

DFC-11A

OFF-LINE EXERCISER
MD-11-DZDFA-B

EP DZDFA-B-DL-A
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The image displays a grid of 40 small data tables, organized into 8 rows and 5 columns. Each table contains various numerical and text data, likely representing test results or system parameters. The data is presented in a structured, tabular format, with some tables featuring headers and sub-headers. The overall layout is dense and systematic, typical of a technical manual or a data log.

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IDENTIFICATIONS

PRODUCT CODE:	MAINDEC-11-DZDFA-B-D
PRODUCT NAME:	DUI1/DFC11 & DP11/DFC11 OFFLINE EXERCISOR
DATE CREATED:	APRIL, 1975
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	R. OCHESTER/J. EGOLF

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1.0 ABSTRACT

THIS MAINDEC CONSISTS OF TWO PROGRAMS TO CHECK OUT THE DFC11A. FIRST, A DP11A/DFC11 EXERCISER WHICH IS RUN WITH A DP11 TEST CONNECTOR IN PLACE OF THE MODEM. THE FUNCTION OF THIS TEST IS TO CHECK OUT THE DFC11A AND CABLE.

SECOND, THERE IS A DU11/DFC11 EXERCISER WHICH IS RUN WITH AN H315 TEST CONNECTOR IN PLACE OF THE MODEM. THE FUNCTION OF THIS TEST IS TO CHECK OUT THE DFC11A AND CABLE.

THESE TWO PROGRAMS ARE TOTALLY INDEPENDENT OF EACH OTHER AND ONLY ONE PROGRAM NEED BE RUN. THE INTENT IS TO HAVE ONLY ONE LISTING AND DOCUMENTATION.

THE TWO PROGRAMS OPERATE (MONITOR-WISE) LIKE THEIR DP11 OR DU11 DIAGNOSTIC COUNTERPARTS-- THE "MONITOR" OF EACH WILL FUNCTION SWITCH-WISE OR CONVERSATION-WISE IDENTICALLY.

2.0 REQUIREMENTS

2.1 ANY PDP11 FAMILY CPU WITH 4K MINIMUM

- . A TTY OR EQUIVALENT
- . A DFC11A
- . EITHER A DP11A OR DU11
- . EITHER A DP11 CABLE TERMINATOR OR H315 CONNECTOR RESPECTIVELY
- . MODEM CABLE

2.2 STORAGE

MINIMUM OF 4K

3.0 LOADING PROCEDURE

THE PROGRAM MAY BE LOADED LIKE ANY OTHER PROGRAM SUCH AS: PAPERTAPE, DECTAPE, MAGTAPE, CASSETTE, DISC, ETC. MOST COMMON WILL BE PAPER TAPE LOADING THROUGH THE USE OF ABSOLUTE LOADER.

3.1 DFC11A TESTING

THIS PROGRAM(S) WILL EXERCISE DFC11A
METHOD: INSERT DU11 OR DP11 AS REQUIRED
INSERT DFC11 AND REQUIRED CABLE..

INSERT PROPER TEST CONNECTOR ON END

OF DFC11 CABLE PER SECTION 1.0.

4.0 STARTING PROCEDURE

4.1 CONTROL SWITCH SETTINGS

FOR THE DP11A/DFC11A

SWITCH 07 = 1 INDICATES SINGLE DP11 MODE WHEN STARTING
(PLACE RESPECTIVE LINE NUMBER AND VECTOR
IN SWR WHEN PROGRAM HALTS)
= 0 INDICATES CYCLE MODE (MORE THAN ONE)
LOC "BASCSR" AND "BASVEC" ARE USED TO PICK UP
FIRST DP11 CSR + VECTOR. THIS MODE WILL BE USED
WHEN UNDER ACT-11. NOTE: ALL DP11'S IN SYSTEM
MUST BE CONFIGURED THE SAME IN THIS MODE OF OPERATION.

FOR THE DU11/DFC11A

SWITCH 00 = 1 INDICATES RE-SELECT ADDRESSES AND VECTORS.
(THIS IS A FLOATING ADDRESS DEVICE - MORE THAN
LIKELY YOU SHOULD ALWAYS START WITH SW00= 1 AND
ANSWER THE RESPECTIVE QUESTIONS.)
= 0 NORMAL DEFAULT START OR RESTART.

4.2 STARTING ADDRESSES

200 = START ADDRESS FOR DU11/DFC11 TEST - CABLE & RESPECTIVE
TERMINATOR MUST BE ON.

210 = START ADDRESS FOR DP11/DFC11 TEST - CABLE & RESPECTIVE
TERMINATOR MUST BE ON.

1000 = RESTART FOR PRODUCTION RUNNING DU/DFC

SEE DFC11-A DOCUMENTATION FOR CORRECT JUMPERS & SWITCH
SETTINGS FOR DU11 OR DP11. THIS IS IMPORTANT!!!!

4.3 OPERATOR ACTION

4.3.1 DP11A/DFC11A

IF SWITCH 07 WAS LEFT UP THE PROGRAM WILL HALT WITH
THE SWITCH REG. IN THE DATA LIGHTS. (EXCLUDING 1105 &
11/10 CPU) AND REQUIRE THE FOLLOWING OPERATOR ACTION:

- A. SW00-SW08 MUST BE SET TO THE VECTOR ADDRESS OF THE
FIRST DP11. NOTE FIRST DP11 VECTOR, NOT
THE LINE SELECTED UNLESS IT IS LINE 0.
- B. SW09-SW15 MUST BE SET TO THE OCTAL LINE NUMBER OF
THE DP11 TO BE TESTED. E.G. THE FIRST
DP11 IS LINE 0.

PRESS CONTINUE, RESET SWR AS PER 5.1.1. SWITCH SETTINGS.

PRESS CONTINUE, THIS STARTS PROGRAM. ALL DP11 ADDRESSES SHALL BE ASSIGNED FROM 774400 TO 774770 (CONTIGUOUSLY)

C. SEE SECTION 4.3.2 PARAGRAPHS D,E,AND F FOR BAUD RATE AND SWITCH LOOP EXPLANATIONS.

D. SEE SECTION 8.3

4.3.2 DU11/DFC11-A

IF SWITCH 00 WAS ASSERTED AFTER LOADING ADDRESS 200; THE PROGRAM WILL ASK THE FOLLOWING QUESTIONS:

- A. FIRST DEVICE CSR ADDRESS: EG: TYPE 160040(160010 TO 164000)
- B. DEVICE VECTOR: EG: TYPE 300(300 TO 776)
- C. ARE YOU RUNNING MULTIPLE DEVICES(Y OR N): EG TYPE N
IF YES WAS ANSWERED THE MONITOR WILL ASK FOR LAST DEVICE'S CSR ADDRESS. EG. TYPE 160060 THUS 3 DEVICES WILL BE RUN.
IF WRONG ANSWERS WERE TYPED -- RESPECTIVE ERROR MESSAGES WILL BE TYPED. NOTE: UP TO 16 DU11/DFC11'S CAN BE RUN.
- D. DO YOU WANT TO RUN BAUD RATE TEST (Y OR N) EG: TYPE Y
IF YES, THEN WILL ASK IF AC LINE IS 60 HERTZ (Y OR N) EG: ANSWER Y
AT THIS POINT THERE WILL BE A 5 SECOND DELAY BEFORE THE BAUD RATE OR AN ERROR MESSAGE IS TYPED. NOTE: THE BAUD RATE CHECK CAN ONLY BE RUN ON ONE DEVICE.
- E. LOWER CONSOLE SWITCHES WITH THE EXCEPTION OF ERROR SWITCHES.
- F. IF RUNNING IN CLOCK RECOVERY MODE ABOVE 9600 BAUD PUT UP SW03 = 1 TO ELEIMINATE ERRONEOUS INTERMITTANT ERRORS.
- G. SEE SECTION 8.3

5.0 OPERATING PROCEDURE

5.1.1 SWITCH SETTINGS (APPLICABLE TO BOTH TESTS)

SW15 = 1	HALT ON ERROR
SW14 = 1	SCOPE LOOP FOR WHOLE CURRENT TEST
SW13 = 1	INHIBIT ERROR PRINTOUT
SW12 = 1	INHIBIT ALL PRINTOUT, BELL ON ERROR
SW11 = 1	INHIBIT ITERATIONS
SW10 = 1	ESCAPE TO NEXT TEST ON ERROR (DP11 ONLY)
SW07 = 1	SINGLE DP11 MODE (DP11 ONLY ON START UP) ALSO ASKS IF BAUD RATE CHECK IS WANTED.
SW03 = 1	PREVENT ERRONEOUS ERRORS WHEN RUNNING DU/DFC IN CLOCK RECOVERY ABOVE 9600 BAUD.
SW01 = 1	RETURN TO BAUD RATE TEST AFTER EOP. (SW11 MUST ALSO BE UP)
SW00 = 1	RESELECT ADDRESS & VECTORS AND ASKS IF BAUD RATE TEST IS WANTED (DU11 ONLY ON START UP). ANY RESTARTS NEED NOT START WITH SW01 =1 SINCE THE PROGRAM WILL REMEMBER ANSWERS.

6.0 ERRORS

6.1 ERROR PRINTOUT

PRINTS ALL ERRORS UNLESS INHIBITED BY SW13 OR SW12

ERROR PC: XXXXX THIS IS MEMORY ADDRESS +2 LOCATION. BACK UP 2 TO FIND HLT IN LISTING
DEPENDING ON THE ERROR AN ADDITIONAL MESSAGE MAY BE TYPED OUT

6.2 ERROR RECOVERY

- A. IF IN A SCOPE LOOP, SET SW14
- B. TO RECOVER FROM HALT ON ERROR, DEPRESS CONTINUE
- C. IT MAY BE DESIRABLE TO SET SW13 OR SW12 IN AN ERROR
CONDITION SO THAT AN OSCILLOSCOPE CAN BE PLACE ON LOGIC.

7.0 RESTRICTIONS

7.1 STARTING RESTRICTIONS

MOST LIKELY START:

START@ LOC 200 WITH SW00=1 FOR STARTING OF DU11/DFC11A
SW00=0 FOR RESTART
START@ LOC 210 WITH SW07=1 FOR SINGLE DP11A/DFC11A
SW07=0 FOR ACT-11 & CYCLE MODE

SEE SECTIONS 4.1, 4.3.1, AND 4.3.2

8.0 MISCELLANEOUS

THE MONITORS ARE "CARBON COPIES" OF THE DP11 & DU11
DIAGNOSTICS. THIS WAS TO KEEP UNIFORMITY IN THE OPERATING
PROCEDURES, SINCE THE CHECK OUT OF THE DFC11A IS LARGELY
DEPENDENT ON THE DEVICE DRIVING IT. KEEP IN MIND THAT
THIS PROGRAM IS JUST AN EXERCISOR FOR THE DFC11A, FOR DETAILED
TROUBLE-SHOOTING EXTENSIVE SCOPING WILL BE REQUIRED.

8.1 MULTIPLE DP11A/DFC11A

REFER TO DP11A DIAGNOSTICS

8.2 MULTIPLE DU11/DFC11A

REFER TO DU11 DIAGNOSTIC

8.3 SWITCH SETTINGS FOR THE DFC11A

THE FOLLOWING APPLIES:

- A. MAKE SURE THAT THE PROPER MODEM JUMPERS ARE IN FOR
THE RESPECTIVE DEVICE THAT IS DRIVING IT. IE DP11 OR DU11.
- B. SELECT APPROPRIATE BAUD RATE (S2). THE BAUD RATE
CAN BE SOFTWARE CHECKED IF A KW11 IS INSTALLED IN THE
SYSTEM. USE AN OSCILLOSCOPE IF NO KW11 IS AVAILABLE.
IF THE SOFTWARE BAUD RATE CHECK IS MADE, A DELAY

OF FIVE SECONDS WILL OCCUR AND THEN THE APPROPRIATE MESSAGE WILL BE TYPED OUT.

- C. SELECT APPROPRIATE OPTION MODES (S1). BY CAREFUL ANALYSIS OF THE RESPECTIVE PROGRAM, WRONG (S1) SWITCH SETTINGS WILL CAUSE A PREDETERMINED ERROR. IE S1-2 & S1-8 =0 WILL FAIL TO CLOCK DATA IN OR OUT.
- D. MAKE SURE THE DFC11/CABLE IS CORRECTLY TERMINATED.
- E. TYPICAL SWITCH & OPTION MODE SELECTIONS OF THE DFC11A ARE INCLUDED IN THE LISTING FOR QUICK REFERENCE.

9.0 PROGRAM DESCRIPTION

SEE LISTING FOR THE DETAILS, HOWEVER THE DP11 & DU11 PROGRAMS BASICALLY CHECK EIA LINES AND INSURE THAT DATA IS TRANSMITTED & RECEIVED CORRECTLY.

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H01

DZDFA-B MACY11 27(732) 17-SEP-76 16:06 PAGE 8
DZDFAB.P11

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35500 :DU11 AND DP11A ----DFC11A INTERFACE EXERCISER
35600 :COPYRIGHT, DIGITAL EQUIPMENT CORPORATION*****
35700 :MAYNARD, MASSACHUSETTS 01754
35800 :PROGRAMMER: R.OCHESTER/J.EGOLF

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S1-1,2,3,4,5,6,7,8,9,10
1,1,1,1,1,0,0,0,1,1
* * * *

S1-1,2,3,4,5,6,7,8,9,10
1,1,1,1,1,0,0,0,1,1
* * * *

*= CUSTOMER OPTION

SET S2-1 THRU S2-10 FOR DESIRED BAUD RATE

+++++
THE DFC11 MODEM JUMPERS SHALL BE CONFIGURED AS FOLLOWS:

NOTE: 0= JUMPER REMOVED
1= JUMPER IN

JUMPER		FOR DU11/DFC11	FOR DP11/DFC11
NO.	NAME		
W1	EIA	0	0
W2	202	1	1
W3	EIA	0	0
W4	202	1	1
W5	811	0	0
W6	BSY	1	1
W7	301	1	1
W8	301	1	1

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TERMINATOR:::THESE MUST BE ON THE DFC11 !!!!!!!
DU11:: THE DFC11 SHALL BE TERMINATED WITH H315 CONNECTOR

DP11:: THE DFC11 SHALL BE TERMINATED WITH DP11 TERMINATOR

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;DP11/DU11-DFC11A
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;STARTING PROCEDURE
;LOAD PROGRAM
;LOAD ADDRESS 000200
;PRESS START OR PRESS START WITH SW00=1 TO RESELECT
;ADDRESSES AND VECTORS
;THIS IS FOR THE DU11/DFC11 TEST

;LOAD ADDRESS 000210
;PRESS START
;THIS IS FOR THE DP11/DFC11 TEST

;FOR MORE INFORMATION SEE THE
;DOCUMENTATION IN FRONT OF THE LISTING

;SWITCH REGISTER OPTIONS

SW15=100000 ;=1,HALT ON ERROR

100000

K01

DZDFA-B MACY11 27(732) 17-SEP-76 16:06 PAGE 11
DZDFAB.P11

419 040000
420 020000
421 010000
422 004000
423 002000
424 001000
425 000400
426 000200
427 000100
428 000040
429 000020
430 000010
431 000004
432 000002
433 000001

SW14=40000
SW13=20000
SW12=10000
SW11=4000
SW10=2000
SW09=1000
SW08=400
SW07=200
SW06=100
SW05=40
SW04=20
SW03=10
SW02=4
SW01=2
SW00=1

:=1, LOOP ON CURRENT TEST
:=1, INHIBIT ERROR TYPEOUT
:=1, DELETE TYPEOUT/BELL ON ERROR.
:=1, INHIBIT ITERATIONS
:=1, ESCAPE TO NEXT TEST ON ERROR
:=1, LOOP WITH CURRENT DATA
:=1, LOOP ON ERROR
:=1, SINGLE SELECTED DP11. =0 CYCLE ALL DP11S

:=1, BAUD RATE TEST RESELECT - SW11 MUST ALSO BE UP.
:=1, RESELECT ADDRESSES & VECTORS

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000000
 000001
 000002
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 000004
 000005
 000006
 000007

 177570
 177570
 177776
 001050

 005746
 005726
 010046
 012600
 024646
 022626

 100000
 040000
 020000
 010000
 004000
 002000
 001000
 000400
 000200
 000100
 000040
 000020
 000010
 000004
 000002
 000001

;REGISTER DEFINITIONS

R0=%0 ;GENERAL REGISTER
 R1=%1 ;GENERAL REGISTER
 R2=%2 ;GENERAL REGISTER
 R3=%3 ;GENERAL REGISTER
 R4=%4 ;GENERAL REGISTER
 R5=%5 ;GENERAL REGISTER
 SP=%6 ;PROCESSOR STACK POINTER
 PC=%7 ;PROGRAM COUNTER

;LOCATION EQUIVALENCIES

SWR=177570 ;CONSOLE SWITCH REGISTER
 LIGHTS=177570 ;PDP-11/45 DISPLAY REGISTER
 PS=177776 ;PROCESSOR STATUS WORD
 STACK=1050 ;START OF PROCESSOR STACK

;INSTRUCTION DEFINITIONS

PUSH1SP=5746 ;DECREMENT PROCESSOR STACK 1 WORD
 POP1SP=5726 ;INCREMENT PROCESSOR STACK 1 WORD
 PUSHRO=10046 ;SAVE R0 ON STACK
 POPRO=12600 ;RESTORE R0 FROM STACK
 PUSH.SP=24646 ;DECREMENT STACK TWICE
 POP.SP=22626 ;INCREMENT STACK TWICE
 .EQUIV EMT,HLT ;BASIC DEFINITION OF ERROR CALL

BIT15=100000
 BIT14=40000
 BIT13=20000
 BIT12=10000
 BIT11=4000
 BIT10=2000
 BIT9=1000
 BIT8=400
 BIT7=200
 BIT6=100
 BIT5=40
 BIT4=20
 BIT3=10
 BIT2=4
 BIT1=2
 BIT0=1

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483                                     ;TRAPCATCAER FOR ILLEGAL INTERRUPTS
484                                     ;THE STANDARD "PC+2.....HALT" WILL BE PLACED
485                                     ;BETWEEN ADDRESS 0 AND 776. THIS WILL CATCH ANY
486                                     ;STRAY INTERUPTS.
487         000000
488
489         59200
490         000024         000024         59700
491         000024         006414         59800
492         000026         000340         59900
493         000030         010106         60000
494         000032         000340         60100
495         000034         011266         60200
496         000036         000340         60300
497         60400
498         60500
499         000200         000200         60600
500         000200         005037         001074         60700
501         000204         000137         001642         60800
502         60900
503         000210         000210         61000
504         000210         012737         002370         001232         61100
505         000216         005037         001156         61200
506         000222         005037         001074         61300
507         000226         005037         001234         61400
508         000232         000137         001374         61500
509         61600
510         001000         001000         61700
511         000137         003110         61800
512         61900
513         001050         62000
514
515                                     ;INDIRECT POINTERS TO TELETYPE VECTORS AND REGISTERS
516
517         001050         177560         TKCSR: 177560         ;TELETYPE KEYBOARD CONTROL REGISTER
518         001052         177562         TKDBR: 177562         ;TELETYPE KEYBOARD DATA BUFFER
519         001054         177564         TPCSR: 177564         ;TELEPRINTER CONTROL REGISTER
520         001056         177566         TPDBR: 177566         ;TELEPRINTER DATA BUFFER
521
522                                     ;PROGRAM CONTROL PARAMETERS
523
524         001060         000000         RETURN: 0         ;SCOPE ADDRESS FOR LOOP ON TEST
525         001062         000000         NEXT: 0         ;ADDRESS OF NEXT TEST TO BE EXECUTED
526         001064         000000         LOCK: 0         ;ADDRESS FOR LOCK ON CURRENT DATA
527         001066         000000         ICOUNT: 0         ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE
528         001070         000000         LPCNT: 0         ;NUMBER OF ITERATIONS COMPLETED
529         001072         000000         TSTNO: 0         ;NUMBER OF TEST IN PROGRESS
530         001074         000000         PASCNT: 0         ;NUMBER OF PASSES COMPLETED
531         001076         000000         ERRCNT: 0         ;TOTAL NUMBER OF ERRORS
532         001100         000000         LSTERR: 0         ;PC OF LAST ERROR CALL
533
534                                     ;PROGRAM VARIABLES
535
536         001102         000000         TEMP1: 0         ;TEMPORARY STORAGE
537         001104         000000         TEMP2: 0         ;TEMPORARY STORAGE
538         001106         000000         TEMP3: 0         ;TEMPORARY STORAGE

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539	001110	000000	TEMP4:	0	; TEMPORARY STORAGE
540	001112	000000	TEMP5:	0	; TEMPORARY STORAGE
541	001114	000000	TEMP10:	0	
542	001116	000000	TEMP11:	0	
543	001120	000000	TEMP12:	0	
544	001122	000000	TEMP13:	0	
545	001124	000000	SAVRO:	0	; R0 STORAGE
546	001126	000000	SAVR1:	0	; R1 STORAGE
547	001130	000000	SAVR2:	0	; R2 STORAGE
548	001132	000000	SAVR3:	0	; R3 STORAGE
549	001134	000000	SAVR4:	0	; R4 STORAGE
550	001136	000000	SAVR5:	0	; R5 STORAGE
551	001140	000000	SAVSP:	0	; STACK POINTER STORAGE
552	001142	000000	SAVPC:	0	; PROGRAM COUNTER STORAGE
553	001144	000000	SAVSR1:	0	; NEW DEVICE STORAGE
554	001146	000000	TMPDAT:	0	; DP DATA STORAGE
555	001150	000000	SLIM:	0	
556	001152	000000	BPC:	0	
557	001154	000000	TSYNC:	0	; SYNC CHARACTER STORAGE
558	001156	000000	XLINEX:	0	; LINE NUMBER STORAGE
559	001160	000000	CABLE:	0	
560	001162	000000	TDATA:	0	; TRANSMITTER DATA STORAGE
561	001164	000000	RDATA:	0	; RECEIVE DATA STORAGE
562	001166	000000	CHLEN:	0	; CHARACTER LENGTH STORAGE
563	001170	000000	LIMIT:	0	; END OF DATA STORAGE
564	001172	000000	SCNT:	0	; SYNC COUNT STORAGE
565	001174	000000	SAVSR2:	0	; CONSOLE SWITCH STORAGE
566	001176	000000	TIME:	0	
567	001200	000000	TP:	0	
568	001202	000000	RP:	0	
569	001204	000000	BACK:	0	; PROGRAM RTI RETURN STORAGE
570	001206	000000	CONT.:	0	; RETURN TO BEGIN TEST STORAGE
571	001210	000000	DEVICE:	0	
572	001212	000000	NO.CLOCK:	0	; CLOCK STORAGE
573	001214	000	CPSFLG:	.BYTE 0	; 50/60 HERTZ STORAGE
574	001215	000	FLG19.2:	.BYTE 0	; HF CRYSTAL PROGRAM CONTROL STORAGE
575	001216	000	BAUDFLG:	.BYTE 0	; BAUD RATE TEST STORAGE
576	001217	000	INIF.A:	.BYTE 0	; ONCE ONLY CODE STORAGE
577	001220	000	BDRFLG:	.BYTE 0	; BAUD RATE FLAG STORAGE
578	001221	000	BDTSTFLG:	.BYTE 0	; BAUD RATE TEST STORAGE
579				.EVEN	
580	001222	000000	CHCNT:	.WORD 0	; CHARACTER COUNT STORAGE
581	001224	000000	CLKSET:	.WORD 0	; PRESET CYCLE COUNT STORAGE FOR KW11
582	001226	000000	INTCNT:	.WORD 0	; INTERRUPT COUNT STORAGE
583	001230	000000	CLKSTATUS:	.WORD 0	; KW11 CSR STORAGE
584	001232	000000	DD.A:	.WORD 0	; START OF TEST STORAGE
585	001234	000000	TAG:	.WORD 0	; CONTROL STORAGE FOR BAUD RATE TEST
586	001236	000000	PSTART:	.WORD 0	; POWER FAIL CONTROL STORAGE

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001240 000
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001244 377
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001247 377
001250 000
001251 377

001252 000000
001254 000000
001256 000000
001260 000000
001262 000000
001264 000000

001266 000000

001270 104400
001270 007626
001272 007552
001274 010026
001276 010044
001300 010612
001302 010652
001304 010412
001306 010416

62200
62300
62400
62500
62600
62700
62800
62900
63000
63100
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;PROGRAM CONTROL FLAGS
INIFLG: .BYTE 0 ;PROGRAM INITIALIZATION FLAG
STFLG: .BYTE 0 ;TEST START FLAG
ERRFLG: .BYTE 0 ;ERROR OCCURED FLAG
LOKFLG: .BYTE 0 ;LOCK ON CURRENT TEST FLAG

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

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

;PROGRAM CONTROL FLAGS

$Y=0

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

*****
*****
TRPTAB:
SCOPE=TRAP+0 ;CALL TO SCOPE LOOP AND ITERATION HANDLER
.SCOPE
DELAY=TRAP+1 ;CALL TO DELAY FOR SPEC. TIME.
.DELAY
SCOPI=TRAP+2 ;CALL TO LOOP ON CURRENT DATA HANDLER
.SCOPI
TYPE=TRAP+3 ;CALL TO TELETYPE OUTPUT ROUTINE
.TYPE
SAVOS=TRAP+4 ;CALL TO REGISTER SAVE ROUTINE
.SAVOS
RESOS=TRAP+5 ;CALL TO REGISTER RESTORE ROUTINE
.RESOS
CONVRT=TRAP+6 ;CALL TO DATA OUTPUT ROUTINE
.CONVRT
CNVRT=TRAP+7 ;CALL TO DATA OUTPUT ROUTINE WITHOUT CR/LF.
.CONVRT

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643      104410
644 001310 011070
645      104411
646 001312 010704
647      104412
648 001314 011172
649      104413
650 001316 011162
651      104414
652 001320 011240

```

```

INSTR=TRAP+10 ;CALL TO ASCII STRING INPUT ROUTINE
.INSTR
PARAM=TRAP+11 ;CALL TO NUMERICAL DATA INPUT ROUTINE
.PARAM
SETFLG=TRAP+12 ;CALL TO FLAG SET ROUTINE
.SETFLG
INSTER=TRAP+13 ;CALL TO INPUT ERROR HANDLER
.INSTER
SCOP2=TRAP+14 ;CALL TO SEQUENCE TEST SCOPE LOOP
.SCOP2

```

```

:*****
:*****

```

```

653      100000
654 040000
655 020000
656 010000
657 004000
658 002000
659 001000
660 000400
661 000200
662 000100
663 000040
664 000020
665 000010
666 000004
667 000002
668 000001
669      100000
670 040000
671 020000
672 010000
673      001000
674 000400
675      030000
676 020000
677 000000
678 000000
679 002000
680 004000
681 006000
682 000000
683 001000
684 001400
685      100000
686 040000
687 020000
688 002000
689 000400
690 000200

```

```

64700 :RXCSR BIT DEFINITIONS
64800 DSC=BIT15 ;DATA SET CHANGE
64900 RING=BIT14 ;RING
65000 CTS=BIT13 ;CLR TO SEND
65100 CARDET=BIT12 ;CARRIER DETECT
65200 RECACT=BIT11 ;REC ACTIVE
65300 SRD=BIT10 ;SEC REC DATA
65400 DSR=BIT9 ;DATA SET RDY
65500 STPSYN=BIT8 ;STRIP SYNC
65600 RXDONE=BIT7 ;REC DONE
65700 RINTEN=BIT6 ;REC INTR ENABLE
65800 DSINTE=BIT5 ;DSC INTR ENABLE
65900 SYNSCH=BIT4 ;SYNC SEARCH
66000 STD=BIT3 ;SEC XMIT DATA
66100 RTS=BIT2 ;REQ TO SEND
66200 DTR=BIT1 ;DATA TERM RDY
66300 VOID=BIT0
66400 :RXDBUF BIT DEFINITIONS
66500 RXERR=BIT15 ;REC ERROR
66600 OVRUN=BIT14 ;OVERRUN
66700 FRMERR=BIT13 ;FRAME ERROR
66800 PARER=BIT12 ;PARITY ERROR
66900 :PARCSR BIT DEFINITIONS
67000 PAREN=BIT9 ;PARITY ENABLE
67100 EVPAR=BIT8 ;EVEN PARITY SENSE
67200 :PARCSR WRD DEFINITIONS
67300 SYNINT=30000 ;SYNC EXTERNAL MODE
67400 SYNEXT=20000 ;SYNC INTERNAL MODE
67500 ISYMOD=0 ;ISOC MODE
67600 FIVE=0 ;WORD LENGTH 5 BITS
67700 SIX=2000 ;WORD LENGTH 6 BITS
67800 SEVEN=4000 ;WORD LENGTH 7 BITS
67900 EIGHT=6000 ;WORD LENGTH 8 BITS
68000 NOPAR=0 ;NO PARITY
68100 .ODDPAR=1000 ;ODD PARITY
68200 EVEPAR=1400 ;EVEN PARITY
68300 :TXCSR BIT DEFINITIONS
68400 DNA=BIT15 ;DATA NOT AVAILABLE
68500 MTDATA=BIT14 ;MAINT DATA
68600 CLK=BIT13 ;CLK
68700 BITW=BIT10 ;BIT WINDOW
68800 MRESET=BIT8 ;MASTER RESET
68900 TXDONE=BIT7 ;XMIT DONE

```



```

699          000100          69000 TXINTE=BIT6          ;XMIT INTR ENABLE
700          000040          69100 DNAINTE=BITS        ;DNA INTR ENAB
701          000020          69200 SEND=BIT4          ;SEND
702          000010          69300 HDXEN=BIT3        ;HDX/FDX
703          000001          69400 BREAK=BIT0       ;BREAK
704          ;TXCSR WRD DEFINITIONS
705          000000          69500 ;TXCSR WRD DEFINITIONS
706          004000          69600 USER=0            ;USER MODE
707          010000          69700 MINT=4000         ;MAINT INT MODE
708          014000          69800 MEXT=10000        ;MAINT EXT MODE
709          ;SYSTEM TEST MODE
710          70000
711          70100
712          70200 ;*****
713          001322 000001 70300
714          001324 000001 70400 DPRS: .BLKW 1 ;DP11 RECEIVER STATUS
715          001326 000001 70500 DPRB: .BLKW 1 ;DP11 RECEIVER BUFFER
716          001330 000001 70600 SYNC: .BLKW 1 ;SYNC BUFFER
717          001332 000001 70700 DPTS: .BLKW 1 ;DP11 TRANSMITTER STATUS
718          001334 000001 70800 DPTB: .BLKW 1 ;DP11 TRANSMITTER BUFFER
719          ;DP11 SYNC EXTENSION
720          70900
721          71000
722          001336 000001 71100 ;*****
723          001340 000001 71200 DPRIV: .BLKW 1 ;DP11 RECEIVER INTERRUPT VECTOR
724          001342 000001 71300 DPRP: .BLKW 1 ;DP11 RECEIVER PRIORITY
725          001344 000001 71400 DPTIV: .BLKW 1 ;DP11 TRANSMITTER INTERRUPT VECTOR
726          001346 000300 71500 DPTP: .BLKW 1 ;DP11 TRANSMITTER PRIORITY
727          001350 174770 71600 BASVEC: 300 ;THIS IS THE FIRST VECTOR. PATCH FOR YOUR FIRST
728          ;FIRST CSR ADDRESS.MAKE IT YOURS.
729          71700 BASCSR: 174770
730          71800 ;*****
731          71900
732          72000
733          72100
734          72200 ;DU11 REGISTER POINTERS
735          72300 ;*****
736          001352 160040 72400 ;DEFAULT DU ADDRESSES
737          001354 160042 72500 RXCSR: 160040
738          001356 160042 72600 RXDBUF: 160042
739          001360 160044 72700 PARCSR: 160042
740          001362 160046 72800 TXCSR: 160044
741          ;DEFAULT DU VECTORS
742          001364 000770 72900 TXDBUF: 160046
743          001366 000772 73000 DURIV: 770 ;REC INTR VECTOR
744          001370 000774 73100 DURIS: 772 ;REC INTR STATUS
745          001372 000776 73200 DUTIV: 774 ;XMIT INTR VECTOR
746          73300 DUTIS: 776 ;XMIT INTR STATUS
73400
73500
73600

```


E02

DZDFA-B MACY11 27(732) 17-SEP-76 16:06 PAGE 18
 DZDFAB.P11

747					00200
748					00300
749	001374				00400
750	001374	000005			00500
751	001376	012706	001050		00600
752	001402	012737	000340	177776	00700
753	001410	012737	001374	001236	00800
754	001416	012737	002370	001060	00900
755	001424	012737	002370	001062	01000
756	001432	012737	011320	010242	01100
757	001440	105037	001217		01200
758	001444	005137	001234		01300
759	001450	005037	001070		01400
760	001454	005037	001100		01500
761	001460	105037	001240		01600
762	001464	005037	001076		01700
763	001470	012737	000012	001066	01800
764	001476	005327			01900
765	001500	000001			02000
766	001502	001002			02100
767	001504	104403	011563		02200
768	001510	105737	177570		02300
769	001514	100005			02400
770	001516	004737	006306		02500
771					02600
772					02700
773	001522	004737	006014		02800
774	001526	000404			02900
775	001530	004737	006306		03000
776	001534	004737	006064		03100
777	001540				03200
778	001540	012737	001632	001206	03300
779	001546	105737	001240		03400
780	001552	001013			03500
781	001554	105137	001240		03600
782	001560	104410			
783	001562	013547			
784	001564	104412			
785	001566	001221			
786	001570	105737	001221		03800
787	001574	001402			03900
788	001576	000137	002636		04000
789	001602	012737	002370	001060	04100
790	001610	032737	000002	177570	04200
791	001616	001403			04300
792	001620	012737	002636	001060	04400
793	001626	000177	177226		04500
794	001632	105737	001144		04600
795	001636	100740			04700
796	001640	000733			04800
797					

```

*****PART2 DB255 CONNECTOR TEST SECTION*****
DP11:  RESET
      MOV    #STACK,SP      ;SET UP STACK POINTER
      MOV    #340,PS        ;SET PROCESSOR PRIORITY = 7
      MOV    #DP11,PSTART  ;SETUP POWER FAIL
      MOV    #DP11.A,RETURN ;SETUP FOR REGULAR TEST
      MOV    #DP11.A,NEXT  ;DITTO
      MOV    #EDP11,WHO
      CLRB  INIF.A         ;DP PROGRAM SETUP
      COM   TAG            ;DITTO
      CLR  LPCNT          ;DITTO
      CLR  LSTERR         ;DITTO
      CLRB INIFLG         ;DITTO
      CLR  ERRCNT        ;DITTO
      MOV  #10.,ICOUNT    ;#OF ITERATIONS
      DEC  (PC)+          ;ONCE ONLY
      .WORD 1
      BNE  .+6
      TYPE ,DPTITLE
      TSTB SWR            ;TEST FOR CHANGE IN DP ADRS
      BPL  BGNDA         ;BRANCH IF NO CHANGE
      JSR  PC,CLAVEC     ;LOAD ENTIRE VECTOR AREA WITH
      .+2
      HALT
      JSR  PC,LINE.N     ;FETCH LINE NUMBER FROM SWR
      BR   PART2
      BGNDA: JSR PC,CLAVEC ;CLEAR OUT VECTOR AND GET NEW NUMBER
      JSR  PC,LINE.X    ;GET NEW LINE NUMBER
      PART2: MOV #DP.UPDATE,CONT. ;SETUP FOR RETURN
      TSTB INIFLG      ;FIRST TIME?
      BNE  PART3       ;NO
      COMB INIFLG      ;YES
      INSTR ;OUTPUT MESSAGE & GET INPUT STRING
      MBDTEST ;MESSAGE
      SETFLG ;SET FLAG BASED UPON INPUT STRING
      BDTSTFLG ;THIS FLAG
      TSTB BDTSTFLG   ;DO YOU WANT TO RUN BAUD TEST?
      BEQ  .+6         ;NO
      JMP  BAUD        ;YES
      PART3: MOV #DP11.A,RETURN ;SETUP FOR RETURN TO START PROGRAM
      BIT  #SW01,SWR
      BEQ  1$
      MOV  #BAUD,RETURN
      1$: JMP @RETURN
      DP.UPDATE: TSTB SAVSR1 ;NEW DEVICE?
      BMI  PART2       ;NO
      BR   BGNDA      ;YES
  
```



```

798          00100
799          00200
800 001642 000005 003110 001060 00300
801 001644 012737 003110 001060 00400
802 001652 012737 003110 001062 00500
803 001660 013737 001352 001210 00600
804 001666 005037 001234 000000 00700
805 001672 105037 001217 000000 00800
806 001676 012737 000340 177776 00900
807 001704 012706 001050 000000 01000
808 001710 012737 001642 001236 01100
809 001716 012737 003110 001232 01200
810 001724 005037 001100 000000 01300
811 001730 005037 001076 000000 01400
812 001734 005037 001070 000000 01500
813 001740 012737 002000 001206 01600
814 001746 012737 000012 001066 01700
815 001754 012737 011345 010242 01800
816 001762 105737 001240 000000 01900
817 001766 001004 000000 000000 02000
818 001770 104403 011476 000000 02100
819 001774 105137 001240 000000 02200
820 002000 032737 000001 177570 02300
821 002006 001017 000000 000000 02400
822 002010 032737 000002 177570 02500
823 002016 001404 000000 000000 02600
824 002020 012737 004274 001060 02700
825 002026 000405 000000 000000 02800
826 002030 104403 012250 000000 02900
827 002034 012737 003110 001060 03000
828 002042 000177 177012 000000 03100
829 002046 000000 000000 000000 03200
830 002046 104410 000000 000000 03300
831 002050 011672 000000 000000 03400
832 002052 104411 000000 000000 03500
833 002054 160000 000000 000000 03600
834 002056 167776 000000 000000 03700
835 002060 007270 000000 000000 03800
836 002062 001 000000 000000 03900
837 002063 001 000000 000000 04000
838 002064 004737 006334 001254 03400
839 002070 013737 007270 001254 03500
840 002076 004737 007200 001254 03600
841 002102 013737 001254 001252 03700
842 002110 104410 000000 000000 03800
843 002112 011650 000000 000000 03900
844 002114 104411 000000 000000 04000
845 002116 000300 000000 000000 04100
846 002120 000776 000000 000000 04200
847 002122 001364 000000 000000 04300
848 002124 001 000000 000000 04400
849 002125 004 000000 000000 04500
850 002126 013737 001364 001262 03900
851 002134 013737 001364 001260 04000
852 002142 104410 000000 000000 04100
853 002144 011753 000000 000000 04200

```

```

***** PART3 *****
DU11:  RESET
      MOV #DU11.A,RETURN ;SETUP FOR REGULAR TEST
      MOV #DU11.A,NEXT ;DITTO
      MOV RXCSR,DEVICE ;SETUP FOR EOP MESSAGE
      CLR TAG
      CLRB INIF.A ;CLEAR OUT FOR FIRST TIME THRU
      MOV #340,PS ;SET PROCESSOR PRIORITY = 7
      MOV #STACK,SP ;SETUP STACK POINTER
      MOV #DU11,PSTART ;SET UP POWER FAIL
      MOV #DU11.A,DD.A ;SET UP FOR RETURN TO START OF TEST
      CLR LSTERR ;CLEAR LIST
      CLR ERRCNT ;CLEAR ERROR COUNT
      CLR LPCNT
      MOV #ONCE,CONT. ;SETUP FOR REPEAT
      MOV #10,COUNT ;SET ITERATIONS = 10
      MOV #EDU11,WHO
      TSTB INIFLG ;CHECK FOR FIRST TIME
      BNE ONCE ;NO
      TYPE DUTITLE ;YES
      COMB INIFLG
      BIT #SW00,SWR ;CHECK FOR CONVERSATIONAL
      BNE AAA ;YES
      BIT #SW01,SWR ;CHECK FOR BAUD RATE
      BEQ 1$ ;NO
      MOV #START,RETURN
      BR 2$
1$:  TYPE .MR ;LET OPERATOR KNOW TEST IS RUNNING
      MOV #DU11.A,RETURN ;GO TO START
2$:  JMP @RETURN
AAA:  INSTR ;OUTPUT MESSAGE & GET INPUT STRING
      MREGAD ;MESSAGE
      PARAM ;CONVERT STRING
      160000 ;LOW LIMIT
      167776 ;HIGH LIMIT
      DUBASE ;STORE AT THIS LOCATION
      .BYTE 1 ;MASK
      .BYTE 1 ;HOW MANY TIMES + 2
      JSR PC,OKADR ;CHECK FOR VALID ADDRESS
      MOV DUBASE,KEEPADD ;SAVE
      JSR PC,DUADDR ;GET ADDRESS
      MOV KEEPADD,BASEADD ;RESTORE FOR ROTATION
      INSTR ;OUTPUT MESSAGE & GET INPUT STRING
      MVECTO ;MESSAGE
      PARAM ;CONVERT STRING
      300 ;LOW LIMIT
      776 ;HIGH LIMIT
      DURIV ;STORE AT THIS LOCATION
      .BYTE 1 ;MASK
      .BYTE 4 ;HOW MANY TIMES + 2
      MOV DURIV,KEEPIV ;SAVE
      MOV DURIV,BASEIV ;SET UP FOR ROTATION
      INSTR ;OUTPUT MESSAGE & GET INPUT STRING
      MMULT ;MESSAGE

```



```

909 00200
910 00300
911 00400
912 00500
913 00600
914 00700
915 00800
916 00900
917 01000
918 01100
919 01200
920 01300
921 01400
922 01500
923 01600
924 01700
925 01800
926 01900
927 02000
928 002370 02100
929
930
931
932
933
934
935 002370 012737 000001 001072
936 002376 012737 003124 001062
937 002404 012737 001632 001206 02300
938 002412 012737 002370 001060 02400
939 002420 012737 007736 001062 02500
940 002426 005077 176676 02600
941 002432 005077 176664 02700
942 002436 005002 02800
943 002440 012700 013000 02900
944 002444 010277 176662 03000
945 002450 017701 176654 03100
946 002454 042701 164777 03200
947 002460 022701 013000 03300
948 002464 001406 03400
949 002466 005202 03500
950 002470 001367 03600
951 002472 104001 03700
952 03800
953 002474 012737 000005 001120 03900
954 002502 005002 04000
955 002504 005202 04100
956 002506 001376 04200
957 002510 032777 013000 176612 04300
958 002516 001404 04400
959 002520 005337 001120 04500
960 002524 001366 04600
961 002526 104000 04700
962 04800
963 04900
964 05000
  
```

```

;CABLE TEST WITH OUT EXERCISING THE SOFTWARE CLOCK.
;IN THIS TEST FUNCTIONS OF THE CABLE WILL BE
;TESTED WITHOUT THE SOFTWARE CLOCK. THE CLOCK MUST BE
;SUPPLIED BY THE DFC11.
  
```

```

; DFC11-A TEST!!!
;VERIFY THAT LOADING THE TRANSMITTER BUFFER
;BRINGS UP "REQUEST TO SEND" WHICH IN TURN WILL
;BRING UP "CLEAR TO SEND" AND "MODEM READY".
;VERIFY ALSO THAT THEY GO AWAY.
;NOTE: THE DFC11 CLOCK IS NECESSARY FOR
;THIS TEST TO WORK.
  
```

```

*****
DP11 TEST FOR THE DFC11-A
*****
  
```

DP11.A:

```

*****
TEST 1
*****
  
```

```

TST1:  MOV #1,TSTNO
      MOV #TST2,NEXT
      MOV #DP.UPDATE,CONT. ;SET FOR RETURN AT END PASS
      MOV #DP11.A,RETURN ;SET RETURN ADDRESS.
      MOV #.EOP,NEXT ;GOTO END PASS AT END OF TEST.
      CLR @DPTS ;CLEAR THE TX STATUS
      CLR @DPRS ;CLEAR THE RX STATUS.
      CLR R2 ;SET TIME OUT
      MOV #13000,R0
      MOV R2,@DPTB ;LOAD THE TX BUFFER
1$:   MOV @DPTS,R1
      BIC #<13000>,R1
      CMP #13000,R1
      BEQ 2$
      INC R2 ;UPDATE DELAY
      BNE 1$ ;IS IT DONE?
      HLT 1 ;ERROR REQUEST TO SEND,CLEAR TO
      ;SEND AND MODEM READY NOT UP.
2$:   MOV #5,TEMP12
      CLR R2 ;SET FOR TIME OUT
      INC R2 ;DELAY
      BNE .-2
      BIT #13000,@DPTS ;ARE THEY GONE?
      BEQ 3$
      DEC TEMP12
      BNE 2$
      HLT
  
```

```

;VERIFY THAT THE SETTING OF "TERMINAL READY" BRINGS
;UP "RING" AND "CARRIER DOWN" ALSO VERIFY THAT
  
```



```

989          07600 ;THIS IS THE SETUP FOR THE BAUD RATE TEST USING THE DP
990          07700 ;*****
991 002624 012737 000372 001224 07800 NOT60: MOV #250.,CLKSET ;250 HERTZ SETUP
992 002632 000137 004462          07900      JMP KWSETUP
993 002636 012737 000340 177776 08000 BAUD:  MOV #340,PS ;SET PROCESSOR STATUS = 7
994 002644 012706 001050          08100      MOV #STACK,SP ;SET UP STACK
995 002650 000005          08200 RX:    RESET
996 002652 012777 003004 176456 08300 DPSETUP:MOV #CON.RX,ADPRIV ;SETUP RX VECTOR
997 002660 012777 000340 176452 08400      MOV #340,ADPRP ;PROCESSOR STATUS = 7
998 002666 012777 003016 176446 08500      MOV #N.TRAP,ADPTIV ;SETUP TX TRAPCATCHER
999 002674 012777 000340 176442 08600      MOV #340,ADPTP ;PROCESSOR STATUS = 7
1000 002702 012737 177777 001226 08700      MOV #-1,INTCNT ;ONCE ONLY
1001 002710 112777 000100 176404 08800 TX:    MOVB #100,ADPRS ;TURN ON RECEIVER
1002 002716 112777 000252 176402 08900      MOVB #252,ASYN ;SET SYNC CHARACTER
1003 002724 112777 000252 176400 09000      MOVB #252,ADPTB ;LOAD TX BUFFER
1004 002732 005037 001222          09100      CLR CHCNT ;CLEAR CHARACTER COUNTER
1005          09200
1006 002736 004737 005456          09300      JSR PC,CLOCK ;FIND OUT IF KW11 IS AVAILABLE
1007 002742 005737 001212          09400      TST NO.CLOCK
1008 002746 001002          09500      BNE 1$ ;YES
1009 002750 000137 003042          09600      JMP TST.Z ;NO,CHECK SW 14 FOR SCOPE LOOP
1010 002754          09700 1$:
1011 002754 104410          INSTR ;OUTPUT MESSAGE & GET INPUT STRING
1012 002756 012600          MCPS ;MESSAGE
1013 002760 104412          SETFLG ;SET FLAG BASED UPON INPUT STRING
1014 002762 001214          CPSFLG ;THIS FLAG
1015 002764 105737 001214          09800 TSTB CPSFLG ;IS AC 50 OR 60 HERTZ
1016 002770 001715          09900 BEQ NOT60 ;50 HERTZ
1017 002772 012737 000454 001224 10000 MOV #300.,CLKSET ;60 HERTZ
1018 003000 000137 004462          10100 JMP KWSETUP ;GO SETUP KW
1019          10200
1020          10300 ;THIS IS THE BAUD RATE INTERRUPT SVC ROUTINE
1021          10400 ;*****
1022 003004 005237 001222 10500 CON.RX: INC CHCNT ;COUNT FOR BAUD RATE CHECK
1023 003010 005777 176310 10600      TST ADPRB ;CLR BUFFER
1024 003014 000002          10700      RTI
1025 003016 011637 006012 10800 N.TRAP: MOV (SP),TRP.PC ;TRAPCATCHER FOR TX INTERRUPT
1026 003022 104010          10900      HLT 10
1027 003024 000002          11000      RTI
1028 003026 032737 040000 177570 11100 SW14.B: BIT #BIT14,SWR ;FIND OUT IF BAUD RATE CHECK IS WANTED
1029 003034 001402          11200 BEQ TST.Z ;NOT YET
1030 003036 000137 003072          11300 JMP OUT.PT ;YES
1031 003042          11400 TST.Z:
1032 003042 104410          INSTR ;OUTPUT MESSAGE & GET INPUT STRING
1033 003044 012663          MRBAUD ;MESSAGE
1034 003046 104412          SETFLG ;SET FLAG BASED UPON INPUT STRING
1035 003050 001216          BAUDFLG ;THIS FLAG
1036 003052 105737 001216          11500 TSTB BAUDFLG ;DO YOU STILL WANT TO RUN BAUD TEST?
1037 003056 001412          11600 BEQ SWMP ;NO
1038 003060 104403 012535          11700 TYPE ,MSCOPBAUD ;YES,FIND OUT IF SWITCH 14 IS UP
1039 003064 000000          11800 HALT ;WAIT FOR OPR TO PUT UP SW 14
1040 003066 000137 003026          11900 JMP SW14.B
1041 003072 112777 000103 176230 12000 OUT.PT: MOVB #103,ADPTS ;TURN ON TRANSMITTER
1042 003100 000137 003026          12100 JMP SW14.B
1043 003104 000137 005700          12200 SWMP:  JMP MAINPR
  
```



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1059 003110 032737 000010 177570
1060 003116 001402
1061 003120 000137 003512
1062 003124
1063
1064
1065
1066
1067
1068
1069 003124 012737 000002 001072
1070 003132 012737 003512 001062
1071 003140 052777 000400 176212 14400
1072 003146 012777 000000 176202 14500
1073
1074 003154 052777 000400 176176 14700
1075 003162 012777 006026 176166 14800
1076
1077
1078 003170 042777 003010 176154 15100
1079 003176 012700 073016 15200
1080 003202 013737 001352 001110 15300
1081 003210 012737 040000 001106 15400
1082
1083 003216 052777 000016 176126 15500
1084 003224 005337 001106 15600
1085 003230 001002 15700
1086 003232 104002 15800
1087
1088 003234 000406 15900
1089 003236 017701 176110 16000
1090 003242 042701 104761 16100
1091 003246 020001 16200
1092 003250 001365 16300
1093
1094 003252 112777 000025 176102 16400
1095 003260 012777 003360 176076 16500
1096 003266 012777 000340 176072 16600
1097 003274 005037 177776 16700
1098 003300 013737 001354 001110 16800
1099 003306 012700 000025 16900

```

```

;*****
;DU11 TEST FOR THE DFC-11A
;*****
; THIS TEST VERIFYS THAT THE DFC-11A IS CLOCKING DATA
; IN & OUT OF THE DU11 IT ALSO VERIFY THAT RING, CARRIER,
; CLEAR TO SEND, DATA TERMINAL READY, AND REQUEST TO SEND
; SIGNALS ARE WORKING CORRECTLY
; NOTE: THE BCOSC MODEM CABLE MUST BE ATTACHED TO
; THE DFC-11A AND MUST BE TERMINATED WITH H315 CONNECTOR
; MODE: ISYMOD (ISOCRONOUS)
; LENGTH: EIGHT
; THIS TEST USES BOTH THE RECEIVER & TRANSMITTER LOGIC OF THE DU11
DU11.A: BIT #BIT3,SWR ;TEST BIT 3
        BEQ 64$
        JMP DU11.B ;JUMP AROUND
64$:
;*****
; TEST 2
;*****
;*****
TST2:  MOV #2,TSTNO
      MOV #TST3,NEXT
      BIS #MRESET,@TXCSR ;MASTER RESET
      MOV #ISYMOD,@PARCSR ;LOAD THE MODE
      BIS #MRESET,@TXCSR ;MASTER RESET
      MOV #ISYMOD,EIGHT;NOPAR!26,@PARCSR ;LOAD THE MODE,
      ;# OF BITS PER CHAR, PARITY SENSE(NO PARITY),
      ;&SYNC CHARACTER (25)
      BIC #SRD!DSR!STD,@RXCSR
      MOV #RING!CTS!CARDET!SRD!DSR!STD!RTS!DTR,RO ;SET UP FOR ERROR MSG
      MOV RXCSR,TEMP4 ;DITTO
      MOV #40000,TEMP3 ;SET UP FOR CABLE DELAY + CTS DELAY
      ;OF .3 SEC MAX.
      BIS #DTR!RTS!STD,@RXCSR ;SET DTR & RTS & STD
1$: DEC TEMP3
   BNE 6$
   HLT 2 ;RING,CTS,CARDET,SRD,DSR,STD,RTS,OR DTR FAILED TO SET
      ;CHECK THE BCOSC CABLE
6$: BR 7$ ;GO RUN THE TEST ANYWAY !
   MOV @RXCSR,R1 ;SAVE ACTUAL
   BIC #<RING!CTS!CARDET!SRD!DSR!STD!RTS!DTR>,R1 ;STRIP JUNK
   CMP RO,R1 ;GOT THEM YET ?
   BNE 1$ ;NO NOT YET MAYBE THE BCOSC
      ;CABLE IS NOT ON OR TERMINATED WITH H315
7$: MOVB #25,@TXDBUF ;LOAD THE CHAR
   MOV #25,@DURIV ;SET UP TRAPCATCHER
   MOV #340,@DURIS ;SET LEVEL 7
   CLR PS ;ALLOW INTERRUPTS
   MOV RXDBUF,TEMP4 ;SET UP FOR ERROR MESSAGE
   MOV #25,RO ;EXPECTED

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1100 003312 012777 000020 176040 17300      MOV      #USER!SEND, @TXCSR      ;OK NOW LOAD SEND & USER MODE
1101 003320 052777 000120 176024 17400      BIS      #SYNSCH!RINTEN, @RXCSR  ;SET SEARCH SYNC &
1102                                     17500                                     ;RECEIVER INTERRUPT
1103                                     17600                                     ;ENABLE & WAIT FOR INTERRUPT
1104 003326 005037 001112                                     CLR      TEMPS
1105 003332 005002                                     3$:     CLR      R2
1106 003334 005202                                     INC      R2                          ;WAIT FOR INTERRUPT
1107 003336 001376                                     BNE     .-2
1108 003340 005237 001112                                     INC      TEMPS
1109 003344 022737 000003 001112 18100      CMP      #3, TEMPS
1110 003352 002367                                     BGE     3$
1111 003354 104004                                     HLT     4                          ;INTERRUPT DID NOT OCCUR
1112 003356 000422                                     BR      4$
1113                                     18500
1114                                     18600
1115 003360 012737 000340 177776 18700      :THE FOLLOWING IS THE INTERRUPT SVC ROUTINE
1116 003366 017704 175760 2$:     MOV      #340, PS      ;PREVENT INTERRUPTS
1117 003372 017701 175756                                     MOV      @RXCSR, R4      ;SAVE
1118 003376 013777 001366 175760 19000      MOV      @RXDBUF, R1     ;ACTUAL
1119 003404 005077 175756                                     MOV      DURIS, @DURIV   ;RESTORE TRAPCATCHER
1120 003410 012716 003454                                     CLR      @DURIS
1121 003414 042777 000100 175730 19100      MOV      #5$, (SP)      ;SET UP RETURN
1122 003422 000002                                     BIC     #RINTEN, @RXCSR  ;CLR INTERRUPT ENABLE
1123                                     19200      RTI
1124 003424 042777 000100 175720 19300      4$:     BIC     #PINTEN, @RXCSR ;CLR INTERRUPT ENABLE
1125 003432 012737 000340 177776 19400      MOV      #340, PS      ;PREVENT INTERRUPTS
1126 003440 013777 001366 175716 19500      MOV      DURIS, @DURIV  ;RESTORE TRAPCATCHER
1127 003446 005077 175714                                     CLR      @DURIS
1128 003452 000416                                     BR      8$
1129                                     19600
1130 003454 020001                                     5$:     CMP      R0, R1
1131 003456 001401                                     BEQ     .+4
1132 003460 104002                                     HLT     2                          ;CHARACTERS DID NOT MATCH
1133                                     19700                                     ;IF DU/DFC ARE RUNNING IN CLOCK
1134                                     19800                                     ;RECOVERY ABOVE 9600 BAUD AND THIS
1135                                     19900                                     ;ERROR OCCURS PUT SW03 = 1. THIS
1136                                     20000                                     ;ERROR IS LEGITIMATE ONLY IF BELOW
1137                                     20100                                     ;9600 BAUD.
1138 003462 013737 001352 001110 21000      MOV      RXCSR, TEMP4     ;SETUP FOR ERROR MESSAGE
1139 003470 012700 000200                                     MOV      #RXDONE, R0     ;EXPECTED
1140 003474 010401                                     MOV      R4, R1          ;ACTUAL
1141 003476 042701 177577                                     BIC     #1<RXDONE>, R1  ;SAVE ONLY RXDONE
1142 003502 020001                                     CMP      R0, R1
1143 003504 001401                                     BEQ     .+4
1144 003506 104006                                     HLT     6                          ;FALSE INTERRUPT
1145                                     21100
1146 003510 104400                                     8$:     SCOPE
1147                                     21200
                                     21300
                                     21400
                                     21500
                                     21600
                                     21700
                                     21800
                                     21900

```


M02

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1148      00200
1149      00300
1150      00400
1151      00500
1152      00600
1153      00700
1154      00800
1155      00900
1156      003512 01000
1157
1158
1159
1160
1161
1162
1163      003512 012737 000003 001072
1164      003520 012737 007736 001062
1165      003526 052777 000400 175624 01200
1166      003534 012777 030000 175614 01300
1167      003542 052777 000400 175610 01400
1168      003550 012777 000020 175602 01500
1169      003556 012777 036026 175572 01600
1170
1171
1172      003564 052777 000436 175560 01900
1173
1174
1175
1176
1177
1178
1179
1180      003572 005037 001112
1181      003576 005002
1182      003600 005202
1183      003602 001376
1184      003604 005237 001112
1185      003610 022737 000003 001112
1186      003616 002367
1187      003620 012777 004022 175536 03400
1188      003626 012777 000340 175532 03500
1189      003634 012777 004100 175526 03600
1190      003642 012777 000340 175522 03700
1191      003650 005037 177776
1192      003654 013737 001354 001110 03900
1193      003662 012700 000025
1194      003666 012737 000003 001106 04100
1195
1196      003674 052777 000100 175450 04300
1197      003702 052777 000100 175450 04400
1198      003710 000137 003726
1199
1200      003714 112777 000026 175440 04700
1201      003722 005037 001112
1202      003726 005002
1203      003730 005202
  
```

```

;: THIS TEST VERIFYS THAT THE DFC11A IS CLOCKING DATA IN & OUT
;: OF THE DU11
;: NOTE: THE BC05C MODEM CABLE MUST BE ATTACHED TO THE DFC11A
;: & MUST BE TERMINATED WITH H315 CONNECTOR
;: MODE: SYNINT
;: LENGTH: EIGHT
;: THIS TEST USES BOTH THE RECEIVER & TRANSMITTER LOGIC
;: *****
DU11.B:
;: *****
;: *
;: TEST 3
;: *
;: *****
;: *****
TST3:  MOV    #3,TSTNO
      MOV    #.EOP,NEXT
      BIS    #MRESET,@TXCSR ;MASTER RESET
      MOV    #SYNINT,@PARCSR ;SET THE MODE
      BIS    #MRESET,@TXCSR ;MASTER RESET
      MOV    #USER!SEND,@TXCSR ;SET USER MODE AND SEND
      MOV    #SYNINT!EIGHT!NOPAR!26,@PARCSR ;SET SYNC INTERNAL,
      ;EIGHT BITS PER CHAR,NO PARITY,
      ;AND "26" FOR THE SYNC CHARACTER
      BIS    #SYNSCH!STPSYN!DTR!RTS!STD,@RXCSR ;SET SEARCH SYNC &
      ;STRIP SYNC SO THAT RXDONE ASSERTS
      ;WHEN CHAR "25" ARRIVES AND NOT BEFORE...
      ;THEREFORE,SET STRIP SYNC
      ;ALSO SET DTR, RTS,& STD FOR THE DFC11A

;: ..... WAIT FOR SYNSCH TO BE
;: CLOKED IN BY CLK
      CLR    TEMPS
      CLR    R2
      INC    R2
      BNE    .-2
      INC    TEMPS
      CMP    #3,TEMPS
      BGE    .-20
      MOV    #25,@DURIV ;GO BACK TO CLR R2 AND WAIT SOME MORE
      MOV    #340,@DURIS ;SET UP TRAPCATCHER
      MOV    #35,@DUTIV ;SET PROCESSOR STATUS = 7
      MOV    #340,@DUTIS ;SET UP TRAPCATCHER
      CLR    PS ;SET PROCESSOR STATUS = 7
      MOV    RXDBUF,TEMP4 ;ALLOW INTERRUPTS
      MOV    #25,R0 ;SET UP FOR ERROR MSG
      MOV    #3,TEMP3 ;EXPECTED CHAR
      ;# OF SYNC CHARS TO GET INTO
      ;SYNCRONIZATION
      BIS    #RINTEN,@RXCSR ;SET INTERRUPT ENABLES
      BIS    #TXINTE,@TXCSR
      JMP    8$
      ;THE FIRST XMIT INTERRUPT SHOULD COME
      ;FROM TXDONE = 1 AFTER A MASTER RESET
      MOVB   #26,@TXDBUF ;LOAD SYNC CHAR
      CLR    TEMPS
      CLR    R2
      INC    R2
      ;WAIT FOR INTERRUPT
  
```

1204	003732	001376		05100
1205	003734	005237	001112	05200
1206	003740	022737	000003 001112	05300
1207	003746	002367		05400
1208	003750	012737	000340 177776	05500
1209	003756	042777	000100 175374	05600
1210	003764	042777	000100 175360	05700
1211	003772	013777	001366 175364	05800
1212	004000	005077	175362	05900
1213	004004	013777	001372 175356	06000
1214	004012	005077	175354	06100
1215	004016	104003		06200
1216				06300
1217				06400
1218				06500
1219				06600
1220				06700
1221	004020	000521		06800
1222				06900
1223				07000
1224	004022			07100
1225	004022	017704	175324	07200
1226	004026	017701	175322	07300
1227	004032	013777	001366 175324	07400
1228	004040	005077	175322	07500
1229	004044	013777	001372 175316	07600
1230	004052	005077	175314	07700
1231	004056	012716	004230	07800
1232	004062	042777	000100 175262	07900
1233	004070	042777	000100 175262	08000
1234	004076	000002		08100
1235				08200
1236				08300
1237	004100	005337	001106	08400
1238	004104	100403		08500
1239	004106	012716	003714	08600
1240				08700
1241	004112	000002		08800
1242	004114	012716	004122	08900
1243	004120	000002		09000
1244				09100
1245	004122	112777	000025 175232	09200
1246	004130	042777	000100 175222	09300
1247	004136	005037	001112	09400
1248	004142	005002		09500
1249	004144	005202		09600
1250	004146	001376		09700
1251	004150	005237	001112	09800
1252	004154	022737	000003 001112	09900
1253	004162	002367		10000
1254	004164	012737	000340 177776	10100
1255	004172	042777	000100 175152	10200
1256	004200	013777	001366 175156	10300
1257	004206	005077	175154	10400
1258	004212	013777	001372 175150	10500
1259	004220	005077	175146	10600

```

BNE      .-2           ;CONTINUE TO WAIT
INC      TEMPS
CMP      #3,TEMPS     ;DONE YET?
BGE      8$           ;GO BACK,NOT YET
MOV      #340,PS      ;PREVENT INTERRUPTS
BIC      #TXINTE,@TXCSR ;CLR INTR ENABLES
BIC      #RINTEN,@RXCSR ;DITTO
MOV      DURIS,@DURIV ;RESTORE TRAPCATCHER
CLR      @DURIS
MOV      DUTIS,@DUTIV ;RESTORE INTERRUPT CATCHER
CLR      @DUTIS
HLT      3           ;TXDONE INTERRUPT FAILED TO OCCUR
                        ;WATCH OUT HERE::: THIS FAILURE MAY
                        ;ALSO BE CAUSED BY TRANSMIT DATA NOT
                        ;BEING CLOCKED OUT. I.E. TXDONE
                        ;NOT RE-ASCERTING SO THAT THE 2ND
                        ;SYNC CHARACTER CAN BE LOADED
                        ;GET OUT OF THE TEST
BR       7$

;THE FOLLOWING IS THE RECEIVER INTERRUPT SVC ROUTINE
2$:      MOV      @RXCSR,R4 ;SAVE
        MOV      @RXDBUF,R1 ;ACTUAL
        MOV      DURIS,@DURIV ;RESTORE TRAPCATCHER
        CLR      @DURIS      ;CLEAR OUT INTERRUPTS
        MOV      DUTIS,@DUTIV
        CLR      @DUTIS
        MOV      #4$(SP)    ;SET UP RETURN LOCATION
        BIC      #RINTEN,@RXCSR ;CLR INTERRUPT ENABLES
        BIC      #TXINTE,@TXCSR ;DITTO
        RTI

;END OF RECEIVER INTERRUPT SVC ROUTINE
3$:      ;...THE FOLLOWING IS THE XMITTER INTERRUPT SVC ROUTINE
        DEC      TEMP3      ;# OF SYNC CHARACTERS LEFT
        BMI      5$
        MOV      #1$(SP)    ;SET UP RETURN LOCATION
                        ;(LOAD SYNC CHARACTER AGAIN)
        RTI
5$:      MOV      #6$(SP)    ;SET UP RETURN LOCATION
        RTI
;END OF XMITTER INTERRUPT SVC ROUTINE
6$:      MOVB     #25,@TXDBUF ;LOAD CHARACTER
        BIC      #TXINTE,@TXCSR ;CLR INTR ENABLE
        CLR      TEMPS
10$:     CLR      R2        ;WAIT FOR INTERRUPT(RECEIVER)
        INC      R2
        BNE     .-2        ;CONTINUE TO WAIT
        INC      TEMPS
        CMP      #3,TEMPS  ;DONE YET?
        BGE     10$       ;GO BACK,NOT YET
        MOV     #340,PS    ;PREVENT INTERRUPTS
        BIC     #RINTEN,@RXCSR ;CLR INTR ENABLE
        MOV     DURIS,@DURIV ;RESTORE TRAPCATCHER
        CLR     @DURIS
        MOV     DUTIS,@DUTIV
        CLR     @DUTIS
  
```


1260	004224	104004			10700	HLT	4	:RECEIVER INTR FAILED TO OCCUR
1261	004226	000416			10800	BR	7\$:GET OUT OF TEST
1262	004230	020001			10900	CMP	RO,R1	
1263	004232	001401			11000	BEQ	.+4	
1264	004234	104002			11100	HLT	2	:CHARACTERS DID NOT MATCH
1265	004236	013737	001352	001110	11200	MOV	RXCSR,TEMP4	:SET UP FOR ERROR MSG
1266	004244	012700	000200		11300	MOV	#RXDONE,R0	:EXPECTED RXDONE
1267	004250	010401			11400	MOV	R4,R1	:ACTUAL
1268	004252	042701	177577		11500	BIC	#1<RXDONE>,R1	:SAVE ONLY RXDONE
1269	004256	020001			11600	CMP	RO,R1	
1270	004260	001401			11700	BEQ	.+4	
1271	004262	104006			11800	HLT	6	:FALSE INTERRUPT
1272	004264	012737	000340	177776	11900	MOV	#340,PS	:INHIBIT INTERRUPTS
1273	004272	104400			12000	SCOPE		
1274								

1275					02100
1276					02200
1277					02300
1278					02400
1279					02500
1280					02600
1281					02700
1282					02800
1283					02900
1284					03000
1285					03100
1286					03200
1287					03300
1288					03400
1289					03500
1290					03600
1291					03700
1292					03800
1293					03900
1294					04000
1295					04100
1296	004274	012737	000340	177776	04200
1297	004302	012706	001050		04300
1298	004306	000005			04400
1299	004310	005037	001222		04500
1300	004314	012737	177777	001226	04600
1301	004322	052777	000400	175030	04700
1302	004330	012777	026252	175020	04800
1303	004336	000240			04900
1304	004340	012777	000040	175012	05000
1305	004346	042777	000100	175004	05100
1306	004354	112777	000252	175000	05200
1307	004362	052777	000122	174762	05300
1308	004370	012777	005770	174766	05400
1309	004376	012777	000340	174762	05500
1310	004404	012777	006002	174756	05600
1311	004412	012777	000340	174752	05700
1312					05800
1313	004420	004737	005456		05900
1314	004424	005737	001212		06000
1315	004430	001002			06100
1316	004432	000137	005634		06200
1317	004436				06300
1318	004436	104410			
1319	004440	012600			
1320	004442	104412			
1321	004444	001214			
1322	004446	105737	001214		06400
1323	004452	001500			06500
1324	004454	012737	000454	001224	06600
1325	004462	022737	177546	001212	06700
1326	004470	001402			06800
1327	004472	000137	005572		06900
1328	004476	012737	004552	000100	07000
1329	004504	012737	000340	000102	07100
1330	004512	012737	177546	001230	07200

```

;*****
; BAUD RATE TEST
;*****
; THIS TEST DETERMINES THE BAUD RATE OF THE DFC USING
; A KW11-L/P AND DU/DP-11 AND PRINTS OUT THAT RATE. THE
; TEST ALSO GIVES AN ERROR TYPEOUT IF THE BAUD RATE IS
; OFF BY MORE THAN 10%.
; MODE: IDLE SYNC
; LENGTH: EIGHT
; THIS TEST USES BOTH TRANSMITTER AND RECEIVER LOGIC.
; A SCOPE LOOP IS AVAILABLE BY USING SWITCH 14.
; MAKE SURE THE PROPER CONNECTOR IS INSTALLED!!!!!! SEE
; SECTION 1.0!!!!!!

START:  MOV    #340,PS      ;PREVENT INTERRUPTS
        MOV    #STACK,SP   ;SET UP STACK
TXSETUP: RESET
        CLR    CHCNT
        MOV    #-1,INTCNT
        BIS    #MRESET,@TXCSR ;MASTER RESET TRANSMITTER
        MOV    #026252,@PARCSR ;LOAD THE MODE,WORD LENGTH
        NOP    ;PARITY SENSE AND SYNC CHARACTER
        MOV    #40,@TXCSR    ;ASSERT DRA INTEG
        BIC    #100,@TXCSR   ;CLR TXINTEB
        MOV    #252,@TXDBUF  ;LOAD SYNC CHAR INTO BUFFER
RXSETUP: BIS    #122,@RXCSR  ;SET UP RECEIVER
DUSETUP: MOV    #CNT.RX,@DURIV ;SET
        MOV    #340,@DURIS   ;
        MOV    #NO.TRAP,@DUTIV ;
        MOV    #340,@DUTIS   ;          UP
        ;          FOR DU
        ;          INTERRUPTS

        JSR    PC,CLOCK     ;GO CHECK FOR CLOCK
        TST    NO.CLOCK    ;IS IT THERE?
        BNE    1$          ;NO,CHECK IF SCOPE LOOP WANTED
        JMP    SW14A

1$:
        INSTR
        MCPS
        SETFLG
        CPSFLG
        TSTB    CPSFLG
        BEQ    NO60CPS     ;TEST FOR 50/60 CYCLES
        MOV    #300,CLKSET ;50 CYCLE MACHINE
        CMP    #177546,NO.CLOCK ;SETUP FOR 60 CYCLE COUNT
        BEQ    KW11L       ;FIND OUT WHICH CLOCK
        JMP    KW11P       ;KW11L SETUP
        JMP    KW11P       ;KW11P SETUP
KW11L:  MOV    #INTSVC,@#100 ;SET UP SERVICE ROUTINE
        MOV    #340,@#102   ;SET UP LEVEL 7
        MOV    #177546,CLKSTATUS ;KW11L CSR

```


1331	004520	012777	000100	174502	07300		MOV	#100, @CLKSTATUS	: SETUP FOR CLOCK INTERRUPT
1332	004526	005037	177776		07400	BEGIN:	CLR	PS	: ALLOW INTERRUPTS
1333	004532	005000			07500		CLR	RO	
1334	004534	012701	000005		07600		MOV	#5, R1	: WAIT FOR INTERRUPTS
1335	004540	005300			07700	1\$:	DEC	RO	: SO THAT WE CAN
1336	004542	001376			07800		BNE	1\$: SYNC UP KW AND DEVICE
1337	004544	005301			07900		DEC	R1	
1338	004546	001374			08000		BNE	1\$	
1339	004550	104000			08100		HLT		: TOOK TOO LONG---TIME OUT!!!!
1340	004552	042777	000200	174450	08200	INTSVC:	BIC	#200, @CLKSTATUS	: CLEAR THE MONITOR
1341	004560	005237	001226		08300		INC	INTCNT	: COUNT INTERRUPTS
1342	004564	001015			08400		BNE	EEE	: FIRST TIME?
1343	004566	005737	001234		08500		TST	TAG	: DP OR DU?
1344	004572	001404			08600		BEQ	INTS.A	: DU
1345	004574	052777	000103	174526	08700		BIS	#103, @DPTS	: YES, START OUTPUT OF DP
1346	004602	000403			08800		BR	INTS.B	: KEEP GOING WITH TEST
1347	004604	112777	000020	174546	08900	INTS.A:	MOV	#20, @TXCSR	: YES, START OUTPUT OF DU
1348	004612	012716	004526		09000	INTS.B:	MOV	#BEGIN, (SP)	: CONTINUE TO RUN TEST
1349	004616	000002			09100		RTI		
1350	004620	023737	001224	001226	09200	EEE:	CMP	CLKSET, INTCNT	: ARE WE DONE?
1351	004626	001403			09300		BEQ	2\$: YES
1352	004630	012716	004526		09400		MOV	#BEGIN, (SP)	: NO, CONTINUE TO TEST
1353	004634	000002			09500		RTI		
1354	004636	042777	000101	174364	09600	2\$:	BIC	#101, @CLKSTATUS	: SHUT OFF CLOCK
1355	004644	012716	004666		09700		MOV	#BDTAG, (SP)	: GO DETERMINE BAUD RATE
1356	004650	000005			09800		RESET		
1357	004652	000002			09900		RTI		
1358	004654	012737	000372	001224	10000	NO60CPS:	MOV	#250, CLKSET	: 50 CYCLE SETUP
1359	004662	000137	004462		10100		JMP	KWSETUP	
1360	004666				10500	BDTAG:			
1361	004666	012737	013112	004732			MOV	#M19200, 17\$	
1362	004674	023727	001222	031620			CMP	CHCNT, #13200.	: COMPARE TO THIS HIGH END
1363	004702	101404					BLOS	.+12	: ANSWER IS TOO HIGH
1364	004704	104403	013205				TYPE	, MWRONGRT	
1365	004710	000137	005634				JMP	\$W14A	
1366	004714	023727	001222	025060			CMP	CHCNT, #10800.	: COMPARE TO THIS LOW END
1367	004722	103410					BLO	18\$: NOT HERE
1368	004724	104403	013306				TYPE	, MBAUDRT	: TYPE THIS RATE
1369	004730	104403					TYPE		
1370	004732	000000				17\$:	0		
1371	004734	104403	013334				TYPE	, MRITE	
1372	004740	000137	005700				JMP	MAINPR	
1373	004744					18\$:			
1374	004744	012737	013122	005010			MOV	#M9600, 1\$	
1375	004752	023727	001222	014710			CMP	CHCNT, #6600.	: COMPARE TO THIS HIGH END
1376	004760	101404					BLOS	.+12	: ANSWER IS TOO HIGH
1377	004762	104403	013205				TYPE	, MWRONGRT	
1378	004766	000137	005634				JMP	\$W14A	
1379	004772	023727	001222	012430			CMP	CHCNT, #5400.	: COMPARE TO THIS LOW END
1380	005000	103410					BLO	2\$: NOT HERE
1381	005002	104403	013306				TYPE	, MBAUDRT	: TYPE THIS RATE
1382	005006	104403					TYPE		
1383	005010	000000				1\$:	0		
1384	005012	104403	013334				TYPE	, MRITE	
1385	005016	000137	005700				JMP	MAINPR	
1386	005022					2\$:			

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1387	005022	012737	013131	005066		MOV	#M4800,3\$		
1388	005030	023727	001222	006344		CMP	CHCNT,#3300.		;COMPARE TO THIS HIGH END
1389	005036	101404				BLOS	.+12		;ANSWER IS TOO HIGH
1390	005040	104403	013205			TYPE	,MWRONGRT		
1391	005044	000137	005634			JMP	\$W14A		
1392	005050	023727	001222	005214		CMP	CHCNT,#2700.		;COMPARE TO THIS LOW END
1393	005056	103410				BLO	4\$;NOT HERE
1394	005060	104403	013306			TYPE	,MBAUDRT		;TYPE THIS RATE
1395	005064	104403				TYPE			
1396	005066	000000			3\$:	O			
1397	005070	104403	013334			TYPE	,MRITE		
1398	005074	000137	005700			JMP	MAINPR		
1399	005100				4\$:				
1400	005100	012737	013140	005144		MOV	#M2400,5\$		
1401	005106	023727	001222	003162		CMP	CHCNT,#1650.		;COMPARE TO THIS HIGH END
1402	005114	101404				BLOS	.+12		;ANSWER IS TOO HIGH
1403	005116	104403	013205			TYPE	,MWRONGRT		
1404	005122	000137	005634			JMP	\$W14A		
1405	005126	023727	001222	002506		CMP	CHCNT,#1350.		;COMPARE TO THIS LOW END
1406	005134	103410				BLO	6\$;NOT HERE
1407	005136	104403	013306			TYPE	,MBAUDRT		;TYPE THIS RATE
1408	005142	104403				TYPE			
1409	005144	000000			5\$:	O			
1410	005146	104403	013334			TYPE	,MRITE		
1411	005152	000137	005700			JMP	MAINPR		
1412	005156				6\$:				
1413	005156	012737	013147	005222		MOV	#M1200,7\$		
1414	005164	023727	001222	001471		CMP	CHCNT,#825.		;COMPARE TO THIS HIGH END
1415	005172	101404				BLOS	.+12		;ANSWER IS TOO HIGH
1416	005174	104403	013205			TYPE	,MWRONGRT		
1417	005200	000137	005634			JMP	\$W14A		
1418	005204	023727	001222	001243		CMP	CHCNT,#675.		;COMPARE TO THIS LOW END
1419	005212	103410				BLO	8\$;NOT HERE
1420	005214	104403	013306			TYPE	,MBAUDRT		;TYPE THIS RATE
1421	005220	104403				TYPE			
1422	005222	000000			7\$:	O			
1423	005224	104403	013334			TYPE	,MRITE		
1424	005230	000137	005700			JMP	MAINPR		
1425	005234				8\$:				
1426	005234	012737	013156	005300		MOV	#M600,9\$		
1427	005242	023727	001222	000635		CMP	CHCNT,#413.		;COMPARE TO THIS HIGH END
1428	005250	101404				BLOS	.+12		;ANSWER IS TOO HIGH
1429	005252	104403	013205			TYPE	,MWRONGRT		
1430	005256	000137	005634			JMP	\$W14A		
1431	005262	023727	001222	000521		CMP	CHCNT,#337.		;COMPARE TO THIS LOW END
1432	005270	103410				BLO	10\$;NOT HERE
1433	005272	104403	013306			TYPE	,MBAUDRT		;TYPE THIS RATE
1434	005276	104403				TYPE			
1435	005300	000000			9\$:	O			
1436	005302	104403	013334			TYPE	,MRITE		
1437	005306	000137	005700			JMP	MAINPR		
1438	005312				10\$:				
1439	005312	012737	013164	005356		MOV	#M300,11\$		
1440	005320	023727	001222	000317		CMP	CHCNT,#207.		;COMPARE TO THIS HIGH END
1441	005326	101404				BLOS	.+12		;ANSWER IS TOO HIGH
1442	005330	104403	013205			TYPE	,MWRONGRT		

1443	005334	000137	005634			JMP	SW14A	
1444	005340	023727	001222	000251		CMP	CHCNT, #169.	;COMPARE TO THIS LOW END
1445	005346	103410				BLO	12\$;NOT HERE
1446	005350	104403	013306			TYPE	,MBAUDRT	;TYPE THIS RATE
1447	005354	104403				TYPE		
1448	005356	000000				11\$:	0	
1449	005360	104403	013334			TYPE	,WRITE	
1450	005364	000137	005700			JMP	MAINPR	
1451	005370					12\$:		
1452	005370	012737	013172	005434		MOV	#M150, 13\$	
1453	005376	023727	001222	000147		CMP	CHCNT, #103.	;COMPARE TO THIS HIGH END
1454	005404	101404				BLOS	.+12	;ANSWER IS TOO HIGH
1455	005406	104403	013205			TYPE	,MWRONGRT	
1456	005412	000137	005634			JMP	SW14A	
1457	005416	023727	001222	000125		CMP	CHCNT, #85.	;COMPARE TO THIS LOW END
1458	005424	103410				BLO	14\$;NOT HERE
1459	005426	104403	013306			TYPE	,MBAUDRT	;TYPE THIS RATE
1460	005432	104403				TYPE		
1461	005434	000000				13\$:	0	
1462	005436	104403	013334			TYPE	,WRITE	
1463	005442	000137	005700			JMP	MAINPR	
1464	005446					14\$:		
1465	005446	104403	013205		11400	TYPE	,MWRONGRT	;EITHER DEVICE DIDN'T TURN ON
1466					11500			;OR COUNT WAS OFF BY MORE THAN 10 PERCENT
1467	005452	000137	005634		11600	JMP	SW14A	
1468					11700			
1469					11800			
1470					11900			
1471					12000			
1472					12100			
1473					12200			
1474	005456	013746	000004		12300			
1475	005462	013746	000006		12400			
1476	005466	012737	005524	000004	12500			
1477	005474	012737	000340	000006	12600			
1478	005502	005037	001212		12700			
1479	005506	005737	177546		12800			
1480	005512	000240			12900			
1481	005514	012737	177546	001212	13000			
1482	005522	000416			13100			
1483	005524	012737	005552	000004	13200			
1484	005532	022626			13300			
1485	005534	005737	172540		13400			
1486	005540	000240			13500			
1487	005542	012737	172540	001212	13600			
1488	005550	000403			13700			
1489	005552	104403	012506		13800			
1490	005556	022626			13900			
1491	005560	012637	000006		14000			
1492	005564	012637	000004		14100			
1493	005570	000207			14200			
1494	005572	012737	004552	000104	14300			
1495	005600	012737	000340	000106	14400			
1496	005606	012737	177777	172542	14500			
1497	005614	012737	172540	001230	14600			
1498	005622	012777	000135	173400	14700			


```

;ROUTINE TO FIND OUT IF EITHER KW11-P OR
;KW11-L EXIST. ENTERED BY "JSR PC,CLOCK"
;*****
CLOCK:  MOV    Q#4, -(SP)      ;SETUP FOR INTERRUPTS
        MOV    Q#6, -(SP)      ;IN THIS ROUTINE
        MOV    #2$, Q#4        ;SETUP TO SEE IF KW11P
        MOV    #340, Q#6      ;PREVENT INTERRUPTS
        CLR    NO.CLOCK
1$:     TST    Q#177546        ;KW11-L CSR
        NOP
        ;WAIT
        MOV    #177546, NO.CLOCK;THIS IS THE ONE
        BR    3$
2$:     MOV    #4$, Q#4        ;SETUP TO CHECK KW11P
        CMP    (SP)+, (SP)+    ;POP STACK
        TST    Q#172540        ;KW11-P CSR
        NOP
        ;WAIT
        MOV    #172540, NO.CLOCK;THIS IS THE ONE
        BR    3$
4$:     TYPE   ,MNOLOCK        ;THERE IS NO CLOCK
        CMP    (SP)+, (SP)+    ;POP STACK
3$:     MOV    (SP)+, Q#6      ;RETURN ADDRESSES 4 AND 6 TO NORMAL
        MOV    (SP)+, Q#4      ;DITTO
        RTS    PC
KW11P:  MOV    #INTSVC, Q#104   ;SETUP FOR INTSVC RTN
        MOV    #340, Q#106     ;PREVENT INTERRUPTS
        MOV    #177777, Q#172542 ;PRESET COUNT SET BUFFER
        MOV    #172540, CLKSTATUS ;KW11P CSR
        MOV    #135, QCLKSTATUS ;SETUP INTER EN AND STATE
  
```


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```

1541          00100
1542          00200 ;LINE.N SUBROUTINE TO FETCH THE LINE
1543          00300 ;NUMBER AND FIRST DP11 VECTOR ADDRESS FROM
1544          00400 ;THE CONSOL SWITCHES
1545          00500 ;SW0-SW8=VECTOR ADDRESS OF FIRST DP11
1546          00600 ;SW9-SW15=LINE NUMBER OF DP11 SELECTED FOR TEST
1547          00700
1548 006014 005037 001076          00800 LINE.N: CLR      ERRCNT      ;CLEAR ERROR COUNT
1549 006020 013737 177570 001144 00900      MOV      SWR,SAVSR1 ;SAVE CONSOL SWITCH SETTINGS
1550 006026 013700 177570          01000      MOV      SWR,RO
1551 006032 000000          01100      HALT
1552          01200 ;SET SWR TO LINE NUMBER
1553          01300 ;LOW BYTE = FIRST DP VECTOR
1554 006034 013737 177570 001174 01400      MOV      SWR,SAVSR2 ;HIGH BYTE = LINE NUMBER(8)
1555 006042 013700 177570          01500      MOV      SWR,RO ;SAVE CONSOL SWITCHES
1556 006046 000000          01600      HALT
1557 006050 005001          01700      CLR      R1
1558 006052 113701 001175          01800      MOV      SAVSR2+1,R1 ;SAVE LINE NUMBER
1559 006056 042701 000001          01900      BIC      #1,R1
1560 006062 000405          02000      BR       XTAG
1561 006064 013701 001156          02100 LINE.X: MOV      XLINEX,R1
1562 006070 005037 001144          02200      CLR      SAVSR1
1563 006074 006301          02300      ASL      R1
1564 006076 006201          02400 XTAG:  ASR      R1 ;CLEAR LSB
1565 006100 010137 001156          02500      MOV      R1,XLINEX
1566 006104 006301          02600      ASL      R1 ;SCALE LINE NUMBER TO ADDRESS
1567 006106 006301          02700      ASL      R1 ;MODULO 10(8)
1568 006110 006301          02800      ASL      R1
1569 006112 005777 173232          02900      TST      @BASC SR ;DOES LINE 0 REALLY EXIST??
1570 006116 000240          03000      NOP
1571 006120 105737 001144          03100      TSTB    SAVSR1
1572 006124 100403          03200      BMI     .+10
1573 006126 012737 006240 000004 03300      MOV      #3$,@#4
1574 006134 013702 001350          03400      MOV      BASCSR,R2 ;SET R2 = LINE 0 ADDRESS
1575 006140 160102          03500      SUB      R1,R2 ;MANUFACTURE DEVICE ADDRESS
1576 006142 012703 001322          03600      MOV      #DPRS,R3 ;R3 = ADDRESS OF RCY STATUS ADRS
1577 006146 010223          03700      MOV      R2,(R3)+ ;LOAD RCY STATUS ADRS
1578 006150 005722          03800      TST      (R2)+ ;INC TO RCY BUFFER ADRS
1579 006152 010223          03900      MOV      R2,(R3)+ ;LOAD RCY BUFFER ADRS
1580 006154 005202          04000      INC      R2 ;INC TO SYNC BUFFER ADRS
1581 006156 010223          04100      MOV      R2,(R3)+ ;LOAD SYNC ADRS
1582 006160 005202          04200      INC      R2 ;INC TO XMIT STATUS ADRS
1583 006162 010223          04300      MOV      R2,(R3)+ ;LOAD TRANSMITTER STATUS ADRS
1584 006164 005722          04400      TST      (R2)+ ;INC TO XMIT BUFFER
1585 006166 010223          04500      MOV      R2,(R3)+ ;LOAD XMIT BUFFER ADRS
1586 006170 005202          04600      INC      R2 ;INC TO SYNC EXTENSION
1587 006172 010223          04700      MOV      R2,(R3)+ ;LOAD SYNC EXTENSION ADRS
1588 006174 013702 001174          04800      MOV      SAVSR2,R2 ;SET UP VECTOR ADDRESS
1589 006200 042702 177000          04900      BIC      #1C<???,R2 ;CLEAR LINE NUMBER FROM VEC ADRS
1590 006204 105737 001144          05000      TSTB    SAVSR1
1591 006210 100402          05100      BMI     2$
1592 006212 013702 001346          05200 2$:  MOV      BASVEC,R2
1593 006216 060102          05300      ADD      R1,R2 ;SET VECTOR ADDRESS TO LINE NUMBER
1594 006220 010223          05400      MOV      R2,(R3)+ ;LOAD RCY VECTOR ADRS
1595 006222 005722          05500      TST      (R2)+ ;INC TO NEXT VECTOR
1596 006224 010223          05600      MOV      R2,(R3)+ ;LOAD RCY PRIORITY ADRS

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1597	006226	005722		05700
1598	006230	010223		05800
1599	006232	005722		05900
1600	006234	010213		06000
1601	006236	000414		06100
1602	006240	005037	001156	06200
1603	006244	013701	000042	06300
1604	006250	001405		06400
1605	006252	000005		06500
1606				06600
1607				06700
1608				06800
1609	006254	004711		06900
1610	006256	000240		07000
1611	006260	000240		07100
1612	006262	000240		07200
1613	006264	022626		07300
1614	006266	000676		07400
1615	006270	012737	000006 000004	07500
1616	006276	013737	001322 001210	07600
1617	006304	000207		07700
1618				07800
1619				07900
1620				08000
1621				08100
1622	006306	012702	000300	08200
1623	006312	012701	000302	08300
1624	006316	010122		08400
1625	006320	005022		08500
1626	006322	022121		08600
1627	006324	022701	000776	08700
1628	006330	001372		08800
1629	006332	000207		08900
1630				09000
1631				09100
1632				09200
1633				09300
1634				09400
1635				09500
1636	006334	013746	000004	09600
1637	006340	013746	000006	09700
1638	006344	012737	006370 000004	09800
1639	006352	012737	000340 000006	09900
1640	006360	005777	000704	10000
1641	006364	000240		10100
1642	006366	000405		10200
1643	006370	104403	012773	10300
1644	006374	022626		10400
1645	006376	000000		10500
1646	006400	000777		10600
1647				10700
1648	006402	012637	000006	10800
1649	006406	012637	000004	10900
1650	006412	000207		11000
1651				11100
1652				11200

```

TST      (R2)+           ;INC TO NEXT VECTOR
MOV      R2,(R3)+       ;LOAD XMIT VECTOR ADRS
TST      (R2)+           ;INC TO NEXT VECTOR
MOV      R2,(R3)        ;LOAD XMIT PRIORITY ADRS
BR       5$
3$:      CLR      XLINEX
MOV      @#42,R1
BEQ      4$
RESET
;*****
;DP11 LOGICAL ENDING
;*****
JSR      PC,(R1)
NOP
NOP
NOP
4$:      POP     .SP
BR       LINE.X
5$:      MOV      #6,@#4
MOV      DPRS,DEVICE    ;SET FOR END PASS MSG.
RTS      PC
;*****CLRVEC*****
;CLRVEC,ROUTINE TO FILL COMMUNICATION VECTOR AREA WITH .+2,HALT
CLRVEC:  MOV      #300,R2      ;R2 COMM VECTOR AREA ADRS
MOV      #302,R1            ;INIT R1 WITH ADRS OF HALT
1$:      MOV      R1,(R2)+    ;MOV .+2 TO PC
CLR      (R2)+             ;MOV HALT TO PC
CMP      (R1)+,(R1)+       ;INC TO NEXT VECTOR AREA
CMP      #776,R1          ;END OF VECTOR AREA
BNE      1$                ;NO
RTS      PC                ;RETURN
;*****OKADR*****
;OKADR, ROUTINE TO CHECK FOR VALID DU ADDRESS
OKADR:   MOV      @#4,-(SP)   ;SETUP FOR INTERRUPTS
MOV      @#6,-(SP)         ;DITTO
MOV      #1$,@#4           ;SETUP TO CHECK ADDR YOU SELECTED
MOV      #340,@#6          ;PREVENT INTERRUPTS
TST      @DUBASE           ;ADDRESS
NOP
BR       2$                ;WAIT
BR       2$                ;ADDRESS OK
1$:      TYPE     MNODEV     ;ADDRESS NG--LET OPR KNOW
CMP      (SP)+,(SP)+       ;POP STACK
HALT
BR       .                 ;WAIT FOR OPR TO DECIDE IF ADR IS OK
2$:      MOV      (SP)+,@#6   ;IF ADRS WAS OK THEN RUN DU DIAGNOSTIC
MOV      (SP)+,@#4         ;IF ADRS WRONG RESTART TEST AND ANS QUESTIONS
RTS      PC                ;RETURN ADDRESS 4 AND 6 TO NORMAL
;DITTO

```


1653					11300
1654					11400
1655					11500
1656					11600
1657					11700
1658	006414	012737	006424	000024	11800
1659	006422	000000			11900
1660	006424	000005			12000
1661	006426	012706	001050		12100
1662	006432	012737	006414	000024	12200
1663	006440	104403			12300
1664	006442	011372			12400
1665	006444	000177	172566		12500
1666					12600
1667					12700
1668	006450				12800
1669	006450	012737	006662	001204	12900
1670	006456	105077	172652		13000
1671	006462	005037	001164		13100
1672	006466	005037	001162		13200
1673	006472	005077	172624		13300
1674	006476	005077	172626		13400
1675	006502	052777	000001	172612	13500
1676	006510	012737	000400	001166	13600
1677	006516	032737	000400	001144	13700
1678	006524	001414			13800
1679	006526	012737	010000	001170	13900
1680	006534	052777	002000	172560	14000
1681	006542	012737	000426	001154	14100
1682	006550	105277	172560		14200
1683	006554	000406			14300
1684	006556	012737	000400	001170	14400
1685	006564	012737	000026	001154	14500
1686	006572	012777	006664	172542	14600
1687	006600	012777	006772	172530	14700
1688	006606	012737	000200	177776	14800
1689	006614	012737	000004	001172	14900
1690	006622	113777	001154	172476	15000
1691	006630	052777	000100	172464	15100
1692	006636	052777	000301	172464	15200
1693					15300
1694					15400
1695	006644	005237	001102		15500
1696	006650	001375			15600
1697	006652	005337	001104		15700
1698	006656	001372			15800
1699	006660	104000			15900
1700	006662	000207			16000
1701					16100
1702					16200
1703					16300
1704	006664	013777	001154	172440	16400
1705	006672	113777	001155	172434	16500
1706	006700	005337	001172		16600
1707	006704	001003			16700
1708	006706	012777	006716	172426	16800

;POWER FAIL ROUTINE

```

.PFAIL: MOV #PWRUP,24 ;LOAD PFAIL VECTOR FOR POWER UP
        HALT
PWRUP:  RESET ;WAIT TTY TO COME UP
        MOV #STACK,SP ;REINIT STACK POINTER
        MOV #.PFAIL,24 ;LOAD PFAIL VECTOR FOR POWER DOWN
        TYPE
        MPOWER.
        JMP @PSTART
  
```

SEQ.DATA:

```

MOV #6$,BACK ;CLEAR SYNC EXTENTION
CLRB @SEXT ;RECEIVER DATA
CLR RDATA ;TRANSMITTER DATA
CLR TDATA ;RECEIVER STATUS
CLR @DPRS ;TRANSMITTER STATUS
CLR @DPTS ;STRIP SYNC
BIS #BIT0,@DPRS ;CHAR LENGTH INDEX
MOV #400,CHLEN ;TEST 12 BIT CHAR MODE
BIT #BIT8,SAVSR1 ;NO
BEQ 1$ ;SELECT END OF DATA
MOV #10000,LIMIT ;SELECT 12 BITS/CHARACTER
BIS #BIT10,@DPRS ;SYNC FOR 12 BIT CHAR
MOV #426,TSYNC ;PLACE MSB OF SYNC IN SYNC EXT
INCB @SEXT
BR 2$
1$: MOV #400,LIMIT ;TEMPORARY CHARACTER LIMIT
MOV #26,TSYNC ;INIT SYNC STORAGE
2$: MOV #TV18,@DPTIV ;TRANSMITTER VECTOR
MOV #RV18,@DPRIV ;RECEIVER VECTOR
MOV #200,PS ;PRIORITY=4
MOV #4,SCNT ;SYNC COUNT=4
MOVB TSYNC,@SYNC ;LOAD SYNC
BIS #BIT6,@DPRS ;RCV INT ENB
BIS #301,@DPTS ;TRANS INT ENB
;TRANS DONE
5$: INC TEMP1
   BNE 5$
   DEC TEMP2
   BNE 5$
   HLT
6$: RTS PC
TV18: MOV TSYNC,@DPTB ;XMIT SYNC
      MOVB TSYNC+1,@SEXT ;LOAD SYNC EXT
      DEC SCNT ;HAVE 2 SYNC'S BEEN XMITED
      BNE 1$ ;NO
      MOV #TV19,@DPTIV ;YES CHANGE VECTOR
  
```

1709	006714	000002			16900
1710					17000
1711					17100
1712					17200
1713					17300
1714	006716	032777	140000	172404	17400
1715	006724	001401			17500
1716	006726	104000			17600
1717	006730	105777	172374		17700
1718	006734	100401			17800
1719	006736	104000			17900
1720	006740	013777	001162	172364	18000
1721	006746	005237	001162		18100
1722	006752	023737	001170	001162	18200
1723	006760	001003			18300
1724	006762	042777	000140	172340	18400
1725	006770	000002			18500
1726					18600
1727					18700
1728					18800
1729	006772	105777	172324		18900
1730	006776	100401			19000
1731	007000	104000			19100
1732	007002	013700	001164		19200
1733	007006	017701	172312		19300
1734	007012	023777	001164	172304	19400
1735	007020	001404			19500
1736	007022	017737	172276	001146	19600
1737	007030	104001			19700
1738	007032	042777	000001	172262	19800
1739	007040	005237	001164		19900
1740	007044	023737	001170	001164	20000
1741	007052	001037			20100
1742	007054	005037	001164		20200
1743	007060	005037	001162		20300
1744	007064	006237	001170		20400
1745	007070	012777	006664	172244	20500
1746	007076	012737	000004	001172	20600
1747	007104	052777	000001	172210	20700
1748	007112	042777	004000	172202	20800
1749	007120	052777	000301	172202	20900
1750	007126	053777	001166	172166	21000
1751	007134	062737	000400	001166	21100
1752	007142	022737	001400	001166	21200
1753	007150	001401			21300
1754	007152	000002			21400
1755	007154	005077	172150		21500
1756	007160	005077	172136		21600
1757	007164	042737	000040	177776	21700
1758	007172	013716	001204		21800
1759	007176	000002			21900
1760					22000
1761	007200	013737	007270	001352	22100
1762	007206	013737	001352	001210	22200
1763	007214	062737	000002	007270	22300
1764	007222	013737	007270	001354	22400

```

1$: RTI
;SEQUENTIAL DATA TRANSMISSION ROUTINE

TV19: BIT #140000,ADPTS ;ANY STATUS ERRORS
      BEQ .+4 ;NO
      HLT ;REPORT ERROR
      TSTB ADPTS ;TRANSMITTER READY
      BMI .+4 ;YES
      HLT ;REPORT ERROR
      MOV TDATA,ADPTB ;LOAD BUFFER
      INC TDATA ;NEXT CHARACTER
      CMP LIMIT,TDATA ;HAVE ALL CHARACTERS
      BNE 1$ ;NO
      BIC #140,ADPTS ;YES, CLEAR INTERRUPTS
1$: RTI

;RECEIVE SEQUENTIAL DATA

RV18: TSTB ADPRS ;RECEIVER DONE??
      BMI .+4 ;YES
      HLT ;REPORT ERROR
      MOV RDATA,RO
      MOV ADPRB,R1
      CMP RDATA,ADPRB ;CORRECT DATA
      BEQ 1$
      MOV ADPRB,TMPDAT ;STORE DATA
      HLT 1 ;REPORT ERROR
1$: BIC #BIT0,ADPRS ;CLEAR STRIP SYNC
      INC RDATA ;NEXT CHARACTER
      CMP LIMIT,RDATA
      BNE 3$
      CLR RDATA
      CLR TDATA
      ASR LIMIT ;DECREASE LIMIT TO 7 BITS
      MOV #TV18,ADPTIV ;SET UP SYNC TRANSMISSION
      MOV #4,SCNT ;SYNC COUNT =4
      BIS #BIT0,ADPRS ;STRIP SYNC
      BIC #BIT11,ADPRS ;CLEAR RCV ACTIVE
      BIS #301,ADPTS
      BIS CHLEN,ADPRS ;CHANGE CHAR LENGTH
      ADD #400,CHLEN ;DECREASE CHAR LENGTH
2$: CMP #1400,CHLEN ;HAVE ALL LENGTHS BEEN TESTED
      BEQ 4$ ;YES
3$: RTI ;NO
4$: CLR ADPTS ;CLR TRANSMITTER STATUS
      CLR ADPRS ;CLR RECEIVER STATUS
      BIC #BITS,PS ;PRIORITY = 4
      MOV BACK,(SP)
DUADDR: MOVA DU ADDRESSES
        MOV DUBASE,RXCSR ;XXX0
        ADD #2,DUBASE
        MOV DUBASE,RXDBUF ;XXX2

```


1765	007230	013737	007270	001356	22500
1766	007236	062737	000002	007270	22600
1767	007244	013737	007270	001360	22700
1768	007252	062737	000002	007270	22800
1769	007260	013737	007270	001362	22900
1770	007266	000207			23000
1771	007270	000000			23100
1772					23200
1773					23300
1774					23400
1775					23500
1776					23600
1777	007272	105737	001250		23700
1778	007276	001510			23800
1779	007300	005737	001264		23900
1780	007304	001007			24000
1781	007306	104403	012113		24100
1782	007312	013700	001264		24200
1783	007316	000000			24300
1784					24400
1785	007320	000137	001642		24500
1786	007324	062737	000010	001252	24600
1787	007332	062737	000010	001260	24700
1788	007340	000241			24800
1789	007342	006137	001266		24900
1790	007346	103412			25000
1791					25100
1792	007350	033737	001266	001264	25200
1793	007356	001762			25300
1794	007360	004737	007424		25400
1795	007364	004737	006334		25500
1796	007370	000137	007540		25600
1797	007374	012737	000001	001266	25700
1798					25800
1799	007402	013737	001254	001252	25900
1800	007410	013737	001262	001260	26000
1801	007416	004737	007424		26100
1802	007422	000436			26200
1803	007424	013737	001252	007270	26300
1804	007432	004737	007200		26400
1805	007436	013737	001260	001364	26500
1806	007444	062737	000002	001260	26600
1807	007452	013737	001260	001366	26700
1808	007460	062737	000002	001260	26800
1809	007466	012737	001260	001370	26900
1810	007474	062737	000002	001260	27000
1811	007502	013737	001260	001372	27100
1812	007510	013737	001364	001260	27200
1813	007516	000207			27300
1814					27400
1815					27500
1816	007520				27600
1817	007520	013701	000042		27700
1818	007524	001405			27800
1819	007526	000005			27900
1820	007530	004711			28000

```

MOV DUBASE,PARCSR ;XXX2
ADD #2,DUBASE
MOV DUBASE, TXCSR ;XXX4
ADD #2,DUBASE
MOV DUBASE, TXDBUF ;XXX6
RTS PC
DUBASE: 0

;THE FOLLOWING CALCULATES THE NEXT DEVICE ADDRESS AND ASSOCIATED
;VECTOR ADDRESSES IF RUNNING MULTIPLE DEVICES (DU11...DFC11'S)
DU.UPDATE: TSTB MULTD ;ARE YOU RUNNING MULTIPLE DEVICES ?
BEQ CCC ;NO JUMP AROUND
TST ACTREG ;ARE ANY DEVICES ACTIVE ?
BNE RUNIT ;YES
TYPE MCOW ;NO
MOV ACTREG,RO ;DISPLAY ACTREG
HALT ;SELECT SOMETHING TO RUN @ ACTREG:
;SELECT SWITCHES & HIT CONTINUE (PUT SW00 =1)
JMP DU11 ;START OVER AGAIN..... YOU DESELECTED EVERYTHING
RUNIT: ADD #10,BASEADD ;NEXT BLOCK (ADDRESSES)
ZERO: ADD #10,BASEIV ;NEXT BLOCK (VECTORS)
CLC
ROL ROTADD ;UP DATE ROTATING POINTER
BCS 2$ ;IS IT THE LAST DEVICE
;TO BE TESTED IN THIS PASS ?
BIT ROTADD,ACTREG ;TEST THIS DEVICE FOR ACTIVE STATUS
BEQ RUNIT ;IF NOT ACTIVE, TRY NEXT ADDRESS
JSR PC,REPLAY ;CALCULATE NEW PARAMETERS
JSR PC,OKADR ;CHECK FOR GOOD ADDRESS
JMP ARESTRT ;YES IT WAS ACTIVE, TEST THIS DEVICE
2$: MOV #1,ROTADD ;OK! NOW SET UP ROTATING
;POINTER FOR NEXT MULTIPLE PASS
MOV KEEPADD,BASEADD ;RESTORE BASE ADDRESS
MOV KEEPIV,BASEIV ;RESTORE BASE INTERRUPT VECTORS
JSR PC,REPLAY ;CALC NEW PARAMETERS
BR CCC ;JUMP AROUND REPLAY
REPLAY: MOV BASEADD,DUBASE ;SET UP FOR NEW ADDRESSES
JSR PC,DUADDR ;CREATE NEW ADDRESSES
MOV BASEIV,DURIV ;CREATE DURIV
ADD #2,BASEIV
MOV BASEIV,DURIS ;CREATE DURIS
ADD #2,BASEIV
MOV BASEIV,DUTIV ;CREATE DUTIV
ADD #2,BASEIV
MOV BASEIV,DUTIS ;CREATE DUTIS
MOV DURIV,BASEIV ;RESTORE
RTS PC

CCC: MOV @#42,R1 ;CHECK FOR ACT-11 OR DDP
BEQ ARESTRT ;IF NOT, CONTINUE TESTING
LOGICAL: JSF PC,(R1)
  
```

M03

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1821	007532	000240			28100		NOP		
1822	007534	000240			28200		NOP		
1823	007536	000240			28300		NOP		
1824	007540	012737	000340	177776	28400	ARESTRT:	MOV	#340,PS ;PREVENT INTERRUPTS (PRIO: 7)	
1825	007546	000177	171434		28500		JMP	@CONT.	
1826					28600				
1827	007552	017637	000000	001106		.DELAY:	MOV	@(SP),TEMP3 ;SET UP COUNT	
1828	007560	062716	000002				ADD	#2,(SP)	
1829	007564	011637	001110				MOV	(SP),TEMP4	
1830	007570	022626					POP	SP	
1831	007572	005037	177776				CLR	PS	
1832	007576	162737	001106				SUB	(PC)+,TEMP3 ;FOR A SMALLER DELAY TIME	
1833	007602					LESS.TIME:		;PUT A NUMBER IN HERE TO BE	
1834	007602	000000					000	;SUBTRACTED FROM TOTAL.	
1835	007604	062737	001106				ADD	(PC)+,TEMP3 ;FOR A LONGER DELAY TIME	
1836	007610					MORE.TIME:		;PUT A NUMBER IN HERE TO BE ADDED	
1837	007610	000000					000	;TO THE TOTAL TIME.	
1838	007612	162737	000001	001106		1\$:	SUB	#1,TEMP3 ;TIME OUT	
1839	007620	001374					BNE	1\$	
1840	007622	000177	171262				JMP	@TEMP4 ;NO	
1841									


```

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1845 007626 032737 040000 177570
1846 007634 001407
1847 007636 000432
1848 007640 105777 171204
1849 007644 100027
1850 007646 017700 171200
1851 007652 000412
1852 007654 032737 004000 177570
1853 007662 001006
1854 007664 005237 001070
1855 007670 023737 001070 001066
1856 007676 001012
1857 007700 105037 001242
1858 007704 005037 001070
1859 007710 012737 000062 001066
1860 007716 013737 001062 001060
1861 007724 013716 001060
1862 007730 000002
1863 007732 001407
1864 007734 000432
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1873 007736 005037 001100
1874 007742 105037 001242
1875 007746 005237 001074
1876 007752 104403
1877 007754 011410
1878 007756 104407
1879 007760 010020
1880 007762 105737 001144
1881 007766 100402
1882 007770 005237 001156
1883 007774 013737 001074 177570
1884 010002 005737 001234
1885 010006 001002
1886 010010 000137 007272
1887 010014 000177 171166
1888 010020 000001
1889 010022 006 002
1890 010024 001210
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1894 010026 032737 001000 177570
1895 010034 001402
1896 010036 013716 001064
1897 010042 000002

;SCOPE LOOP AND INTERATION HANDLER
.SCOPE: BIT #BIT14,SWR
TTST: BEQ 1$
BR 3$
TSTB @TKCSR
BPL 3$
MOV @TKDBR,RO
BR 2$
1$: BIT #SW11,SWR.
BNE 2$
INC LPCNT
CMP LPCNT,ICOUNT
BNE 3$
2$: CLRB ERRFLG
CLR LPCNT
MOV #50.,ICOUNT
MOV NEXT,RETURN
3$: MOV RETURN,(SP)
RTI
BRW: 1407
BRX: 432

;END OF PASS
;TYPE "END OF PASS CSR: XXXXXX"
;UPDATE PASS COUNT
;UPDATE LINE NUMBER
;IF IN CYCLE MODE
;RESTART TEST
.EOP: CLR LSTERR ;CLEAR LAST ERROR PC
CLRB ERRFLG ;CLEAR ERROR FLAG
INC PASCNT ;UPDATE PASS COUNT
TYPE
MEPASS
CNVRT
XCSR
TSTB SAVSR1
BMI .+6
INC XLINX
MOV PASCNT,LIGHTS ;DISPLAY PASS COUNT
TST TAG ;DP OR DU
BNE RESTRT ;DP
JMP DU.UPDATE ;DU
RESTRT: JMP @CONT. ;CONTINUE TO TEST APPRO. DEVICE
XCSR: 1
.BYTE 6,2
DEVICE

;CHECK FOR FREEZE ON CURRENT DATA
.SCOPE1: BIT #SW09,SWR
BEQ 1$
MOV LOCK,(SP)
1$: RTI

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010044 017605 000000
010050 062716 000002
010054 032737 010000 177570
010062 001010
010064 105715
010066 001406
010070 105777 170760
010074 100375
010076 112577 170754
010102 000764
010104 000002

010106 032737 010000 177570
010114 001406
010116 105777 170732
010122 100003
010124 112777 000207 170724
010132 032737 020000 177570
010140 001067
010142 021637 001100
010146 001404
010150 011637 001100
010154 105037 001242
010160 104034
010162 011605
010164 162705 000002
010170 011504
010172 006304
010174 061504
010176 006304
010200 042704 177001
010204 062704 013632
010210 012437 010270
010214 012437 010302
010220 011437 010314
010224 105737 001242
010230 001403
010232 005737 010314
010236 001022
010240 104403
010242 000001
010244 104403
010246 011456
010250 104407
010252 010404
010254 104403
010256 011473
010260 112737 177777 001242
010266 104403
010270 000000
010272 005737 010302

; TELETYPE OUTPUT ROUTINE
.TYPE: MOV @ (SP), R5
ADD #2, (SP)
1\$: BIT #SW12, SWR
BNE 3\$
TSTB (R5)
BEQ 3\$
2\$: TSTB @TPCSR
BPL 2\$
MOVB (R5)+, @TPDBR
BR 1\$
3\$: RTI

; ERROR HANDLER
.HLT: BIT #SW12, SWR
BEQ XBX
TSTB @TPCSR
BPL XBX
MOVB #207, @TFDBR
XBX: BIT #SW13, SWR
ENE HALTS
CMP (SP), LSTERR
BEQ 1\$
MOV (SP), LSTERR
1\$: CLRB ERRFLG
SAVOS
MOV (SP), R5
SUB #2, R5
MOV (R5), R4
ASL R4
ADD (R5), R4
ASL R4
BIC #177001, R4
ADD #.ERRTAB, R4
MOV (R4)+, ERRMSG
MOV (R4)+, DATAHD
MOV (R4), DATABP
TSTB ERRFLG
BEQ TYPMSG
TST DATABP
BNE TYPDAT
TYPMSG: TYPE
WHO: .BLKW 1
TYPE
MERRPC
CNVRT
ERTAB0
TYPE
MCRLF
MOVB #-1, ERRFLG
ERRMSG: 0
TST DATAHD


```

1954 010276 001402
1955 010300 104403
1956 010302 000000
1957 010304 005737 010314
1958 010310 001402
1959 010312 104406
1960 010314 000000
1961 010316 104405
1962 010320 005737 177570
1963 010324 100005
1964 010326 010046
1965 010330 016600 000002
1966 010334 000000
1967 010336 012600
1968 010340 005237 001076
1969 010344 032737 000400 177570
1970 010352 001007
1971 010354 032737 002000 177570
1972 010362 001407
1973 010364 013737 001062 001060
1974 010372 012706 001050
1975 010376 000177 170456
1976 010402 000002
1977 010404 000001
1978 010406 006 002
1979 010410 001142
1980
1981
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1983 010412 104403
1984 010414 011473
1985 010416 017601 000000
1986 010422 013737 013756 001106
1987 010430 062716 000002
1988 010434 012137 010604
1989 010440 112137 010606
1990 010444 112137 010607
1991 010450 013137 010610
1992 010454 013704 010610
1993 010460 113705 010606
1994 010464 012700 0.3756
1995 010470 010403
1996 010472 042703 177770
1997 010476 062703 000260
1998 010502 110320
1999 010504 000241
2000 010506 006004
2001 010510 000241
2002 010512 006004
2003 010514 000241
2004 010516 006004
2005 010520 005305
2006 010522 001362
2007 010524 012703 014020
2008 010530 114023
2009 010532 105337 010606

```

```

BEQ TYPDAT
TYPE
DATAHD: 0
TYPDAT: TST DATABP
BEQ RESREG
CONVRT
DATABP: 0
RESREG: RESOS
HALTS: TST SWR
BPL EXITER
PUSHRO
MOV 2(SP),RO
HALT
POPPO
EXITER: INC ERRCNT
BIT #SW09,SWR
BNE 1$
BIT #SW10,SWR
BEQ 2$
MOV NEXT,RETURN
1$: MOV #STACK,SP
JMP JRETURN
2$: RTI
ERTABO: 1
.BYTE 6,2
SAVPC

```

;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER

```

.CONVR: TYPE
MCR LF
.CNVRT: MOV 2(SP),R1
MOV TEMP,TEMP3
ADD #2,(SP)
MOV (R1)+,WORDCNT
1$: MOVB (R1)+,CHRCNT
MOVB (R1)+,SPACNT
MOV 2(R1)+,BINWRD
2$: MOV BINWRD,R4
MOVB CHRCNT,R5
MOV #TEMP,RO
3$: MOV R4,R3
BIC #177770,R3
ADD #260,R3
MOVB R3,(RO)+
CLC
ROR R4
CLC
ROR R4
CLC
ROR R4
DEC R5
BNE 3$
4$: MOV #MDATA,R3
MOVB -(RO),(R3)+
DECB CHRCNT

```

2010	010536	001374			BNE	4\$	
2011	010540	105737	010607		TSTB	SPACNT	
2012	010544	001405			BEQ	6\$	
2013	010546	112723	000240		5\$:	MOV	#240,(R3)+
2014	010552	105337	010607		DECB	SPACNT	
2015	010556	001373			BNE	5\$	
2016	010560	105013			6\$:	CLRB	(R3)
2017	010562	104403			TYPE		
2018	010564	014020			MDATA		
2019	010566	005337	010604		DEC	WRDCNT	
2020	010572	001322			BNE	1\$	
2021	010574	013737	001106	013756	MOV	TEMP3,TEMP	
2022	010602	000002			RTI		
2023	010604	000000			WRDCNT:	0	
2024	010606	000000			CHRCNT:	0	
2025		010607			SPACNT=CHRCNT+1		
2026	010610	000000			BINWRD:	0	
2027							
2028							
2029							
2030							
2031	010612	016637	000004	001142	.SAV05:	MOV	4(SP),SAVPC
2032							
2033							
2034	010620	010537	001136		SV05:	MOV	R5,SAVR5
2035	010624	010437	001134		MOV	R4,SAVR4	
2036	010630	010337	001132		MOV	R3,SAVR3	
2037	010634	010237	001130		MOV	R2,SAVR2	
2038	010640	010137	001126		MOV	R1,SAVR1	
2039	010644	010037	001124		MOV	R0,SAVR0	
2040	010650	000002			RTI		
2041							
2042							
2043							
2044	010652	013700	001124		.RES05:	MOV	SAVR0,R0
2045	010656	013701	001126		MOV	SAVR1,R1	
2046	010662	013702	001130		MOV	SAVR2,R2	
2047	010666	013703	001132		MOV	SAVR3,R3	
2048	010672	013704	001134		MOV	SAVR4,R4	
2049	010676	013705	001136		MOV	SAVR5,R5	
2050	010702	000002			RTI		
2051							
2052							
2053							
2054	010704	011605			.PARAM:	MOV	(SP),R5 ;PUT CONTENTS OF SP INTO R5
2055	010706	012537	011060		MOV	(R5)+,LOLIM	;PUT LOW LIMIT INTO LOLIM
2056	010712	012537	011062		MOV	(R5)+,HILIM	;PUT HIGH LIMIT INTO HILIM
2057	010716	012537	011064		MOV	(R5)+,DEVADR	;PUT STORE LOC INTO DEVADR
2058	010722	112537	011066		MOVB	(R5)+,LOBITS	;PUT MASK INTO LOBITS
2059	010726	112537	011067		MOVB	(R5)+,ADRCNT	;PUT COUNT INTO ADRCNT
2060	010732	010516			MOV	R5,(SP)	;RESTORE RETURN ADDR ON STACK FOR RTI
2061	010734	005005			PARAM1:	CLR	R5
2062	010736	012704	014062		MOV	#INBUF,R4	
2063	010742	122714	000015		CMPB	#15,(R4)	;CR ?
2064	010746	001420			BEQ	PARERR	;YOU TYPED CR TOO SOON !
2065	010750	121427	000060		1\$:	CMPB	(R4),#60 ;LOW LIMIT ASCII 0

E04

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2066	010754	002415			BLT	PARERR	
2067	010756	121427	000067		CMPB	(R4), #67	;HIGH LIMIT ASCII 7
2068	010762	003012			BGT	PARERR	
2069	010764	142714	000060		BICB	#60, (R4)	;CONVERT TO OCTAL
2070	010770	152405			BISB	(R4)+, R5	;STORE AWAY ITS AN OK CHAR
2071	010772	122714	000015		CMPB	#15, (R4)	;CR ?
2072	010776	001406			BEQ	LIMITS	;NOW CHECK FOR HIGH & LOW LIMIT CONDS
2073	011000	006305			ASL	R5	;ALLOCATE ROOM FOR NEXT CHAR
2074	011002	006305			ASL	R5	
2075	011004	006305			ASL	R5	
2076	011006	000760			BR	1\$	
2077	011010	104413			PARERR:	INSTER	;RETRY
2078	011012	000750			BR	PARAM1	
2079							
2080							;TEST TO SEE IF NUMBER IS WITHIN LIMITS
2081							
2082	011014	020537	011062		LIMITS:	CMP	R5, HILIM
2083	011020	101373			BHI	PARERR	;THE # IS TOO HIGH
2084	011022	020537	011060		CMP	R5, LOLIM	
2085	011026	103770			BLO	PARERR	;THE # IS TOO LOW
2086	011030	133705	011066		BITB	LOBITS, R5	;TEST BY MASKING THE #
2087	011034	001365			BNE	PARERR	
2088							
2089							;STORE NUMBER AT SPECIFIED ADDRESS
2090							
2091	011036	013704	011064		1\$:	MOV	DEVADR, R4
2092	011042	010524				MOV	R5, (R4)+
2093	011044	062705	000002			ADD	#2, R5
2094	011050	105337	011067			DECB	ADRCNT
2095	011054	001372				BNE	1\$
2096	011056	000002				RTI	
2097	011060	000000					
2098	011062	000000			LOLIM:	0	
2099	011064	000000			HILIM:	0	
2100	011066	000000			DEVADR:	0	
2101		011067			LOBITS:	0	
2102					ADRCNT=	LOBITS+1	
2103							;ASCII STRING INPUT ROUTINE
2104							
2105	011070	017637	000000	011104	.INSTR:	MOV	@(SP), .MSG
2106	011076	062716	000002			ADD	#2, (SP)
2107	011102	104403			.INST1:	TYPE	
2108	011104	000000			.MSG:	0	
2109	011106	012704	014062			MOV	#INBUF, R4
2110	011112	012703	000007			MOV	#7, R3
2111	011116	105777	167726		1\$:	TSTB	@TKCSR
2112	011122	100375				BPL	1\$
2113	011124	117714	167722			MOVB	@TKDBR, (R4)
2114	011130	142714	000200			BICB	#200, (R4)
2115	011134	122427	000015			CMPB	(R4)+, #15
2116	011140	001413				BEQ	INSTR2
2117	011142	105777	167706		2\$:	TSTB	@TPCSR
2118	011146	100375				BPL	2\$
2119	011150	117777	167676	167700		MOVB	@TKDBR, @TPDBR
2120	011156	005303				DEC	R3
2121	011160	001356				BNE	1\$

2122	011162	104403		
2123	011164	012243		
2124	011166	000745		
2125	011170	000002		
2126				
2127				
2128				
2129				
2130				
2131				
2132	011172	017605	000000	
2133	011176	122737	000116	014062
2134	011204	001002		
2135	011206	105015		
2136	011210	000406		
2137	011212	122737	000131	014062
2138	011220	001005		
2139	011222	112715	177777	
2140	011226	062716	000002	
2141	011232	000002		
2142	011234	104413		
2143	011236	000755		
2144	011240	105777	167604	
2145	011244	100005		
2146	011246	005777	167600	
2147	011252	013737	001062	001060
2148	011260	013716	001060	
2149	011264	000002		
2150				
2151				
2152				
2153				
2154				
2155	011266	011646		
2156	011270	162716	000002	
2157	011274	017616	000000	
2158	011300	006316		
2159	011302	042716	177001	
2160	011306	062716	001270	
2161	011312	017616	000000	
2162	011316	000136		
2163				01400
2164				01500
2165				01600
2166				01700
2167				01800
2168				01900
2169				02000
2170	011320	005015	050104	030461
	011345	015	042012	030525
	011372	005015	053520	020122
	011410	003407	005015	047105
	011433	015	052012	051505
	011447	114	047111	035105
	011456	005015	051105	047522
	011473	015	000012	03100

```

.INSTE: TYPE
MQM ;?
BR .INST1 ;RETRY
INSTR2: RTI

;COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
;BUFFER TO THE CHARACTERS "N" AND "Y"
;IF THE CHARACTER IS "N" CLEAR THE FLAG
;IF THE CHARACTER IS "Y" SET THE FLAG

.SETFLG:MOV @ (SP),R5
CMPB #'N,INBUF ;IS IT "N" ?
BNE 1$
CLRB (R5) ;000
BR 2$
1$: CMPB #'Y,INBUF ;IS IT "Y" ?
BNE 3$
MOVB #-1,(R5) ;377
2$: ADD #2,(SP)
RTI
3$: INSTER ;RETRY
BR .SETFLG
.SCOF2: TSTB @TKCSR
BPL 3$
TST @TKDBR
MOV NEXT,RETURN
3$: MOV RETURN,(SP)
RTI
;TRAP DISPATCH SERVICE
;ARGUMENT OF TRAP IS EXTRACTED
;AND USED AS OFFSET TO OBTAIN POINTER
;TO SELECTED SUBROUTINE

.TRPSR: MOV (SP),-(SP) ;GET PC OF RETURN
SUB #2,(SP) ;=PC OF TRAP
MOV @ (SP),(SP) ;GET TRP
TRPOK: ASL (SP) ;MULTIPLY TRAP ARG BY 2
BIC #177001,(SP) ;CLEAR UNWANTED BITS
ADD #.TRPTAB,(SP) ;POINTER TO SUBROUTINE ADDRESS
MOV @ (SP),(SP) ;SUBROUTINE ADDRESS
JMP @ (SP)+ ;GO TO SUBROUTINE

;*****
;TTY MESSAGES
;*****

EDP11: .ASCIZ <15><12>?DP11/DFC11-A TEST ?
EDU11: .ASCIZ <15><12>?DU11/DFC11-A TEST ?
MPOWER: .ASCIZ <15><12>/PWR FAILED /
MEPASS: .ASCIZ <7><7><15><12>/END PASS CSR: /
MTSTN: .ASCIZ <15><12>/TEST NO. /
MLINE: .ASCIZ /LINE: /
MERRPC: .ASCIZ <15><12>/ERROR PC: /
MCRLF: .ASCIZ <15><12>

```


011476	005015	042012	053105	03200
011542	042115	030455	026461	03300
011563	015	005012	042504	03400
011627	115	026504	030461	03500
011650	005015	042526	052103	03600
011672	005015	051461	020124	03700
011753	015	040412	042522	03800
012032	005015	040514	052123	03900
012113	015	020012	027056	04000
012162	005015	052517	020124	04100
012243	040	037440	000040	04200
012250	005015	020122	000	04300
				04400
012255	015	051012	043505	04500
012276	005015	051124	047101	04600
012316	005015	042522	042503	04700
012333	015	052412	042516	04800
012363	105	050130	041505	04900
012407	106	044501	042514	05000
012434	047111	042524	052522	05100
012466	005015	051124	050101	05200
012506	005015	054523	052123	05300
012535	015	050012	052125	05400
012600	005015	051511	052040	05500
012663	015	042012	020117	05600
012773	015	052012	042510	05700
013112	034461	030062	020060	05800
013122	033071	030060	020040	05900
013131	064	030070	020060	06000
013140	032062	030060	020040	06100
013147	061	030062	020060	06200
013156	030066	020060	000040	06300
013164	030063	020060	000040	06400
013172	032461	020060	000040	06500
013200	032467	020040	000	06600
013205	015	041412	047101	06700
013245	123	020127	032061	06800
013306	005015	047531	051125	06900
013334	041040	052501	027104	07000
013402	005015	047504	054440	07100
013465	015	054412	052517	07200
013547	015	042012	020117	09100
				09200
				09600
2171	013632	000000		09700
2172	013634	000000		09800
2173	013636	000000		09900
2174	013640	011473		10000
2175	013642	012363		10100
2176	013644	013720		10200
2177				10300
2178	013646	012255		10400
2179	013650	012363		10500
2180	013652	013732		10600
2181				10700
2182	013654	012276		10800

```

DUTITLE: .ASCII <15><12><12>/DEVICE UNDER TEST-DU11 &DFC11A /<15><12>
          .ASCIZ /MD-11-DZDFA-B /<15><12>
DPTITLE: .ASCII <15><12><12>/DEVICE UNDER TEST-DP11 &DFC11A /<15><12>
          .ASCIZ /MD-11-DZDFA-B /<15><12>
MVECTO: .ASCIZ <15><12>/VECTOR ADDRESS-/
MREGAD: .ASCIZ <15><12>/1ST DEVICE: RECEIVER CONTROL REGISTER ADDRESS-/
MMULT: .ASCIZ <15><12>/ARE YOU RUNNING MULTIPLE DEVICES ? (Y OR N)-/
MLASTD: .ASCIZ <15><12>/LAST DEVICE:RECEIVER CONTROL REGISTER ADDRESS-/
MCOW: .ASCIZ <15><12>/...SELECT SOMETHING TO RUN &ACTREG /
MRANGE: .ASCIZ <15><12>/OUT OF RANGE:RETYPE LAST DEVICE RXCSR ADDRESS-/
MQM: .ASCIZ / ? /
MR: .ASCIZ <15><12>/R /

EM1: .ASCIZ <15><12>/REG. ADDRESS /
EM2: .ASCIZ <15><12>/TRANSMITTER /
EM3: .ASCIZ <15><12>/RECEIVER /
EM4: .ASCIZ <15><12>/UNEXPECTED INTERRUPT /
DHO: .ASCIZ /EXPECTED RECEIVED /
DH1: .ASCIZ /FAILED TO INTERRUPT. /
DH2: .ASCIZ /INTERRUPTED UNEXPECTEDLY. /
DH3: .ASCIZ <15><12>/TRAPPED FROM /
MNOLOCK: .ASCII <15><12>/SYSTEM HAS NO CLOCK!!/
MSCOPBAUD: .ASCIZ <15><12>/PUT UP SWITCH 14 FOR SCOPE LOOP /
MCPS: .ASCIZ <15><12>/IS THE AC LINE INPUT 60 CYCLES? (Y OR N) --- /
MRBAUD: .ASCIZ <15><12>/DO YOU STILL WISH TO RUN BAUD TEST USING SCOPE LOOP? (
MNODEV: .ASCIZ <15><12>/THERE IS NO DEVICE PRESENT AT THE ADDRESS YOU SELECTED-
M19200: .ASCIZ /19200 /
M9600: .ASCIZ /9600 /
M4800: .ASCIZ /4800 /
M2400: .ASCIZ /2400 /
M1200: .ASCIZ /1200 /
M600: .ASCIZ /600 /
M300: .ASCIZ /300 /
M150: .ASCIZ /150 /
M75: .ASCIZ /75 /
MWRONGRT: .ASCII <15><12>/CAN'T DETERMINE RATE--PUT UP/<15><12>
          .ASCIZ /SW 14 IF SCOPE LOOP IS WANTED. /
MBAUDRT: .ASCIZ <15><12>/YOUR BAUD RATE IS /
MWRITE: .ASCIZ / BAUD. IF NOT CORRECT, USE A SCOPE!!!/
MBDRT: .ASCIZ <15><12>/DO YOU WISH TO CHECK BAUD RATE? (Y OR N) --- /
MTSTM: .ASCIZ <15><12>/YOU TOOK TOO LONG TO SCOPE OR DFC FAILED TEST. /
MBDTEST: .ASCIZ <15><12>/DO YOU WANT TO RUN BAUD RATE TEST? (Y OR N) --- /
.EVEN
.ERRTAB:
0
0
0
MCRLF
DHO ;HALT 1
DHO
DHO
EM1
DHO ;HALT 2
DT1
EM2

```

H04

2183	013656	012407		10900		DH1	;HALT 3
2184	013660	000000		11000		0	
2185				11100			
2186	013662	012316		11200		EM3	
2187	013664	012407		11300		DH1	;HALT 4
2188	013666	000000		11400		0	
2189				11500			
2190	013670	012276		11600		EM2	
2191	013672	012434		11700		DH2	;HALT 5
2192	013674	000000		11800		0	
2193				11900			
2194	013676	012316		12000		EM3	
2195	013700	012434		12100		DH2	;HALT 6
2196	013702	000000		12200		0	
2197				12300			
2198	013704	011473		12400		MCRLF	
2199	013706	013465		12500		MTSTM	;HALT 7
2200	013710	000000		12600		0	
2201				12700			
2202	013712	012333		12800		EM4	
2203	013714	012466		12900		DH3	;HALT 10
2204	013716	013750		13000		DT2	
2205	013720	000002		13100	DT0:	2	
2206	013722	006	004	13200		.BYTE	6,4
2207	013724	001124		13300		SAVRO	
2208	013726	006	002	13400		.BYTE	6,2
2209	013730	001126		13500		SAVRI	
2210				13600			
2211	013732	000003		13700	DT1:	3	
2212	013734	006	010	13800		.BYTE	6,8.
2213	013736	001110		13900		TEMP4	
2214	013740	006	004	14000		.BYTE	6,4
2215	013742	001124		14100		SAVRO	
2216	013744	006	002	14200		.BYTE	6,2
2217	013746	001126		14300		SAVRI	
2218				14400			
2219	013750	000001		14500	DT2:	1	
2220	013752	006	002	14600		.BYTE	6,2
2221	013754	006012		14700		TRP.PC	
2222	013756	000000		14800			
2223		014020		14900	TEMP:	0	
2224	014020	000000		15000	.=. +40		
2225		014062		15100	MDATA:	0	
2226	014062	000000		15200	.=. +40		
2227		014124		15300	INBUF:	0	
2228		000001		15400	.=. +40		
					.END		

E05

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 DZDFAB.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

ADD	878	1593	1751	1763	1766	1768	1786	1787	1806	1808	1810	1828	1835	1902	1931
	1934	1997	1997	2093	2106	2140	2160								
ASL	1563	1566	1567	1568	1930	1932	2073	2074	2075	2158					
ASR	1564	1744													
BCS	877	1790													
BEQ	787	791	823	903	948	958	973	978	1016	1029	1037	1050	1131	1143	1253
	1270	1323	1326	1344	1351	1501	1509	1516	1604	1678	1715	1735	1753	1778	1793
	1818	1846	1895	1906	1916	1923	1939	1954	1958	1972	2012	2064	2072	2116	
BGE	1110	1186	1207	1253											
BGT	2068														
BHI	880	2083													
BIC	946	971	975	1078	1090	1121	1124	1141	1209	1210	1232	1233	1246	1255	1268
	1305	1340	1354	1559	1589	1724	1738	1748	1757	1933	1996	2159			
BICB	2069	2114													
BIS	874	881	1071	1074	1083	1101	1165	1167	1172	1196	1197	1301	1307	1345	1517
	1675	1680	1691	1692	1747	1749	1750								
BISB	2070														
BIT	790	820	822	957	1028	1059	1500	1520	1677	1714	1792	1845	1852	1894	1903
	1915	1920	1969	1971											
BITB	2086														
BLO	1367	1380	1393	1406	1419	1432	1445	1458	2085						
BLOS	1363	1376	1389	1402	1415	1428	1441	1454							
BLT	2066														
BMI	795	858	1238	1572	1591	1718	1730	1881							
BNE	766	780	817	821	950	956	960	1008	1085	1092	1107	1183	1204	1250	1315
	1336	1338	1342	1521	1628	1696	1698	1707	1723	1741	1780	1839	1853	1856	1885
	1904	1921	1941	1970	2006	2010	2015	2020	2087	2095	2121	2134	2138		
BPL	759	1849	1908	1918	1963	2112	2118	2145							
BR	774	796	825	886	1088	1112	1128	1221	1261	1346	1482	1488	1518	1560	1601
	1614	1642	1646	1683	1802	1847	1851	1910	2076	2078	2124	2136	2143		
CLC	875	1788	1999	2001	2003										
CLR	499	504	505	506	759	760	762	804	810	811	812	859	860	873	940
	941	942	954	985	986	1004	1097	1104	1105	1119	1127	1180	1181	1191	1201
	1202	1212	1214	1228	1230	1247	1248	1257	1259	1299	1332	1333	1478	1548	1557
	1562	1602	1625	1671	1672	1673	1674	1742	1743	1755	1756	1831	1858	1873	2061
CLRB	757	761	805	1670	1857	1874	1925	2016	2135						
CMP	879	947	972	977	1091	1109	1130	1142	1185	1206	1252	1262	1269	1325	1350
	1362	1366	1375	1379	1388	1392	1401	1405	1414	1418	1427	1431	1440	1444	1453
	1457	1484	1490	1626	1627	1644	1722	1734	1740	1752	1855	1922	2082	2084	
CMPB	2063	2065	2067	2071	2115	2133	2137								
COM	758														
COMB	781	819													
DEC	764	959	1084	1237	1335	1337	1697	1706	2005	2019	2120				
DECB	2009	2014	2094												
EMT	462														
HALT	488	1039	1511	1551	1556	1645	1659	1783	1966						
INC	949	955	1022	1106	1108	1182	1184	1203	1205	1249	1251	1341	1533	1580	1582
	1586	1695	1721	1739	1854	1875	1882	1968							
INCB	1682														
JMP	500	507	510	788	793	828	861	896	904	906	992	1009	1018	1030	1040
	1042	1043	1061	1198	1316	1327	1359	1365	1372	1378	1385	1391	1398	1404	1411
	1417	1424	1430	1437	1443	1450	1456	1463	1467	1499	1502	1512	1513	1523	1665
	1785	1796	1825	1840	1886	1887	1975	2162							
JSR	770	773	775	776	838	840	987	1006	1313	1609	1794	1795	1801	1804	1820
MOV	503	751	752	753	754	755	756	763	778	789	792	801	802	803	806
	807	808	809	813	814	815	824	827	839	841	850	851	872	884	885

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DZDFAB.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

.REPT	488								
.TITLE	415								
.WORD	580	581	582	583	584	585	586	765	

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERAT 0

*.DZDFAB.SEQ/SOL/CRF/...UM=DZDFAB
RUN-TIME: 13 21 3 SECONDS
RUN-TIME RATIO: 108/38=2.8
CORE USED: 13K (25 PAGES)

