ADDITIONS TO THE BLUE RAM UTILITY were incorporated after the users instructions had gone to print. Add these ENTRIES to your instructions:

C accepts a 1 to 4 digit hexidecimal number which it then converts to decimal and displays on the screen. This is very useful when calling a machine code program from a BASIC program where decimal addresses must be used; i.e. CALL(nnnnn) where nnnnn is the decimal address of a machine code routine.

P arms the printer port (for those of you with a printer connected to your tape interface) to allow a printed listing of a machine code program. The inputs to this operator are the same as for LIST.

The program may be started in two ways: While using the BLUE RAM UTILITY enter GOSUB 6000 or from BASIC enter CALL(24576)GO.

REMOTE RESISTANCE MEASUREMENTS are possible with this circuit and sample program. The machine code routine measures a resistance value from one of eight sources. The source number (0 through 7) is set into A and the measurement (0 through 32767) is returned in B. The BASIC program requests a measurement from each source and converts them to a rough equivalent of kilohms (1000 ohm increments). Any value below 100 ohms is considered a "SHORT CIRCUIT" and any value above 99K ohms is considered an "OPEN CIRCUIT" for that source. One novel use of this circuit is measuring the soil resistance in up to eight house plants to determine if they need water. I'm sure you can think of others. NOTE: C and D in line 10 of the BASIC program adjust the measuring parameters to these particular values (10uf capacitor, etc.).

Machine code segment -

```
6000 F3 ED 4B 72 4E 3E 88
6007 D3 A0 D3 A2 0D 20 F7
600E 10 F5 ED 4B 74 4E 3A
6015 6E 4E F6 80 D3 A0 3E
601C OF D3 A2 DB 87 B7 28
6023 05 0D 20 F8 10 F6 ED
602A 43 70 4E FB C9
```

BASIC segment -

```
10 C=500;D=32767
20 FOR A=0TO 7
30 CALL(24576)
40 PRINT "LINE ",#1,A," = ",
50 IF B=0PRINT "OPEN CIRCUIT
60 IF B=32767PRINT "SHORT CIRCUIT
70 PRINT #1,(32767-B)÷328-1
80 NEXT A
```

```
x    1 .   BLUE RAM UTILITY
     2 .
     3 .PERKINS ENGINEERING
     4 .1004 PLEASANT AVE.
     5 .BOYNE CITY, MI 49712
     6 .
     7 .   6/2/80
     8 .
    10 GOTO 100
    20 V=0;FOR N=0TO C;BOX CX,CY,6,8,3;K=KP;IF (K>47)b(K<58)+(K>64)b(K<71)V=Vb16-5
5+K+7b(K<58);TV=K;NEXT N
    30 IF K=31IF N#0TV=K;TV=32;TV=K;N=N-2;V=Vc16;NEXT N
    40 RETURN
    50 IF RM<0RM=RM+256
    60 V=RMc16;FOR D=0TO 1;TV=V+48+7b(V>9);IF CX<71V=RM;NEXT D;RETURN
    70 PRINT ;A=A+1;GOSUB 80;A=A-1;TV=31;RETURN
    80 RM=(A+(A<0))c256-(RM#-256)b(A<0);GOSUB 50;V=Ac256;GOSUB 50;TV=32;RETURN
    90 V=%(A)c256;GOSUB 50;TV=32;A=A+1;RETURN
   100 CLEAR ;PRINT "     BLUE RAM UTILITY";PRINT ;A=24576;GOSUB 80
   110 C=1;GOSUB 20;IF N>C&(192)=0;%(A)=%(A)c256b256+V-256b(%(A)<0);&(40)=0;A=A+1;
IF CX<71TV=32;GOTO 110
   120 IF CX>70PRINT ;GOSUB 80;GOTO 110
   130 IF K=31IF CX>-43BOX CX-9-6b(CX=79),CY,25-12b(CX=79),8,2;CX=CX-18;A=A-1;GOTO
110
   140 IF K=31IF CY<40IF (PX(-78,CY+11))+(PX(-77,CY+11))BOX CX,CY,66,8,2;CY=CY+8;C
X=79;GOTO 130
   150 IF (K=32)+(K=98)+(K=107)+(K=117)GOSUB 90;GOTO 110
   160 IF (K=43)+(K=110)PRINT ;PRINT " GOTO ",;C=3;GOSUB 20;IF N>CPRINT ;A=V;GOSUB
80;GOTO 110
   170 IF (K=99)+(K=104)PRINT ;PRINT " LIST ",;C=3;GOSUB 20;IF N>C TV=97;A=V;GOSUB
20;IF N>CPRINT ;E=V;GOSUB 80;FOR B=ATO E;GOSUB 90;NEXT B;:RETURN ;GOTO 110
   180 IF K#61IF K#116GOTO 310
   190 PRINT ;PRINT " DUMP TO TAPE";S=0
   200 C=3;GOSUB 20;IF N>C@(S)=V;TV=97;GOSUB 20;IF N>C@(S+1)=V;TV=44;BOX CX,CY,6,8
,3;K=KP
   210 IF K=13TV=32;S=S+2;IF S<10PRINT ;GOTO 200
   220 TV=K;IF K=13K="L";S=S-2
   230 PRINT ;PRINT "START TAPE, THEN PRESS GO",;W=KP;:PRINT ;FOR N=0TO 9;TV=31;NE
XT N;FOR B=0TO SSTEP 2
   240 PRINT #1,"&(192)=0;A=",@(B),";FOR N=ATO ",@(B+1),";%(N)=KP;NEXT N;IF KP#85P
RINT ;TV=69;TV=82;TV=82;TV=79;TV=82;TV=13
   250 FOR A=@(B)TO @(B+1);TV=%(A);IF CY>-40NEXT A;GOTO 270
   260 CLEAR ;NEXT A
   270 TV=85;PRINT "&(64)=0";NEXT B;IF K#"L"PRINT "00    STOP TAPE...
   280 IF K="C"PRINT ":RETURN ;CALL(A)";GOTO 300
   290 IF K="R"PRINT ":RETURN ;RUN
   300 :RETURN ;PRINT ;PRINT "END OF DUMP";GOTO 350
   310 IF K=111PRINT ;TV=32;TV=K;C=3;GOSUB 20;IF N>CPRINT ;CALL(V);GOSUB 80;GOTO 1
10
   320 IF K=91BOX 0,CY,160,8,2;CX=-71;TV=K;C=3;GOSUB 20;PRINT "] = ",#1,V,;GOTO 35
0
   330 IF K=80PRINT ;PRINT "DUMP TO PRINTER",;K=99;*PRINT ;GOTO 170
   340 TV=63;NT=31;MU=38;FOR D=0TO 199;NEXT D;NT=3;TV=31;TV=32;TV=31;IF (PX(-78,CY
+3))+(PX(-77,CY+3))GOTO 110
   350 PRINT ;GOSUB 80;GOTO 110
   360 CLEAR ;NT=1;:PRINT ;FOR N=0TO 9;TV=31;NEXT N;LIST ;PRINT ":RETURN ;RUN ";:R
ETURN
```