Importing SAS® Graphic Files into WordPerfect Version 5.2 (Comparing several device drivers to determine which produces the best result.)

Lori D. Griffin, Marion Merrell Dow Inc., Kansas City, MO

ABSTRACT

This paper demonstrates several different device drivers that were used to import a SAS graph into WordPerfect. The ultimate goal was to determine which device driver displayed the best result. Criteria for best result was that the imported WordPerfect graph closely resemble the original graph. A comparison process took place between examples of each imported WordPerfect graph and the original graph. Several aspects were taken into consideration in this process, such as color to color transfer, font styles, and the size of the files that were compared. Two different graphs, an annotated pie chart and a box and whisker plot, were taken through this comparison process.
The comparison process began with the device drivers recommended by WordPerfect. Next were the device drivers recommended by SAS. Concluding the process was a modified SAS device driver. The last device driver proved to have the best result. Included in the paper are specifics on how to create this device driver and the goptions needed to use this device.

Also included are two examples (a bar chart and a scatter plot) that illustrate a bug detected in the result of one device driver versus the result of the modified device driver.

INTRODUCTION

In the Pharmaceutical industry it is of great importance to standardize on one word processing package. In making this decision several aspects should be taken into consideration. Most important is that this package must have the capability of combining both text and graphics into a single document. WordPerfect is a prime candidate for becoming this word processing package. Therefore, it became a necessity to import SAS graphs into WordPerfect. This prompted an initial testing process to begin.

During the initial testing process, it became apparent that several different device drivers were available for WordPerfect. The initial testing process transformed into a comparison process.

COMPARISON PROCESS

The comparison process consisted of taking an original graph and creating several graphic files. Each graphic file was created using a different device driver. The first two graphic files were created using the device drivers recommended by WordPerfect. These device drivers were the HPGL and HP7475A. The next graphic files that were created used the device drivers recommended by SAS. These device drivers were CGM, CGMWP and CGMWPL. When all of the above devices failed to return satisfactory results, SAS documentation was obtained that showed how to create a device driver called CGMWPWA. Using CGMWPWA, the results were better but could still be improved. The final device, CGMTEST, is a slight modification of device driver CGMWPWA. The results of this device driver has proven to closely resemble the original graphic output.

EXAMPLES

The examples of all seven device drivers follow. You be the judge as to which device driver more closely resembles the original graph. Please take into consideration, since this paper is printed in black and white that it does not truly represent the difficulties encountered when using color. Also the size listed, represents the size in bytes once the graphic file is in WordPerfect.

To complete the comparison process, compare figures 1 through 7 to the original Pie Chart on page 7. Next compare figures 8 through 14 to the original Box and Whisker plot on page 8.

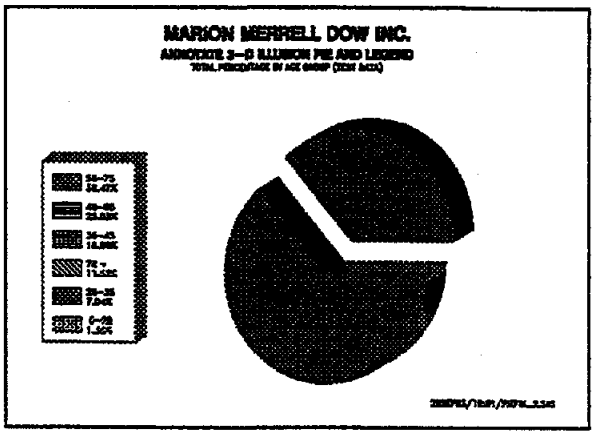


Figure 1 Created using device = HPGL
Size in bytes = 835,248

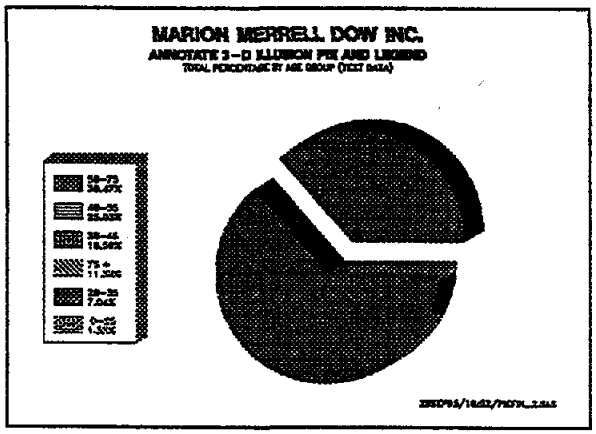


Figure 2 Created using device = HP7475A
Size in bytes = 616,286

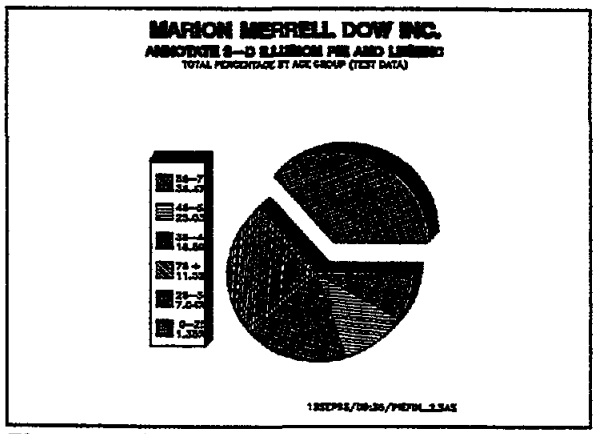


Figure 3 Created using device = CGMWP
Size in bytes = 156,030

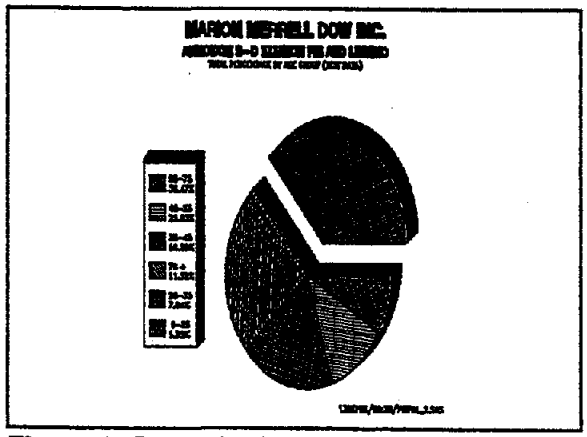


Figure 4 Created using device = CGMWPL
Size in bytes = 156,174

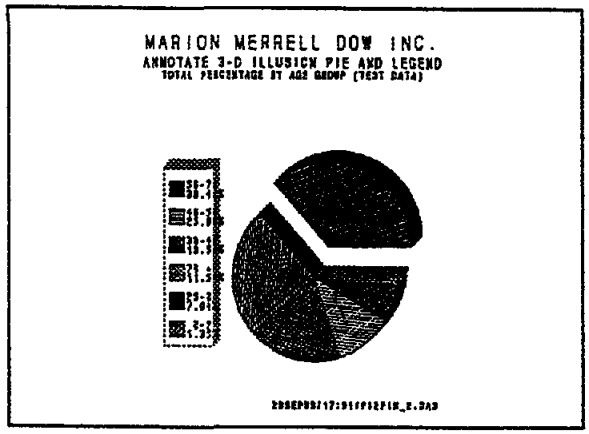


Figure 5 Created using device = CGM
Size in bytes = 17,104

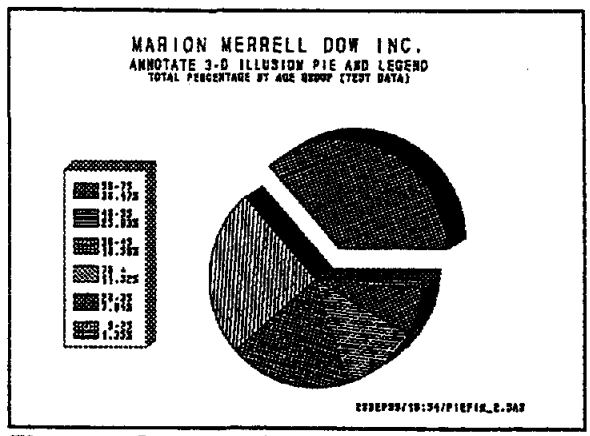


Figure 6 Created using device = CGMWPWA
Size in bytes = 17,028

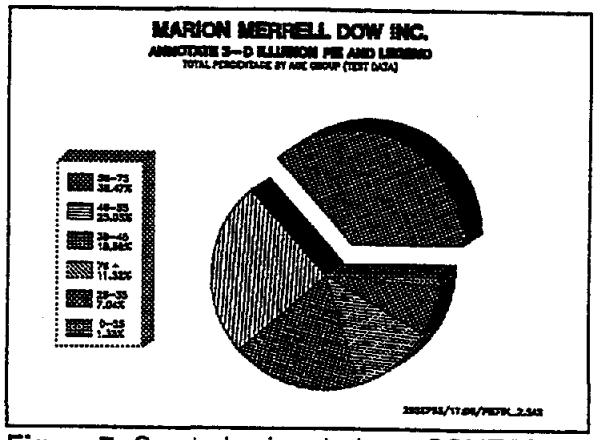


Figure 7 Created using device = CGMTEST
Size in bytes = 230,098

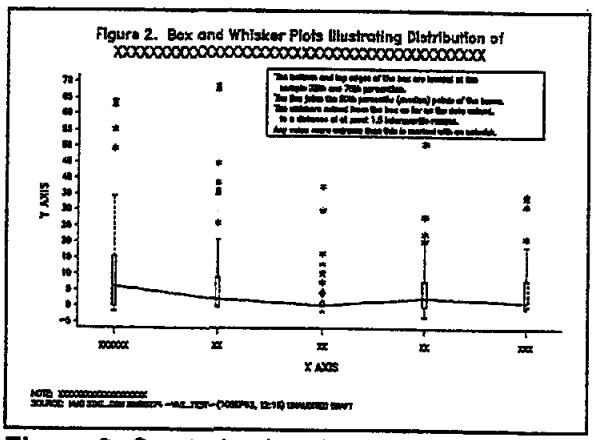


Figure 8 Created using device = HPGL
Size in bytes = 95,202

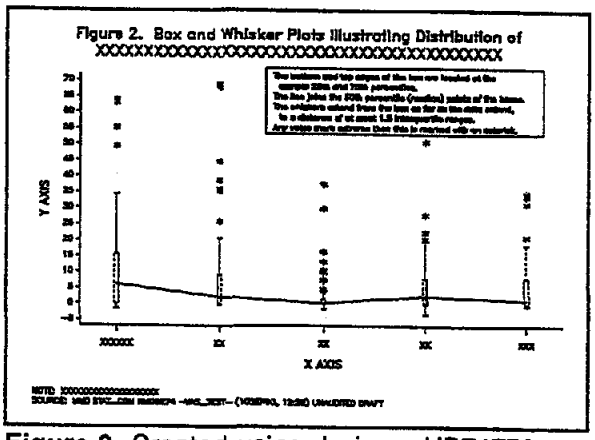


Figure 9 Created using device = HP7475A
Size in bytes = 92,328

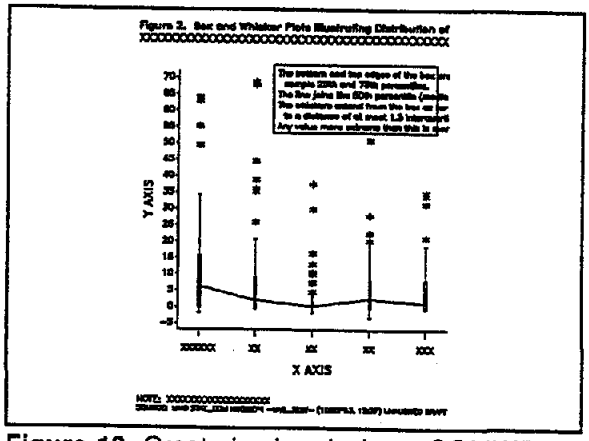


Figure 10 Created using device = CGMWP
Size in bytes = 29,454

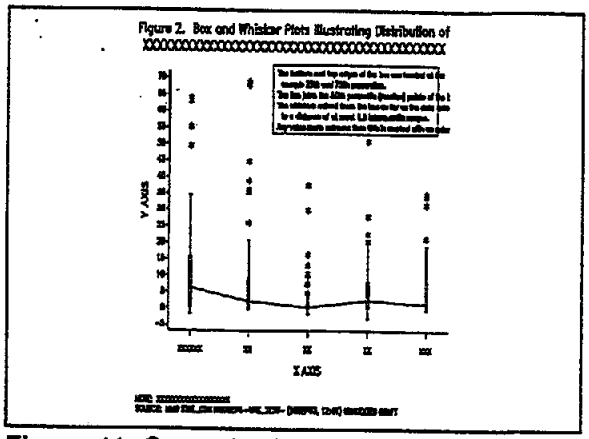


Figure 11 Created using device = CGMWPL
Size in bytes = 32,658

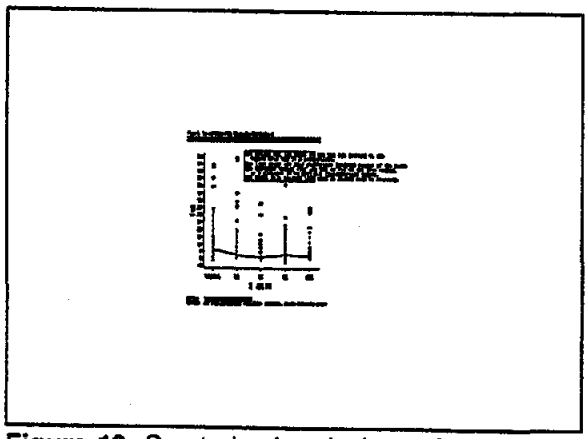


Figure 12 Created using device = CGM
Size in bytes = 6,316

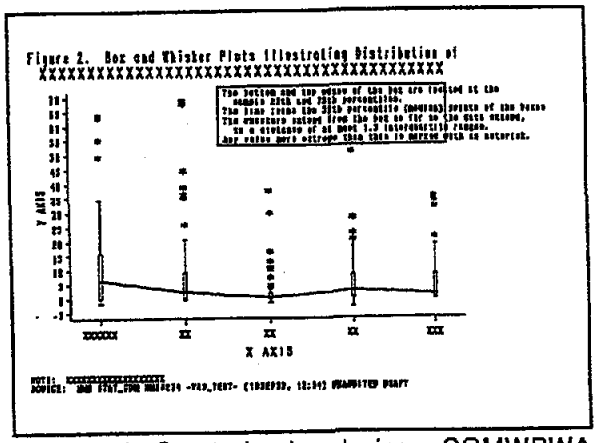


Figure 13 Created using device = CGMWPWA
Size in bytes = 6,254

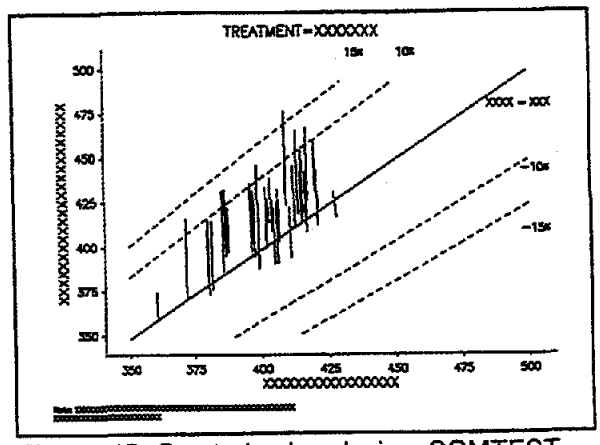


Figure 15 Created using device=CGMTEST

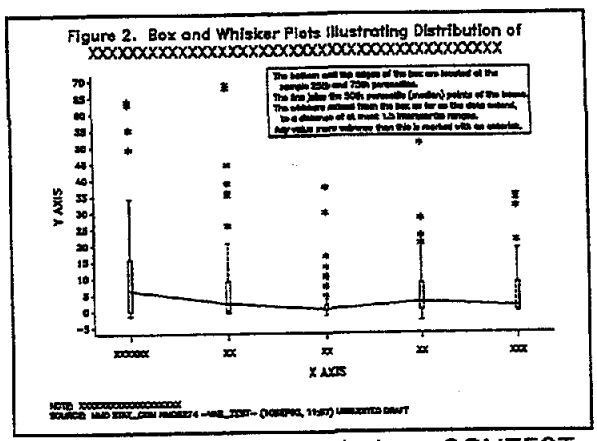


Figure 14 Created using device = CGMTEST
Size in bytes = 33,488

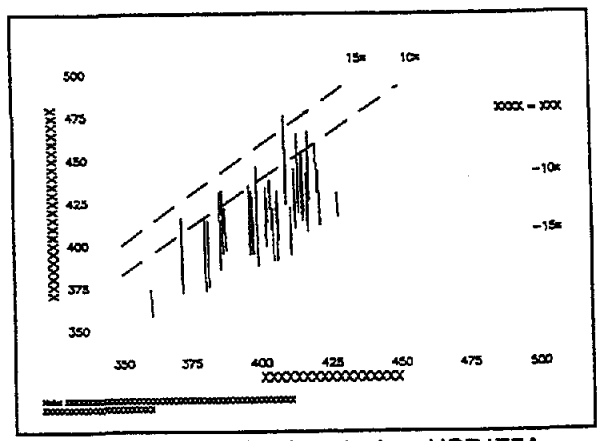


Figure 16 Created using device=HP7475A

The comparison process proved that each device driver had a different outcome, some of which were unacceptable. It also proved that the device driver CGMTEST had the best results. It should be noted that the only differences between (Figure 6 and 7) and (Figure 13 and 14) are the fonts which had a significant impact on the size of the files.

DEVICE PROBLEMS

The following demonstrates problems (or bugs) that were encountered with other types of graphs. Figure 15 was created using the modified device driver and closely resembles the original. Figure 16, created using device HP7475A, has dropped the axis and the title for some unknown reason.

Figure 17 was created using the modified device driver and closely resembles the original. Figure 18, created using device HP7475A, displayed a strange problem. Notice here how the pattern of a bar appears below the x-axis.

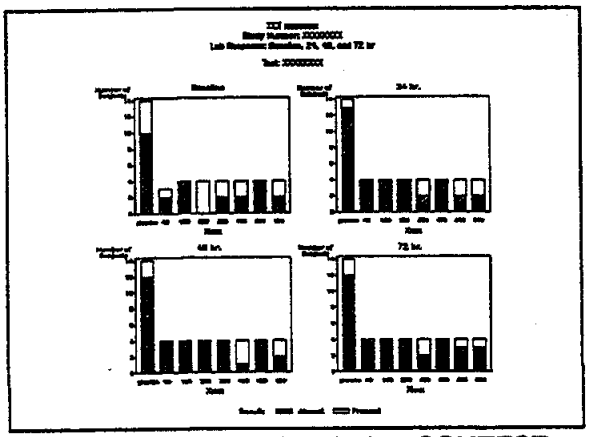


Figure 17 Created using device=CGMTEST

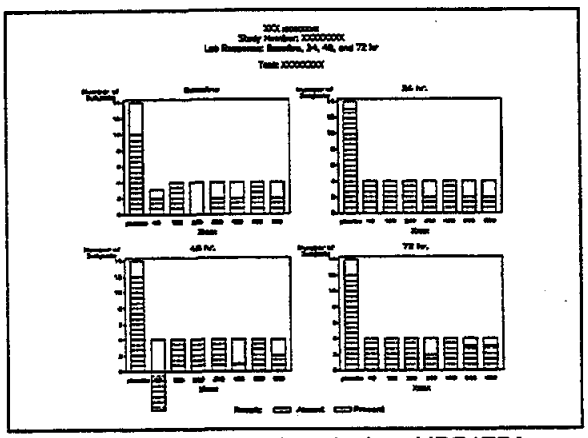


Figure 18 Created using device=HP7475A

MODIFYING A DEVICE DRIVER

If you are interested in trying device driver CGMTEST, the following is the code that creates this device driver.

```
   /* libname gdevice0 'SAS_library'; */

proc gdevice c=gdevice0.devices nofs;
copy cgmc from=sashelp.devices
newname=CGMTEST;
modify CGMTEST
     des='CGM test for WordPerfect'
     lrows=45 prows=0
     xmax=11.0 xpixels=32767
     lcols=80 pcols=0
     ymax=8.5 ypixels=25320
     rotate=landscape
     chartype=0
     devopts='F512304000000000'x
     circlearc=n piefill=n
      ;
run;
quit;
```

To use the CGMTEST device driver, after it has been created, use the following goptions.

```
/* tested for versions 6.07 and 6.08 */

    /* goptions for VAX */
LIBNAME GDEVICE0 '[SAS_library]';
FILENAME GRAFOUT filename
   GSFCC=NONE;
GOPTIONS GSFMODE=REPLACE
    GSFNAME=GRAFOUT
      DEVICE=CGMTEST
      GSFLEN=80 NOPIEFILL;

    /* goptions for CMS */
FILENAME GSASFILE 'fn ft fm';
GOPTIONS DEVICE=CGMTEST
   GACCESS=GSASFILE
   GPROTOCOL=SASGPASC
   GSFLEN=80 GSFMODE=REPLACE;
```

CONCLUSION

Hopefully, the information presented in this paper will prove beneficial in any endeavors with importing graphic files into WordPerfect. Thereby, saving others time and effort and enabling them to be more productive.

ACKNOWLEDGEMENTS

The author would like to thank Peter Ruzsa, of SAS institute, for the technical assistance that was provided.

AUTHOR INFORMATION

Any questions, comments, or suggestions contact:

Lori Griffin
Statistical Operations
Marion Merrell Dow Inc.
10400 Hickman Mills Dr.
Kansas City, Missouri 64137
(816) 966-7044

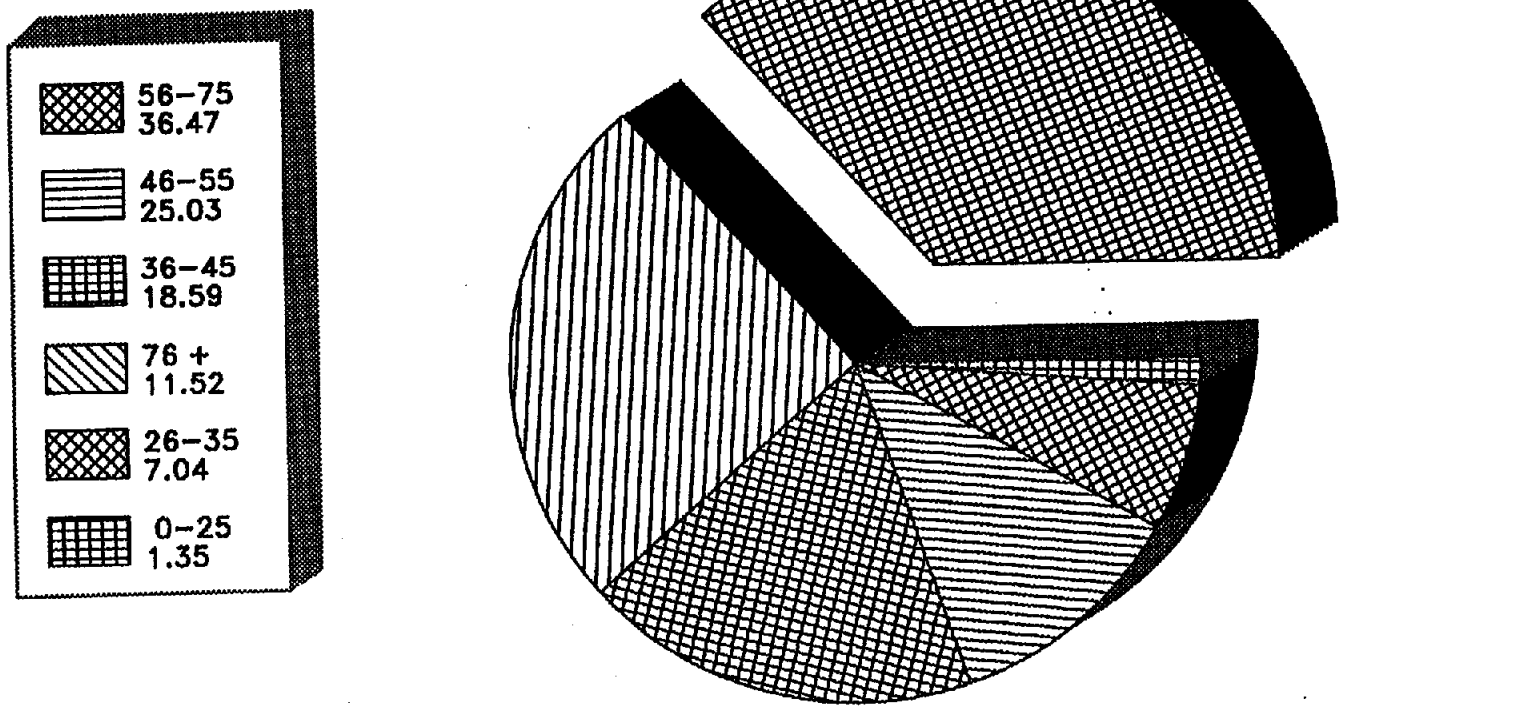
SAS, SAS/GRAPH are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Other brand and product names are registered trademarks or trademarks of their respective companies.

MARION MERRELL DOW INC.

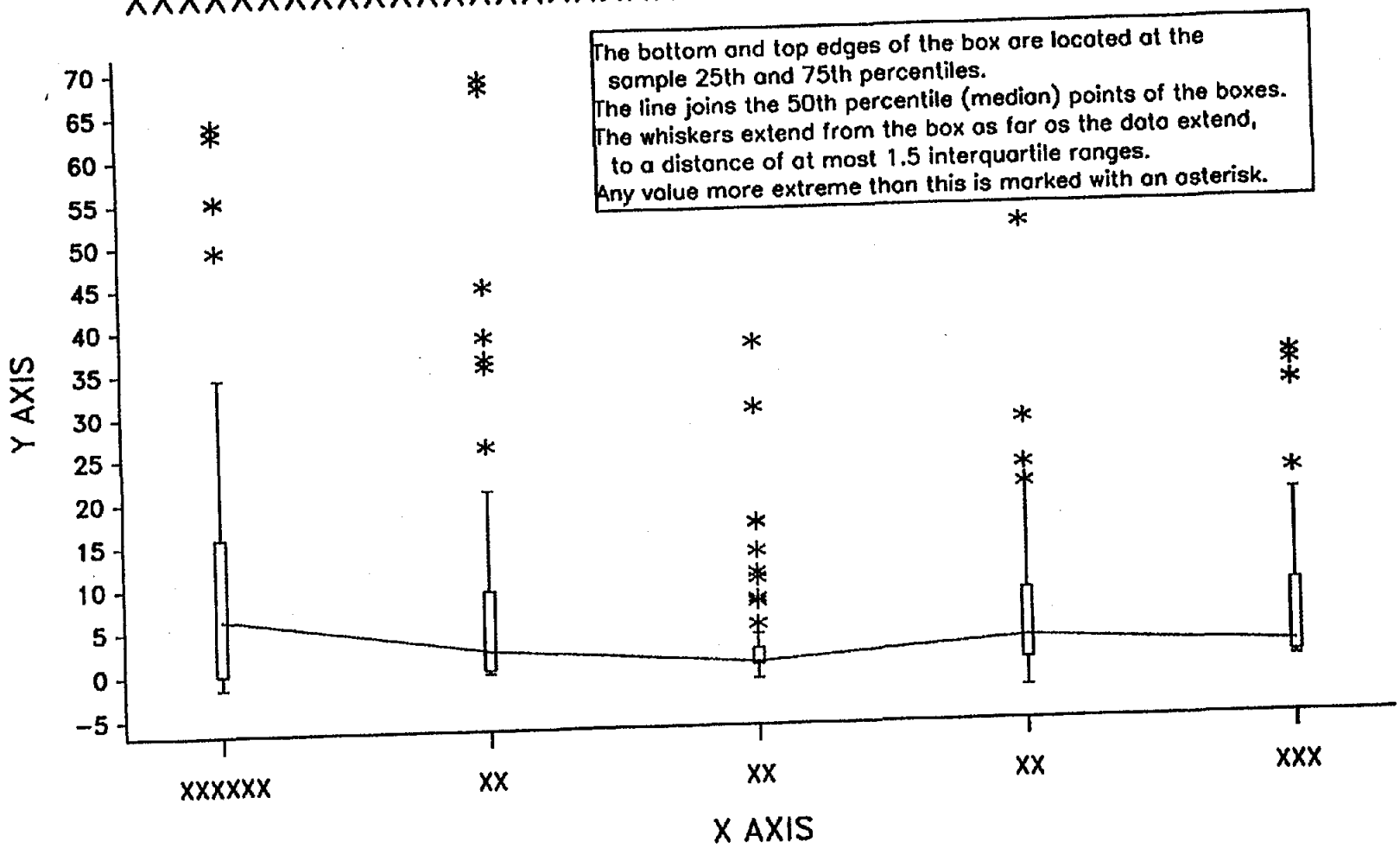
ANNOTATE 3–D ILLUSION PIE AND LEGEND

TOTAL PERCENTAGE BY AGE GROUP (TEST DATA)



14MAR94/10:08/PIEFIN_2.SAS

Figure 2. Box and Whisker Plots Illustrating Distribution of XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX



NOTE: XXXXXXXXXXXXXXXXXX
SOURCE: MMD STAT_CDM NM08274 -VAS_TEST- (10SEP93, 11:25) UNAUDITED DRAFT