  001326         MOV     #8.,SHIFTS      ;LOAD THE # OF  CLOCKS
2060  010564  004137  006746                 JSR     R1,RPOKE        ;PUSH OUT THE DATA
2061  010570  042777  002000  170614         BIC     #BITW,@TXCSR    ;CLEAR THE DATA WINDOW
2062  010576  104412  000002                 PKCLK   2               ;PUSH OUT THE BIT
2063  010602  032777  000200  170574         BIT     #RXDONE,@RXCSR  ;CHECK FOR DONE
2064  010610  001401                 BEQ     5$      ;BR IF CLEAR
2065  010612  104000                         HLT                     ;DONE BIT ERROR
2066  010614  105777  170566         5$:     TSTB    @RXDBUF         ;READ THE BUFFER
2067  010620  052777  002000  170564 64$:    BIS     #BITW,@TXCSR    ;PUT A 1 IN THE WINDOW
2068  010626  104412  000002                 PKCLK   2               ;PUSH IT OUT
2069  010632  005237  001236                 INC     TEMP1           ;INC THE # TO DO
2070  010636  022737  000006  001236         CMP     #6,TEMP1        ;CHECK FOR FINISH
2071  010644  001365                         BNE     64$             ;BR IF MORE TO GO
2072  010646  042777  002000  170536         BIC     #BITW,@TXCSR    ;CLEAR THE WINDOW
2073  010654  104412  000004                 PKCLK,  4               ;PUSH OUT 2 BINTS
2074  010660  032777  001000  170520         BIT     #REOM,@RXDBUF   ;TEST REC END OF MSG
2075  010666  001401                         BEQ     2$              ;BR IF NOT SET
2076  010670  104004                         HLT     4               ;BIT IS SET AND SHOULDN'T
2077                                                                  ;BE - THIS IS SECONDARY MODE
2078  010672  004137  007006         2$:     JSR     R1,RFLG         ;OUTPUT A FLAG
2079  010676  000001                         1
2080  010700  005037  001324                 CLR     DATA            ;CLEAR DATA
2081  010704  012737  000010  001326         MOV     #8.,SHIFTS      ;LOAD THE # OF  CLOCKS
2082  010712  004137  006746                 JSR     R1,RPOKE        ;PUSHOUT SEC. ADRS
2083  010716  012737  000252  001324         MOV     #252,DATA       ;LOAD DATA
2084  010724  012737  000010  001326         MOV     #8.,SHIFTS      ;LOAD # OF CLOCKS
2085  010732  004137  006746                 JSR     R1,RPOKE        ;PUSHOUT DATA
2086  010736  042777  002000  170446         BIC     #BITW,@TXCSR    ;CLEAR OUT DATA WINDOW
2087  010744  104412  000002                 PKCLK,  2               ;PUSH OUT A BIT
2088  010750  032777  000200  170426         BIT     #RXDONE,@RXCSR  ;CHECK DONE
2089  010756  001001                         BNE     6$              ;BR IF SET
2090  010760  104002                         HLT     2               ;DONE FAILED TO SET
2091  010762  005037  001236         6$:     CLR     TEMP1           ;CLEAR TO KEEP TRACK OF THE BITS
2092  010766  105777  170414                 TSTB    @RXDBUF         ;READ THE BUFFER
2093  010772  052777  002000  170412 65$:    BIS     #BITW,@TXCSR    ;SET THE WINDOW BIT
2094  011000  104412  000002                 PKCLK,  2               ;PUSH IT OUT
2095  011004  005237  001236                 INC     TEMP1           ;CHECK TO SEE IF
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2096  011010  022737  000006  001236          CMP     #6,TEMP1        ;6 ARE DONE YET
2097  011016  001365                          BNE     65$             ;BR IF NO
2098  011020  042777  002000  170364          BIC     #BITW,@TXCSR    ;CLEAR THE WINDOW
2099  011026  104412  000004                  PKCLK,  4               ;PUSH 2 BITS
2100  011032  017737  170346  006002          MOV     @RXCSR,TEMP     ;READ THE CSR
2101  011040  032777  001000  170340          BIT     #REOM,@RXDBUF   ;TEST END OF MSG
2102  011046  001001                          BNE     3$              ;BR IF SET
2103  011050  104001                          HLT     1               ;EOM FAILED TO SET IN SEC. MODE
2104  011052  032737  000200  001240  3$:     BIT     #RXDONE,TEMP2   ;TEST DONE
2105  011060  001001                          BNE     4$              ;BR IF SET
2106  011062  104002                          HLT     2               ;BIT FAILED TO SET
2107
2108  011064  104400                  4$:     SCOPE                   ;SCOPE THIS TEST
2109
2110                                          ;************************* TEST 6 ****************************
2111                                          ;*TEST TO PROVE THE INTERACTION OF ABORT
2112                                          ;*WITH A DONE AND RX ERROR IN PRIMARY MODE
2113
2114                                          ;;*****************************************************************
2115                                  ;;*************
2116                                  ;           *
2117                                  ; TEST 6
2118                                  ;           *
2119                                  ;;*************
2120                                  ;;*****************************************************************
2121  011066  012737  000006  001226  TST6:   MOV     #6,@#TSTNO
2122  011074  012737  011300  001216          MOV     #TST7,NEXT
2123  011102  052777  000400  170302          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
2124  011110  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
2125  011114  052777  001000  170266          BIS     #CRCEN,@PARCSR  ;TURN OFF CRC
2126  011122  052777  000020  170254          BIS     #RCVEN,@RXCSR   ;TURN ON RECEIVER
2127  011130  052777  014000  170254          BIS     #MMODE,@TXCSR   ;ENTER MAINT MODE
2128  011136  004137  007006                  JSR     R1,RFLG         ;PUSH OUT A FLAG
2129  011142  000001                          1                       ;ONE FLAG
2130  011144  005037  001324          CLR     DATA    ;CLEAR DATA
2131  011150  012737  000010  001326          MOV     #8.,SHIFTS      ;LOAD CLOCKS
2132  011156  004137  006746                  JSR     R1,RPOKE        ;PUSH OUT DATA CHAR
2133  011162  052777  002000  170222          BIS     #BITW,@TXCSR    ;SET THE WINDOW
2134  011170  104412  000002                  PKCLK,  2               ;PUSH OUT A BIT
2135  011174  105777  170206                  TSTB    @RXDBUF         ;READ A CHAR
2136  011200  112737  000177  001324          MOVB    #177,DATA       ;LOAD A SECOND CHAR
2137  011206  012737  000010  001326          MOV     #8.,SHIFTS      ;LOAD CLOCKS
2138  011214  004137  006746                  JSR     R1,RPOKE        ;PUSH OUT THE DATA
2139  011220  017737  170160  001236          MOV     @RXCSR,TEMP1    ;READ THE CSR
2140  011226  017700  170154                  MOV     @RXDBUF,R0      ;SAVE THE BUFFER
2141  011232  032700  002000                  BIT     #RABORT,R0      ;TEST ABORT BIT
2142  011236  001001                          BNE     1$              ;BR IF SET
2143  011240  104005                          HLT     5               ;ABORT BIT FAILED TO SET
2144  011242  032737  004000  001236  1$:     BIT     #RECACT,TEMP1   ;TEST REC ACT
2145  011250  001401                          BEQ     2$              ;BR IF CLEAR
2146  011252  104006                          HLT     6               ;REC ACT. FAILED TO CLEAR
2147  011254  032737  000200  001236  2$:     BIT     #RXDONE,TEMP1   ;TEST DONE
2148  011262  001001                          BNE     3$              ;BR IF SET
2149  011264  104002                          HLT     2               ;DONE FAILED TO SET
2150  011266  032700  100000          3$:     BIT     #RXDERR,R0      ;TEST ERROR BIT
2151  011272  001001                          BNE     12$             ;BR IF SET
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2152  011274  104007                          HLT     7               ;ERROR BIT FAILED TO SET AFTER ABORT
2153  011276  104400                  12$:    SCOPE                   ;SCOPE THIS TEST
2154                                          ;************************* TEST 7 ****************************
2155                                          ;*TEST TO PROVE THE INTERACTION OF ABORT IN SECONDARY MODE
2156                                          ;*TEST FOR ABORT AT THE WRONG SECONDARY ADDRESS, THEN TEST
2157                                          ;*AT THE CORRECT SECONDARY ADDRESS
2158                                          ;;*****************************************************************
2159                                  ;;*************
2160                                  ;           *
2161                                  ; TEST 7
2162                                  ;           *
2163                                  ;;*************
2164                                  ;;*****************************************************************
2165  011300  012737  000007  001226  TST7:   MOV     #7,@#TSTNO
2166  011306  012737  011636  001216          MOV     #TST10,NEXT
2167  011314  052777  000400  170070          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
2168  011322  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
2169  011326  052777  001000  170054          BIS     #CRCEN,@PARCSR  ;TURN OFF CRC
2170  011334  052777  000020  170042          BIS     #RCVEN,@RXCSR   ;TURN ON RECEIVER
2171  011342  052777  010000  170040  BIS     #PRISEC,@PARCSR ;ENTER SECONDARY MODE
2172  011350  052777  014000  170034          BIS     #MMODE,@TXCSR   ;ENTER MAINT MODE
2173  011356  004137  007006                  JSR     R1,RFLG         ;PUSH OUT A FLAG
2174  011362  000001                          1                       ;ONE FLAG
2175  011364  012737  000001  001324  MOV     #1,DATA ;LOAD WRONG ADRS
2176  011372  012737  000010  001326          MOV     #8.,SHIFTS      ;LOAD CLOCKS
2177  011400  004137  006746                  JSR     R1,RPOKE        ;PUSH OUT DATA CHAR
2178  011404  052777  002000  170000          BIS     #BITW,@TXCSR    ;SET THE WINDOW
2179  011412  104412  000002                  PKCLK,  2               ;PUSH OUT A BIT
2180  011416  105777  167764                  TSTB    @RXDBUF         ;READ A CHAR
2181  011422  112737  000177  001324          MOVB    #177,DATA       ;LOAD A SECOND CHAR
2182  011430  012737  000010  001326          MOV     #8.,SHIFTS      ;LOAD CLOCKS
2183  011436  004137  006746                  JSR     R1,RPOKE        ;PUSH OUT THE DATA
2184  011442  032777  002000  167736          BIT     #RABORT,@RXDBUF ;TEST FOR ABORT
2185  011450  001401                          BEQ     5$              ;BR IF NOT SET
2186  011452  104011                          HLT     11              ;ABORT IS SET AND SHOULDN'T
2187                                                                  ;BE - THIS IS A SECONDARY STATION
2188  011454  004137  007006          5$:     JSR     R1,RFLG         ;PUSH OUT A FLAG
2189  011460  000001                          1                       ;ONE FLAG
2190  011462  005037  001324                  CLR     DATA            ;LOAD ADRS
2191  011466  012737  000010  001326          MOV     #8.,SHIFTS      ;LOAD CLOCKS
2192  011474  004137  006746                  JSR     R1,RPOKE        ;PUSH OUT THE ADRS
2193  011500  012737  000252  001324          MOV     #252,DATA       ;LOAD A CHAR
2194  011506  012737  000010  001326          MOV     #8.,SHIFTS      ;LOAD  CLOCKS
2195  011514  004137  006746                  JSR     R1,RPOKE        ;PUSH OUT THE CHAR
2196  011520  052777  002000  167664          BIS     #BITW,@TXCSR    ;SET THE WINDOW
2197  011526  104412  000002                  PKCLK,  2               ;PUSH OUT A BIT
2198  011532  105777  167650                  TSTB    @RXDBUF         ;READ THE CHAR
2199  011536  112737  000177  001324          MOVB    #177,DATA       ;LOAD THE ABORT
2200  011544  012737  000010  001326          MOV     #8.,SHIFTS      ;LOAD CLOCKS
2201  011552  004137  006746                  JSR     R1,RPOKE        ;PUSH OUT THE ABORT
2202  011556  017737  167622  001240          MOV     @RXCSR,TEMP2    ;READ THE CSR
2203  011564  017700  167616                  MOV     @RXDBUF,R0      ;SAVE THE BUFFER
2204  011570  032700  002000                  BIT     #RABORT,R0      ;TEST THE ABORT BIT
2205  011574  001001                          BNE     6$              ;BR IF SET
2206  011576  104005                          HLT     5               ;BIT IS CLEAR - SHOULD BE SET
2207  011600  032737  004000  001240  6$:     BIT     #RECT,TEMP2     ;TEST ACTIVE
```

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2208  011606  001401                          BEQ     7$              ;BR IF CLEAR
2209  011610  104006                          HLT     6               ;BIT FAILED TO CLEAR AFTEF ABORT
2210  011612  032737  000200  001240  7$:     BIT     #RXDONE,TEMP2   ;TEST DONE
2211  011620  001001                          BNE     10$             ;BR IF SET
2212  011622  104002                          HLT     2               ;DONE FAILED TO SET
2213  011624  032700  100000          10$:    BIT     #RXDERR,R0      ;TEST FOR ERROR
2214  011630  001001                          BNE     12$             ;BR IF SET
2215  011632  104007                          HLT     7               ;ERROR WASN'T SET AFTER ABORT
2216
2217  011634  104400                  12$:    SCOPE                   ;SCOPE THIS TEST
2218                                          ;************************* TEST 10 ****************************
2219                                          ;*DATA OVERRUN TEST IN PRIMARY MODE. TEST TO
2220                                          ;*PROVE OVERRUN ERROR AND RX ERROR WILL OCCUR
2221                                          ;:**********************************************************************
2222
2223                                  ;:************
2224                                  ;            *
2225                                  ; TEST 10
2226                                  ;            *
2227                                  ;:************
2228                                  ;:**********************************************************************
2229  011636  012737  000010  001226  TST10:  MOV     #10,@#TSTNO
2230  011644  012737  012010  001216          MOV     #TST11,NEXT
2231  011652  052777  000400  167532          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
2232  011660  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
2233  011664  013703  001404                  MOV     RXCSR,R3        ;LOAD THE CONTROL REGISTER
2234  011670  052777  001000  167512          BIS     #CRCEN,@PARCSR  ;TURN OFF CRC
2235  011676  052713  000020                  BIS     #RCVEN,(R3)     ;TURN ON THE RECEIVER
2236  011702  052777  014000  167502          BIS     #MMODE,@TXCSR   ;ENTER MAINTENANCE MODE
2237  011710  004137  007006                  JSR     R1,RFLG         ;PUSH OUT A FLAG
2238  011714  000001                          1                       ;ONE FLAG
2239  011716  012737  000252  001324          MOV     #252,DATA       ;LOAD CHAR TO BE OUTPUT
2240  011724  012737  000010  001326          MOV     #8.,SHIFTS      ;CLOCK SETUP
2241  011732  004137  006746                  JSR     R1,RPOKE        ;PUSH DATA INTO RECEIVER
2242  011736  012737  000070  001324          MOV     #70,DATA        ;LOAD A SECOND CHARACTER
2243  011744  012737  000011  001326          MOV     #9.,SHIFTS      ;SETUP #OF CLOCKS
2244  011752  004137  006746                  JSR     R1,RPOKE        ;PUSH THE SECOND CHAPACTER INTO RX
2245  011756  017?00  16742?                  MOV     @RXDBUF,R0      ;SAVE BUFFER
2246  011762  042700  037777                  BIC     #^C<RXDERR!OVRRUN>,R0 ;CLEAR JUNK
2247  011766  022700  140000                  CMP     #RXDERR!OVRRUN,R0 ;CHECK TO SEE IF BOTH ARE SET
2248  011772  001401                          BEQ     2$              ;BR IF OK
2249  011774  104013                          HLT     13              ;THEY DIDN'T MATCH
2250
2251  011776  032713  004000          2$:     BIT     #RECACT,(R3)    ;TEST REC. ACT
2252  012002  001001                          BNE     3$              ;BR IF STILL SET
2253  012004  104014                          HLT     14              ;REC. ACTIVE CLEARED AND SHOULD BE SET
2254
2255  012006  104400                  3$:     SCOPE                   ;SCOPE THIS TEST
2256
2257                                          ;************************* TEST 11 ****************************
2258                                          ;*DATA OVERRUN TEST IN SECONDARY MODE. TEST TO PROVE
2259                                          ;*THAT OVERRUN DOES NOT OCCUR IF THIS STATION IS NOT
2260                                          ;*SELECTED.  THEN SELECT THIS SECONDARY STATION AND
2261                                          ;*PROVE OVERRUN ERROR AND RX ERROR WILL OCCUR
2262                                          ;:**********************************************************************
2263
```

```
                                        ;:************
                                        ;*
                                        ; TEST 11
                                        ;*
                                        ;:************
                                        ;:*****************************************************************************
012010  012737  000011  001226  TST11:  MOV     #11,@#TSTNO
012016  012737  012246  001216          MOV     #TST12,NEXT
012024  052777  000400  167360          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
012032  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
012036  013703  001404                  MOV     RXCSR,R3        ;LOAD THE CONTROL REGISTER
012042  052777  001000  167340          BIS     #CRCEN,@PARCSR  ;TURN OFF CRC
012050  052713  000020                  BIS     #RCVEN,(R3)     ;TURN ON THE RECEIVER
012054  052777  010000  167326  BIS     #PRISEC,@PARCSR ;ENTER SECONDARY MODE
012062  052777  014000  167322          BIS     #MMODE,@TXCSR   ;ENTER MAINTENANCE MODE
012070  004137  007006                  JSR     R1,RFLG         ;PUSH OUT A FLAG
012074  000001                          1                       ;ONE FLAG
012076  012737  000252  001324          MOV     #252,DATA       ;LOAD AN INCORRECT SEC. STA ADRS
012104  012737  000031  001326          MOV     #25.,SHIFTS     ;PUSH OUT 3 CHARS
012112  004137  006746                  JSR     R1,RPOKE        ;THRU THE RECEIVER
012116  032777  040000  167262          BIT     #OVRRUN,@RXDBUF ;TEST FOR OVERRUN
012124  001401                          BEQ     4$              ;BR IF NOT SET
                                        
012126  104015                          HLT     15              ;OVERRUN IS SET AND SHOULDN'T BE
                                                                ;THIS IS A SECONDARY STATION WHICH
                                                                ;DID NOT GET ITS ADDRESS
012130  004137  007006          4$:     JSR     R1,RFLG         ;PUSH OUT A FLAG
012134  000001                          1                       ;ONE FLAG
012136  005037  001324                  CLR     DATA            ;GET CORRECT SEC. STATION ADRS
012142  012737  000010  001326          MOV     #8.,SHIFTS      ;MOVE THE #OF CLOCKS TO PUSH
012150  004137  006746                  JSR     R1,RPOKE        ;PUSH OUT THE SEC. ADRS
012154  012737  000252  001324          MOV     #252,DATA       ;PUSH OUT
012162  012737  000010  001326          MOV     #8.,SHIFTS      ;TWO
012170  004137  006746                  JSR     R1,RPOKE        ;DATA
012174  012737  000070  001324          MOV     #70,DATA        ;CHARACTERS
012202  012737  000011  001326          MOV     #9.,SHIFTS      ;TO FORCE
012210  004137  006746                  JSR     R1,RPOKE        ;AN OVERRUN ERROR
012214  017700  167166                  MOV     @RXDBUF,R0      ;SAVE
012220  042700  037777                  BIC     #^C<RXDERR!OVRRUN>,R0 ;CLEAR JUNK
012224  022700  140000                  CMP     #RXDERR!OVRRUN,R0 ;ARE THE ERROR BITS THERE
012230  001401                          BEQ     6$              ;BR IF YES
012232  104013                          HLT     13              ;ERROR BITS MISSING
                                        
012234  032713  004000          6$:     BIT     #RECACT,(R3)    ;TEST ACTIVE
012240  001001                          BNE     3$              ;BR IF SET
012242  104005                          HLT     5               ;ACTIVE DROPPED OUT
012244  104400                  3$:     SCOPE                   ;SCOPE THIS TEST
                                        
                                        ;************************** TEST 12 ****************************
                                        ;*TEST OF SPECIFIC DATA PATTERNS THRU
                                        ;*THE RECEIVER IN PRIMARY MODE
                                        ;:*************************************************************
                                        ;:************
                                        ;*
                                        ; TEST 12
                                        ;*
```

```
2320                                            ;:************
2321                                            ;:*************************************************************************
2322  012246  012737  000012  001226  TST12:    MOV     #12,@#TSTNO
2323  012254  012737  012512  001216            MOV     #TST13,NEXT
2324  012262  052777  000400  167122            BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
2325  012270  004737  004772                    JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
2326  012274  012703  012500                    MOV     #TBLA,R3        ;LOAD THE TABLE POINTER
2327  012300  012704  012500                    MOV     #TBLA,R4        ;DITTO
2328  012304  012702  000004                    MOV     #4,R2           ;LOAD THE # OF CHARS TO DO
2329  012310  052777  001000  167072            BIS     #CRCEN,@PARCSR
2330  012316  052777  014000  167066            BIS     #MMODE,@TXCSR   ;ENTER M/MODE
2331  012324  052777  000020  167052            BIS     #RCVEN,@RXCSR           ;TURN ON THE RECEIVER
2332  012332  052777  000020  167052            BIS     #SEND,@TXCSR    ;TURN ON THE TRANSMITTER
2333  012340  052777  000400  167046            BIS     #TSOM,@TXDBUF   ;START A FLAG
2334  012346  104412  000010                    PKCLK   ,8.                     ;START A FLAG
2335  012352  012377  167036                    MOV     (R3)+,@TXDBUF           ;LOAD FIRST DATA CHAR
2336  012356  005302                            DEC     R2                      ;LOWER THE # TO DO
2337  012360  104412  000020                    PKCLK   ,16.                    ;PUSH OUT
2338  012364  012377  167024          1$:       MOV     (R3)+,@TXDBUF           ;LOAD DATA
2339  012370  005302                            DEC R2                          ;LOWER THE # TO DO
2340  012372  104412  000020                    PKCLK   ,16.                    ;PUSH OUT DATA
2341  012376  105777  167002                    TSTB    @RXCSR                  ;CHECK FOR RX DONE
2342  012402  100401                            BMI     2$                      ;BR IF DONE SET
2343  012404  104000                            HLT                             ;RX DONE FAILED TO SET
2344  012406  017737  166774  001324  2$:       MOV     @RXDBUF,DATA            ;GET THE BUFFER
2345  012414  121437  001324                    CMPB    (R4),DATA               ;CHECK IT
2346  012420  001401                            BEQ     3$                      ;BR IF OK
2347  012422  104000                            HLT                             ;DATA COMPARE EROR
2348  012424  005724                  3$:       TST     (R4)+
2349  012426  005702                            TST     R2                      ;CHECK FOR FINISH
2350  012430  001355                            BNE     1$                      ;BR IF MORE TO GO
2351  012432  104412  000020                    PKCLK   ,16.                    ;PUSH OUT LAST CHAR
2352  012436  105777  166742                    TSTB    @RXCSR                  ;CHECK FOR DONE
2353  012442  100401                            BMI     4$                      ;BR IF DONE SET
2354  012444  104000                            HLT                             ;DONE FAILED TO SET
2355  012446  017737  166734  001324  4$:       MOV     @RXDBUF,DATA            ;GET THE BUFFER
2356  012454  121437  001324                    CMPB    (R4),DATA               ;CHECK IT
2357  012460  001401                            BEQ     5$                      ;BR IF A MATCH
2358  012462  104000                            HLT                             ;DATA COMPARE ERROR
2359  012464                            5$:
2360  012464  052777  000400  166720            BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
2361  012472  004737  004772                    JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
2362  012476  104400                            SCOPE
2363
2364                                    ;DATA TABLE
2365  012500  000125                    TBLA:   .WORD   125
2366  012502  000252                            .WORD   252
2367  012504  000000                            .WORD   000
2368  012506  000377                            .WORD   377
2369  012510  000000                            .WORD   000
2370
2371                                            ;*************************** TEST 13 ****************************
2372                                            ;*TEST TO PROVE THAT THE DEVICE WILL
2373                                            ;*WORK WITH ALL POSSIBLE SECONDARY
2374                                            ;*STATION ADDRESSES.
2375                                            ;:*************************************************************************
```

```
                                        ;:************
                                        ;            *
                                        ; TEST 13    
                                        ;            *
                                        ;:************
                                        ;:*************************************************************************
012512  012737  000013  001226 TST13:  MOV     #13,@#TSTNO
012520  012737  013006  001216         MOV     #TST14,NEXT
012526  012737  012554  001220         MOV     #20$,LOCK       ;SW09 SETUP
012534  005005                        CLR     R5              ;CLEAR SEC ADRS HOLD
012536  005037  001236                CLR     TEMP1           ;CLEAR TEMP STORAGE
012542  005037  001240                CLR     TEMP2           ;DITTO
012546  012737  011000  001236         MOV     #CRCEN!PRISEC,TEMP1     ;LOAD MODE AND NO CRC
012554                        20$:
012554  052777  000400  166630         BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
012562  004737  004772                JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
012566  013777  001236  166614         MOV     TEMP1,@PARCSR ;LOAD MODE AND NO CRC AND SEC STATION
012574  052777  000020  166602  1$:    BIS     #RCVEN,@RXCSR   ;TURN ON RECEIVER
012602  052777  004020  166602         BIS     #SYSTST!SEND,@TXCSR ;TURN ON TRANSMITTER AND CLOCK
012610  105777  166576          2$:    TSTB    @TXCSR          ;WAIT FOR
012614  100375                        BPL     2$              ;DONE
012616  012777  000400  166570         MOV     #TSOM,@TXDBUF   ;LOAD START OF MSG
012624  105777  166562          3$:    TSTB    @TXCSR          ;WAIT FOR
012630  100375                        BPL     3$              ;DONE AGAIN
012632  013777  001240  166554         MOV     TEMP2,@TXDBUF   ;LOAD SEC STATION ADRS AND
012640  105777  166546          4$:    TSTB    @TXCSR          ;WAIT FOR
012644  100375                        BPL     4$              ;DONE AGAIN
012646  012777  000252  166540         MOV     #252,@TXDBUF    ;NOW LOAD DATA
012654  032777  004000  166532  64$:   BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
012662  001374                        BNE     64$             ;BR IF SET
012664  032777  004000  166522  65$:   BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
012672  001774                        BEQ     65$             ;BR IF CLEAR
012674  105777  166504          5$:    TSTB    @RXCSR          ;TEST FOR
012700  100375                        BPL     5$              ;RX DONE
012702  005777  166476                TST     @RXCSR          ;TEST FOR ERROR
012706  100001                        BPL     6$              ;BR IF NO ERROR
012710  104014                        HLT     14              ;ERROR FOUND!
012712  017704  166470          6$:    MOV     @RXDBUF,R4      ;GET THE BUFFER
012716  032704  000400                BIT     #RSOM,R4        ;CHECK FOR START OF MSG
012722  001001                        BNE     7$              ;BR IF SET
012724  104000                        HLT                     ;START OF MSG FAILED TO SET
012726  122704  000252          7$:    CMPB    #252,R4         ;CHECK FOR DATA
012732  001401                        BEQ     10$             ;BR IF A MATCH
012734  104012                        HLT     12              ;FAILED TO RECEIVE DATA AS A SEC STATION
012736  104401                10$:    SCOP1                   ;SW09=1?
012740  052777  000400  166444         BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
012746  004737  004772                JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
012752  105205                        INCB    R5              ;GET NEXT SEC ADRS
012754  001413                        BEQ     11$     ;      ;BR IF ALL DONE
012756  110537  001236                MOVB    R5,TEMP1        ;LOAD THE ADRS FOR PAR CSR
012762  110537  001240                MOVB    R5,TEMP2        ;DITTO FOR TXD BUF
012766  052737  011000  001236         BIS     #CRCEN!PRISEC,TEMP1 ;LOAD FOR PAR CSR
012774  013777  001236  166406         MOV     TEMP1,@PARCSR   ;DO IT
013002  000674                        BR      1$              ;BR TO DO OVER
013004  104400                11$:    SCOPE                   ;SCOPE THIS TEST
```

```
2432
2433                                    ;************************** TEST 14 **************************
2434                                    ;*TEST OF SPECIFIC CHAPACTER DATA PATTERNS
2435                                    ;*USING BCC CHECK IN PRIMARY MODE.
2436                                    ;:*************************************************************
2437
2438                                ;:************
2439                                ;            *
2440                                ; TEST 14
2441                                ;            *
2442                                ;:************
2443                                ;:*************************************************************************
2444  013006  012737  000014  001226 TST14:  MOV     #14,@#TSTNO
2445  013014  012737  013524  001216         MOV     #TST15,NEXT
2446  013022  012704  013332                 MOV     #TBLB,R4        ;GET THE TABLE POINTER
2447  013026  012703  000004                 MOV     #4,R3           ;GET THE # TO DO
2448  013032  012701  013332                 MOV     #TBLB,R1        ;GET THE POINTER
2449  013036  012702  013332                 MOV     #TBLB,R2        ;DITTO
2450  013042  005037  001324                 CLR     DATA            ;CLR DATA HOLD
2451  013046  012737  102010  013516 10$:    MOV     #CRC.CCITT,XPOLY        ;LOAD THE POLYNOMIAL FOR CRC
2452  013054  012737  177777  013522         MOV     #-1,CALBCC      ;PRESET BCC FOR SDLC
2453  013062  013737  013522  013104         MOV     CALBCC,12$      ;MOVE BCC
2454  013070  011437  013102                 MOV     (R4),11$        ;MOVE DATA
2455  013074  004537  013344                 JSR     R5,SIMBCC       ;GO CALCULATE BCC
2456  013100  000010                         8.                      ;BASED
2457  013102  000001             11$:        .BLKW   1               ;ON THESE
2458  013104  000001             12$:        .BLKW   1               ;PARMETERS
2459  013106  052777  000400  166276         BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
2460  013114  004737  004772                 JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
2461  013120  052777  014000  166264         BIS     #MMODE,@TXCSR   ;ENTER MAINT MODE
2462  013126  052777  000020  166250         BIS     #RCVEN,@RXCSR   ;TURN ON THE RECEIVER
2463  013134  052777  000020  166250         BIS     #SEND,@TXCSR    ;TURN ON TRANSMITTER
2464  013142  052777  000400  166244         BIS     #TSOM,@TXDBUF   ;TURN ON START OF MSG
2465  013150  104412  000012                 PKCLK   ,10.            ;PUSH OUT 4 BITS
2466  013154  105777  166232                 TSTB    @TXCSR          ;CHECK FOR DONE
2467  013160  100401                         BMI     1$              ;BR IF SET
2468  013162  104000                         HLT                     ;DONE FAILED TO SET
2469  013164                      1$:
2470  013164  011177  166224                 MOV     (R1),@TXDBUF    ;LOAD DATA
2471  013170  104412  000020                 PKCLK   ,16.            ;PUSH OUT 8 BITS
2472  013174  052777  000000  166212         BIS     #TEOM,@TXDBUF   ;SET END OF MSG
2473  013202  104412  000020                 PKCLK   ,16.            ;PUSH OUT 8 MOPE BITS
2474  013206  105777  166172                 TSTB    @RXCSR          ;CHECK FOR DONE
2475  013212  100401                         BMI     2$              ;BR IF SET
2476  013214  104000                         HLT                     ;DONE FAILED TO SET
2477  013216  017737  166164  001324 2$:     MOV     @RXDBUF,DATA    ;READ THE BUFFER
2478  013224  121237  001324                 CMPB    (R2),DATA       ;CHECK THE DATA
2479  013230  001401                         BEQ     3$              ;BR IF A MATCH
2480  013232  104000                         HLT                     ;DATA COMPARE ERROR
2481  013234  104412  000020         3$:     PKCLK   ,16.            ;PUSH OUT 8 MORE BITS
2482  013240  105777  166140                 TSTB    @RXCSR          ;CHECK FOR DONE
2483  013244  100401                         BMI     4$              ;BR IF SET
2484  013246  104000                         HLT                     ;DONE FAILED TO SET ON FIRST OCTET OF BCC
2485  013250  017737  166132  001324 4$:     MOV     @RXDBUF,DATA    ;READ THE BUFFER
2486  013256  104412  000032                 PKCLK   ,26.            ;FINISH POKING BITS
2487  013262  105777  166116                 TSTB    @RXCSR          ;CHECK FOR DONE
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2488  013266  100401                          BMI     5$              ;BR IF SET
2489  013270  104000                          HLT                     ;DONE FAILED TO SET ON SECOND OCTET OF BCC
2490  013272  117737  166110  001325  5$:     MOVB    @RXDBUF,DATA +1 ;GET IT
2491  013300  005137  013522                  COM     CALBCC          ;INVERT SOFTWARE
2492  013304  023737  013522  001324          CMP     CALBCC,DATA     ;COMPARE
2493  013312  001401                          BEQ     6$              ;BR IF A MATCH
2494  013314  104000                          HLT                     ;BCC COMPARE FAILURE
2495                                                                  ;USE CRC DEBUGGING ROUTINE TO
2496                                                                  ;REPAIR CRC.SEE FRONT OF LISTING
2497  013316  005721                  6$:     TST     (R1)+           ;POP POINTER
2498  013320  005722                          TST     (R2)+           ;DITTO
2499  013322  005724                          TST     (R4)+           ;DITTO
2500  013324  005303                          DEC     R3              ;DECREMENT THE # TO DO
2501  013326  001247                          BNE     10$             ;BR IF MORE TOGO
2502  013330  104400                          SCOPE                   ;SCOPE THIS TEST
2503
2504                                  ;DATA TABLE
2505  013332  000252                  TBLB:   .WORD   252
2506  013334  000000                          .WORD   0
2507  013336  000125                          .WORD   125
2508  013340  000377                          .WORD   377
2509  013342  000000                          .WORD   0
2510
2511
2512  013344  010046                  SIMBCC: MOV     R0,-(SP)
2513  013346  010146                          MOV     R1,-(SP)
2514  013350  010246                          MOV     R2,-(SP)
2515  013352  012537  001236                  MOV     (R5)+,TEMP1
2516  013356  012537  001240                  MOV     (R5)+,TEMP2
2517  013362  012537  001242                  MOV     (R5)+,TEMP3
2518  013366  005037  013520          1$:     CLR     BCCFBK
2519  013372  013700  001242                  MOV     TEMP3,R0
2520  013376  006037  001240                  ROR     TEMP2
2521  013402  005500                          ADC     R0
2522  013404  032700  000001                  BIT     #BIT0,R0
2523  013410  001402                          BEQ     2$
2524  013412  005137  013520                  COM     BCCFBK
2525  013416  013700  013516          2$:     MOV     XPOLY,R0
2526  013422  005100                          COM     R0
2527  013424  040037  013520                  BIC     R0,BCCFBK
2528  013430  000241                          CLC
2529  013432  006037  001242                  ROR     TEMP3
2530  013436  013700  013520                  MOV     BCCFBK,R0
2531  013442  013701  001242                  MOV     TEMP3,R1
2532  013446  010102                          MOV     R1,R2
2533  013450  040100                          BIC     R1,R0
2534  013452  043702  013520                  BIC     BCCFBK,R2
2535  013456  050200                          BIS     R2,R0
2536  013460  043737  013516  001242          BIC     XPOLY,TEMP3
2537  013466  050037  001242                  BIS     R0,TEMP3
2538  013472  005337  001236                  DEC     TEMP1
2539  013476  001333                          BNE     1$
2540  013500  013737  001242  013522          MOV     TEMP3,CALBCC
2541  013506  012602                          MOV     (SP)+,R2
2542  013510  012601                          MOV     (SP)+,R1
2543  013512  012600                          MOV     (SP)+,R0
```

```
                                                    R7S     R5
                                XPOLY:  0
                                BCCFBK: 0
                                CALBCC: 0
                                CRC16=120001
                                CRC.CCITT=102010

                                        ;************************** TEST 15 ********************************
                                        ;THIS TEST PROVES THAT THE DEVICE WILL
                                        ;OUTPUT SIXTEEN SPACES IN FRONT OF A
                                        ;FLAG IF STARTING FROM THE IDLE STATE.
                                        ;:*****************************************************************

                                ;:************
                                ;            *
                                ; TEST 15
                                ;            *
                                ;:************
                                ;:*****************************************************************************
013524  012737  000015  001226  TST15:  MOV     #15,@#TSTNO
013532  012737  014026  001216          MOV     #TST16,NEXT
013540  052777  000400  165644          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
013546  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
013552  005037  001236                  CLR     TEMP1           ;CLEAR FOR SOFTWARE STORAGE
013556  005037  001240                  CLR     TEMP2
013562  005037  001242                  CLR     TEMP3
013566  052777  014000  165616          BIS     #MMODE,@TXCSR   ;ENTER MAINT MODE
013574  052777  001000  165606          BIS     #CRCEN,@PARCSR  ;TURN OFF CRC
013602  052777  000020  165602          BIS     #SEND,@TXCSR    ;TURN ON TRANSMITTER
013610  052777  000020  165566          BIS     #RCVEN,@RXCSR   ;TURN ON RECEIVER
013616  052777  001400  165570          BIS     #TEOM!TSOM,@TXDBUF  ;START SPECIAL SEQUENCE
013624  104412  000004                  PKCLK   4               ;SYNC UP DUP
013630  005237  001236          1$:     INC     TEMP1           ;UPDATE COUNT
013634  022737  000021  001236          CMP     #17.,TEMP1      ;CHECK FOR FINISH
013642  001407                          BEQ     2$              ;BR IF YES
013644  104412  000002                  PKCLK   ,2              ;POKE CLOCK
013650  032777  040000  165534          BIT     #MTDATA,@TXCSR  ;CHECK THE DATA
013656  001764                          BEQ     1$              ;BR IF OK
013660  104000                          HLT                     ;DATA SHOULD BE A 0, WAS A 1
013662  104412  000002          2$:     PKCLK   ,2              ;POKE CLOCK
013666  032777  040000  165516          BIT     #MTDATA,@TXCSR  ;CHECK THE DATA
013674  001401                          BEQ     3$              ;BR IF OK
013676  104000                          HLT                     ;DATA SHOULD BE 0, WAS A ONE
013700  012777  000125  165506  3$:     MOV     #125,@TXDBUF    ;LOAD DATA CHAR
013706  104412  000002          4$:     PKCLK   ,2              ;POKE CLOCK
013712  032777  040000  165472          BIT     #MTDATA,@TXCSR  ;CHECK THE BIT
013720  001001                          BNE     5$              ;BR IF OK
013722  104000                          HLT                     ;DATA SHOULD BE 1, WAS 0
013724  005237  001240          5$:     INC     TEMP2           ;UPDATE FOR FINISH
013730  022737  000006  001240          CMP     #6,TEMP2                ;CHECK FOR DONE
013736  001363                          BNE     4$              ;BR IF MORE TO GO
013740  104412  000002                  PKCLK   ,2              ;POKE CLOCK
013744  032777  040000  165440          BIT     #MTDATA,@TXCSR  ;CHECK THE DATA
013752  001401                          BEQ     6$              ;BR IF OK
013754  104000                          HLT                     ;DATA SHOULD BE 0, WAS A 1
```

```
2600  013756  104412  000006          6$:     PKCLK   ,6              ;START OUT DATA CHAR
2601  013762  052777  001000  165422          BIS     #TEOM,@TXCSR    ;TURN OFF TRANSMITTER
2602  013770  104412  000016                  PKCLK   ,14.            ;FINISH
2603  013774  105777  165404                  TSTB    @RXCSR          ;CHECK RECEIVER
2604  014000  100401                          BMI     7$              ;BR IF OK
2605  014002  104000                          HLT                     ;RECEIVER FAILED TO ACCEPT SPECIAL CHAR
2606  014004  117737  165376  001242  7$:     MOVB    @RXDBUF,TEMP3   ;GET THE CHAR
2607  014012  122737  000125  001242          CMPB    #125,TEMP3      ;CHECK IT
2608  014020  001401                          BEQ     10$
2609  014022  104000                          HLT                     ;DATA FAILED TO MATCH AFTER
2610                                                                  ;SPECIAL SPACES CHARACTER
2611  014024  104400                  10$:    SCOPE                   ;SCOPE THIS TEST
2612
2613
2614                                          ;************************** TEST 16 ****************************
2615                                          ;*THIS TEST PROVES THE INTERACTION OF DTR
2616                                          ;*WITH RING,DSR
2617                                          ;*AND DATA SET CHANGE ONE AND DATA SET CHANGE TWO.
2618                                          ;*SET THE BIT AND VERIFY THE OTHER BITS ARE SET. CLEAR
2619                                          ;*THE BIT AND VERIFY CLEAR. REPEAT FOR MRESET.
2620                                          ;;*************************************************************
2621
2622                                  ;;*************
2623                                  ;             *
2624                                  ; TEST 16
2625                                  ;             *
2626                                  ;;*************
2627                                  ;;*************************************************************************
2628  014026  012737  000016  001226  TST16:  MOV     #16,@#TSTNO
2629  014034  012737  014474  001216          MOV     #TST17,NEXT
2630  014042  012737  014122  001220          MOV     #1$,LOCK
2631  014050  105737  001322                  TSTB    TCNFLG
2632  014054  001002                          BNE     .+6
2633  014056  000137  014462          10$:    JMP     6$
2634  014062  005077  165316                  CLR     @RXCSR          ;CLEAR THE REGISTER
2635  014066  004137  007260                  JSR     R1,@JUMPER      ;THIS CALL DETERMINES IF TURNAROUND CONNECTOR
2636  014072  014464                          7$                      ;AND OPTIONAL JUMPER ARE USED
2637                                                                  ;AND LOADS R5 (EXPECTED) ACCORDINGLY.
2638  014074  052777  000400  165310          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
2639  014102  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
2640  014106  013703  001404                  MOV     RXCSR,R3        ;LOAD THE RECEIVER CONTROL REGISTER TO R3.
2641  014112  005013                          CLR     (R3)            ;CLEAR OUT EXTRA BITS
2642  014114  052777  010000  165270          BIS     #MEXT,@TXCSR    ;ENTER EXTERNAL MAINT. MODE
2643  014122  052713  000002          1$:     BIS     #DTR,(R3)       ;TURN ON DTR
2644  014126  012737  000110  014156          MOV     #110,66$                ;LOAD THE NUMBER
2645  014134  032777  004000  165252  66$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
2646  014142  001374                          BNE     66$             ;BR IF SET
2647  014144  032777  004000  165242  67$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
2648  014152  001774                          BEQ     67$             ;BR IF CLEAR
2649  014154  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
2650  014156  000110                  68$:    110                     ;OF TIMES TO REPEAT
2651  014160  001365                          BNE     66$             ;BR IF MORE TO GO
2652  014162  011304                          MOV     (R3),R4         ;GET THE BITS FROM THE RXCSR
2653  014164  020504                          CMP     R5,R4           ;R5=GOOD R4=?
2654  014166  001423                          BEQ     2$              ;BRANCH IF THEY MATCH
2655  014170  104003                          HLT     3               ;NO MATCH - SHOW OPR.
```

```
2656  014172  104401                                    SCOP1
2657  014174  012737  000005  014224                    MOV     #5,73$          ;LOAD THE NUMBER
2658  014202  032777  004000  165204  71$:              BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
2659  014210  001374                                    BNE     71$             ;BR IF SET
2660  014212  032777  004000  165174  72$:              BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
2661  014220  001774                                    BEQ     72$             ;BR IF CLEAR
2662  014222  005327                                    DEC     (PC)+           ;DECREMENT THE NUMBER
2663  014224  000005                    73$:            5                       ;OF TIMES TO REPEAT
2664  014226  001365                                    BNE     71$             ;BR IF MORE TO GO
2665  014230  032713  040000                            BIT     #RING,(R3)
2666  014234  001000                                    BNE     2$
2667  014236  012737  014250  001220  2$:               MOV     #3$,LOCK        ;SW09 SETUP
2668  014244  042705  041002                            BIC     #RING!DSR!DTR,R5                ;CLEAR OUT UNWANTED BITS
2669  014250  005013                    3$:             CLR     (R3)            ;CLEAR OUT THE REGISTER
2670  014252  012737  000005  014302                    MOV     #5,78$          ;LOAD THE NUMBER
2671  014260  032777  004000  165126  76$:              BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
2672  014266  001374                                    BNE     76$             ;BR IF SET
2673  014270  032777  004000  165116  77$:              BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
2674  014276  001774                                    BEQ     77$             ;BR IF CLEAR
2675  014300  005327                                    DEC     (PC)+           ;DECREMENT THE NUMBER
2676  014302  000005                    78$:            5                       ;OF TIMES TO REPEAT
2677  014304  001365                                    BNE     76$             ;BR IF MORE TO GO
2678  014306  011304                                    MOV     (R3),R4         ;READ BACK THE REGISTER
2679  014310  020504                                    CMP     R5,R4           ;R5=GOOD R4=?
2680  014312  001402                                    BEQ     4$              ;BRANCH IF ONLY THE DSC BITS ARE SET
2681  014314  104003                                    HLT     3               ;NO-GO TELL OPR
2682  014316  104401                                    SCOP1
2683  014320  012737  014326  001220  4$:               MOV     #5$,LOCK        ;SW09 SETUP
2684  014326  052713  000002                    5$:     BIS     #DTR,(R3)       ;TURN ON DTR
2685  014332  012737  000005  014362                    MOV     #5,83$          ;LOAD THE NUMBER
2686  014340  032777  004000  165046  81$:              BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
2687  014346  001374                                    BNE     81$             ;BR IF SET
2688  014350  032777  004000  165036  82$:              BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
2689  014356  001774                                    BEQ     82$             ;BR IF CLEAR
2690  014360  005327                                    DEC     (PC)+           ;DECREMENT THE NUMBER
2691  014362  000005                    83$:            5                       ;OF TIMES TO REPEAT
2692  014364  001365                                    BNE     81$             ;BR IF MORE TO GO
2693  014366  005005                                    CLR     R5              ;CLEAR OUT EXPECTED
2694  014370  005013                                    CLR     (R3)            ;CLEAR OUT THE REGISTER
2695  014372  052777  000400  165012                    BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
2696  014400  004737  004772                            JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
2697  014404  052777  010000  165000                    BIS     #MEXT,@TXCSR    ;TURN ON EXTERNAL MODE
2698  014412  012737  000005  014442                    MOV     #5,88$          ;LOAD THE NUMBER
2699  014420  032777  004000  164766  86$:              BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
2700  014426  001374                                    BNE     86$             ;BR IF SET
2701  014430  032777  004000  164756  87$:              BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
2702  014436  001774                                    BEQ     87$             ;BR IF CLEAR
2703  014440  005327                                    DEC     (PC)+           ;DECREMENT THE NUMBER
2704  014442  000005                    88$:            5                       ;OF TIMES TO REPEAT
2705  014444  001365                                    BNE     86$             ;BR IF MORE TO GO
2706  014446  005713                                    TST     (R3)            ;STRIP DSCA &DSCB FROM CSR
2707  014450  011304                                    MOV     (R3),R4         ;GET THE REGISTER
2708  014452  020504                                    CMP     R5,R4           ;R5=GOOD,R4=?
2709  014454  001402                                    BEQ     6$              ;BR IF OK
2710  014456  104003                                    HLT     3               ;REPORT THE ERROR
2711  014460  104401                                    SCOP1                   ;SW09=1?
```

```
2712
2713  014462  104400                  6$:     SCOPE                   ;SCOPE THE WHOLE TEST
2714  014464  141003                  7$:     .WORD   141003
2715  014466  141001                          .WORD   141001
2716  014470  001002                          .WORD   1002
2717  014472  000000                          .WORD   0
2718
2719
2720                                          ;************************** TEST 17 ****************************
2721                                          ;*THIS TEST PROVES THE INTERACTION OF RTS
2722                                          ;*WITH CTS,CARDET
2723                                          ;*AND DATA SET CHANGE ONE AND DATA SET CHANGE TWO.
2724                                          ;*SET THE BIT AND VERIFY THE OTHER BITS ARE SET. CLEAR
2725                                          ;*THE BIT AND VERIFY CLEAR. REPEAT FOR MRESET.
2726                                          ;:**************************************************************
2727
2728                                  ;:*************
2729                                  ;             *
2730                                  ; TEST 17
2731                                  ;             *
2732                                  ;:*************
2733                                  ;:*****************************************************************************
2734  014474  012737  000017  001226  TST17:  MOV     #17,@#TSTNO
2735  014502  012737  015142  001216          MOV     #1$T20,NEXT
2736  014510  012737  014570  001220          MOV     #1$,LOCK
2737  014516  105737  001322                  TSTB    TCNFLG
2738  014522  001002                          BNE     .+6
2739  014524  000137  015130          10$:    JMP     6$
2740  014530  005077  164650                  CLR     @RXCSR          ;CLEAR THE REGISTER
2741  014534  004137  007260                  JSR     R1,OJUMPER      ;THIS CALL DETERMINES IF TURNAROUND CONNECTOR
2742  014540  015132                          7$                      ;AND OPTIONAL JUMPER ARE USED
2743                                                                  ;AND LOADS R5 (EXPECTED) ACCORDINGLY.
2744  014542  052777  000400  164642          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
2745  014550  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
2746  014554  013703  001404                  MOV     RXCSR,R3        ;LOAD THE RECEIVER CONTROL REGISTER TO R3.
2747  014560  005013                          CLR     (R3)            ;CLEAR OUT EXTRA BITS
2748  014562  052777  010000  164622          BIS     #MEXT,@TXCSR    ;ENTER EXTERNAL MAINT. MODE
2749  014570  052713  000004          1$:     BIS     #RTS,(R3)       ;TURN ON RTS
2750  014574  012737  000110  014624          MOV     #110,68$                ;LOAD THE NUMBER
2751  014602  032777  004000  164604  66$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
2752  014610  001374                          BNE     66$             ;BR IF SET
2753  014612  032777  004000  164574  67$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
2754  014620  001774                          BEQ     67$             ;BR IF CLEAR
2755  014622  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
2756  014624  000110                  68$:    110                     ;OF TIMES TO REPEAT
2757  014626  001365                          BNE     66$             ;BR IF MORE TO GO
2758  014630  011304                          MOV     (R3),R4         ;GET THE BITS FROM THE RXCSR
2759  014632  020504                          CMP     R5,R4           ;R5=GOOD R4=?
2760  014634  001423                          BEQ     2$              ;BRANCH IF THEY MATCH
2761  014636  104003                          HLT     3               ;NO MATCH - SHOW OPR.
2762  014640  104401                          SCOP1
2763  014642  012737  000005  014672          MOV     #5,73$          ;LOAD THE NUMBER
2764  014650  032777  004000  164536  71$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
2765  014656  001374                          BNE     71$             ;BR IF SET
2766  014660  032777  004000  164526  72$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
2767  014666  001774                          BEQ     72$             ;BR IF CLEAR
```

```
2768  014670  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
2769  014672  000005                  73$:    5                       ;OF TIMES TO REPEAT
2770  014674  001365                          BNE     71$             ;BR IF MORE TO GO
2771  014676  032713  040000                  BIT     #RING,(R3)
2772  014702  001000                          BNE     2$
2773  014704  012737  014716  001220  2$:     MOV     #3$,LOCK        ;SW09 SETUP
2774  014712  042705  030004                  BIC     #CTS!CARDET!RTS,R5              ;CLEAR OUT UNWANTED BITS
2775  014716  005013                  3$:     CLR     (R3)            ;CLEAR OUT THE REGISTER
2776  014720  012737  000005  014750          MOV     #5,78$          ;LOAD THE NUMBER
2777  014726  032777  004000  164460  76$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
2778  014734  001374                          BNE     76$             ;BR IF SET
2779  014736  032777  004000  164450  77$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
2780  014744  001774                          BEQ     77$             ;BR IF CLEAR
2781  014746  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
2782  014750  000005                  78$:    5                       ;OF TIMES TO REPEAT
2783  014752  001365                          BNE     76$             ;BR IF MORE TO GO
2784  014754  011304                          MOV     (R3),R4         ;READ BACK THE REGISTER
2785  014756  020504                          CMP     R5,R4           ;R5=GOOD R4=?
2786  014760  001402                          BEQ     4$              ;BRANCH IF ONLY THE DSC BITS ARE SET
2787  014762  104003                          HLT     3               ;NO-GO TELL OPR
2788  014764  104401                          SCOP1
2789  014766  012737  014774  001220  4$:     MOV     #5$,LOCK        ;SW09 SETUP
2790  014774  052713  000004          5$:     BIS     #RTS,(R3)       ;TURN ON RTS
2791  015000  012737  000005  015030          MOV     #5,83$          ;LOAD THE NUMBER
2792  015006  032777  004000  164400  81$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
2793  015014  001374                          BNE     81$             ;BR IF SET
2794  015016  032777  004000  164370  82$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
2795  015024  001774                          BEQ     82$             ;BR IF CLEAR
2796  015026  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
2797  015030  000005                  83$:    5                       ;OF TIMES TO REPEAT
2798  015032  001365                          BNE     81$             ;BR IF MORE TO GO
2799  015034  005005                          CLR     R5              ;CLEAR OUT EXPECTED
2800  015036  005013                          CLR     (R3)            ;CLEAR OUT THE REGISTER
2801  015040  052777  000400  164344          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
2802  015046  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
2803  015052  052777  010000  164332          BIS     #MEXT,@TXCSR    ;TURN ON EXTERNAL MODE
2804  015060  012737  000005  015110          MOV     #5,88$          ;LOAD THE NUMBER
2805  015066  032777  004000  164320  86$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
2806  015074  001374                          BNE     86$             ;BR IF SET
2807  015076  032777  004000  164310  87$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
2808  015104  001774                          BEQ     87$             ;BR IF CLEAR
2809  015106  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
2810  015110  000005                  88$:    5                       ;OF TIMES TO REPEAT
2811  015112  001365                          BNE     86$             ;BR IF MORE TO GO
2812  015114  005713                          TST     (R3)            ;STRIP DSCA &DSCB FROM CSR
2813  015116  011304                          MOV     (R3),R4         ;GET THE REGISTER
2814  015120  020504                          CMP     R5,R4           ;R5=GOOD,R4=?
2815  015122  001402                          BEQ     6$              ;BR IF OK
2816  015124  104003                          HLT     3               ;REPORT THE ERROR
2817  015126  104401                          SCOP1                   ;SW09=1?
2818
2819  015130  104400                  6$:     SCOPE                   ;SCOPE THE WHOLE TEST
2820  015132  130005                  7$:     .WORD   130005
2821  015134  130001                          .WORD   130001
2822  015136  000004                          .WORD   4
2823  015140  000000                          .WORD   0
```

```
                                        ;************************** TEST 20 ****************************
                                        ;*THIS TEST PROVES THE INTERACTION OF STD
                                        ;*WITH STD,SRD
                                        ;*AND DATA SET CHANGE ONE AND DATA SET CHANGE TWO.
                                        ;*SET THE BIT AND VERIFY THE OTHER BITS ARE SET. CLEAR
                                        ;*THE BIT AND VERIFY CLEAR. REPEAT FOR MRESET.
                                        ;;*************************************************************

                                ;:************
                                ;            *
                                ; TEST 20
                                ;            *
                                ;:************
                                ;:*************************************************************************
015142  012737  000020  001226  TST20:  MOV     #20,@#TSTNO
015150  012737  015624  001216          MOV     #TST21,NEXT
015156  012737  015252  001220          MOV     #1$,LOCK
015164  105737  001322                  TSTB    TCNFLG
015170  001002                          BNE     .+6
015172  000137  015612          10$:    JMP     6$
015176  105737  001334                  TSTB    STJMFL
015202  001773                          BEQ     10$
015204  105737  001336                  TSTB    SRJMFL
015210  001770                          BEQ     10$
015212  005C77  164166                  CLR     @RXCSR          ;CLEAR THE REGISTER
015216  004137  007260                  JSR     R1,OJUMPER      ;THIS CALL DETERMINES IF TURNAROUND CONNECTOR
015222  015614                          7$                      ;AND OPTIONAL JUMPER ARE USED
                                                                ;AND LOADS R5 (EXPECTED) ACCORDINGLY.
015224  052777  000400  164160          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
015232  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
015236  013703  001404                  MOV     RXCSR,R3        ;LOAD THE RECEIVER CONTROL REGISTER TO R3.
015242  005013                          CLR     (R3)            ;CLEAR OUT EXTRA BITS
015244  052777  010000  164140          BIS     #MEXT,@TXCSR    ;ENTER EXTERNAL MAINT. MODE
015252  052713  000010          1$:     BIS     #STD,(R3)       ;TURN ON STD
015256  012737  000110  015306          MOV     #110,68$                ;LOAD THE NUMBER
015264  032777  004000  164122  66$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
015272  001374                          BNE     66$             ;BR IF SET
015274  032777  004000  164112  67$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
015302  001774                          BEQ     67$             ;BR IF CLEAR
015304  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
015306  000110          68$:    110             ;OF TIMES TO REPEAT
015310  001365                          BNE     66$             ;BR IF MORE TO GO
015312  011304                          MOV     (R3),R4         ;GET THE BITS FROM THE RXCSR
015314  020504                          CMP     R5,R4           ;R5=GOOD R4=?
015316  001423                          BEQ     2$              ;BRANCH IF THEY MATCH
015320  104003                          HLT     3               ;NO MATCH - SHOW OPR.
015322  104401                          SCOP1
015324  012737  000005  015354          MOV     #5,73$          ;LOAD THE NUMBER
015332  032777  004000  164054  71$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
015340  001374                          BNE     71$             ;BR IF SET
015342  032777  004000  164044  72$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
015350  001774                          BEQ     72$             ;BR IF CLEAR
015352  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
015354  000005          73$:    5               ;OF TIMES TO REPEAT
```

```
 2880  015356  001365                          BNE     71$                 ;BR IF MORE TO GO
 2881  015360  032713  040000                  BIT     #RING,(R3)
 2882  015364  001000                          BNE     2$
 2883  015366  012737  015400  001220  2$:     MOV     #3$,LOCK            ;SW09 SETUP
 2884  015374  042705  002010                  BIC     #STD!SRD,R5                 ;CLEAR OUT UNWANTED BITS
 2885  015400  005013                  3$:     CLR     (R3)                ;CLEAR OUT THE REGISTER
 2886  015402  012737  000005  015432          MOV     #5,78$              ;LOAD THE NUMBER
 2887  015410  032777  004000  163776  76$:     BIT     #TIMER,@TXDBUF      ;CHECK THE TIMER BIT
 2888  015416  001374                          BNE     76$                 ;BR IF SET
 2889  015420  032777  004000  163766  77$:     BIT     #TIMER,@TXDBUF      ;CHECK THE BIT
 2890  015426  001774                          BEQ     77$                 ;BR IF CLEAR
 2891  015430  005327                          DEC     (PC)+               ;DECREMENT THE NUMBER
 2892  015432  000005                  78$:    5                           ;OF TIMES TO REPEAT
 2893  015434  001365                          BNE     76$                 ;BR IF MORE TO GO
 2894  015436  011304                          MOV     (R3),R4             ;READ BACK THE REGISTER
 2895  015440  020504                          CMP     R5,R4               ;R5=GOOD R4=?
 2896  015442  001402                          BEQ     4$                  ;BRANCH IF ONLY THE DSC BITS ARE SET
 2897  015444  104003                          HLT     3                   ;NO-GO TELL OPR
 2898  015446  104401                          SCOP1
 2899  015450  012737  015456  001220  4$:     MOV     #5$,LOCK            ;SW09 SETUP
 2900  015456  052713  000010                  BIS     #STD,(R3)           ;TURN ON STD
 2901  015462  012737  000005  015512          MOV     #5,83$              ;LOAD THE NUMBER
 2902  015470  032777  004000  163716  81$:     BIT     #TIMER,@TXDFJF      ;CHECK THE TIMER BIT
 2903  015476  001374                          BNE     81$                 ;BR IF SET
 2904  015500  032777  004000  163706  82$:     BIT     #TIMER,@TXDBUF      ;CHECK THE BIT
 2905  015506  001774                          BEQ     82$                 ;BR IF CLEAR
 2906  015510  005327                          DEC     (PC)+               ;DECREMENT THE NUMBER
 2907  015512  000005                  83$:    5                           ;OF TIMES TO REPEAT
 2908  015514  001365                          BNE     81$                 ;BR IF MORE TO GO
 2909  015516  005005                          CLR     R5                  ;CLEAR OUT EXPECTED
 2910  015520  005013                          CLR     (R3)                ;CLEAR OUT THE REGISTER
 2911  015522  052777  000400  163662          BIS     #MRESET,@TXCSR      ;RESET THE DEVICE
 2912  015530  004737  004772                  JSR     PC,SMALL            ;WAIT FOR RESET TO FINISH
 2913  015534  052777  010000  163650          BIS     #MEXT,@TXCSR        ;TURN ON EXTERNAL MODE
 2914  015542  012737  000005  015572          MOV     #5,88$              ;LOAD THE NUMBER
 2915  015550  032777  004000  163636  86$:     BIT     #TIMER,@TXDBUF      ;CHECK THE TIMER BIT
 2916  015556  001374                          BNE     86$                 ;BR IF SET
 2917  015560  032777  004000  163626  87$:     BIT     #TIMER,@TXDBUF      ;CHECK THE BIT
 2918  015566  001774                          BEQ     87$                 ;BR IF CLEAR
 2919  015570  005327                          DEC     (PC)+               ;DECREMENT THE NUMBER
 2920  015572  000005                  88$:    5                           ;OF TIMES TO REPEAT
 2921  015574  001365                          BNE     86$                 ;BR IF MORE TO GO
 2922  015576  005713                          TST     (R3)                ;STRIP DSCA &DSCB FROM CSR
 2923  015600  011304                          MOV     (R3),R4             ;GET THE REGISTER
 2924  015602  020504                          CMP     R5,R4               ;R5=GOOD,R4=?
 2925  015604  001402                          BEQ     6$                  ;BR IF OK
 2926  015606  104003                          HLT     3                   ;REPORT THE ERROR
 2927  015610  104401                          SCOP1                       ;SW09=1?
 2928
 2929  015612  104400                  6$:     SCOPE                       ;SCOPE THE WHOLE TEST
 2930  015614  002011                  7$:     .WORD   2011
 2931  015616  002001                          .WORD   2001
 2932  015620  000010                          .WORD   10
 2933  015622  000000                          .WORD   0
 2934
 2935
```

```
                                        ;************************** TEST 21 ****************************
                                        ;*THIS TEST PROVES THE INTERACTION OF DTR!RTS!STD
                                        ;*WITH RING,DSR,CTS,CARDET,STD,SRD
                                        ;*AND DATA SET CHANGE ONE AND DATA SET CHANGE TWO.
                                        ;*SET THE BIT AND VERIFY THE OTHER BITS ARE SET. CLEAR
                                        ;*THE BIT AND VERIFY CLEAR. REPEAT FOR MRESET.
                                        ;;*************************************************************

                                ;;************
                                ;           *
                                ; TEST 21
                                ;           *
                                ;;************
                                ;;*************************************************************
015624  012737  000021  001226  TST21:  MOV     #21,@#TSTNO
015632  012737  016306  001216          MOV     #TST22,NEXT
015640  012737  015734  001220          MOV     #1$,LOCK
015646  105737  001322                  TSTB    TCNFLG
015652  001002                          BNE     .+6
015654  000137  016274          10$:    JMP     6$
015660  105737  001334                  TSTB    STJMFL
015664  001773                          BEQ     10$
015666  105737  001336                  TSTB    SRJMFL
015672  001770                          BEQ     10$
015674  005077  163504                  CLR     @RXCSR          ;CLEAR THE REGISTER
015700  004137  007260                  JSR     R1,OJUMPER      ;THIS CALL DETERMINES IF TURNAROUND CONNECTOR
015704  016276                          7$                      ;AND OPTIONAL JUMPER ARE USED
                                                                ;AND LOADS R5 (EXPECTED) ACCORDINGLY.
015706  052777  000400  163476          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
015714  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
015720  013703  001404                  MOV     RXCSR,R3        ;LOAD THE RECEIVER CONTROL REGISTER TO R3.
015724  005013                          CLR     (R3)            ;CLEAR OUT EXTRA BITS
015726  052777  010000  163456          BIS     #MEXT,@TXCSR    ;ENTER EXTERNAL MAINT. MODE
015734  052713  000016          1$:     BIS     #DTR!RTS!STD,(R3)       ;TURN ON DTR!RTS!STD
015740  012737  000110  015770          MOV     #110,68$                ;LOAD THE NUMBER
015746  032777  004000  163440  66$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
015754  001374                          BNE     66$             ;BR IF SET
015756  032777  004000  163430  67$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
015764  001774                          BEQ     67$             ;BR IF CLEAR
015766  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
015770  000110                  68$:    110                     ;OF TIMES TO REPEAT
015772  001365                          BNE     66$             ;BR IF MORE TO GO
015774  011304                          MOV     (R3),R4         ;GET THE BITS FROM THE RXCSR
015776  020504                          CMP     R5,R4           ;R5=GOOD R4=?
016000  001423                          BEQ     2$              ;BRANCH IF THEY MATCH
016002  104003                          HLT     3               ;NO MATCH - SHOW OPR.
016004  104401                          SCOP1
016006  012737  000005  016036          MOV     #5,73$          ;LOAD THE NUMBER
016014  032777  004000  163372  71$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
016022  001374                          BNE     71$             ;BR IF SET
016024  032777  004000  163362  72$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
016032  001774                          BEQ     72$             ;BR IF CLEAR
016034  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
016036  000005                  73$:    5                       ;OF TIMES TO REPEAT
016040  001365                          BNE     71$             ;BR IF MORE TO GO
016042  032713  040000                  BIT     #RING,(R3)
```

```
2992  016046  001000                        BNE     2$
2993  016050  012737  016062  001220  2$:   MOV     #3$,LOCK          ;SW03 SETUP
2994  016056  042705  073016                BIC     #RING!CTS!CARDET!SRD!DSR!STD!RTS!DTR,R5         ;CLEAR OUT UNWANTED BITS
2995  016062  005013                  3$:   CLR     (R3)              ;CLEAR OUT THE REGISTER
2996  016064  012737  000005  016114        MOV     #5,78$            ;LOAD THE NUMBER
2997  016072  032777  004000  163314  76$:   BIT     #TIMER,@TXDBUF    ;CHECK THE TIMER BIT
2998  016100  001374                        BNE     76$               ;BR IF SET
2999  016102  032777  004000  163304  77$:   BIT     #TIMER,@TXDBUF    ;CHECK THE BIT
3000  016110  001774                        BEQ     77$               ;BR IF CLEAR
3001  016112  005327                        DEC     (PC)+             ;DECREMENT THE NUMBER
3002  016114  000005                  78$:  5                         ;OF TIMES TO REPEAT
3003  016116  001365                        BNE     76$               ;BR IF MORE TO GO
3004  016120  011304                        MOV     (R3),R4           ;READ BACK THE REGISTER
3005  016122  020504                        CMP     R5,R4             ;R5=GOOD R4=?
3006  016124  001402                        BEQ     4$                ;BRANCH IF ONLY THE DSC BITS ARE SET
3007  016126  104003                        HLT     3                 ;NO-GO TELL OPR
3008  016130  104401                        SCOP1
3009  016132  012737  016140  001220  4$:   MOV     #5$,LOCK          ;SW09 SETUP
3010  016140  052713  000016            5$:   BIS     #DTR!RTS!STD,(R3)       ;TURN ON DTR!RTS!STD
3011  016144  012737  000005  016174        MOV     #5,83$            ;LOAD THE NUMBER
3012  016152  032777  004000  163234  81$:   BIT     #TIMER,@TXDBUF    ;CHECK THE TIMER BIT
3013  016160  001374                        BNE     81$               ;BR IF SET
3014  016162  032777  004000  163224  82$:   BIT     #TIMER,@TXDBUF    ;CHECK THE BIT
3015  016170  001774                        BEQ     82$               ;BR IF CLEAR
3016  016172  005327                        DEC     (PC)+             ;DECREMENT THE NUMBER
3017  016174  000005                  83$:  5                         ;OF TIMES TO REPEAT
3018  016176  001365                        BNE     81$               ;BR IF MORE TO GO
3019  016200  005005                        CLR     R5                ;CLEAR OUT EXPECTED
3020  016202  005013                        CLR     (R3)              ;CLEAR OUT THE REGISTER
3021  016204  052777  000400  163200        BIS     #MRESET,@TXCSR    ;RESET THE DEVICE
3022  016212  004737  004772                JSR     PC,SMALL          ;WAIT FOR RESET TO FINISH
3023  016216  052777  010000  163166        BIS     #MEXT,@TXCSR      ;TURN ON EXTERNAL MODE
3024  016224  012737  000005  016254        MOV     #5,88$            ;LOAD THE NUMBER
3025  016232  032777  004000  163154  86$:   BIT     #TIMER,@TXDBUF    ;CHECK THE TIMER BIT
3026  016240  001374                        BNE     86$               ;BR IF SET
3027  016242  032777  004000  163144  87$:   BIT     #TIMER,@TXDBUF    ;CHECK THE BIT
3028  016250  001774                        BEQ     87$               ;BR IF CLEAR
3029  016252  005327                        DEC     (PC)+             ;DECREMENT THE NUMBER
3030  016254  000005                  88$:  5                         ;OF TIMES TO REPEAT
3031  016256  001365                        BNE     86$               ;BR IF MORE TO GO
3032  016260  005713                        TST     (R3)              ;STRIP DSCA &DSCB FROM CSR
3033  016262  011304                        MOV     (R3),R4           ;GET THE REGISTER
3034  016264  020504                        CMP     R5,R4             ;R5=GOOD,R4=?
3035  016266  001402                        BEQ     6$                ;BR IF OK
3036  016270  104003                        HLT     3                 ;REPORT THE ERROR
3037  016272  104401                        SCOP1                     ;SW09=1?
3038
3039  016274  104400                  6$:   SCOPE                     ;SCOPE THE WHOLE TEST
3040  016276  173017                  7$:   .WORD   173017
3041  016300  173001                        .WORD   173001
3042  016302  001016                        .WORD   1016
3043  016304  000000                        .WORD   0
3044
3045                                        ;************************** TEST 22 ****************************
3046                                        ;*TEST THAT SETTING TRANSMIT INTERRUPT
3047                                        ;*ENABLE AND TRANSMITTER DONE PRODUCE
```

```
                                        ;*AN INTERRUPT ON THE TRANSMITTER VECTOR.
                                        ;:*****************************************************************

                                ;:************
                                ;            *
                                ; TEST 22
                                ;            *
                                ;:************
                                ;:*****************************************************************************
016306  012737  000022  001226  TST22:  MOV     #22,@#TSTNO
016314  012737  016424  001216          MOV     #TST23,NEXT
016322  012706  001150                  MOV     #STACK,SP
016326  000005                          RESET
016330  012737  000340  177776          MOV     #340,PS         ;LOCK OUT INTERRUPTS
016336  052777  000400  163046          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
016344  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
016350  004537  007160                  JSR     R5,SETVEC       ;SET UP THE VECTORS
016354  007202                          NO.ATRAP                ;VECTOR "A"
016356  016412                          1$                      ;VECTOR B
016360     340     340                  .BYTE   340,340         ;PRIORITY
016362  052777  004000  163022          BIS     #SYSTST,@TXCSR
016370  005037  177776                  CLR     PS              ;ZERO CPU PRIORITY
016374  052777  000100  163010          BIS     #TXINTE,@TXCSR  ;TURN ON TXINT ENABLE
016402  000240                          NOP                     ;STALL
016404  000240                          NOP                     ;DITTO
016406  000240                          NOP                     ;DITTO
016410  104027                          HLT     27              ;DUP FAILED TO INTERRUPT
016412  012706  001150          1$:     MOV     #STACK,SP       ;RESET THE STACK
016416  005077  162770                  CLR     @TXCSR          ;DISABLE DUP11
016422  104400                          SCOPE                   ;SCOPE THIS TEST

                                        ;************************** TEST 23 **************************
                                        ;*TEST TO VERIFY THAT A TRANSMITTER DONE
                                        ;*INTERRUPT WILL ONLY OCCUR ONCE  IF THE
                                        ;*TXCSR AND TXDBUF ARE *NOT* READ OR WRITTEN.
                                        ;:*****************************************************************

                                ;:************
                                ;            *
                                ; TEST 23
                                ;            *
                                ;:************
                                ;:*****************************************************************************
016424  012737  000023  001226  TST23:  MOV     #23,@#TSTNO
016432  012737  016616  001216          MOV     #TST24,NEXT
016440  012737  000340  177776          MOV     #340,PS         ;LOCK OUT INTERRUPTS
016446  052777  000400  162736          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
016454  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
016460  004537  007160                  JSR     R5,SETVEC       ;SETUP FOR INTERRUPTS
016464  007202                          NO.ATRAP                ;RECEIVER
016466  016566                          1$                      ;TRANSMITTER
016470     340     340                  .BYTE   340,340         ;LEVEL
016472  052777  004000  162712          BIS     #SYSTST,@TXCSR  ;TURN ON CLOCK
016500  052777  000100  162704          BIS     #TXINTE,@TXCSR  ;TURN ON INT. ENABLE
016506  005037  177776                  CLR     PS              ;LOWER PROCESSOR STATUS
016512  000240                          NOP                     ;STALL
```

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3104  016514  000240                          NOP                     ;DITTO
3105  016516  000240                          NOP                     ;DITTO
3106  016520  104027                          HLT     27              ;DUP FAILED TO INTERRUPT
3107  016522  000411                          BR      5$              ;LEAVE TEST
3108  016524  005037  177776          2$:     CLR     PS              ;LOWER PROCESSOR STATUS
3109  016530  000240                          NOP                     ;STALL
3110  016532  000240                          NOP                     ;DITTO
3111  016534  000240                          NOP                     ;DITTO
3112  016536  105777  162650          4$:     TSTB    @TXCSR          ;CHECK THE DONE BIT
3113  016542  100401                          BMI     5$              ;BR IF SET
3114  016544  104024                          HLT     24              ;DONE IS CLEARED AND SHOULDN'T BE
3115  016546  012737  000340  177776  5$:     MOV     #340,PS         ;RAISE PROCESSOR STATUS
3116  016554  005077  162632                  CLR     @TXCSR          ;CLEAR OUT DUP
3117  016560  012706  001150                  MOV     #STACK,SP       ;RESET STACK
3118  016564  104400                          SCOPE                   ;SCOPE THIS TEST
3119
3120  016566  012716  016524          1$:     MOV     #2$,(SP)        ;SET UP SECOND PART OF TEST
3121  016572  004537  007160                  JSR     R5,SETVEC       ;SETUP FOR SECOND INTERRUPT TRY
3122  016576  007202                          NO.ATRAP                ;RECEIVER
3123  016600  016606                          3$                      ;TRANSMITTER
3124  016602     340     340                  .BYTE   340,340         ;LEVEL
3125  016604  000002                          RTI                     ;RETURN
3126  016606                          3$:
3127  016606  104026                          HLT     26              ;REPORT THE FACT YOU GOT HERE
3128  016610  012716  016536                  MOV     #4$,(SP)        ;SETUP FOR END OF TEST
3129  016614  000002                          RTI                     ;RETURN
3130
3131                                          ;************************** TEST 24 ****************************
3132                                          ;*TEST THAT SETTING DATA SET INTERRUPT
3133                                          ;*ENABLE AND RECEIVING A DATA SET
3134                                          ;*CHANGE 1 OR DATA SET CHANGE 2
3135                                          ;*PRODUCES AN INTERRUPT TO THE
3136                                          ;*RECEIVER VECTOR
3137                                          ;;**********************************************************************
3138
3139                                  ;;*************
3140                                  ;               *
3141                                  ; TEST 24
3142                                  ;               *
3143                                  ;;*************
3144                                  ;;**********************************************************************
3145  016616  012737  000024  001226  TST24:  MOV     #24,@#TSTNO
3146  016624  012737  017134  001216          MOV     #TST25,NEXT
3147  016632  105737  001322                  TSTB    TCNFLG
3148  016636  001002                          BNE     .+6
3149  016640  000137  017122                  JMP     5$
3150  016644  012737  016712  001220          MOV     #1$,LOCK        ;SW09 SETUP
3151  016652  012737  000340  177776          MOV     #340,PS         ;LOCK OUT INTERRUPTS
3152  016660  052777  000400  162524          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
3153  016666  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
3154  016672  052777  010000  162512          BIS     #MEXT,@TXCSR    ;ENTER MAINT EXTERNAL MODE
3155  016700  004537  007160                  JSR     R5,SETVEC       ;SET UP VECTORS
3156  016704  016772                          2$                      ;RECEIVER
3157  016706  007206                          NO.BTRAP                ;TRANSMITTER
3158  016710     340     340                  .BYTE   340,340         ;PRORITY AT 7
3159  016712  005037  177776          1$:     CLR     PS              ;LOWER PS
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3160  016716  052777  000040  162460          BIS     #DSINTE,@RXCSR  ;TURN ON INT. ENABLE
3161  016724  052777  000004  162452          BIS     #RTS,@RXCSR     ;TURN ON INT. BIT
3162  016732  012737  000005  016762          MOV     #5,68$          ;LOAD THE NUMBER
3163  016740  032777  004000  162446  66$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
3164  016746  001374                          BNE     66$             ;BR IF SET
3165  016750  032777  004000  162436  67$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
3166  016756  001774                          BEQ     67$             ;BR IF CLEAR
3167  016760  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
3168  016762  000005                  68$:    5                       ;OF TIMES TO REPEAT
3169  016764  001365                          BNE     66$             ;BR IF MORE TO GO
3170  016766  104022                          HLT     22              ;FAILED TO INTERRUPT
3171  016770  104401                          SCOP1                   ;SW09=1
3172  016772  012706  001150          2$:     MOV     #STACK,SP       ;RESET THE STACK
3173  016776  005077  162402                  CLR     @RXCSR          ;CLEAR OUT RECEIVER CONTRL REGISTER.
3174  017002  012737  017022  001220          MOV     #3$,LOCK        ;SW09 SETUP
3175  017010  004537  007160                  JSR     R5,SETVEC       ;SET THE VECTORS
3176  017014  017110                          4$                      ;RECEIVER
3177  017016  007206                          NO.BTRAP                ;TRANSMITTERS
3178  017020     340     340                  .BYTE   340,340         ;PRIOR @7
3179  017022  012737  000005  001236  3$:     MOV     #5.,TEMP1       ;LOAD TEMP1
3180  017030  052777  000040  162346          BIS     #DSINTE,@RXCSR  ;TURN ON INT. ENABLE
3181  017036  005037  177776                  CLR     PS              ;LOWER CPU STATUS
3182  017042  052777  000002  162334          BIS     #DTR,@RXCSR     ;PUSH OUT INT. BITS
3183  017050  012737  000156  017100          MOV     #110.,73$               ;LOAD THE NUMBER
3184  017056  032777  004000  162330  71$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
3185  017064  001374                          BNE     71$             ;BR IF SET
3186  017066  032777  004000  162320  72$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
3187  017074  001774                          BEQ     72$             ;BR IF CLEAR
3188  017076  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
3189  017100  000156                  73$:    110.                    ;OF TIMES TO REPEAT
3190  017102  001365                          BNE     71$             ;BR IF MORE TO GO
3191  017104  104022                          HLT     22              ;FAILED TO INTERRUPT
3192  017106  104401                          SCOP1                   ;BIT09=1?
3193  017110                          4$:
3194  017110  032777  100000  162266          BIT     #BIT15,@RXCSR   ;CHECK FOR INTERRUPT FROM DSC1
3195  017116  001001                          BNE     5$              ;IT CAME FROM DSC1
3196  017120  104023                          HLT     23              ;BIT15 IS CLEARED - INTERRUPTED
3197                                                                  ;FROM THE WRONG DSC BIT.
3198  017122  005077  162256          5$:     CLR     @RXCSR          ;CLEAR OUT RECEIVER CONTROL REG
3199  017126  012706  001150                  MOV     #STACK,SP       ;RESET THE STACK
3200  017132  104400                          SCOPE                   ;SCOPE THIS TEST
3201                                          ;************************** TEST 25 ****************************
3202                                          ;*TEST THAT SETTING RECEIVER INTERRUPT
3203                                          ;*ENABLE AND RECEIVER DONE CAUSES AN
3204                                          ;*INTERRUPT TO THE RECEIVER VECTOR
3205                                          ;;**************************************************************
3206
3207                                  ;:************
3208                                  ;            *
3209                                  ; TEST 25
3210                                  ;            *
3211                                  ;:************
3212                                  ;:*************************************************************************
3213  017134  012737  000025  001226  TST25:  MOV     #25,@#TSTNO
3214  017142  012737  017414  001216          MOV     #TST26,NEXT
3215  017150  012737  000340  177776          MOV     #340,PS         ;LOCK OUT INTERRUPTS
```

```
3216  017156  052777  000400  162226          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
3217  017164  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
3218  017170  052777  004000  162214          BIS     #SYSTST,@TXCSR  ;ENTER SYSTEM TEST MODE
3219  017176  004537  007160                  JSR     R5,SETVEC       ;SET UP VECTORS
3220  017202  017376                          3$                      ;RECEIVER
3221  017204  007206                          NO.BTRAP                ;TRANSMITTER
3222  017206     340     340                  .BYTE   340,340         ;PRIORITY AT 7
3223  017210  005037  177776                  CLR     PS              ;LOWER PS
3224  017214  052777  000020  162162          BIS     #RCVEN,@RXCSR   ;TURN ON RECEIVER
3225  017222  052777  000100  162154          BIS     #RINTEN,@RXCSR  ;TURN ON INT. ENABLE
3226  017230  052777  000020  162154          BIS     #SEND,@TXCSR    ;TURN ON TRANSMITTER
2227  017236                          1$:
3228  017236  012737  000005  017266          MOV     #5,68$          ;LOAD THE NUMBER
3229  017244  032777  004000  162142  66$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
3230  017252  001374                          BNE     66$             ;BR IF SET
3231  017254  032777  004000  162132  67$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
3232  017262  001774                          BEQ     67$             ;BR IF CLEAR
3233  017264  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
3234  017266  000005                  68$:    5                       ;OF TIMES TO REPEAT
3235  017270  001365                          BNE     66$             ;BR IF MORE TO GO
3236  017272  032777  000200  162112          BIT     #TXDONE,@TXCSR  ;TEST TXDONE
3237  017300  001001                          BNE     2$              ;BR IF SET
3238  017302  104024                          HLT     24              ;TXDONE FAILED TO SET
3239  017304                          2$:
3240  017304  012777  000400  162102          MOV     #400,@TXDBUF    ;LOAD TX BUFFER
3241  017312  105777  162074                  TSTB    @TXCSR          ;CHECK FOR
3242  017316  100375                          BPL     .-4             ;DONE
3243  017320  005077  162070                  CLR     @TXDBUF         ;CLEAR TX BUFFER
3244  017324  105777  162062                  TSTB    @TXCSR          ;AND CHECK
3245  017330  100375                          BPL     .-4             ;FOR DONE
3246  017332  012777  001000  162054          MOV     #1000,@TXDBUF   ;LOAD END OF MSG
3247  017340  012737  000050  017370          MOV     #40.,73$                ;LOAD THE NUMBER
3248  017346  032777  004000  162040  71$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
3249  017354  001374                          BNE     71$             ;BR IF SET
3250  017356  032777  004000  162030  72$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
3251  017364  001774                          BEQ     72$             ;BR IF CLEAR
3252  017366  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
3253  017370  000050                  73$:    40.                     ;OF TIMES TO REPEAT
3254  017372  001365                          BNE     71$             ;BR IF MORE TO GO
3255  017374  104022                          HLT     22              ;RECEIVER FAILED TO INTERRUPT
3256  017376  012706  001150          3$:     MOV     #STACK,SP       ;RESET STACK
3257  017402  005077  161776                  CLR     @RXCSR          ;CLEAR OUT REGISTER
3258  017406  005077  162000                  CLR     @TXCSR          ;DITTO
3259  017412  104400                          SCOPE                   ;SCOPE THIS TEST
3260
3261                                          ;************************** TEST 26 ****************************
3262                                          ;*TEST TO VERIFY THAT A RECEIVER DONE
3263                                          ;*INTERRUPT WILL ONLY OCCUR ONCE IF THE
3264                                          ;*RXCSR AND RXDBUF ARE NOT READ OR WRITTEN
3265                                          ;;***********************************************************
3266
3267                                  ;:************
3268                                  ;            *
3269                                  ; TEST 26
3270                                  ;            *
3271                                  ;:************
```

```
3272                                    ;;*****************************************************************
3273  017414  012737  000026  001226  TST26:  MOV     #26,@#TSTNO
3274  017422  012737  017774  001216           MOV     #TST27,NEXT
3275  017430  012737  000340  177776           MOV     #340,PS         ;LOCK OUT INTERRUPTS
3276  017436  052777  000400  161746           BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
3277  017444  004737  004772                    JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
3278  017450  052777  004000  161734           BIS     #SYSTST,@TXCSR  ;ENTER SYSTST MODE
3279  017456  004537  007160                    JSR     R5,SETVEC       ;SETUP VECTORS
3280  017462  017744                           6$                      ;RECEIVER VECTOR
3281  017464  007206                           NO.BTRAP                ;TRANSMITTER VECTOR
3282  017466     340     340                   .BYTE   340,340         ;LEVEL
3283  017470  052777  000020  161706           BIS     #RCVEN,@RXCSR   ;TURN ON RECEIVER
3284  017476  052777  000100  161700           BIS     #RINTEN,@RXCSR  ;TURN ON INT. ENABLE
3285  017504  052777  000020  161700           BIS     #SEND,@TXCSR    ;TURN ON TRANSMITTER
3286  017512                          1$:
3287  017512  012737  000005  017542           MOV     #5,68$          ;LOAD THE NUMBER
3288  017520  032777  004000  161666  66$:     BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
3289  017526  001374                           BNE     66$             ;BR IF SET
3290  017530  032777  004000  161656  67$:     BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
3291  017536  001774                           BEQ     67$             ;BR IF CLEAR
3292  017540  005327                           DEC     (PC)+           ;DECREMENT THE NUMBER
3293  017542  000005                  68$:     5                       ;OF TIMES TO REPEAT
3294  017544  001365                           BNE     66$             ;BR IF MORE TO GO
3295  017546  032777  000200  161636           BIT     #TXDONE,@TXCSR  ;TEST TXDONE
3296  017554  001001                           BNE     2$              ;WAIT
3297  017556  104024                           HLT     24              ;TXDONE FAILED TO SET
3298  017560  012777  000400  161626  2$:      MOV     #TSOM,@TXDBUF   ;LOAD TX BUFFER
3299  017566  105777  161620                   TSTB    @TXCSR          ;CHECK DONE
3300  017572  100375                           BPL     .-4             ;AND THEN
3301  017574  005077  161614                   CLR     @TXDBUF         ;LOAD BUFFER
3302  017600  105777  161606                   TSTB    @TXCSR          ;AND CHECK
3303  017604  100375                           BPL     .-4             ;DONE AGAIN, THEN
3304  017606  012777  001000  161600           MOV     #TEOM,@TXDBUF   ;SET END OF MSG
3305  017614  005037  177776                   CLR     PS              ;LOWER PS
3306  017620                          10$:
3307  017620  012737  000050  017650           MOV     #40.,73$                ;LOAD THE NUMBER
3308  017626  032777  004000  161560  71$:     BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
3309  017634  001374                           BNE     71$             ;BR IF SET
3310  017636  032777  004000  161550  72$:     BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
3311  017644  001774                           BEQ     72$             ;BR IF CLEAR
3312  017646  005327                           DEC     (PC)+           ;DECREMENT THE NUMBER
3313  017650  000050                  73$:     40.                     ;OF TIMES TO REPEAT
3314  017652  001365                           BNE     71$             ;BR IF MORE TO GO
3315  017654  104022                           HLT     22              ;RECEIVER FAILED TO INTERRUPT
3316  017656  000420                           BR      5$              ;LEAVE
3317  017660                          3$:
3318  017660  032777  004000  161526  74$:     BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
3319  017666  001374                           BNE     74$             ;BR IF SET
3320  017670  032777  004000  161516  75$:     BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
3321  017676  001774                           BEQ     75$             ;BR IF CLEAR
3322  017700  012737  000340  177776           MOV     #340,PS         ;RAISE PS
3323  017706  033777  000200  161470           BIT     RXDONE,@RXCSR   ;TEST RXDONE
3324  017714  001001                           BNE     5$              ;BR IF SET
3325  017716  104024                           HLT     24              ;RXDONE IS NOT SET AND SHOULD BE
3326  017720  012737  000340  177776  5$:      MOV     #340,PS         ;LOCKOUT INTERRUPTS
3327  017726  005077  161452                   CLR     @RXCSR          ;CLEAR OUT DEVICE
```

```
                                                CLR     @RXDBUF         ;DITTO
                                                MOV     #STACK,SP       ;RESET THE STACK
                                                SCOPE                   ;SCOPE THIS TEST
                                        6$:
                                                MOV     #3$,(SP)        ;2ND PART SETUP
                                                JSR     R5,$ETVEC       ;SETUP FOR SECOND INTERRUPT TRY
                                                7$                              ;RECEIVER VECTOR
                                                NO.BTRAP                ;TRANSMITTER VECTOR
                                                .BYTE   340,340         ;LEVEL
                                                RTI                     ;RETURN
                                        7$:
                                                HLT     23              ;REPORT THE FACT YOU GOT HERE
                                                                        ;YOU TOOK A SECOND INTERRUPT AND SHOULDN'T HAVE
                                                MOV     #5$,(SP)        ;SETUP TO LEAVE TEST
                                                RTI                     ;LEAVE

                                                ;************************** TEST 27 **************************
                                                ;*TEST TO VERIFY THAT INTERRUPT VECTOR "A"
                                                ;*OCCURS BEFORE INTERRUPT VECTOR "B" EVEN
                                                ;*WHEN VECTOR "B" IS ENABLED BEFORE
                                                ;*VECTOR "A"
                                                ;;*********************************************************************

                                        ;;************
                                        ;               *
                                        ; TEST 27
                                        ;               *
                                        ;;************
                                        ;;*********************************************************************
017774  012737  000027  001226  TST27:  MOV     #27,@#TSTNO
020002  012737  020334  001216          MOV     #TST30,NEXT
020010  012737  000340  177776          MOV     #340,PS         ;SET PRIORITY TO 7
020016  052777  000400  161366          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
020024  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
020030  004537  007160                  JSR     R5,SETVEC       ;SET UP THE VECTORS
020034  020314                          4$                      ;RECEIVER VECTOR
020036  007206                          NO.BTRAP                ;TRANSMITTER VECTOR
020040    340     340                   .BYTE   340,340         ;LEVEL
020042  052777  004000  161342          BIS     #SYSTST,@TXCSR  ;ENTER SYSTEM TEST MODE
020050  052777  000020  161326          BIS     #RCVEN,@RXCSR   ;TURN ON RECEIVER
020056  052777  000100  161320          BIS     #RINTEN,@RXCSR  ;TURN ON REC. DONE INT. ENABLE
020064  052777  001000  161316          BIS     #CRCEN,@PARCSR  ;TURN OFF CRC
020072  052777  000020  161312          BIS     #SEND,@TXCSR    ;TURN ON TRANSMITTER
020100                          1$:
020100  012737  000005  020130          MOV     #5,68$          ;LOAD THE NUMBER
020106  032777  004000  161300  66$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
020114  001374                          BNE     66$             ;BR IF SET
020116  032777  004000  161270  67$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
020124  001774                          BEQ     67$             ;BR IF CLEAR
020126  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
020130  000005                  68$:    5                       ;OF TIMES TO REPEAT
020132  001365                          BNE     66$             ;BR IF MORE TO GO
020134  032777  000200  161250          BIT     #TXDONE,@TXCSR  ;TEST TXDONE
020142  001001                          BNE     2$              ;BR IF SET
020144  104024                          HLT     24              ;TXDONE FAILED TO SET
020146                          2$:
```

```
 3384  020146  012777  000400  161240          MOV     #400,@TXDBUF    ;LOAD TX BUFFER
 3385  020154  105777  161232                  TSTB    @TXCSR          ;CHECK FOR
 3386  020160  100375                          BPL     .-4             ;DONE
 3387  020162  005077  161226                  CLR     @TXDBUF         ;LOAD THE BUFFER
 3388  020166  105777  161220                  TSTB    @TXCSR          ;AND CHECK
 3389  020172  100375                          BPL     .-4             ;DONE AGAIN
 3390  020174  012777  001000  161212          MOV     #1000,@TXDBUF   ;LOAD TEOM
 3391  020202  012737  000144  020232          MOV     #100.,73$               ;LOAD THE NUMBER
 3392  020210  032777  004000  161176  71$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
 3393  020216  001374                          BNE     71$             ;BR IF SET
 3394  020220  032777  004000  161166  72$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
 3395  020226  001774                          BEQ     72$             ;BR IF CLEAR
 3396  020230  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
 3397  020232  000144                  73$:    100.                    ;OF TIMES TO REPEAT
 3398  020234  001365                          BNE     71$             ;BR IF MORE TO GO
 3399  020236  105777  161142                  TSTB    @RXCSR          ;CHECK DONE
 3400  020242  100401                          BMI     5$              ;BR IF SET
 3401  020244  104024                          HLT     24              ;DONE FAILED TO SET
 3402  020246  032777  000200  161136  5$:     BIT     #TXDONE,@TXCSR  ;TEST TXDONE
 3403  020254  001001                          BNE     3$              ;BR IF SET
 3404  020256  104024                          HLT     24              ;TXDONE NOT SET SHOULD BE
 3405  020260  052777  000100  161124  3$:     BIS     #TXINTE,@TXCSR  ;TURN ON TRANSMITTER INT. ENABLE
 3406  020266  005037  177776                  CLR     PS              ;LOWER PROCESSOR STATUS
 3407  020272  032777  004000  161114  74$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
 3408  020300  001374                          BNE     74$             ;BR IF SET
 3409  020302  032777  004000  161104  75$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
 3410  020310  001774                          BEQ     75$             ;BR IF CLEAR
 3411  020312  104027                          HLT     27              ;DUP FAILED TO INTERRUPT
 3412  020314  012706  001150          4$:     MOV     #STACK,SP       ;RESET THE STACK
 3413  020320  052777  000400  161064          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
 3414  020326  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
 3415  020332  104400                          SCOPE                   ;SCOPE THIS TEST
 3416
 3417                                          ;************************* TEST 30 ****************************
 3418                                          ;*TEST TO VERIFY THAT SERVICING THE
 3419                                          ;*TXDONE BIT RE-ARMS THE INTERRUPT
 3420                                          ;*LOGIC IF INTERRUPT ENABLE IS SET.
 3421                                          ;:**************************************************************
 3422
 3423                                  ;:************
 3424                                  ;            *
 3425                                  ; TEST 30
 3426                                  ;            *
 3427                                  ;:************
 3428                                  ;:**************************************************************************
 3429  020334  012737  000030  001226  TST30:  MOV     #30,@#TSTNO
 3430  020342  012737  020642  001216          MOV     #TST31,NEXT
 3431  020350  012737  000340  177776          MOV     #340,PS         ;LOCK OUT INTERRUPTS
 3432  020356  052777  000400  161026          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
 3433  020364  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
 3434  020370  004537  007160                  JSR     R5,SETVEC       ;INTERRUPT VECTOR SETUP
 3435  020374  007202                          NO.ATRAP                ;RECEIVER VECTOR
 3436  020376  020554                          4$                      ;TRANSMITTER VECTOR
 3437  020400     340     340                  .BYTE   340,340         ;LEVEL
 3438  020402  052777  004120  161002          BIS     #SYSTST!SEND!TXINTE,@TXCSR ;TURN ON TRANSMITTER, CLOCK
 3439                                                                  ;AND INTERRUPTS
```

```
 3440  020410  052777  000400  160776          BIS     #TSOM,@TXDBUF   ;LOAD START OF MSG
 3441  020416  005037  177776                  CLR     PS              ;LOWER PROCESSOR STATUS
 3442  020422  012737  000005  020452          MOV     #5,68$          ;LOAD THE NUMBER
 3443  020430  032777  004000  160756  66$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
 3444  020436  001374                          BNE     66$             ;BR IF SET
 3445  020440  032777  004000  160746  67$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
 3446  020446  001774                          BEQ     67$             ;BR IF CLEAR
 3447  020450  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
 3448  020452  000005                  68$:    5                       ;OF TIMES TO REPEAT
 3449  020454  001365                          BNE     66$             ;BR IF MORE TO GO
 3450  020456  104027                          HLT     27              ;DUP FAILED TO INTERRUPT THE FIRST TIME
 3451  020460  000427                          BR      3$              ;LEAVE THE TEST
 3452  020462  005037  177776          1$:     CLR     PS              ;LOWER PROCESSOR STATUS
 3453  020466  012737  000005  020516          MOV     #5,73$          ;LOAD THE NUMBER
 3454  020474  032777  004000  160712  71$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
 3455  020502  001374                          BNE     71$             ;BR IF SET
 3456  020504  032777  004000  160702  72$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
 3457  020512  001774                          BEQ     72$             ;BR IF CLEAR
 3458  020514  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
 3459  020516  000005                  73$:    5                       ;OF TIMES TO REPEAT
 3460  020520  001365                          BNE     71$             ;BR IF MORE TO GO
 3461  020522  104027                          HLT     27              ;DUP FAILED TO INTERRUPT AFTER SERVICING DONE
 3462  020524  000405                          BR      3$              ;LEAVE
 3463  020526                          2$:
 3464  020526  005077  160660                  CLR     @TXCSR          ;SHUT DOWN THE DUP
 3465  020532  012716  020540                  MOV     #3$,(SP)        ;SETUP TO END TEST
 3466  020536  000002                          RTI                     ;RETURN
 3467  020540  012737  000340  177776  3$:     MOV     #340,PS         ;RAISE PROCESSOR STATUS
 3468  020546  012706  001150                  MOV     #STACK,SP       ;RESET STACK
 3469  020552  104400                          SCOPE                   ;SCOPE THIS TEST
 3470  020554  032777  000200  160630  4$:     BIT     #TXDONE,@TXCSR  ;CLEAR DONE AND RE-ARM INTERRUPT
 3471  020562  005077  160626                  CLR     @TXDBUF         ;LOAD BUFFER
 3472  020566  012737  000005  020616          MOV     #5,78$          ;LOAD THE NUMBER
 3473  020574  032777  004000  160612  76$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
 3474  020602  001374                          BNE     76$             ;BR IF SET
 3475  020604  032777  004000  160602  77$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
 3476  020612  001774                          BEQ     77$             ;BR IF CLEAR
 3477  020614  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
 3478  020616  000005                  78$:    5                       ;OF TIMES TO REPEAT
 3479  020620  001365                          BNE     76$             ;BR IF MORE TO GO
 3480  020622  012716  020462                  MOV     #1$,(SP)        ;SETUP TO FINISH TEST
 3481  020626  004537  007160                  JSR     R5,SETVEC       ;SETUP VECTORS FOR NEXT PART OF TEST
 3482  020632  007202                          NO.ATRAP                ;RECEIVER VECTOR
 3483  020634  020526                          2$                      ;TRANSMITTER VECTOR
 3484  020636     340     340                  .BYTE   340,340         ;LEVEL
 3485  020640  000002                          RTI                     ;RETURN
 3486
 3487
 3488                                          ;************************** TEST 31 ****************************
 3489                                          ;*TEST TO VERIFY THAT SERVICING THE
 3490                                          ;*RXDONE BIT RE-ARMS THE INTERRUPT
 3491                                          ;*LOGIC IF INTERRUPT ENABLE IS SET.
 3492                                          ;:**************************************************************
 3493
 3494                                  ;:*************
 3495                                  ;             *
```

```
3496                                    ; TEST 31
3497                                    ;          *
3498                                    ;:*********
3499                                    ;:*************************************************************************
3500  020642  012737  000031  001226  TST31:  MOV     #31,@#TSTNO
3501  020650  012737  021234  001216           MOV     #TST32,NEXT
3502  020656  012737  000340  177776           MOV     #340,PS             ;LOCK OUT INTERRUPTS
3503  020664  052777  000400  160520           BIS     #MRESET,@TXCSR      ;RESET THE DEVICE
3504  020672  004737  004772                    JSR     PC,SMALL            ;WAIT FOR RESET TO FINISH
3505  020676  052777  004000  160506           BIS     #SYSTST,@TXCSR      ;ENTER SYSTST MODE
3506  020704  004537  007160                    JSR     R5,SETVEC           ;SETUP VECTORS
3507  020710  021152                           4$                          ;RECEIVER VECTOR
3508  020712  007206                           NO.BTRAP                    ;TRANSMITTER VECTOR
3509  020714     340     340                   .BYTE   340,340             ;LEVEL
3510  020716  052777  000020  160460           BIS     #RCVEN,@RXCSR       ;TURN ON RECEIVER
3511  020724  052777  000100  160452           BIS     #RINTEN,@RXCSR      ;TURN ON INT. ENABLE
3512  020732  052777  000020  160452           BIS     #SEND,@TXCSR        ;TURN ON TRANSMITTER
3513  020740                          1$:
3514  020740  012737  000005  020770           MOV     #5,68$              ;LOAD THE NUMBER
3515  020746  032777  004000  160440  66$:     BIT     #TIMER,@TXDBUF      ;CHECK THE TIMER BIT
3516  020754  001374                           BNE     66$                 ;BR IF SET
3517  020756  032777  004000  160430  67$:     BIT     #TIMER,@TXDBUF      ;CHECK THE BIT
3518  020764  001774                           BEQ     67$                 ;BR IF CLEAR
3519  020766  005327                           DEC     (PC)+               ;DECREMENT THE NUMBER
3520  020770  000005                  68$:     5                           ;OF TIMES TO REPEAT
3521  020772  001365                           BNE     66$                 ;BR IF MORE TO GO
3522  020774  032777  000200  160410           BIT     #TXDONE,@TXCSR      ;TEST TXDONE
3523  021002  001001                           BNE     2$                  ;BR IF SET
3524  021004  104024                           HLT     24                  ;TXDONE FAILED TO SET
3525  021006  005037  177776           2$:     CLR     PS                  ;LOWER PROCESSOR STATUS
3526  021012  012777  000400  160374           MOV     #400,@TXDBUF        ;LOAD TX BUFFER
3527  021020  105777  160366                    TSTB    @TXCSR
3528  021024  100375                           BPL     .-4
3529  021026  005077  160362                    CLR     @TXDBUF
3530  021032  105777  160354                    TSTB    @TXCSR
3531  021036  100375                           BPL     .-4
3532  021040  012777  001000  160346           MOV     #1000,@TXDBUF
3533  021046                          7$:
3534  021046  012737  000050  021076           MOV     #40.,73$                    ;LOAD THE NUMBER
3535  021054  032777  004000  160332  71$:     BIT     #TIMER,@TXDBUF      ;CHECK THE TIMER BIT
3536  021062  001374                           BNE     71$                 ;BR IF SET
3537  021064  032777  004000  160322  72$:     BIT     #TIMER,@TXDBUF      ;CHECK THE BIT
3538  021072  001774                           BEQ     72$                 ;BR IF CLEAR
3539  021074  005327                           DEC     (PC)+               ;DECREMENT THE NUMBER
3540  021076  000050                  73$:     40.                         ;OF TIMES TO REPEAT
3541  021100  001365                           BNE     71$                 ;BR IF MORE TO GO
3542  021102  104022                           HLT     22                  ;RECEIVER FAILED TO INTERRUPT
3543  021104  000445                           BR      6$                  ;GET OUT OF TEST
3544  021106  005037  177776           3$:     CLR     PS                  ;LOWER STATUS
3545  021112  012737  000005  021142           MOV     #5,78$              ;LOAD THE NUMBER
3546  021120  032777  004000  160266  76$:     BIT     #TIMER,@TXDBUF      ;CHECK THE TIMER BIT
3547  021126  001374                           BNE     76$                 ;BR IF SET
3548  021130  032777  004000  160256  77$:     BIT     #TIMER,@TXDBUF      ;CHECK THE BIT
3549  021136  001774                           BEQ     77$                 ;BR IF CLEAR
3550  021140  005327                           DEC     (PC)+               ;DECREMENT THE NUMBER
3551  021142  000005                  78$:     5                           ;OF TIMES TO REPEAT
```

```
 3552  021144  001365                          BNE     76$             ;BR IF MORE TO GO
 3553  021146  104022                          HLT     22              ;DUP FAILED TO INTERRUPT AFTER SERVICING DONE
 3554  021150  000423                          BR      6$              ;LEAVE IT
 3555
 3556  021152  032777  000200  160224  4$:     BIT     #RXDONE,@RXCSR  ;SERVICE THE DONE BIT
 3557  021160  012 !6  021106                  MOV     #3$,(SP)        ;SETUP FOR 2ND PART OF TEST
 3558  021164  004537  007160                  JSR     R5,SETVEC       ;SETUP NEW VECTORS
 3559  021170  021200                          5$                      ;RECEIVER VECTOR
 3560  021172  007206                          NO.BTRAP                ;TRANSMITTER VECTOR
 3561  021174     340     340                  .BYTE   340,340         ;LEVEL
 3562  021176  000002                          RTI                     ;GO FINISH TEST
 3563  021200                          5$:
 3564  021200  052777  000400  160204          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
 3565  021206  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
 3566  021212  012716  021220                  MOV     #6$,(SP)        ;SETUP TO FINISH TEST
 3567  021216  000002                          RTI                     ;LEAVE
 3568  021220  012737  000340  177776  6$:     MOV     #340,PS         ;RAISE PROCESSOR STATUS
 3569  021226  012706  001150                  MOV     #STACK,SP       ;RESET THE STACK
 3570  021232  104400                          SCOPE                   ;SCOPE THIS TEST
 3571                                          ;************************* TEST 32 ****************************
 3572                                          ;*TEST TO PROVE AN INTERRUPT REQUEST
 3573                                          ;*IS GENERATED WHEN AN ABORT IS RECEIVED.
 3574                                          ;;*********************************************************************
 3575
 3576                                  ;;*************
 3577                                  ;             *
 3578                                  ; TEST 32
 3579                                  ;             *
 3580                                  ;;*************
 3581                                  ;;*********************************************************************
 3582  021234  012737  000032  001226  TST32:  MOV     #32,@#TSTNO
 3583  021242  012737  021512  001216          MOV     #TST33,NEXT
 3584  021250  012737  000340  177776          MOV     #340,PS         ;LOCK OUT INTERRUPTS
 3585  021256  052777  000400  160126          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
 3586  021264  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
 3587  021270  052777  004000  160114          BIS     #SYSTST,@TXCSR  ;ENTER SYS TST MODE
 3588  021276  004537  007160                  JSR     R5,SETVEC       ;SET UP VECTORS
 3589  021302  021464                          2$                      ;RECEIVER
 3590  021304  007206                          NO.BTRAP                ;TRANSMITTER
 3591  021306     340     340                  .BYTE   340,340         ;LEVEL
 3592  021310  005037  177776                  CLR     PS              ;LOWER PROCESSOR STATUS
 3593  021314  052777  000120  160062          BIS     #RCVEN!RINTEN,@RXCSR  ;TURN ON RECEIVER AND INTERRUPT ENABLE
 3594  021322  052777  000020  160062          BIS     #SEND,@TXCSR    ;TURN ON TRANSMITTER
 3595  021330  012737  000005  021360          MOV     #5,68$          ;LOAD THE NUMBER
 3596  021336  032777  004000  160050  66$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
 3597  021344  001374                          BNE     66$             ;BR IF SET
 3598  021346  032777  004000  160040  67$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
 3599  021354  001774                          BEQ     67$             ;BR IF CLEAR
 3600  021356  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
 3601  021360  000005                  68$:    5                       ;OF TIMES TO REPEAT
 3602  021362  001365                          BNE     66$             ;BR IF MORE TO GO
 3603  021364  105777  160022                  TSTB    @TXCSR          ;TEST DONE
 3604  021370  100401                          BMI     1$              ;BR IF SET
 3605  021372  104024                          HLT     24              ;DONE FAILED TO SET
 3606  021374  012777  000400  160012  1$:     MOV     #TSOM,@TXDBUF   ;LOAD TX BUFFER
 3607  021402  105777  160004                  TSTB    @TXCSR          ;CHECK FOR DONE
```

```
3608  021406  100375                          BPL     .-4             ;BR IF NOT SET
3609  021410  005077  160000                  CLR     @TXDBUF         ;PUSH OUT A CHARACTER
3610  021414  105777  157772                  TSTB    @TXCSR          ;WAIT FOR DONE
3611  021420  052777  002000  157766          BIS     #TABORT,@TXDBUF  ;SET ABORT
3612  021426  012737  000113  021456          MOV     #75.,73$                ;LOAD THE NUMBER
3613  021434  032777  004000  157752  71$:    BIT     #TIMER,@TXDBUF  ;CHECK THE TIMER BIT
3614  021442  001374                          BNE     71$             ;BR IF SET
3615  021444  032777  004000  157742  72$:    BIT     #TIMER,@TXDBUF  ;CHECK THE BIT
3616  021452  001774                          BEQ     72$             ;BR IF CLEAR
3617  021454  005327                          DEC     (PC)+           ;DECREMENT THE NUMBER
3618  021456  000113                  73$:    75.                     ;OF TIMES TO REPEAT
3619  021460  001365                          BNE     71$             ;BR IF MORE TO GO
3620  021462  104022                          HLT     22              ;RECEIVER FAILED TO INTERRUPT
3621                                                                  ;ON AN ABORTED MESSAGE
3622  021464  012737  000340  177776  2$:     MOV     #340,PS         ;SET STATUS TO 7
3623  021472  012706  001150                  MOV     #STACK,SP       ;RESET THE STACK
3624  021476  052777  000400  157706          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
3625  021504  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
3626  021510  104400                          SCOPE
3627
3628                                          ;************************** TEST 33 ****************************
3629                                          ;*THIS TEST IS AN AID FOR DEBUGGING CRC
3630                                          ;*ERRORS.  A CHARACTER IS LOADED INTO THE
3631                                          ;*DUP AND PUSHED OUT BIT BY BIT WHILE
3632                                          ;*ALLOWING THE OPERATOR TO MONITOR THE CRC
3633                                          ;*CHARACTER AS IT IS GENERATED.  THE DATA CHARACTER
3634                                          ;*CAN ALSO BE CHANGED BY THE OPERATOR.
3635                                          ;*PUT SW09=1 TO LOCK ON BITS.  TO CONTINUE HIT
3636                                          ;*ANY KEY ON THE TTY. AFTER 16 TIMES PUT DOWN SW09 TO LEAVE
3637                                          ;NOTE:  REMEMBER--IN SDLC A ONE IS A LOGIC LOW IN THE
3638                                          ;CRC GENERATOR.
3639                                          ;*************************************************************
3640                                  ;:*************
3641                                  ;             *
3642                                  ; TEST 33
3643                                  ;             *
3644                                  ;:*************
3645                                  ;:*************************************************************
3646  021512  012737  000033  001226  TST33:  MOV     #33,@#TSTNO
3647  021520  012737  002764  001216          MOV     #.EOP,NEXT
3648  021526  052777  000400  157656          BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
3649  021534  004737  004772                  JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
3650  021540  012737  102010  013516          MOV     #CRC.CCITT,XPOLY        ;LOAD THE POLYNOMIAL
3651  021546  012737  000125  021710          MOV     #125,3$         ;LOAD DATA TO SOFTWARE BCC-CHANGE CHARACTER HERE
3652  021554  013737  021710  001252          MOV     3$,SAVR1
3653  021562  012737  177777  013522          MOV     #-1,CALBCC              ;CLEAR FOR SOFTWARE BCC
3654  021570  013737  013522  021712          MOV     CALBCC,4$
3655  021576  005037  001242                  CLR     TEMP3
3656  021602  005037  001244                  CLR     TEMP4           ;CLEAR BIT COUNTER
3657  021606  005037  001246                  CLR     TEMP5
3658  021612  052777  014000  157572          BIS     #MMODE,@TXCSR   ;ENTER MAINT MODE-PROGRAM CLOCKING
3659  021620  052777  000020  157556          BIS     #RCVEN,@RXCSR   ;TURN ON RECEIVER
3660  021626  052777  000020  157556          BIS     #SEND,@TXCSR    ;TURN ON TRANSMITTER
3661  021634  012777  000400  157552          MOV     #TSOM,@TXDBUF   ;
3662  021642  104412  000044                  PKCLK   ,36.            ;PUSH OUT 2
3663  021646  013777  021710  157540          MOV     3$,@TXDBUF      ;LOAD DATA
```

```
 3664  021654  104412  000020                PKCLK   .16.            ;PUSH OUT ANOTHER
 3665  021660  104412  000002          1$:   PKCLK   ,2              ;PUSH OUT A BIT
 3666  021664  013737  001244  001254        MOV     TEMP4,SAVR2     ;SET UP TO TYPE
 3667  021672  005237  001242                INC     TEMP3
 3668  021676  005237  001244                INC     TEMP4           ;UPDATE BIT COUNTER
 3669  021702  004537  013344          2$:   JSR     R5,SIMBCC       ;CALCULATE SOFTWARE BCC BASED ON THESE PARAMETERS
 3670  021706  000001                        1                       ;SHIFTS
 3671  021710  000000                  3$:   .WORD 0                 ;DATA
 3672  021712  000000                  4$:   .WORD 0                 ;PREVIOUS BCC
 3673  021714  004737  022012                JSR     PC,5$           ;CHECK TO SEE IF WE SHOULD WAIT FOR SCOPING
 3674  021720  000241                        CLC                     ;CLEAR FOR NEXT ROTATE
 3675  021722  106037  021710                RORB    3$              ;SET UP THE NEXT BIT
 3676  021726  013737  013522  021712        MOV     CALBCC,4$       ;FOR THE SOFTWARE BCC
 3677  021734  022737  000006  001244        CMP     #6,TEMP4
 3678  021742  001002                        BNE     .+6
 3679  021744  005077  157444                CLR     @TXDBUF
 3680  021750  022737  000014  001242        CMP     #12.,TEMP3
 3681  021756  001003                        BNE     12$
 3682  021760  012777  001000  157426        MOV     #TEOM,@TXDBUF
 3683  021766  022737  000020  001244  12$:  CMP     #16.,TEMP4      ;ALL DONE WITH THE CHARACTER?
 3684                                                                ;INCREASE THE COMPARE NUMBER TO OUTPUT
 3685                                                                ;CRC TO THE RECEIVER
 3686  021774  001331                        BNE     1$              ;BR IF MORE TO GO
 3687  021776  052777  000400  157406        BIS     #MRESET,@TXCSR  ;RESET THE DEVICE
 3688  022004  004737  004772                JSR     PC,SMALL        ;WAIT FOR RESET TO FINISH
 3689  022010  104400                        SCOPE                   ;SCOPE THIS TEST
 3690
 3691  022012  032777  001000  157162  5$:   BIT     #SW09,@SWR      ;SW09=1?
 3692  022020  001432                        BEQ     6$              ;BR IF NO
 3693  022022  013704  013522                MOV     CALBCC,R4       ;THE DATA CHARACTER IS ALWAYS
 3694  022026  012737  000001  001256        MOV     #1,SAVR3        ;FOLLOWED BY A ZERO CHARACTER.TTHE
 3695  022034  000241                        CLC                     ;DATA BIT IN CRC SHOWS WHICH BIT OF
 3696  022036  006004                 11$:   ROR     R4              ;THE TWO CHARACTERS IS BEING GENERATED.
 3697  022040  006137  001256                ROL     SAVR3
 3698  022044  103374                        BCC     11$
 3699  022046  105737  001246                TSTB    TEMP5
 3700  022052  001006                        BNE     10$
 3701  022054  104402  022551                TYPE    ,EM17           ;TYPE MSG
 3702  022060  104402  022600                TYPE    ,MH1            ;TYPE HEADER
 3703  022064  105137  001246                COMB    TEMP5
 3704  022070  104410                 10$:   CONVRT
 3705  022072  023366                        DT1
 3706  022074  105777  157104          7$:   TSTB    @TKCSR          ;CHECK TTY DONE--GO SCOPE THE CRC GENERATOR
 3707                                                                ;NOTE: THE LSB IS RIGHT JUSTIFIED ON THE TTY OUTPUT!!
 3708  022100  100375                        BPL     7$              ;BR IF NOT YET
 3709  022102  017701  157100                MOV     @TKDBR,R1       ;READ THE BUFFER
 3710  022106  000207                  6$:   RTS     PC              ;RETURN
 3711
 3712
```

```
3713  022110  051377  047505  020115  EM1:    .ASCIZ  <377>/RECM BIT /
(1)   022123     377  054122  047504  EM2:    .ASCIZ  <377>/RXDONE BIT /
(1)   022140  051377  040530  047502  EM3:    .ASCIZ  <377>/RXABORT BIT /
(1)   022156  051377  040530  052103  EM4:    .ASCIZ  <377>/RXACTIVE BIT /
(1)   022175     377  054122  042504  EM5:    .ASCIZ  <377>/RXDERR BIT /
(1)   022212  051377  043505  051511  EM6:    .ASCIZ  <377>/REGISTER ERROR /
(1)   022233     377  054122  042504  EM7:    .ASCIZ  <377>/RXDERR OR OVERRUN /
(1)   022257     377  053117  051105  EM10:   .ASCIZ  <377>/OVERRUN BIT /
(1)   022275     377  040504  040524  EM11:   .ASCIZ  <377>/DATA COMPARE ERROR /
(1)   022322  042377  052101  020101  EM12:   .ASCIZ  <377>/DATA COMPARE ERROR IN SECONDARY MODE /
(1)   022371     377  051103  020103  EM13:   .ASCIZ  <377>/CRC CALCULATION ERROR /
(1)   022421     377  051522  046517  EM14:   .ASCIZ  <377>/RSOM BIT /
(1)   022434  040506  046111  042105  DH1:    .ASCIZ       /FAILED TO CLEAR /
(1)   022455     106  044501  042514  DH2:    .ASCIZ       /FAILED TO SET /
(1)   022474  052777  042516  050130  DH3:    .ASCIZ  <377>/UNEXPECTED /
(1)   022511     377  054105  042520  DH6:    .ASCIZ  <377>/EXPECTED    FOUND    REGISTER /
(1)   022551     377  051103  020103  EM17:   .ASCIZ  <377>/CRC GENERATOR STATUS /
(1)   022600  042377  052101  020101  MH1:    .ASCIZ  <377>/DATA CHAR     DATA BIT IN CRC GEN.     CRC FOR THIS BIT  /
(1)   022673     015  052012  040522  EM15:   .ASCIZ <15><12>/TRANSMITTER  /
(1)   022713     015  051012  041505  EM16:   .ASCIZ <15><12>/RECEIVER  /
(1)   022730  047504  042516  041040  EM23:   .ASCIZ  /DONE BIT  /
(1)   022743     106  044501  042514  EM22:   .ASCIZ  /FAILED TO SET /
(1)   022762  052777  042516  050130  EM20:   .ASCIZ  <377>/UNEXPECTED RECEIVER INTERRUPT  /
(1)   023023     377  047125  054105  EM21:   .ASCIZ  <377>/UNEXPECTED TRANSMITTER INTERRUPT  /
(1)   023067     106  044501  042514  DH4:    .ASCIZ /FAILED TO INTERUPT. /
(1)   023114  047111  042524  052522  DH5:    .ASCIZ /INTERUPTED UNEXPECTEDLY./
(1)           023146                  .EVEN
(1)
(1)
(1)
(1)   023146                          .ERRTAB:
(1)   023146  000000                          0
(1)   023150  000000                          0
(1)   023152  000000                          0
(1)   023154  022110                          EM1
(1)   023156  022455                          DH2     ;HALT 1
(1)   023160  000000                          0
(1)
(1)   023162  022123                          EM2
(1)   023164  022455                          DH2     ;HALT 2
(1)   023166  000000                          0
(1)
(1)   023170  022212                          EM6
(1)   023172  022511                          DH6     ;HALT 3
(1)   023174  023404                          DT6
(1)
(1)   023176  022110                          EM1
(1)   023200  022434                          DH1     ;HALT 4
(1)   023202  000000                          0
(1)
(1)   023204  022140                          EM3
(1)   023206  022455                          DH2     ;HALT 5
(1)   023210  000000                          0
(1)
(1)   023212  022156                          EM4
(1)   023214  022434                          DH1     ;HALT   6
```

```
(1)  023216  000000                        0
(1)
(1)  023220  022175                        EM5
(1)  023222  022455                        DH2     :'HALT 7
(1)  023224  000000                        0
(1)
(1)  023226  022275                        EM11
(1)  023230  000000                        0       ;HALT 10
(1)  023232  000000                        0
(1)
(1)  023234  022140                        EM3
(1)  023236  022434                        DH1     ;HALT 11
(1)  023240  000000                        0
(1)
(1)  023242  022322                        EM12
(1)  023244  000000                        0       ;HALT 12
(1)  023246  000000                        0
(1)
(1)  023250  022233                        EM7
(1)  023252  022455                        DH2     ;HALT   13
(1)  023254  000000                        0
(1)
(1)  023256  022156                        EM4
(1)  023260  022455                        DH2     ;HALT 14
(1)  023262  000000                        0
(1)
(1)  023264  022257                        EM10
(1)  023266  022434                        DH1     ;HALT 15
(1)  023270  000000                        0
(1)
(1)  023272  022474                        DH3
(1)  023274  022212                        EM6     ;HALT 16
(1)  023276  000000                        0
(1)
(1)  023300  022371                        EM13
(1)  023302  000000                        0       ;HALT 17
(1)  023304  000000                        0
(1)
(1)  023306  022421                        EM14
(1)  023310  022434                        DH1     ;HALT 20
(1)  023312  000000                        0
(1)
(1)  023314  022421                        EM14
(1)  023316  022455                        DH2     ;HALT 21
(1)  023320  000000                        0
(1)
(1)  023322  022713                        EM16
(1)  023324  023067                        DH4     ;HALT 22
(1)  023326  000000                        0
(1)
(1)  023330  022713                        EM16
(1)  023332  023114                        DH5     ;HALT 23
(1)  023334  000000                        0
(1)
(1)  023336  022730                        EM23
(1)  023340  022743                        EM22    ;HALT 24
```

```
(1)  023342  000000                          0
(1)
(1)  023344  022762                          EM20
(1)  023346  000000                          0          ;HALT 25
(1)  023350  000000                          0
(1)
(1)  023352  023023                          EM21
(1)  023354  000000                          0          ;HALT 26
(1)  023356  000000                          0
(1)
(1)  023360  022673                          EM15
(1)  023362  023067                          DH4        ;HALT 27
(1)  023364  000000                          0
(1)
(1)  023366  000003                DT1:      3
(1)  023370     006      021                  .BYTE   6,17.
(1)  023372  001252                          SAVR1
(1)  023374     006      017                  .BYTE   6,15.
(1)  023376  001254                          SAVR2
(1)  023400     006      002                  .BYTE   6,2
(1)  023402  001256                          SAVR3
(1)
(1)  023404  000003                DT6:      3
(1)  023406     006      004                  .BYTE   6,4
(1)  023410  001262                          SAVR5
(1)  023412     006      002                  .BYTE   6,2
(1)  023414  001260                          SAVR4
(1)  023416     006      002       .BYTE      6,2
(1)  023420  001256                          SAVR3
(1)  023422                        CORMAX:
             000001                .END
```

```
ADRCNT= 003735          1310*   1346*   1355*
BCCFBK  013520          2518*   2524*   2527*   2530    2534    2546*
BINWRD  004240          1397*   1398    1435*
BITW  = 002000           787*   1732    1735    1745    1747    1752    1761    1766    1959    1965    1970    2009    2018
                        2023    2061    2067    2072    2086    2093    2098    2133    2178    2196
BIT0  = 000001           649*    769    2522
BIT1  = 000002           648*    768
BIT10 = 002000           639*    759     774     787     807
BIT11 = 004000           638*    758     786     806
BIT12 = 010000           637*    757     773     780     785     805
BIT13 = 020000           636*    756     784     804
BIT14 = 040000           635*    755     772     783     803    1069    1217
BIT15 = 100000           634*    754     771     778     782     802    1066    3194
BIT2  = 000004           647*    767    1155
BIT3  = 000010           646*    766     793
BIT4  = 000020           645*    765     792
BIT5  = 000040           644*    764
BIT6  = 000100           643*    763     791
BIT7  = 000200           642*    762     790
BIT8  = 000400           641*    761     776     789     809
BIT9  = 001000           640*    760     775     779     788     808
BRW     003306          1161    1239*
BRX     003310          1162    1240*
CALBCC  013522          2452*   2453    2491*   2492    2540*   2547*   3653*   3654    3676    3693
CARDET= 010000           757*   2774    2994
CHRCNT  004236          1395*   1399    1415*   1433*   1434
CLK   = 020000           784*   1554    1557
CLK.A   001433           895*   1670
CLRVEC  005032          1579*
CNVRT = 104411           862*   1178    1180    1182    1184    1508    1510
CONVRT= 104410           860*   1114    1524    3704
CORMAX  023422          3713*
CRCEN = 001000           779*   1834    1881    1951    1999    2052    2125    2169    2234    2275    2329    2389    2428
                        2572    3369
CRCERR= 010000           773*
CRC.CC= 102010          2451    2549*   3650
CRC16 = 120001          2548*
CREAM   001316           749*    976*   1624*   1625    1627*   1632    1633*   1634    1637*
CTS   = 020000           756*   2774    2994
CYCLE   006152          1163    1198    1199    1614*
DATA    001324           816*   1715    1733*   1843*   1898*   1916*   1956*   2006*   2058*   2080*   2083*   2130*   2136*
                        2175*   2181*   2190*   2193*   2199*   2239*   2242*   2281*   2292*   2295*   2298*   2344*   2345
                        2355*   2356    2450*   2477*   2478    2485*   2490*   2492
DATABP  004612          1497*   1500    1522    1525*
DATAHD  004600          1496*   1518    1521*
DECMOD= 100000           778*
DEVADR  003732          1308*   1343    1353*
DH1     022434          3713*
DH2     022455          3713*
DH3     022474          3713*
DH4     023067          3713*
DH5     023114          3713*
DH6     022511          3713*
DISPLA  001200           693*    989*   1175*
DISPLE  000174           681*    989
DSCA  = 100000           754*
```

F07

DZDPCA.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

```
DSCB   = 000001            769#
DSINTE= 000040             764#  3160    3180
DSR    = 001000            760#  2668    2994
DTR    = 000002            768#  2643    2668    2684    2969    2994    3010    3182
DT1      023366           3705    3713#
DT6      023404           3713#
DUPACT   001310            743#  1079*   1103*   1136*   1137    1614    1619
DUPCR0   001500            904#  1018    1082
DUPCR1   001506            908#  1083
DUPCR2   001514            912#
DUPCR3   001522            916#
DUPCR4   001530            920#
DUPCR5   001536            924#
DUPCR6   001544            928#
DUPCR7   001552            932#
DUPNUM   001311            744#   972    1071*   1104*   1188
DUPRPS   001376            874#  1660*   1661*   1662    1774*
DUPRVC   001374            873#  1205    1639*   1660    1772*
DUPSEC   001416            882#  1646*
DUPTPS   001402            876#  1664*   1665*   1775*
DUPTR0   001502            905#  1026
DUPTR1   001510            909#
DUPTR2   001516            913#
DUPTR3   001524            917#
DUPTR4   001532            921#
DUPTR5   001540            925#
DUPTR6   001546            929#
DUPTR7   001554            933#
DUPTVC   001400            875#  1662*   1663*   1664    1773*
DUP.EN   001560            936#  1011    1095    1625    1634
DUP.MA   001500            749    903#    976    1009    1093    1097    1111    1627    1637
DUP0.A   001504            906#  1066*   1069*
DUP1.A   001512            910#
DUP2.A   001520            914#
DUP3.A   001526            918#
DUP4.A   001534            922#
DUP5.A   001542            926#
DUP6.A   001550            930#
DUP7.A   001556            934#
EM1      022110           3713#
EM10     022257           3713#
EM11     022275           3713#
EM12     022322           3713#
EM13     022371           3713#
EM14     022421           3713#
EM15     022673           3713#
EM16     022713           3713#
EM17     022551           3701    3713#
EM2      022123           3713#
EM20     022762           3713#
EM21     023023           3713#
EM22     022743           3713#
EM23     022730           3713#
EM3      022140           3713#
EM4      022156           3713#
EM5      022175           3713#
```

```
EM6      022212            3713#
EM7      022233            3713#
ERRCNT   001232             714#   978*  1211   1536*
ERRFLG   001341             829#   974*  1173*  1231*  1485*  1498   1512*
ERRMSG   004566            1495*  1513   1516#
ERTA80   004720            1510   1545#
EXIT   = 000000             650#
EXITER   004654            1530   1536#
FIX.00   006670            1671   1705#
FLAG     001332             819#  1007*  1120   1123*
HALTS    004616            1481   1527#
HDXEN  = 000010             793#
HILIM    003730            1307*  1334   1352#
HUPPSR   001420             883#  1650*  1651
HUPRBF   001422             884#  1648*  1649*  1650
HUPRCR   001424             885#  1642*  1643*  1644
HUPTBF   001426             886#  1657*  1658*
HUPTCR   001430             887#  1653*  1654*  1655
ICOUNT   001222             710#  1229   1234*
INBUF    006106            1277   1313   1444*  1445   1449   1601#
INIFLG   001340             828#   993    999*  1008*
INSTER=  104404             852#  1328   1454
INSTR  = 104403             850#  1013   1021   1029   1038   1046   1050   1056   1060   1677
INSTR2   003530            1284   1296#
JUMPER   007212            1791#
LIMITS   003656            1323   1334#
LOBITS   003734            1309*  1338   1354#  1355
LOCK     001220             709#  1233*  1247   1249   1504   2385*  2630*  2667*  2683*  2736*  2773*  2789*  2842*
                           2883*  2899*  2952*  2993*  3009*  3150*  3174*
LOKFLG   001342             830#
LOLIM    003726            1306*  1336   1351#
LPCNT    001224             711#  1228*  1229   1232*
LSTERR   001234             715#   979*  1172*  1215*  1482   1484*
LOO.OO   001434             897#  1640*  1668
MASK.A   001432             893#  1669
MASTEK   005337            1506   1590#
MCRLF    005064            1262   1386   1502   1503   1511   1590#  1676   1693
MCSR     005421            1014   1590#
MCSRX    005267            1177   1590#
MDATA    006044            1413   1423   1599#
MEPASS   005105            1176   1590#
MERRPC   005414            1509   1590#
MERRX    005314            1183   1590#
MERR2    005133            1590#  1616
MERR3    005202            1133   1590#
MEXT   = 010000             797#  1533   2642   2697   2748   2803   2858   2913   2968   3023   3154
MH1      022600            3702   3713#
MIND     001330             818#  1718*  1719   1721*
MJMPR    005453            1047   1590#
MLOCK    005240            1157   1590#
MMODE  = 014000             796#  1836   1884   1953   2001   2055   2127   2172   2236   2278   2330   2461   2571
                           3658
MMODEA=  004000             786#
MMODEB=  010000             785#
MNEW     005341            1128   1590#
MPAR     005630            1030   1590#
```

```
MPASSX  005303          1181    1590#
MPOWER  005067          1575    1590#
MQM     005060          1294    1590#   1699
MR      005130          1164    1590#   1694
MRESET= 000400           650#    789#   1831    1878    1948    1996    2049    2123    2167    2231    2272    2324    2360
                        2391    2422    2459    2566    2638    2695    2744    2801    2854    2911    2964    3021    3062
                        3094    3152    3216    3276    3360    3413    3432    3503    3564    3585    3624    3648    3687
MSRJM   005707          1061    1590#
MSTJM   005654          1057    1590#
MTCN    005526          1051    1590#
MTDATA= 040000           783#   2581    2585    2590    2597
MTITLE  001000           688#    998
MTOTAL  005575          1039    1590#
MTSTN   005325          1507    1590#   1678
MTSTPC  005226          1590#
MVEC    005440          1022    1590#
MVECX   005275          1179    1590#
NEXT    001216           708#   1235    1541    1830*   1877*   1947*   1995*   2048*   2122*   2166*   2230*   2271*   2323*
                        2384*   2445*   2565*   2629*   2735*   2841*   2951*   3058*   3092*   3146*   3214*   3274*   3358*
                        3430*   3501*   3583*   3647*
NO.ATR  007202          1777#   3065    3097    3122    3435    3482
NO.BTR  007206          1781#   3157    3177    3221    3281    3335    3364    3508    3560    3590
OJUMPE  007260          1807#   2635    2741    2851    2961
OPCLRJ  001323           815#   1049    1064    1108*   1794    1800
OVRRUN= 040000           772#   2246    2247    2284    2302    2303
PARAM = 104405           854#   1015    1023    1031    1040    1679
PARAM1  003576          1312#   1329
PARBIT= 000000           650#
PARCSR  001410           879#   1647*   1834*   1881*   1883*   1951*   1999*   2052*   2054*   2125*   2169*   2171*   2234*
                        2275*   2277*   2329*   2393*   2429*   2572*   3369*
PARERR  003652          1315    1317    1319    1328#   1335    1337    1339
PASCNT  001230           713#    973*   1174*   1175    1208
PC     =%000007          614#   1193*   1565*   1586*   1671*   1706*   1725*   1832*   1879*   1949*   1997*   2050*   2124*
                        2168*   2232*   2273*   2325*   2361*   2392*   2423*   2460*   2567*   2639*   2649*   2662*   2675*
                        2690*   2696*   2703*   2745*   2755*   2768*   2781*   2796*   2802*   2809*   2855*   2865*   2878*
                        2891*   2906*   2912*   2919*   2965*   2975*   2988*   3001*   3016*   3022*   3029*   3063*   3095*
                        3153*   3167*   3188*   3217*   3233*   3252*   3277*   3292*   3312*   3361*   3377*   3396*   3414*
                        3433*   3447*   3458*   3477*   3504*   3519*   3539*   3550*   3565*   3586*   3600*   3617*   3625*
                        3649*   3673*   3688*   3710*
PERFOR= 000000           650#
PKCLK = 104412           864#   1737    1746    1748    1753    1762    1767    1919    1960    1966    1971    2010    2019
                        2024    2062    2068    2073    2087    2094    2099    2134    2179    2197    2334    2337    2340
                        2351    2465    2471    2473    2481    2486    2576    2580    2584    2589    2596    2600    2602
                        3662    3664    3665
POPRO = 012600           628#   1535
POP1SP= 005726           626#
POP2SP= 022626           630#   1237
PRIRTY  001320           813#   1037*   1101*
PRISEC= 010000           780#   1883    2054    2171    2277    2389    2428
PS     = 177776          619#    969*   1151*   3061*   3069*   3093*   3102*   3108*   3115*   3151*   3159*   3181*   3215*
                        3223*   3275*   3305*   3322*   3326*   3359*   3406*   3431*   3441*   3452*   3467*   3502*   3525*
                        3544*   3568*   3584*   3592*   3622*
PUSHRO= 010046           627#   1531
PUSH1S= 005746           625#
PUSH2S= 024646           629#
PWRUP   005006          1569    1571#
```

DZDPCA.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

```
GV.FLG  001343            831#   975*  1187*  1226
RABORT= 002000            774#  2141   2184   2204
RCRCIN= 040000            803#
RCRC7T= 100000            802#
RCVEN = 000020            765#  1835   1882   1950   1998   2051   2126   2170   2235   2276   2331   2394   2462
                         2574   3224   3283   3367   3510   3593   3659
RECACT= 004000            758#  1839   1859   1887   1901   1903   1930   2144   2207   2251   2307
RECM  = 001000            775#  1973   2026   2074   2101
RESREG  004614           1523   1526#
RESTRT  003116           1186   1190   1198#
RESOS = 104407            858#  1526
RETURN  001214            707#   981*  1163*  1165   1198*  1235*  1238   1541*  1543   1576   1692*  1702*  1703
RFLG    007006           1743#  1837   1885   1954   2002   2056   2078   2128   2173   2188   2237   2279   2290
RING  = 040000            755#  2665   2668   2771   2881   2991   2994
RINTEN= 000100            763#  3225   3284   3368   3511   3593
RPOKE   006746           1732#  1739   1845   1900   1918   1958   2008   2060   2082   2085   2132   2138   2177
                         2183   2192   2195   2201   2241   2244   2283   2294   2297   2300
RSOM  = 000400            776#  1851   1853   1913   1926   2415
RTS   = 000004            767#  2749   2774   2790   2969   2994   3010   3161
RUN     001314            747#   977*  1619   1622*  1623*  1630*  1631*
RXCSR   001404            877#  1202   1638*  1642   1833   1858   1880   1929   1950*  1961   1972   1998*  2011
                         2025   2051*  2063   2088   2100   2126*  2139   2170*  2202   2233   2274   2331*  2341
                         2352   2394*  2409   2411   2462*  2474   2482   2487   2574*  2603   2634*  2640   2740*
                         2746   2850*  2856   2960*  2966   3160*  3161*  3173*  3180*  3182*  3194   3198*  3224*
                         3225*  3257*  3283*  3284*  3323   3327*  3367*  3368*  3399   3510*  3511*  3556   3593*
                         3659*
RXDBUF  001406            878#  1644*  1645*  1646   1647   1648   1851   1854   1913   1926   1964   1973   2014
                         2026   2066   2074   2092   2101   2135   2140   2180   2184   2198   2203   2245   2284
                         2301   2344   2355   2414   2477   2485   2490   2606   3328*
RXDERR= 100000            771#  2150   2213   2246   2247   2302   2303
RXDONE= 000200            762#  1846   1848   1894   1906   1909   1920   1922   1961   1976   2011   2029   2063
                         2088   2104   2147   2210   3323   3556
R0      =%000000          607#  1009*  1010*  1011   1082*  1087   1089   1091   1093*  1094*  1095   1097*  1098*
                         1099*  1100*  1102*  1103   1104   1105   1106   1107   1108   1129*  1137*  1138*  1140*
                         1142*  1144   1145   1216   1222*  1236*  1369   1374*  1387   1400*  1404*  1414   1430*
                         1532*  1551*  1555*  1558*  1632*  1638   1639   1640   1641*  1661   1663   1665   1668*
                         1685*  1686   1688   1690   1692   1696   1697   1705   1715*  1717*  1791*  1796   1799
                         1802   1804   1807*  1810   1812   1813   2140*  2141   2150   2203*  2204   2213   2245*
                         2246*  2247   2301*  2302*  2303   2512   2519*  2521*  2522   2525*  2526*  2527   2530*
                         2533*  2535*  2537   2543*
R1      =%000001          608#  1083*  1087*  1088*  1089*  1090*  1091*  1141*  1142   1143*  1144   1189*  1193
                         1368   1375*  1388   1392*  1394   1395   1396   1397   1429*  1580*  1581   1583   1584
                         1669*  1716*  1723*  1740*  1743   1756*  1759   1770*  1791   1805*  1807   1814*  1837*
                         1845*  1885*  1900*  1918*  1954*  1958*  2002*  2004*  2008*  2056*  2060*  2078*  2082*
                         2085*  2128*  2132*  2138*  2173*  2177*  2183*  2188*  2192*  2195*  2201*  2237*  2241*
                         2244*  2279*  2283*  2290*  2294*  2297*  2300*  2448*  2470   2497   2513   2531*  2532
                         2533   2542*  2635*  2741*  2851*  2961*  3709*
R2      =%000002          609#  1367   1376*  1579*  1581*  1582*  1670*  2328*  2336*  2339*  2349   2449*  2478
                         2498   2514   2532*  2534*  2535   2541*
R3      =%000003          610#  1271   1278*  1288*  1291*  1292   1297*  1366   1377*  1389   1401*  1402*  1403*
                         1404   1413*  1414*  1419*  1422*  1428*  1705*  1833*  1835*  1839   1846   1849   1854*
                         1855   1858*  1859   1880*  1882*  1887   1891   1894   1901   1904   1906   1910   1920
                         1923   1929*  1930   2233*  2235*  2251   2274*  2276*  2307   2326*  2335   2338   2447*
                         2500*  2640*  2641*  2643*  2652   2665   2669*  2678   2684*  2694*  2706   2707   2746*
                         2747*  2749*  2758   2771   2775*  2784   2790*  2800*  2612   2813   2856*  2857*  2859*
                         2868   2881   2885*  2894   2900*  2910*  2922   2923   2966*  2967*  2969*  2978   2991
```

DZDPCA.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

```
                    2995*  3004   3010*  3020*  3032   3033
R4      =%000004     611#  1272   1277*  1281*  1282*  1283   1290*  1293   1296*  1304   1313*  1314   1316
                    1318   1320*  1321   1322   1343*  1344*  1348*  1365   1378*  1390   1398*  1401   1406*
                    1408*  1410*  1427*  1489*  1490*  1491*  1492*  1493*  1494*  1495   1496   1497   1849*
                    1855*  1891*  1904*  1910*  1923*  2327*  2345   2348   2356   2414*  2415   2418   2446*
                    2454   2499   2652*  2653   2678*  2679   2707*  2708   2758*  2759   2784*  2785   2813*
                    2814   2868*  2869   2894*  2895   2923*  2924   2978*  2979   3004*  3005   3033*  3034
                    3693*  3696*
R5      =%000005     612#  1255   1256*  1260   1265   1267*  1303   1305*  1306   1307   1308   1309   1310
                    1311   1312*  1321*  1324*  1325*  1326*  1334   1336   1338   1344   1345*  1349*  1364
                    1379*  1391   1399*  1411*  1426*  1443*  1447*  1451*  1487*  1488*  1489   1491   1772
                    1773   1774   1775   1776*  1796*  1802*  1804*  1810*  1813*  1848*  1853*  1890*  1903*
                    1909*  1922*  2386*  2424*  2426   2427   2455*  2515   2516   2517   2544*  2653   2668*
                    2679   2693*  2708   2759   2774*  2785   2799*  2814   2869   2884*  2895   2909*  2924
                    2979   2994*  3005   3019*  3034   3064*  3096*  3121*  3155*  3175*  3219*  3279*  3333*
                    3362*  3434*  3481*  3506*  3558*  3588*  3669*
SAVACT  001312       745#  1070*  1076*  1078   1079   1105*  1131
SAVNUM  001313       746#   972*  1072*  1106*  1185*  1188*
SAVPC   001266       732#  1360*  1547
SAVPCA  001306       741#
SAVR0   001250       725#  1369*  1374
SAVR0A  001270       734#
SAVR1   001252       726#  1368*  1375   3652*  3713
SAVR1A  001272       735#
SAVR2   001254       727#  1367*  1376   3666*  3713
SAVR2A  001274       736#
SAVR3   001256       728#  1366*  1377   3694*  3697*  3713
SAVR3A  001276       737#
SAVR4   001260       729#  1365*  1378   3713
SAVR4A  001300       738#
SAVR5   001262       730#  1364*  1379   3713
SAVR5A  001302       739#
SAVSP   001264       731#
SAVSPA  001304       740#
SAVOS = 104406       856#  1486
SCOPE = 104400       844#  1862   1933   1980   2033   2108   2153   2217   2255   2310   2362   2431   2502
                    2611   2713   2819   2929   3039   3077   3118   3200   3259   3330   3415   3469   3570
                    3626   3689
SCOP1 = 104401       846#  2421   2656   2682   2711   2762   2788   2817   2872   2898   2927   2982   3008
                    3037   3171   3192
SEND  = 000020       792#  2332   2395   2463   2573   3226   3285   3370   3438   3512   3594   3660
SETFLG= 104413       866#  1048   1052   1058   1062
SETVEC  007160      1772#  3064   3096   3121   3155   3175   3219   3279   3333   3362   3434   3481   3506
                    3558   3588
SFLG    007100      1759#  2004
SHIFTS  001326       817#  1714*  1722*  1738*  1844*  1899*  1917*  1957*  2007*  2059*  2081*  2084*  2131*
                    2137*  2176*  2182*  2191*  2194*  2200*  2240*  2243*  2282*  2293*  2296*  2299*
SIMBCC  013344      2455   2512#  3669
SMALL   004772      1564#  1832   1879   1949   1997   2050   2124   2168   2232   2273   2325   2361   2392
                    2423   2460   2567   2639   2696   2745   2802   2855   2912   2965   3022   3063   3095
                    3153   3217   3277   3361   3414   3433   3504   3565   3586   3625   3649   3688
SP      =%000006     613#   970*   983*   984*   990    991    992   1152*  1216*  1236   1249*  1255*  1256
                    1257*  1267   1271*  1272*  1273   1274*  1290   1291   1292*  1293*  1296   1297   1303*
                    1304*  1305   1311*  1348   1349   1360   1387*  1388*  1389*  1390*  1391*  1392   1393*
                    1426   1427   1428   1429   1430   1443   1452*  1463*  1464*  1465*  1466*  1467*  1468*
                    1469*  1470   1482   1484   1487   1532   1542*  1551   1552*  1572*  2512*  2513*  2514*
```

```
                    2541    2542    2543    3059*   3075*   3117*   3120*   3128*   3172*   3199*   3256*   3329*   3332*
                    3341*   3412*   3465*   3468*   3480*   3557*   3566*   3569*   3623*
SPACNT= 004237      1396*   1417    1420*   1434*
SRD   = 002000       759*   2884    2994
SRJMFL  001336       821*   1063    2848    2958
STACK = 001150       620*    970    1152    1542    1572    3059    3075    3117    3172    3199    3256    3329    3412
                    3468    3569    3623
STD   = 000010       766*   2859    2884    2900    2969    2994    3010
STJMFL  001334       820*   1059    2846    2956
STPSYN= 000400       761*
STUFCK  006674      1714*
SVC5    003744      1364*
SWR     001202       694*    986     988*   1000    1004    1118    1126    1131    1136    1155    1217    1224    1245
                    1258    1475    1480    1529    1537    1539    1674    3691
SWREG   000176       682*    988
SW00  = 000001       601*   1004    1118
SW01  = 000002       600*   1674
SW02  = 000004       599*
SW03  = 000010       597*   1126
SW04  = 000020       596*
SW05  = 000040       595*
SW06  = 000100       594*
SW07  = 000200       593*
SW08  = 000400       592*   1537
SW09  = 001000       591*   1245    3691
SW10  = 002000       590*   1539
SW11  = 004000       589*   1224
SW12  = 010000       588*   1258    1475
SW13  = 020000       587*   1480
SW14  = 040000       586*
SW15  = 100000       585*
SYSTST= 004000       798*   1533    2395    3068    3100    3218    3278    3366    3438    3505    3587
TABORT= 002000       807*   3611
TBLA    012500      2326    2327    2365*
TBLB    013332      2446    2448    2449    2505*
TCNFLG  001322       814*   1053    1054    1067    1107*   1792    1808    2631    2737    2843    2953    3147
TCRCIN= 010000       805*
TCRC7T= 020000       804*
TEMP    006002      1400    1597*   2014*   2015    2100*
TEMP1   001236       720*   1043    1071    1072    1073*   1111*   1112    1116*   1592    1952*   1967*   1968    2000*
                    2020*   2021    2053*   2069*   2070    2091*   2095*   2096    2139*   2144    2147    2387*   2389*
                    2393    2426*   2428*   2429    2515*   2538*   2568*   2577*   2578    3179*
TEMP2   001240       721*   1034    1037    1078*   1081*   1085*   1112*   1594    1972*   1976    2025*   2029    2104
                    2202*   2207    2210    2388*   2401    2427*   2516*   2520*   2569*   2593*   2594
TEMP3   001242       722*   2517*   2519    2529*   2531    2536*   2537*   2540    2570*   2606*   2607    3655*   3667*
                    3680
TEMP4   001244       723*   1743*   1754*   1759*   1768*   3656*   3666    3668*   3677    3693
TEMP5   001246       724*   1744*   1749*   1750    1760*   1763*   1764    3657*   3699    3703*
TECM  = 001000       808*   2472    2575    2601    3304    3682
TIMER = 004000       806*   2405    2407    2645    2647    2658    2660    2671    2673    2686    2688    2699    2701
                    2751    2753    2764    2766    2777    2779    2792    2794    2805    2807    2861    2863    2874
                    2876    2887    2889    2902    2904    2915    2917    2971    2973    2984    2986    2997    2999
                    3012    3014    3025    3027    3163    3165    3184    3186    3229    3231    3248    3250    3288
                    3290    3308    3310    3318    3320    3373    3375    3392    3394    3407    3409    3443    3445
                    3454    3456    3473    3475    3515    3517    3535    3537    3546    3548    3596    3598    3613
                    3615
```

DZDPCA.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

```
TKCSR   001204            699*   1220   1279   3706
TKDBR   001206            700*   1222   1281   1287   3709
TLAST = 021512           1697   3713*
TPCSR   001210            701*   1263   1285   1477
TPDBR   001212            702*   1265*  1287*  1479*
TRPOK   004330           1466*
TRP.PC  006150           1603*
TSOM  = 000400            809*   2333   2398   2464   2575   3298   3440   3606   3661
TSTNO   001226            712*    980*  1550   1682   1688   1690   1829*  1876*  1946*  1994*  2047*  2121*  2165*
                         2229*  2270*  2322*  2383*  2444*  2564*  2628*  2734*  2840*  2950*  3057*  3091*  3145*
                         3213*  3273*  3357*  3429*  3500*  3582*  3646*
TST1    007304           1685   1702   1829*
TST10   011636           2166   2229*
TST11   012010           2230   2270*
TST12   012246           2271   2322*
TST13   012512           2323   2383*
TST14   013006           2384   2444*
TST15   013524           2445   2564*
TST16   014026           2565   2628*
TST17   014474           2629   2734*
TST2    007472           1830   1876*
TST20   015142           2735   2840*
TST21   015624           2841   2950*
TST22   016306           2951   3057*
TST23   016424           3058   3091*
TST24   016616           3092   3145*
TST25   017134           3146   3213*
TST26   017414           3214   3273*
TST27   017774           3274   3357*
TST3    007762           1877   1946*
TST30   020334           3358   3429*
TST31   020642           3430   3500*
TST32   021234           3501   3582*
TST33   021512           3583   3646*  3713
TST34 = ****** U         3647
TST4    010210           1947   1994*
TST5    010460           1995   2047*
TST6    011066           2048   2121*
TST7    011300           2122   2165*
TTST    003174           1158*  1159*  1161*  1162*  1218*
TWOSYN= 000000            650*
TXACT = 001000            788*
TXCSR   001412            880*  1533*  1554*  1557*  1651*  1652*  1653   1732*  1735*  1745*  1747*  1752*  1761*
                         1766*  1831*  1836*  1878*  1884*  1948*  1953*  1959*  1965*  1970*  1996*  2001*  2009*
                         2018*  2023*  2049*  2055*  2061*  2067*  2072*  2086*  2093*  2098*  2123*  2127*  2133*
                         2167*  2172*  2178*  2196*  2231*  2236*  2272*  2278*  2324*  2330*  2332*  2360*  2391*
                         2395*  2396   2399   2402   2422*  2459*  2461*  2463*  2466   2566*  2571*  2573*  2581
                         2585   2590   2597   2601*  2638*  2642*  2695*  2697*  2744*  2748*  2801*  2803*  2854*
                         2858*  2911*  2913*  2964*  2968*  3021*  3023*  3062*  3068*  3070*  3076*  3094*  3100*
                         3101*  3112   3116*  3152*  3154*  3216*  3218*  3226*  3236   3241   3244   3258*  3276*
                         3278*  3285*  3295   3299   3302   3360*  3366*  3370*  3380   3385   3388   3402   3405*
                         3413*  3432*  3438*  3464*  3470   3503*  3505*  3512*  3522   3527   3530   3564*  3585*
                         3587*  3594*  3603   3607   3610   3624*  3648*  3658*  3660*  3687*
TXDBUF  001414            881*  1655*  1656*  1657   2333*  2335*  2338*  2398*  2401*  2404*  2405   2407   2464*
                         2470*  2472*  2575*  2588*  2645   2647   2658   2660   2671   2673   2686   2688   2699
                         2701   2751   2753   2764   2766   2777   2779   2792   2794   2805   2807   2861   2863
```

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                    2874    2876    2887    2889    2902    2904    2915    2917    2971    2973    2984    2986    2997
                    2999    3012    3014    3025    3027    3163    3165    3184    3186    3229    3231    3240*   3243*
                    3246*   3248    3250    3288    3290    3298*   3301*   3304*   3308    3310    3318    3320    3373
                    3375    3384*   3387*   3390*   3392    3394    3407    3409    3440*   3443    3445    3454    3456
                    3471*   3473    3475    3515    3517    3526*   3529*   3532*   3535    3537    3546    3548    3596
                    3598    3606*   3609*   3611*   3613    3615    3661*   3663*   3679*   3692*
TXDLAT= 100000       782*
TXDONE= 000200       790*   3236    3295    3380    3402    3470    3522
TXINTE= 000100       791*   3070    3101    3405    3438
TYPDAT  004602      1501    1519    1522*
TYPE  = 104402       848*    998    1110    1128    1133    1157    1164    1176    1177    1179    1181    1183    1262
                    1275    1294    1386    1423    1502    1503    1506    1507    1509    1511    1515    1520    1574
                    1616    1676    1693    1694    1699    3701    3702
TYPMSG  004502      1499    1502*
USER  = 000000       795*
WRDCNT  004234      1394*   1424*   1432*
WRKO.F  004570      1514    1517*
XBX     004374      1476    1478    1480*
XCSR    003130      1178    1200*
XERR    003152      1184    1209*
XHEAD   005742      1110    1590*
XPASS   003144      1182    1206*
XPOLY   013516      2451*   2525    2536    2545*   3650*
XSTATQ  005770      1115    1590*
XTSTN   004726      1508    1548*
XVEC    003136      1180    1203*
$E    = 000035         1*   1830    1831*   1877    1878*   1947    1948*   1995    1996*   2048    2049*   2122    2123*
                    2166    2167*   2230    2231*   2271    2272*   2323    2324*   2384    2385*   2445    2446*   2565
                    2566*   2629    2631*   2735    2737*   2841    2843*   2951    2953*   3058    3059*   3092    3093*
                    3146    3147*   3214    3215*   3274    3275*   3358    3359*   3430    3431*   3501    3502*   3583
                    3584*   3647    3648*
$ENDAD  003104       676     996    1192*   1527
$N    = 000033         1*   1816    1823    1831*   1864    1870    1878*   1935    1940    1948*   1982    1988    1996*
                    2035    2041    2049*   2110    2115    2123*   2154    2159    2167*   2218    2223    2231*   2257
                    2264    2272*   2312    2316    2324*   2371    2377    2385*   2433    2438    2446*   2552    2558
                    2566*   2614    2622    2631*   2720    2728    2737*   2826    2834    2843*   2936    2944    2953*
                    3045    3051    3059*   3079    3085    3093*   3131    3139    3147*   3201    3207    3215*   3261
                    3267    3275*   3344    3351    3359*   3417    3423    3431*   3488    3494    3502*   3571    3576
                    3584*   3628    3640    3648*   3713*
$RAYO = 177777       1*   1816*   1817    1820*   1864*   1865    1868*   1935*   1936    1939*   1982*   1983    1987*
                    2035*   2036    2040*   2110*   2111    2114*   2154*   2155    2158*   2218*   2219    2221*   2257*
                    2258    2262*   2312*   2313    2315*   2371*   2372    2375*   2433*   2434    2436*   2552*   2553
                    2556*   2614*   2615    2620*   2720*   2721    2726*   2826*   2827    2832*   2936*   2937    2942*
                    3045*   3046    3049*   3079*   3080    3083*   3131*   3132    3137*   3201*   3202    3205*   3261*
                    3262    3265*   3344*   3345    3349*   3417*   3418    3421*   3488*   3489    3492*   3571*   3572
                    3574*   3628*   3629    3639*
$Y    = 000014       835*    844     846*    848*    850*    852*    854*    856*    858*    860*    862*    864*    866*
                    868*
.     = 023422       661*    662     665*    672*    677*    680*    683*    687*    689*    743*    744*    745*    746*
                    747*    748*    814*    815*    820*    821*    902*    904*    905*    906*    908*    909*    910*
                    912*    913*    914*    916*    917*    918*    920*    921*    922*    924*    925*    926*    928*
                    929*    930*    932*    933*    934*   1005    1135    1598*   1600*   1602*   1603*   1618    2457*
                   2458*   2632    2738    2844    2954    3148    3242    3245    3300    3303    3386    3389    3528
                   3531    3608    3678    3713*
.BEGIN  002660      1151*
.CNVRT  004034       863    1387*
```

DZDPCA.CMB   CROSS REFERENCE TABLE -- USER SYMBOLS

.CONVR	004030	861	1386*		
.EOP	002764	1172*	3647		
.ERRTA	023146	1494	3713*		
.HLT	004350	668	1475*		
.INSTE	003516	853	1292*		
.INSTR	003412	851	1271*		
.INST1	003432	1275*	1295		
.MSG	003434	1273*	1276*		
.PARAM	003536	855	1303*		
.PFAIL	004776	666	971	1569*	1573
.PKCLK	004734	865	1551*		
.RES05	003776	859	1374*		
.SAV05	003736	857	1360*		
.SCOPE	003160	845	1215*		
.SCOP1	003312	847	1245*		
.SETFL	004242	867	1443*	1455	
.START	001562	684	969*	981	
.TRPSR	004316	670	1463*		
.TRPTA	001344	843*	1468		
.TYPE	003336	849	1255*		

```
DJPEND      1#   1166
DJPFRN      1#    568
MLT       631#   1778    1782    1842    1850    1856    1861    1892    1896    1905    1911    1315    1924    1928    1932
          1963   1975    1978    2013    2017    2028    2031    2065    2076    2090    2103    2106    2142    2146    2149
          2152   2186    2206    2209    2212    2215    2249    2253    2287    2305    2309    2343    2347    2354    2358
          2413   2417    2420    2468    2476    2480    2484    2489    2494    2583    2587    2592    2539    2605    2609
          2655   2681    2710    2761    2787    2816    2871    2897    2926    2381    3007    3036    3074    3106    3114
          3127   3170    3191    3196    3238    3255    3297    3315    3325    3339    3382    3401    3404    3411    3450
          3461   3524    3542    3553    3505    3620
$$$         1#
$ABORT    568#   3571
$AUTOS      1#
$BT       569#   2613    2719    2825    2935
$BUFFE      1#   1586
$CLKDN      1#   1557
$CLKUP      1#   1554
$CLRVE      1#   1577
$CYCLE      1#   1605
$DEC23    568#   3627
$DEFAU      1#   1093
$DELY       1#
$EOP        1#   1166
$ERRTA      1#
$FINI       1#   3712
$GETFL      1#   1046    1050    1056    1060
$GETPA      1#   1013    1021    1029    1038    1677
$HEADE      1#    568
$INTA     568#   3344
$JMPR     568#   1785
$MSG        1#   1590
$MSGA    3713#
$PFAIL      1#   1567
$POKCK      1#   1551
$QUEST      1#   1004
$RCRC     568#   2432
$RESET      1#   1831    1878    1948    1996    2049    2123    2167    2231    2272    2324    2359    2390    2422    2459
          2566   2638    2695    2744    2801    2854    2911    2964    3021    3062    3094    3152    3216    3276    3360
          3413   3432    3503    3564    3585    3624    3648    3687
$RFLAG    568#   1742
$RITX     568#   3261
$RNT      568#   3487
$RPOKE    568#   1727
$RT1      568#   1816    1864
$RT2      568#   1935    1982    2035
$RT3      568#   2110    2154
$RT4      568#   2312
$RT5      568#   2218    2257
$RT6      568#   2370
$RXINT    568#   3131
$RXITB    568#   3201
$SCOPE      1#   1212
$SCOP2      1#    568#   3691
$SETFL      1#   1437
$SETVE    568#   1772
$SFLAG    568#   1758
$SIMBC   2511#   2512
```

DZDPCA.CMB CROSS REFERENCE TABLE -- MACRO NAMES

```
$SMALL      1#   1562
$SPACE    568#   2551
$STUF     568#   1710
$TINTX    568#   3079
$TNT      568#   3417
$TRPDE      1#    844    846    848    850    852    854    856    858    860    862    864    866
$TSTN       1#   1823   1870   1940   1988   2041   2115   2159   2223   2264   2316   2377   2438   2558   2622
         2728    2834   2944   3051   3085   3139   3207   3267   3351   3423   3494   3576   3640
$TXINT    568#   3045
$VARIA      1#    686
$WAIT       1#   2405   2644   2657   2670   2685   2698   2750   2763   2776   2791   2804   2860   2873   2886
         2901    2914   2970   2983   2996   3011   3024   3162   3183   3227   3247   3286   3306   3318   3371
         3391    3407   3442   3453   3472   3513   3533   3545   3595   3612
$XZ         1#   1816   1820   1864   1868   1935   1939   1982   1987   2035   2040   2110   2114   2154   2159
         2218    2221   2257   2262   2312   2315   2371   2375   2433   2436   2552   2556   2614   2620   2720
         2726    2826   2832   2936   2942   3045   3049   3079   3083   3131   3137   3201   3205   3261   3265
         3344    3349   3417   3421   3488   3492   3571   3574   3628   3639
```

CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

DZDPCA.CMB CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

```
        3455  3460  3474  3479  3516  3521  3523  3536  3541  3547  3552  3597  3602  3614  3619
        3678  3681  3686  3700
BPL     1001  1221  1261  1264  1280  1286  1478  1530  2397  2400  2403  2410  2412  3242  3245
        3300  3303  3386  3389  3528  3531  3608  3708
BR       907   995  1077  1092  1117  1135  1160  1219  1223  1295  1327  1329  1448  1455  1618
        1628  1695  1700  2430  3107  3316  3451  3462  3543  3554
CLC     1080  1084  1405  1407  1409  1621  1629  2528  3674  3695
CLR      973   978   979  1010  1094  1123  1129  1143  1172  1215  1232  1233  1312  1582  1721
        1744  1760  1843  1890  1898  1952  2000  2053  2080  2091  2130  2190  2292  2386  2387
        2388  2450  2518  2568  2569  2570  2634  2641  2669  2693  2694  2740  2747  2775  2799
        2800  2850  2857  2885  2909  2910  2960  2967  2995  3019  3020  3069  3076  3102  3108
        3116  3159  3173  3181  3198  3223  3243  3257  3258  3301  3305  3327  3328  3387  3406
        3441  3452  3464  3471  3525  3529  3544  3592  3609  3655  3656  3657  3679
CLRB     974   975  1173  1231  1422  1447  1485
CMP      990   996  1011  1095  1144  1145  1229  1334  1336  1482  1527  1583  1584  1625  1634
        1686  1688  1690  1697  1719  1750  1764  1799  1812  1968  2021  2070  2096  2247  2303
        2492  2578  2594  2653  2679  2708  2759  2785  2814  2869  2895  2924  2979  3005  3034
        3677  3680  3683
CMPB    1131  1283  1314  1316  1318  1322  1445  1449  2015  2345  2356  2418  2478  2607
CCM     2491  2524  2526
COMB     999  1007  3703
DEC     1073  1288  1411  1424  1555  1558  1738  1754  1768  2336  2339  2500  2538  2649  2662
        2675  2690  2703  2755  2768  2781  2796  2809  2865  2878  2891  2906  2919  2975  2988
        3001  3016  3029  3167  3188  3233  3252  3292  3312  3377  3396  3447  3458  3477  3519
        3539  3550  3600  3617
DECB    1185  1346  1415  1420
EMT      631
HALT     662  1130  1134  1139  1534  1570  1617
INC     1174  1228  1536  1643  1645  1649  1652  1654  1656  1660  1722  1749  1763  1967  2020
        2069  2095  2577  2593  3667  3668
INCB    2424
JMP      684  1002  1006  1122  1165  1199  1238  1470  1543  1576  1703  1798  1803  1811  2633
        2739  2845  2955  3149
JSR     1193  1671  1832  1837  1845  1879  1885  1900  1918  1949  1954  1958  1997  2002  2004
        2008  2050  2056  2060  2078  2082  2085  2124  2128  2132  2138  2168  2173  2177  2183
        2188  2192  2195  2201  2232  2237  2241  2244  2273  2279  2283  2290  2294  2297  2300
        2325  2361  2392  2423  2455  2460  2567  2635  2639  2696  2741  2745  2802  2851  2855
        2912  2961  2965  3022  3063  3064  3095  3096  3121  3153  3155  3175  3217  3219  3277
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F08


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RESET       1191  1571  3060
ROL         3697
ROLB        1076  1622  1630
ROR         1406  1408  1410  1717  1723  1733  2520  2529  3696
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 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

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 RUN-TIME RATIO: 164/84=1.9
 CORE USED:  27K  (53 PAGES)
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Spooler runtime 14 Seconds, 60 KCS, 307 disk reads, 0 disk writes, 98 pages