CONSTRUCTING BLOCK CHARACTERS WITH THE HP 2563A

CONSTRUCTING BLOCK CHARACTERS WITH THE HP 2563A

GENERAL INFORMATION

One of the optional character sets avialable for the HP 2563A is the block character set. This option allows the formation of large-scale characters and symbols using block segments. Each segment consists of a 7 by 9 dot matrix pattern. By joining the segments together via software, characters and symbols of various sizes and shapes can be designed.

This application note contains a program that provides an example of how to print these block characters with the HP 3000. The program provides several block sizes and may be run on the HP 3000 system as indicated. The program is also annotated describing how to add additional characters and/or new sizes of characters to the existing program.

This note is divided into three sections. Section I lists the building blocks available, defining three different character sets using the building blocks. This section also shows examples to help the user design new characters and/or symbols. Section II contains a general description of the programs. Section III contains an annotated listing of an application program for use on the HP 3000 system.

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

SECTION I. CHARACTER DEFINITION

A list of the various building blocks and the ASCII characters that allow access to them are shown in table 1-1. An example which shows the different character sizes is provided in figure 1-1.

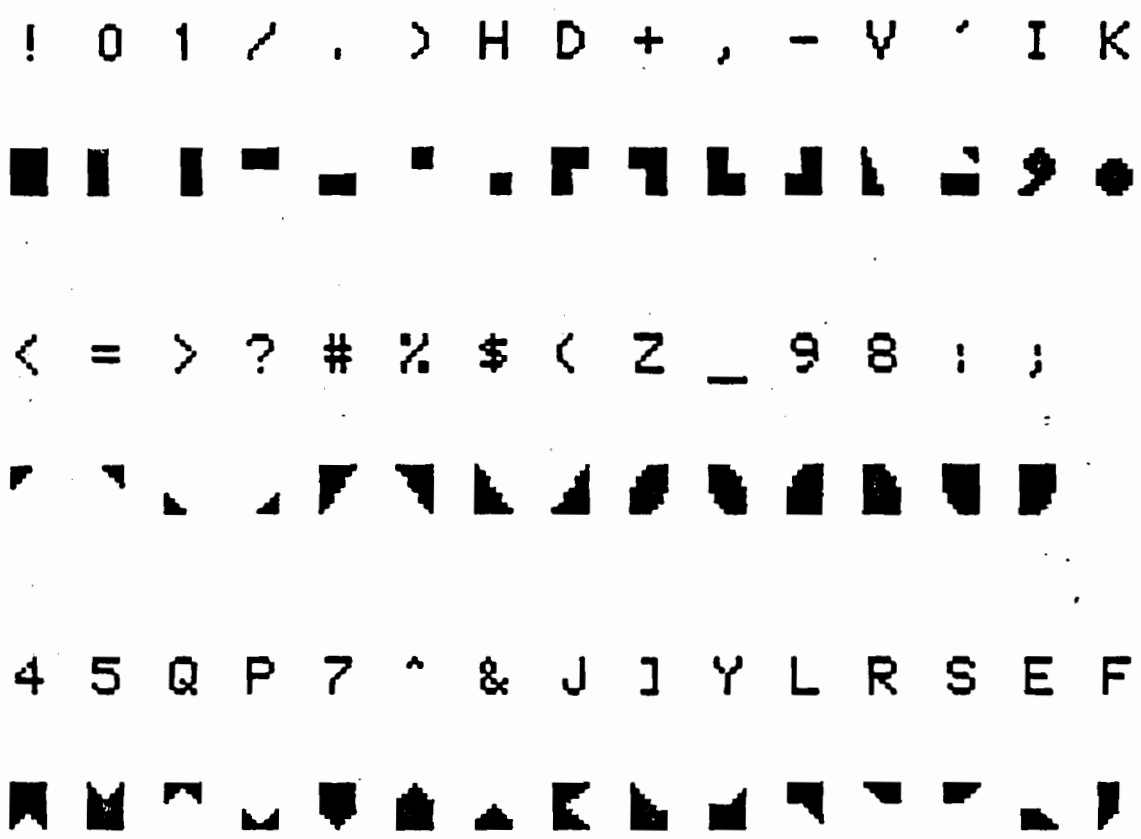


TABLE 1-1 HP 2563A BLOCK CHARACTER SET
(Shown twice normal size for clarity)

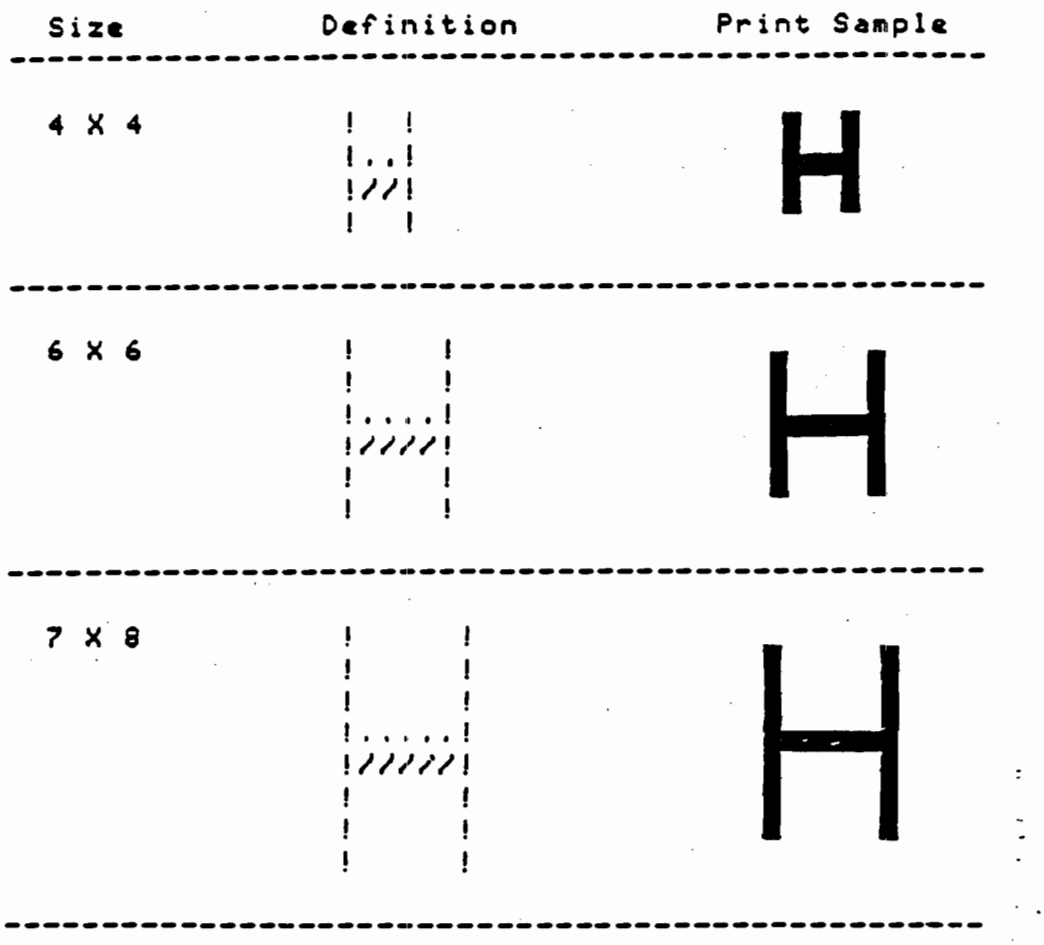


Figure 1-1. Character Definition Example

Figures 1-2 through 1-4 and tables 1-2 through 1-4 show examples of 46 different characters and symbols in three different sizes. The figures show the physical characters formed and the tables show the associated letters required to form the characters.

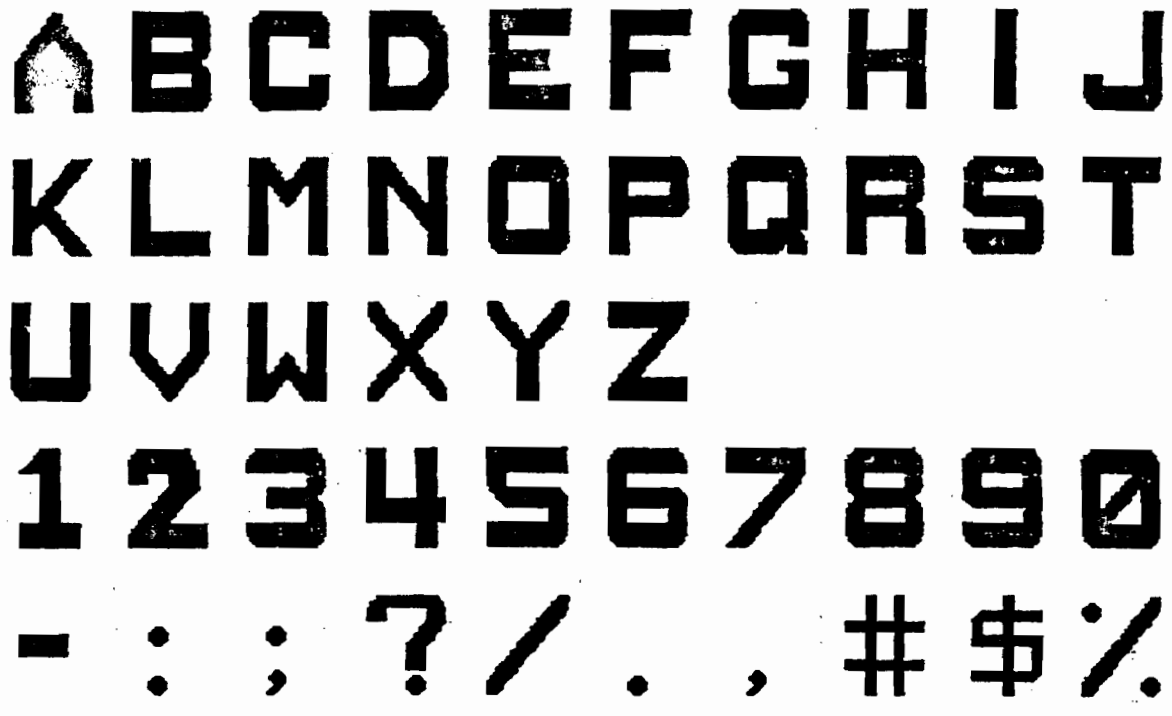


Figure 1-2. Size Four Block Character Print Sample

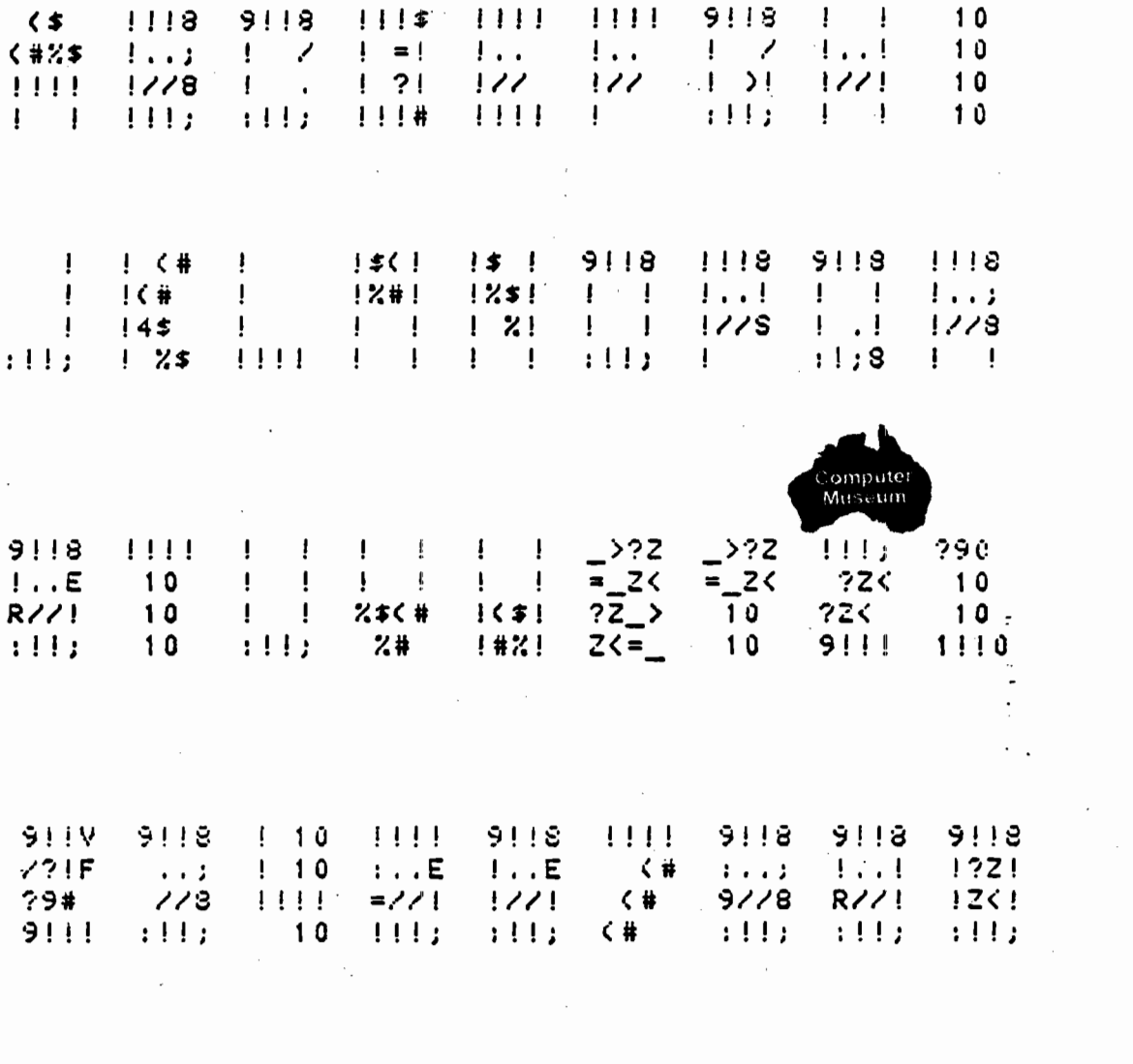


TABLE 1-2. SIZE FOUR BLOCK CHARACTER DEFINITION

Figure 1-3. Size Six Block Character Print Sample

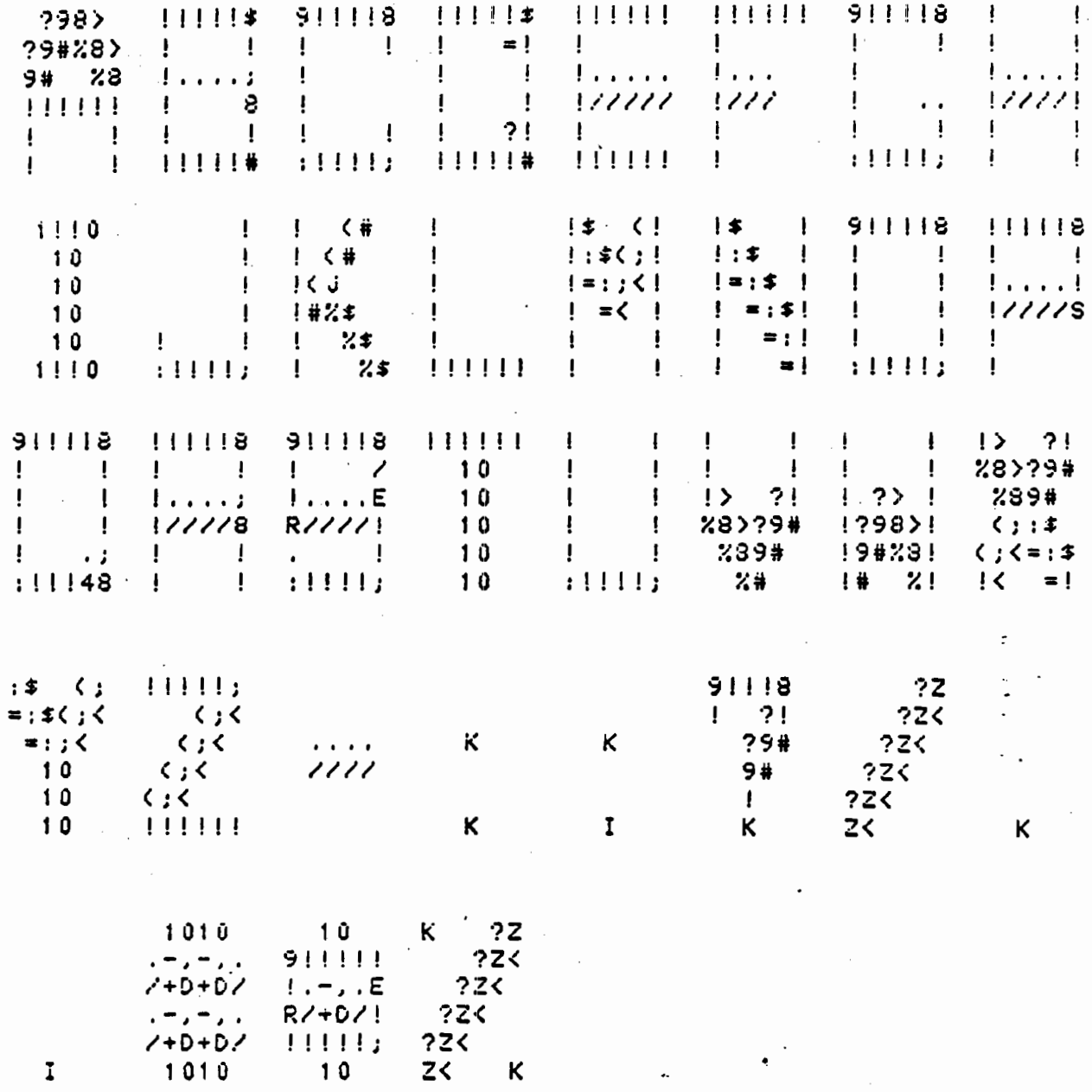


TABLE 1-3. SIZE SIX BLOCK CHARACTER DEFINITION

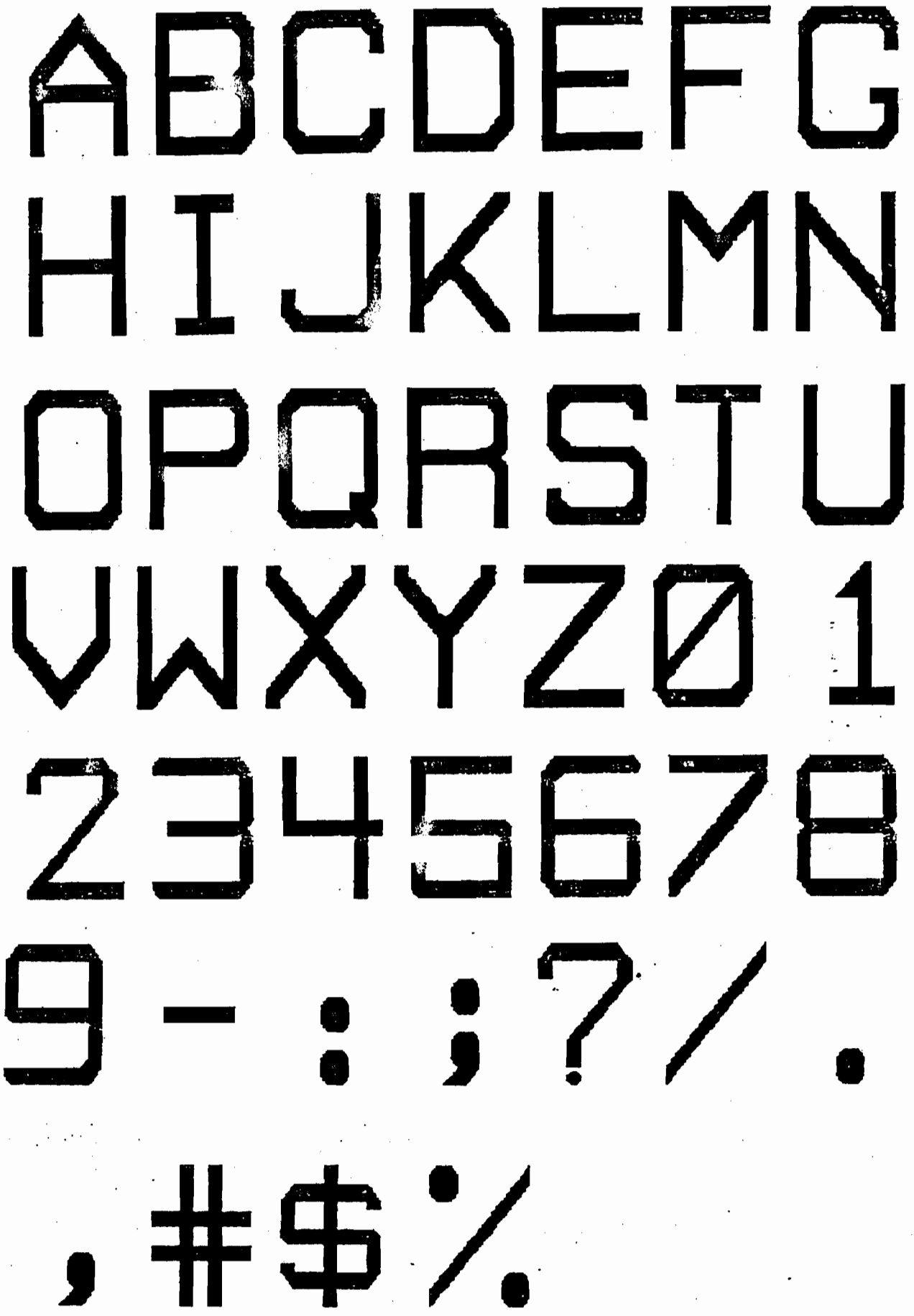


Figure 1-4(a). Size Eight Block Character Print Sample

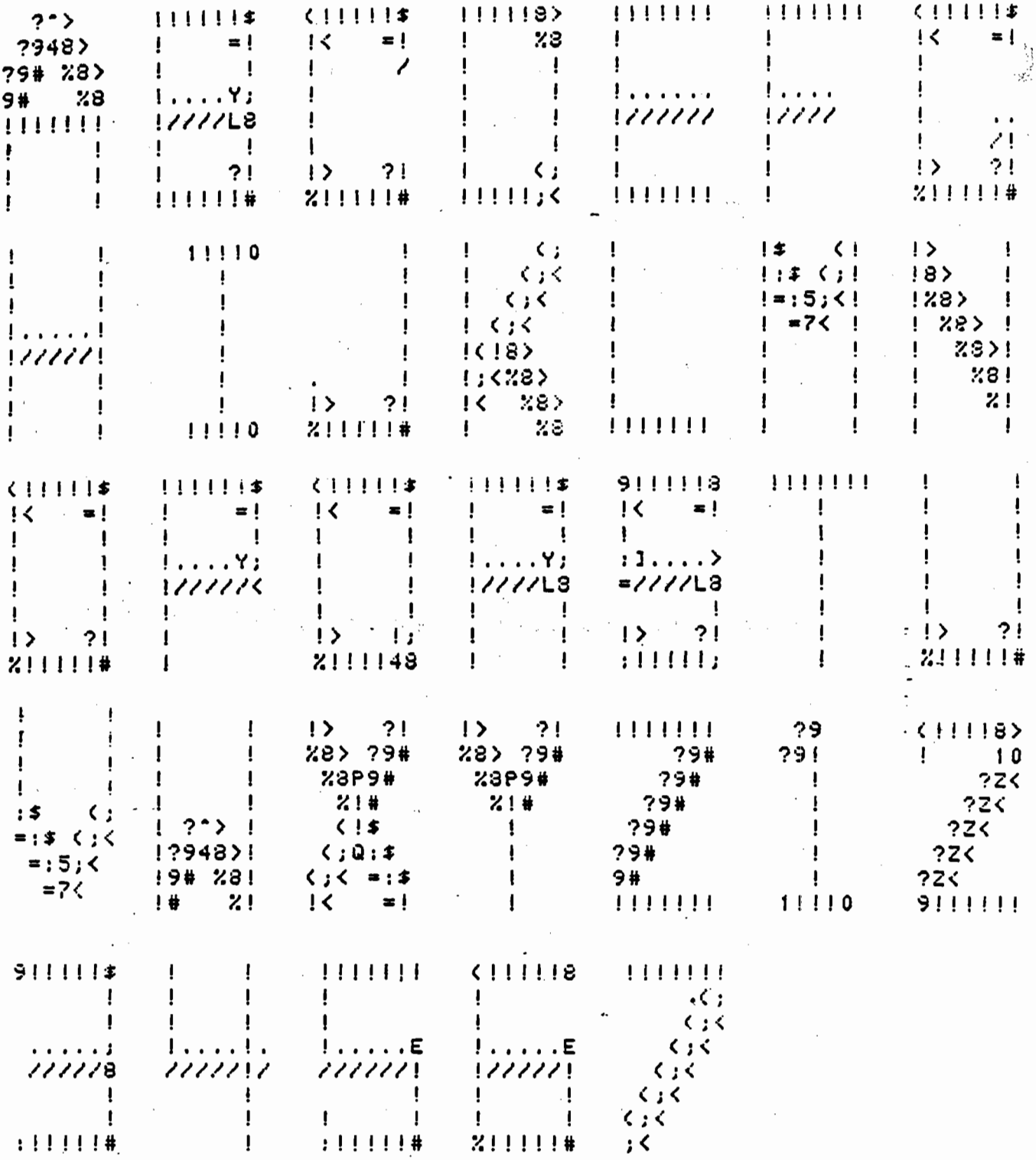


TABLE 1-4(a). SIZE EIGHT BLOCK CHARACTER DEFINITION

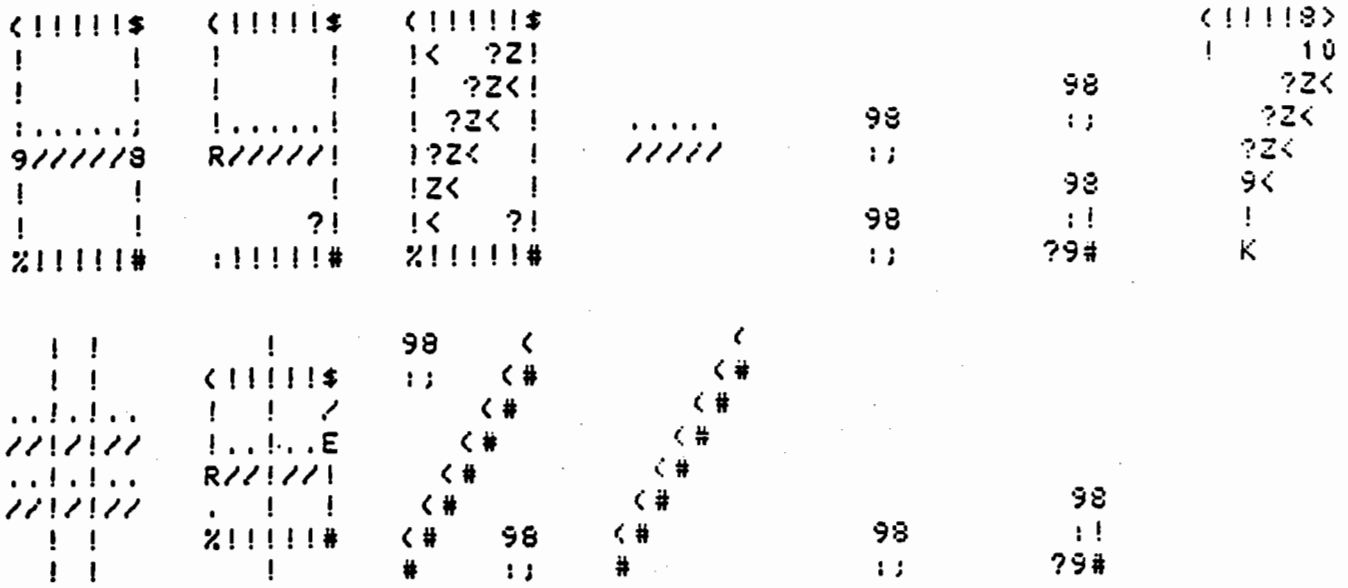
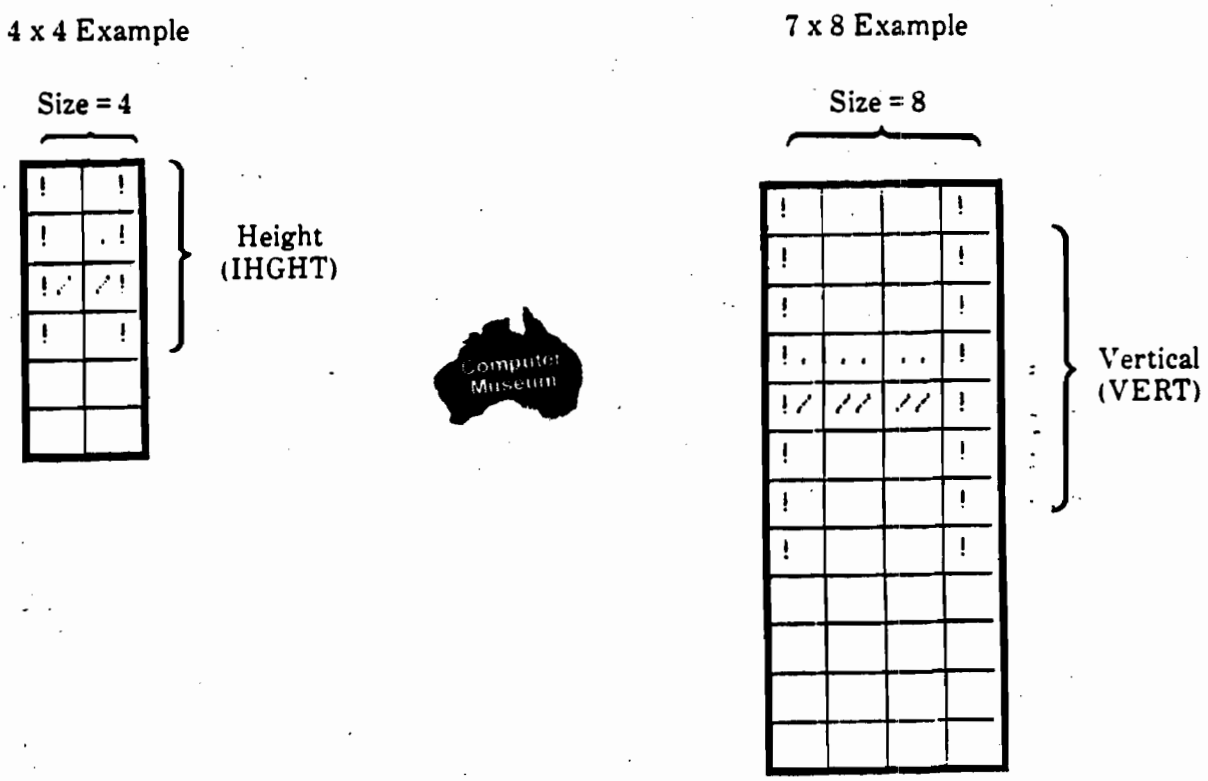


TABLE 1-4(b). SIZE EIGHT BLOCK CHARACTER DEFINITION

SECTION II. PROGRAM DESCRIPTION

The application programs in this note use the character definitions described in Section I. These character definitions are stored in reference arrays. As the operator inputs the text to be printed, the program takes each input character and searches the reference array for that character. The character, together with the size definition, points to the locations of the beginning of the character definition in the appropriate size array. This information is merged into an output array and then sent to the printer. Adding new character arrays therefore necessitates using the proper format in the character location program. The format is defined below using the letter "H" as an example.



The character data from tables 1-2 through 1-4 are entered into the arrays. Data for the width of the character must be in even numbers (size four characters are already even)*. For example, the width of the 7 by 8 characters is 7. Therefore, one blank is added to the width at the end of the character to make the character width an even number.

The program adds two blank spaces after each character for character separation. Vertical separation can be adjusted by changing the value of the variable VERT. Height (IHGHT) is defined as the value of the vertical rows in the character. The vertical array dimensions (IA$(141,4), IA8(235,8), Alpha4$(4)[300], Alpha6$(6)[400]) listed in the sample programs represent the character height. The difference between VERT and IHGHT is the number of blank lines between characters.

* For HP 1000 and HP 3000 system programs only.

This program allows the user to input the paper text width, the size of character desired, and the text to be printed. For both the HP 1000 and HP 3000 the character size is selectable from standard height (1) to 2, 4, 6, 8, 12, and 16 times standard height. The characters that are 2, 12 and 16 times the standard size are selected by accessing the double size mode and choosing either standard (1), 4, 6, or 8 times the standard height. For example, if 6 times the standard height is selected the printer output will be 12 times (6 x 2) the standard height when in the double size mode.

SECTION III. PROGRAM LISTING FOR THE HP 3000

```
$CONTROL LIST,MAP,LOCATION ,FILE=05,FILE=06,FILE=07
      PROGRAM BLOCK
C ***************************************************
C
C
C
C     USING THE BLOCK CHARACTER ROM OF THE HP 2563A
C     AND THE HP 3000
C
C     THE OUTPUT FILE NAME FOR THIS PROGRAM IS FTN07
C ***************************************************
C
      DIMENSION IREF(47),LEN1(66),LEN2(66),IA4(141,4),IA6(188,6)
      DIMENSION IA4B(141),IA4C(141),IA4D(141)
      DIMENSION IA6B(188),IA6C(188),IA6D(188),IA6E(188),IA6F(188)
      DIMENSION IA8B(235),IA8C(235),IA8D(235),IA8E(235),IA8F(235)
      DIMENSION IA8G(235),IA8H(235)
      DIMENSION IA8(235,8)
      DIMENSION IA8AA(45),IA8BB(45),IA8CC(45),IA8DD(45),IA8EE(45)
      DIMENSION IA8FF(45),IA8GG(45),IA8HH(45)
      DIMENSION ITEXT(132),IOUT(66,12)
      EQUIVALENCE  (IA4(1,2),IA4B),(IA4(1,3),IA4C),(IA4(1,4),IA4D)
      EQUIVALENCE (IA6(1,2),IA6B),(IA6(1,3),IA6C),(IA6(1,4),IA6D)
      EQUIVALENCE (IA6(1,5),IA6E),(IA6(1,6),IA6F)
      EQUIVALENCE (IA8(1,2),IA8B),(IA8(1,3),IA8C),(IA8(1,4),IA8D)
      EQUIVALENCE (IA8(1,5),IA8E),(IA8(1,6),IA8F),(IA8(1,7),IA8G)
      EQUIVALENCE (IA8(1,8),IA8H)
      EQUIVALENCE (IA8(191,1),IA8AA),(IA8(191,2),IA8BB)
      EQUIVALENCE(IA8(191,3),IA8CC),(IA8(191,4),IA8DD)
      EQUIVALENCE(IA8(191,5),IA8EE),(IA8(191,6),IA8FF)
      EQUIVALENCE(IA8(191,7),IA8GG),(IA8(191,8),IA8HH)
C
C ***************************************************
C
C REDIMENSION IREF & IA ARRAYS IF ADDITIONAL LETTERS ARE
C ADDED.  IOUT - 12 MIGHT ALSO NEED REDIMENSIONING IF
C NEW CHARACTERS ARE VERY LARGE.
C
C DIMENSION AND EQUIVALENCE ARRAYS FOR ANY NEW CHARACTER
C SIZES TO BE ADDED
C
C ***************************************************
C
C***
C     FILL REFERENCE ARRAY WITH LETTERS AVAILABLE
C
      DATA IREF/2HA ,2HB ,2HC ,2HD ,2HE ,2HF ,2HG ,2HH ,2HI ,2HJ ,
```

```
48          C2HK ,2HL ,2HM ,2HN ,2HO ,2HP ,2HQ ,2HR ,2HS ,2HT ,2HU ,
49          C2HV ,2HW ,2HX ,2HY ,2HZ ,2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,
50          C2H7 ,2H8 ,2H9 ,2H0 ,2H- ,2H/ ,2H# ,2H. ,2H, ,2H$ ,2H% ,
51          C2H; ,2H: ,2H  ,2H? /
52        C
53        C  ************************************************
54        C  INPUT ANY NEW CHARACTERS INTO IREF ARRAY
55        C  ************************************************
56        C
57        C *** THIS IS THE START OF SIZE 4 - FIRST ROW
58             DATA IA4/2H (,2H$ ,2H  ,2H!!,2H!8,2H  ,2H9!,2H!8,2H  ,
59            C2H!!,2H!$,2H  ,
60            C2H!!,2H!!,2H  ,2H!!,2H!!,2H  ,2H9!,2H!8,2H  ,2H! ,2H !,2H  ,
61            C2H 1,2H0 ,2H  ,
62            C2H  ,2H !,2H  ,2H! ,2H(#,2H  ,2H! ,2H  ,2H  ,2H!$,2H(!,2H  ,
63            C2H!$,2H !,2H  ,
64            C2H9!,2H!8,2H  ,2H!!,2H!8,2H  ,2H9!,2H!8,2H  ,2H!!,2H!8,2H  ,
65            C2H9!,2H!8,2H  ,
66            C2H!!,2H!!,2H  ,2H! ,2H !,2H  ,2H! ,2H !,2H  ,2H! ,2H !,2H  ,
67            C2H_>,2H?Z,2H  ,2H_>,2H?Z,2H  ,2H!!,2H!;,2H  ,
68            C2H?9,2H0 ,2H  ,2H9!,2H!V,2H  ,2H9!,2H!8,2H  ,2H! ,2H10,2H  ,
69            C2H!!,2H!!,2H  ,
70            C2H9!,2H!8,2H  ,2H!!,2H!!,2H  ,2H9!,2H!8,2H  ,2H9!,2H!8,2H  ,
71            C2H9!,2H!8,2H  ,2H  ,2H  ,2H  ,2H  ,2H?Z,2H  ,2H 0,2H1 ,2H  ,
72            C2H  ,2H  ,2H  ,
73            C2H  ,2H  ,2H  ,2H?.,2H,.,2H  ,2HK ,2H?Z,2H  ,2H  ,2H  ,2H  ,
74            C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H9/,2H/8,2H  /
75             DATA IA4B/2H(#,2H%$,2H  ,2H!.,2H.;,2H  ,
76            C2H! ,2H /,2H  ,2H! ,2H=!,2H  ,
77            C2H!.,2H. ,2H  ,2H!.,2H. ,2H  ,2H! ,2H /,2H  ,2H!.,2H.!,2H  ,
78            C2H 1,2H0 ,2H  ,2H  ,2H !,2H  ,2H!(,2H# ,2H  ,2H! ,2H  ,2H  ,
79            C2H!%,2H#!,2H  ,2H!%,2H$!,2H  ,2H! ,2H !,2H  ,2H!.,2H.!,2H  ,
80            C2H! ,2H !,2H  ,2H!.,2H.;,2H  ,2H!.,2H.E,2H  ,2H 1,2H0 ,2H  ,
81            C2H! ,2H !,2H  ,2H! ,2H !,2H  ,2H! ,2H !,2H  ,2H=_,2HZ<,2H  ,
82            C2H=_,2HZ<,2H  ,2H ?,2HZ<,2H  ,2H 1,2H0 ,2H  ,2H/?,2H!F,2H  ,
83            C2H .,2H.;,2H  ,2H! ,2H10,2H  ,2H:.,2H.E,2H  ,2H!.,2H.E,2H  ,
84            C2H  ,2H(#,2H  ,2H:.,2H.;,2H  ,2H!.,2H.!,2H  ,2H!?,2HZ!,2H  ,
85            C2HH.,2H. ,2H  ,2H ?,2HZ<,2H  ,2H/D,2H+/,2H  ,2H  ,2H  ,2H  ,
86            C2H  ,2H  ,2H  ,2H1.,2H,.,2H  ,2H ?,2HZ<,2H  ,2H K,2H  ,2H  ,
87            C2H K,2H  ,2H  ,2H  ,2H  ,2H  ,2H(#,2H  /
88             DATA IA4C/2H!!,
89            C2H!!,2H  ,2H!/,2H/8,2H  ,2H! ,2H .,2H  ,2H! ,2H?!,2H  ,
90            C2H!/,2H/ ,2H  ,2H!/,2H/ ,2H  ,2H! ,2H)!,2H  ,2H!/,2H/!,2H  ,
91            C2H 1,2H0 ,2H  ,2H  ,2H !,2H  ,2H!4,2H$ ,2H  ,2H! ,2H  ,2H  ,
92            C2H! ,2H !,2H  ,2H! ,2H%!,2H  ,2H! ,2H !,2H  ,2H!/,2H/S,2H  ,
93            C2H! ,2H.!,2H  ,2H!/,2H/8,2H  ,2HP/,2H/!,2H  ,2H 1,2H0 ,2H  ,
94            C2H! ,2H !,2H  ,2H%$,2H(#,2H  ,2H!(,2H$!,2H  ,2H?Z,2H_>,2H  ,
95            C2H 1,2H0 ,2H  ,2H?Z,2H< ,2H  ,2H 1,2H0 ,2H  ,2H?9,2H# ,2H  ,
96            C2H /,2H/8,2H  ,2H!!,2H!!,2H  ,2H=/,2H/!,2H  ,2H!/,2H/!,2H  ,
97            C2H (,2H# ,2H  ,2H9/,2H/8,2H  ,2HR/,2H/!,2H  ,2H!Z,2H<!,2H  ,
98            C2H)/,2H/ ,2H  ,2H?Z,2H< ,2H  ,2H.,,2H-.,2H  ,2H  ,2H  ,2H  ,
99            C2H  ,2H  ,2H  ,2H  ,2H01,2H  ,2H?Z,2H< ,2H  ,2H  ,2H  ,2H  ,
```

```
100           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  /
101            DATA IA4D/2H! ,2H !,2H  ,                                    9=
102           C2H!!,2H!;,2H  ,2H:!,2H!;,2H  ,2H!!,2H!#,2H  ,
103           C2H!!,2H!!,2H  ,2H! ,2H  ,2H  ,2H:!,2H!;,2H  ,2H! ,2H !,2H  ,
104           C2H 1,2H0 ,2H  ,2H:!,2H!;,2H  ,2H! ,2H%$,2H  ,2H!!,2H!!,2H  ,
105           C2H! ,2H !,2H  ,2H! ,2H !,2H  ,2H:!,2H!;,2H  ,2H! ,2H  ,2H  ,
106           C2H:!,2H;8,2H  ,2H! ,2H !,2H  ,2H:!,2H!;,2H  ,2H 1,2H0 ,2H  ,
107           C2H:!,2H!;,2H  ,2H %,2H# ,2H  ,2H!#,2H%!,2H  ,2HZ<,2H=_,2H  ,
108           C2H 1,2H0 ,2H  ,2H9!,2H!!,2H  ,
109           C2H1!,2H!0,2H  ,2H9!,2H!!,2H  ,2H:!,2H!;,2H  ,2H  ,2H10,2H  ,
110           C2H!!,2H!;,2H  ,2H:!,2H!;,2H  ,2H(#,2H  ,2H  ,2H:!,2H!;,2H  ,
111           C2H:!,2H!;,2H  ,2H:!,2H!;,2H  ,2H  ,2H  ,2H  ,2HZ<,2H  ,2H  ,
112           C2H 0,2H1 ,2H  ,2H K,2H  ,2H  ,2H I,2H  ,2H  ,2H)/,2HDS,2H  ,
113           C2HZ<,2H K,2H  ,2H I,2H  ,2H  ,2H K,2H  ,2H  ,2H  ,2H  ,2H  ,
114           C2H  ,2HK ,2H  /
115      C *** FILL LENGTH ARRAY
116            DATA LEN1/2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H1 ,
117           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H2 ,
118           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H3 ,
119           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H4 ,
120           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H5 ,
121           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H6 ,
122           C2H  ,2H  ,2H  ,2H  ,2H  /
123            DATA LEN2/2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
124           C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
125           C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
126           C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
127           C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
128           C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
129           C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 /
130      C
131      C  *** THIS IS THE START OF SIZE 6 - FIRST ROW
132      C
133            DATA IA6 /2H ?,2H98,2H> ,2H  ,2H!!,2H!!,2H!$,2H  ,
134           C2H9!,2H!!,2H!8,2H  ,2H!!,2H!!,2H!$,2H  ,2H!!,2H!!,2H!!,2H  ,
135           C2H!!,2H!!,2H!!,2H  ,2H9!,2H!!,2H!8,2H  ,2H! ,2H  ,2H !,2H  ,
136           C2H 1,2H!!,2H0 ,2H  ,2H  ,2H  ,2H !,2H  ,2H! ,2H (,2H# ,2H  ,
137           C2H! ,2H  ,2H  ,2H  ,2H!$,2H  ,2H(!,2H  ,2H!$,2H  ,2H !,2H  ,
138           C2H9!,2H!!,2H!8,2H  ,2H!!,2H!!,2H!8,2H  ,
139           C2H9!,2H!!,2H!8,2H  ,2H!!,2H!!,2H!8,2H  ,2H9!,2H!!,2H!8,2H  ,
140           C2H!!,2H!!,2H!!,2H  ,2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H !,2H  ,
141           C2H! ,2H  ,2H !,2H  ,2H!>,2H  ,2H?!,2H  ,
142           C2H:$,2H  ,2H(;,2H  ,2H!!,2H!!,2H!;,2H  ,
143           C2H  ,2H(0,2H  ,2H  ,2H9!,2H!!,2H8 ,2H  ,2H9!,2H!!,2H!8,2H  ,
144           C2H! ,2H  ,2H! ,2H  ,2H!!,2H!!,2H!!,2H  ,2H9!,2H!!,2H!!,2H  ,
145           C2H!!,2H!!,2H!!,2H  ,2H9!,2H!!,2H!8,2H  ,2H9!,2H!!,2H!8,2H  ,
146           C2H(!,2H!!,2H!$,2H  ,
147           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H?Z,2H  ,2H 1,2H01,2H0 ,2H  ,
149           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H10,2H  ,2H  ,
149           C2HK ,2H  ,2H?Z,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
150           C2H  ,2H  ,2H  ,2H  ,2H9!,2H!!,2H8 ,2H  /                    B=
151            DATA IA6B/2H?9,2H#%,2H8>,2H  ,                              ee
```

```
152             C2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H !,2H  ,
153             C2H! ,2H  ,2H=!,2H  ,2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H  ,2H  ,
154             C2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H !,2H  ,
155             C2H  ,2H10,2H  ,2H  ,2H  ,2H  ,2H !,2H  ,2H! ,2H<#,2H  ,2H  ,
156             C2H! ,2H  ,2H  ,2H  ,2H!:,2H$<,2H;!,2H  ,2H!:,2H$ ,2H !,2H  ,
157             C2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H !,2H  ,
158             C2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H /,2H  ,
159             C2H  ,2H10,2H  ,2H  ,2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H !,2H  ,
160             C2H! ,2H  ,2H !,2H  ,2H%8,2H>?,2H9#,2H  ,
161             C2H=:,2H$<,2H;<,2H  ,2H  ,2H <,2H;<,2H  ,
162             C2H <,2H!0,2H  ,2H  ,2H! ,2H ?,2H! ,2H  ,2H  ,2H  ,2H !,2H  ,
163             C2H! ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,
164             C2H  ,2H ?,2H9#,2H  ,2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H !,2H  ,
165             C2H! ,2H ?,2HZ!,2H  ,
166             C2H  ,2H  ,2H  ,2H  ,2H  ,2H ?,2HZ<,2H  ,2H.-,2H,-,2H,.,2H  ,
167             C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H9!,2H!!,2H!!,2H  ,
168             C2H  ,2H ?,2HZ<,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
169             C2H  ,2H  ,2H  ,2H  ,2H! ,2H ?,2H! ,2H  /
170              DATA IA6C/2H9#,
171             C2H  ,2H%8,2H  ,2H!.,2H..,2H.;,2H  ,2H! ,2H  ,2H  ,2H  ,
172             C2H! ,2H  ,2H !,2H  ,2H!.,2H..,2H..,2H  ,2H!.,2H..,2H  ,2H  ,
173             C2H! ,2H  ,2H  ,2H  ,2H!.,2H..,2H.!,2H  ,
174             C2H  ,2H10,2H  ,2H  ,2H  ,2H  ,2H !,2H  ,2H!<,2HJ ,2H  ,2H  ,
175             C2H! ,2H  ,2H  ,2H  ,2H!=,2H:;,2H<!,2H  ,2H!=,2H:$,2H !,2H  ,
176             C2H! ,2H  ,2H !,2H  ,2H!.,2H..,2H.!,2H  ,
177             C2H! ,2H  ,2H !,2H  ,2H!.,2H..,2H.;,2H  ,2H!.,2H..,2H.E,2H  ,
178             C2H  ,2H10,2H  ,2H  ,2H! ,2H  ,2H !,2H  ,2H!>,2H ,2H?!,2H  ,
179             C2H! ,2H?>,2H !,2H  ,2H %,2H89,2H# ,2H  ,
180             C2H =,2H:;,2H<  ,2H  ,2H  ,2H<;,2H<  ,2H  ,
181             C2H  ,2H10,2H  ,2H  ,2H  ,2H?9,2H# ,2H  ,2H .,2H..,2H.;,2H  ,
182             C2H!.,2H..,2H!.,2H  ,2H!.,2H..,2H.E,2H  ,2H!.,2H..,2H.E,2H  ,
183             C2H  ,2H?9,2H# ,2H  ,2H:.,2H..,2H.;,2H  ,2H!.,2H..,2H.!,2H  ,
184             C2H! ,2H?Z,2H<!,2H  ,
185             C2H ..,2H..,2H. ,2H  ,2H  ,2H?Z,2H<  ,2H  ,2H/+,2HD+,2HD/,2H  ,
186             C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H!.,2H-,,2H.E,2H  ,
187             C2H  ,2H?Z,2H<  ,2H  ,2H  ,2HK ,2H  ,2H  ,2H  ,2HK ,2H  ,2H  ,
188             C2H  ,2H  ,2H  ,2H  ,2H  ,2H?9,2H# ,2H  /
189              DATA IA6D/2H!!,
190             C2H!!,2H!!,2H  ,2H! ,2H  ,2H 8,2H  ,2H! ,2H  ,2H  ,2H  ,
191             C2H! ,2H  ,2H !,2H  ,2H!/,2H//,2H//,2H  ,2H!/,2H//,2H  ,2H  ,
192             C2H! ,2H  ,2H..,2H  ,2H!/,2H//,2H/!,2H  ,
193             C2H  ,2H10,2H  ,2H  ,2H  ,2H  ,2H !,2H  ,2H!#,2H%$,2H  ,2H  ,
194             C2H! ,2H  ,2H  ,2H  ,2H! ,2H=<,2H !,2H  ,2H! ,2H=:,2H$!,2H  ,
195             C2H! ,2H  ,2H !,2H  ,2H!/,2H//,2H/S,2H  ,
196             C2H! ,2H  ,2H !,2H  ,2H!/,2H//,2H/8,2H  ,2HR/,2H//,2H/!,2H  ,
197             C2H  ,2H10,2H  ,2H  ,2H! ,2H  ,2H !,2H  ,2H%8,2H>?,2H9#,2H  ,
198             C2H!?,2H98,2H>!,2H  ,2H <,2H;:,2H$ ,2H  ,
199             C2H  ,2H10,2H  ,2H  ,2H <,2H;<,2H  ,2H  ,
200             C2H  ,2H10,2H  ,2H  ,2H ?,2H9#,2H  ,2H  ,2H /,2H//,2H/8,2H  ,
201             C2H//,2H//,2H!/,2H  ,2H//,2H//,2H/!,2H  ,2H!/,2H//,2H/!,2H  ,
202             C2H ?,2H9#,2H  ,2H  ,2H9/,2H//,2H/8,2H  ,2HR/,2H//,2H/!,2H  ,
203             C2H!?,2HZ<,2H !,2H  ,
```

```
204         C2H /,2H//,2H/ ,2H  ,2H ?,2HZ<,2H  ,2H  ,2H.-,2H,-,2H,.,2H  ,
205         C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2HR/,2H+D,2H/!,2H  ,
206         C2H ?,2HZ<,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
207         C2H  ,2H  ,2H  ,2H  ,2H  ,2H9#,2H  ,2H  /
208          DATA IA6E/2H! ,
209         C2H  ,2H !,2H  ,2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H !,2H  ,
210         C2H! ,2H  ,2H?!,2H  ,2H! ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,
211         C2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H !,2H  ,
212         C2H  ,2H10,2H  ,2H  ,2H! ,2H  ,2H !,2H  ,2H! ,2H %,2H$ ,2H  ,
213         C2H! ,2H  ,2H  ,2H  ,2H! ,2H  ,2H !,2H  ,2H! ,2H =,2H:!,2H  ,
214         C2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H  ,2H  ,
215         C2H! ,2H  ,2H.;,2H  ,2H! ,2H  ,2H !,2H  ,2H. ,2H  ,2H !,2H  ,
216         C2H  ,2H10,2H  ,2H  ,2H! ,2H  ,2H !,2H  ,2H %,2H89,2H# ,2H  ,
217         C2H!9,2H#%,2H8!,2H  ,2H(;,2H<=,2H:$,2H  ,
218         C2H  ,2H10,2H  ,2H  ,2H(;,2H< ,2H  ,2H  ,
219         C2H  ,2H10,2H  ,2H  ,2H?9,2H# ,2H  ,2H  ,2H  ,2H  ,2H !,2H  ,
220         C2H  ,2H  ,2H! ,2H  ,2H. ,2H  ,2H !,2H  ,2H! ,2H  ,2H !,2H  ,
221         C2H?9,2H# ,2H  ,2H  ,2H! ,2H  ,2H !,2H  ,2H  ,2H  ,2H !,2H  ,
222         C2H!Z,2H< ,2H !,2H  ,
223         C2H  ,2H  ,2H  ,2H  ,2H?Z,2H< ,2H  ,2H  ,2H/+,2HD+,2HD/,2H  ,
224         C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H!!,2H!!,2H!;,2H  ,
225         C2H?Z,2H< ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
226         C2H  ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  /
227          DATA IA6F/2H! ,
228         C2H  ,2H !,2H  ,2H!!,2H!!,2H!#,2H  ,2H:!,2H!!,2H!;,2H  ,
229         C2H!!,2H!!,2H!#,2H  ,2H!!,2H!!,2H!!,2H  ,2H! ,2H  ,2H  ,2H  ,
230         C2H:!,2H!!,2H!;,2H  ,2H! ,2H  ,2H !,2H  ,
231         C2H 1,2H!!,2H0 ,2H  ,2H:!,2H!!,2H!;,2H  ,2H! ,2H  ,2H%$,2H  ,
232         C2H!!,2H!!,2H!!,2H  ,2H! ,2H  ,2H !,2H  ,2H! ,2H  ,2H=!,2H  ,
233         C2H:!,2H!!,2H!;,2H  ,2H! ,2H  ,2H  ,2H  ,
234         C2H:!,2H!!,2H48,2H  ,2H! ,2H  ,2H !,2H  ,2H:!,2H!!,2H!;,2H  ,
235         C2H  ,2H10,2H  ,2H  ,2H:!,2H!!,2H!;,2H  ,2H  ,2H%#,2H  ,2H  ,
236         C2H!#,2H  ,2H%!,2H  ,2H!<,2H  ,2H=!,2H  ,
237         C2H  ,2H10,2H  ,2H  ,2H!!,2H!!,2H!!,2H  ,
238         C2H !,2H!!,2H! ,2H  ,2H9!,2H!!,2H! ,2H  ,2H:!,2H!!,2H!;,2H  ,
239         C2H  ,2H  ,2H! ,2H  ,2H!!,2H!!,2H!;,2H  ,2H:!,2H!!,2H!;,2H  ,
240         C2H9#,2H  ,2H  ,2H  ,2H:!,2H!!,2H!;,2H  ,2H:!,2H!!,2H!;,2H  ,
241         C2H%!,2H!!,2H!#,2H  ,
242         C2H  ,2H  ,2H  ,2H  ,2HZ<,2H  ,2H  ,2H  ,2H 1,2H01,2H0 ,2H  ,
243         C2H  ,2HK ,2H  ,2H  ,2H  ,2HI ,2H  ,2H  ,2H  ,2H10,2H  ,2H  ,
244         C2HZ<,2H  ,2H K,2H  ,2H  ,2HK ,2H  ,2H  ,2H  ,2HI ,2H  ,2H  ,
245         C2H  ,2H  ,2H  ,2H  ,2H  ,2HK ,2H  ,2H  /
246          DATA IA8/2H  ,2H?^,2H> ,2H  ,2H  ,2H!!,2H!!,2H!!,2H$ ,2H  ,
247         C2H(!,2H!!,2H!!,2H$ ,2H  ,2H!!,2H!!,2H!8,2H> ,2H  ,
248         C2H!!,2H!!,2H!!,2H! ,2H  ,2H!!,2H!!,2H!!,2H! ,2H  ,
249         C2H(!,2H!!,2H!!,2H$ ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
250         C2H  ,2H1!,2H!!,2H0 ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,
251         C2H! ,2H  ,2H (,2H; ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
252         C2H!$,2H  ,2H (,2H! ,2H  ,2H!>,2H  ,2H  ,2H! ,2H  ,
253         C2H(!,2H!!,2H!!,2H$ ,2H  ,2H!!,2H!!,2H!!,2H$ ,2H  ,
254         C2H(!,2H!!,2H!!,2H$ ,2H  ,2H!!,2H!!,2H!!,2H$ ,2H  ,
255         C2H9!,2H!!,2H!!,2H8 ,2H  ,2H!!,2H!!,2H!!,2H! ,2H  ,
```

```
256           C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
257           C2H! ,2H  ,2H  ,2H! ,2H  ,2H!>,2H  ,2H ?,2H! ,2H  ,
258           C2H!>,2H  ,2H ?,2H! ,2H  ,2H!!,2H!!,2H!!,2H! ,2H  ,
259           C2H  ,2H?9,2H  ,2H  ,2H  ,2H<!,2H!!,2H!8,2H> ,2H  ,
260           C2H9!,2H!!,2H!!,2H$ ,2H  ,2H! ,2H  ,2H !,2H  ,2H  ,
261           C2H!!,2H!!,2H!!,2H! ,2H  ,2H<!,2H!!,2H!!,2H8 ,2H  ,
262           C2H!!,2H!!,2H!!,2H! ,2H  ,2H<!,2H!!,2H!!,2H$ ,2H  ,
263           C2H<!,2H!!,2H!!,2H$ ,2H  ,2H<!,2H!!,2H!!,2H$ ,2H  ,
264           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H< ,2H  /
265            DATA IA8AA/2H  ,
266           C2H! ,2H! ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
267           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H !,2H  ,2H  ,2H  ,
268           C2H98,2H  ,2H  ,2H< ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
269           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
270           C2H<!,2H!!,2H!8,2H> ,2H  /
271            DATA IA8B/2H ?,
272           C2H94,2H8>,2H  ,2H  ,2H! ,2H  ,2H =,2H! ,2H  ,
273           C2H!<,2H  ,2H =,2H! ,2H  ,2H! ,2H  ,2H %,2H8 ,2H  ,
274           C2H! ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
275           C2H!<,2H  ,2H =,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
276           C2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,
277           C2H! ,2H  ,2H<;,2H< ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
278           C2H!:,2H$ ,2H<;,2H! ,2H  ,2H!8,2H> ,2H  ,2H! ,2H  ,
279           C2H!<,2H  ,2H =,2H! ,2H  ,2H! ,2H  ,2H =,2H! ,2H  ,
280           C2H!<,2H  ,2H =,2H! ,2H  ,2H! ,2H  ,2H =,2H! ,2H  ,
281           C2H!<,2H  ,2H =,2H! ,2H  ,2H  ,2H !,2H  ,2H  ,2H  ,
282           C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
283           C2H! ,2H  ,2H  ,2H! ,2H  ,2H%8,2H> ,2H?9,2H# ,2H  ,
284           C2H%8,2H> ,2H?9,2H# ,2H  ,2H  ,2H  ,2H?9,2H# ,2H  ,
285           C2H ?,2H9!,2H  ,2H  ,2H  ,2H! ,2H  ,2H 1,2H0 ,2H  ,
286           C2H  ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H !,2H  ,2H  ,
287           C2H! ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
288           C2H  ,2H  ,2H <,2H; ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
289           C2H! ,2H  ,2H  ,2H! ,2H  ,2H!<,2H  ,2H?Z,2H! ,2H  ,
290           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H <,2H# ,2H  /
291            DATA IA8BB/2H  ,
292           C2H! ,2H! ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
293           C2H  ,2H  ,2H  ,2H  ,2H  ,2H<!,2H!!,2H!!,2H$ ,2H  ,
294           C2H:;,2H  ,2H <,2H# ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
295           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
296           C2H! ,2H  ,2H 1,2H0 ,2H  /
297            DATA IA8C/2H?9,
298           C2H# ,2H%8,2H> ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
299           C2H! ,2H  ,2H  ,2H/ ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
300           C2H! ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
301           C2H! ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
302           C2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,
303           C2H! ,2H <,2H;<,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
304           C2H!=,2H:5,2H;<,2H! ,2H  ,2H!%,2H8>,2H  ,2H! ,2H  ,
305           C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
306           C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
307           C2H! ,2H  ,2H  ,2H  ,2H  ,2H  ,2H !,2H  ,2H  ,2H  ,
```

```
308           C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
309           C2H! ,2H  ,2H  ,2H! ,2H  ,2H %,2H8P,2H9#,2H  ,2H  ,
310           C2H %,2H8P,2H9#,2H  ,2H  ,2H  ,2H ?,2H9#,2H  ,2H  ,
311           C2H  ,2H !,2H  ,2H  ,2H  ,2H  ,2H  ,2H?Z,2H< ,2H  ,
312           C2H  ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H !,2H  ,2H  ,
313           C2H! ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
314           C2H  ,2H  ,2H(;,2H< ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
315           C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H ?,2HZ<,2H! ,2H  ,
316           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H(#,2H  ,2H  /
317            DATA IA8CC/2H..,
318           C2H!.,2H!.,2H. ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
319           C2H  ,2H  ,2H  ,2H  ,2H  ,2H! ,2H !,2H  ,2H/ ,2H  ,
320           C2H  ,2H  ,2H(#,2H  ,2H  ,2H  ,2H 9,2H8 ,2H  ,2H  ,
321           C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
322           C2H  ,2H  ,2H?Z,2H< ,2H  /
323            DATA IA8D/2H9#,
324           C2H  ,2H %,2H8 ,2H  ,2H!.,2H..,2H.Y,2H; ,2H  ,
325           C2H! ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
326           C2H!.,2H..,2H..,2H. ,2H  ,2H!.,2H..,2H. ,2H  ,2H  ,
327           C2H! ,2H  ,2H  ,2H  ,2H  ,2H!.,2H..,2H..,2H! ,2H  ,
328           C2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,
329           C2H! ,2H(;,2H< ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
330           C2H! ,2H=7,2H< ,2H! ,2H  ,2H! ,2H%8,2H> ,2H! ,2H  ,
331           C2H! ,2H  ,2H  ,2H! ,2H  ,2H!.,2H..,2H.Y,2H; ,2H  ,
332           C2H! ,2H  ,2H  ,2H! ,2H  ,2H!.,2H..,2H.Y,2H; ,2H  ,
333           C2H:],2H..,2H..,2H> ,2H  ,2H  ,2H !,2H  ,2H  ,2H  ,
334           C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
335           C2H! ,2H  ,2H  ,2H! ,2H  ,2H  ,2H%!,2H# ,2H  ,2H  ,
336           C2H  ,2H%!,2H# ,2H  ,2H  ,2H  ,2H?9,2H# ,2H  ,2H  ,
337           C2H  ,2H !,2H  ,2H  ,2H  ,2H  ,2H ?,2HZ<,2H  ,2H  ,
338           C2H ,,2H..,2H..,2H; ,2H  ,2H!.,2H..,2H.!,2H. ,2H  ,
339           C2H!.,2H..,2H..,2HE ,2H  ,2H!.,2H..,2H..,2HE ,2H  ,
340           C2H  ,2H (,2H;<,2H  ,2H  ,2H:.,2H..,2H..,2H; ,2H  ,
341           C2H!.,2H..,2H..,2H! ,2H  ,2H! ,2H?Z,2H< ,2H! ,2H  ,
342           C2H ,,2H..,2H..,2H  ,2H  ,2H  ,2H (,2H# ,2H  ,2H  /
343            DATA IA8DD/2H//,
344           C2H!/,2H!/,2H/ ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
345           C2H  ,2H  ,2H  ,2H  ,2H  ,2H!.,2H.!,2H..,2HE ,2H  ,
346           C2H  ,2H (,2H# ,2H  ,2H  ,2H  ,2H :,2H; ,2H  ,2H  ,
347           32H  ,2H 9,2H8 ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
348           C2H  ,2H ?,2HZ<,2H  ,2H  /
349            DATA IA8E/2H!!,
350           C2H!!,2H!!,2H! ,2H  ,2H!/,2H//,2H/L,2H8 ,2H  ,
351           C2H! ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
352           C2H!/,2H//,2H//,2H/ ,2H  ,2H!/,2H//,2H/ ,2H  ,2H  ,
353           C2H! ,2H  ,2H  .,2H. ,2H  ,2H!/,2H//,2H//,2H! ,2H  ,
354           C2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,
355           C2H!(,2H!8,2H> ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
356           C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H %,2H8>,2H! ,2H  ,
357           C2H! ,2H  ,2H  ,2H! ,2H  ,2H!/,2H//,2H//,2H< ,2H  ,
358           C2H! ,2H  ,2H  ,2H! ,2H  ,2H!/,2H//,2H/L,2H8 ,2H  ,
359           C2H=/,2H//,2H/L,2H8 ,2H  ,2H  ,2H !,2H  ,2H  ,2H  ,
```

```
360         C2H! ,2H  ,2H  ,2H! ,2H  ,2H:$,2H  ,2H (,2H; ,2H  ,
361         C2H! ,2H?^,2H> ,2H! ,2H  ,2H  ,2H<!,2H$ ,2H  ,2H  ,
362         C2H  ,2H !,2H  ,2H  ,2H  ,2H ?,2H9#,2H  ,2H  ,2H  ,
363         C2H  ,2H !,2H  ,2H  ,2H  ,2H  ,2H?Z,2H< ,2H  ,2H  ,
364         C2H /,2H//,2H//,2H8 ,2H  ,2H//,2H//,2H/!,2H/ ,2H  ,
365         C2H//,2H//,2H//,2H! ,2H  ,2H!/,2H//,2H//,2H! ,2H  ,
366         C2H  ,2H<;,2H< ,2H  ,2H  ,2H9/,2H//,2H//,2H8 ,2H  ,
367         C2HR/,2H//,2H//,2H! ,2H  ,2H!?,2HZ<,2H  ,2H! ,2H  ,
368         C2H /,2H//,2H//,2H  ,2H  ,2H  ,2H<#,2H  ,2H  ,2H  /
369          DATA IA8EE/2H..,
370         C2H!.,2H!.,2H. ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
371         C2H  ,2H  ,2H  ,2H  ,2H  ,2HR/,2H/!,2H//,2H! ,2H  ,
372         C2H  ,2H<#,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
373         C2H  ,2H :,2H; ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
374         C2H  ,2H?Z,2H< ,2H  ,2H  /
375          DATA IA8F/2H! ,
376         C2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
377         C2H! ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
378         C2H! ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
379         C2H! ,2H  ,2H /,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
380         C2H  ,2H  ,2H! ,2H  ,2H  ,2H. ,2H  ,2H  ,2H! ,2H  ,
381         C2H!;,2H<%,2H8>,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
382         C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H%8,2H! ,2H  ,
383         C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
384         C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
385         C2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H !,2H  ,2H  ,2H  ,
386         C2H! ,2H  ,2H  ,2H! ,2H  ,2H=:,2H$ ,2H<;,2H< ,2H  ,
387         C2H!?,2H94,2H8>,2H! ,2H  ,2H (,2H;Q,2H:$,2H  ,2H  ,
388         C2H  ,2H !,2H  ,2H  ,2H  ,2H?9,2H# ,2H  ,2H  ,2H  ,
389         C2H  ,2H !,2H  ,2H  ,2H  ,2H ?,2HZ<,2H  ,2H  ,2H  ,
390         C2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H !,2H  ,2H  ,
391         C2H  ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
392         C2H (,2H;<,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
393         C2H  ,2H  ,2H  ,2H! ,2H  ,2H!Z,2H< ,2H  ,2H! ,2H  ,
394         C2H  ,2H  ,2H  ,2H  ,2H  ,2H (,2H# ,2H  ,2H  ,2H  /
395          DATA IA8FF/2H//,
396         C2H!/,2H!/,2H/ ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
397         C2H  ,2H 9,2H8 ,2H  ,2H  ,2H. ,2H !,2H  ,2H! ,2H  ,
398         C2H (,2H# ,2H  ,2H  ,2H  ,2H  ,2H 9,2H8 ,2H  ,2H  ,
399         C2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
400         C2H  ,2H9<,2H  ,2H  ,2H  /
401          DATA IA8G/2H! ,
402         C2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H ?,2H! ,2H  ,
403         C2H!>,2H  ,2H ?,2H! ,2H  ,2H! ,2H  ,2H (,2H; ,2H  ,
404         C2H! ,2H  ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
405         C2H!>,2H  ,2H ?,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
406         C2H  ,2H  ,2H! ,2H  ,2H  ,2H!>,2H  ,2H ?,2H! ,2H  ,
407         C2H!<,2H  ,2H%8,2H> ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
408         C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H %,2H! ,2H  ,
409         C2H!>,2H  ,2H ?,2H! ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
410         C2H!>,2H  ,2H !,2H; ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
411         C2H!>,2H  ,2H ?,2H! ,2H  ,2H  ,2H !,2H  ,2H  ,2H  ,
```

```
412           C2H!>,2H  ,2H ?,2H! ,2H  ,2H =,2H:5,2H;<,2H  ,2H  ,
413           C2H!9,2H# ,2H%8,2H! ,2H  ,2H<;,2H< ,2H=:,2H$ ,2H  ,
414           C2H  ,2H !,2H  ,2H  ,2H  ,2H9#,2H  ,2H  ,2H  ,2H  ,
415           C2H  ,2H !,2H  ,2H  ,2H  ,2H?Z,2H< ,2H  ,2H  ,2H  ,
416           C2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H  ,2H !,2H  ,2H  ,
417           C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
418           C2H<;,2H< ,2H  ,2H  ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
419           C2H  ,2H  ,2H ?,2H! ,2H  ,2H!<,2H  ,2H ?,2H! ,2H  ,
420           C2H  ,2H  ,2H  ,2H  ,2H  ,2H<#,2H  ,2H  ,2H  ,2H  /
421            DATA IA8GG/2H  ,
422           C2H! ,2H! ,2H  ,2H  ,2H  ,2H 9,2H8 ,2H  ,2H  ,
423           C2H  ,2H :,2H! ,2H  ,2H  ,2H%!,2H!!,2H!!,2H# ,2H  ,
424           C2H<#,2H  ,2H 9,2H8 ,2H  ,2H  ,2H  ,2H :,2H! ,2H  ,2H  ,
425           C2H  ,2H 9,2H8 ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
426           C2H  ,2H! ,2H  ,2H  ,2H  /
427            DATA IA8H/2H! ,
428           C2H  ,2H  ,2H! ,2H  ,2H!!,2H!!,2H!!,2H# ,2H  ,
429           C2H%!,2H!!,2H!!,2H# ,2H  ,2H!!,2H!!,2H!;,2H< ,2H  ,
430           C2H!!,2H!!,2H!!,2H! ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
431           C2H%!,2H!!,2H!!,2H# ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
432           C2H  ,2H!!,2H!!,2H0 ,2H  ,2H%!,2H!!,2H!!,2H# ,2H  ,
433           C2H! ,2H  ,2H %,2H8 ,2H  ,2H!!,2H!!,2H!!,2H! ,2H  ,
434           C2H! ,2H  ,2H  ,2H! ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
435           C2H%!,2H!!,2H!!,2H# ,2H  ,2H! ,2H  ,2H  ,2H  ,2H  ,
436           C2H%!,2H!!,2H!4,2H8 ,2H  ,2H! ,2H  ,2H  ,2H! ,2H  ,
437           C2H:!,2H!!,2H!!,2H; ,2H  ,2H  ,2H !,2H  ,2H  ,2H  ,
438           C2H%!,2H!!,2H!!,2H# ,2H  ,2H  ,2H=7,2H< ,2H  ,2H  ,
439           C2H!#,2H  ,2H %,2H! ,2H  ,2H!<,2H  ,2H =,2H! ,2H  ,
440           C2H  ,2H !,2H  ,2H  ,2H  ,2H!!,2H!!,2H!!,2H! ,2H  ,
441           C2H 1,2H!!,2H!0,2H  ,2H  ,2H9!,2H!!,2H!!,2H! ,2H  ,
442           C2H:!,2H!!,2H!!,2H# ,2H  ,2H  ,2H  ,2H !,2H  ,2H  ,
443           C2H:!,2H!!,2H!!,2H# ,2H  ,2H%!,2H!!,2H!!,2H# ,2H  ,
444           C2H;<,2H  ,2H  ,2H  ,2H  ,2H%!,2H!!,2H!!,2H# ,2H  ,
445           C2H:!,2H!!,2H!!,2H# ,2H  ,2H%!,2H!!,2H!!,2H# ,2H  ,
446           C2H  ,2H  ,2H  ,2H  ,2H  ,2H# ,2H  ,2H  ,2H  ,2H  /
447            DATA IA8HH/2H  ,
448           C2H! ,2H! ,2H  ,2H  ,2H  ,2H :,2H; ,2H  ,2H  ,
449           C2H  ,2H?9,2H# ,2H  ,2H  ,2H  ,2H !,2H  ,2H  ,2H  ,
450           C2H# ,2H  ,2H :,2H; ,2H  ,2H  ,2H?9,2H# ,2H  ,2H  ,
451           C2H  ,2H :,2H; ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,2H  ,
452           C2H  ,2HK ,2H  ,2H  ,2H  /
453      C
454      C  ***************************************************
455      C  INSERT ADDITIONAL CHARACTER SIZE ARRAYS HERE
456      C  ***************************************************
457      C
458      C
459      C  *** DEFINE ADDRESSES
460      C
461           LUCRT = 6
462           ICRTRD = 5
463           LUPRT = 7
```

```
C
C  ***************************************************
C  REDEFINE ICHAR IF NEW CHARACTERS ARE ADDED
C  ***************************************************
C
C  *** NUMBER OF DEFINED CHARACTERS = ICHAR
C
      ICHAR = 47
C  *** GET DATA FROM OPERATOR
      WRITE (LUCRT,100)
100   FORMAT(" ESC&JINPUT PAPER TEXT WIDTH"///)
      READ(ICRTRD,*) PAPER
105   CONTINUE
C
C  *** SET PRINTER TO BLOCK CHARACTERS & 8 LPI
C
C
C *** INITIALIZE TEXT ARRAY
C
      DO 500I=1,132
      ITEXT(I)=%20040
500   CONTINUE
C
C  *** INITIALIZE OUTPUT ARRAY
C
C  ***************************************************
C  CHANGE J LIMIT FROM 12 IF IOUT IS REDIMENSIONED
C  ***************************************************
C
      DO 4500 I=1,66
      DO 4600 J = 1,12
      IOUT(I,J) =%20040
4600  CONTINUE
4500  CONTINUE
C
C  *** GET CHARACTER SIZE FROM OPERATOR
C
      WRITE (LUCRT,110)
110   FORMAT (" ESC&JINPUT CHARACTER HEIGHT")
      WRITE(LUCRT,113)
113   FORMAT(" 0,1,4,6, OR 8"///)
      WRITE(LUCRT,115)
115   FORMAT(" 0 MEANS COMPLETE"///)
      READ (ICRTRD,*)IHGHT
      WRITE(LUCRT,340)
      IF(IHGHT.NE.0)GOTO 250
C
C  *** CLEAR PRINTER
C
      WRITE (LUPRT,210)
210    FORMAT(" ^F")
      GO TO 9990
```

```
516      C
517      C  *** TEST HEIGHT AND SET VARIABLES
518      C
519      250   CONTINUE
520            IF(IHGHT.EQ.1) SIZE = -1
521            IF(IHGHT.EQ.4) SIZE = 4
522            IF(IHGHT.EQ.4) VERT = 6
523            IF(IHGHT.EQ.6) SIZE = 6
524            IF(IHGHT.EQ.6) VERT = 8
525            IF(IHGHT.EQ.8) SIZE = 8
526            IF(IHGHT.EQ.8) VERT = 12
527      C
528      C  ************************************************
529      C  SET VERT & SIZE PARAMETERS FOR NEW CHARACTER
530      C  SIZES HERE.
531      C  ************************************************
532            MAX = PAPER *132 /(13.2 *(SIZE +2))
533            IMAX = MAX
534      C
535      C  *** GET CHARACTER STRING FROM OPERATOR
536      C
537            WRITE (LUCRT,300)IMAX
538      300   FORMAT(" ←h←JINPUT STRING -- MAXIMUM OF ",I3," LETTERS"///)
539            IF (IMAX.GT.66)  GO TO 330
540            WRITE(LUCRT,335)(LEN1(I),I=1,IMAX)
541            WRITE(LUCRT,335)(LEN2(I),I=1,IMAX)
542            WRITE(LUCRT,350)
543      350   FORMAT(" ")
544      330   CONTINUE
545            READ (ICRTRD,345)(ITEXT(I),I=1,IMAX)
546      345   FORMAT(132A1)
547      335   FORMAT(" ",132A1)
548            WRITE(LUCRT,340)
549      340   FORMAT(" ←h←J")
550      C
551      C  *** BLOCK OUTPUT ROUTINES
552      C
553      C
554      C  *** SIZE 4 OUTPUT
555      C
556            IF (IHGHT.NE.4) GOTO 6150
557      C
558      C  *** FILL OUTPUT ARRAY
559      C
560            DO 4100 I = 1,IMAX
561            DO 4300 K = 1,ICHAR
562            IF (ITEXT(I).NE.IREF(K)) GOTO 4300
563            DO 4200 J = 1,IHGHT
564            DO 4370 L=1,(SIZE+2)/2
565            IOUT(((I-1)*((SIZE+2)/2))+L ,J) = IA4(((K-1)*((SIZE+2)/2)+L),
566      4370  CONTINUE
567      4200  CONTINUE
```

```
568      4300  CONTINUE
569      4100  CONTINUE
570      C
571      C  *** OUTPUT DATA TO PRINTER
572      C
573            GOTO 9000
574      6150  CONTINUE
575      C
576      C  *** SIZE 6 OUTPUT
577      C
578            IF (IHGHT.NE.6) GOTO 8150
579      C
580      C  *** FILL OUTPUT ARRAY
581      C
582            DO 6100 I = 1,IMAX
583            DO 6300 K = 1,ICHAR
584            IF (ITEXT(I).NE.IREF(K)) GOTO 6300
585            DO 6200 J = 1,IHGHT
586            DO 6370 L=1,(SIZE+2)/2
587            IOUT(((I-1)*((SIZE+2)/2) +L),J) = IA6(((K-1)*((SIZE+2)/2)+L),
588      6370  CONTINUE
589      6200  CONTINUE
590      6300  CONTINUE
591      6100  CONTINUE
592      C
593      C  *** OUTPUT DATA TO PRINTER
594      C
595            GOTO9000
596      8150  CONTINUE
597      C
598      C  ************************************************************
599      C  TYPICAL OUTPUT ROUTINE FOLLOWS -- CHANGE IA8 TO THE NEW
600      C  CHARACTER MATRIX.  CHANGE ALL REFERENCES FROM SIZE EIGHT.
601      C  CHANGE ALL LINE REFERENCE NUMBERS.  ADD NEW CHARACTER SIZE
602      C  ROUTINE WHERE SHOWN BELOW.
603      C  ************************************************************
604      C
605      C  *** SIZE 8 OUTPUT
606      C
607            IF (IHGHT.NE.8) GOTO 10000
608      C
609      C  *** FILL OUTPUT ARRAY
610      C
611            DO 8100 I = 1,IMAX
612            DO 8300 K = 1,ICHAR
613            IF (ITEXT(I).NE.IREF(K))  GOTO 8300
614            DO 8200 J = 1,IHGHT
615            DO 8370 L=1,(SIZE+2)/2
616            IOUT(((I-1)*((SIZE+2)/2) +L),J) = IA8(((K-1)*((SIZE+2)/2)+L),
617      8370  CONTINUE
618      8200  CONTINUE
619      8300  CONTINUE
```

```
 8100  CONTINUE
C
C  *** OUTPUT DATA TO PRINTER
C
       GOTO9000
10000 CONTINUE
C
C  ************************************************************
C  INSERT NEW SIZE OUTPUT ROUTINE HERE AS DEFINED ABOVE
C  ************************************************************
C
C
C  *** OUTPUT SIZE 1 - STANDARD SIZE PRINT
C
       IF(IHGHT.NE.1) GOTO 105
       WRITE(LUPRT,1110)
1110   FORMAT(" %")
       WRITE(LUPRT,1100)ITEXT
1100   FORMAT(132A1)
       GOTO105
C
C  *** OUTPUT BLOCK CHARACTERS TO LINE PRINTER
C
9000   CONTINUE
       WRITE(LUPRT,4407)
4407   FORMAT(" %&k0S%(0U%)1L%&18D")
       WRITE(LUPRT,4410)
4410   FORMAT(" %")
       WRITE(LUPRT,4400)((IOUT(I,J),I=1,66),J=1,VERT)
4400   FORMAT(66A2)
       WRITE(LUPRT,4420)
4420   FORMAT(" %")
       GOTO 105
9990   CONTINUE
       STOP
       END
```