

# DFC-11A

OFF-LINE EXERCISER  
MD-11-DZDFA-C

EP-DZDFA-C-DL-B

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FICHE 1 OF 1

DEC 1976

**digital**

MADE IN USA

This microfiche card contains a grid of frames. The left side of the card is filled with a grid of frames, each containing a small table or data set. The frames are arranged in approximately 15 rows and 6 columns. The data within the frames is too small to read clearly but appears to be organized in a structured format, possibly representing a list of items or a data table. The right side of the card is mostly blank, with some faint markings and a small vertical strip of data at the bottom right corner.

.REM \$

## IDENTIFICATIONS

PRODUCT CODE: MAINDEC-11-DZDFA-C-D  
PRODUCT NAME: DU11/DFC11 & DP11/DFC11 OFFLINE EXERCISOR  
DATE: DECEMBER 1976  
MAINTAINER: DIAGNOSTIC GROUP  
AUTHOR: R. OCHESTER/J. EGOLF/O. CHOATE

FIRST PRINTING, APRIL, 1975

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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 DF11 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  
\*\* WITH OR WITHOUT A HARDWARE SWITCH REGISTER (LOC. 177570)

- . 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: PAPER TAPE, 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

\*\*\*IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING  
WILL BE TYPED AFTER THE PROGRAM IDENTIFIES ITSELF:  
SWR=XXXXXX NEW= (REFER TO SECTION 4.1 FOR OPERATOR'S OPTION)\*\*\*

#### 4.1 CONTROL SWITCH SETTINGS

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

#### CONTROL:

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

- 1) TYPE CONTROL G (<↑G>); THIS WILL ALLOW THE TTY TO ENTER DATA INTO  
LOC. 176 AT SELECTED POINTS WITHIN THE PROGRAM.
- 2) THE MACHINE WILL THEN TYPE: SWR=XXXXXXNEW= (XXXXXX IS THE OCTAL CONTENTS  
OF THE SOFTWARE SWITCH REGISTER.)
- 3) AFTER THE ''NEW='' HAS BEEN TYPED THEN THE OPERATOR CAN DO ONE  
OF THE FOLLOWING AT THE TTY:
  - A) TYPE A NUMBER TO BE LOADED INTO LOC. 176 FOLLOWED BY A <CR>.  
(ONLY NUMBERS BETWEEN 0-7 WILL BE ACCEPTED AND ONLY 6 NUMBERS  
WILL BE ALLOWED)  
IF A <CR> IS THE FIRST KEY DEPRESSED THE SOFTWARE SWITCH  
REGISTER CONTENTS WILL NOT BE CHANGED.
  - B) IF A CONTROL U (<↑U>) IS DEPRESSED THEN THE PROGRAM WILL SEND YOU  
BACK TO STEP 2.
- 2) THE MACHINE WILL THEN TYPE: SWR=XXXXXXNEW= (XXXXXX IS THE OCTAL CONTENTS  
OF THE SOFTWARE SWITCH REGISTER.)
- 3) AFTER THE ''NEW='' HAS BEEN TYPED THEN THE OPERATOR CAN DO ONE  
OF THE FOLLOWING AT THE TTY:
  - A) TYPE A NUMBER TO BE LOADED INTO LOC. 176 FOLLOWED BY A <CR>.  
(ONLY NUMBERS BETWEEN 0-7 WILL BE ACCEPTED AND ONLY 6 NUMBERS  
WILL BE ALLOWED)  
IF A <CR> IS THE FIRST KEY DEPRESSED THE SOFTWARE SWITCH  
REGISTER CONTENTS WILL NOT BE CHANGED.
  - B) IF A CONTROL U (<↑U>) IS DEPRESSED THEN THE PROGRAM WILL SEND YOU  
BACK TO STEP 2.

## 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

HALT PC: XXXXX THIS IS MEMORY ADDRESS +2 LOCATION. BACK UP 2 TO FIND ERROR 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 PLACED 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

H01

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DZDFAC.P11 20-SEP-76 14:36

SEQ 0008

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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I01

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SEQ 0009

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

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.REM 3  
+++++  
THE FOLLOWING DESCRIBES THE SWITCH SETTINGS FOR THE DFC11-A  
.....HOWEVER READ ENGINEERING'S BLURBS FOR THE STRAIGHT SKINNY  
+++++  
BAUD RATE SELECTION NOTE 1: A SCOPE LOOP IS AVAILABLE  
TO VERIFY BAUD RATE IF NO KW11  
IS AVAILABLE.

S2-4=1 150 BAUD  
S2-3=1 300 BAUD  
S2-6=1 600 BAUD  
S2-5=1 1200 BAUD  
S2-8=1 2400 BAUD  
S2-10=1 4800 BAUD  
S2-7=1 9600 BAUD  
S2-9=1 19200 BAUD  
NOTE 2: ALL OTHERS MUST BE ZERO  
FOR THE BAUD RATE SELECTION

+++++  
OTHER SWITCH SELECTIONS  
S1-1=1 REC CLK TURNED ON BY OFF TO ON CARRIER TRANSITION  
S1-1=0 NO EFFECT BY CARRIER TRANSITION

S1-2=1 ENABLE DFC-11A  
S1-2=0 DISABLE DFC-11A

S1-3=1 REC CLK TURNED ON BY 1ST MARK TO SPACE TRANSITION  
S1-3=0 NO CLK DATA HAS NO EFFECT

S1-4=1 REC CLK RESYNCD BY ANY MARK TO SPACE TRANSITION  
S1-4=0 NOT SYNCHRONIZED

S1-5=1 REC CLK TURNED OFF BY ON TO OFF CARRIER TRANSITION  
S1-5=0 TIME OUT AFTER NO DATA FOR .5 SEC

S1-8=1 EXTERNAL CLK  
S1-8=0 NOTHING

S1-9=1 CTS NO DELAY  
S1-9=0 CTS WITH DELAY BASED UPON THE SWITCH SETTINGS OF S1-6 & S1-7

S1-6	S1-7	
0	0	CTS DELAY =0 NOT APPLICABLE
0	1	CTS DELAY= .2 SEC
1	0	CTS DELAY= .1 SEC
1	1	CTS DELAY= .3 SEC

NOTE::::::::::S1-8 & S1-2 SWITCH SETTINGS ARE INTERACTIVE !!!!!!!!  
.PAGE

+++++  
TYPICAL DFC11 SWITCH SETTINGS FOR THE DU11 AND DP11 ARE AS FOLLOWS:::

	DU11	DP11
S1-1,2,3,4,5,6,7,8,9,10	S1-1,2,3,4,5,6,7,8,9,10	S1-1,2,3,4,5,6,7,8,9,10
1,1,1,1,1,0,0,0,1,1	1,1,1,1,1,0,0,0,1,1	1,1,1,1,1,0,0,0,1,1

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\*= 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

\*\*\*\*\*  
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

\*\*\*\*\*  
a  
;DP11/DU11-DFC11A  
;COPYRIGHT APRIL 1975, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754  
;REVISED 21-JUNE-76 BY O.CHOATE  
; A)SUPPORTS SOFTWARE SWITCH REGISTER  
; B)SUPPORTS THE DYNAMIC LOADING OF THE SOFTWARE SWITCH REGISTER  
; BY <↑G>.

; 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

# L01

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SEQ 0012

469			
470	100000	SW15=100000	:=1, HALT ON ERROR
471	040000	SW14=40000	:=1, LOOP ON CURRENT TEST
472	020000	SW13=20000	:=1, INHIBIT ERROR TYPEOUT
473	010000	SW12=10000	:=1, DELETE TYPEOUT/BELL ON ERROR.
474	004000	SW11=4000	:=1, INHIBIT ITERATIONS
475	002000	SW10=2000	:=1, ESCAPE TO NEXT TEST ON ERROR
476	001000	SW09=1000	
477	000400	SW08=400	:=1, LOOP ON ERROR
478	000200	SW07=200	:=1, SINGLE SELECTED DP11. =0 CYCLE ALL DP11S
479	000100	SW06=100	
480	000040	SW05=40	
481	000020	SW04=20	
482	000010	SW03=10	
483	000004	SW02=4	
484	000002	SW01=2	:=1, BAUD RATE TEST RESELECT - SW11 MUST ALSO BE UP.
485	000001	SW00=1	:=1, RESELECT ADDRESSES & VECTORS

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;REGISTER DEFINITIONS

RO=%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

DSWR=177570 ; CONSOLE SWITCH REGISTER  
 DLIGHTS=177570 ; PDP-11/45 DISPLAY REGISTER  
 PS=177776 ; PROCESSOR STATUS WORD  
 STACK=1050 ; START OF PROCESSOR STACK  
 CRLF=200

;INSTRUCTION DEFINITIONS

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

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

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



592	001106	000000	TEMP1:	0	: TEMPORARY STORAGE
593	001110	000000	TEMP2:	00	: TEMPORARY STORAGE
594	001112	000000	TEMP3:	00	: TEMPORARY STORAGE
595	001114	000000	TEMP4:	00	: TEMPORARY STORAGE
596	001116	000000	TEMP5:	00	: TEMPORARY STORAGE
597	001120	000000	TEMP10:	00	
598	001122	000000	TEMP11:	00	
599	001124	000000	TEMP12:	00	
600	001126	000000	TEMP13:	00	
601	001130	000000	SAVR0:	00	: R0 STORAGE
602	001132	000000	SAVR1:	00	: R1 STORAGE
603	001134	000000	SAVR2:	00	: R2 STORAGE
604	001136	000000	SAVR3:	00	: R3 STORAGE
605	001140	000000	SAVR4:	00	: R4 STORAGE
606	001142	000000	SAVR5:	00	: R5 STORAGE
607	001144	000000	SAVSP:	00	: STACK POINTER STORAGE
608	001146	000000	SAVPC:	00	: PROGRAM COUNTER STORAGE
609	001150	000000	SAVSR1:	00	: NEW DEVICE STORAGE
610	001152	000000	TMPDAT:	00	: DP DATA STORAGE
611	001154	000000	SLIM:	00	
612	001156	000000	BPC:	00	
613	001160	000000	TSYNC:	00	: SYNC CHARACTER STORAGE
614	001162	000000	XLINEX:	00	: LINE NUMBER STORAGE
615	001164	000000	CABLE:	00	
616	001166	000000	TDATA:	00	: TRANSMITTER DATA STORAGE
617	001170	000000	RDATA:	00	: RECEIVE DATA STORAGE
618	001172	000000	CHLEN:	00	: CHARACTER LENGTH STORAGE
619	001174	000000	LIMIT:	00	: END OF DATA STORAGE
620	001176	000000	SCNT:	00	: SYNC COUNT STORAGE
621	001200	000000	SAVSR2:	00	: CONSOLE SWITCH STORAGE
622	001202	000000	TIME:	00	
623	001204	000000	TP:	00	
624	001206	000000	RP:	00	
625	001210	000000	BACK:	00	: PROGRAM RTI RETURN STORAGE
626	001212	000000	CONT.:	00	: RETURN TO BEGIN TEST STORAGE
627	001214	000000	DEVICE:	0	
628	001216	000000	NO.CLOCK:	0	: CLOCK STORAGE
629	001220	000	CPSFLG:	.BYTE 0	: 50/60 HERTZ STORAGE
630	001221	000	FLG19.2:	.BYTE 0	: HF CRYSTAL PROGRAM CONTROL STORAGE
631	001222	000	BAUDFLG:	.BYTE 0	: BAUD RATE TEST STORAGE
632	001223	000	INIF.A:	.BYTE 0	: ONCE ONLY CODE STORAGE
633	001224	000	BDRFLG:	.BYTE 0	: BAUD RATE FLAG STORAGE
634	001225	000	BDTSTFLG:	.BYTE 0	: BAUD RATE TEST STORAGE
635				.EVEN	
636	001226	000000	CHCNT:	.WORD 0	: CHARACTER COUNT STORAGE
637	001230	000000	CLKSET:	.WORD 0	: PRESET CYCLE COUNT STORAGE FOR KW11
638	001232	000000	INTCNT:	.WORD 0	: INTERRUPT COUNT STORAGE
639	001234	000000	CLKSTATUS:	.WORD 0	: KW11 CSR STORAGE
640	001236	000000	DD.A:	.WORD 0	: START OF TEST STORAGE
641	001240	000000	TAG:	.WORD 0	: CONTROL STORAGE FOR BAUD RATE TEST
642	001242	000000	PSTART:	.WORD 0	: POWER FAIL CONTROL STORAGE

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001244 000  
001245 000  
001246 000  
001247 000  
  
001250 377  
001251 377  
001252 377  
001253 377  
001254 000  
001255 377

;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  
SYNCRNO: .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



```

658
659 ;PROGRAM MULTIPLE DEVICE PARAMETERS
660 001256 000000 BASEADD: 0 ;PROG CONTROLLED 1ST DEVICE ADDR
661 001260 000000 KEEPADD: 0 ;SAVED 1ST DEVICE ADDR
662 001262 000000 LASTADD: 0 ;LAST DEVICE RXCSR ADDR
663 001264 000000 BASEIV: 0 ;PROG CONTROLLED IV
664 001266 000000 KEEPIV: 0 ;SAVED INTR VECTOR
665 001270 000000 ACTREG: 0 ;ACTIVE REGISTER ,A, MODIFY THIS
666 ;LOCATION TO DISQUALIFY OR QUALIFY
667 ;DEVICES (1= RUN , 0= DON'T RUN)
668 001272 000000 ROTADD: 0 ;ROTATING POINTER FOR ACTREG. POINTS
669 ;TO DEVICE PRESENTLY UNDER TEST WHEN RUNNING MULTIPLE DEVICES
670
671 ;PROGRAM CONTROL FLAGS
672
673
674 000000 $Y=0
675
676 ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
677 ;POINTERS TO SUBROUTINES CAN BE FOUND
678 ;IN THE TABLE IMMEDIATLY FOLLOWING THE DEFINITIONS
679
680 ;*****
681 ;*****
682 001274 TRPTAB:
683 104400 SCOPE=TRAP+0 ;CALL TO SCOPE LOOP AND ITERATION HANDLER
684 001274 007650 .SCOPE
685 104401 DELAY=TRAP+1 ;CALL TO DELAY FOR SPEC. TIME.
686 001276 007574 .DELAY
687 104402 TYPE=TRAP+2 ;CALL TO TELETYPE OUTPUT ROUTINE
688 001300 010154 .TYPE
689 104403 SAVOS=TRAP+3 ;CALL TO REGISTER SAVE ROUTINE
690 001302 010760 .SAVOS
691 104404 RESOS=TRAP+4 ;CALL TO REGISTER RESTORE ROUTINE
692 001304 011020 .RESOS
693 104405 CONVRT=TRAP+5 ;CALL TO DATA OUTPUT ROUTINE.
694 001306 010560 .CONVRT
695 104406 CNVRT=TRAP+6 ;CALL TO DATA OUTPUT ROUTINE WITHOUT CR/LF.
696 001310 010564 .CNVRT
697 104407 INSTR=TRAP+7 ;CALL TO ASCII STRING INPUT ROUTINE
698 001312 011266 .INSTR
699 104410 PARAM=TRAP+10 ;CALL TO NUMERICAL DATA INPUT ROUTINE
700 001314 011052 .PARAM
701 104411 SETFLG=TRAP+11 ;CALL TO FLAG SET ROUTINE
702 001316 011436 .SETFLG
703 104412 INSTRER=TRAP+12 ;CALL TO INPUT ERROR HANDLER
704 001320 011404 .INSTRER
705 104413 CKSWR=TRAP+13 ;CALL TO SEE IF IG STRUCK
706 001322 011506 .CKSWR
707 104414 GTSWR=TRAP+14 ;CALL TO TYPE 'OLD' VALUE AND GET 'NEW' VALUE
708 001324 011562 .GTSWR
709
710 ;*****
711 ;*****
712 ;RXCSR BIT DEFINITIONS
713 100000 DSC=BIT15 ;DATA SET CHANGE

```

E02

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DZDFAC.P11 20-SEP-76 14:36 PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0018

714	040000	RING=BIT14	:RING
715	020000	CTS=BIT13	:CLR TO SEND
716	010000	CARDET=BIT12	:CARRIER DETECT
717	004000	REACT=BIT11	:REC ACTIVE
718	002000	SRD=BIT10	:SEC REC DATA
719	001000	DSR=BIT9	:DATA SET RDY
720	000400	STPSYN=BIT8	:STRIP SYNC
721	000200	RxDONE=BIT7	:REC DONE
722	000100	RINTEN=BIT6	:REC INTR ENABLE
723	000040	DSINTE=BIT5	:DSC INTR ENABLE
724	000020	SYNSCH=BIT4	:SYNC SEARCH
725	000010	STD=BIT3	:SEC XMIT DATA
726	000004	RTS=BIT2	:REQ TO SEND
727	000002	DTR=BIT1	:DATA TERM RDY
728	000001	VOID=BIT0	

F02

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PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0019

729		:RXDBUF BIT DEFINITIONS	
730	100000	RXERR=BIT15	:REC ERROR
731	040000	OVRRUN=BIT14	:OVERRUN
732	020000	FRMERR=BIT13	:FRAME ERROR
733	010000	PARER=BIT12	:PARITY ERROR
734		:PARCSR BIT DEFINITIONS	
735	001000	PAREN=BIT9	:PARITY ENABLE
736	000400	EVPAR=BIT8	:EVEN PARITY SENSE
737		:PARCSR WRD DEFINITIONS	
738	030000	SYNINT=30000	:SYNC EXTERNAL MODE
739	020000	SYNEXT=20000	:SYNC INTERNAL MODE
740	000000	ISYMOD=0	:ISOC MODE
741	000000	FIVE=0	:WORD LENGTH 5 BITS
742	002000	SIX=2000	:WORD LENGTH 6 BITS
743	004000	SEVEN=4000	:WORD LENGTH 7 BITS
744	006000	EIGHT=6000	:WORD LENGTH 8 BITS
745	000000	NOPAR=0	:NO PARITY
746	001000	ODDPAR=1000	:ODD PARITY
747	001400	EVEPAR=1400	:EVEN PARITY
748		:TXCSR BIT DEFINITIONS	
749	100000	DNA=BIT15	:DATA NOT AVAILABLE
750	040000	MTDATA=BIT14	:MAINT DATA
751	020000	CLK=BIT13	:CLK
752	002000	BITW=BIT10	:BIT WINDOW
753	000400	MRESET=BIT8	:MASTER RESET
754	000200	TXDONE=BIT7	:XMIT DONE
755	000100	TXINTE=BIT6	:XMIT INTR ENABLE
756	000040	DNAINTE=BIT5	:DNA INTR ENAB
757	000020	SEND=BIT4	:SEND
758	000010	HDXEN=BIT3	:HDX/FDX
759	000001	BREAK=BIT0	:BREAK

```

760                                     ;TXCSR WRD DEFINITIONS
761         000000         USER=0         ;USER MODE
762         004000         MINT=4000      ;MAINT INT MODE
763         010000         MEXT=10000     ;MAINT EXT MODE
764         014000         SYSTST=14000   ;SYSTEM TEST MODE
765
766
767         ;*****
768
769         001326 000001     DPRS:  .BLKW 1         ;DP11 RECEIVER STATUS
770         001330 000001     DPRB:  .BLKW 1         ;DP11 RECEIVER BUFFER
771         001332 000001     SYNC:   .BLKW 1         ;SYNC BUFFER
772         001334 000001     DPTS:   .BLKW 1         ;DP11 TRANSMITTER STATUS
773         001336 000001     DPTB:   .BLKW 1         ;DP11 TRANSMITTER BUFFER
774         001340 000001     SEXT:   .BLKW 1         ;DP11 SYNC EXTENSION
775
776
777         ;*****
778         001342 000001     DPRIV:  .BLKW 1         ;DP11 RECEIVER INTERRUPT VECTOR
779         001344 000001     DPRP:   .BLKW 1         ;DP11 RECEIVER PRIORITY
780         001346 000001     DPTIV:  .BLKW 1         ;DP11 TRANSMITTER INTERRUPT VECTOR
781         001350 000001     DPTP:   .BLKW 1         ;DP11 TRANSMITTER PRIORITY
782         001352 000300     BASVEC: 300           ;THIS IS THE FIRST VECTOR. PATCH FOR YOUR FIRST VECTOR.
783         001354 174770     BASCSR: 174770        ;FIRST CSR ADDRESS.MAKE IT YOURS.
784
785         ;*****
786
787
788                                     ;DU11 REGISTER POINTERS
789
790         ;*****
791         ;DEFAULT DU ADDRESSES
792         001356 160040     RXCSR:  160040
793         001360 160042     RXDBUF: 160042
794         001362 160042     PARCSR: 160042
795         001364 160044     TXCSR:  160044
796         001366 160046     TXDBUF: 160046
797         ;DEFAULT DU VECTORS
798         001370 000770     DURIV:  770         ;REC INTR VECTOR
799         001372 000772     DURIS:  772         ;REC INTR STATUS
800         001374 000774     DUTIV:  774         ;XMIT INTR VECTOR
801         001376 000776     DUTIS:  776         ;XMIT INTR STATUS
    
```

# H02

```

802
803
804 001400
805 001400 000005
806 001402 012706 001050
807 001406 012737 000340 177776
808 001414 012737 001400 001242
809 001422 012737 002404 001064
810 001430 012737 002404 001066
811 001436 012737 011712 010406
812 001444 105037 001223
813 001450 005137 001240
814 001454 005037 001074
815 001460 005037 001104
816 001464 105037 001244
817 001470 005037 001102
818 001474 012737 000012 001072
819 001502 004737 010040
820 001506 005327
821 001510 000001
822 001512 001002
823 001514 104402 012146
824 001520 105777 177324
825 001524 100005
826 001526 004737 006330
827
828
829 001532 004737 006036
830 001536 000404
831 001540 004737 006330
832 001544 004737 006106
833 001550
834 001550 012737 001642 001212
835 001556 105737 001244
836 001562 001013
837 001564 105137 001244
838 001570 104407
839 001572 014101
840 001574 104411
841 001576 001225
842 001600 105737 001225
843 001604 001402
844 001606 000137 002654
845 001612 012737 002404 001064
846 001620 032777 000002 177222
847 001626 001403
848 001630 012737 002654 001064
849 001636 000177 177222
850 001642 105737 001150
851 001646 100740
852 001650 000733
853

;*****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
      CALL TSTSWR ;ARE WE USING THE HARD OR SOFT SWITCH REGISTER?
      DEC (PC)+ ;ONCE ONLY
      .WORD 1
      BNE 1$
      TYPE ,DPTITLE
      TSTB ,JSWR ;TEST FOR CHANGE IN DP ADRS
      BPL BGNOA ;BRANCH IF NO CHANGE
      JSR PC,CLRVEC ;LOAD ENTIRE VECTOR AREA WITH
      ; .+2
      ; HALT
      ; FETCH LINE NUMBER FROM SWR
      JSR PC,LINE.N
      BR PART2
      JSR PC,CLRVEC ;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 PART3 ;NO
      JMP BAUD ;YES
      PART3: MOV #DP11.A,RETURN ;SETUP FOR RETURN TO START PROGRAM
      BIT #SW01,JSWR
      BEQ 1$
      MOV #BAUD,RETURN
      JSR ,RETURN ;GO START
      TSTB SAVSR1 ;NEW DEVICE?
      BMI PART2 ;NO
      BR BGNOA ;YES
  
```

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***** PART3 *****
DU11: RESET
854
855 001652 000005
856 001654 012737 003126 001064 MOV #DU11.A,RETURN ;SETUP FOR REGULAR TEST
857 001662 012737 003126 001066 MOV #DU11.A,NEXT ;DITTO
858 001670 013737 001356 001214 MOV RXCSR,DEVICE ;SETUP FOR EOP MESSAGE
859 001676 005037 001240 CLR TAG
860 001702 105037 001223 CLRB INIF.A ;CLEAR OUT FOR FIRST TIME THRU
861 001706 012737 000340 177776 MOV #340,PS ;SET PROCESSOR PRIORITY = 7
862 001714 012706 001050 MOV #STACK,SP ;SETUP STACK POINTER
863 001720 012737 001652 001242 MOV #DU11,PSTART ;SET UP POWER FAIL
864 001726 012737 003126 001236 MOV #DU11.A,DD.A ;SET UP FOR RETURN TO START OF TEST
865 001734 005037 001104 CLR LSTERR ;CLEAR LIST
866 001740 005037 001102 CLR ERRCNT ;CLEAR ERROR COUNT
867 001744 005037 001074 CLR LPCNT
868 001750 012737 002014 001212 MOV #ONCE,CONT. ;SETUP FOR REPEAT
869 001756 012737 000012 001072 MOV #10.,ICOUNT ;SET ITERATIONS = 10
870 001764 004737 010040 CALL TSTSWR ;ARE WE USING THE HARD OR SOFT SWITCH REGISTER?
871 001770 012737 011736 010406 MOV #EDU11,WHO
872 001776 105737 001244 TSTB INIFLG ;CHECK FOR FIRST TIME
873 002002 001004 BNE ONCE ;NO
874 002004 104402 012064 TYPE ,DUTITLE ;YES
875 002010 105137 001244 COMB INIFLG
876 002014 032777 000001 177026 ONCE: BIT #SW00,DSWR ;CHECK FOR CONVERSATIONAL
877 002022 001017 BNE AAA ;YES
878 002024 032777 000002 177016 BIT #SW01,DSWR ;CHECK FOR BAUD RATE
879 002032 001404 BEQ 1$ ;NO
880 002034 012737 004316 001064 MOV #START,RETURN
881 002042 000405 BR 2$
882 002044 104402 012622 1$: TYPE ,MR ;LET OPERATOR KNOW TEST IS RUNNING
883 002050 012737 003126 001064 MOV #DU11.A,RETURN ;GO TO START
884 002056 000177 177002 2$: JMP RETURN
    
```

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PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0023

885	002062				AAA:					
886	002062	104407				INSTR				: OUTPUT MESSAGE & GET INPUT STRING
887	002064	012251				MREGAD				: MESSAGE
888	002066	104410				PARAM				: CONVERT STRING
889	002070	160000				160000				: LOW LIMIT
890	002072	167776				167776				: HIGH LIMIT
891	002074	007312				DUBASE				: STORE AT THIS LOCATION
892	002076	001			.BYTE	1				: MASK
893	002077	001			.BYTE	1				: HOW MANY TIMES + 2
894	002100	004737	006356			JSR	PC,OKADR			: CHECK FOR VALID ADDRESS
895	002104	013737	007312	001260		MOV	DUBASE,KEEPADD			: SAVE
896	002112	004737	007222			JSR	PC,DUADDR			: GET ADDRESS
897	002116	013737	001260	001256		MOV	KEEPADD,BASEADD			: RESTORE FOR ROTATION
898	002124	104407				INSTR				: OUTPUT MESSAGE & GET INPUT STRING
899	002126	012230				MVECTO				: MESSAGE
900	002130	104410				PARAM				: CONVERT STRING
901	002132	000300				300				: LOW LIMIT
902	002134	000776				776				: HIGH LIMIT
903	002136	001370				DURIV				: STORE AT THIS LOCATION
904	002140	001			.BYTE	1				: MASK
905	002141	004			.BYTE	4				: HOW MANY TIMES + 2
906	002142	013737	001370	001266		MOV	DURIV,KEEPIV			: SAVE
907	002150	013737	001370	001264		MOV	DURIV,BASEIV			: SET UP FOR ROTATION
908	002156	104407				INSTR				: OUTPUT MESSAGE & GET INPUT STRING
909	002160	012331				MMULT				: MESSAGE
910	002162	104411				SETFLG				: SET FLAG BASED UPON INPUT STRING
911	002164	001254				MULTD				: THIS FLAG
912	002166	105737	001254			TSTB	MULTD			: ARE THERE MULTIPLE DEVICES
913										: ON THE SYSTEM ?
914	002172	100406				BMI	BBB			: YES,ASK NEXT QUESTION
915	002174	005037	001270			CLR	ACTREG			
916	002200	005037	001272			CLR	ROTADD			: CLEAR POINTER
917	002204	000137	002350			JMP	DDD			: JUMP AROUND NEXT QUESTION
918	002210				BBB:					
919	002210	104407				INSTR				: OUTPUT MESSAGE & GET INPUT STRING
920	002212	012407				MLASTD				: MESSAGE
921	002214	104410				PARAM				: CONVERT STRING
922	002216	160000				160000				: LOW LIMIT
923	002220	167776				167776				: HIGH LIMIT
924	002222	001262				LASTADD				: STORE AT THIS LOCATION
925	002224	001			.BYTE	1				: MASK
926	002225	001			.BYTE	1				: HOW MANY TIMES + 2
927										: THE FOLLOWING ROUTINE SETS UP ACTREG FOR THE FIRST TIME
928	002226	012737	000001	001272	1\$:	MOV	#1,ROTADD			: SET UP POINTER
929	002234	005037	001270			CLR	ACTREG			: CLR ACTIVE REGISTER
930	002240	053737	001272	001270	2\$:	BIS	ROTADD,ACTREG			: MAKE THIS DEVICE ACTIVE
931	002246	000241				CLC				
932	002250	006137	001272			ROL	ROTADD			: SET UP POINTER
933	002254	103421				BCS	3\$			: ARE YOU OUT OF RANGE ?
934	002256	062737	000010	001256		ADD	#10,BASEADD			: SET UP BASE ADDRESS
935	002264	023737	001262	001256		CMP	LASTADD,BASEADD			: IS THIS THE LAST DEVICE ?
936	002272	101362				BHI	2\$			: NO DO IT AGAIN
937	002274	053737	001272	001270		BIS	ROTADD,ACTREG			: THIS ASSUMES THAT THERE ARE AT
938										: LEAST TWO DEVICES WHEN YOU ANSWER YES TO
939										: MULTIPLE DEVICE QUESTION
940	002302	012737	000001	001272		MOV	#1,ROTADD			: SET UP FOR LATER USE IN END OF PASS ROUTINE





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002404

002404	012737	000001	001076
002412	104413		
002414	012737	003142	001066
002422	012737	001642	001212
002430	012737	002404	001064
002436	012737	007746	001066
002444	005077	176664	
002450	005077	176652	
002454	005002		
002456	012700	013000	
002462	010277	176650	
002466	017701	176642	
002472	042701	164777	
002476	022701	013000	
002502	001406		
002504	005202		
002506	001367		
002510	104001		
002512	012737	000005	001124
002520	005002		
002522	005202		
002524	001376		
002526	032777	013000	176600
002534	001404		
002536	005337	001124	
002542	001366		
002544	104000		

;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
        CKSWR
        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$:     MOV      @DPTS,R1
        BIC      #1<13000>,R1
        CMP      #13000,R1
        BEQ      2$
        INC      R2                       ;UPDATE DELAY
        BNE     1$                       ;IS IT DONE?
        ERROR   1                        ;ERROR REQUEST TO SEND,CLEAR TO
                                        ;SEND AND MODEM READY NOT UP.
2$:     MOV      #5,TEMP12
3$:     CLR      R2                       ;SET FOR TIME OUT
        INC      R2                       ;DELAY
        BNE     3$
        BIT      #13000,@DPTS            ;ARE THEY GONE?
        BEQ      4$
        DEC      TEMP12
        BNE     2$
        ERROR

```

## M02

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PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0026

```

1019                                     ;VERIFY THAT THE SETTING OF "TERMINAL READY" BRINGS
1020                                     ;UP "RING" AND "CARRIER DOWN" ALSO VERIFY THAT
1021                                     ;CLEARING "TERMINAL READY" BRINGS DOWN "RING"
1022                                     ;AND "CARRIER DOWN".
1023
1024 002546 012777 000001 176560 4$:   MOV   #BIT0,ADPTS   ;SET TERMINAL READY
1025 002554 104401 001500             DELAY 1500         ;WAIT
1026 002560 017701 176550             MOV   ADPTS,R1    ;GET WORD
1027 002564 042701 153776             BIC   #1C<24001>,R1 ;CLEAR UNWANTED BITS
1028 002570 022701 024001             CMP   #24001,R1   ;DID RING AND CARRIER DOWN SET?
1029 002574 001401                   BEQ   5$          ;YES
1030 002576 104001                   ERROR 1          ;NO--TYPE ERROR
1031 002600 042777 000001 176526 5$:   BIC   #BIT0,ADPTS ;CLEAR TERMINAL READY
1032 002606 104401 001500             DELAY 1500         ;WAIT
1033 002612 022777 120000 176514     CMP   #120000,ADPTS ;DID THEY CLEAR?
1034 002620 001401                   BEQ   6$          ;YES
1035 002622 104000                   ERROR             ;NO--TYPE ERROR
1036
1037                                     ;NOW TEST THAT DATA CAN BE TRANSFERED.
1038                                     ;A BINARY COUNT PATTERN WILL BE TRANSMITTED AND RECEIVED
1039                                     ;WITH OUT THE USE OF THE SOFTWARE CLOCK.
1040
1041 002624 005037 001106 6$:   CLR   TEMP1       ;CLEAR OUT INFO
1042 002630 005037 001110             CLR   TEMP2       ;DITTO
1043 002634 004737 006472             JSR   PC,SEQ.DATA ;GO RUN SEQUENTIAL DATA TEST
1044 002640 104400                   SCOPE

```

# N02

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PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0027

```

1045 ;THIS IS THE SETUP FOR THE BAUD RATE TEST USING THE DP
1046 ;*****
1047 002642 012737 000372 001230 NOT60: MOV #250.,CLKSET ;250 HERTZ SETUP
1048 002650 000137 004504 JMP KWSETUP
1049 002654 012737 000340 177776 BAUD: MOV #340,PS ;SET PROCESSOR STATUS = 7
1050 002662 012706 001050 MOV #STACK,SP ;SET UP STACK
1051 002666 000005 RX: RESET
1052 002670 012777 003022 176444 DPSETUP: MOV #CON.RX,ADPRIV ;SETUP RX VECTOR
1053 002676 012777 000340 176440 MOV #340,ADPRP ;PROCESSOR STATUS = 7
1054 002704 012777 003034 176434 MOV #N.TRAP,ADPTIV ;SETUP TX TRAPCATCHER
1055 002712 012777 000340 176430 MOV #340,ADPTP ;PROCESSOR STATUS = 7
1056 002720 012737 177777 001232 MOV #-1,INTCNT ;ONCE ONLY
1057 002726 112777 000100 176372 MOVB #100,ADPRS ;TURN ON RECEIVER
1058 002734 112777 000252 176370 TX: MOVB #252,ASYNC ;SET SYNC CHARACTER
1059 072742 112777 000252 176366 MOVB #252,ADPTB ;LOAD TX BUFFER
1060 002750 005037 001226 CLR CHCNT ;CLEAR CHARACTER COUNTER
1061
1062 002754 004737 005500 JSR PC,CLOCK ;FIND OUT IF KW11 IS AVAILABLE
1063 002760 005737 001216 TST NO.CLOCK
1064 002764 001002 BNE 1$ ;YES
1065 002766 000137 003060 JMP TST.Z ;NO,CHECK SW 14 FOR SCOPE LOOP
1066 002772 1$:
1067 002772 104407 INSTR ;OUTPUT MESSAGE & GET INPUT STRING
1068 002774 013142 MCPS ;MESSAGE
1069 002776 104411 SETFLG ;SET FLAG BASED UPON INPUT STRING
1070 003000 001220 CPSFLG ;THIS FLAG
1071 003002 105737 001220 TSTB CPSFLG ;IS AC 50 OR 60 HERTZ
1072 003006 001715 BEQ NOT60 ;50 HERTZ
1073 003010 012737 000454 001230 MOV #300.,CLKSET ;60 HERTZ
1074 003016 000137 004504 JMP KWSETUP ;GO SETUP KW
1075

```

```

1076                                     :THIS IS THE BAUD RATE INTERRUPT SVC ROUTINE
1077                                     :*****
1078 003022 005237 001226 CON.RX: INC      CHCNT      ;COUNT FOR BAUD RATE CHECK
1079 003026 005777 176276      TST      @DPRB      ;CLR BUFFER
1080 003032 000002          RTI
1081 003034 011637 006034 N.TRAP: MOV      (SP),TRP.PC ;TRAPCATCHER FOR TX INTERRUPT
1082 003040 104010          ERROR 10
1083 003042 000002          RTI
1084 003044 032777 040000 175776 SW14.B: BIT      @BIT14,@SWR ;FIND OUT IF BAUD RATE CHECK IS WANTED
1085 003052 001402          BEQ      TST.Z      ;NOT YET
1086 003054 000137 003110          JMP      OUT.PT      ;YES
1087 003060
1088 003060 104407          INSTR      ;OUTPUT MESSAGE & GET INPUT STRING
1089 003062 013224          MRBAUD ;MESSAGE
1090 003064 104411          SETFLG ;SET FLAG BASED UPON INPUT STRING
1091 003066 001222          BAUDFLG ;THIS FLAG
1092 003070 105737 001222          TSTB   BAUDFLG ;DO YOU STILL WANT TO RUN BAUD TEST?
1093 003074 001412          BEQ      SWMP      ;NO
1094 003076 104402 013100          TYPE   ,MSCOPBAUD ;YES,FIND OUT IF SWITCH 14 IS UP
1095 003102 000000          HALT   ;WAIT FOR OPR TO PUT UP SW 14
1096 003104 000137 003044          JMP      SW14.B
1097 003110 112777 000103 176216 OUT.PT: MOVB   @103,@DPTS ;TURN ON TRANSMITTER
1098 003116 000137 003044          JMP      SW14.B
1099 003122 000137 005722          SWMP:  JMP      MAINPR
    
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003126 032777 000010 175714  
003134 001402  
003136 000137 003532  
003142  
003142 012737 000002 001076  
003150 104413  
003152 012737 003532 001066  
003160 052777 000400 176176  
003166 012777 000000 176166  
003174 052777 000400 176162  
003202 012777 006026 176152  
003210 042777 003010 176140  
003216 012700 073016  
003222 013737 001356 001114  
003230 012737 040000 001112  
003236 052777 000016 176112  
003244 005337 001112  
003250 001002  
003252 104002  
003254 000406  
003256 017701 176074  
003262 042701 104761  
003266 020001  
003270 001365  
003272 112777 000025 176066  
003300 012777 003400 176062  
003306 012777 000340 176056  
003314 005037 177776  
003320 013737 001360 001114

```
::*****  
::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,DSWR ;TEST BIT 3  
        BEQ 64$  
        JMP DU11.B ;JUMP AROUND  
64$:  
*****  
: TEST 2  
*****  
*****  
TST2: MOV #2,TSTNO  
        CKSWR  
        MOV #TST3,NEXT  
        BIS #MRESET,@TXCSR ;MASTER RESET  
        MOV #ISYMOD,@PARCSR ;LOAD THE MODE  
        BIS #MRESET,@TXCSR ;MASTER RESET  
        MOV #ISYMOD,EIGHT!NOPAR!26,@PARCSR ;LOAD THE MODE,  
        ;# OF BITS PER CHAR,PARITY SENSE(NO PARITY),  
        ;&SYNC CHARACTER (26)  
        BIC #SRD!DSR!STD,@RXCSR  
        MOV #RING!CTS!CARDET!SRD!DSR!STD!RTS!DTR,RO ;SET UP FOR ERROR MSG  
        MOV RXCSR,TEMP4 ;DITTO  
        MOV #40000,TEMP3 ;SET UP FOR CABLE DELAY + CTS DELAY  
        ;OF .3 SEC MAX.  
        BIS #DTR!RTS!STD,@RXCSR ;SET DTR & RTS & STD  
1$: DEC TEMP3  
        BNE 2$  
        ERROR 2 ;RING,CTS,CARDET,SRD,DSR,STD,RTS,OR DTR FAILED TO SET  
        ;CHECK THE BCOSC CABLE  
2$: BR 3$ ;GO RUN THE TEST ANYWAY!  
        MOV @RXCSR,R1 ;SAVE ACTUAL  
        BIC #!C<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  
3$: MOVB #25,@TXDBUF ;LOAD THE CHAR  
        MOV #6$,@DURIV ;SET UP TRAPCATCHER  
        MOV #340,@DURIS ;SET LEVEL 7  
        CLR PS ;ALLOW INTERRUPTS  
        MOV RXDBUF,TEMP4 ;SET UP FOR ERROR MESSAGE
```

```

1156 003326 012700 000025      MOV      #25,R0      ;EXPECTED
1157 003332 012777 000020 176024  MOV      #USER!SEND,@TXCSR ;OK NOW LOAD SEND & USER MODE
1158 003340 052777 000120 176010  BIS      #SYNSCH!RINTEN,@RXCSR ;SET SEARCH SYNC &
1159                                     ;RECEIVER INTERRUPT
1160                                     ;ENABLE & WAIT FOR INTERRUPT
1161 003346 005037 001116      CLR      TEMPS
1162 003352 005002      CLR      R2
1163 003354 005202      INC      R2          ;WAIT FOR INTERRUPT
1164 003356 001376      BNE     SS
1165 003360 005237 001116      INC     TEMPS
1166 003364 022737 000003 001116  CMP     #3,TEMPS
1167 003372 002367      BGE     4$
1168 003374 104004      ERROR  4          ;INTERRUPT DID NOT OCCUR
1169 003376 000422      BR      7$
1170
1171                                     ;THE FOLLOWING IS THE INTERRUPT SVC ROUTINE
1172 003400 012737 000340 177776 6$:  MOV     #340,PS ;PREVENT INTERRUPTS
1173 003406 017704 175744      MOV     @RXCSR,R4 ;SAVE
1174 003412 017701 175742      MOV     @RXDBUF,R1 ;ACTUAL
1175 003416 013777 001372 175744  MOV     @DURIS,@DURIV ;RESTORE TRAPCATCHER
1176 003424 005077 175742      CLR     @DURIS
1177 003430 012716 003474      MOV     #8$, (SP) ;SET UP RETURN
1178 003434 042777 000100 175714  BIC     #RINTEN,@RXCSR ;CLR INTERRUPT ENABLE
1179 003442 000002      RTI
1180
1181 003444 042777 000100 175704 7$:  BIC     #RINTEN,@RXCSR ;CLR INTERRUPT ENABLE
1182 003452 012737 000340 177776  MOV     #340,PS ;PREVENT INTERRUPTS
1183 003460 013777 001372 175702  MOV     @DURIS,@DURIV ;RESTORE TRAPCATCHER
1184 003466 005077 175700      CLR     @DURIS
1185 003472 000416      BR      10$
1186
1187 003474 020001      CMP     R0,R1
1188 003476 001401      BEQ     9$
1189 003500 104002      ERROR  2          ;CHARACTERS DID NOT MATCH
1190                                     ;IF DU/DFC ARE RUNNING IN CLOCK
1191                                     ;RECOVERY ABOVE 9600 BAUD AND THIS
1192                                     ;ERROR OCCURS PUT SW03 = 1. THIS
1193                                     ;ERROR IS LEGITIMATE ONLY IF BELOW
1194                                     ;9600 BAUD.
1195 003502 013737 001356 001114 9$:  MOV     RXCSR,TEMP4 ;SETUP FOR ERROR MESSAGE
1196 003510 012700 000200      MOV     #RXDONE,R0 ;EXPECTED
1197 003514 010401      MOV     R4,R1      ;ACTUAL
1198 003516 042701 177577      BIC     #1<RXDONE>,R1 ;SAVE ONLY RXDONE
1199 003522 020001      CMP     R0,R1
1200 003524 001401      BEQ     10$
1201 003526 104006      ERROR  6          ;FALSE INTERRUPT
1202
1203 003530 104400      10$:  SCOPE

```

E03

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PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0031

```

1204      ;; THIS TEST VERIFYS THAT THE DFC11A IS CLOCKING DATA IN & OUT
1205      ;; OF THE DU11
1206      ;; NOTE: THE BC05C MODEM CABLE MUST BE ATTACHED TO THE DFC11A
1207      ;; & MUST BE TERMINATED WITH W315 CONNECTOR
1208      ;; MODE: SYNINT
1209      ;; LENGTH: EIGHT
1210      ;; THIS TEST USES BOTH THE RECEIVER & TRANSMITTER LOGIC
1211      ;; *****
1212      003532 DU11.B:
1213      ;; *****
1214      ;; *
1215      ;; TEST 3
1216      ;; *
1217      ;; *****
1218      ;; *****
1219      003532 012737 000003 001076 TST3:  MOV     #3,TSTNO
1220      003540 104413          CKSWR
1221      003542 012737 007746 001066  MOV     #.EOP,NEXT
1222      003550 052777 000400 175606  BIS     #MRESET,@TXCSR ;MASTER RESET
1223      003556 012777 030000 175576  MOV     #SYNINT,@PARCSR ;SET THE MODE
1224      003564 052777 000400 175572  BIS     #MRESET,@TXCSR ;MASTER RESET
1225      003572 012777 000020 175564  MOV     #USER!SEND,@TXCSR ;SET USER MODE AND SEND
1226      003600 012777 036026 175554  MOV     #SYNINT!EIGHT!NOPAR!26,@PARCSR ;SET SYNC INTERNAL,
1227      ;; ;EIGHT BITS PER CHAR,NO PARITY,
1228      ;; ;AND "26" FOR THE SYNC CHARACTER
1229      003606 052777 000436 175542  BIS     #SYNSCH!STPSYN!DTR!RTS!STD,@RXCSR ;SET SEARCH SYNC &
1230      ;; ;STRIP SYNC SO THAT RXDONE ASSERTS
1231      ;; ;WHEN CHAR "25" ARRIVES AND NOT BEFORE...
1232      ;; ;THEREFORE,SET STRIP SYNC
1233      ;; ;ALSO SET DTR,RTS,& STD FOR THE DFC11A
1234      ;;
1235      ;;
1236      ;;
1237      003614 005037 001116          CLR     TEMPS
1238      003620 005002          CLR     R2
1239      003622 005202          INC     R2 ;WAIT
1240      003624 001376          BNE     2$
1241      003626 005237 001116          INC     TEMPS
1242      003632 022737 000003 001116  CMP     #3,TEMPS
1243      003640 002367          BGE     1$ ;GO BACK TO CLR R2 AND WAIT SOME MORE
1244      003642 012777 004044 175520  MOV     #6$,@DURIV ;SET UP TRAPCATCHER
1245      003650 012777 000340 175514  MOV     #340,@DURIS ;SET PROCESSOR STATUS = 7
1246      003656 012777 004122 175510  MOV     #7$,@DUTIV ;SET UP TRAPCATCHER
1247      003664 012777 000340 175504  MOV     #340,@DUTIS ;SET PROCESSOR STATUS = 7
1248      003672 005037 177776          CLR     PS ;ALLOW INTERRUPTS
1249      003676 013737 001360 001114  MOV     RXDBUF,TEMP4 ;SET UP FOR ERROR MSG
1250      003704 012700 000025          MOV     #25,R0 ;EXPECTED CHAR
1251      003710 012737 000003 001112  MOV     #3,TEMP3 ;# OF SYNC CHARS TO GET INTO
1252      ;; ;SYNCHRONIZATION
1253      003716 052777 000100 175432  BIS     #RINTEN,@RXCSR ;SET INTERRUPT ENABLES
1254      003724 052777 000100 175432  BIS     #TXINTE,@TXCSR
1255      003732 000137 003750          JMP     4$ ;THE FIRST XMIT INTERRUPT SHOULD COME
1256      ;; ;FROM TXDONE = 1 AFTER A MASTER RESET

```

```

1257 003736 112777 000026 175422 3$: MOVB #26, @TXDBUF ;LOAD SYNC CHAR
1258 003744 005037 001116          CLR TEMP5
1259 003750 005002          4$: CLR R2 ;WAIT FOR INTERRUPT
1260 003752 005202          5$: INC R2
1261 003754 001376          BNE 5$ ;CONTINUE TO WAIT
1262 003756 005237 001116          INC TEMP5
1263 003762 022737 000003 001116          CMP #3, TEMP5 ;DONE YET?
1264 003770 002367          BGE 4$ ;GO BACK, NOT YET
1265 003772 012737 000340 177776          MOV #340, PS ;PREVENT INTERRUPTS
1266 004000 042777 000100 175356          BIC #TXINTE, @TXCSR ;CLR INTR ENABLES
1267 004006 042777 000100 175342          BIC #RINTEN, @RXCSR ;DITTO
1268 004014 013777 001372 175346          MOV @DURIS, @DURIV ;RESTORE TRAPCATCHER
1269 004022 005077 175344          CLR @DURIS
1270 004026 013777 001376 175340          MOV @DUTIS, @DUTIV ;RESTORE INTERRUPT CATCHER
1271 004034 005077 175336          CLR @DUTIS
1272 004040 104003          ERROR 3 ;TXDONE INTERRUPT FAILED TO OCCUR
1273          ;WATCH OUT HERE::: THIS FAILURE MAY
1274          ;ALSO BE CAUSED BY TRANSMIT DATA NOT
1275          ;BEING CLOCKED OUT. I.E. TXDONE
1276          ;NOT RE-ASCERTING SO THAT THE 2ND
1277          ;SYNC CHARACTER CAN BE LOADED
1278 004042 000521          BR 14$ ;GET OUT OF THE TEST
1279
1280          ;THE FOLLOWING IS THE RECEIVER INTERRUPT SVC ROUTINE
1281 004044 6$:
1282 004044 017704 175306          MOV @RXCSR, R4 ;SAVE
1283 004050 017701 175304          MOV @RXDBUF, R1 ;ACTUAL
1284 004054 013777 001372 175306          MOV @DURIS, @DURIV ;RESTORE TRAPCATCHER
1285 004062 005077 175304          CLR @DURIS ;CLEAR OUT INTERRUPTS
1286 004066 013777 001376 175300          MOV @DUTIS, @DUTIV
1287 004074 005077 175276          CLR @DUTIS
1288 004100 012716 004252          MOV #12$, (SP) ;SET UP RETURN LOCATION
1289 004104 042777 000100 175244          BIC #RINTEN, @RXCSR ;CLR INTERRUPT ENABLES
1290 004112 042777 000100 175244          BIC #TXINTE, @TXCSR ;DITTO
1291 004120 000002          RTI
1292          ;END OF RECEIVER INTERRUPT SVC ROUTINE
1293          ;...THE FOLLOWING IS THE XMITTER INTERRUPT SVC ROUTINE
1294 004122 005337 001112 7$: DEC TEMP3 ;# OF SYNC CHARACTERS LEFT
1295 004126 100403          BMI 8$
1296 004130 012716 003736          MOV #3$, (SP) ;SET UP RETURN LOCATION
1297          ;(LOAD SYNC CHARACTER AGAIN)
1298 004134 000002          RTI
1299 004136 012716 004144 8$: MOV #9$, (SP) ;SET UP RETURN LOCATION
1300 004142 000002          RTI
1301          ;END OF XMITTER INTERRUPT SVC ROUTINE
1302 004144 112777 000025 175214 9$: MOVB #25, @TXDBUF ;LOAD CHARACTER
1303 004152 042777 000100 175204          BIC #TXINTE, @TXCSR ;CLR INTR ENABLE
1304 004160 005037 001116          CLR TEMP5
1305 004164 005002          10$: CLR R2 ;WAIT FOR INTERRUPT(RECEIVER)
1306 004166 005202          11$: INC R2
1307 004170 001376          BNE 11$ ;CONTINUE TO WAIT
1308 004172 005237 001116          INC TEMP5
1309 004176 022737 000003 001116          CMP #3, TEMP5 ;DONE YET?
1310 004204 002367          BGE 10$ ;GO BACK, NOT YET
1311 004206 012737 000340 177776          MOV #340, PS ;PREVENT INTERRUPTS
1312 004214 042777 000100 175134          BIC #RINTEN, @RXCSR ;CLR INTR ENABLE
    
```



## G03

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SEQ 0033

1313	004222	013777	001372	175140		MOV	DURIS,ADURIV	;RESTORE TRAPCATCHER
1314	004230	005077	175136			CLR	ADURIS	
1315	004234	013777	001376	175132		MOV	DUTIS,ADUTIV	
1316	004242	005077	175130			CLR	ADUTIS	
1317	004246	104004				ERROR	4	;RECEIVER INTR FAILED TO OCCUR
1318	004250	000416				BR	14\$	;GET OUT OF TEST
1319	004252	020001			12\$:	CMP	RO,R1	
1320	004254	001401				BEQ	13\$	
1321	004256	104002				ERROR	2	;CHARACTERS DID NOT MATCH
1322	004260	013737	001356	001114	13\$:	MOV	RXCSR,TEMP4	;SET UP FOR ERROR MSG
1323	004266	012700	000200			MOV	#RXDONE,RO	;EXPECTED RXDONE
1324	004272	010401				MOV	R4,R1	;ACTUAL
1325	004274	042701	177577			BIC	#1C<RXDONE>,R1	;SAVE ONLY RXDONE
1326	004300	020001				CMP	RO,R1	
1327	004302	001401				BEQ	14\$	
1328	004304	104006				ERROR	6	;FALSE INTERRUPT
1329	004306	012737	000340	177776	14\$:	MOV	#340,PS	;INHIBIT INTERRUPTS
1330	004314	104400				SCOPE		

# H03

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SEQ 0034

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::\*\*\*\*\*

:: 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!!!!!!

004316	012737	000340	177776	START: MOV	#340,PS	:PREVENT INTERRUPTS
004324	012706	001050		MOV	#STACK,SP	:SET UP STACK
004330	000005			TXSETUP:RESET		
004332	005037	001226		CLR	CHCNT	
004336	012737	177777	001232	MOV	#-1,INTCNT	
004344	052777	000400	175012	BIS	#MRESET,@TXCSR	:MASTER RESET TRANSMITTER
004352	012777	026252	175002	MOV	#026252,@PARCSR	:LOAD THE MODE,WORD LENGTH
004360	000240			NOP		:PARITY SENSE AND SYNC CHARACTER
004362	012777	000040	174774	MOV	#40,@TXCSR	:ASSERT DNA INTEB
004370	042777	000100	174766	BIC	#100,@TXCSR	:CLR TXINTEB
004376	112777	000252	174762	MOVB	#252,@TXDBUF	:LOAD SYNC CHAR INTO BUFFER

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PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0035

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1363 004404 052777 000122 174744 RXSETUP: BIS #122, @RXCSR ;SET UP RECEIVER
1364 004412 012777 006012 174750 DUSETUP: MOV #CNT.RX, @DURIV ;SET
1365 004420 012777 000340 174744 MOV #340, @DURIS ; UP
1366 004426 012777 006024 174740 MOV #NO.TRAP, @DUTIV ; FOR DU
1367 004434 012777 000340 174734 MOV #340, @DUTIS ; INTERRUPTS
1368
1369 004442 004737 005500 JSR PC,CLOCK ;GO CHECK FOR CLOCK
1370 004446 005737 001216 TST NO.CLOCK ;IS IT THERE?
1371 004452 001002 BNE 1$ ;NO,CHECK IF SCOPE LOOP WANTED
1372 004454 000137 005656 JMP SW14A
1373 004460 1$:
1374 004460 104407 INSTR ;OUTPUT MESSAGE & GET INPUT STRING
1375 004462 013142 MCPS ;MESSAGE
1376 004464 104411 SETFLG ;SET FLAG BASED UPON INPUT STRING
1377 004466 001220 CPSFLG ;THIS FLAG
1378 004470 105737 001220 TSTB CPSFLG ;TEST FOR 50/60 CYCLES
1379 004474 001500 BEQ NO60CPS ;50 CYCLE MACHINE
1380 004476 012737 000454 001230 MOV #300, CLKSET ;SETUP FOR 60 CYCLE COUNT
1381 004504 022737 177546 001216 KWSETUP: CMP #177546, NO.CLOCK ;FIND OUT WHICH CLOCK
1382 004512 001402 BEQ KW11L ;KW11L SETUP
1383 004514 000137 005614 JMP KW11P ;KW11P SETUP
1384 004520 012737 004574 000100 KW11L: MOV #INTSVC, @#100 ;SET UP SERVICE ROUTINE
1385 004526 012737 000340 000102 MOV #340, @#102 ;SET UP LEVEL 7
1386 004534 012737 177546 001234 MOV #177546, CLKSTATUS ;KW11L CSR
1387 004542 012777 000100 174464 MOV #100, @CLKSTATUS ;SETUP FOR CLOCK INTERRUPT
1388 004550 005037 177776 BEGIN: CLR PS ;ALLOW INTERRUPTS
1389 004554 005000 CLR RO
1390 004556 012701 000005 MOV #5, R1 ;WAIT FOR INTERRUPTS
1391 004562 005300 1$: DEC RO ;SO THAT WE CAN
1392 004564 001376 BNE 1$ ;SYNC UP KW AND DEVICE
1393 004566 005301 DEC R1
1394 004570 001374 BNE 1$
1395 004572 104000 ERROR ;TOOK TOO LONG---TIME OUT!!!!

```

```

1396 004574 042777 000200 174432 INTSVC: BIC #200, @CLKSTATUS ; CLEAR THE MONITOR
1397 004602 005237 001232 INC INTCNT ; COUNT INTERRUPTS
1398 004606 001015 BNE EEE ; FIRST TIME?
1399 004610 005737 001240 TST TAG ; DP OR DU?
1400 004614 001404 BEQ INTS.A ; DU
1401 004616 052777 000003 174510 BIS #3, @DPTS ; YES, START OUTPUT OF DP
1402 004624 000403 BR INTS.B ; KEEP GOING WITH TEST
1403 004626 112777 000020 174530 INTS.A: MOVB #20, @TXCSR ; YES, START OUTPUT OF DU
1404 004634 012716 004550 INTS.B: MOV #BEGIN, (SP) ; CONTINUE TO RUN TEST
1405 004640 000002 RTI
1406 004642 023737 001230 001232 EEE: CMP CLKSET, INTCNT ; ARE WE DONE?
1407 004650 001403 BEQ 1$ ; YES
1408 004652 012716 004550 MOV #BEGIN, (SP) ; NO, CONTINUE TO TEST
1409 004656 000002 RTI
1410 004660 042777 000101 174346 1$: BIC #101, @CLKSTATUS ; SHUT OFF CLOCK
1411 004666 012716 004710 MOV #BDTAG, (SP) ; GO DETERMINE BAUD RATE
1412 004672 000005 RESET
1413 004674 000002 RTI
1414 004676 012737 000372 001230 NO60CPS: MOV #250, CLKSET ; 50 CYCLE SETUP
1415 004704 000137 004504 JMP KWSETUP
1416 004710 BDTAG:
1417 004710 012737 013451 004754 MOV #M19200, 65$
1418 004716 023727 001226 031620 CMP CHCNT, #13200. ; COMPARE TO THIS HIGH END
1419 004724 101404 BLOS 64$ ; ANSWER IS TOO HIGH
1420 004726 104402 013544 TYPE MWRONGRT
1421 004732 000137 005656 JMP $W14A
1422 004736 023727 001226 025060 64$: CMP CHCNT, #10800. ; COMPARE TO THIS LOW END
1423 004744 103410 BLO 66$ ; NOT HERE
1424 004746 104402 013643 TYPE MBAUDRT ; TYPE THIS RATE
1425 004752 104402 TYPE
1426 004754 000000 65$: 0
1427 004756 104402 013670 TYPE MRITE
1428 004762 000137 005722 JMP MAINPR
1429 004766 66$:
1430 004766 012737 013461 005032 MOV #M9600, 68$
1431 004774 023727 001226 014710 CMP CHCNT, #6600. ; COMPARE TO THIS HIGH END
1432 005002 101404 BLOS 67$ ; ANSWER IS TOO HIGH
1433 005004 104402 013544 TYPE MWRONGRT
1434 005010 000137 005656 JMP $W14A
1435 005014 023727 001226 012430 67$: CMP CHCNT, #5400. ; COMPARE TO THIS LOW END
1436 005022 103410 BLO 69$ ; NOT HERE
1437 005024 104402 013643 TYPE MBAUDRT ; TYPE THIS RATE
1438 005030 104402 TYPE
1439 005032 000000 68$: 0
1440 005034 104402 013670 TYPE MRITE
1441 005040 000137 005722 JMP MAINPR
1442 005044 69$:
1443 005044 012737 013470 005110 MOV #M4800, 71$
1444 005052 023727 001226 006344 CMP CHCNT, #3300. ; COMPARE TO THIS HIGH END
1445 005060 101404 BLOS 70$ ; ANSWER IS TOO HIGH
1446 005062 104402 013544 TYPE MWRONGRT
1447 005066 000137 005656 JMP $W14A
1448 005072 023727 001226 005214 70$: CMP CHCNT, #2700. ; COMPARE TO THIS LOW END
1449 005100 103410 BLO 72$ ; NOT HERE
1450 005102 104402 013643 TYPE MBAUDRT ; TYPE THIS RATE
1451 005106 104402 TYPE
    
```

# K03

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SEQ 0037

1452	005110	000000		71\$:	0		
1453	005112	104402	013670		TYPE	,WRITE	
1454	005116	000137	005722		JMP	MAINPR	
1455	005122			72\$:			
1456	005122	012737	013477	005166	MOV	#M2400,74\$	
1457	005130	023727	001226	003162	CMP	CHCNT,#1650.	;COMPARE TO THIS HIGH END
1458	005136	101404			BLOS	73\$	;ANSWER IS TOO HIGH
1459	005140	104402	013544		TYPE	,MWRONGRT	
1460	005144	000137	005656		JMP	SW14A	
1461	005150	023727	001226	002506	73\$:	CMP	CHCNT,#1350.
1462	005156	103410			BLO	75\$	;COMPARE TO THIS LOW END
1463	005160	104402	013643		TYPE	,MBAUDRT	;NOT HERE
1464	005164	104402			TYPE		;TYPE THIS RATE
1465	005166	000000		74\$:	0		
1466	005170	104402	013670		TYPE	,WRITE	
1467	005174	000137	005722		JMP	MAINPR	
1468	005200			75\$:			
1469	005200	012737	013506	005244	MOV	#M1200,77\$	
1470	005206	023727	001226	001471	CMP	CHCNT,#825.	;COMPARE TO THIS HIGH END
1471	005214	101404			BLOS	76\$	;ANSWER IS TOO HIGH
1472	005216	104402	013544		TYPE	,MWRONGRT	
1473	005222	000137	005656		JMP	SW14A	
1474	005226	023727	001226	001243	76\$:	CMP	CHCNT,#675.
1475	005234	103410			BLO	78\$	;COMPARE TO THIS LOW END
1476	005236	104402	013643		TYPE	,MBAUDRT	;NOT HERE
1477	005242	104402			TYPE		;TYPE THIS RATE
1478	005244	000000		77\$:	0		
1479	005246	104402	013670		TYPE	,WRITE	
1480	005252	000137	005722		JMP	MAINPR	
1481	005256			78\$:			
1482	005256	012737	013515	005322	MOV	#M600,80\$	
1483	005264	023727	001226	000635	CMP	CHCNT,#413.	;COMPARE TO THIS HIGH END
1484	005272	101404			BLOS	79\$	;ANSWER IS TOO HIGH
1485	005274	104402	013544		TYPE	,MWRONGRT	
1486	005300	000137	005656		JMP	SW14A	
1487	005304	023727	001226	000521	79\$:	CMP	CHCNT,#337.
1488	005312	103410			BLO	81\$	;COMPARE TO THIS LOW END
1489	005314	104402	013643		TYPE	,MBAUDRT	;NOT HERE
1490	005320	104402			TYPE		;TYPE THIS RATE
1491	005322	000000		80\$:	0		
1492	005324	104402	013670		TYPE	,WRITE	
1493	005330	000137	005722		JMP	MAINPR	
1494	005334			81\$:			
1495	005334	012737	013523	005400	MOV	#M300,83\$	
1496	005342	023727	001226	000317	CMP	CHCNT,#207.	;COMPARE TO THIS HIGH END
1497	005350	101404			BLOS	82\$	;ANSWER IS TOO HIGH
1498	005352	104402	013544		TYPE	,MWRONGRT	
1499	005356	000137	005656		JMP	SW14A	
1500	005362	023727	001226	000251	82\$:	CMP	CHCNT,#169.
1501	005370	103410			BLO	84\$	;COMPARE TO THIS LOW END
1502	005372	104402	013643		TYPE	,MBAUDRT	;NOT HERE
1503	005376	104402			TYPE		;TYPE THIS RATE
1504	005400	000000		83\$:	0		
1505	005402	104402	013670		TYPE	,WRITE	
1506	005406	000137	005722		JMP	MAINPR	
1507	005412			84\$:			

# L03

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PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0038

1508	005412	012737	013531	005456	MOV	#M150,86\$		
1509	005420	023727	001226	000147	CMP	CHCNT,#103.	:COMPARE TO THIS HIGH END	
1510	005426	101404			BLOS	85\$	:ANSWER IS TOO HIGH	
1511	005430	104402	013544		TYPE	,MWRONGRT		
1512	005434	000137	005656		JMP	SW14A		
1513	005440	023727	001226	000125	85\$:	CMP	CHCNT,#85.	:COMPARE TO THIS LOW END
1514	005446	103410			BLO	87\$	:NOT HERE	
1515	005450	104402	013643		TYPE	,MBAUDRT	:TYPE THIS RATE	
1516	005454	104402			TYPE			
1517	005456	000000			86\$:	0		
1518	005460	104402	013670		TYPE	,MRITE		
1519	005464	000137	005722		JMP	MAINPR		
1520	005470				87\$:			
1521	005470	104402	013544		TYPE	,MWRONGRT	:EITHER DEVICE DIDN'T TURN ON	
1522							:OR COUNT WAS OFF BY MORE THAN 10 PERCENT	
1523	005474	000137	005656		JMP	SW14A		
1524								
1525								
1526								

# M03

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SEQ 0039

```

1527 ;ROUTINE TO FIND OUT IF EI. & KW11-P OR
1528 ;KW11-L EXIST. ENTERED BY JSR PC,CLOCK"
1529 ;*****
1530 005500 013746 000004 CLOCK: MOV @#4,-(SP) ;SETUP FOR INTERRUPTS
1531 005504 013746 000006 MOV @#6,-(SP) ;IN THIS ROUTINE
1532 005510 012737 005546 000004 MOV #25,@#4 ;SETUP TO SEE IF KW11P
1533 005516 012737 000340 000006 MOV #340,@#6 ;PREVENT INTERRUPTS
1534 005524 005037 001216 CLR NO.CLOCK
1535 005530 005737 177546 1$: TST @#177546 ;KW11-L CSR
1536 005534 000240 NOP ;WAIT
1537 005536 012737 177546 001216 MOV #177546,NO.CLOCK;THIS IS THE ONE
1538 005544 000416 BR 4$
1539 005546 012737 005574 000004 2$: MOV #35,@#4 ;SETUP TO CHECK KW11P
1540 005554 022626 CMP (SP)+,(SP)+ ;POP STACK
1541 005556 005737 172540 TST @#172540 ;KW11-P CSR
1542 005562 000240 NOP ;WAIT
1543 005564 012737 172540 001216 MOV #172540,NO.CLOCK;THIS IS THE ONE
1544 005572 000403 BR 4$
1545 005574 104402 013052 3$: TYPE ,MNOCLOCK ;THERE IS NO CLOCK
1546 005600 022626 CMP (SP)+,(SP)+ ;POP STACK
1547 005602 012637 000006 4$: MOV (SP)+,@#6 ;RETURN ADDRESSES 4 AND 6 TO NORMAL
1548 005606 012637 000004 MOV (SP)+,@#4 ;DITTO
1549 005612 000207 RTS PC
1550 005614 012737 004574 000104 KW11P: MOV #INTSVC,@#104 ;SETUP FOR INTSVC RTN
1551 005622 012737 000340 000106 MOV #340,@#106 ;PREVENT INTERRUPTS
1552 005630 012737 177777 172542 MOV #177777,@#172542 ;PRESET COUNT SET BUFFER
1553 005636 012737 172540 001234 MOV #172540,CLKSTATUS ;KW11P CSR
1554 005644 012777 000135 173362 MOV #135,@CLKSTATUS ;SETUP INTER EN AND STATE
1555 005652 000137 004550 JMP BEGIN ;GO START BAUD RATE CHECK
  
```

# N03

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PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0040

```

1556 005656 032777 040000 173164 SW14A: BIT #BIT14,@SWR ;FIND OUT IF SCOPE LOOP IS WANTED
1557 005664 001402 BEQ TESTZ
1558 005666 000137 005726 JMP OUTPUT ;RUN BAUD SCOPE LOOP
1559 005672 TESTZ:
1560 005672 104407 INSTR ;OUTPUT MESSAGE & GET INPUT STRING
1561 005674 013224 MRBAUD ;MESSAGE
1562 005676 104411 SETFLG ;SET FLAG BASED UPON INPUT STRING
1563 005700 001222 BAUDFLG ;THIS FLAG
1564 005702 105737 001222 TSTB BAUDFLG ;WANT TO RUN BAUD TEST?
1565 005706 001405 BEQ MAINPR ;NO
1566 005710 104402 013100 TYPE ,MSCOPBAUD
1567 005714 000000 HALT ;WAIT FOR OPR TO PUT UP SW 14
1568 005716 000137 005656 JMP SW14A
1569 005722 000177 173310 MAINPR: JMP @DD.A ;JUMP TO MAIN PROGRAM
1570 ;IF DU GO TO DU11.A, IF DP GO TO DP11.A
1571 005726 005737 001240 OUTPUT: TST TAG ;DP OR DU?
1572 005732 001404 BEQ 1$ ;DU
1573 005734 052777 000103 173372 BIS #103,@DPTS ;START OUTPUT OF DP
1574 005742 000403 BR 2$ ;KEEP GOING WITH TEST
1575 005744 012777 000020 173412 1$: MOV #20,@TXCSR ;TURN ON TRANSMITTER OF DU
1576 005752 032777 040000 173070 2$: BIT #BIT14,@SWR ;MAKE SURE SW 14 IS SET
1577 005760 001374 BNE 2$
1578 005762 000005 RESET
1579 005764 000177 173246 JMP @DD.A ;GO RUN NORMAL TESTS
1580 005770 013451 XXTABLE: M19200 ;MESSAGE SETUPS
1581 005772 013461 M9600 ;DITTO
1582 005774 013470 M4800 ;DITTO
1583 005776 013477 M2400 ;DITTO
1584 006000 013506 M1200 ;DITTO
1585 006002 013515 M600 ;DITTO
1586 006004 013523 M300 ;DITTO
1587 006006 013531 M150 ;DITTO
1588 006010 013537 M75 ;DITTO
1589 006012 005237 001226 CNT.RX: INC CHCNT ;UPDATE COUNTER.
1590 006016 005777 173336 TST @RXDBUF ;CLR RX DONE
1591 006022 000002 RTI
1592 006024 011637 006034 NO.TRAP: MOV (SP),TRP.PC ;IN CASE TX TURNS ON
1593 006030 104010 ERROR 10 ;ERROR MESSAGE
1594 006032 000002 RTI
1595 006034 000001 TRP.PC: .BLKW 1
1596

```



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1597 ;LINE.N SUBROUTINE TO FETCH THE LINE
1598 ;NUMBER AND FIRST DP11 VECTOR ADDRESS FROM
1599 ;THE CONSOL SWITCHES
1600 ;SW0-SW8=VECTOR ADDRESS OF FIRST DP11
1601 ;SW9-SW15=LINE NUMBER OF DP11 SELECTED FOR TEST
1602
1603 006036 005037 001102 LINE.N: CLR ERRCNT ;CLEAR ERROR COUNT
1604 006042 017737 173002 001150 MOV @SWR,SAVSR1 ;SAVE CONSOL SWITCH SETTINGS
1605 006050 017700 172774 MOV @SWR,R0
1606 006054 000000 HALT ;SET SWR TO LINE NUMBER
1607 ;LOW BYTE = FIRST DP VECTOR
1608 ;HIGH BYTE = LINE NUMBER(8)
1609 006056 017737 172766 001200 MOV @SWR,SAVSR2 ;SAVE CONSOL SWITCHES
1610 006064 017700 172760 MOV @SWR,R0
1611 006070 000000 HALT
1612 006072 005001 CLR R1
1613 006074 113701 001201 MOV @1,R1 ;SAVE LINE NUMBER
1614 006100 042701 000001 BIC #1,R1
1615 006104 000405 BR XTAG
1616 006106 013701 001162 LINE.X: MOV XLINEX,R1
1617 006112 005037 001150 CLR SAVSR1
1618 006116 006301 ASL R1
1619 006120 006201 XTAG: ASR R1 ;CLEAR LSB
1620 006122 010137 001162 MOV R1,XLINEX
1621 006126 006301 ASL R1 ;SCALE LINE NUMBER TO ADDRESS
1622 006130 006301 ASL R1 ;MODULO 10(8)
1623 006132 006301 ASL R1
1624 006134 005777 173214 TST @BASCSR ;DOES LINE 0 REALLY EXIST??
1625 006140 000240 NOP
1626 006142 105737 001150 TSTB SAVSR1
1627 006146 100403 BMI 1$
1628 006150 012737 006262 000004 1$: MOV #3$,@#4
1629 006156 013702 001354 MOV BASCSR,R2 ;SET R2 = LINE 0 ADDRESS
1630 006162 160102 SUB R1,R2 ;MANUFACTURE DEVICE ADDRESS
1631 006164 012703 001326 MOV #DPRS,R3 ;R3 = ADDRESS OF RCV STATUS ADRS
1632 006170 010223 MOV R2,(R3)+ ;LOAD RCV STATUS ADRS
1633 006172 005722 TST (R2)+ ;INC TO RCV BUFFER ADRS
1634 006174 010223 MOV R2,(R3)+ ;LOAD RCV BUFFER ADRS
1635 006176 005202 INC R2 ;INC TO SYNC BUFFER ADRS
1636 006200 010223 MOV R2,(R3)+ ;LOAD SYNC ADRS
1637 006202 005202 INC R2 ;INC TO XMIT STATUS ADRS
1638 006204 010223 MOV R2,(R3)+ ;LOAD TRANSMITTER STATUS ADRS
1639 006206 005722 TST (R2)+ ;INC TO XMIT BUFFER
1640 006210 010223 MOV R2,(R3)+ ;LOAD XMIT BUFFER ADRS
1641 006212 005202 INC R2 ;INC TO SYNC EXTENSION
1642 006214 010223 MOV R2,(R3)+ ;LOAD SYNC EXTENSION ADRS
1643 006216 013702 001200 MOV SAVSR2,R2 ;SET UP VECTOR ADDRESS
1644 006222 042702 177000 BIC #1C<777>,R2 ;CLEAR LINE NUMBER FROM VEC ADRS
1645 006226 105737 001150 TSTB SAVSR1
1646 006232 100402 BMI 2$
1647 006234 013702 001352 MOV BASVEC,R2
    
```

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1648 006240 060102      2$:  ADD      R1,R2          ;SET VECTOR ADDRESS TO LINE NUMBER
1649 006242 010223      MOV      R2,(R3)+        ;LOAD RCV VECTOR ADRS
1650 006244 005722      TST     (R2)+           ;INC TO NEXT VECTOR
1651 006246 010223      MOV      R2,(R3)+        ;LOAD RCV PRIORITY ADRS
1652 006250 005722      TST     (R2)+           ;INC TO NEXT VECTOR
1653 006252 010223      MOV      R2,(R3)+        ;LOAD XMIT VECTOR ADRS
1654 006254 005722      TST     (R2)+           ;INC TO NEXT VECTOR
1655 006256 010213      MOV      R2,(R3)        ;LOAD XMIT PRIORITY ADRS
1656 006260 000414      BR      5$
1657 006262 005037 001162  3$:  CLR      XLINEX
1658 006266 013701 000042  MOV      @#42,R1
1659 006272 001405      BEQ     4$
1660 006274 000005      RESET
1661
1662      ;*****
1663      ;DP11 LOGICAL ENDING
1664      ;*****
1664 006276 004711      JSR     PC,(R1)
1665 006300 000240      NOP
1666 006302 000240      NOP
1667 006304 000240      NOP
1668 006306 022626      4$:  POP.SP
1669 006310 000676      BR      LINE.X
1670 006312 012737 000006 000004 5$:  MOV      #6,@#4
1671 006320 013737 001326 001214  MOV      DPRS,DEVICE ;SET FOR END PASS MSG.
1672 006326 000207      RTS     PC
1673      ;*****CLRVEC*****
1674
1675      ;CLRVEC,ROUTINE TO FILL COMMUNICATION VECTOR AREA WITH .+2,HALT
1676
1677 006330 012702 000300  CLRVEC: MOV      #300,R2          ;R2 COMM VECTOR AREA ADRS
1678 006334 012701 000302  MOV      #302,R1          ;INIT R1 WITH ADRS OF HALT
1679 006340 010122      1$:  MOV      R1,(R2)+        ;MOV .+2 TO PC
1680 006342 005022      CLR     (R2)+           ;MOV HALT TO PC
1681 006344 022121      CMP     (R1)+,(R1)+     ;INC TO NEXT VECTOR AREA
1682 006346 022701 000776  CMP     #776,R1         ;END OF VECTOR AREA
1683 006352 001372      BNE    1$              ;NO
1684 006354 000207      RTS     PC             ;RETURN
1685
1686
1687

```

```

1688 ;*****OKADR*****
1689 ;OKADR, ROUTINE TO CHECK FOR VALID DU ADDRESS
1690
1691 006356 013746 000004 OKADR: MOV @#4,-(SP) ;SETUP FOR INTERRUPTS
1692 006362 013746 000006 MOV @#6,-(SP) ;DITTO
1693 006366 012737 006412 000004 MOV #15,@#4 ;SETUP TO CHECK ADDR YOU SELECTED
1694 006374 012737 000340 000006 MOV #340,@#6 ;PREVENT INTERKJPTS
1695 006402 005777 000704 TST @DUBASE ;ADDRESS
1696 006406 000240 NOP ;WAIT
1697 006410 000405 BR 2$ ;ADDRESS OK
1698 006412 104402 013333 1$: TYPE ,MNODEV ;ADDRESS NG--LET OPR KNOW
1699 006416 022626 CMP (SP)+,(SP)+ ;POP STACK
1700 006420 000000 HALT ;WAIT FOR OPR TO DECIDE IF ADR IS OK
1701 006422 000777 BR . ;IF ADRS WAS OK THEN RUN DU DIAGNOSTIC
1702 ;IF ADRS WRONG RESTART TEST AND ANS QUESTIONS
1703 006424 012637 000006 2$: MOV (SP)+,@#6 ;RETURN ADDRESS 4 AND 6 TO NORMAL
1704 006430 012637 000004 MOV (SP)+,@#4 ;DITTO
1705 006434 000207 RTS PC
1706
1707
1708
1709
1710
1711 ;POWER FAIL ROUTINE
1712
1713 006436 012737 006446 000024 .PFAIL: MOV #PWRUP,24 ;LOAD PFAIL VECTOR FOR POWER UP
1714 006444 000000 HALT ;
1715 006446 000005 PWRUP: RESET ;WAIT TTY TO COME UP
1716 006450 012706 001050 MOV #STACK,SP ;REINIT STACK POINTER
1717 006454 012737 006436 000024 MOV #.PFAIL,24 ;LOAD PFAIL VECTOR FOR POWER DOWN
1718 006462 104402 TYPE
1719 006464 011762 MPOWER
1720 006466 000177 172550 JMP @PSTART
1721
1722
  
```

# E04

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PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0044

Address	Op Code	Op 1	Op 2	Op 3	Op 4	Op 5	Op 6	Op 7	Op 8	Op 9	Op 10
1723	006472										
1724	006472	012737	006704	001210							
1725	006500	105077	172634								
1726	006504	005037	001170								
1727	006510	005037	001166								
1728	006514	005077	172606								
1729	006520	005077	172610								
1730	006524	052777	000001	172574							
1731	006532	012737	000400	001172							
1732	006540	032737	000400	001150							
1733	006546	001414									
1734	006550	012737	010000	001174							
1735	006556	052777	002000	172542							
1736	006564	012737	000426	001160							
1737	006572	105277	172542								
1738	006576	000406									
1739	006600	012737	000400	001174	1\$:						
1740	006606	012737	000026	001160							
1741	006614	012777	006706	172524	2\$:						
1742	006622	012777	007014	172512							
1743	006630	012737	000200	177776							
1744	006636	012737	000004	001176							
1745	006644	113777	001160	172460							
1746	006652	052777	000100	172446							
1747	006660	052777	000301	172446							
1748											
1749											
1750	006666	005237	001106		3\$:						
1751	006672	001375									
1752	006674	005337	001110								
1753	006700	001372									
1754	006702	104000									
1755	006704	000207			4\$:						
1756											
1757											
1758											

SEQ.DATA:

MOV	#4\$,BACK	
CLRB	@SEXT	:CLEAR SYNC EXTENTION
CLR	RDATA	:RECEIVER DATA
CLR	TDATA	:TRANSMITTER DATA
CLR	@DPRS	:RECEIVER STATUS
CLR	@DPTS	:TRANSMITTER STATUS
BIS	#BIT0,@DPRS	:STRIP SYNC
MOV	#400,CHLEN	:CHAR LENGTH INDEX
BIT	#BIT8,SAVSR1	:TEST 12 BIT CHAR MODE
BEQ	1\$	:NO
MOV	#10000,LIMIT	:SELECT END OF DATA
BIS	#BIT10,@DPRS	:SELECT 12 BITS/CHARACTER
MOV	#426,TSYNC	:SYNC FOR 12 BIT CHAR
INCB	@SEXT	:PLACE MSB OF SYNC IN SYNC EXT
BR	2\$	
MOV	#400,LIMIT	:TEMPORARY CHARACTER LIMIT
MOV	#26,TSYNC	:INIT SYNC STORAGE
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
INC	TEMP1	
BNE	3\$	
DEC	TEMP2	
BNE	3\$	
ERROR		
RTS	PC	



```

1782 ;RECEIVE SEQUENTIAL DATA
1783
1784 007014 105777 172306 RV18: TSTB 3DPRS ;RECEVIER DONE??
1785 007020 100401 BMI 1$ ;YES
1786 007022 104000 ERROR ;REPORT ERROR
1787 007024 013700 001170 1$: MOV RDATA,R0
1788 007030 017701 172274 MOV 3DPRB,R1
1789 007034 023777 001170 172266 CMP RDATA,3DPRB ;CORRECT DATA
1790 007042 001404 BEQ 2$
1791 007044 017737 172260 001152 MOV 3DPRB,TMPDAT ;STORE DATA
1792 007052 104001 ERROR 1 ;REPORT ERROR
1793 007054 042777 000001 172244 2$: BIC #BIT0,3DPRS ;CLEAR STRIP SYNC
1794 007062 005237 001170 INC RDATA ;NEXT CHARACTER
1795 007066 023737 001174 001170 CMP LIMIT,RDATA
1796 007074 001037 BNE 3$
1797 007076 005037 001170 CLR RDATA
1798 007102 005037 001166 CLR TDATA
1799 007106 006237 001174 ASR LIMIT ;DECREASE LIMIT TO 7 BITS
1800 007112 012777 006706 172226 MOV #TV18,3DPTIV ;SET UP SYNC TRANSMISSION
1801 007120 012737 000004 001176 MOV #4,SCNT ;SYNC COUNT =4
1802 007126 052777 000001 172172 BIS #BIT0,3DPRS ;STRIP SYNC
1803 007134 042777 004000 172164 BIC #BIT11,3DPRS ;CLEAR RCV ACTIVE
1804 007142 052777 000301 172164 BIS #301,3DPTS
1805 007150 053777 001172 172150 BIS CHLEN,3DPRS ;CHANGE CHAR LENGTH
1806 007156 062737 000400 001172 ADD #400,CHLEN ;DECREASE CHAR LENGTH
1807 007164 022737 001400 001172 CMP #1400,CHLEN ;HAVE ALL LENGTHS BEEN TESTED
1808 007172 001401 BEQ 4$ ;YES
1809 007174 000002 3$: RTI ;NO
1810 007176 005077 172132 4$: CLR 3DPTS ;CLR TRANSMITTER STATUS
1811 007202 005077 172120 CLR 3DPRS ;CLR RECEIVER STATUS
1812 007206 042737 000040 177776 BIC #BIT5,PS ;PRIORITY = 4
1813 007214 013716 001210 MOV BACK,(SP)
1814 007220 000002 RTI

```

# H04

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DZDFAC.P11 20-SEP-76 14:36 PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0047

1815						:NEW DU ADDRESSES	
1816	007222	013737	007312	001356	DUADDR:	MOV DUBASE, RXCSR	;XXX0
1817	007230	013737	001356	001214		MOV RXCSR, DEVICE	
1818	007236	062737	000002	007312		ADD #2, DUBASE	
1819	007244	013737	007312	001360		MOV DUBASE, RXDBUF	;XXX2
1820	007252	013737	007312	001362		MOV DUBASE, PARCSR	;XXX2
1821	007260	062737	000002	007312		ADD #2, DUBASE	
1822	007266	013737	007312	001364		MOV DUBASE, TXCSR	;XXX4
1823	007274	062737	000002	007312		ADD #2, DUBASE	
1824	007302	013737	007312	001366		MOV DUBASE, TXDBUF	;XXX6
1825	007310	000207				RTS	
1826	007312	000000			DUBASE:	0	
1827							
1828							

```

1829                                     ;THE FOLLOWING CALCULATES THE NEXT DEVICE ADDRESS AND ASSOCIATED
1830                                     ;VECTOR ADDRESSES IF RUNNING MULTIPLE DEVICES (DU11...DFC11'S)
1831
1832 007314 105737 001254          DU.UPDATE:      TSTB      MULTD      ;ARE YOU RUNNING MULTIPLE DEVICES ?
1833 007320 001510                BEQ        CCC        ;NO JUMP AROUND
1834 007322 005737 001270          TST        ACTREG     ;ARE ANY DEVICES ACTIVE ?
1835 007326 001007                BNE        RUNIT      ;YES
1836 007330 104402 012467          TYPE       MCOV       ;NO
1837 007334 013700 001270          MOV        ACTREG,RO  ;DISPLAY ACTREG
1838 007340 000000                HALT       ;SELECT SOMETHING TO RUN @ ACTREG:
1839                                     ;SELECT SWITCHES & HIT CONTINUE (PUT SW00 =1)
1840 007342 000137 001652          JMP        DU11       ;START OVER AGAIN.....YOU DESELECTED EVERYTHING
1841 007346 062737 000010 001256  RUNIT:      ADD        #10,BASEADD ;NEXT BLOCK (ADDRESSSES)
1842 007354 062737 000010 001264  ZERO:      ADD        #10,BASEIV  ;NEXT BLOCK (VECTORS)
1843 007362 000241                CLC
1844 007364 006137 001272          ROL        ROTADD    ;UP DATE ROTATING POINTER
1845 007370 103412                BCS       1$         ;IS IT THE LAST DEVICE
1846                                     ;TO BE TESTED IN THIS PASS ?
1847 007372 033737 001272 001270  BIT        ROTADD,ACTREG ;TEST THIS DEVICE FOR ACTIVE STATUS
1848 007400 001762                BEQ        RUNIT      ;IF NOT ACTIVE, TRY NEXT ADDRESS
1849 007402 004737 007446          JSR        PC,REPLAY  ;CALCULATE NEW PARAMETERS
1850 007406 004737 006356          JSR        PC,OKADR   ;CHECK FOR GOOD ADDRESS
1851 007412 000137 007562          JMP        ARESTRT    ;YES IT WAS ACTIVE,TEST THIS DEVICE
1852 007416 012737 000001 001272  1$:      MOV        #1,ROTADD  ;OK! NOW SET UP ROTATING
1853                                     ;POINTER FOR NEXT MULTIPLE PASS
1854 007424 013737 001260 001256  MOV        KEEPADD,BASEADD ;RESTORE BASE ADDRESS
1855 007432 013737 001266 001264  MOV        KEEPIV,BASEIV  ;RESTORE BASE INTERRUPT VECTORS
1856 007440 004737 007446          JSR        PC,REPLAY  ;CALC NEW PARAMETERS
1857 007444 000436                BR        CCC        ;JUMP AROUND REPLAY
1858 007446 013737 001256 007312  REPLAY:  MOV        BASEADD,DUBASE ;SET UP FOR NEW ADDRESSES
1859 007454 004737 007222          JSR        PC,DUADDR  ;CREATE NEW ADDRESSES
1860 007460 013737 001264 001370  MOV        BASEIV,DURIV ;CREATE DURIV
1861 007466 062737 000002 001264  ADD        #2,BASEIV
1862 007474 013737 001264 001372  MOV        BASEIV,DURIS ;CREATE DURIS
1863 007502 062737 000002 001264  ADD        #2,BASEIV
1864 007510 013737 001264 001374  MOV        BASEIV,DUTIV ;CREATE DUTIV
1865 007516 062737 000002 001264  ADD        #2,BASEIV
1866 007524 013737 001264 001376  MOV        BASEIV,DUTIS ;CREATE DUTIS
1867 007532 013737 001370 001264  MOV        DURIV,BASEIV ;RESTORE
1868 007540 000207                RTS        PC
1869
1870
1871 007542                CCC:
1872 007542 013701 000042          MOV        @#42,R1    ;CHECK FOR ACT-11 OR DDP
1873 007546 001405                BEQ        ARESTRT    ;IF NOT, CONTINUE TESTING
1874 007550 000005                RESET
1875 007552 004711          LOGICAL:  JSR        PC,(R1)
1876 007554 000240                NOP
1877 007556 000240                NOP
1878 007560 000240                NOP
1879 007562 012737 000340 177776  ARESTRT:  MOV        #340,PS ;PREVENT INTERRUPTS (PRIO: 7)
1880 007570 000177 171416          JMP        @CONT.
    
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# J04

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 DZDFAC.P11 20-SEP-76 14:36 PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0049

1881									
1882	007574	017637	000000	001112	.DELAY:	MOV	2(SP),TEMP3		;SET UP COUNT
1883	007602	062716	000002			ADD	#2,(SP)		
1884	007606	011637	001114			MOV	(SP),TEMP4		
1885	007612	022626				POP	SP		
1886	007614	005037	177776			CLR	PS		
1887	007620	162737	001112			SUB	(PC)+,TEMP3		;FOR A SMALLER DELAY TIME
1888	007624				LESS.TIME:				;PUT A NUMBER IN HERE TO BE
1889	007624	000000				000			;SUBTRACTED FROM TOTAL.
1890	007626	062737	001112			ADD	(PC)+,TEMP3		;FOR A LONGER DELAY TIME
1891	007632				MORE.TIME:				;PUT A NUMBER IN HERE TO BE ADDED
1892	007632	000000				000			;TO THE TOTAL TIME.
1893	007634	162737	000001	001112	1\$:	SUB	#1,TEMP3		;TIME OUT
1894	007642	001374				BNE	1\$		;NO
1895	007644	000177	171244			JMP	2TEMP4		

# K04

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1896
1897
1898
1899 007650 104413 .SCOPE: CKSWR ;SEE IF ↑G STRUCK (SOFT SWITCH REGISTER)
1900 007652 032777 040000 171170 TTST: BIT #BIT14, @SWR
1901 007660 001401 BEQ 1$
1902 007662 000424 BR 3$
1903 007664 032777 004000 171156 1$: BIT #SW11, @SWR
1904 007672 001006 BNE 2$
1905 007674 005237 001074 INC LPCNT
1906 007700 023737 001074 001072 CMP LPCNT, ICOUNT
1907 007706 001012 BNE 3$
1908 007710 105037 001246 2$: CLRB ERRFLG
1909 007714 005037 001074 CLR LPCNT
1910 007720 012737 000062 001072 MOV #50, ICOUNT
1911 007726 013737 001066 001064 MOV NEXT, RETURN
1912 007734 013716 001064 3$: MOV RETURN, (SP)
1913 007740 000002 RTI
1914 007742 001407 BRW: 1407
1915 007744 000432 BRX: 432
1916
1917 ;END OF PASS
1918 ;TYPE "END OF PASS CSR: XXXXXX"
1919 ;UPDATE PASS COUNT
1920 ;UPDATE LINE NUMBER
1921 ;IF IN CYCLE MODE
1922 ;RESTART TEST
1923
1924 007746 005037 001104 .EOP: CLR LSTERR ;CLEAR LAST ERROR PC
1925 007752 105037 001246 CLRB ERRFLG ;CLEAR ERROR FLAG
1926 007756 005237 001100 INC PASCNT ;UPDATE PASS COUNT
1927 007762 104402 TYPE
1928 007764 011777 MEPASS
1929 007766 104406 CNVRT
1930 007770 010032 XCSR
1931 007772 105737 001150 TSTB SAVSR1
1932 007776 100402 BMI 64$
1933 010000 005237 001162 INC XLINEX
1934 010004 013737 001100 001052 64$: MOV PASCNT, LIGHTS ;DISPLAY PASS COUNT
1935 010012 005737 001240 TST TAG ;DP OR DU
1936 010016 001002 BNE RESTRT ;DP
1937 010020 000137 007314 JMP DU.UPDATE ;DU
1938 010024 104413 RESTRT: CKSWR
1939 010026 000177 171160 JMP @CONT. ;CONTINUE TO TEST APPRO. DEVICE
1940 010032 000001 XCSR: 1
1941 010034 006 002 .BYTE 6,2
1942 010036 001214 DEVICE
1943
1944 010040 012737 177570 001050 TSTSWR: MOV #DSWR, SWR ;MOV HARDWARE SWR TO SWR
1945 010046 012737 177570 001052 MOV #DLIGHTS, LIGHTS ;MOV DISPLAY LIGHTS TO LIGHTS
1946 010054 013746 000006 MOV @#6, -(SP) ;SAVE VECTORS
1947 010060 013746 000004 MOV @#4, -(SP)
1948 010064 012737 010104 000004 MOV #64$, @#4 ;SET UP FOR TIMEOUT
1949 010072 022777 177777 170750 CMP #-1, @SWR ;REFERENCE HARDWARE SWITCH REGISTER
1950 010100 001402 BEQ 65$
1951 010102 000407 BR 66$

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1952 010104 022626          64$:  CMP      (SP)+,(SP)+      ;ADJUST STACK
1953 010106 012737 000176 001050 65$:  MOV      #SWREG,SWR      ;POINT TO SOFTWARE SWITCH REG
1954 010114 012737 000174 001052      MOV      #DISPREG,LIGHTS ;POINT TO SOFT DISPLAY REG
1955 010122 012637 000004          66$:  MOV      (SP)+,@#4      ;RESTORE VECTORS
1956 010126 012637 000006      MOV      (SP)+,@#6
1957 010132 005737 000042      TST      @#42          ;UNDER MONITOR
1958 010136 001005          BNE      67$
1959 010140 022737 000176 001050      CMP      #SWREG,SWR      ;IS SWREG USED
1960 010146 001001          BNE      67$
1961 010150 104414          GTSWR
1962 010152 000207          67$:  RETURN
1963
1964          ;TELETYPE OUTPUT ROUTINE
1965
1966 010154 010046          .TYPE: MOV  RD,-(SP)      ;SAVE RD
1967 010156 017600 000002      MOV      @2(SP),RD      ;GET ADDRESS OF ASCIZ STRING
1968 010162 005737 011504      TST      @#RDSW        ;?CALLED BY GTSWR ROUTINE?
1969 010166 001004          BNE      1$           ;IF YES, DON'T INHIBIT TYPEOUT
1970 010170 032777 010000 170652      BIT      #SW12,@SWR    ;INHIBIT ALL TYPEOUTS?
1971 010176 001020          BNE      4$           ;YES- GET OUT
1972 010200 112046          1$:  MOVB     (RD)+,-(SP)   ;PUSH CHAR TO BE TYPED ONTO STACK
1973 010202 001415          BEQ      3$           ;NULL AT END OF MESSAGE
1974 010204 122716 000200      CMPB     #CRLF,(SP)   ;IS IT A CODED <CRLF>
1975 010210 001004          BNE      2$           ;IF NOT MOVE ON
1976 010212 005726          TST      (SP)+        ;POP OFF CODED <CRLF>
1977 010214 104402 012061      TYPE     ,CR.LF      ;AND TYPE THE REAL THING
1978
1979 010220 000767          BR       1$           ;GET NEXT CHARACTER
1980
1981 010222          2$:
1982 010222 105777 170632      TSTB     @TPCSR      ;READY TO PRINT
1983 010226 100375          BPL      2$          ;WAIT
1984 010230 112677 170626      MOVB     (SP)+,@TPDBR ;PRINT IT
1985 010234 000761          BR       1$          ;GET NEXT CHAR
1986 010236 005726          3$:  TST      (SP)+        ;CLEAN UP STACK
1987 010240 012600          4$:  MOV      (SP)+,RD     ;PUT RD BACK
1988 010242 062716 000002      ADD      #2,(SP)     ;ADJUST RETURN PC
1989 010246 000002          RTI
1990
1991          ;ERROR HANDLER
1992
1993 010250 104413          .ERROR: CKSWR
1994 010252 032777 010000 170570      BIT      #SW12,@SWR
1995 010260 001406          BEQ      XBX
1996 010262 105777 170572      TSTB     @TPCSR
1997 010266 100003          BPL      XBX
1998 010270 112777 000207 170564      MOVB     #207,@TPDBR
1999 010276 032777 020000 170544      XBX:  BIT      #SW13,@SWR
2000 010304 001067          BNE      HALTS
2001 010306 021637 001104      CMP      (SP),LSTERR
2002 010312 001404          BEQ      1$
2003 010314 011637 001104      MOV      (SP),LSTERR
2004 010320 105037 001246          CLRB     ERRFLG
2005 010324 104403          1$:  SAVOS
2006 010326 011605          MOV      (SP),R5
2007 010330 162705 000002      SUB      #2,R5
    
```

M04

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;TEST TO SEE IF USING HARD OR SOFT SWITCH REGISTER

SEQ 0052

2008	010334	011504				MOV	(R5),R4
2009	010336	006304				ASL	R4
2010	010340	061504				ADD	(R5),R4
2011	010342	006304				ASL	R4
2012	010344	042704	177001			BIC	#177001,R4
2013	010350	062704	014164			ADD	#.ERRTAB,R4
2014	010354	012437	010434			MOV	(R4)+,ERRMSG
2015	010360	012437	010446			MOV	(R4)+,DATAHD
2016	010364	011437	010460			MOV	(R4),DATABP
2017	010370	105737	001246			TSTB	ERRFLG
2018	010374	001403				BEQ	TYPMSG
2019	010376	005737	010460			TST	DATABP
2020	010402	001022				BNE	TYPDAT
2021	010404	104402				TYPMSG: TYPE	
2022	010406	000001				WHO: .BLKW	1
2023	010410	104402				TYPE	
2024	010412	012043				MERRPC	
2025	010414	104406				CNVRT	
2026	010416	010552				ERTABO	
2027	010420	104402				TYPE	
2028	010422	012057				MCRLF	
2029	010424	112737	177777	001246		MOVB	#-1,ERRFLG
2030	010432	104402				TYPE	
2031	010434	000000				ERRMSG: 0	
2032	010436	005737	010446			TST	DATAHD
2033	010442	001402				BEQ	TYPDAT
2034	010444	104402				TYPE	
2035	010446	000000				DATAHD: 0	
2036	010450	005737	010460			TYPDAT: TST	DATABP
2037	010454	001402				BEQ	RESREG
2038	010456	104405				CONVRT	
2039	010460	000000				DATABP: 0	
2040	010462	104404				RESREG: RES05	
2041	010464	005777	170360			HALTS: TST	2SWR
2042	010470	100005				BPL	EXITER
2043	010472	010046				PUSHRO	
2044	010474	016600	000002			MOV	2(SP),R0
2045	010500	000000				HALT	
2046	010502	012600				POPPO	
2047	010504	104413				EXITER: CKSWR	
2048	010506	005237	001102			INC	ERRCNT
2049	010512	032777	000400	170330		BIT	#SW08,2SWR
2050	010520	001007				BNE	1\$
2051	010522	032777	002000	170320		BIT	#SW10,2SWR
2052	010530	001407				BEQ	2\$
2053	010532	013737	001066	001064		MOV	NEXT,RETURN
2054	010540	012706	001050			1\$: MOV	#STACK,SP
2055	010544	000177	170314			JMP	2RETURN
2056	010550	000002				2\$: RTI	
2057	010552	000001				ERTABO: 1	
2058	010554	006	002			.BYTE	6,2
2059	010556	001146				SAVPC	
2060							
2061							;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
2062							
2063	010560	104402				.CONVR: TYPE	

2064	010562	012057			MCRLF
2065	010564	017601	000000		.CNVRT: MOV 4(SP),R1
2066	010570	013737	014310	001112	MOV TEMP,TEMP3
2067	010576	062716	000002		ADD #2,(SP)
2068	010602	012137	010752		MOV (R1)+,WRDCNT
2069	010606	112137	010754		1\$: MOV (R1)+,CHRCNT
2070	010612	112137	010755		MOV (R1)+,SPACNT
2071	010616	013137	010756		MOV 2(R1)+,BINWRD
2072	010622	013704	010756		2\$: MOV BINWRD,R4
2073	010626	113705	010754		MOV (R1)+,CHRCNT,R5
2074	010632	012700	014310		MOV #TEMP,R0
2075	010636	010403			3\$: MOV R4,R3
2076	010640	042703	177770		BIC #177770,R3
2077	010644	062703	000260		ADD #260,R3
2078	010650	110320			MOV R3,(R0)+
2079	010652	000241			CLC
2080	010654	006004			ROR R4
2081	010656	000241			CLC
2082	010660	006004			ROR R4
2083	010662	000241			CLC
2084	010664	006004			ROR R4
2085	010666	005305			DEC R5
2086	010670	001362			BNE 3\$
2087	010672	012703	014352		MOV #MDATA,R3
2088	010676	114023			4\$: MOV -(R0),(R3)+
2089	010700	105337	010754		DECB CHRCNT
2090	010704	001374			BNE 4\$
2091	010706	105737	010755		TSTB SPACNT
2092	010712	001405			BEQ 6\$
2093	010714	112723	000240		5\$: MOV #240,(R3)+
2094	010720	105337	010755		DECB SPACNT
2095	010724	001373			BNE 5\$
2096	010726	105013			6\$: CLRB (R3)
2097	010730	104402			TYPE
2098	010732	014352			MDATA
2099	010734	005337	010752		DEC WRDCNT
2100	010740	001322			BNE 1\$
2101	010742	013737	001112	014310	MOV TEMP3,TEMP
2102	010750	000002			RTI
2103	010752	000000			WRDCNT: 0
2104	010754	000000			CHRCNT: 0
2105		010755			SPACNT=CHRCNT+1
2106	010756	000000			BINWRD: 0
2107					
2108					;SAVE PC OF TEST THAT FAILED AND R0-R5
2109					
2110	010760	016637	000004	001146	.SAV05: MOV 4(SP),SAVPC
2111					
2112					;SAVE R0-R5
2113					
2114	010766	010537	001142		SV05: MOV R5,SAVR5
2115	010772	010437	001140		MOV R4,SAVR4
2116	010776	010337	001136		MOV R3,SAVR3
2117	011002	010237	001134		MOV R2,SAVR2
2118	011006	010137	001132		MOV R1,SAVR1
2119	011012	010037	001130		MOV R0,SAVR0

```

120 011016 000002
121
122
123
124
125 011020 013700 001130
126 011024 013701 001132
127 011030 013702 001134
128 011034 013703 001136
129 011040 013704 001140
130 011044 013705 001142
131
132
133
134
135 011052 010546
136 011054 010446
137 011056 016605 000004
138 011062 012537 011256
139 011066 012537 011260
140 011072 012537 011262
141 011076 112537 011264
142 011102 112537 011265
143 011106 010566 000004
144 011112 005005
145 011114 012704 014414
146 011120 122714 000015
147 011124 001420
148 011126 121427 000060
149 011132 002415
150 011134 121427 000067
151 011140 003012
152 011142 142714 000060
153 011146 152405
154 011150 122714 000015
155 011154 001414
156 011156 006305
157 011160 006305
158 011162 006305
159 011164 000760
160 011166 122714 000015
161 011172 001003
162 011174 005737 011504
163 011200 001023
164 011202 104412
165 011204 000742
166
167
168 011206 020537 011260
169 011212 101365
170 011214 020537 011256
171 011220 103762
172 011222 133705 011264
173 011226 001357
174
175

```

RTI

;RESTORE R0-R5

```

.RES05: MOV SAVR0,R0
MOV SAVR1,R1
MOV SAVR2,R2
MOV SAVR3,R3
MOV SAVR4,R4
MOV SAVR5,R5
RTI

```

;CONVERT ASCII STRING TO OCTAL

```

.PARAM: MOV R5,-(SP)
MOV R4,-(SP)
MOV 4(SP),R5
MOV (R5)+,LOLIM
MOV (R5)+,HILIM
MOV (R5)+,DEVADR
MOV (R5)+,LOBITS
MOV (R5)+,ADRCNT
MOV R5,4(SP)

```

```

PARAM1: CLR R5
MOV #INBUF,R4
CMPB #15,(R4)
BEQ PARERR
1$: CMPB (R4),#60
BLT PARERR
CMPB (R4),#67
BGT PARERR
BICB #60,(R4)
BISB (R4)+,R5
CMPB #15,(R4)
BEQ LIMITS
ASL R5
ASL R5
ASL R5
BR 1$

```

```

PARERR: CMPB #15,(R4) ;IS FIRST CHARACTER A <CR>
BNE 120$
TST @#RDSW ;IS CKSWR ROUTINE BEING USED
BNE PARTI

```

```

120$: INSTER
BR PARAM1

```

;TEST TO SEE IF NUMBER IS WITHIN LIMITS

```

LIMITS: CMP R5,HILIM
BHI PARERR
CMP R5,LOLIM
BLO PARERR
BITB LOBITS,R5
BNE PARERR

```

;STORE NUMBER AT SPECIFIED ADDRESS

2176									
2177	011230	013704	011262						
2178	011234	010524							
2179	011236	062705	000002						
2180	011242	105337	011265						
2181	011246	001372							
2182	011250	012604							
2183	011252	012605							
2184	011254	000002							
2185	011256	000000							
2186	011260	000000							
2187	011262	000000							
2188	011264	000000							
2189		011265							
2190									
2191									
2192									
2193									
2194	011266	010346							
2195	011270	010446							
2196	011272	017637	000004	011310					
2197	011300	062766	000002	000004					
2198	011306	104402							
2199	011310	000000							
2200	011312	012704	014414						
2201	011316	012703	000007						
2202	011322	105777	167526						
2203	011326	100375							
2204	011330	117714	167522						
2205	011334	142714	000200						
2206	011340	121427	000025						
2207	011344	001003							
2208	011346	104402	012057						
2209	011352	000755							
2210	011354	122427	000015						
2211	011360	001423							
2212	011362	117777	167470	167472					
2213	011370	105777	167464						
2214	011374	100375							
2215	011376	005303							
2216	011400	001350							
2217	011402	000402							
2218	011404	010346							
2219	011406	010446							
2220	011410	104402							
2221	011412	012615							
2222	011414	005737	011504						
2223	011420	001402							
2224	011422	104402	012057						
2225	011426	000727							
2226	011430	012604							
2227	011432	012603							
2228	011434	000002							
2229									
2230									
2231									

```

;TEST TO SEE IF USING HARD OR SOFT SWITCH REGISTER
;ASCII STRING INPUT ROUTINE
;IS IT <↑G>
;COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
;BUFFER TO THE CHARACTERS "N" AND "Y".
;IF THE CHARACTER IS "N" CLEAR THE FLAG
    
```

# D05

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;TEST TO SEE IF USING HARD OR SOFT SWITCH REGISTER

SEQ 0056

;IF THE CHARACTER IS "Y" SET THE FLAG

```

2232
2233
2234 011436 017605 000000 .SETFLG: MOV 3(SP),R5
2235 011442 122737 000116 014414 CMPB #'N,INBUF ;IS IT "N" ?
2236 011450 001002 BNE 1$
2237 011452 105015 CLRB (R5) ;000
2238 011454 000406 BR 2$
2239 011456 122737 000131 014414 1$: CMPB #'Y,INBUF ;IS IT "Y" ?
2240 011464 001005 BNE 3$
2241 011466 112715 MOVB #-1,(R5) ;377
2242 011472 062716 000002 2$: ADD #2,(SP)
2243 011476 000002 RTI
2244 011500 104412 3$: INSTR ;RETRY
2245 011502 000755 BR .SETFLG
2246
2247 ;CHECK SWITCH REGISTER ROUTINE. CHECKS FOR ↑G TO ALLOW CHANGING
2248 ;OF LOC.176.
2249 ;LOCATIONS USED:
2250 011504 000000 RDSW: .WORD 0
2251
2252
2253 011506 005737 000042 .CKSWR: TST 3#42
2254 011512 001042 BNE OUT
2255 011514 022737 000176 001050 CMP #SWREG,SWR ;SOFTWARE SWITCH REGISTER PRESENT
2256 011522 001036 BNE OUT ;NO, GET OUT
2257 011524 105777 167324 TSTB 3TKCSR ;YES, WAIT FOR
2258 011530 100033 BPL OUT ;READY, GET CHARACTER
2259 011532 017737 167320 011310 MOV 3TKDBR,.MSG ;AND STRIP OFF
2260 011540 042737 177600 011310 BIC #177600,.MSG ;THE GARBAGE
2261 011546 122737 000007 011310 CMPB #7,.MSG ;IS IT A (↑G)
2262 011554 001021 BNE OUT
2263 011556 104402 011634 TYPE,$CNTG
2264 011562 005137 011504 .GTSWR: COM 3#RDSW
2265 011566 104402 011640 TYPE,$MSWR
2266 011572 104406 011626 CNVRT,SWREGC
2267 011576 104407 011647 INSTR,$MNEW
2268 011602 104410 PARAM
2269 011604 000000 0
2270 011606 177777 177777
2271 011610 000176 SWREG
2272 011612 000 001 .BYTE 0,1
2273 011614 104402 012057 TYPE,MCRLF
2274 011620 005037 011504 OUT: CLR 3#RDSW
2275 011624 000002 RTI
2276 011626 000001 SWREGC: 1
2277 011630 006 002 .BYTE 6,2
2278 011632 000176 SWREG
2279 011634 057377 000107 $CNTG: .ASCIZ <377>/↑G/
2280 011640 051777 051127 020075 $MSWR: .ASCIZ <377>/SWR= /
2281 011646 000
2282 011647 040 047040 053505 $MNEW: .ASCIZ / NEW= /
2283 011654 020075 000
2284 011660 .EVEN
2285 ;TRAP DISPATCH SERVICE
2286 ;ARGUMENT OF TRAP IS EXTRACTED
2287 ;AND USED AS OFFSET TO OBTAIN POINTER
  
```



# E05

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;ROUTINES TO CHECK FOR TG AND TO GET 'NEW' VALUES  
;TO SELECTED SUBROUTINE

SEQ 0057

2288  
2289  
2290  
2291  
2292  
2293  
2294  
2295  
2296  
2297  
2298  
2299  
2300

011660	011646	
011662	162716	000002
011666	017616	000000
011672	006316	
011674	042716	177001
011700	062716	001274
011704	017616	000000
011710	000136	

.TRPSR: MOV (SP), -(SP)  
SUB #2, (SP)  
MOV @ (SP), (SP)  
TRPOK: ASL (SP)  
BIC #177001, (SP)  
ADD #.TRPTAB, (SP)  
MOV @ (SP), (SP)  
JMP @ (SP)+

:GET PC OF RETURN  
:=PC OF TRAP  
:GET TRP  
:MULTIPLY TRAP ARG BY 2  
:CLEAR UNWANTED BITS  
:POINTER TO SUBROUTINE ADDRESS  
:SUBROUTINE ADDRESS  
:GO TO SUBROUTINE

F05

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;ROUTINES TO CHECK FOR IG AND TO GET 'NEW' VALUES

SEQ 0058

2301  
2302  
2303  
2304  
2305

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

011712	042200	030520	027461	EDP11: .ASCIZ <CRLF>?DP11/DFC11-A TEST ?
011736	042200	030525	027461	EDU11: .ASCIZ <CRLF>?DU11/DFC11-A TEST ?
011762	050200	051127	043040	MPOWER: .ASCIZ <CRLF>/PWR FAILED /
011777	007	103007	047105	MEPASS: .ASCIZ <7><7><CRLF>/END PASS CSR: /
012021	200	042524	052123	MTSTN: .ASCIZ <CRLF>/TEST NO. /
012034	044514	042516	020072	MLINE: .ASCIZ /LINE: /
012043	200	051105	047522	MERRPC: .ASCIZ <CRLF>/ERROR PC: /
012057	200	000		MCRLF: .ASCIZ <CRLF>
012061	015	000012		CR.LF: .ASCIZ <15><12>
012064	005200	042504	044526	DUTITLE: .ASCII <CRLF><12>/DEVICE UNDER TEST-DU11 &DFC11A /<CRLF>
012126	042115	030455	026461	.ASCIZ /MD-11-DZDFA-B /<CRLF>
012146	005200	042504	044526	DPTITLE: .ASCII <CRLF><12>/DEVICE UNDER TEST-DP11 &DFC11A /<CRLF>
012210	042115	030455	026461	.ASCIZ /MD-11-DZDFA-B /<CRLF>
012230	053200	041505	047524	MVECTO: .ASCIZ <CRLF>/VECTOR ADDRESS-/
012251	200	051461	020124	MREGAD: .ASCIZ <CRLF>/1ST DEVICE: RECEIVER CONTROL REGISTER ADDRESS-/
012331	200	051101	020105	MMULT: .ASCIZ <CRLF>/ARE YOU RUNNING MULTIPLE DEVICES ? (Y OR N)-/
012407	200	040514	052123	MLASTD: .ASCIZ <CRLF>/LAST DEVICE:RECEIVER CONTROL REGISTER ADDRESS-/
012467	200	027040	027056	MCOW: .ASCIZ <CRLF>/...SELECT SOMETHING TO RUN @ACTREG /
012535	200	052517	020124	MRANGE: .ASCIZ <CRLF>/OUT OF RANGE:RETYPE LAST DEVICE RXCSR ADDRESS-/
012615	040	037440	000040	MQM: .ASCIZ / ? /
012622	051200	000040		MR: .ASCIZ <CRLF>/R /
012626	051200	043505	020056	EM1: .ASCIZ <CRLF>/REG. ADDRESS /
012646	052200	040522	051516	EM2: .ASCIZ <CRLF>/TRANSMITTER /
012665	200	042522	042503	EM3: .ASCIZ <CRLF>/RECEIVER /
012701	200	047125	054105	EM4: .ASCIZ <CRLF>/UNEXPECTED INTERRUPT /
012730	054105	042520	052103	DHO: .ASCIZ /EXPECTED RECEIVED /
012754	040506	046111	042105	DH1: .ASCIZ /FAILED TO INTERUPT. /
013001	111	052116	051105	DH2: .ASCIZ /INTERRUPTED UNEXPECTEDLY. /
013033	200	051124	050101	DH3: .ASCIZ <CRLF>/TRAPPED FROM /

G05

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;ROUTINES TO CHECK FOR ↑G AND TO GET 'NEW' VALUES

SEQ 0059

013052	051600	051531	042524	MNOCLOCK:	.ASCII <CRLF>/SYSTEM HAS NO CLOCK!!/
013100	050200	052125	052440	MSCOPBAUD:	.ASCIZ <CRLF>/PUT UP SWITCH 14 FOR SCOPE LOOP /
013142	044600	020123	044124	MCPS: .ASCIZ	<CRLF>/IS THE AC LINE INPUT 60 CYCLES? (Y OR N) --- /
013224	042200	020117	047531	MRBAUD: .ASCIZ	<CRLF>/DO YOU STILL WISH TO RUN BAUD TEST USING SCOPE LOOP? (Y OR N) -
013333	200	044124	051105	MNODEV: .ASCIZ	<CRLF>/THERE IS NO DEVICE PRESENT AT THE ADDRESS YOU SELECTED---PLEASE R
013451	061	031071	030060	M19200: .ASCIZ	/19200 /
013461	071	030066	020060	M9600: .ASCIZ	/9600 /
013470	034064	030060	020040	M4800: .ASCIZ	/4800 /
013477	062	030064	020060	M2400: .ASCIZ	/2400 /
013506	031061	030060	020040	M1200: .ASCIZ	/1200 /
013515	066	030060	020040	M600: .ASCIZ	/600 /
013523	063	030060	020040	M300: .ASCIZ	/300 /
013531	061	030065	020040	M150: .ASCIZ	/150 /
013537	067	020065	000040	M75: .ASCIZ	/75 /
013544	041600	047101	052047	MWRONGRT:	.ASCII <CRLF>/CAN'T DETERMINE RATE--PUT UP/<CRLF>
013602	053523	030440	020064		.ASCIZ /SW 14 IF SCOPE LOOP IS WANTED. /
013643	200	047531	051125	MBAUDRT:	.ASCIZ <CRLF>/YOUR BAUD RATE IS /
013670	041040	052501	027104	MRITE: .ASCIZ	/ BAUD. IF NOT CORRECT, USE A SCOPE!!/
013736	042200	020117	047531	MBDRT: .ASCIZ	<CRLF>/DO YOU WISH TO CHECK BAUD RATE? (Y OR N) --- /
014020	054600	052517	052040	MTSTM: .ASCIZ	<CRLF>/YOU TOOK TOO LONG TO SCOPE OR DFC FAILED TEST. /
014101	200	047504	054440	MBDTEST: .ASCIZ	<CRLF>/DO YOU WANT TO RUN BAUD RATE TEST? (Y OR N) --- /
	014164				.EVEN

# H05

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;ROUTINES TO CHECK FOR ↑G AND TO GET 'NEW' VALUES

SEQ 0060

			.ERRTAB:	
2306	014164	000000	0	
2307	014166	000000	0	
2308	014170	000000	0	
2309	014172	012057	MCRLF	
2310	014174	012730	DH0	;HALT 1
2311	014176	014252	DT0	
2312				
2313	014200	012626	EM1	
2314	014202	012730	DH0	;HALT 2
2315	014204	014264	DT1	
2316				
2317	014206	012646	EM2	
2318	014210	012754	DH1	;HALT 3
2319	014212	000000	0	
2320				
2321	014214	012665	EM3	
2322	014216	012754	DH1	;HALT 4
2323	014220	000000	0	
2324				
2325	014222	012646	EM2	
2326	014224	013001	DH2	;HALT 5
2327	014226	000000	0	
2328				
2329	014230	012665	EM3	
2330	014232	013001	DH2	;HALT 6
2331	014234	000000	0	
2332				
2333	014236	012057	MCRLF	
2334	014240	014020	MTSTM	;HALT 7
2335	014242	000000	0	
2336				
2337	014244	012701	EM4	
2338	014246	013033	DH3	;HALT 10
2339	014250	014302	DT2	
2340	014252	000002	2	
2341	014254	006	.BYTE	6,4
2342	014256	001130	SAVRO	
2343	014260	006	.BYTE	6,2
2344	014262	001132	SAVR1	
2345				
2346	014264	000003	DT1:	3
2347	014266	006	.BYTE	6,8.
2348	014270	001114	TEMP4	
2349	014272	006	.BYTE	6,4
2350	014274	001130	SAVRO	
2351	014276	006	.BYTE	6,2
2352	014300	001132	SAVR1	
2353				
2354	014302	000001	DT2:	1
2355	014304	006	.BYTE	6,2
2356	014306	006034	TRP.PC	
2357	014310	000000	TEMP:	0
2358		014352	.=. +40	
2359	014352	000000	MDATA:	0
2360		014414	.=. +40	

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;ROUTINES TO CHECK FOR IG AND TO GET 'NEW' VALUES

SEQ 0061

2361 014414 000000  
2362 014456  
2363 000001

INBUF: 0  
. = .+40  
.END









# M05

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0065

MBAUDR	013643	1424	1437	1450	1463	1476	1489	1502	1515	2305#
MBDRT	013736	2305#								
MBDTE5	014101	839	955	2305#						
MCOW	012467	1836	2305#							
MCPS	013142	1068	1375	2305#						
MCRLF	012057	2028	2064	2207	2223	2273	2305#	2309	2333	
MDATA	014352	2087	2098	2359#						
MEPASS	011777	1928	2305#							
MERRPC	012043	2024	2305#							
MEXT =	010000	763#								
MINT =	004000	762#								
MLASTD	012407	920	2305#							
MLINE	012034	2305#								
MMULT	012331	909	2305#							
MNOCLO	013052	1545	2305#							
MNODEV	013333	1698	2305#							
MORE.T	007632	1891#								
MPOWER	011762	1719	2305#							
MQM	012615	2220	2305#							
MR	012622	882	2305#							
MRANGE	012535	945	2305#							
MRBAUD	013224	1089	1561	2305#						
MREGAD	012251	887	2305#							
MRESET=	000400	753#	1128	1131	1222	1224	1357			
MRITE	013670	1427	1440	1453	1466	1479	1492	1505	1518	2305#
MSCOPB	013100	1094	1566	2305#						
MTDATA=	040000	750#								
MTSTM	014020	2305#	2334							
MTSTN	012021	2305#								
MULTD	001254	655#	911	912	1832					
MVECTO	012230	899	2305#							
MWRONG	013544	1420	1433	1446	1459	1472	1485	1498	1511	1521 2305#
M1200	013506	1469	1584	2305#						
M150	013531	1508	1587	2305#						
M19200	013451	1417	1580	2305#						
M2400	013477	1456	1583	2305#						
M300	013523	1495	1586	2305#						
M4800	013470	1443	1582	2305#						
M600	013515	1482	1585	2305#						
M75	013537	1588	2305#							
M9600	013461	1430	1581	2305#						
NEXT	001066	581#	810*	857*	992*	995*	1127*	1221*	1911	2053
NOPAR =	000000	745#	1132	1226						
NOT60	002642	1047#	1072							
NO.CLO	001216	628#	1063	1370	1381	1534*	1537*	1543*		
NO.TRA	006024	1366	1592#							
NO60CP	004676	1379	1414#							
N.TRAP	003034	1054	1081#							
ODDPAR=	001000	746#								
OKADR	006356	894	1691#	1850						
ONCE	002014	868	873	876#						
OPTCLR	001253	654#								
OUT	011620	2254	2256	2258	2262	2274#				
OUTMUL	002372	942	959	961#						
OUTPUT	005726	1558	1571#							
OUT.PT	003110	1086	1097#							









# E06

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ERROR	515#	1007	1017	1030	1035	1082	1143	1168	1189	1201	1272	1317	1321	1328	1395
	1593	1754	1771	1774	1786	1792									
\$BAUD	1#	1417	1430	1443	1456	1469	1482	1495	1508						
\$CATCH	1#	536													
\$CONVR	1#	2060													
\$DELAY	1#	1882													
\$EOP	1#	1916													
\$ERROR	1#	1990													
\$GETFL	1#	838	908	954	1066	1087	1373	1560							
\$GETPA	1#	886	898	918	944										
\$HEADE	1#	444													
\$HELPE	1#														
\$INSTR	1#	2190													
\$PARAM	1#	2131													
\$REG	1#	2107													
\$SCOPE	1#	1896													
\$SETFL	1#	2228													
\$SWITC	1#	357													
\$SWSWR	1#	2246													
\$SYMBO	1#	467													
\$TRAPS	1#	674													
\$TRPDE	1#	683	685	687	689	691	693	695	697	699	701	703	705	707	
\$TRPSR	1#	2285													
\$TSTN	1#	984	1119	1213											
\$TSTSW	1#	1943													
\$TYPE	1#	1963													
\$VARIA	1#	567													

. ABS. 014456 000

ERRORS DETECTED: 0  
 DEFAULT GLOBALS GENERATED: 0

DZDFAC, DZDFAC/SOL/CRF/CPU:20+DZDFAC.MAC, DZDFAC.P11  
 RUN-TIME: 13 22 2 SECONDS  
 RUN-TIME RATIO: 53/39=1.3  
 CORE USED: 14K (28 PAGES)

