

Micro Fiche Scan

Name of device(s) tested:

DH11

Test description:

DH11 ECHO TEST

MAINDEC Number or Package Identifier (after SEP 1977):

CZDHJC0

Fiche Document Part Number:

AH-FG28C-MC

Fiche preparation date unknown, using copyright year:

1985

Image resolution:

1-bit black&white, compressed for minimal file size

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IDENTIFICATION

PRODUCT CODE: AC-8480C-MC
PRODUCT NAME: CZDHJCO DH11 ECHO TEST
DATE: AUGUST 1985
MAINTAINER: NAC SOFTWARE ENGINEERING
AUTHOR: GEORGE BAISLEY

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1. ABSTRACT
THE DH11 ECHO/CABLE DIAGNOSTIC IS DIVIDED INTO TWO TESTS.
THE FIRST TEST (ECHO) IS A QUICK VERIFY TEST USING
A TTY OR VT05 ETC.

THE SECOND TEST (CABLE TEST) IS A QUICK VERIFY TEST USING THE
CABLE TERMINATOR (TEST CONNECTOR).

BOTH TESTS ASSUME 8 BITS/CHARACTER, NO PARITY GENERATION
OR CHECKING, AND A DH PRIORITY LEVEL 5 (BR:5)
- 1.1 THE DH11 ECHO TEST VERIFIES THAT ALL CHARACTERS (0 377)
WILL ECHO ON EACH LINE (0-17 OCTAL) WITH STANDARD DH11
TERMINAL ATTACHMENTS TTY 33,35 OR VT05 ETC. USING ASCII
ASYNCHRONOUS CODE
- 1.2 THE DH11 CABLE TEST VERIFIES THAT ALL CHARACTERS (0 377)
ARE TRANSMITTED AND RECEIVED ON A PER LINE BASIS.
THE LINE UNDER TEST MUST BE TERMINATED WITH THE TEST CONNECTOR !
2. REQUIREMENTS

PDP-11 FAMILY STANDARD COMPUTER WITH MINIMUM 4K MEMORY.
DH11 ASYNCHRONOUS MULTIPLEXER.
- 2.1 FOR THE ECHO TEST
TWO TERMINALS; ONE FOR CONSOLE, ONE FOR DH11 ECHO TEST.
- 2.2 FOR THE CABLE TEST
ONE CONSOLE TERMINAL, ONE TEST CONNECTOR MINIMUM
- 2.3 STORAGE

THE PROGRAM LOADS INTO 4KW OF MEMORY WITH ABS LOADER
3. LOADING PROCEDURE

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

CONTROL SWITCH SETTINGS

AFTER PROGRAM LOAD (INITIAL PROGRAM START)

ALL CONSOLE SWITCHES DOWN.
- 4.1 TO MODIFY DEVICE VECTOR AND CONTROL REGISTER ADDRESSES
AFTER PROGRAM RESTART

SW00=1

TO MODIFY DH11 LINE NUMBER AND BAUD RATE OF DH11 (WHILE RUNNING)
SW02=1 (MOMENTARILY- DO NOT LEAVE THIS SWITCH UP AFTER LINE # QUESTION)

4.2 STARTING ADDRESS

THE STARTING ADDRESS FOR ALL TESTS IS 000200

THE RESTART ADDRESS FOR ALL TESTS IS 000200

4.3 PROGRAM AND/OR OPERATOR ACTION

4.3.1 INITIAL PROGRAM START

LOAD PROGRAM INTO MEMORY

LOAD ADDRESS 000200

CLEAR CONSOLE SWITCHES

PRESS START

4.3.2 THE PROGRAM WILL TYPE "DH11 ECHO/CABLE TEST" <CR>
CZDHJ-REVISION C (ONCE ONLY)
AND WILL TYPE "WHICH TEST ECHO OR CABLE (E OR C)" AND WILL
WAIT FOR AN INPUT FROM THE CONSOLE TELETYPE KEYBOARD

TYPE IN THE TEST YOU INTEND TO RUN (E OR C) FOLLOWED BY A <CARRIAGE RETURN>

IF AN INCORRECT CHARACTER IS TYPED, THE PROGRAM WILL TYPE "?"
AND WILL THEN REPEAT THE MESSAGE

4.3.3 THE PROGRAM WILL TYPE "VECTOR ADDRESS " AND WAIT
FOR AN INPUT FROM THE TELETYPE KEYBOARD.

TYPE IN THE ADDRESS OF THE RECEIVER INTERRUPT
VECTOR FOR THE DH11 TO BE TESTED FOLLOWED BY A
<CARRIAGE RETURN>.

4.3.3 THE PROGRAM WILL TYPE "CONTROL REGISTER ADDRESS "
AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD.

TYPE IN THE ADDRESS OF THE SYSTEM CONTROL REGISTER
OF THE DH11 TO BE TESTED FOLLOWED BY <CARRIAGE RETURN>

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

4.3.4 THE PROGRAM WILL TYPE "LINE NUMBER IN OCTAL-" AND
WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD.

TYPE IN THE DH11 LINE NUMBER (IN OCTAL, FROM 0 TO 17)
TO BE TESTED FOLLOWED BY <CARRIAGE RETURN>.

4.3.5 THE PROGRAM WILL TYPE "BAUD RATE-" AND WAIT FOR
AN INPUT FROM THE TELETYPE KEYBOARD.

TYPE IN THE APPROPRIATE DH11 TERMINAL'S LINE
SPEED FOLLOWED BY <CARRIAGE RETURN>.

(ANY LEGAL BAUD RATE IS ACCEPTABLE IN THE CABLE TEST) TRY 'EM ALL

IF AN INVALID BAUD RATE IS TYPED IN THE PROGRAM
WILL TYPE "INVALID BAUD RATE" AND REPEAT THE MESSAGE.

- 4.3.6 THE PROGRAM WILL TYPE "ECHO" OR "CABLE" RESP. TO INDICATE THAT IT IS
ABOUT TO START TESTING, AND THEN TESTING WILL BEGIN.

THE ECHO TEST WILL TYPE "TYPE A CHARACTER ON DH11 TERMINAL"
-TYPE OR TRANSMIT VIA PREPUNCHED TAPE ANY SEQUENCE OF CHARACTERS(EXCEPT +C)
A CONTROL C (+C) WHEN TYPED ON THE DH11 TERMINAL WILL CAUSE
PROGRAM TO EXIT TO THE END OF PASS ROUTINE.

THE CABLE TEST REQUIRES NO ADDITIONAL OPERATOR INTERVENTION
UNLESS TO RESELECT LINE #,BAUD RATE, ETC.

NOTE: TO CHANGE LINE NUMBER AND/OR BAUD RATE,
SIMPLY MOMENTARILY RAISE SW02 (SW02=1).

- 4.4 PROGRAM RESTART WITH ALL SWITCHES DOWN

LOAD ADDRESS 000200

PRESS START

THE PROGRAM WILL TYPE "ECHO" OR "CABLE" RESPECTIVELY
AND COMMENCE TESTING AS BEFORE.

- 4.5 PROGRAM RESTART WITH SW00=1

LOAD ADDRESS 000200

SET SW01=1

PRESS START

THE PROGRAM WILL PERFORM AS DESCRIBED IN 4.3.2 TO 4.3.6

5. OPERATING PROCEDURE

- 5.1 OPERATIONAL SWITCH SETTINGS

SW15=1. HALT ON ERROR
SW14=1. LOOP ON CURRENT TEST (CABLE TEST ONLY)
SW13=1. SUPPRESS ERROR TYPEOUT
SW11=1. INHIBIT ITERATIONS (CABLE TEST ONLY)
SW10=1. ESCAPE ON ERROR
SW02=1. RESELECT LINE NUMBER AND BAUD RATE (MOMENTARILY)
SW00=1. CHANGE PARAMETERS AT PROGRAM RESTART

- 6.0 ERRORS

- 6.1 ERROR HALTS

THE ERROR MESSAGE FORMAT FOR ALL ERROR TYPEOUTS IS AS FOLLOWS:

PC+2
MESSAGE

WHERE
PC+2 IS THE ADDRESS OF THE CALL TO THE ERROR HANDLER +2
MESSAGE IS AN ASCII MESSAGE DESCRIBING (BRIEFLY) THE FAILURE

6.1.1 ERROR DESCRIPTIONS

SEE LISTING FOR DETAILS OF ERRORS

NOTE: FOR SERIOUS TROUBLESHOOTING...USE THE REGULAR DH11 DIAGNOSTICS

6.2 ERROR RECOVERY

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

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

6.2.3 ILLEGAL INTERRUPTS

IF AN INTERRUPT OCCURS TO A VECTOR ADDRESS NOT SELECTED
DURING PROGRAM INITIALIZATION, THE PROGRAM WILL HALT IN THE
TRAPCATCHER. THE ADDRESS AT WHICH THE PROGRAM HALTS IS 2
GREATER THAN THE ADDRESS TO WHICH THE INTERRUPT OCCURRED.
THE PROGRAM MUST BE RESTARTED AT 200 TO RECOVER FROM THIS
ERROR.

7. RESTRICTIONS

NONE

8. MISCELLANEOUS

- THE ECHO TEST DOES NOT ENABLE AUTO ECHO
- BAUD RATE 134.5 HAS BEEN ROUNDED OFF TO 135

9. PROGRAM DESCRIPTION

BOTH TESTS CHECK OUT THE DH11 IN AN "ONLINE" FUNCTION;
ONE LINE AT A TIME AT THE FOLLOWING ASYNCHRONOUS BAUD
RATES: 50,75,110,134.5,150,200,300,600,1200,1800,2400,4800,9600.

10. LISTING

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7      ;DH11 ECHO/CABLE TEST
8      ;COPYRIGHT 1973, 1985 DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
9
10     ;STARTING PROCEDURE
11     ;LOAD PROGRAM
12     ;LOAD ADDRESS 000200
13     ;PRESS START
14     ;PROGRAM WILL TYPE DH11 ECHO/CABLE TEST
15     ;PROGRAM WILL TYPE WHICH TEST- ECHO OR CABLE
16     ;TYPE IN E OR C RESPECTIVELY
17     ;PROGRAM WILL TYPE "VECTOR ADDRESS-"
18     ;TYPE IN THE ADDRESS OF THE RECEIVER INTERRUPT VECTOR
19     ;FOR THE DH11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>
20     ;PROGRAM WILL TYPE "CONTROL REGISTER ADDRESS-"
21     ;TYPE IN THE ADDRESS OF THE SYSTEM CONTROL REGISTER
22     ;FOR THE DH11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>
23     ;PROGRAM WILL TYPE "LINE NUMBER-"
24     ;TYPE IN THE LINE NUMBER TO BE TESTED (IN OCTAL)
25     ;, FOLLOWED BY <CARRIAGE RETURN>
26     ;PROGRAM WILL TYPE "BAUD RATE-"
27     ;TYPE IN THE BAUD RATE OF THE DH11 TERMINAL
28     ;, FOLLOWED BY <CARRIAGE RETURN>
29     ;THE FOLLOWING BAUD RATES ARE ACCEPTED IN DECIMAL
30     :
31     :      50
32     :      75
33     :      110
34     :      135      (ROUNDED OFF 134.5)
35     :      150
36     :      200
37     :      300
38     :      600
39     :      1200
40     :      1800
41     :      2400
42     :      4800
43     :      9600
44     ; ALL OTHERS ARE REJECTED
45     ;PROGRAM WILL TYPE "ECHO" OR "CABLE TEST" TO INDICATE THAT TESTING HAS STARTED
46     ;AT THE END OF A PASS, PROGRAM WILL TYPE " CZDHJ [REV] "
47     ;AND THEN RESUME TESTING
51
52     ;SWITCH REGISTER OPTIONS
53
54     100000      SW15=100000      ;=1,HALT ON ERROR
55     040000      SW14=40000      ;=1,LOOP ON CURRENT TEST
56     020000      SW13=20000      ;=1,INHIBIT ERROR TYPEOUT
57     010000      SW12=10000
58     004000      SW11=4000      ;=1,INHIBIT ITERATIONS
59     002000      SW10=2000      ;=1,ESCAPE TO NEXT TEST ON ERROR
60     001000      SW09=1000      ;=1,LOOP WITH CURRENT DATA
61     000400      SW08=400
62     000100      SW06=100
63     000040      SW05=40
64     000020      SW04=20
65     000010      SW03=10
66     000004      SW02=4      ;RESELECT DH11 LINE NUMBER AND BAUD RATE (RAISE MOMENTARILY ONLY)

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67          000002          SW01=2          ;RESTART PROGRAM AT SELECTED TEST
68          000001          SW00=1          ;RESELECT VECTOR AND CONTROL REGISTER
69
70
71
72
73          ;REGISTER DEFINITIONS
74          000000          R0=#0           ;GENERAL REGISTER
75          000001          R1=#1           ;GENERAL REGISTER
76          000002          R2=#2           ;GENERAL REGISTER
77          000003          R3=#3           ;GENERAL REGISTER
78          000004          R4=#4           ;GENERAL REGISTER
79          000005          R5=#5           ;GENERAL REGISTER
80          000006          SP=#6           ;PROCESSOR STACK POINTER
81          000007          PC=#7           ;PROGRAM COUNTER
82
83          ;LOCATION EQUIVALENCIES
84
85          177776          PS=177776        ;PROCESSOR STATUS WORD
86
87          ;INSTRUCTION DEFINITIONS
88
89          005746          PUSH1SP=5746      ;DECREMENT PROCESSOR STACK 1 WORD
90          005726          POP1SP=5726       ;INCREMENT PROCESSOR STACK 1 WORD
91          010046          PUSHRO=10046     ;SAVE RO ON STACK
92          012600          POPRO=12600      ;RESTORE RO FROM STACK
93          024646          PUSH2SP=24646    ;DECREMENT STACK TWICE
94          022626          POP2SP=22626    ;INCREMENT STACK TWICE
95
96
97
98
99
100
101
102          100000          BIT15=100000
103          040000          BIT14=40000
104          020000          BIT13=20000
105          010000          BIT12=10000
106          004000          BIT11=4000
107          002000          BIT10=2000
108          001000          BIT09=1000
109          000400          BIT08=400
110          000200          BIT07=200
111          000100          BIT06=100
112          000040          BIT05=40
113          000020          BIT04=20
114          000010          BIT03=10
115          000004          BIT02=4
116          000002          BIT01=2
117          000001          BIT00=1
118
119          ;TRAPCATCAER FOR ILLEGAL INTERRUPTS
120          000000          . =0
121          000002          HALT
122          000000          HALT
123
124          ;STANDARD INTERRUPT VECTORS
125
126
127
128
129
130
131          000024          . =24
132          000024          005126          PFAIL          ;POWER FAIL HANDLER

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133 000026 000340          340          ;SERVICE AT LEVEL 7
134 000030 002720          ERRORS          ;ERROR HANDLER
135 000032 000340          340          ;SERVICE AT LEVEL 7
136 000034 003122          TRPSRV          ;GENERAL HANDLER DISPATCH SERVICE
137 000036 000340          340          ;SERVICE AT LEVEL 7
138          000200          . =200
139 000200 000137 001104  JMP      START          ;GO TO START OF PROGRAM
140
141
142
143          ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
144          ;POINTERS TO SUBROUTINES CAN BE FOUND STARTING
145          ;AT LOCATION "TRPTAB"
146
147          104400          SCOPE=TRAP+0          ;SCOPE LOOP AND ITERATION HANDLER
148          104401          TYPE=TRAP+1          ;TELETYPE OUTPUT ROUTINE
149          104402          OCTASC=TRAP+2          ;OCTAL TO ASCII CONVERSION
150          104403          INSTR=TRAP+3          ;INPUT ASCII STRING
151          104404          INSTER=TRAP+4          ;STRING INPUT ERROR
152          104405          PARAM=TRAP+5          ;CONVERT STRING TO OCTAL, CHECK LIMITS
153          104406          SAVOSP=TRAP+6          ;SAVE R0-R5, PC
154          104407          RESOS=TRAP+7          ;RESTORE R0-R5
155          104410          SCOPE1=TRAP+10         ;CHECK FOR FREEZE ON CURRENT DATA
156          104411          PARAMD=TRAP+11        ;CONVERT DECIMAL STRING TO OCTAL
157          104412          PAUNCH=TRAP+12       ;SET FLAG ECHO OR CABLE
158          104413          SAVOS=TRAP+13        ;SAVE R0 - R5
159
160          001000          . =1000
161
162 001000 000000          STACK: .WORD          ;PROCESSOR STACK (PS)
163
164          001100          . =1100
165
166          ;PROGRAM INITIALIZATION
167          ;LOCK OUT INTERRUPTS
168          ;SET UP PROCESSOR STACK
169          ;SET UP POWER FAIL VECTOR
170          ;CLEAR PROGRAM FLAGS AND COUNTS
171          ;TYPE TITLE MESSAGE
172
173 001100 177570          SWR: .WORD 177570          ; SWITCH REG ADDRESS
174 001102 177570          LIGHTS: .WORD 177570          ; lights
175
176 001104 012737 000340 177776 START: MOV      #340,PS          ;LOCK OUT INTERRUPTS
177 001112 012706 001000      MOV      #STACK,SP          ;SET UP PROCESSOR STACK
178 001116 012702 000024      MOV      #24,R2           ; POINT TO VECTOR AREA
179 001122 012722 005126      MOV      #PFail,(R2)+      ;SET UP POWER FAIL TRAP
180 001126 012722 000340      MOV      #340,(R2)+        ;SERVICE AT LEVEL 7
181 001132 012722 002720      MOV      #ERRORS,(R2)+    ;ERROR HANDLER
182 001136 012722 000340      MOV      #340,(R2)+        ;SERVICE AT LEVEL 7
183 001142 012722 003122      MOV      #TRPSRV,(R2)+    ;GENERAL HANDLER DISPATCH SERVICE
184 001146 012712 000340      MOV      #340,(R2)+        ;SERVICE AT LEVEL 7
185 001152 012737 001104 005032 MOV      #START,RETURN     ;SET UP IN CASE OF POWER FAIL
186 001160 005037 005070      CLR      STFLG            ;CLEAR TEST START FLAG
187 001164 005037 005026      CLR      PASCNT          ;CLEAR PASS COUNT
188 001170 005037 005030      CLR      ERRCNT          ;CLEAR ERROR COUNT
189 001174 005037 005024      CLR      ERRFLG          ;CLEAR ERROR FLAG

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247 001426      000      .BYTE 0      ;LSB MASK
248 001427      001      .BYTE 1      ;NUMBER OF LOCATIONS
249 001430     104403    BAUD: INSTR      ;INPUT BAUD RATE
250 001432     005642    MSPEED          ;MESSAGE "BAUD RATE-"
251 001434     104411    PARAMD         ;CONVERT DECIMAL STRING TO OCTAL
252 001436     000062    50.            ;LOW LIMIT
253 001440     022600    9600.          ;HIGH LIMIT
254 001442     005104    LINESP         ;LOCATION TO BE FILLED
255 001444      000      .BYTE 0      ;LSB MASK
256 001445      001      .BYTE 1      ;NUMBER OF LOCATIONS
257 001446     004537    004204        JSR      R5,SET
258 001452     013737    005006    005010      MOV      DHSSR,DHSLR
259 001460     005237    005010        INC      DHSLR      ;SET UP ADDRESS OF SILO
260
261
262 001464     012737    000340    177776  BEGIN:  MOV      #340,PS      ;LOCK OUT INTERRUPTS
263 001472     012706    001000        MOV      #STACK,SP   ;SET UP PROCESSOR STACK
264 001476     005037    005072        CLR      LOCKUP      ;CLEAR TIMEOUT
265 001502     005737    005066        TST      WCHFLG      ;ECHO OR CABLE TEST ?
266 001506     C01413        BEQ      2$          ;ECHO
267 001510     012737    002074    005032      MOV      #TEST2,RETURN ;CABLE TEST
268 001516     005737    005070        TST      STFLG       ;ARE YOU LOOPING ?
269 001522     001017        BNE      1$          ;YES
270 001524     005137    005070        COM      STFLG       ;NO
271 001530     104401    006017        TYPE    ,MCABLE     ;TYPE CABLE TEST
272 001534     000412        BR       1$
273 001536     012737    001566    005032  2$:  MOV      #TEST1,RETURN ;SET UP ECHO TEST
274 001544     005737    005070        TST      STFLG       ;ARE YOU LOOPING ?
275 001550     001004        BNE      1$          ;YES
276 001552     005137    005070        COM      STFLG       ;NO
277 001556     104401    005771        TYPE    ,MTERM      ;TYPE ECHO TEST
278 001562     000177    003244        JMP      #RETURN     ;START TESTING
279
280      ;THIS TEST WILL ACCEPT 1 CHARACTER AT A TIME
281      ;((IN INTERRUPT MODE) AND TRANSMIT THAT SAME CHARACTER.
282      ;ONE LINE AT A TIME, ANY LINE 0 THRU 17 (OCTAL)
283 001566     012737    000340    177776  TEST1:  MOV      #340,PS      ;DISABLE ALL INTERRUPTS
284 001574     012737    001400    005034      MOV      #LINE,ESCAPE
285 001602     012737    002500    005022      MOV      #EOP,NEXT
286 001610     052777    004000    003152      BIS      #BIT11,BDHSCR ;MASTER CLEAR INTERFACE
287 001616     013777    005112    003144      MOV      NUMLIN,BDHSCR ;SELECT LINE # & SET INTERRUPT ENABLE
288 001624     013777    005106    003142      MOV      SPEED,BDHLPR ;SET LINE SPEED AND
289
290 001632     012777    000000    003146      MOV      #0,BDHSSR   ;CHARACTER LENGTH (TRANS. & REC.)
291 001640     012777    005124    003130      MOV      #TBUF,BDDBA ;SET SILO ALARM LEVEL=0
292
293 001646     052777    100000    003114      BIS      #100000,BDHSCR ;DATA BUFFER
294 001654     012777    001716    003130      MOV      #INTSVC,BDHVEC ;SET TRANSMIT "DONE"
295 001662     013777    005116    003124      MOV      #PRI0,BDHLVL ;SET UP INTERRUPT SERVICE
296 001670     013737    005120    177776      MOV      LESS1,PS    ;AND LEVEL
297 001676     104401    005661        TYPE    ,MCHAR      ;ALLOW INTERRUPTS
298 001702     032777    000004    177170  DELAY:  BIT      #SW02,BSMR   ;TYPE "ANY CHARACTER"
299 001710     001774        BEQ      DELAY      ;IF SW02=1 GET NEW LINE NUMBER
300 001712     000137    001400        JMP      LINE       ;RETURN HERE AFTER "INTERRUPT"
301
302
303

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;THE FOLLOWING IS THE RECEIVER INTERRUPT SVC ROUTINE

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304 001716 105777 003046          INTSVC: TSTB      @DHSCR          ;TEST REC. FLAG
305 001722 100401                    BMI          .+4
306 001724 104000                    EMT          0
307 001726 005777 003040          TST      @DHNRC          ;TEST FOR VALID CHARACTER
308 001732 100401                    BMI          .+4
309 001734 104001                    EMT          1
310 001736 017737 003030 005122    MOV      @DHNRC,@RECDAT
311 001744 113737 005122 005124    MOV      RECDAT,TBUF      ;MOVE CHARACTER TO OUTPUT AREA
312 001752 113737 005122 006066    MOV      RECDAT,INBUF     ;MOVE CHARACTER TO CHECK FOR +C
313 001760 042737 177600 006066    BIC      @+C<177>,INBUF   ;STRIP JUNK PLUS PARITY
314 001766 042737 170377 005122    BIC      @170377,@RECDAT  ;SAVE ONLY LINE NUMBER
315 001774 000337 005122          SWAB     RECDAT
316 002000 023737 005110 005122    CMP      LINENU,RECDAT   ;DOES THE LINE # COMPARE?
317 002006 001401                    BEQ      .+4
318 002010 104002                    EMT          2
319 002012 012777 177777 002760    MOV      #-1,@DHBC      ;1 (OCTAL) BYTES WILL BE XMITTED
320 002020 032777 100000 002742    BIT      @100000,@DHSCR  ;TEST "FLAG" FOR [ONE
321 002026 001001                    BNE      .+4
322 002030 104003                    EMT          3
323 002032 123727 006066 000003    CMP      INBUF,#3        ;IS IT A +C ?
324 002040 001006                    BNE      1#              ;NO
325 002042 052777 004000 002720    BIS      @BIT11,@DHSCR   ;STOP DEVICE
326 002050 012716 002500          MOV      @EOP,(SP)      ;CRUNCH STACK
327 002054 000002                    RTI
328 002056 012777 005124 002712 1# :  MOV      @TBUF,@DHBA    ;ADDRESS OF TRANSMITTER
329 002064 013777 005114 002710    MOV      NUMBAR,@DHBAR   ;START XMITTER
330 002072 000002                    RTI
331
332
333
334          ;THIS TEST TRANSMITS A BINARY COUNT PATTERN
335          ;VIA INTERRUPT MODE TO THE RECEIVER
336          ;...THE LINE UNDER TEST MUST BE TERMINATED WITH THE TEST CONNECTOR
336 002074 012737 000340 177776    TEST2:  MOV      @340,PS    ;DISABLE INTERRUPTS
337 002102 012737 001400 005034    MOV      @LINE,ESCAPE
338 002110 012737 002500 005022    MOV      @EOP,NEXT
339 002116 052777 004000 002644    BIS      @BIT11,@DHSCR   ;MASTER CLEAR INTERFACE
340 002124 013777 005112 002636    MOV      NUMLIN,@DHSCR  ;SELECT LINE # & REC. INTERRUPT ENABLE
341 002132 052777 020000 002630    BIS      @BIT13,@DHSCR  ;SET TRANSMITTER INTERRUPT ENABLE
342
343 002140 013777 005106 002626    MOV      SPEED,@DHLPB   ;& NON EXISTANT MEMORY INTR ENABLE
344 002146 012777 000000 002632    MOV      #0,@DHSSR     ;SET LINE SPEED
345 002154 012777 006664 002614    MOV      #0,@DHSSR     ;SET SILO ALARM LEVEL =0
346 002162 012777 177400 002610    MOV      @TABLE,@DHBA  ;ADDRESS OF TRANSMITTER DATA BUFFER
347 002170 012777 002266 002614    MOV      #-256,@DHBC   ;SET UP BYTE COUNT
348 002176 013777 005116 002610    MOV      @INTREC,@DHAVEC ;SET UP INTR SERVICE
349 002204 012777 002436 002604    MOV      @INTRAN,@DHTEVC ;SET UP INTR SERVICE
350 002212 013777 005116 002600    MOV      @INTRAN,@DHTEVC ;SET UP INTR SERVICE
351 002220 012701 006664          MOV      @TABLE,R1     ;SET UP DATA POINTER
352 002224 013737 005120 177776    MOV      LESS1,PS      ;ALLOW INTERRUPTS
353 002232 013777 005114 002542    MOV      NUMBAR,@DHBAR ;SET UP BAR BIT
354
355          ;YOU RETURN HERE AFTER EVERY RECEIVER INTERRUPT
356 002240 032777 000004 176632    SPIN:  BIT      @SW02,@SWR  ;IF SW02=1 GET NEW LINE NUMBER
357 002246 001402                    BEQ      1#              ;SW02=0
358 002250 000137 001400          JMP      LINE           ;SW02=1
359 002254 005237 005072          1# :  INC      LOCKUP      ;INC TIMEOUT FLAG
360 002260 001367                    BNE      SPIN          ;IF NOT 0 RETURN SPINNING

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361	002262	104006				EMT	6		
362	002264	104400				QUITs: SCOPE			
363	002266	005037	005072			INTREC: CLR	LOCKUP		;CLEAR TIMEOUT FLAG
364	002272	105777	002472			TSTB	@DHSCR		;TEST REC DONE
365	002276	100401				BMI	.+4		;YES
366	002300	104000				EMT	0		
367	002302	017737	002464	005122		MOV	@DHNR,RECDAT		;SAVE WORD
368	002310	005737	005122			TST	RECDAT		;TEST FOR VALID CHARACTER
369	002314	100401				BMI	.+4		
370	002316	104001				EMT	1		
371	002320	032737	040000	005122		BIT	@BIT14,RECDAT		;DATA OVERRUN ?
372	002326	001401				BEQ	.+4		;NO
373	002330	104007				EMT	7		
374	002332	032737	020000	005122		BIT	@BIT13,RECDAT		;FRAMING ERROR ?
375	002340	001401				BEQ	.+4		;NO
376	002342	104010				EMT	10		
377	002344	032737	010000	005122		BIT	@BIT12,RECDAT		;PARITY ERROR ?
378	002352	001401				BEQ	.+4		;NO
379	002354	104011				EMT	11		
380	002356	122137	005122			CMPB	(R1)+,RECDAT		;GOOD CHARACTER ?
381	002362	001401				BEQ	.+4		;YES
382	002364	104005				EMT	5		
383	002366	042737	170377	005122		BIC	@170377,RECDAT		;SAVE ONLY LINE NUMBER
384	002374	000337	005122			SWAB	RECDAT		
385	002400	023737	005110	005122		CHP	LINENU,RECDAT		;DOES THE LINE # COMPARE ?
386	002406	001401				BEQ	.+4		;YES
387	002410	104002				EMT	2		
388	002412	126127	177777	000377		CMPB	-1(R1),#377		;LAST CHARACTER ?
389	002420	001003				BNE	1#		;NO
390	002422	012716	002264			MOV	@QUITs,(SP)		;CRUNCH STACK
391	002426	000402				BR	2#		
392	002430	012716	002240			MOV	@SPIN,(SP)		;CRUNCH STACK
393	002434	000002				1#: 2#:	RTI		
394									
395	002436	032777	100000	002324		INTRAN: BIT	@BIT15,@DHSCR		;TEST TRANSMIT FLAG
396	002444	001001				BNE	.+4		
397	002446	104003				EMT	3		
398	002450	032777	002000	002312		BIT	@BIT10,@DHSCR		;NON EXISTANT MEMORY ?
399	002456	001404				BEQ	1#		
400	002460	104004				EMT	4		
401	002462	042777	000400	002300		BIC	@BIT08,@DHSCR		;CLEAR NON EXISTANT MEMORY BIT
402	002470	042777	100000	002272		1#:	BIC	@BIT15,@DHSCR	;CLEAR DONE BIT FOR NEXT ROUND
403	002476	000002				RTI	;RETURN		

```

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412 002500 104401
413 002502 005525
414 002504 005037 005074
415 002510 005037 005024
416 002514 005237 005026
417 002520 005737 001102
418 002524 001005
419 002526 104401
420 002530 005541
421 002532 104402
422 002534 002574
423 002536 000403
424 002540
425 002540 013737 005026 001102
426 002546
427 002546 013701 000042
428 002552 001406
429 002554 000005
430 002556 004711
431 002560 000240
432 002562 000240
433 002564 000240
434 002566 000240
435 002570 000137 001464
436 002574 000001
437 002576 006 002
438 002600 005026
439
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443 002602 032777 002000 176270
444 002610 001030
445 002612 032777 040000 176260
446 002620 001021
447 002622 032777 004000 176250
448 002630 001006
449 002632 005237 005042
450 002636 023737 005042 005040
451 002644 001007
452 002646 005037 005042
453 002652 005037 005024
454 002656 013737 005022 005032
455 002664 013716 005032
456 002670 000002
457 002672 005737 005024
458 002676 001745
459 002700 000762
460
461

```

```

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

EOP:  TYPE
      MEPASS ;TYPE NAME OF TEST
      CLR     LAST ;CLEAR LAST ERROR PC
      CLR     ERRFLG ;CLEAR ERROR FLAG
      INC     PASCNT ;UPDATE PASS COUNT
      TST     LIGHTS ; ARE WE USING LIGHTS?
      BNE     2# ; BRANCH IF WE ARE
      TYPE    ; TYPE PASCOUNT MESSAGE
      PASTXT
      OCTASC
      PASARG
      BR      3# ; CONTINUE

2#:  MOV     PASCNT,LIGHTS ;DISPLAY PASS COUNT
3#:  MOV     @42,R1 ;CHECK FOR ACT-11 OR DCP
      BEQ    RESTR ;IF NOT, CONTINUE TESTING
      RESET

LOGICAL: JSR     PC,(R1)
          NOP
          NOP
          NOP
          NOP

RESTR:  JMP     BEGIN
PASARG: .WORD   1 ; PARAMETERS TO PRINT PASCOUNT
        .BYTE  6,2
        .WORD  PASCNT

;CHECK FOR LOOP ON CURRENT TEST
;CHECK FOR ITERATION SUPPRESSION

SCOPER: BIT     @SW10,@SWR
        BNE    4#
1#:     BIT     @SW14,@SWR
        BNE    3#
        BIT     @SW11,@SWR
        BNE    2#
        INC    LPCNT
        CMP    LPCNT,ICOUNT
        BNE    3#
2#:     CLR    LPCNT
        CLR    ERRFLG
        MOV    NEXT,RETURN
3#:     MOV    RETURN,(SP) ;LOOPING
        RTI
4#:     TST    ERRFLG
        BEQ    1#
        BR    2#

;CHECK FOR FREEZE ON CURRENT DATA

```



```

519 003122 011646 TRPSRV: MOV (SP),-(SP) ;GET PC OF RETURN
520 003124 162716 000002 SUB #2,(SP) ;=PC OF TRAP
521 003130 017616 000000 MOV @2(SP),(SP) ;GET TRP
522 003134 006316 TRPOK: ASL (SP) ;MULTIPLY TRAP ARG BY 2
523 003136 042716 177001 BIC #177001,(SP) ;CLEAR UNWANTED BITS
524 003142 062716 006036 ADD #TRPTAB,(SP) ;POINTER TO SUBROUTINE ADDRESS
525 003146 017616 000000 MOV @2(SP),(SP) ;SUBROUTINE ADDRESS
526 003152 000136 JMP @2(SP)+ ;GO TO SUBROUTINE
527
528 ;SAVE PC OF TEST THAT FAILED AND R0-R5
529
530 003154 016637 000004 005062 SV05P: MOV 4(SP),SAVPC
531
532 ;SAVE R0-R5
533
534 003162 010537 005056 SV05: MOV R5,SAVR5
535 003166 010437 005054 MOV R4,SAVR4
536 003172 010337 005052 MOV R3,SAVR3
537 003176 010237 005050 MOV R2,SAVR2
538 003202 010137 005046 MOV R1,SAVR1
539 003206 010037 005044 MOV R0,SAVR0
540 003212 000002 RTI
541 ;RESTORE R0-R5
542
543 003214 013700 005044 RS05: MOV SAVR0,R0
544 003220 013701 005046 MOV SAVR1,R1
545 003224 013702 005050 MOV SAVR2,R2
546 003230 013703 005052 MOV SAVR3,R3
547 003234 013704 005054 MOV SAVR4,R4
548 003240 013705 005056 MOV SAVR5,R5
549 003244 000002 RTI
550
551 ;TELETYPE OUTPUT ROUTINE
552
553 003246 017605 000000 TYPER: MOV @2(SP),R5
554 003252 062716 000002 ADD #2,(SP)
555 003256 105777 001502 1$: TSTB @TPCSR
556 003262 100375 BPL 1$
557 003264 105715 TSTB (R5)
558 003266 001001 BNE 2$
559 003270 000002 RTI
560 003272 112577 001470 2$: MOVB (R5)+,@TPDBR
561 003276 000767 BR 1$
562
563 ;ASCII STRING INPUT ROUTINE
564
565 003300 017637 000000 003314 INSTRG: MOV @2(SP),MSG
566 003306 062716 000002 ADD #2,(SP)
567 003312 104401 INSTR1: TYPE
568 003314 000000 MSG: 0
569 003316 012704 006066 MOV #INBUF,R4
570 003322 012703 000007 MOV #7,R3
571 003326 105777 001426 1$: TSTB @TKCSR
572 003332 100375 BPL 1$
573 003334 117714 001422 MOVB @TKDBR,(R4)
574 003340 142714 000200 BICB #200,(R4)
575 003344 122427 000015 CMPB (R4)+,#15

```



```

576 003350 001413
577 003352 117777 001404 G01406
578 003360 105777 001400
579 003364 100375
580 003366 005303
581 003370 001356
582 003372 104401
583 003374 005427
584 003376 000745
585 003400 000002
586
587
588
589 003402 011605
590 003404 012537 003556
591 003410 012537 003560
592 003414 012537 003562
593 003420 112537 003564
594 003424 112537 003565
595 003430 010516
596 003432 005005
597 003434 012704 006066
598 003440 122714 000015
599 003444 001420
600 003446 121427 000060
601 003452 002415
602 003454 121427 000067
603 003460 003012
604 003462 142714 000060
605 003466 152405
606 003470 122714 000015
607 003474 001406
608 003476 006305
609 003500 006305
610 003502 006305
611 003504 000760
612 003506 104404
613 003510 000750
614
615
616
617 003512 020537 003560
618 003516 101373
619 003520 020537 003556
620 003524 103770
621 003526 133705 003564
622 003532 001365
623
624
625
626 003534 013704 003562
627 003540 010524
628 003542 062705 000002
629 003546 105337 003565
630 003552 001372
631 003554 000002
632 003556 000000

      BEQ      INSTR2
      MOVB     @TKDBR,@TPDBR
2$:    TSTB     @TPCSR
      BPL      2$
      DEC      R3
      BNE      1$
INSTRE: TYPE
      MQM
      BR       INSTR1
INSTR2: RTI

      ;CONVERT ASCII STRING TO OCTAL

PARAMS: MOV      (SP),R5
      MOV      (R5)+,LOLIM
      MOV      (R5)+,HILIM
      MOV      (R5)+,DEVADR
      MOVB     (R5)+,LOBITS
      MOVB     (R5)+,ADRCNT
      MOV      R5,(SP)
PARAM1: CLR      R5
      MOV      @INBUF,R4
      CMPB     @15,(R4)
1$:    BEQ      PARERR
      CMPB     (R4),@60
      BLT      PARERR
      CMPB     (R4),@67
      BGT      PARERR
      BICB     @60,(R4)
      BISB     (R4)+,R5
      CMPB     @15,(R4)
      BEQ      LIMITS
      ASL      R5
      ASL      R5
      ASL      R5
      BR       1$
PARERR: 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

1$:    MOV      DEVADR,R4
      MOV      R5,(R4)+
      ADD      @2,R5
      DECB     ADRCNT
      BNE      1$
      RTI
LOLIM: 0
    
```

633	003560	000000		HILIM:	0
634	003562	000000		DEVADR:	0
635	003564	000		LOBITS:	.BYTE 0
636	003565	000		ADRCNT:	.BYTE 0
637					
638					
639	003566	011605			; CONVERT DECIMAL ACCII STRING TO OCTAL
640	003570	012537	003752	.PARAMD:	MOV (SP),R5
641	003574	012537	003754		MOV (R5)+,6#
642	003600	012537	003756		MOV (R5)+,7#
643	003604	112537	003760		MOV (R5)+,8#
644	003610	112537	003761		MOVB (R5)+,9#
645	003614	010516			MOVB (R5)+,10#
646	003616	005005			MOV R5,(SP)
647	003620	012704	006066	2#:	CLR R5
648	003624	122714	000015		MOV #INBUF,R4
649	003630	001424			CMPB #15,(R4)
650	003632	121427	000060	1#:	BEQ 3#
651	003636	002421			CMPB (R4),#0
652	003640	121427	000071		BLT 3#
653	003644	003016			CMPB (R4),#9
654	003646	142714	000060		BGT 3#
655	003652	005002			BICB #0,(R4)
656	003654	152402			CLR R2
657	003656	060205			BISB (R4)+,R2
658	003660	122714	000015		ADD R2,R5
659	003664	001410			CMPB #15,(R4)
660	003666	006305			BEQ 4#
661	003670	010502			ASL R5 ;X2
662	003672	006305			MOV R5,R2 ;SAVE X2
663	003674	006305			ASL R5 ;X4
664	003676	060205			ASL R5 ;X8
665	003700	000754			ADD R2,R5 ;TIMES 10
666	003702	104404			BR 1#
667	003704	000744		3#:	INSTER
668					BR 2#
669					
670					; TEST TO SEE IF NUMBER IS WITHIN LIMITS
671	003706	020537	003754	4#:	CMP R5,7#
672	003712	101373			BHI 3#
673	003714	020537	003752		CMP R5,6#
674	003720	103770			BLO 3#
675	003722	133705	003760		BITB 9#,R5
676	003726	001365			BNE 3#
677					
678					; STORE NUMBER AT SPECIFIED ADDRESS
679					
680	003730	013704	003756		MOV 8#,R4
681	003734	010524		5#:	MOV R5,(R4)+
682	003736	062705	000002		ADD #2,R5
683	003742	105337	003761		DECB 10#
684	003746	001372			BNE 5#
685	003750	000002			RTI
686	003752	000000		6#:	0
687	003754	000000		7#:	0
688	003756	000000		8#:	0
689	003760	000		9#:	.BYTE 0

```

690 003761      000          10$:  .BYTE 0
691
692
693
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697
698 003762      017605      000000
699 003766      122737      000105      006066
700 003774      001002
701 003776      105015
702 004000      000406
703 004002      122737      000103      006066
704 004010      001005
705 004012      112715      177777
706 004016      062716      000002
707 004022      000002
708 004024      104404
709 004026      C00755
710
711
712
713
714 004030      104401
715 004032      005434
716 004034      104413
717 004036      017601      000000
718 004042      062716      000002
719 004046      C12137      004662
720 004052      112137      004664
721 004056      112137      004665
722 004062      013137      004666
723 004066      013704      004666
724 004072      113705      004664
725 004076      012700      006100
726 004102      010403
727 004104      042703      177770
728 004110      062703      000260
729 004114      110320
730 004116      006204
731 004120      006204
732 004122      006204
733 004124      005305
734 004126      001365
735 004130      012703      006112
736 004134      114023
737 004136      105337      004664
738 004142      001374
739 004144      105737      004665
740 004150      001405
741 004152      112723      000240
742 004156      105337      004665
743 004162      001373
744 004164      105013
745 004166      104401
746 004170      006112

;COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
;BUFFER TO THE CHARACTERS "E" AND "C".
;IF THE CHARACTER IS "E" CLEAR THE FLAG
;IF THE CHARACTER IS "C" SET THE FLAG

.PAWCH:MOV      @ (SP),R5
CMPB      #'E,INBUF      ;IS IT "E" ?
BNE       1$
CLRB      (R5)           ;000
BR        2$
1$: CMPB      #'C,INBUF      ;IS IT "C" ?
BNE       3$
MOVB      @-1,(R5)       ;377
2$: ADD      @2,(SP)
RTI
3$: INSTER
BR        .PAWCH      ;RETRY

;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER

OCTASN: TYPE
MCRLF
SAV05
MOV       @ (SP),R1
ADD      @2,(SP)
1$: MOV      (R1)+,WRDCNT
MOV      (R1)+,CHRCNT
MOV      (R1)+,SPACNT
MOV      @ (R1)+,BINWRD
2$: MOV      BINWRD,R4
MOV      CHRCNT,R5
MOV      @TEMP,R0
3$: MOV      R4,R3
BIC      @177770,R3
ADD      @260,R3
MOV      R3,(R0)+
ASR      R4
ASR      R4
ASR      R4
DEC      R5
BNE      3$
MOV      @MDATA,R3
4$: MOV      -(R0),(R3)+
DECB    CHRCNT
BNE      4$
TSTB    SPACNT
BEQ      6$
5$: MOV      @240,(R3)+
DECB    SPACNT
BNE      5$
6$: CLRB    (R3)
TYPE
MDATA

```

```

747 004172 005337 004662          DEC      WRDCNT
748 004176 001325          BNE      1$
749 004200 104407          RES05
750 004202 000002          RTI
751                                ;THIS ROUTINE CONVERTS LINE SPEED (LINESP) AND
752                                ;LINE NUMBER (LINENU) FOR DHLPR, DHBAR AND DHSCR
753                                ;REGISTER USAGE.
754
755 004204 013737 005110 005112 SET:    MOV      LINENU,@#NUMLIN ;SAVE LINENU
756 004212 052737 000100 005112      BIS      @BIT06,@#NUMLIN ;SET REC INTERRUPT ENABLE
757 004220 023727 005110 000000 BAR0:   CMP      LINENU,#0        ;IS IT LINE 0?
758 004226 001004          BNE      BAR1            ;NO
759 004230 012737 000001 005114      MOV      #1,@#NUMBER    ;STORE BAR BIT 0
760 004236 000572          BR       SET1
761 004240 023727 005110 000001 BAR1:   CMP      LINENU,#1        ;IS IT LINE 1?
762 004246 001004          BNE      BAR2            ;NO
763 004250 012737 000002 005114      MOV      #2,@#NUMBER    ;STORE BAR BIT 1
764 004256 000562          BR       SET1
765 004260 023727 005110 000002 BAR2:   CMP      LINENU,#2        ;IS IT LINE 2?
766 004266 001004          BNE      BAR3            ;NO
767 004270 012737 000004 005114      MOV      #4,@#NUMBER    ;STORE BAR BIT 2
768 004276 000552          BR       SET1
769 004300 023727 005110 000003 BAR3:   CMP      LINENU,#3        ;IS IT LINE 3?
770 004306 001004          BNE      BAR4            ;NO
771 004310 012737 000010 005114      MOV      #10,@#NUMBER   ;STORE BAR BIT 3
772 004316 000542          BR       SET1
773 004320 023727 005110 000004 BAR4:   CMP      LINENU,#4        ;IS IT LINE 4?
774 004326 001004          BNE      BAR5            ;NO
775 004330 012737 000020 005114      MOV      #20,@#NUMBER   ;STORE BAR BIT 4
776 004336 000532          BR       SET1
777 004340 023727 005110 000005 BAR5:   CMP      LINENU,#5        ;IS IT LINE 5?
778 004346 001004          BNE      BAR6            ;NO
779 004350 012737 000040 005114      MOV      #40,@#NUMBER   ;STORE BAR BIT 5
780 004356 000522          BR       SET1
781 004360 023727 005110 000006 BAR6:   CMP      LINENU,#6        ;IS IT LINE 6?
782 004366 001004          BNE      BAR7            ;NO
783 004370 012737 000100 005114      MOV      #100,@#NUMBER  ;STORE BAR BIT 6
784 004376 000512          BR       SET1
785 004400 023727 005110 000007 BAR7:   CMP      LINENU,#7        ;IS IT LINE 7 ?
786 004406 001004          BNE      BAR8            ;NO
787 004410 012737 000200 005114      MOV      #200,@#NUMBER  ;STORE BAR BIT 7
788 004416 000502          BR       SET1
789 004420 023727 005110 000010 BAR8:   CMP      LINENU,#10       ;IS IT LINE 10?
790 004426 001004          BNE      BAR9            ;NO
791 004430 012737 000400 005114      MOV      #400,@#NUMBER  ;STORE BAR BIT 8
792 004436 000472          BR       SET1
793 004440 023727 005110 000011 BAR9:   CMP      LINENU,#11       ;IS IT LINE 11?
794 004446 001004          BNE      BAR10           ;NO
795 004450 012737 001000 005114      MOV      #1000,@#NUMBER ;STORE BAR BIT 9
796 004456 000462          BR       SET1
797 004460 023727 005110 000012 BAR10:  CMP      LINENU,#12       ;IS IT LINE 12?
798 004466 001004          BNE      BAR11           ;NO
799 004470 012737 002000 005114      MOV      #2000,@#NUMBER ;STORE BAR BIT 10
800 004476 000452          BR       SET1
801 004500 023727 005110 000013 BAR11:  CMP      LINENU,#13       ;IS IT LINE 13?
802 004506 001004          BNE      BAR12           ;NO
803 004510 012737 004000 005114      MOV      #4000,@#NUMBER ;STORE BAR BIT 11

```

```

804 004516 000442
805 004520 023727 005110 000014 BAR12: BR SET1
806 004526 001004 CMP LINENU,#14 ;IS IT LINE 14?
807 004530 012737 010000 005114 BNE BAR13 ;NO
808 004536 000432 MOV #10000,@#NUMBER ;STORE BAR BIT 12
809 004540 023727 005110 000015 BAR13: BR SET1
810 004546 001004 CMP LINENU,#15 ;IS IT LINE 15?
811 004550 012737 020000 005114 BNE BAR14 ;NO
812 004556 000422 MOV #20000,@#NUMBER ;STORE BAR BIT 13
813 004560 023727 005110 000016 BAR14: BR SET1
814 004566 001004 CMP LINENU,#16 ;IS IT LINE 16?
815 004570 012737 040000 005114 BNE BAR15 ;NO
816 004576 000412 MOV #40000,@#NUMBER ;STORE BAR BIT 14
817 004600 023727 005110 000017 BAR15: BR SET1
818 004606 001004 CMP LINENU,#17 ;IS IT LINE 17?
819 004610 012737 100000 005114 BNE BARNUN ;NO
820 004616 000402 MOV #100000,@#NUMBER ;STORE BAR BIT 15
821 004620 005037 005114 BR SET1
822 004624 012701 004670 BARNUN: CLR @#NUMBER ;CLEAR BAR BITS
823 004630 C22137 005104 SET1: MOV #TABLE2,R1
824 004634 001407 1$: CMP (R1)+,LINESP
825 004636 005721 BEQ 2$
826 004640 001373 TST (R1)+ ;IS IT THE END OF TABLE?
827 004642 104401 005561 BNE 1$ ;NO
828 004646 012705 001430 TYPE ,MINVAL ;INVALID BAUD RATE,BEGIN AGAIN
829 004652 000402 MOV #8BAUD,R5 ;JUMP TO BAUD THRU R5
830 004654 011137 005106 BR 3$
831 004660 000205 2$: MOV (R1),SPEED ;SET UP BAUD RATE
832 3$: RTS R5

```

```

833
834 004662 000000 WRDCNT: 0
835 004664 000000 CHRCNT: 0
836 004666 004665 SPACNT=CHRCNT+1
837 004666 000000 BINWRD: 0
838
839

```

```

; THE FOLLOWING IS A TABLE OF LEGAL BAUD RATES (8 BITS/CHAR)
TABLE2: .WORD 50. ;50 BAUD
        .WORD 2107 ;TWO STOP BITS
        .WORD 75. ;75 BAUD
        .WORD 4207 ;TWO STOP BITS
        .WORD 110. ;110 BAUD
        .WORD 6307 ;TWO STOP BITS
        .WORD 135. ;134.5 BAUD
        .WORD 10407 ;TWO STOP BITS
        .WORD 150. ;150 BAUD
        .WORD 12503 ;ONE STOP BIT
        .WORD 200. ;200 BAUD
        .WORD 14603 ;ONE STOP BIT
        .WORD 300. ;300 BAUD
        .WORD 16703 ;ONE STOP BIT
        .WORD 600. ;600 BAUD
        .WORD 21003 ;ONE STOP BIT
        .WORD 1200. ;1200 BAUD
        .WORD 23103 ;ONE STOP BIT
        .WORD 1800. ;1800 BAUD
        .WORD 25203 ;ONE STOP BIT
        .WORD 2400. ;2400 BAUD

```

```

840 004670 000062
841 004672 002107
842 004674 000113
843 004676 004207
844 004700 000156
845 004702 006307
846 004704 000207
847 004706 010407
848 004710 000226
849 004712 012503
850 004714 000310
851 004716 014603
852 004720 000454
853 004722 016703
854 004724 001130
855 004726 021003
856 004730 002260
857 004732 023103
858 004734 003410
859 004736 025203
860 004740 004540

```



```

918 005110 000000          LINENU: 0          ;DEFAULT VALUE, LINE 0
919 005112 000100          NUMLIN: 100         ;DEFAULT VALUE, REC. INTERRUPT ENABLED
920
921 005114 000001          NUMBAR: 1          ;DEFAULT VALUE,BAR BIT 0
922 005116 000240          PRIO: 240         ;DEFAULT DEVICE PRIORITY 5
923 005120 000200          LESS1: 200        ;DEFAULT PRIORITY4, TO ALLOW INTERRUPTS
924 005122 000000          RECDAT: 0
925 005124 000000          TBUF: 0
926                          ;ENTER HERE ON POWER FAILURE
927
928
929 005126 010046          PFAIL: MOV R0,-(SP)      ;SAVE R0-R5 ON PROCESSOR STACK
930 005130 010146          MOV R1,-(SP)
931 005132 010246          MOV R2,-(SP)
932 005134 010346          MOV R3,-(SP)
933 005136 010446          MOV R4,-(SP)
934 005140 010546          MOV R5,-(SP)
935 005142 013746 000024  MOV 24,-(SP)
936 005146 010637 005060  MOV SP,SAVSP          ;SAVE STACK POINTER
937 005152 C12737 005164 000024  MOV @RESTART,24      ;SET UP FOR POWER UP TRAP
938 005160 000000          HALT              ;HALT ON POWER DOWN NORMAL
939 005162 000777          BR
940
941                          ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
942
943 005164 013706 005060  RESTAR: MOV SAVSP,SP      ;RESTORE STACK POINTER
944 005170 012605          MOV (SP)+,R5       ;RESTORE R0-R5
945 005172 012604          MOV (SP)+,R4
946 005174 012603          MOV (SP)+,R3
947 005176 012602          MOV (SP)+,R2
948 005200 012601          MOV (SP)+,R1
949 005202 012600          MOV (SP)+,R0
950 005204 012737 005126 000024  MOV @PFAIL,24       ;SET UP FOR POWER FAILURE
951 005212 012737 000340 177776  MOV @340,PS
952 005220 012706 001000          MOV @STACK,SP
953 005224 005224 005037 006100  CLR TEMP
954 005230 005237 006100          INC TEMP
955 005234 001375          BNE .-4
956 005236 104402          OCTASC
957 005240 005262          PFTAB
958 005242 104401          TYPE
959 005244 005437          MPFAIL
960 005246 005037 005024          CLR ERRFLG
961 005252 005037 005074          CLR LAST
962 005256 000177 177550          JMP @RETURN
963 005262 000001          PFTAB: 1
964 005264 006 002          .BYTE 6,2
965 005266 000207          RETURN
969 005270 015 012 012  MTITLE: .ASCII <15><12><12>?DH11 ECHO/CABLE TEST ?<15><12>
970 005322 103 132 104  .ASCII /CZDHJ REVISION CO /
971 005347 015 012 126  MVECTO: .ASCIZ <15><12>/VECTOR ADDRESS- /
972 005372 015 012 103  MREGAD: .ASCIZ <15><12>/CONTROL REGISTER ADDRESS- /
973 005427 040 040 077  MQM: .ASCIZ / ? /
974 005434 015 012 000  MCRLF: .ASCIZ <15><12>
975 005437 040 040 120  MPFAIL: .ASCIZ / POWER FAILURE, PROGRAM RESTART AT TEST IN PROGRESS /
976 005525 015 012 103  MEPASS: .ASCIZ <15><12>/CZDHJ-CO /
977 005541 015 012 120  PASTXT: .ASCIZ <15><12>/PASS COUNT = /

```

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978 005561      015      012      111 MINVAL: .ASCIZ <15><12>/INVALID BAUD RATE /
979 005610      015      012      114 MLINE: .ASCIZ <15><12>/LINE NUMBER IN OCTAL - /
980 005642      015      012      102 MSPEED: .ASCIZ <15><12>/BAUD RATE - /
981 005661      015      012      124 MCHAR: .ASCIZ <15><12>/TYPE A CHAR. ON DH11 TERMINAL /
982 005722      015      012      127 MWHICH: .ASCIZ <15><12>/WHICH TEST ? ECHO OR CABLE (E OR C) /
983 005771      015      012      124 MTERM: .ASCIZ <15><12>/TERMINAL ECHO TEST /
984 006017      015      012      103 MCABLE: .ASCIZ <15><12>/CABLE TEST /
985
989
990
991
992 006036      002602
993 006040      003246
994 006042      004030
995 006044      003300
996 006046      003372
997 006050      003402
998 006052      003154
999 006054      003214
1000 006056      002702
1001 006060      003566
1002 006062      003762
1003 006064      003162
1004
1005
1006
1007 006066      000000
1008
1009 006100      000000
1010
1011 006112      000000
1012
1013
1014
1015
1016 006124      006174
1017 006124      000000
1018 006126      000000
1019 006130      006243
1020 006132      000000
1021 006134      006300
1022 006136      000000
1023 006140      006333
1024 006142      000000
1025 006144      006403
1026 006146      000000
1027 006150      006440
1028 006152      000000
1029 006154      006471
1030 006156      000000
1031 006160      006567
1032 006162      000000
1033 006164      006615
1034 006166      000000
1035 006170      006644
1036 006172      000000
1040 006174      015      012      105 EM1: .ASCIZ <15><12>/ERROR- INTERRUPT NOT CAUSED BY FLAG /

          ;TABLE OF POINTERS FOR TRAP DECODING
TRPTAB: SCOPER
        TYPER
        OCTASN
        INSTRG
        INSTRE
        PARAMS
        SV05P
        RS05
        SCOPIR
        .PARAMD
        .PAWCH
        SV05

          ;BUFFERS FOR INPUT-OUTPUT
INBUF:  0
        .+.10
TEMP:   0
        .+.10
MDATA:  0
        .+.10

          ;TABLE OF POINTERS TO ERROR MESSAGES AND DATA
ERRTAB:
        EM1
        0
        EM2
        0
        EM3
        0
        EM4
        0
        EM5
        0
        EM6
        0
        EM7
        0
        EM8
        0
        EM9
        0
        EM10
        0

```


006742	056	.BYTE	56
006743	057	.BYTE	57
006744	060	.BYTE	60
006745	061	.BYTE	61
006746	062	.BYTE	62
006747	063	.BYTE	63
006750	064	.BYTE	64
006751	065	.BYTE	65
006752	066	.BYTE	66
006753	067	.BYTE	67
006754	070	.BYTE	70
006755	071	.BYTE	71
006756	072	.BYTE	72
006757	073	.BYTE	73
006760	074	.BYTE	74
006761	075	.BYTE	75
006762	076	.BYTE	76
006763	077	.BYTE	77
006764	100	.BYTE	100
006765	101	.BYTE	101
006766	102	.BYTE	102
006767	103	.BYTE	103
006770	104	.BYTE	104
006771	105	.BYTE	105
006772	106	.BYTE	106
006773	107	.BYTE	107
006774	110	.BYTE	110
006775	111	.BYTE	111
006776	112	.BYTE	112
006777	113	.BYTE	113
007000	114	.BYTE	114
007001	115	.BYTE	115
007002	116	.BYTE	116
007003	117	.BYTE	117
007004	120	.BYTE	120
007005	121	.BYTE	121
007006	122	.BYTE	122
007007	123	.BYTE	123
007010	124	.BYTE	124
007011	125	.BYTE	125
007012	126	.BYTE	126
007013	127	.BYTE	127
007014	130	.BYTE	130
007015	131	.BYTE	131
007016	132	.BYTE	132
007017	133	.BYTE	133
007020	134	.BYTE	134
007021	135	.BYTE	135
007022	136	.BYTE	136
007023	137	.BYTE	137
007024	140	.BYTE	140
007025	141	.BYTE	141
007026	142	.BYTE	142
007027	143	.BYTE	143
007030	144	.BYTE	144
007031	145	.BYTE	145
007032	146	.BYTE	146

007033	147	.BYTE	147
007034	150	.BYTE	150
007035	151	.BYTE	151
007036	152	.BYTE	152
007037	153	.BYTE	153
007040	154	.BYTE	154
007041	155	.BYTE	155
007042	156	.BYTE	156
007043	157	.BYTE	157
007044	160	.BYTE	160
007045	161	.BYTE	161
007046	162	.BYTE	162
007047	163	.BYTE	163
007050	164	.BYTE	164
007051	165	.BYTE	165
007052	166	.BYTE	166
007053	167	.BYTE	167
007054	170	.BYTE	170
007055	171	.BYTE	171
007056	172	.BYTE	172
007057	173	.BYTE	173
007060	174	.BYTE	174
007061	175	.BYTE	175
007062	176	.BYTE	176
007063	177	.BYTE	177
007064	200	.BYTE	200
007065	201	.BYTE	201
007066	202	.BYTE	202
007067	203	.BYTE	203
007070	204	.BYTE	204
007071	205	.BYTE	205
007072	206	.BYTE	206
007073	207	.BYTE	207
007074	210	.BYTE	210
007075	211	.BYTE	211
007076	212	.BYTE	212
007077	213	.BYTE	213
007100	214	.BYTE	214
007101	215	.BYTE	215
007102	216	.BYTE	216
007103	217	.BYTE	217
007104	220	.BYTE	220
007105	221	.BYTE	221
007106	222	.BYTE	222
007107	223	.BYTE	223
007110	224	.BYTE	224
007111	225	.BYTE	225
007112	226	.BYTE	226
007113	227	.BYTE	227
007114	230	.BYTE	230
007115	231	.BYTE	231
007116	232	.BYTE	232
007117	233	.BYTE	233
007120	234	.BYTE	234
007121	235	.BYTE	235
007122	236	.BYTE	236
007123	237	.BYTE	237

007124	240	.BYTE	240
007125	241	.BYTE	241
007126	242	.BYTE	242
007127	243	.BYTE	243
007130	244	.BYTE	244
007131	245	.BYTE	245
007132	246	.BYTE	246
007133	247	.BYTE	247
007134	250	.BYTE	250
007135	251	.BYTE	251
007136	252	.BYTE	252
007137	253	.BYTE	253
007140	254	.BYTE	254
007141	255	.BYTE	255
007142	256	.BYTE	256
007143	257	.BYTE	257
007144	260	.BYTE	260
007145	261	.BYTE	261
007146	262	.BYTE	262
007147	263	.BYTE	263
007150	264	.BYTE	264
007151	265	.BYTE	265
007152	266	.BYTE	266
007153	267	.BYTE	267
007154	270	.BYTE	270
007155	271	.BYTE	271
007156	272	.BYTE	272
007157	273	.BYTE	273
007160	274	.BYTE	274
007161	275	.BYTE	275
007162	276	.BYTE	276
007163	277	.BYTE	277
007164	300	.BYTE	300
007165	301	.BYTE	301
007166	302	.BYTE	302
007167	303	.BYTE	303
007170	304	.BYTE	304
007171	305	.BYTE	305
007172	306	.BYTE	306
007173	307	.BYTE	307
007174	310	.BYTE	310
007175	311	.BYTE	311
007176	312	.BYTE	312
007177	313	.BYTE	313
007200	314	.BYTE	314
007201	315	.BYTE	315
007202	316	.BYTE	316
007203	317	.BYTE	317
007204	320	.BYTE	320
007205	321	.BYTE	321
007206	322	.BYTE	322
007207	323	.BYTE	323
007210	324	.BYTE	324
007211	325	.BYTE	325
007212	326	.BYTE	326
007213	327	.BYTE	327
007214	330	.BYTE	330

007215	331	.BYTE	331
007216	332	.BYTE	332
007217	333	.BYTE	333
007220	334	.BYTE	334
007221	335	.BYTE	335
007222	336	.BYTE	336
007223	337	.BYTE	337
007224	340	.BYTE	340
007225	341	.BYTE	341
007226	342	.BYTE	342
007227	343	.BYTE	343
007230	344	.BYTE	344
007231	345	.BYTE	345
007232	346	.BYTE	346
007233	347	.BYTE	347
007234	350	.BYTE	350
007235	351	.BYTE	351
007236	352	.BYTE	352
007237	353	.BYTE	353
007240	354	.BYTE	354
007241	355	.BYTE	355
007242	356	.BYTE	356
007243	357	.BYTE	357
007244	360	.BYTE	360
007245	361	.BYTE	361
007246	362	.BYTE	362
007247	363	.BYTE	363
007250	364	.BYTE	364
007251	365	.BYTE	365
007252	366	.BYTE	366
007253	367	.BYTE	367
007254	370	.BYTE	370
007255	371	.BYTE	371
007256	372	.BYTE	372
007257	373	.BYTE	373
007260	374	.BYTE	374
007261	375	.BYTE	375
007262	376	.BYTE	376
007263	377	.BYTE	377

1063

000001

.END

ADRCNT	003565	DHBA	004776	INTRAN	002436	PASTXT	005541	SV05	003162
BARNUN	004620	DHBC	005000	INTREC	002266	PAWCH =	104412	SV05P	003154
BAR0	004220	DHBCR	005004	INTSVC	001716	PFAIL	005126	SWR	001100
BAR1	004240	DHLPR	004774	LAST	005074	PFTAB	005262	SW00 =	000001
BAR10	004460	DHNRC	004772	LESS1	005120	POPRO =	012600	SW01 =	000002
BAR11	004300	DHRLVL	005014	LIGHTS	001102	POP1SP =	005726	SW02 =	000004
BAR12	004520	DHRVEC	005012	LIMITS	003512	POP2SP =	022626	SW03 =	000010
BAR13	004540	DHSCR	004770	LINE	001400	PRI0	005116	SW04 =	000020
BAR14	004560	DHSLR	005010	LINEU	005110	PS =	177776	SW05 =	000040
BAR15	004600	DHSSR	005006	LINESP	005104	PUSHRO =	010046	SW06 =	000100
BAR2	004260	DHTLVL	005020	LOBITS	003564	PUSH1S =	005746	SW08 =	000400
BAR3	004300	DHTVEC	005016	LOCKUP	005072	PUSH2S =	024646	SW09 =	001000
BAR4	004320	EM1	006174	LOGICA	002556	QUITS	002264	SW10 =	002000
BAR5	004340	EM10	006644	LOLIM	003556	RDATA	005100	SW11 =	004000
BAR6	004360	EM2	006243	LPNT	005042	RECDAT	005122	SW12 =	010000
BAR7	004400	EM3	006300	MCABLE	006017	RESREG	003050	SW13 =	020000
BAR8	004420	EM4	006333	MCHAR	005661	RESTAR	005164	SW14 =	040000
BAR9	004440	EM5	006403	MTRLF	005434	RESTRT	002570	SW15 =	100000
BAUD	001430	EM6	006440	MDATA	006112	RES05 =	104407	TABLE	006664
BEGIN	001464	EM7	006471	REPASS	005525	RETURN	005032	TABLE2	004670
BINWRD	004666	EM8	006567	MINVAL	005561	RS05	003214	TBUF	005124
BIT00 =	000001	EM9	006615	MLINE	005610	SAVPC	005052	TDATA	005076
BIT01 =	000002	EOP	002500	MPFAIL	005437	SAVRC	005044	TEMP	006100
BIT02 =	000004	ERRCNT	005030	MOM	005427	SAVR1	005046	TEST1	001566
BIT03 =	000010	ERRFLG	005024	MREGAD	005372	SAVR2	005050	TEST2	002074
BIT04 =	000020	ERRMSG	003034	MSG	003314	SAVR3	005052	TKCSR	004760
BIT05 =	000040	ERRORS	002720	MSPEED	005642	SAVR4	005054	TKDBR	004762
BIT06 =	000100	ERRTAB	006124	MTERM	005771	SAVR5	005056	TPCSR	004764
BIT07 =	000200	ERTAB0	003114	MTITLE	005270	SAVSP	005060	TPDBR	004766
BIT08 =	000400	ESCAPE	005034	MVECTO	005347	SAV05 =	104413	TRPOK	003134
BIT09 =	001000	EXITER	003072	MNMICH	005722	SAV05P =	104406	TRPSRV	003122
BIT10 =	002000	FREEZ1	005036	NEXT	005022	SCOPE =	104400	TRPTAB	006036
BIT11 =	004000	HALTS	003052	NUMBER	005114	SCOPEP	002602	TYPDAT	003036
BIT12 =	010000	HILIM	003560	NUMLIN	005112	SCOPE1 =	104410	TYPE =	104401
BIT13 =	020000	ICDUNT	005040	OCTASC =	104402	SCOPE1R	002702	TYPER	003246
BIT14 =	040000	INBUF	006066	OCTASN	004030	SET	004204	TYPMSG	003020
BIT15 =	100000	INIFLG	005064	PARAM =	104405	SET1	004624	VEC1	001272
BYTCNT	005102	INSTER =	104404	PARAMD =	104411	SPACNT =	004665	VEC2	001302
CHRCNT	004664	INSTR =	104403	PARAMS	003402	SPEED	005106	WCHFLG	005066
DATABP	003046	INSTRE	003372	PARAM1	003432	SPIN	002240	WRDCNT	004662
DELAY	001702	INSTRG	003300	PARERR	003506	STACK	001000	!Q =	000400
DEVADR	003562	INSTR1	003312	PASARG	002574	START	001104	.PARAM	003566
DHBA	004776	INSTR2	003400	PASCNT	005026	STFLG	005070	.PAWCH	003762

. ABS. 007264 000 (RW,I,GBL,ABS,OVR)
 000000 001 (RW,I,LCL,REL,CON)
 Errors detected: 0

*** Assembler statistics

Work file reads: 0
 Work file writes: 0
 Size of work file: 8350 Words (33 Pages)
 Size of core pool: 9596 Words (36 Pages)
 Operating system: RSX-11M/PLUS

Elapsed time: 00:00:32.50
CZDHJC.CZDHJC.SEQ/-SP=CZDHJC.DOC.CZDHJC.P11