

**UNISYS**

**OS 1100**

**MAPPER® Color Graphics**

**Operations  
Guide**

Relative to Release  
Level 34R1

Priced Item

June 1988

Printed in U.S. America  
UP-11615.1

**UNISYS**

OS 1100

MAPPER® Color Graphics

**Operations  
Guide**

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# About This Guide

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## PURPOSE

This guide provides instructions for using MAPPER color graphics. By following these instructions you can create a variety of charts and custom graphics.

## SCOPE

In this guide you will find complete descriptions, formats, and examples for color graphics runs and functions, as well as instructions for using primitive graphics code and expanded syntax.

## AUDIENCE

This guide is for both novice and experienced users.

## PREREQUISITES

Before using this guide, you should be familiar with basic MAPPER concepts. You should also know how to use the control line, and how to sign on and off the ***MAPPER** system*. For information, see the *OS 1100 MAPPER Manual Functions Operations Training Guide*.

### HOW TO USE THIS GUIDE

If you are experienced with color graphics, review the new features and enhancements in Section 1. Then refer to the appropriate sections to learn how to use the new features.

If you are a novice, read Section 1 to set up your equipment and to learn about color graphics. Then refer to the instructions in subsequent sections to create the types of graphics you want.

### Conventions

This guide uses certain style conventions to make it easy for you to recognize important terms and functions. These conventions are defined below.

### Typefaces and Symbols

Items that you type as shown in the guide are highlighted with color. In the example below, the word "chart" is in color, meaning that you type that word to carry out the instructions.

Enter **chart** on the control line to display the CHART run menu.

The following conventions are used for MAPPER runs, function calls, and commands:

- ❑ Runs and function calls are capitalized (for example, CHART). You can type them in either uppercase or lowercase letters.
- ❑ Fields and subfields are italicized when they call for *data*. Data is information that you supply. In the example below, *run call* is in italics, meaning that you can enter a specific run call in its place, such as PIEG or LINEG.

**chart**[*run call*]

- ❑ Brackets are used around optional entries. In the example above, you are not required to type a run call after typing **chart**.

- ❑ Braces around items separated by a vertical bar mean that you may choose from among the items listed; for example:

*{item1 | item2}*

- ❑ The italicized letter N (*n* or *N*) stands for a numeral (*nn* calls for two digits; *nnn* for three, and so on).
- ❑ Other italicized letters (for example, *x* and *y*) indicate variables that you supply.
- ❑ In *date formats*, *y* or *Y* means year; *m* or *M* means month; and *d* or *D* means day.

Glossary terms are presented in *boldface italics* when they appear for the first time in the guide.

## Examples

The examples in this guide appear in uppercase letters, but you can type them in lowercase.

## Enter and Resume

When you see the word *enter* in instructions, type the necessary information and press **XMIT**.

When you see the word *resume*, press **F1** or enter **rsm** on the control line.

## Displaying Reports

To display a specific report, enter the *RID*. For example, to display a report in RID number 1, form type C, you would enter **1c**.

## About This Guide

### Keyboard Key Names

The key names used in this guide are based on the Universal Terminal System (UTS) family of keyboards. If you need definitions for keys other than those on a UTS keyboard, refer to your terminal documentation.

## ORGANIZATION

This guide contains six sections and three appendixes:

**Section 1. Introduction** contains a list of color graphics features and provides an explanation of MAPPER color graphics terms. It also includes instructions for setting up your equipment, and instructions for displaying example charts on your screen.

**Section 2. Creating Basic Charts** contains instructions for creating charts using the CHART run.

**Section 3. Creating Organization Charts** shows how to create organization charts using the GOC function.

**Section 4. Creating Other Types of Charts** explains how to create simple charts using data already entered on a report (GRID run), how to create chart input reports from completed data reports (GR run), and how to create signs (SIGN run).

**Section 5. Managing Charts** describes how to create index lists of your charts and display them as a slide show (DISPLAY run), how to place more than one chart on a page (MULTI run), how to rotate and change the size of charts (GS function), and how to plot charts at remote terminals (PLOTIT run).

**Section 6. Writing Graphics Code** contains instructions for creating custom graphics using primitive graphics code and expanded syntax.

**A. Color and Style Tables** contains tables for colors, line styles, fill pattern styles, and marker symbol styles.

**B. Available Fonts** provides examples of font styles you can use.

**C. Primitive Graphics Code Development** contains a brief description of the purpose of primitive graphics code.

### RELATED PRODUCT INFORMATION

This guide is part of the MAPPER software level 34R1 library, which contains documents that you may find helpful while using MAPPER software. The following list provides the exact title of each document in the library, followed by its short title in parentheses and its previous title. The documents are listed in the order a new MAPPER site might use them. A separate list describes how to order copies of the MAPPER software level 34R1 manuals. In addition, there are several documents of related Unisys products that are referenced throughout this guide; these are listed under "Related Unisys Documents."

#### Documents in This Library

- *OS 1100 MAPPER Software Installation Guide*, UP-10786.9  
(**Installation Guide**)

Previous titles: *MAPPER Software Level 33R1, Installation Guide*  
*MAPPER Software Level 33R1, Release Description*

This guide is for systems analysts who install and maintain MAPPER systems. It contains information previously found in the Release Description, such as new features for this software level, compatibility with other software and hardware, any restrictions that apply, and information about product support. It also lists the contents of the release tape and procedures used to install, configure, verify, start, and generate MAPPER software level 34R1.

- *OS 1100 MAPPER Software Operations Guide, Vol. 1: Coordinators*, UP-9194.6 (**Coordinator's Guide**)

Previous title: *MAPPER Software Level 33R1, Coordinator's Reference*

This guide is for MAPPER system coordinators. It describes their responsibilities and gives examples of the reports they use to establish and monitor a MAPPER system.

- *OS 1100 MAPPER Software Operations Reference Card: Coordinators*, UP-14074 (**Coordinator's Reference Card**)

This reference card lists the most commonly used runs, functions, run statements, and reserved words for coordinators.

- *OS 1100 MAPPER Software Operations Guide, Vol. 2: Operators*, UP-9195.6 (**Operator's Guide**)

Previous title: *MAPPER Software Level 33R1, Operator's Reference*

This guide is for MAPPER system operators. It describes and gives examples of all operator tasks, including starting the MAPPER system, maintaining the system database, and creating recovery and history tapes.

- *OS 1100 MAPPER Software Operations Reference Card: Operators*, UP-14073 (**Operator's Reference Card**)

This reference card lists directives used by MAPPER system operators.

- *OS 1100 MAPPER Manual Functions Operations Reference Manual*, UP-9193.6 (**Manual Functions Reference**)

Previous title: *MAPPER Software Level 33R1, Software Reference*

This manual is for users who have a basic knowledge of the MAPPER system. It provides comprehensive descriptions and examples of the MAPPER functions. It also includes an overview of form type design and run design.

- *OS 1100 MAPPER Manual Functions Operations Reference Card*, UP-9196.7 (**Manual Functions Reference Card**)

This reference card provides a summary of formats for MAPPER functions and runs, along with the available options.

## About This Guide

- *OS 1100 MAPPER Run Design Operations Reference Manual, UP-9662.5 (Run Design Reference)*

Previous title: *MAPPER Software Level 33R1, Run Designer's Reference*

This manual is for MAPPER run designers. It provides complete descriptions, formats, and examples for all run statements, as well as instructions for designing runs and getting them registered.

- *OS 1100 MAPPER Run Design Operations Reference Card, UP-12999.1 (Run Design Reference Card)*

This reference card provides all MAPPER run statement formats, along with their field definitions and available options. It also lists reserved words used for run design.

- *OS 1100 MAPPER Word Processing Operations Guide, UP-11619.1 (Word Processing Guide)*

Previous title: *MAPPER Software Level 33R1, Word Processing Guide*

This guide is for all users of MAPPER word processing. It provides complete descriptions and examples of MAPPER word processing functions.

- *OS 1100 MAPPER Word Processing Operations Reference Card, UP-13019 (Word Processing Reference Card)*

This summary card lists and describes all word processing control parameters, control characters, and commands.

- *OS 1100 MAPPER Color Graphics Operations Guide, UP-11615.1 (Color Graphics Guide)*

Previous title: *MAPPER Software Level 33R1, Color Graphics Guide*

This guide is for all users of MAPPER color graphics. It provides complete descriptions and examples of MAPPER color graphics functions, runs, and graphics codes.



- ❑ *OS 1100 MAPPER Color Graphics Operations Reference Card*, UP-13020 (**Color Graphics Reference Card**)

This reference card lists all graphics runs, functions, primitive graphics code commands, and expanded syntax commands. It also contains GOC (Generate Organization Chart) commands and tables for colors, marker symbols, line patterns, and fill patterns.

- ❑ *OS 1100 MAPPER SCHDLR Interface Programming Reference Manual*, UP-11616.1 (**SCHDLR Reference**)

Previous title: *MAPPER Software Level 33R1, SCHDLR Programmer's Reference*

This manual is for COBOL programmers who want to use the SCHDLR interface. It provides the procedures and coding needed for a COBOL program to interface with the MAPPER system. This manual assumes you have knowledge of COBOL and Transaction Processing (TIP).

## Optional Manuals

These manuals are not part of the standard MAPPER library and must be ordered separately.

- ❑ *OS 1100 MAPPER Manual Functions Operations Training Guide*, UP-13964 (**Manual Functions Training Guide**)

Previous title: *A Guide to Using MAPPER Software*

This guide helps beginners use MAPPER software productively. It provides an overview of what MAPPER software is and how it can be used, and it introduces the most commonly used MAPPER functions. For complete details on all MAPPER functions, see the Manual Functions Reference.

## About This Guide

- *OS 1100 MAPPER Run Design Operations Training Guide*, UP-13965  
**(Run Design Training Guide)**

Previous title: *A Guide to Creating MAPPER Software Runs*

This guide is for users who have never written a run. It covers only basic information and should be read and followed, step by step, at a MAPPER terminal. When you need more details than are given in this manual, see the Run Design Reference.

- *OS 1100 MAPPER Software Operations Quick-Reference Guide*, UP-11628.1. **(Quick-Reference Guide)**

This guide is a handy, durable summary for all users of MAPPER systems. It contains MAPPER functions, run statements, function and run statement options, and reserved words. It also lists color graphics and word processing information, commands for the MAPPER system coordinator, and directives for the operator.

- *OS 1100 MAPPER Software Operations Guide, Vol. 3: Using an IBM® 3270 Terminal*, UP-11632.1 **(Using an IBM 3270 Terminal Guide)**

Previous title: *MAPPER Software Level 33R1, Using an IBM 3270 Terminal*

This guide explains how to use MAPPER software from an IBM 3270 series terminal (or equivalent). It shows examples for signing on to the MAPPER system and using MAPPER software in one of the two modes of operation, native or UTS emulation. It also lists considerations for MAPPER run design and word processing.

- *OS 1100 MAPPER New Features Operations Reference Manual*,  
UP-11631.1 (**New Features Reference**)

Previous title: *MAPPER Software Level 33R1, Summarizing Level  
33R1 Features*

This manual provides an overview of MAPPER software level 34R1. It is a handy summary of new features for users who have previous experience with MAPPER software.

## Ordering MAPPER Software Level 34R1 Documents

The MAPPER documentation is ordered by PL, PK, and UP numbers:

- Use the PL (Product Library) number to order an entire standard library. Note that this does not include the optional MAPPER documentation.
- Use the PK (Package) number to order an individual manual with its binder.
- Use the UP number to order documents that do not have binders.

Use the following PK, PL, and UP numbers to order MAPPER documentation.

## About This Guide

### Standard Library

Reference cards are included in the binders of the corresponding manuals. To order additional copies of the reference cards, order them by the UP number.

PL-0284	MAPPER Level 34R1 Standard Library
PK-1328 UP-9196.7	Manual Functions Reference Manual Functions Reference Card
PK-1329 UP-12999.1	Run Design Reference Run Design Reference Card
PK-1330 UP-13019	Word Processing Guide Word Processing Reference Card
PK-1331 UP-13020	Color Graphics Guide Color Graphics Reference Card
PK-1333 UP-14074	Coordinator's Guide Coordinator's Reference Card
PK-1332 PK-14073	Operator's Guide Operator's Reference Card
PK-1334	SCHDLR Reference
PK-1335	Installation Guide

### Optional Documents

These are optional documents that do not come with the standard library and must be ordered separately:

PK-1834	Using an IBM 3270 Terminal Guide
PK-1336	New Features Reference
PK-1835	Manual Functions Training Guide
PK-1836	Run Design Training Guide
UP-11628.1	Quick-Reference Guide

### Related Unisys Documents

These Unisys manuals are referred to in this documentation, but they are not part of the MAPPER library. Use the version that corresponds to the level of software in use at your site.

- *SPERRY Terminal Emulation Package, Enhanced Version, User's Guide*, UP-11886 Rev. 1.1. (**STEP User's Guide**)

This guide contains information about using your Unisys Personal Computer to emulate a Universal Terminal System (UTS) 20 single station, or to use many features of the UTS 30/40/60 and UTS 400 terminals.

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# 1. Introduction

---

This section introduces you to MAPPER color graphics. This section contains the following topics:

- ☐ What Is MAPPER Color Graphics?
- ☐ New Features and Enhancements
- ☐ Required Equipment
- ☐ Example Charts

# What Is MAPPER Color Graphics?

---

MAPPER color graphics is a set of MAPPER *runs* that creates charts representing *data*. You can create monochrome or multicolor charts for display or for output to a color plotter, plotting on paper, or on transparencies for overhead projection.

Here are the types of charts you can make:

- ☐ The basic CHART run allows you to create a variety of charts; examples of these are shown on the following pages. Refer to Section 2 for information on using the CHART run and how to create individual charts.
- ☐ Organization charts, created by entering commands in a *freeform report* (a report without columnar structure) and processing the report with the Generate Organization Chart (GOC) function. See Section 3 for instructions.
- ☐ Charts made from existing column-formatted reports, using the GR run or GRID run. See Section 4 for instructions.
- ☐ Signs, created with the SIGN run. See Section 4 for instructions.

After you have created charts, you can use the following runs and function to manage them. See Section 5 for instructions to use the following:

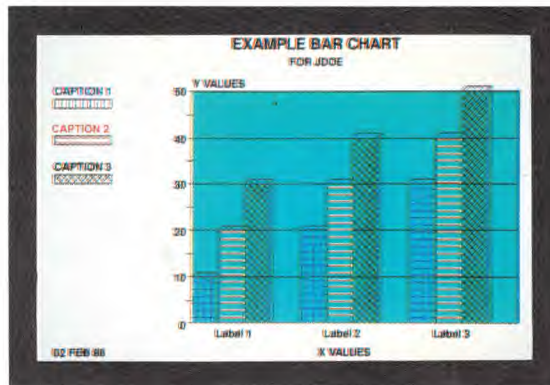
- ☐ DISPLAY run, to keep a list of charts, and to create slide-show presentations of charts on the screen.
- ☐ MULTI run, to place two, three, or four charts on a single page.
- ☐ Graphics Scaler (GS) function, to scale or rotate charts, or to add details with expanded syntax.
- ☐ PLOTIT run, to plot charts at a remote terminal.

You can also create your own graphics by writing graphics code. See Section 6 to learn about primitive graphics code and expanded syntax.

### TYPES OF CHARTS

Following are examples of charts you can create using the CHART runs. For examples of organization charts see Section 3; for examples of charts created using the GR, GRID, and SIGN runs, see Section 4.

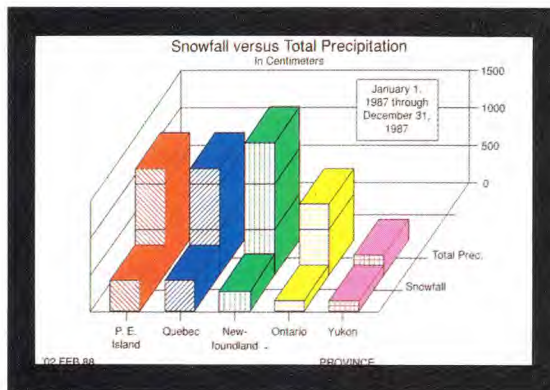
- **Bar charts** graph data with a variety of representative bars. They can be vertical or horizontal and can display stacked or comparative bars with different colors and patterns.





## What Is MAPPER Color Graphics?

- *3D bar charts* graph data with a variety of representative bars. They can be vertical or horizontal and can display stacked or comparative bars with different colors and patterns.

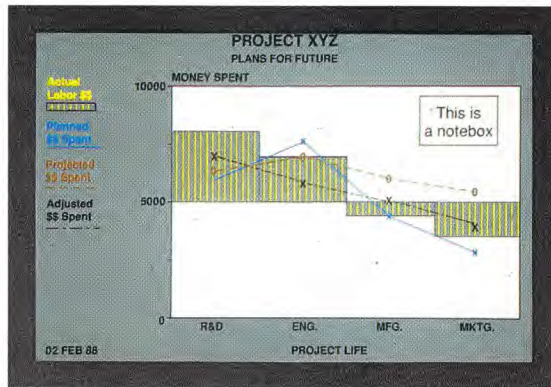


- *Line charts* graph data with a variety of representative lines.

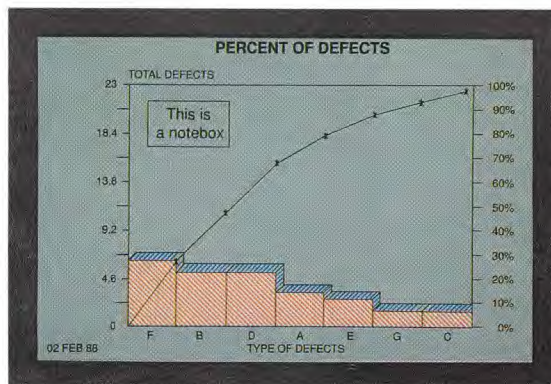


## What Is MAPPER Color Graphics?

- *Mixed Bar and Line charts* are a combination of bar and line charts.

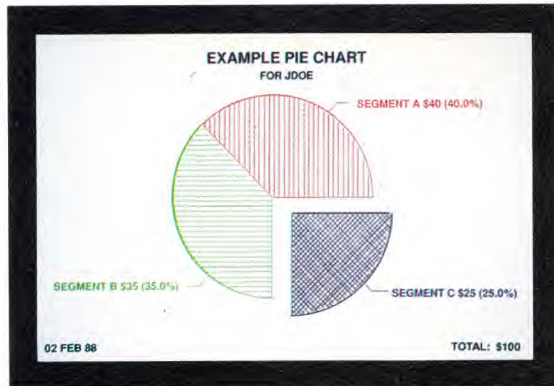


- *Pareto charts* combine a bar chart with a line chart that automatically accumulates the percentage of each bar as it is plotted.

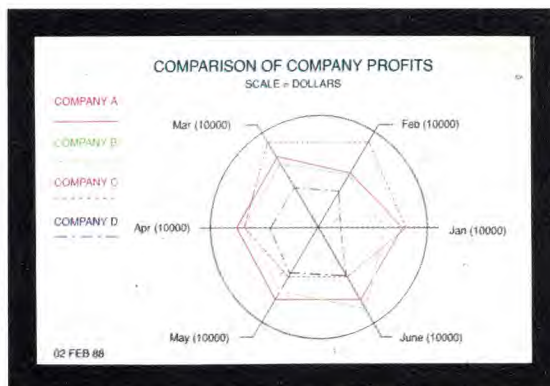


## What Is MAPPER Color Graphics?

- *Pie charts* graph data as percentages of a whole. They look like a sliced pie.

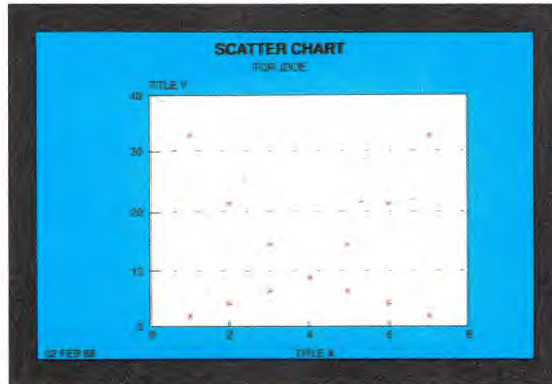


- *Radar charts* contain a number of rays, each representing a different scale and data. The data is then connected by a line representing your data.

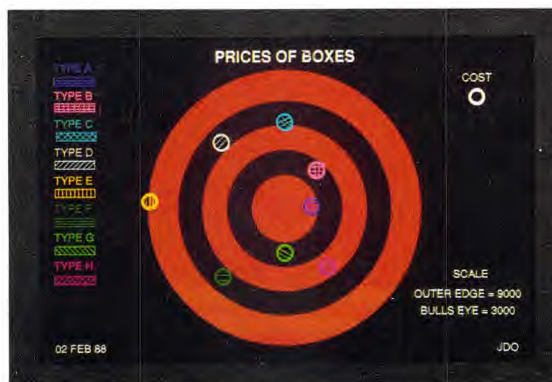


## What Is MAPPER Color Graphics?

- **Scatter charts** graph variable x and y points according to numeric x and y scales. Because these charts allow you to see patterns in the plotted data, they are useful for statistical analysis.

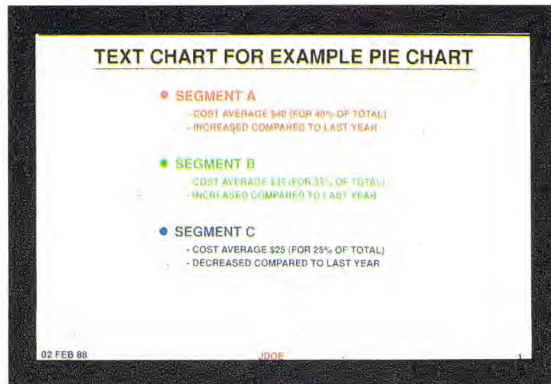


- **Target charts** graph data in the form of a target. This type of chart shows data in relationship to a bull's eye, so it is useful for showing data values in relationship to a specified value.



## What Is MAPPER Color Graphics?

- *Text charts* can have centered titles and bulleted or dashed lines, and are useful for presentations.



- *Time Line charts* graph data representing time spans.



## COLOR GRAPHICS TERMS

The rest of the manual will be easier to understand when you know what the terms listed below mean. These terms are explained in this subsection.

- ☐ Chart input report
- ☐ Completed input report
- ☐ Primitive graphics code
- ☐ Expanded syntax
- ☐ Index list report

## What Is a Chart Input Report?

When you make a chart using the CHART run, you fill in the blanks on a *chart input report*. You use a different chart input report for each type of chart. For example, here is the chart input report for a pie chart:

LINE▶ 1	FMT▶	RL▶	SHFT▶	HLD CHRS▶	HLD LN▶	▶	fcs	▶
.DATE	12:59:17	RID	23	02 FEB 88	JDOE			
.PIE CHART FOR JDOE								
.▶ <<DEPRESS F1 OR ENTER 'RSM' WHEN REPORT IS UPDATED>>								
.TEXT COLOR --->								
.SCREEN COLOR ->								
.TITLE ----->								
.SUBTITLE ----->								
.DATE ----->								
.INCLUDE LEADING '\$'? ----->								
.DISPLAY PERCENTAGE ONLY? ->								
.DISPLAY TOTAL? ----->								
.3D PIE CHART? ----->								
				FOREGROUND	BACKGROUND			
*NAME	VALUE	EXPLODE	COLOR	COLOR	PATTERN			
*=====,=====,=====,=====,=====,=====,=====								

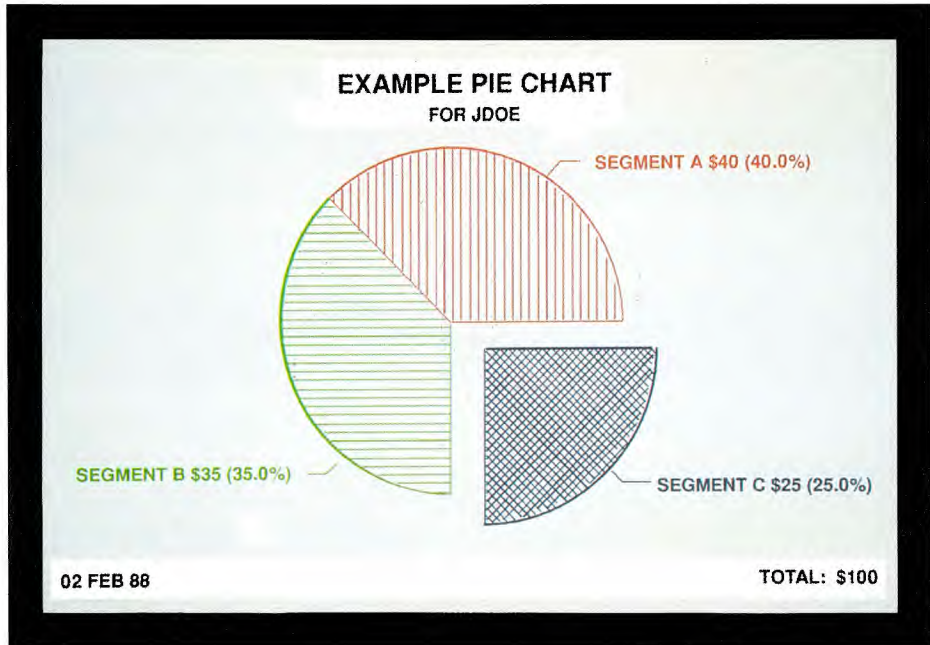


## What Is MAPPER Color Graphics?

### What Is a Completed Input Report?

After you fill in the *fields* and record your entries on a chart input report, you have a *completed input report*. The completed input report shown next produces the pie chart on the next page.

LINE▶ 1	FMT▶	RL▶	SHFT▶	HLD CHR▶	HLD LN▶	▶	fcs	▶
.DATE 12:59:17 RID 23 02 FEB 88 JDOE								
.PIE CHART FOR JDOE								
.▶ <<DEPRESS F1 OR ENTER 'RSM' WHEN REPORT IS UPDATED>>								
.TEXT COLOR ---> BLACK								
.SCREEN COLOR -> WHITE								
.TITLE -----> EXAMPLE PIE CHART								
.SUBTITLE -----> FOR JDOE								
.DATE -----> 02 FEB 88								
.INCLUDE LEADING '\$'? -----> Y								
.DISPLAY PERCENTAGE ONLY? -> N								
.DISPLAY TOTAL? -----> Y								
.3D PIE CHART? ----->								
.								
			FOREGROUND		BACKGROUND			
*NAME	VALUE	EXPLODE	COLOR	COLOR	PATTERN			
*=====,=====,=====,=====,=====,=====,=====								
SEGMENT A	40	N	RED		4			
SEGMENT B	35	N	GREEN		3			
SEGMENT C	25	Y	BLUE		6			



Each chart that you make using one of the CHART runs requires a completed input report. You can quickly produce similar charts by duplicating a completed input report and entering new data in the fields. You can then plot the new chart on your screen or plotter.



## What Is MAPPER Color Graphics?

## What Is Primitive Graphics Code?

The completed input report is processed by MAPPER software to make the finished chart. The data from the input report is translated into *primitive graphics code*. Primitive graphics code is a set of commands that allow the MAPPER system to display charts on different types of output devices. You can also create your own graphics by entering primitive graphics code on a freeform report.

Most of the time, all you need to know about primitive graphics code is that it is produced from your completed input report and can be displayed as a *result*, like the code shown above. If you use the MULTI or DISPLAY run you must save the resulting primitive graphics code; this is explained in Section 5. To learn how to write your own primitive graphics code, see Section 6.

An example of primitive graphics code is shown next. This code is in a result report from the pie chart shown previously.

```
line▶ 1      fmt▶   rl▶ -      shft▶      hld chrs▶      hld ln▶      ▶      RESULT ▶
.DATE 02 FEB 88 14:01:53      REPORT GENERATION      JDOE
.EXAMPLE PIE CHART -
.DEVICE TYPE AQUASTAR, ASPECT RATIO .6424148607
*=====
ZIZ01                      LB7ZNLL0LT0LS1PE2A,C32767,,32767,21049,,21049,,CZ300,358C
J0,2A500,631'02 FEB 88'CJ1,2CZ410,400A32000,631'TOTAL: $100'CZ500,631CJ2,2A16384
,19997'EXAMPLE PIE CHART'CZ410,400CJ2,2A16384,18734'FOR JDOE'CJ3,3PI5PH4LF1LL1LT
1LB0A16384,9472K6000,0,144A18238,15178C18424,15749,19324,15749B410,-210'SEGMENT
A'B4100,'$40 (40.0%)'PI5PH3LF2LL2LT2LB0A16384,9472K6000,144,270A11038,6748C10503
,6476,9603,6476B-9020,-210'SEGMENT B'B4100,'$35 (35.0%)'PI5PH6LF4LL4LT4LB0A17233
623K6000,270,360A21476,4380C21900,3956,22800,3956B410,-210'SEGMENT C'B4100,'$2
5 (25.0%)'ZT
..... END REPORT .....
```

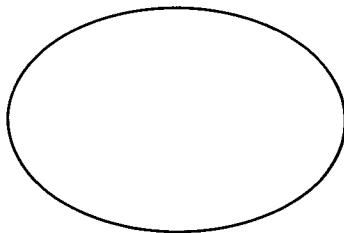
### What Is Expanded Syntax?

Besides writing primitive graphics code, a simpler way to produce certain custom graphics is to write *expanded syntax*. Expanded syntax is a set of graphics commands that allow you to create your own graphics. You can use expanded syntax and primitive graphics code together or separately.

You enter the expanded syntax instructions on a freeform report and use the GS (Graphic Scaler) function to translate them into primitive graphics code. This code then produces your graphics. See Section 6 for instructions.

An example of primitive graphics code and expanded syntax (and the illustration they produce) is shown next. The command enclosed in slashes (/) is an expanded syntax command; the others are primitive graphics code commands. Each command is followed by an explanation of what the command does.

<b>ZI</b>	Initializes graphics
<b>ZO1</b>	Opens workstation
<b>R</b>	Specifies paper size
<b>A16383,12000</b>	Moves to point 16383,12000 on the screen
<b>LL1</b>	Specifies line color
<b>/OV3000,2000/</b>	Draws hollow ellipse
<b>ZT</b>	Terminates graphics



## What Is MAPPER Color Graphics?

### What Is an Index List Report?

An *index list report* is a list of charts that you have created. You generate the index list report by using the DISPLAY run. You can use the index list report to cycle a series of charts on your screen, like a slide show.

The next example shows an index list report. The *mode* and *RID* of each report are in the columns preceding the report's title. The RID of the original chart input report is included in the title.

```
LINE▶ 1    FMT▶  RL▶      SHFT▶    HLD CHRS▶  HLD LN▶  ▶    fcs  ▶
.DATE 02 FEB 88 13:15:57 RID    43    02 FEB 88 JDOE
.GRAPHICS DISPLAY LIST REPORT                                BY: JDOE
-
*MODE TYPE RID                                TITLE
*====,====,====,=====
0  A   38  WATER REQUIREMENTS - 848A
0  A   39  LIDA ROSE ORCHARDS - 802A
0  A   40  PERCOLATOR FACTORY - 804A
0  A   41  BIRDBATH SALES - 850A
          .....END REPORT.....
```

# New Features and Enhancements

---

If you have used earlier levels of MAPPER software, you may be interested in the new features and enhancements that have been added.

## NEW FEATURES

Following are the new features of MAPPER software level 34R1 graphics:

- ☐ CHART run - You can create a new style of three dimensional bar chart by using the BAR3D run call.
- ☐ SIGN run - Creates signs containing textual data. See Section 4.
- ☐ PLOTIT run - Allows you to do remote plotting on a graphics terminal. See Section 5.
- ☐ GOC function

- New data commands:

- \$BOX-COLOR draws boxes around items and specifies the color.
  - \$CONFIDENTIAL adds text regarding a chart's confidentiality.
  - \$DATE through \$DATE8 adds a date in a specified format.
  - \$JUSTIFY justifies the text within a box: left, center, or right.
  - \$LINE-COLOR draws colored lines to connect items.
  - \$PAGE adds a string of text that identifies the page of the chart.

- New parameter commands:

- BACKGROUND sets the background display to a specified color.
  - COLOR turns colors on or off.
  - IGNORE ignores errors encountered in the \$DATA section.

## **New Features and Enhancements**

### **CHART RUN ENHANCEMENTS**

The CHART run has been enhanced with the following features:

- ☐ You can place comments on bar, 3D bar, line, mixed, pareto, and scatter charts using the NOTE BOX and NOTE POSITION parameters.
- ☐ Bar and line charts have one screen for all parameters, instead of two separate screens. When charts from previous levels of MAPPER software are redone, all selections not originally included on the chart are added, provided that the user-id of the person updating the chart is the same as the user-id shown on the report.
- ☐ Pareto charts have two new fields, COLOR and PATTERN, so that you can specify a color or fill pattern for the bars.
- ☐ Radar, pareto, and mixed charts show the default colors on the chart input report. Pareto and mixed charts also show default patterns.
- ☐ Time line charts can have weekly or monthly date graduations, and specified colors and fill patterns for each date interval. You can include a vertical line representing the current date, and a legend representing various dates. You can also specify minimum and maximum dates as the lowest and highest dates within a range of dates; anything outside of the dates is flagged with arrows.

### **GOC FUNCTION ENHANCEMENTS**

The GOC function has been enhanced as follows:

- ☐ Some of the GOC commands have abbreviations that you can use instead of entering the entire name of the command.
- ☐ You can specify color and position for the CONFIDENTIAL parameter command and you can specify text color for the PAGE command.

- ❑ In the \$TITLE data command you can specify where to place the title.
- ❑ You can specify text color for the following data commands:
  - \$APPROVED
  - \$DUTIES
  - \$LEVEL
  - \$MISSION
  - \$OBJECTIVE
  - \$RESPONSIBILITY
  - \$SIGNATURE
  - \$SUB-LEVEL
  - \$TITLE

### EXPANDED SYNTAX ENHANCEMENTS

Expanded syntax has been enhanced with the following features:

- ❑ You can move the current position to any point on the circumference of an ellipse, using the AOV or BOV command. The center of the ellipse is specified using absolute (AOV) or relative (BOV) coordinates.
- ❑ New subfields in the CM command allow you to change the values of the original macro command up to ten times.
- ❑ The GR command draws a grid using any size square as a basic unit.
- ❑ You can now indicate colors by color name in certain commands.

# Required Equipment

---

You can produce chart reports on any supported Unisys terminal and send them to a plotter connected as an auxiliary device. However, to view the resulting charts on your terminal or print them on a plotter attached to your terminal, you need a terminal configured for graphics. (If you already have a terminal that is used for graphics, skip this section.)

Graphics runs for level 34R1 software cannot be used with previous levels of MAPPER software because of internal enhancements and options. The runs will not work correctly if you copy the run control reports from level 34R1 into a system using an earlier level of MAPPER software.

The next few pages tell what types of terminals and plotters you can use with MAPPER graphics. Procedures for configuring the equipment are also provided.

## TYPES OF TERMINALS

You can use several types of terminals. Some require additional hardware or software.

- ☐ *Universal Terminal System 60 (UTS 60)*, for color graphics. You need microcode level 1R3C10 (or higher). As a graphics terminal, it should have the user memory expansion already installed.
- ☐ *Universal Terminal System 30 (UTS 30)*. This provides monochrome graphics if it has microcode level 3R4PC1 (or higher) and a feature board (F3987-00) installed. You also need the 8439 diskette subsystem to load the microcode, which is supplied on a floppy diskette.

- ☐ Universal Terminal System 400 (UTS 400) Master. You can use graphics if you have a UTS 400 Master (not Slave), but your charts will be in monochrome. You don't need a floppy diskette for microcode for the UTS 400 because it is downloaded from the MAPPER system. You do need a monochrome graphics card installed in the UTS 400.
- ☐ Unisys PC with one of the following monitors:
  - CGA monitor (PCC)
  - EGA monitor (PCE)
  - Unisys high resolution monitor (PCS)

If you have a Unisys PC with STEP software, you can configure it as a PCC, PCE, or PCS terminal by installing a SPERRY® Terminal Emulation Package (STEP). To use MAPPER color graphics, you need STEP IIG, version 2.1 (or higher). Order software type 7800-00 and STEP board feature 4213-01 or 4213-02. Make sure you install the P12 PROM on the STEP board to enable the graphics software to work. For installation and configuration instructions, refer to the STEP User's Guide.

If you have a monochrome monitor, use a Hercules™ Graphics Card for monochrome graphics and configure STEP as a UTS 30.

If you want color graphics, use a high resolution color monitor and the Unisys high resolution color graphics card. Configure STEP as a PCS.

- ☐ Intercolor Scope™ (ISC)

This terminal, also called an Intelligent Systems Corporation Color Terminal, does not require any additional hardware or software.

---

SPERRY is a registered trademark of Unisys Corporation.

Hercules is a trademark of Hercules Computer Technology.

Intercolor Scope is a trademark of Intelligent Systems Corporation.



## Required Equipment

### CONFIGURING YOUR TERMINAL

When you configure your terminal, you set up the software to work with graphics to translate the primitive graphics code. Depending on the terminal, you may also need to load the microcode each time you power up your terminal.

#### UTS 30 or UTS 60

Run the CONFIG.SYS program from the floppy diskette that holds the required microcode. Check that the update lock on your terminal is released and then follow this procedure:

1. Insert the microcode diskette into the drive.
2. Press and hold **UPPER FUNCTION** and then press **ENTER**.
3. Type **run config.sys** and press **XMIT**.
4. Choose the fields you need to configure and follow the instructions on the screen.
5. On the last screen, you can choose either to save the changes or leave the configuration as it was. Follow the instructions on the screen.
6. If you made any changes with the CONFIG.SYS program, you must reset your terminal. When you are finished with the program, press the **RESET** button. This loads the new configuration.

### UTS 400

Since the UTS 400 receives the microcode downloaded from the MAPPER system, you do not need to configure it. However, you need to load the graphics code each time you start a session using graphics. See "Loading Graphics Code and Preparing the Plotter" later in this section for instructions.

### STEP with Unisys PC

You need to use the STEP User's Guide to configure the Unisys PC as a UTS 30. Before you try to use color graphics with your configured Unisys PC, test the connection to the MAPPER system using ordinary manual functions or runs. Then test it by looking at the example charts later in this section.

### Intercolor Scope

The Intercolor Scope must be configured as an ISC terminal. Contact your *MAPPER system coordinator* to have it configured.

## Required Equipment

### TYPES OF PLOTTERS

There are several types of Hewlett-Packard® plotters that you can use, ranging from two pens to eight.

If you have a Unisys PC with STEP software, a UTS 30, or a UTS 60 terminal, the only plotters you can connect directly to it are the six-pen HP 7475A or the HP 7550A.

If you have an Intercolor Scope, you can have plotters configured as auxiliary devices by the MAPPER system coordinator. Here are the types of plotters you can use with this terminal:

- ☐ HP 7220C
- ☐ HP 7221B
- ☐ HP 7221S
- ☐ HP 7220T
- ☐ HP 7221C
- ☐ HP 7221T

---

Hewlett-Packard is a registered trademark of Hewlett-Packard, Inc.

## CONFIGURING YOUR PLOTTER

To configure the plotter switch settings, refer to the documentation for your plotter. (You may also refer to the online documentation in **HELP**.)

If you have a UTS 30 or UTS 60 with a plotter attached, you must also follow this procedure:

1. Insert the microcode diskette into the drive.
2. Press and hold **UPPER FUNCTION** and then press **m**.
3. Type **run config.sys** and press **XMIT**.
4. Tab to the **PERIPHERAL ASSIGNMENT** field and press **XMIT**. Follow the instructions on your screen to supply the plotter information.
5. On the last screen, you can choose either to save the changes or leave the configuration as it was. Follow the instructions on the screen.
6. If you made any changes with the **CONFIG.SYS** program, you must reset your terminal. When you are done with the program, press the **RESET** button. This loads the new configuration.

To configure the plotter for a Unisys PC, refer to the **STEP User's Guide**.

## Required Equipment

### LOADING GRAPHICS CODE AND PREPARING THE PLOTTER

To load your graphics code and prepare your plotter (optional), follow the instructions below. If you are using a UTS 60 or a Unisys PC for graphics, you don't need to load the graphics code.

- If you are using a UTS 30, UTS 400, or ISC, load the graphics code by entering **chart,g** on the control line. If your terminal is properly configured, the graphics code is loaded. An *error message* appears if your terminal cannot do graphics.
- If you have a plotter attached to your terminal and you want to plot charts, turn on the power and load paper into it. Refer to the manual for your plotter for paper-loading instructions, and to Table A-1 for the colors of the pens to load in the pen stalls.

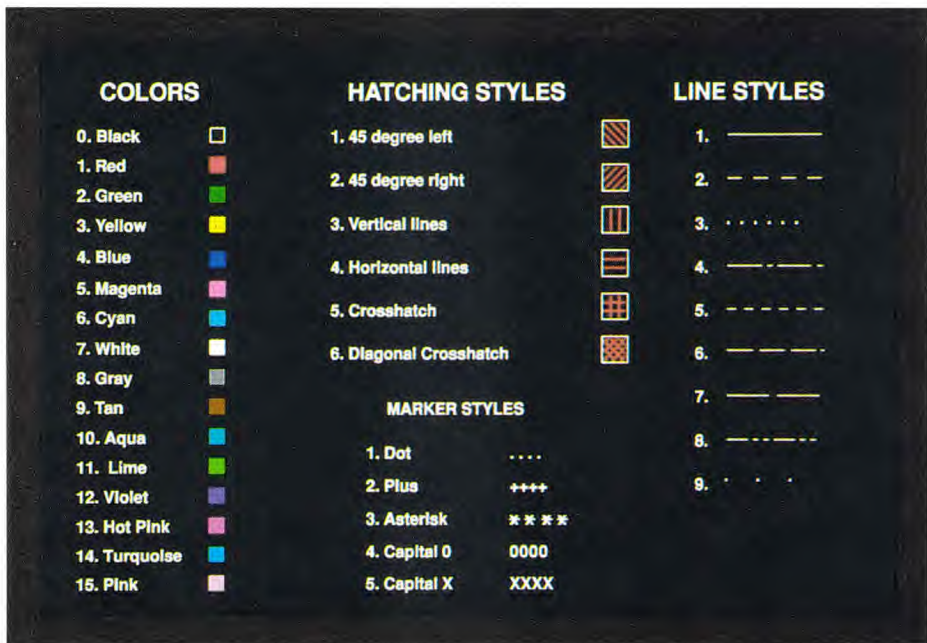
If you are plotting transparencies, change the plotter pens to pens made especially for transparencies. The ink used for transparencies takes about 15 minutes to dry. Do not allow anything to come in contact with the transparencies for at least that long. Keep the transparency masters free from grease, including fingerprints.

# Example Charts

---

To see examples of the types of charts you can create, follow this procedure:

1. Enter **chart,e** on the *control line* (the top line on the screen) to execute the CHART run and display the menu of examples.
2. Press **TAB** to move the *cursor* to a selection, and press **XMIT**. (For this example, we'll choose **STYLES**.) The plotter selection screen is displayed. (The next section shows how to answer the questions on this screen, but for now continue to step 3.)
3. Press **XMIT**. The example is displayed on your screen. In this case, it is the **STYLES** chart.



## Example Charts

4. After you have viewed the chart, press F1 to display the EXAMPLE CHARTS menu again. You can continue looking at example charts if you wish, by repeating steps 2 through 4.

## 2. Creating Basic Charts

---

This section contains instructions for creating basic charts using the CHART run. Examples of these charts are shown in Section 1. By experimenting with colors, fill patterns, and chart styles you'll discover many variations to help convey your data effectively.

This section contains the following topics:

- ☐ How to Use the CHART Run
- ☐ Bar Charts (BARG)
- ☐ 3D Bar Charts (BAR3D)
- ☐ Line Charts (LINEG)
- ☐ Mixed Bar and Line Charts (MIXED)
- ☐ Pareto Charts (PARETO)
- ☐ Pie Charts (PIEG)
- ☐ Radar Charts (RADAR)
- ☐ Scatter Charts (SCAT)
- ☐ Target Charts (TARGET)
- ☐ Text Charts (TEXT)
- ☐ Time Line Charts (TIMEL)



# How to Use the CHART Run

---

The following pages show the procedure for creating a chart using the CHART run. Just read these steps for now; you'll create your own charts later in this section.

To create a chart, follow these steps:

1. Display the CHART GRAPHICS DISPLAY MENU by entering **chart** on the control line. The *menu* looks like the screen below.

The upper half of the screen contains chart selections. The lower half of the screen contains other selections. (To learn more about a selection, you can tab to it and enter **?** for help.)

```

                                CHART GRAPHICS DISPLAY MENU
                                *** Tab to the selection you want and transmit ***
                                *** Or tab to a selection and enter ? for help with it ***

▶ PIE CHART          (PIEG)          ▶ LINE CHART          (LINEG)
▶ BAR CHART          (BARG)          ▶ TEXT CHART          (TEXT)
▶ SCATTER CHART      (SCAT)          ▶ TIME LINE CHART     (TIMEL)
▶ RADAR CHART        (RADAR)         ▶ TARGET CHART        (TARGET)
▶ MIXED BAR & LINE CHART (MIXED)      ▶ PARETO CHART        (PARETO)
▶ 3 DIMENSIONAL BAR CHART (BAR3D)

▶ LOAD GRAPHICS CODE   (G)           ▶ HELP INFORMATION    (H)
▶ DISPLAY EXAMPLE CHARTS (E)         ▶ DETERMINE TYPE OF TERMINAL
▶ DISPLAY CODE ON SCREEN (C)         ▶ DEQUEUE PLOT FROM PLOTTER
▶ SEND CODE TO PLOTTER   (P)         ▶ PLOT UNISYS HEADER ON CHARTS

                                CHART REVISION LEVEL 01.082
```

2. Tab to the desired chart selection (for this example, select PIEG; the cursor is already there) and press **XMIT**. The system responds with the following RID request message:

If the data already exists in a report, enter the RID number & form type. If it doesn't exist, the system adds a new report for you.  
Just enter the form type --->

3. Do one of the following:
  - ☐ If you are modifying an existing chart, enter its RID to display the completed input report; then go to step 6.
  - ☐ If you are creating a new chart, enter the *form type* you are using for chart input reports. (Contact your MAPPER system coordinator if you don't know which form type to use.) For this example, type **a**. A screen like the one shown next displays the new RID number and form type. Remember this number for future reference. For this example it is 5a.

<<PRESS 'F1' OR TYPE 'RSM' TO CONTINUE>>

YOUR NEW RID IS MODE	2, TYPE a, RID NUMBER	5
YOUR NEW RID IS MODE	2, TYPE a, RID NUMBER	5
YOUR NEW RID IS MODE	2, TYPE a, RID NUMBER	5
YOUR NEW RID IS MODE	2, TYPE a, RID NUMBER	5
YOUR NEW RID IS MODE	2, TYPE a, RID NUMBER	5
YOUR NEW RID IS MODE	2, TYPE a, RID NUMBER	5
YOUR NEW RID IS MODE	2, TYPE a, RID NUMBER	5
YOUR NEW RID IS MODE	2, TYPE a, RID NUMBER	5
YOUR NEW RID IS MODE	2, TYPE a, RID NUMBER	5
YOUR NEW RID IS MODE	2, TYPE a, RID NUMBER	5

## How to Use the CHART Run

- Press **F1** or enter **rsm** to display the blank chart input report. Because PIEG was selected in step 2, the input report is for a pie chart.

LINE▶	1	FMT▶	RL▶	SHFT▶	HLD CHRS▶	HLD LN▶	▶	fcs
.DATE		12:01:38	RID	5A	02 FEB 88	JDOE		
.PIE CHART FOR JDOE								
▶		Press F1 or enter RSM when report is updated						
.TEXT COLOR		---	>					
.SCREEN COLOR		->						
.TITLE		----->						
.SUBTITLE		----->						
.DATE		----->						
.INCLUDE LEADING '\$'?		----->						
.DISPLAY PERCENTAGE ONLY?		->						
.DISPLAY TOTAL?		----->						
.3D PIE CHART?		----->						
.					FOREGROUND	BACKGROUND		
*NAME		VALUE	EXPLODE?	COLOR	COLOR	PATTERN		
*-----,-----,-----,-----,-----,-----,-----,-----								

- Fill in the blanks on the chart input report as shown in the next example. Use the **TAB** key to proceed through the entries. Because a *start-of-entry* (SOE) character is stored in the header, you don't need to insert an SOE (unless you roll to a new section of the screen).

For other types of charts, refer to the instructions in this section for specific chart types.

**NOTE:** If your text contains apostrophes, type two apostrophes instead of one. For example, enter `JOHN'S` to display John's. On text charts, type one apostrophe.

LINE▶ 1	FMT▶ RL▶	SHFT▶	HLD CHRS▶	HLD LN▶ ▶	fcs
.DATE	12:01:38	RID	5A	02 FEB 88	JDOE
.PIE CHART FOR JDOE					
.▶ Press F1 or enter RSM when report is updated					
.TEXT COLOR --->	BLACK				
.SCREEN COLOR ->	WHITE				
.TITLE ----->	EXAMPLE PIE CHART				
.SUBTITLE ----->	FOR JDOE				
.DATE ----->	02 FEB 88				
.INCLUDE LEADING '\$'? ----->	Y				
.DISPLAY PERCENTAGE ONLY? ->	N				
.DISPLAY TOTAL? ----->	Y				
.3D PIE CHART? ----->					
.					
*NAME	VALUE	EXPLODE?	FOREGROUND COLOR	BACKGROUND COLOR	PATTERN
*=====					
SEGMENT A	40	N	RED		4
SEGMENT B	35	N	GREEN		3
SEGMENT C	25	Y	BLUE		6

- When you have finished filling in (or modifying) the report, press **XMIT** to save your entries. The cursor returns to the control line. Press **F1** to continue.
- The plotter selection screen, shown next, is displayed. If you want to plot your chart as well as display it, fill in the plotter selection screen as explained in this step. If you don't want to plot, press **XMIT** and go to step 8.

**NOTE:** You can bypass the plotter selection screen if you don't want to plot your chart. To do this, after you have pressed **XMIT** to record your entries in step 6, enter on the control line the *fast access* call for the type of chart you are creating (such as **PIEG**).

## How to Use the CHART Run

**\*\* If you want the chart displayed but not printed, just transmit \*\***

If you want to plot as well as display the chart, enter the plotter station number ---> 000

If you want the printed chart on a full sheet of paper (11" x 17") instead of on a half sheet (8-1/2" x 11"), enter Y ---> N ,

If you're printing on overhead transparencies, enter Y ---> N ,

If you want a logo and header on your chart, enter Y ---> N

Transmit when done with this screen.

The following instructions are in the same order as the questions on the screen. Press **TAB** to move from field to field.

- ☐ Type the plotter *station number*. Do not put the site letter in. Typing the site letter causes the chart to be plotted and displayed.
- ☐ Choose plotter paper size by typing Y for a large sheet, 11 x 17. (The *default*, N, plots on a regular sheet, 8 1/2 x 11.)
- ☐ Type Y if plotting overhead transparencies. This causes the plotter to slow down the pen's speed so that the ink doesn't smear.
- ☐ Type Y to plot the data on the chart smaller, to allow room for a header.

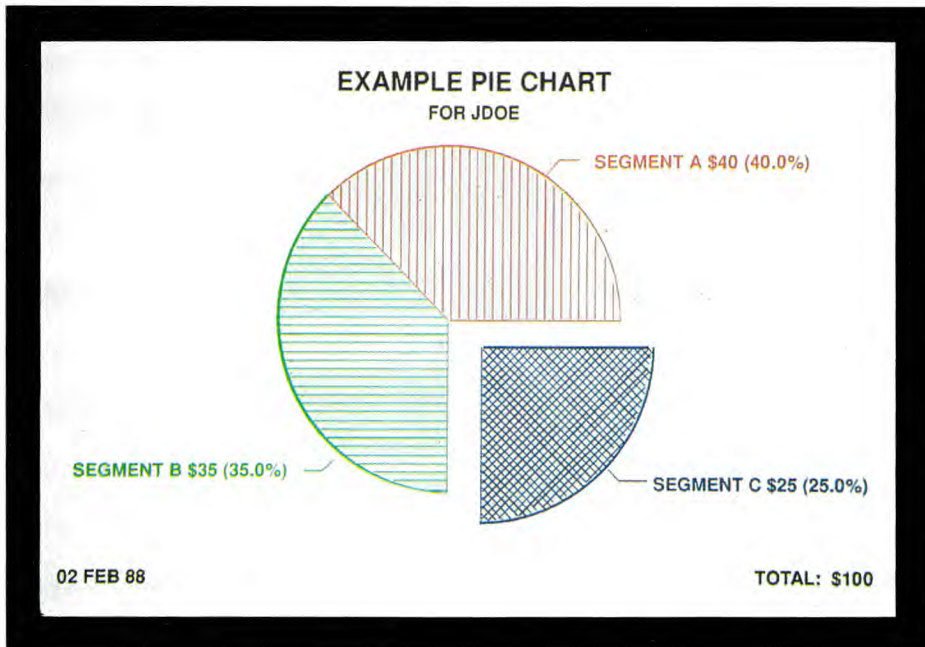
When you have finished answering the questions you want to answer, press **XMIT**.



8. The chart is displayed on the screen, as shown next. If you are plotting, the chart is also plotted at this time.

When you create your own charts, you should view each one on the screen before plotting it. This saves time and plotter paper because you can fine-tune colors and patterns on the screen before plotting.

When the plotter is done, remove the plot.



9. To continue after viewing and plotting the chart, press F1. This displays the primitive graphics code. If you want to save this code, use the XR or REP function. To display the CHART GRAPHICS DISPLAY MENU, press F1 again.

## How to Use the CHART Run

### RETURNING TO TEXT AFTER DISPLAYING A CHART

When your screen is displaying a chart, you cannot enter data. To enter data you must have text displayed.

To return to the text display from a chart display, press **F1**.

To return to the graphics display after displaying text:

- ☐ On a PC terminal, press **Shift + ESC**.
- ☐ On a UTS 30 or UTS 60 terminal, press **SHIFT + DISP 1-2** twice. Pressing **SHIFT + DISP 1-2** one time produces a mixed display of text superimposed over your chart; pressing it again displays text only.

### SHORTCUTS FOR CREATING CHARTS

You can bypass the CHART GRAPHICS DISPLAY MENU if you know which selection you want. To do this, on the control line enter:

**chart,selection**

where *selection* is either a run call or an option letter. Run calls and option letters are shown in parentheses after most selections on the CHART GRAPHICS DISPLAY MENU.

For example, to work on a pie chart enter **CHART,PIEG**. To work with a specific chart input report, specify the RID as well, for example, **CHART,PIEG,25A**. (An even quicker way to display a specific report is to enter only the run call and RID, such as **PIEG,25A**.)

To quickly display a chart from the chart input report, enter the fast access call on the control line, as shown next. You can add the optional *subfields* if you wish.

*fast access call*[*rt,dev,sn,psize?,transpcy?*]

where:

*fast access call* is the fast access call for the chart (for example, BARG or PIEG).

*rt* is the RID where the chart is located. You don't need to enter this if the RID is already displayed.

*dev* is the device type being used for plotting. The default is the device type you are currently working on.

- ☐ ISC      ISC color terminal
- ☐ 400      UTS 400
- ☐ HP4      Hewlett-Packard 4-pen plotter
- ☐ HP8      Hewlett-Packard 8-pen plotter
- ☐ AQUA    AQUASTAR™ projection system
- ☐ 3S      UTS 30
- ☐ 6S      UTS 60
- ☐ PCC      Unisys PC with CGA monitor
- ☐ PCE      Unisys PC with EGA monitor
- ☐ PCS      Unisys PC with high resolution monitor

---

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## How to Use the CHART Run

*sn* is the station number of the plotter, if you are going to plot your chart. The default is 0.

*psize?* is the plotter paper size. Specify Y if the paper size is 11 x 17 inches. The default, N, is for paper size 8 1/2 x 11 inches.

*transpcy?* Answer Y if you are making transparencies. The default is N.

If you use defaults for any of the optional subfields, simply type another comma before entering the next subfield (for example, the command `PIEG,61A,,1,Y` has left out the device type, so the default device is used).

## USING A RUN TO CREATE CHARTS

If you are a run designer, you can start a CHART run in one of your own MAPPER runs. Use the RUN (Run start statement) or LNK (Link to another run) run statement.

Refer to the Run Design Reference for a description of these run statements.

## DISPLAYING CHARTS

If you saved the chart as a primitive graphics code report, you can display it in several ways:

- ☐ Use CHART,C
- ☐ Use G manual function
- ☐ Use DSG run statement

If the primitive graphics code report is on display, enter **chart,c** or **g** - on the control line to display the chart. If you enter **chart,c** or **g** without the primitive graphics code report displayed, you get a message requesting the RID. Enter the RID you want.

If you don't have the primitive graphics code displayed, enter `chart,c,rt` where *rt* is the RID.

Run designers can use the DSG (Display Graphics) run statement to display a chart on a terminal. The chart must be saved as a primitive graphics code report to be used by the DSG run statement. Refer to the Run Design Reference for a description of this run statement.

# Bar Charts (BARG)

---

Bar charts graph data with a variety of representative bars. Here is a blank chart input report for a bar chart:

---

```
LINE▶ 1    FMT▶  RL▶      SHFT▶    HLD CHRS▶  HLD LN▶  ▶      fcs  ▶
.DATE          16:03:24  RID    589A   02 FEB 88  JDOE
.BAR CHART FOR JDOE
.▶          Press F1 or enter RSM when report is updated
.TEXT COLOR --->
.SCREEN COLOR ->
.BACKGROUND --->
.NOTE BOX -----> **NOTE LINE 1** **NOTE LINE 2** **NOTE LINE 3** **NOTE LINE 4**
.NOTE POSITION >
.TITLE ----->
.SUBTITLE ----->
.X AXIS TITLE ->
.Y AXIS TITLE ->
.DATE ----->
.MINIMUM Y ---->
.MAXIMUM Y ---->
.BASE LINE ---->
.3D BARS? ----->
.DISPLAY GRID LINES? ->                (Y OR N)
.STACKED OR COMPARATIVE BARS?          (Y OR N)
.HORIZONTAL OR VERTICAL BARS?          (S OR C)
.      .      1      .      2      .      3      .      4      .      5      .      6      .
.      .----->----->----->----->----->----->----->----->----->----->----->----->----->
.COLOR -----> RED          BLUE          GREEN          YELLOW          CYAN          MAGENTA
.PATTERN  --> 1            2            3            4            5            6
.CAPTIONS  -->
*LABELS
*=====,=====,=====,=====,=====,=====,=====,
```

---

## Bar Charts (BARG)

### CREATING A BAR CHART

To create a bar chart, use the following table to fill in the fields on the input report. When you are finished, press **XMIT** to update the screen, then press **F1**.

#### In Field:

#### Enter:

---

TEXT COLOR	The color for the text. See Table A-1 for available colors. The default color is white.
SCREEN COLOR	The color you want for the screen. See Table A-1 for available colors. The default color is black.
BACKGROUND	The color of the box containing the chart. Leave this field blank if you want this box to be the same color as the SCREEN COLOR. The background color is displayed on the screen but not plotted.
NOTE BOX	Notes that you want to add to the chart. There are four lines for comments; simply type each note line between the tab markers. Each note line is centered in the note box. If you type any notes, delete unused note lines.
NOTE POSITION	The location for your note box. For a vertical bar chart enter either L (upper left) or R (upper right). For a horizontal bar chart enter B (bottom right) or T (upper right). The default, N, results in no note box being drawn, even if you have entered notes for NOTE BOX.
TITLE	A title (optional) up to 40 characters. Places a title at the top of your chart the same color as TEXT COLOR.
SUBTITLE	A subtitle (optional) up to 60 characters.

(continued)

(continued)

**In Field:**

**Enter:**

---

X AXIS TITLE	A title (optional) up to 60 characters. This is centered beneath the <b>x axis</b> .
Y AXIS TITLE	A title (optional) up to 60 characters. This is placed at the top of the <b>y axis</b> .
DATE	The date (optional) up to 18 characters. If you enter Y, today's date appears in the format DD MMM YY, but you can enter the date in any format you want. The date is placed in the lower left corner of the screen.
MINIMUM Y MAXIMUM Y	The minimum and maximum values for the y axis. Enter these only if you do not want the system to produce a y axis scale automatically (by rounding your numbers). Be careful when selecting minimum and maximum y values, because the system will truncate any data values that fall outside your given values. If you enter a value for MAXIMUM Y, all values in your data greater than Y are drawn with two bars, indicating that the maximum value exceeds the scale value. A numeral representing the value is placed above the bars.
BASE LINE	A value where you want a solid horizontal base line drawn. All values greater than the base line value appear above the base line; all values less than this value appear below it. The default is zero.
3D BARS?	Y to have three dimensional bars. Available only with comparative vertical bar charts. The default is N.

(continued)

## Bar Charts (BARG)

(continued)

**In Field:**

**Enter:**

---

DISPLAY GRID LINES?	Y to display grid lines on your chart that will help locate the value of data points. The default is N.
STACKED OR COMPARATIVE BARS?	S or C (see "Types of Bar Charts" in this section). The default is C.
HORIZONTAL OR VERTICAL BARS?	H or V (see "Types of Bar Charts" in this section). The default is V.
COLOR	A color for each bar (see Table A-1). The default colors are shown on the screen.
PATTERN	A number for the fill pattern for the bars. Refer to Table A-2 for available patterns. The default patterns are shown on the input report.
CAPTIONS	Up to six captions (at least one) that describe what the data represents. The data values you place in the <b>column</b> below each caption (see LABELS below) are graphed as a bar. The captions are used in the legend (left of the chart) to describe each bar. There are two rows available for captions on the input report. Captions are required for any column containing data values.
LABELS	Labels to be placed along the x axis. Enter labels in the column below the word LABELS on the input report. Then enter the data values for each caption in the appropriate caption column. At least two labels and two data values are required.

---

## TYPES OF BAR CHARTS

There are five types of bar charts, described below.

Stacked Horizontal	The values stack on one bar, producing one horizontal bar for each label.
Stacked Vertical	The values stack on one bar, producing one vertical bar for each label.
Comparative Horizontal	Each y value you give has its own horizontal bar. The resulting bars are placed close together on the chart.
Comparative Vertical	Each y value you give has its own vertical bar. The resulting bars are placed close together on the chart.
3-Dimensional Comparative Vertical	Similar to the comparative vertical chart, except that the bars are three dimensional. You cannot specify BASE LINE with this type of chart. For a different kind of bar chart, see "3D Bar Charts" in this section.

## TIPS AND SUGGESTIONS

There is no fixed limit to the number of labels you can have on your chart. However, be aware that as you add more labels, the bars become thinner. To make more room for your data, try a stacked rather than a comparative bar chart. If you have a large number of points, try a line chart. If your labels are long, you might get better results with a horizontal bar chart, which gives you more room for labels.

You can display the completed input report as a line chart or as a mixed bar and line chart. To do this, enter **lineg** or **mixed** on the control line. The requested chart is displayed. The system ignores any entries on the input report that don't apply to the chart you requested. Default values may appear in fields that you didn't fill in.

On horizontal bar charts, grid lines are vertical. On vertical bar charts, grid lines are horizontal.

# Bar Charts (BARG)

## COMPLETED BAR CHART

Here is a completed chart input report, followed by the bar chart that it produces:

LINE▶ 1

FMT▶

RL▶

SHFT▶

HLD CHRS▶

HLD LN▶

▶

fcs

▶

.DATE

16:03:24

RID

589A

02 FEB 88

JDOE

.BAR CHART FOR JDOE

.▶

Press F1 or enter RSM when report is updated

.TEXT COLOR --->

BLACK

.SCREEN COLOR ->

WHITE

.BACKGROUND --->

AQUA

.NOTE BOX ----->

.NOTE POSITION >

.TITLE ----->

EXAMPLE BAR CHART

.SUBTITLE ----->

FOR JDOE

.X AXIS TITLE ->

X VALUES

.Y AXIS TITLE ->

Y VALUES

.DATE ----->

02 FEB 88

.MINIMUM Y ---->

0

.MAXIMUM Y ---->

50

.BASE LINE ---->

.3D BARS? ----->

Y

(Y OR N)

.DISPLAY GRID LINES? ->

Y

(Y OR N)

.STACKED OR COMPARATIVE BARS? ->

C

(S OR C)

.HORIZONTAL OR VERTICAL BARS? ->

V

(H OR V)

.

.

1

.

2

.

3

.

4

.

5

.

6

.

.

-----

.

.COLOR ----->

BLUE

RED

GRAY

.PATTERN --->

5

4

6

.CAPTIONS -->

CAPTION 1

CAPTION 2

CAPTION 3

\*LABELS

\*=====

=====

=====

=====

=====

=====

=====

Label 1

10

20

30

Label 2

20

30

40

Label 3

30

40

50





## 3D Bar Charts (BAR3D)

---

3D bar charts are similar to bar charts in that they graph data with a variety of representative bars. However, on a 3D bar chart the entire chart appears to be three-dimensional. Here is a blank chart input report for a 3D bar chart:

LINE▶ 1	FMT▶ 0 RL▶	SHFT▶	HLD CHRS▶	HLD LN▶ ▶	fcs	
.DATE 14:37:17 RID 94A 02 FEB 88 JDOE						
.3D BAR CHART FOR JDOE						
.▶ Press F1 or enter RSM when report is updated						
.TEXT COLOR --->						
.SCREEN COLOR ->						
.BACKGROUND --->						
.NOTE BOX -----> **NOTE LINE 1** **NOTE LINE 2** **NOTE LINE 3** **NOTE LINE 4**						
.NOTE POSITION >						
.TITLE ----->						
.SUBTITLE ----->						
.X AXIS TITLE ->						
.Y AXIS TITLE ->						
.DATE ----->						
.MINIMUM Y ---->						
.SOLID BAR ----> N						
.DISPLAY GRID LINES? -> Y (Y OR N)						
.	1	2	3	4	5	6
.	-----					.
.COLOR ----->	RED	BLUE	GREEN	YELLOW	CYAN	MAGENTA
.PATTERNS -->	1	2	3	4	5	6
.CAPTIONS -->						
*LABELS						
*=====,=====,=====,=====,=====,=====,=====.						

## CREATING A 3D BAR CHART

To create a 3D bar chart, use the following table to fill in the fields on the input report. When you are finished, press **XMIT** to update the screen, then press **F1**.

**In Field:**

**Enter:**

---

TEXT COLOR	The color for the text. See Table A-1 for available colors. The default color is white.
SCREEN COLOR	The color you want for the screen. See Table A-1 for available colors. The default color is black.
BACKGROUND	The color of the box containing the chart. Leave this field blank if you want this box to be the same color as the SCREEN COLOR. The background color is displayed on the screen but not plotted.
NOTE BOX	Notes that you want to add to the chart. There are four lines for comments; simply type each note line between the tab markers. Each note line is centered in the note box. If you type any notes, delete unused note lines.
NOTE POSITION	The location for your note box. Enter either L (upper left) or R (upper right). The default, N, results in no note box being drawn, even if you have entered notes for NOTE BOX.
TITLE	A title (optional) up to 40 characters. Places a title at the top of your chart the same color as TEXT COLOR.
SUBTITLE	A subtitle (optional) up to 60 characters.
X AXIS TITLE	A title (optional) up to 60 characters. This is centered beneath the x axis.

*(continued)*

## 3D Bar Charts (BAR3D)

*(continued)*

**In Field:**

**Enter:**

---

Y AXIS TITLE	A title (optional) up to 60 characters. This is placed at the right side of the y axis. (Although you can use up to 60 characters, it is recommended that you use no more than 30 characters, for readability.)
DATE	The date (optional) up to 18 characters. If you enter Y, today's date appears in the format DD MMM YY, but you can enter the date in any format you want. The date is placed in the lower left corner of the screen.
MINIMUM Y	The minimum value for the y axis. Enter only if you do not want the system to produce a y axis scale automatically (by rounding your numbers). Be careful when selecting this value because the system will truncate any data values that are lower than this value.
SOLID BAR	Y if you want the bar drawn in one complete piece, instead of in multiple sections (each section represents a separate data value for each label). The default is N.
DISPLAY GRID LINES?	N if you don't want grid lines displayed on your chart that help locate the value of data points. The default is Y.
COLOR	A color for each bar (see Table A-1). The default colors are shown on the screen.
PATTERN	A pattern for each bar. The default patterns are shown on the screen.

*(continued)*

*(continued)*

**In Field:**

**Enter:**

---

CAPTIONS	Up to six captions (at least one) that describe what the data represents. The data values you place in the column below each caption (see LABELS below) are graphed as a bar. There are two rows available for captions on the input report. Captions are required for any column containing data values.
LABELS	Labels that describe what the data represents. Enter labels in the column below the word LABELS on the input report. Then enter the data values for each label in the appropriate caption column. At least two labels and two data values are required.

---

### TIPS AND SUGGESTIONS

3D bar charts are not recommended for plotting because the steps used to create the plot will overlay the bars.

If your captions are overwriting each other, try staggering the captions from the first caption line to the second if possible.

## 3D Bar Charts (BAR3D)

### COMPLETED 3D BAR CHART

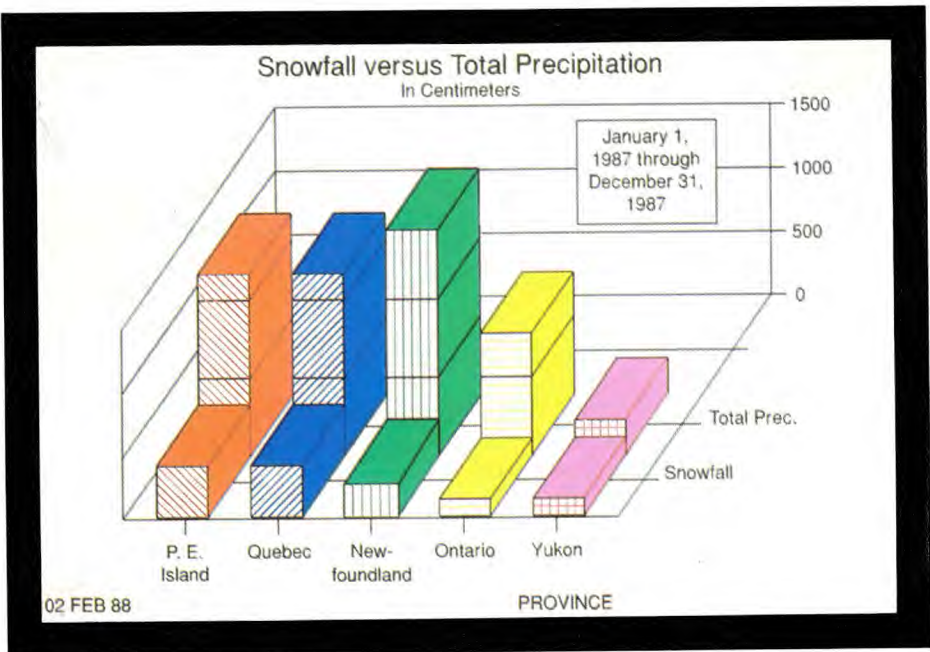
Here is a completed chart input report, followed by the 3D bar chart that it produces:

---

LINE▶ 1	FMT▶ 0 RL▶	SHFT▶	HLD CHRS▶	HLD LN▶	▶	fcs
.DATE	14:37:17	RID	94A	02 FEB 88	JDOE	
.3D BAR CHART FOR JDOE						
.▶	Press F1 or enter RSM when report is updated					
.TEXT COLOR --->	BLACK					
.SCREEN COLOR ->	WHITE					
.BACKGROUND --->						
.NOTE BOX ----->	January 1,	-1987 through	-December 31,	-1987		
.NOTE POSITION >	r					
.TITLE ----->	Snowfall versus Total Precipitation					
.SUBTITLE ----->	In Centimeters					
.X AXIS TITLE ->	PROVINCE					
.Y AXIS TITLE ->						
.DATE ----->						
.MINIMUM Y ----->						
.SOLID BAR ----->	N					
.DISPLAY GRID LINES? ->	Y (Y OR N)					
.	1	2	3	4	5	6
.	-----					
.COLOR ----->	RED	BLUE	GREEN	YELLOW	PINK	MAGENTA
.PATTERN --->	1	2	3	4	5	6
.CAPTIONS -->	P. E.	Quebec	New-	Ontario	Yukon	
*LABELS	Island		foundland			
*=====	=====					
Snowfall	331	343	293	131	135	
Total Prec.	1169	1174	1444	762	267	

---

### 3D Bar Charts (BAR3D)



# Line Charts (LINEG)

---

Line charts graph data with a variety of representative lines.

Here is a blank chart input report for a line chart:

---

```
LINE▶ 1    FMT▶  RL▶      SHFT▶    HLD CHRS▶    HLD LN▶    ▶      fcs    ▶
.DATE      12:07:41 RID    801A   02 FEB 88   JDOE
.LINE CHART FOR JDOE
.▶          Press F1 or enter RSM when report is updated
.TEXT COLOR --->
.SCREEN COLOR ->
.BACKGROUND --->
.NOTE BOX -----> **NOTE LINE 1** **NOTE LINE 2** **NOTE LINE 3** **NOTE LINE 4**
.NOTE POSITION >
.TITLE ----->
.SUBTITLE ----->
.X AXIS TITLE ->
.Y AXIS TITLE ->
.DATE ----->
.MINIMUM Y ---->
.MAXIMUM Y ---->
.BASE LINE ---->
.MARKER DOTS? ->
.OFFSET PLANES? -----> (Y OR N)
.CONNECT THE DOTS? ---> (Y OR N)
.DISPLAY GRID LINES? -> (Y OR N)
.NUMERIC X SCALING? --> (Y OR N)
.          .   1   .   2   .   3   .   4   .   5   .   6   .
.          .----->----->----->----->----->----->
.COLOR -----> RED      BLUE      GREEN      YELLOW      CYAN      MAGENTA
.PATTERN ---> 1          2          3          4          5          6
.SOLID FILL-> N          N          N          N          N          N
.CAPTIONS -->
*LABELS
=====,=====,=====,=====,=====,=====,=====,
```

---




**Line Charts (LINEG)**

**CREATING A LINE CHART**

To create a line chart, use the following table to fill in the fields on the input report. When you are finished, press **XMIT** to update the screen, then press **F1**.

<b>In Field:</b>	<b>Enter:</b>
TEXT COLOR	The color for the text. See Table A-1 for available colors. The default color is white.
SCREEN COLOR	The color you want for the screen. See Table A-1 for available colors. The default color is black.
BACKGROUND	The color of the box containing the chart. Leave this field blank if you want this box to be the same color as the SCREEN COLOR. The background color is displayed on the screen but not plotted.
NOTE BOX	Notes that you want to add to the chart. There are four lines for comments; simply type each note line between the tab markers. Each note line is centered in the note box. If you type any notes, delete unused note lines.
NOTE POSITION	The location for your note box. Enter either L (upper left) or R (upper right). The default, N, results in no note box being drawn, even if you have entered notes for NOTE BOX.
TITLE	A title (optional) up to 40 characters. Places a title at the top of your chart the same color as TEXT COLOR.

*(continued)* 

*(continued)***In Field:****Enter:**


---

SUBTITLE	A subtitle (optional) up to 60 characters.
X AXIS TITLE	A title (optional) up to 60 characters. This is centered beneath the x axis.
Y AXIS TITLE	A title (optional) up to 60 characters. This is placed at the top of the y axis.
DATE	The date (optional) up to 18 characters. If you enter Y, today's date appears in the format DD MMM YY, but you can enter the date in any format you want. The date is placed in the lower left corner of the screen.
MINIMUM Y MAXIMUM Y	The minimum and maximum values for the y axis. Enter these only if you do not want the system to produce a y axis scale automatically (by rounding your numbers). Be careful when selecting minimum and maximum y values, because the system will truncate any data values that fall outside your given values.
BASE LINE	A value where you want a solid horizontal base line drawn. All values greater than the base line value appear above the base line; all values less than this value appear below it. The default is zero.
MARKER DOTS?	Y or the number of a marker symbol (see Table A-4) if you want a specified style of marker on each point of a line. The default is N, for no markers. If you enter Y the system uses marker 4, a circle. Marker dots are not available for filled or offset lines.

*(continued)*

## Line Charts (LINEG)

*(continued)*

**In Field:**

**Enter:**

---

OFFSET PLANES?	Y to have each line solid filled and offset from the other lines. The default is N. There is an example of offset filled planes in EXAMPLE CHARTS, called TRENDS IN PRODUCTION - OFFSET LINE CHART.
CONNECT THE DOTS?	Y when you have incomplete data where blanks will otherwise cause breaks in a line. Entering Y causes each nonblank data point to be connected. The default is N.
DISPLAY GRID LINES?	Y to display grid lines on your chart that will help locate the value of data points. The default is N.
NUMERIC X SCALING?	Y to have the x axis scaled numerically, like the y axis. The default is N.
COLOR	A color for each line (see Table A-1). The default colors are shown on the input report.
PATTERN	A number for the line style. Refer to Table A-3 for available styles. The default patterns are shown on the input report.
SOLID FILL	Y in any column where you want the line to be solid filled. The fill will be the color and pattern you chose for the line, extending from the line to the bottom of the chart. Because lines are drawn in order from one to six, some filled lines may overlap previously drawn lines with lower data values. The default is N.

*(continued)*

*(continued)***In Field:****Enter:**


---

CAPTIONS	Up to six captions (at least one) that describe what the data represents. The data values you place in the column below each caption (see LABELS below) are graphed as a line. The captions are used in the legend (left of the chart) to describe each line. There are two rows available for captions on the input report. Captions are required for any column containing data values.
LABELS	Labels to be placed along the x axis. Enter labels in the column below the word LABELS on the input report. Then enter the data values for each caption in the appropriate caption column. At least two labels and two data values are required.

---

## TIPS AND SUGGESTIONS

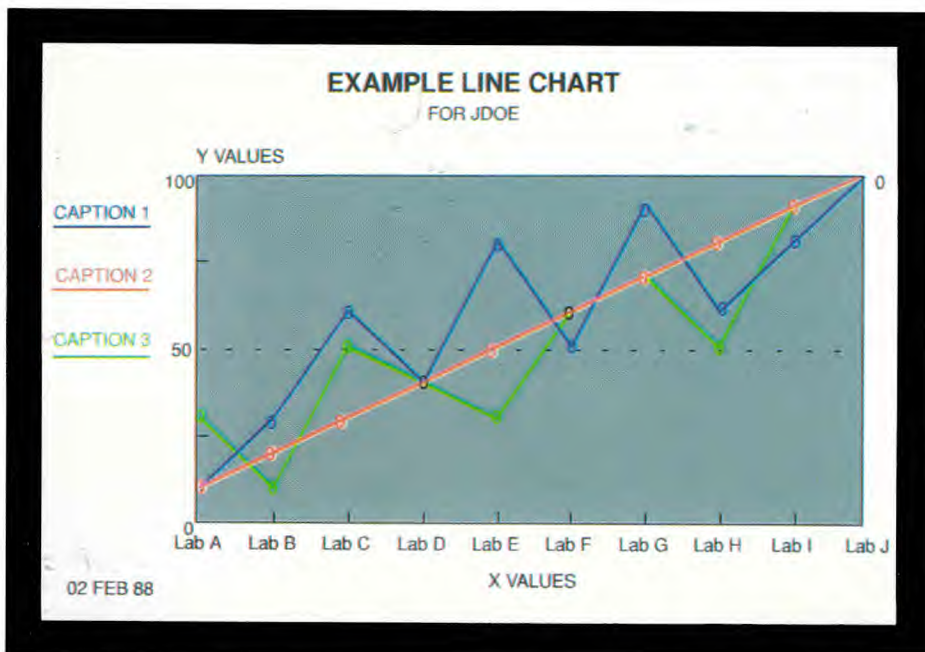
You can display the completed input report as a bar chart or as a mixed bar and line chart. To do this, enter **barg** or **mixed** on the control line. The requested chart is displayed. The system ignores any entries on the completed input report that don't apply to the chart you requested. Default values may appear in fields that you didn't fill in.

## COMPLETED LINE CHART

The following pages show a completed input report and the line chart it produces.

## Line Charts (LINEG)

```
LINE▶ 1    FMT▶  RL▶      SHFT▶    HLD CHRS▶    HLD LN▶    ▶    fcs    ▶
.DATE      12:07:41 RID    801A    02 FEB 88  JDOE
.LINE CHART FOR JDOE
.▶          Press F1 or enter RSM when report is updated
.TEXT COLOR ---> BLACK
.SCREEN COLOR -> WHITE
.BACKGROUND ---> GRAY
.NOTE BOX ----->
.NOTE POSITION >
.TITLE -----> EXAMPLE LINE CHART
.SUBTITLE -----> FOR JDOE
.X AXIS TITLE -> X VALUES
.Y AXIS TITLE -> Y VALUES
.DATE -----> 02 FEB 88
.MINIMUM Y ---->
.MAXIMUM Y ---->
.BASE LINE ---->
.MARKER DOTS? -> Y
.OFFSET PLANES? -----> N (Y OR N)
.CONNECT THE DOTS? ---> N (Y OR N)
.DISPLAY GRID LINES? -> Y (Y OR N)
.NUMERIC X SCALING? --> N (Y OR N)
.          .    1    .    2    .    3    .    4    .    5    .    6    .
.          .----->----->----->----->----->----->
.COLOR -----> BLUE      RED      GREEN
.PATTERN ---> 1          1          1
.SOLID FILL-> N          N          N
.CAPTIONS --> CAPTION 1  CAPTION 2  CAPTION 3
*LABELS
*=====,=====,=====,=====,=====,=====,
Lab A      10      10      30
Lab B      30      20      10
Lab C      60      30      50
Lab D      40      40      40
Lab E      80      50      30
Lab F      50      60      60
Lab G      90      70      70
Lab H      60      80      50
Lab I      80      90      90
Lab J      100     100     100
```



# Mixed Bar and Line Chart (MIXED)

---

A mixed bar and line chart lets you have both bar and line chart information on one chart. This chart allows one set of bars and up to three lines on a single chart.

Here is a blank mixed bar and line chart input report:

---

```
LINE▶ 1    FMT▶ 0 RL▶    SHFT▶    HLD CHRS▶    HLD LN▶    ▶    fcs
.DATE          16:09:55 RID    802A    02 FEB 88  JDOE
.MIXED B-L CHART FOR JDOE
.▶          Press F1 or enter RSM when report is updated
.TEXT COLOR --->
.SCREEN COLOR ->
.BACKGROUND --->
.NOTE BOX -----> **NOTE LINE 1** **NOTE LINE 2** **NOTE LINE 3** **NOTE LINE 4**
.NOTE POSITION >
.TITLE ----->
.SUBTITLE ----->
.DATE ----->
.X AXIS TITLE ->
.Y AXIS TITLE ->
.BASE LINE --->
.MARKER DOTS? ->
.3D BARS? ----->          (Y or N)
.DISPLAY GRID LINES? ->      (Y or N)
.STACKED OR COMPARATIVE BARS? ->C      (S or C)
.      .   BAR   .   BAR   .   BAR   .   LINE   .   LINE   .   LINE   .
.      .-----,-----,-----,-----,-----,-----,-----,
.COLOR -----> RED      BLUE      GREEN      YELLOW      CYAN      MAGENTA
.PATTERN ---> 1          2          3          4          5          6
.CAPTIONS -->
*LABELS
*=====,=====,=====,=====,=====,=====,=====.
```

---

## Mixed Bar and Line Chart (MIXED)

### CREATING A MIXED BAR AND LINE CHART

To create a mixed bar and line chart, use the following table to fill in the fields on the input report. When finished, press **XMIT** to update the screen, then press **F1**.

#### In Field:

#### Enter:

---

TEXT COLOR	The color you want for the text and border. See Table A-1 for available colors. The default color is white.
SCREEN COLOR	The color you want for the screen. See Table A-1 for available colors. The default color is black.
BACKGROUND	The color of the box containing the chart. Leave this field blank if you want this box to be the same color as the SCREEN COLOR. The background color is displayed on the screen but not plotted.
NOTE BOX	Notes that you want to add to the chart. There are four lines for comments; simply type each note line between the tab markers. Each note line is centered in the note box. If you type any notes, delete unused note lines.
NOTE POSITION	The location for your note box. Enter either L (upper left) or R (upper right). The default, N, results in no note box being drawn, even if you have entered notes for NOTE BOX.
TITLE	A title (optional) up to 40 characters. Places a title at the top of your chart the same color as TEXT COLOR.
SUBTITLE	A subtitle (optional) up to 60 characters.

*(continued)*



## Mixed Bar and Line Chart (MIXED)

*(continued)*

### In Field:

### Enter:

---

DATE	The date (optional) up to 18 characters. If you enter Y, today's date appears in the format DD MMM YY, but you can enter the date in any format you want. The date is placed in the lower left corner of the screen.
X AXIS TITLE	A title (optional) up to 60 characters. This is centered beneath the x axis.
Y AXIS TITLE	A title (optional) up to 60 characters. This is placed at the top of the y axis.
BASE LINE	A value where you want a solid horizontal base line drawn. All values greater than the base line value appear above the base line; all values less than this value appear below it. The default is zero. If you specify stacked or 3D bars, this value does not apply.
MARKER DOTS?	Y or the number of a marker symbol (see Table A-4) to be placed on each data point. If you enter Y, the system uses marker 4, a circle. The default is N, for no markers. Marker dots are not available for filled or offset lines.
3D BARS?	Y to have three-dimensional bars. The default is N.
DISPLAY GRID LINES?	Y to display grid lines on your chart that help locate the value of data points. The default is N.
STACKED OR COMPARATIVE BARS?	S (stacked bars) or C (comparative bars). See "Types of Bar Charts" in this section. If you type C, you can use only one BAR column for data. If you type S, you can use all three BAR columns. The default is C.

*(continued)*

## Mixed Bar and Line Chart (MIXED)

*(continued)*

**In Field:**

**Enter:**

---

COLOR	A color for each bar and line. See Table A-1 for available colors. The default colors are shown on the input report.
PATTERN	A number for the fill pattern (for bars) or line style (for lines). Refer to Table A-2 for available patterns or Table A-3 for available styles. The default patterns are shown on the input report.
CAPTIONS	Captions that describe what the data represents. For bars, you can specify one caption for comparative bars (c), or up to three captions for stacked bars (s). For lines, you can specify up to three captions. The data values you place in the column below each caption are graphed as a line (see the next entry, LABELS). The captions are used in the chart's legend (left of the chart) to describe each line on the chart. There are two rows available for captions on the input report. Captions are required for any column containing data values.
LABELS	Labels to be placed along the x axis. Enter labels in the column below the word LABELS on the input report. Enter the data values for each caption in the appropriate column. At least two labels and two data values are required.

---

### TIPS AND SUGGESTIONS

Each line of data located under the headers represents one bar and one point on each of the lines. You do not have to specify information for either the line portion or the bar portion for this chart to work.

You can display the completed input report as a line chart or as a bar chart. To do this, enter **lineg** or **barg** on the control line. The requested chart is displayed. The system ignores any entries on the completed input report that don't apply to the chart you requested.

See "Types of Bar Charts" in this section for additional tips regarding bars.

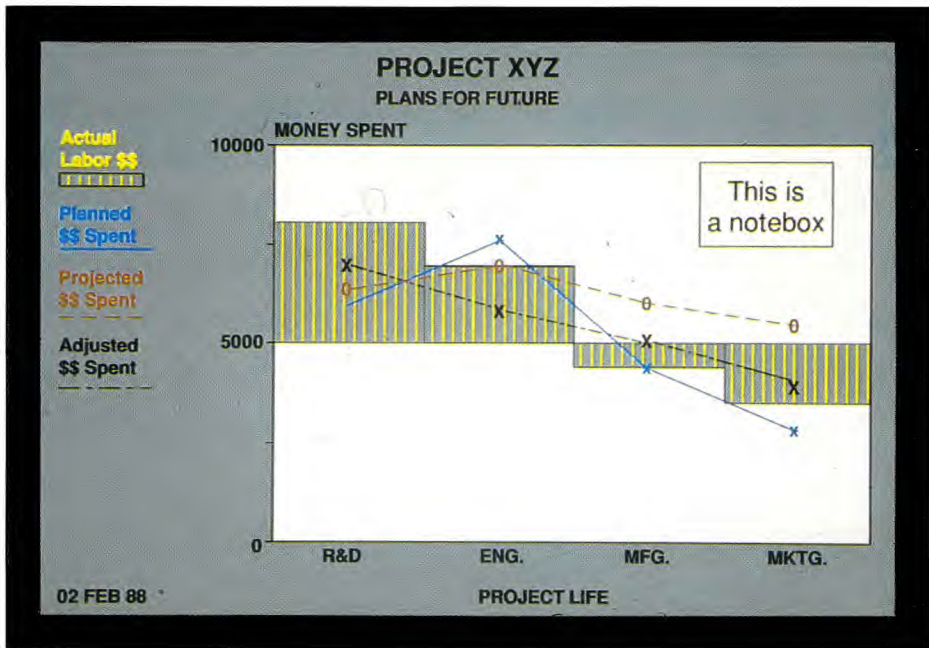
## Mixed Bar and Line Chart (MIXED)

### COMPLETED MIXED BAR AND LINE REPORT

Here is a completed input report, followed by the mixed bar and line chart that it produces:

```
LINE▶ 1    FMT▶  RL▶    SHFT▶    HLD CHRS▶    HLD LN▶    ▶    fcs    ▶
.DATE      16:09:55  RID    802A    02 FEB 88  JDOE
.MIXED B-L CHART FOR JDOE
.▶         Press F1 or enter RSM when report is updated
.TEXT COLOR ---> BLACK
.SCREEN COLOR -> GRAY
.BACKGROUND ---> WHITE
.NOTE BOX -----> This is      a notebook
.NOTE POSITION > r
.TITLE -----> PROJECT XYZ
.SUBTITLE -----> PLANS FOR FUTURE
.DATE -----> 02 FEB 88
.X AXIS TITLE -> PROJECT LIFE
.Y AXIS TITLE -> MONEY SPENT
.BASE LINE -----> 5000
.MARKER DOTS? -> Y
.3D BARS? ----->          (Y OR N)
.DISPLAY GRID LINES? -> Y  (Y or N)
.STACKED OR COMPARATIVE BARS? -> C  (S OR C)
.          .  BAR  .          .          .  LINE  .  LINE  .  LINE  .
.          .------.------.------.------.------.------.
.COLOR -----> YELLOW          BLUE          TAN          BLACK  .
.PATTERN ----> 3              1              2              4      .
.CAPTIONS --> Actual          Actual          Actual          Planned          Projected          Adjusted .
*LABELS      Labor $$      Material $ Total $$      $$ Spent      $$ Spent      $$ Spent .
*=====,=====,=====,=====,=====,=====,=====
R & D      8000      6000      7000      6000      6500      7000
ENG.      7000      8500      8000      7500      7000      6000
MFG.      4500      8500      8000      4500      6000      5000
MKTG.     3500      6000      6500      3000      5500      4000
```

## Mixed Bar and Line Chart (MIXED)



## Pareto Charts (PARETO)

---

A pareto chart looks like a mixed bar and line chart, but the line on a pareto chart represents the sum of the data values of the bars. The y axis scale represents the sum of all y axis data values, and the bars are drawn according to these data values as in a standard bar chart.

Here is a blank chart input report for a pareto chart:

```
LINE▶ 1      FMT▶ 0 RL▶      SHFT▶      HLD CHRS▶      HLD LN▶      ▶      fcs
.DATE          16:11:32 RID    804A   02 FEB 88  JDOE
.PARETO CHART FOR JDOE
▶          Press F1 or enter RSM when report is updated
.TEXT COLOR --->
.SCREEN COLOR ->
.BACKGROUND --->
.NOTE BOX -----> **NOTE LINE 1** **NOTE LINE 2** **NOTE LINE 3** **NOTE LINE 4**
.NOTE POSITION >
.TITLE ----->
.SUBTITLE ----->
.DATE ----->
.X AXIS TITLE ->
.Y AXIS TITLE ->
.3D BARS? -----> (Y OR N)
.DISPLAY GRID LINES? -> (Y or N)
.          .   BAR          .
.          .----->
.COLOR ----->.RED          .
.PATTERN --->.1              .
*LABELS      .              .
*=====,=====.
```

## Pareto Charts (PARETO)

### CREATING A PARETO CHART

To create a pareto chart, use the following table to fill in the fields on the input report. When you are finished, press **XMIT** to record your entries, then press **F1**.

#### In Field:

#### Enter:

---

TEXT COLOR	The color you want for the text and border. See Table A-1 for available colors. The default color is white.
SCREEN COLOR	The color you want for the screen. See Table A-1 for available colors. The default color is black.
BACKGROUND	The color of the box containing the chart. Leave this field blank if you want this box to be the same color as the SCREEN COLOR. The background color is displayed on the screen but not plotted.
NOTE BOX	Notes that you want to add to the chart. There are four lines for comments; simply type each note line between the tab markers. Each note line is centered in the note box. If you type any notes, delete unused note lines.
NOTE POSITION	The location for your note box. Enter either L (upper left) or R (upper right). The default, N, results in no note box being drawn, even if you have entered notes for NOTE BOX.
TITLE	A title (optional) up to 40 characters. Places a title at the top of your chart the same color as TEXT COLOR.
SUBTITLE	A subtitle (optional) up to 60 characters.

(continued)

*(continued)*

**In Field:**

**Enter:**

---

DATE	The date (optional) up to 18 characters. If you enter Y, today's date appears in the format DD MMM YY, but you can enter the date in any format you want. The date is placed in the lower left corner of the screen.
X AXIS TITLE	A title (optional) up to 60 characters. This is centered beneath the x axis.
Y AXIS TITLE	A title (optional) up to 60 characters. This is placed at the top of the y axis.
3D BARS?	Y to have three-dimensional bars. The default is N.
DISPLAY GRID LINES?	Y to display grid lines on your chart that help locate the value of data points. The default is N.
COLOR	A color for each bar and line. See Table A-1 for available colors. The default color is black.
PATTERN	A number for the fill pattern. See Table A-2 for available patterns. The default pattern is 1.
LABELS	Labels to be placed along the x axis. Enter labels in the column below the word LABELS on the input report. Then enter the data values for each caption in the BAR column. At least two labels and two data values are required.

---



## Pareto Charts (PARETO)

### COMPLETED PARETO CHART

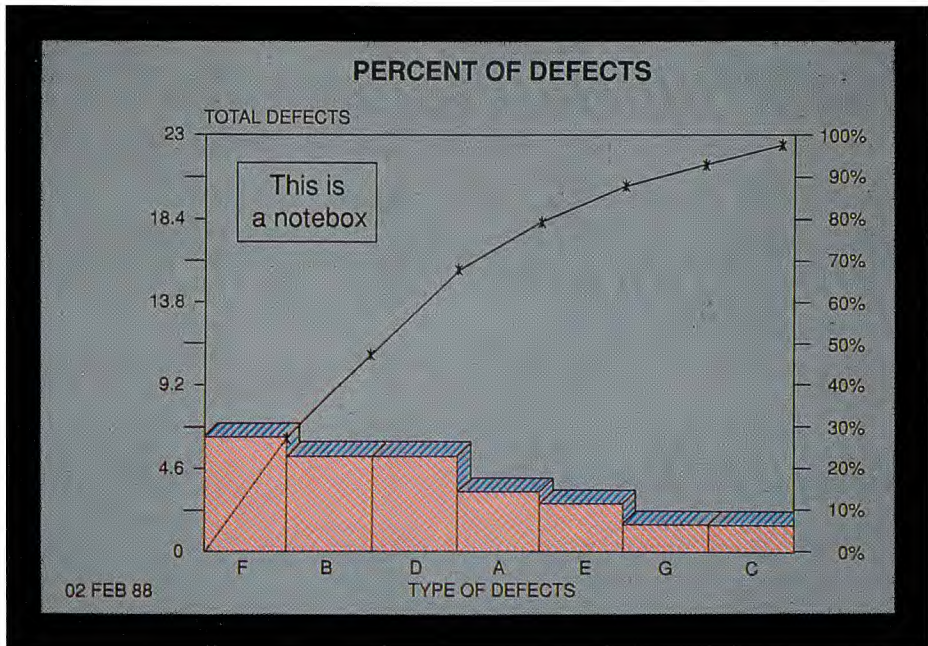
Here is a completed input report and the pareto chart that it produces:

---

```
LINE▶ 1    FMT▶  RL▶      SHFT▶    HLD CHRS▶  HLD LN▶  ▶    fcs    ▶
.DATE          16:11:32  RID    804A   02 FEB 88  JDOE
.PARETO CHART FOR JDOE
.▶          Press F1 or enter RSM when report is updated
.TEXT COLOR ---> BLACK
.SCREEN COLOR -> GRAY
.BACKGROUND ---> WHITE
.NOTE BOX -----> This is      -a notebx
.NOTE POSITION > L
.TITLE -----> PERCENT OF DEFECTS
.SUBTITLE ----->
.DATE -----> 02 FEB 88
.X AXIS TITLE -> TYPE OF DEFECTS
.Y AXIS TITLE -> TOTAL DEFECTS
.3D BARS? -----> Y          (Y OR N)
.DISPLAY GRID LINES? -> N    (Y or N)
.          .  BAR  .
.          .-----
.COLOR -----> RED
.PATTERN ----> 1
*LABELS      .
*=====
F             6
B             5
D             5
A             3
E             2
G             1
C             1
```

---

## Pareto Charts (PARETO)



# Pie Charts (PIEG)

---

The PIEG run produces a chart that resembles a pie with slices. Each slice can be represented by different colors and patterns, and each is proportional to the value you give it.

Here is a blank chart input report for a pie chart:

LINE▶ 1	FMT▶ 0 RL▶	SHFT▶	HLD CHRS▶	HLD LN▶	▶	fcs
.DATE 12:01:38 RID 7 02 FEB 88 JDOE						
.PIE CHART FOR JDOE						
.▶ Press F1 or enter RSM when report is updated						
.TEXT COLOR --->						
.SCREEN COLOR ->						
.TITLE ----->						
.SUBTITLE ----->						
.DATE ----->						
.INCLUDE LEADING '\$'? ----->						
.DISPLAY PERCENTAGE ONLY? ->						
.DISPLAY TOTAL? ----->						
.3D PIE CHART? ----->						
.						
			FOREGROUND	BACKGROUND		
*NAME	VALUE	EXPLODE?	COLOR	COLOR	PATTERN	
*=====,=====,=====,=====,=====,=====						

## Pie Charts (PIEG)

### CREATING A PIE CHART

To create a pie chart, use the following table to fill in the fields on the input report. When you are finished, press **XMIT** to record your entries, then press **F1**.

#### In Field:

#### Enter:

---

TEXT COLOR	The color you want for the text. See Table A-1 for available colors. The default is white.
SCREEN COLOR	The color you want for the screen. See Table A-1 for available colors. The default is black.
TITLE	A title (optional) up to 40 characters. Places a title at the top of your chart the same color as TEXT COLOR.
SUBTITLE	A subtitle (optional) up to 60 characters.
DATE	The date (optional) up to 18 characters. If you enter Y, today's date appears in the format DD MMM YY, but you can enter the date in any format you want. The date is placed in the lower left corner of the screen.
INCLUDE LEADING '\$'?	Y to have a dollar sign (\$) placed in front of each value. The default is N.
DISPLAY PERCENTAGE ONLY?	Y to display only percentages of the whole, not the actual values of each slice. The default, N, displays the value and the percentage.
DISPLAY TOTAL?	Y to have the total of all values displayed in the lower right corner of the screen. The default is N.

*(continued)*

*(continued)***In Field:****Enter:**


---

3D PIE CHART?	Y to have a 3D pie. The default is N. 3D pie charts can have a maximum of 18 slices. Plotting 3D pie charts is not recommended because the steps used to create the plot may overlay some sections of the pie.
NAME	A name for each slice of the pie telling what the data means.
VALUE	A value for each slice (required).
EXPLODE?	Y to offset the slice from the pie's center. The default is N.
FOREGROUND COLOR	A color for the slice. This color will also be used for the name, pattern, and border of the slice. The default colors are listed in Table A-1; these colors are distributed one to each label, beginning with red. Any color you fill in replaces the default color for that slice. To have a solid color for the slice, specify the same color for BACKGROUND COLOR, or specify 0 (zero) for PATTERN.
BACKGROUND COLOR	A color for the background of the pattern (if used). If you specify a pattern but no background color, you get a black background.
PATTERN	A pattern number for each slice of the pie. See Table A-2 for available styles. The default patterns are as listed in the table, beginning with 0.

---

## Pie Charts (PIEG)

### TIPS AND SUGGESTIONS

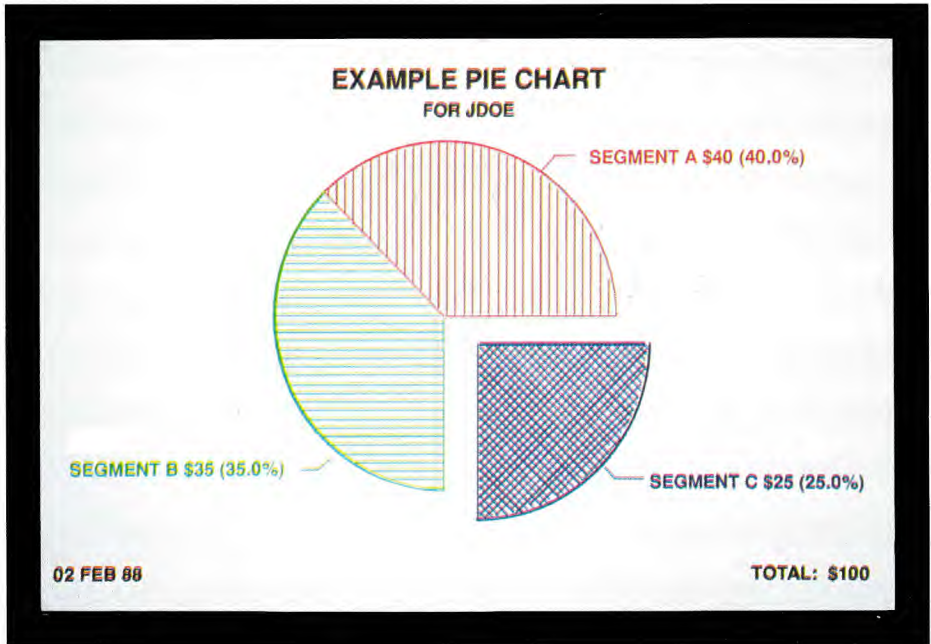
The order you enter the slices on the input report determines their order in your pie chart. Slices start at the 3:00 position and proceed counterclockwise.

There is no fixed limit to the number of slices you may have in your pie. However, after a certain point the slices become too small to be effective. To avoid this problem, rearrange the order of the slices, or separate small slices by putting large slices between them.

### COMPLETED PIE CHART

Here is a completed input report and the pie chart it produces:

LINE▶ 1	FMT▶ 0 RL▶	SHFT▶	HLD CHRS▶	HLD LN▶ ▶	fcs
.DATE 12:01:38 RID 7 02 FEB 88 JDOE					
.PIE CHART FOR JDOE					
▶ Press F1 or enter RSM when report is updated					
.TEXT COLOR ---> BLACK					
.SCREEN COLOR -> WHITE					
.TITLE -----> EXAMPLE PIE CHART					
.SUBTITLE -----> FOR JDOE					
.DATE -----> 02 FEB 88					
.INCLUDE LEADING '\$'? -----> Y					
.DISPLAY PERCENTAGE ONLY? -> N					
.DISPLAY TOTAL? -----> Y					
.3D PIE CHART? ----->					
-					
*NAME	VALUE	EXPLODE?	FOREGROUND COLOR	BACKGROUND COLOR	PATTERN
*=====	=====	=====	=====	=====	=====
SEGMENT A	40	N	RED		4
SEGMENT B	35	N	GREEN		3
SEGMENT C	25	Y	BLUE		6



# Radar Charts (RADAR)

---

A radar chart contains lines radiating from a center point, each line representing a different scale and data. Each set of data values is connected by a line in the specified style.

Here is a blank chart input report for a radar chart:

LINE▶ 1	FMT▶ 0 RL▶	SHFT▶	HLD CHRS▶	HLD LN▶	▶	fcs
.DATE	16:14:56	RID	850A	02 FEB 88	JDOE	
.RADAR CHART FOR JDOE						
.▶ Press F1 or enter RSM when report is updated						
.TEXT COLOR ----->						
.SCREEN COLOR ----->						
.TITLE ----->						
.SUBTITLE ----->						
.DATE ----->						
.PERCENTAGE MARKERS -->						
. 1 . 2 . 3 . 4 . 5 . 6 .						
.----->						
.CAPTIONS ----->						
.						
.COLOR -----> RED BLUE GREEN YELLOW CYAN MAGENTA						
*RAYS	. SCALE .	.	.	.	.	.
=====,=====,=====,=====,=====,=====,=====.						



## Radar Charts (RADAR)

### CREATING A RADAR CHART

To create a radar chart, use the following table to fill in the fields on the input report. When you are finished, press **XMIT** to update the screen, then press **F1**.

#### In Field:

#### Enter:

---

TEXT COLOR	The color you want for the text and border. See Table A-1 for available colors. The default is white.
SCREEN COLOR	The color you want for the screen. See Table A-1 for available colors. The default is black.
TITLE	A title (optional) up to 40 characters. Places a title at the top of your chart the same color as TEXT COLOR.
SUBTITLE	A subtitle (optional) up to 60 characters.
DATE	The date (optional) up to 18 characters. If you enter Y, today's date appears in the format DD MMM YY, but you can enter the date in any format you want. The date is placed in the lower left corner of the screen.
PERCENTAGE MARKERS	N if you don't want symbols placed on each ray to help locate the value of data points. The default is Y; this places markers at 25, 50, and 75 percent of the distance from the center.
CAPTIONS	Up to six captions that describe what the data represents. The data values you place in the column below each caption (see RAYS) are graphed as a line. The captions are used in the legend (left of the chart) to describe each line. There are two rows available for captions on the input report. Captions are required for any column containing data values.

*(continued)*

*(continued)*

**In Field:**

**Enter:**

---

COLOR	A color for each line. See Table A-1 for available colors. The default colors are shown on the screen.
RAYS	A label for each ray on the chart, describing what it represents. Enter names in the column under the word RAYS on the input report.
SCALE	A maximum Y scale value for each ray on the chart.

---

### TIPS AND SUGGESTIONS

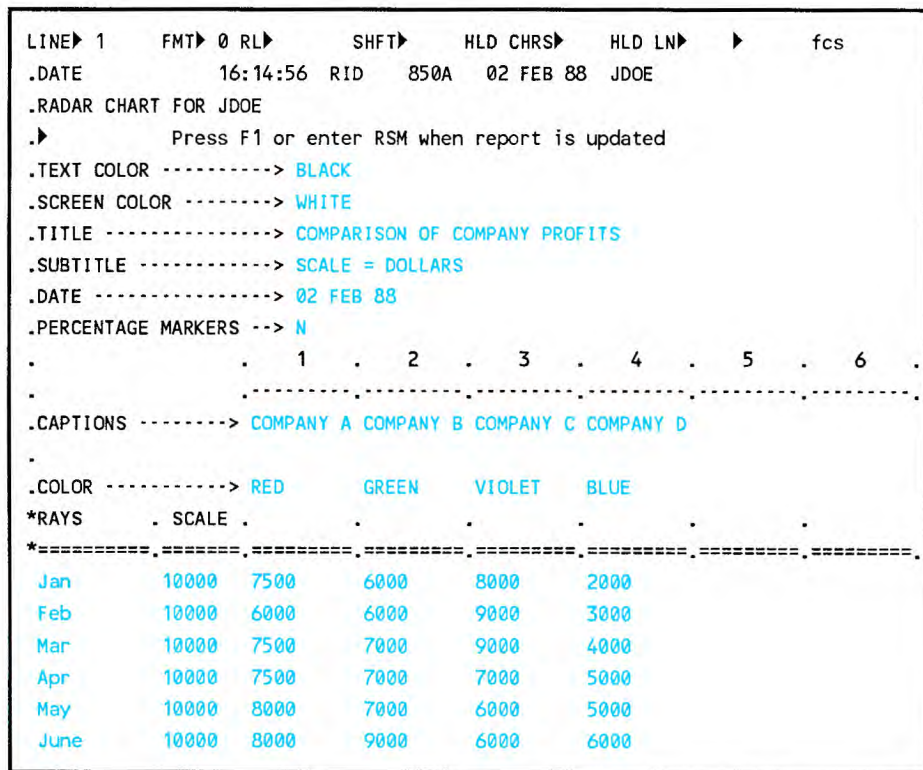
Each label in the RAYS column represents one ray on the chart. Each ray is made up of a scale and a series of points. The data values in a column under a particular caption are graphed as one line; each line has its own style and color.

On the final chart you can compare the various captions. The first ray is at the 3:00 position, and the rest of the rays proceed counterclockwise.

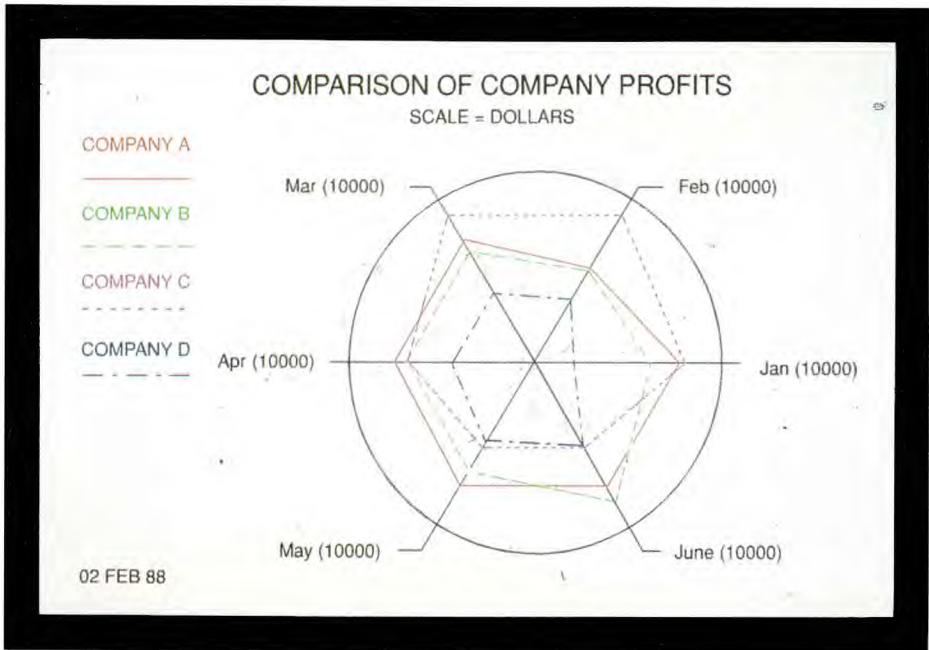
## Radar Charts (RADAR)

### COMPLETED RADAR CHART

Here is a completed input report and the radar chart that it produces:



## Radar Charts (RADAR)



# Scatter Charts (SCAT)

---

Scatter charts graph variable x and y points according to numeric x and y scales and are especially useful for statistical analysis.

Here is a blank chart input report for a scatter chart:

---

```
LINE▶ 1      FMT▶ 0 RL▶      SHFT▶      HLD CHRS▶      HLD LN▶      ▶      fcs
.DATE          16:26:16 RID      865A      02 FEB 88      JDOE
.SCATTER CHART FOR JDOE
.▶           Press F1 or enter RSM when report is updated
.TEXT COLOR --->
.SCREEN COLOR ->
.BACKGROUND --->
.NOTE BOX -----> **NOTE LINE 1** **NOTE LINE 2** **NOTE LINE 3** **NOTE LINE 4**
.NOTE POSITION >
.TITLE ----->
.SUBTITLE ----->
.DATE ----->
.X AXIS TITLE ->
.Y AXIS TITLE ->
.X MINIMUM ----->
.X MAXIMUM ----->
.Y MINIMUM ----->
.Y MAXIMUM ----->
.MARKER SYMBOL->
.LINEAR FIT --->                (Y, N, OR COLOR)
.PARABOLIC FIT->                (Y, N, OR COLOR)
.DISPLAY GRID LINES? ->        (Y OR N)
.
.----->
.COLOR ----->.RED
*      X      .      Y      .
*=====
```

---

## CREATING A SCATTER CHART

To create a scatter chart, use the following table to fill in the fields on the input report. When you are finished, press **XMIT** to record your entries, then press **F1**.

**In Field:**

**Enter:**

---

TEXT COLOR	The color you want for the text and border. See Table A-1 for available colors. The default color is white.
SCREEN COLOR	The color you want for the screen. See Table A-1 for available colors. The default color is black.
BACKGROUND	The color of the box containing the chart. Leave this field blank if you want this box to be the same color as the SCREEN COLOR. The background color is displayed on the screen but not plotted.
NOTE BOX	Notes that you want to add to the chart. There are four lines for comments; simply type each note line between the tab markers. Each note line is centered in the note box. If you type any notes, delete unused note lines.
NOTE POSITION	The location for your note box. Enter either L (upper left) or R (upper right). The default, N, results in no note box being drawn, even if you have entered notes for NOTE BOX.
TITLE	A title (optional) up to 40 characters. Places a title at the top of your chart the same color as TEXT COLOR.
SUBTITLE	A subtitle (optional) up to 60 characters.

*(continued)*

## Scatter Charts (SCAT)

*(continued)*

**In Field:**

**Enter:**

---

DATE	The date (optional) up to 18 characters. If you enter Y, today's date appears in the format DD MMM YY, but you can enter the date in any format you want. The date is placed in the lower left corner of the screen.
X AXIS TITLE	A title (optional) up to 60 characters. This is centered beneath the x axis.
Y AXIS TITLE	A title (optional) up to 60 characters. This is centered at the top of the y axis.
X MINIMUM	The minimum and maximum values for the x and y axes. Enter these only if you do not want the system to produce an axis scale automatically (by rounding your numbers). If you choose a value for MINIMUM Y, the system truncates all values in your data that are less than the minimum. If you enter a value for MAXIMUM Y, all values in your data that are greater than the maximum value are drawn split, indicating that the maximum value exceeds the scale value.
X MAXIMUM	
Y MINIMUM	
Y MAXIMUM	
MARKER SYMBOL	A number from 1 to 99 (check at your site to see which are available) to specify a marker style for each data point. The default is an X. See Table A-4 for available styles of markers.
LINEAR FIT	Y or color name to have a straight line drawn that best fits the data points. The default entry is N; if you enter Y, the default color is yellow.
PARABOLIC FIT	Y or color name to have a parabolic curve drawn that best fits the data points. The default entry is N; if you enter Y, the default color is cyan.

*(continued)*

*(continued)*

**In Field:**

**Enter:**

---

DISPLAY GRID LINES?	Y to display grid lines on your chart that will help locate data values. The default is N.
COLOR	A color name for the marker symbols. See Table A-1 for available colors. The default color is red.
X	The data values. Enter X data values under the X column; enter Y data values under the Y columns. Type as many values as you wish.
Y	

---

### COMPLETED SCATTER CHART

The following pages show a completed input report and the scatter chart it produces.

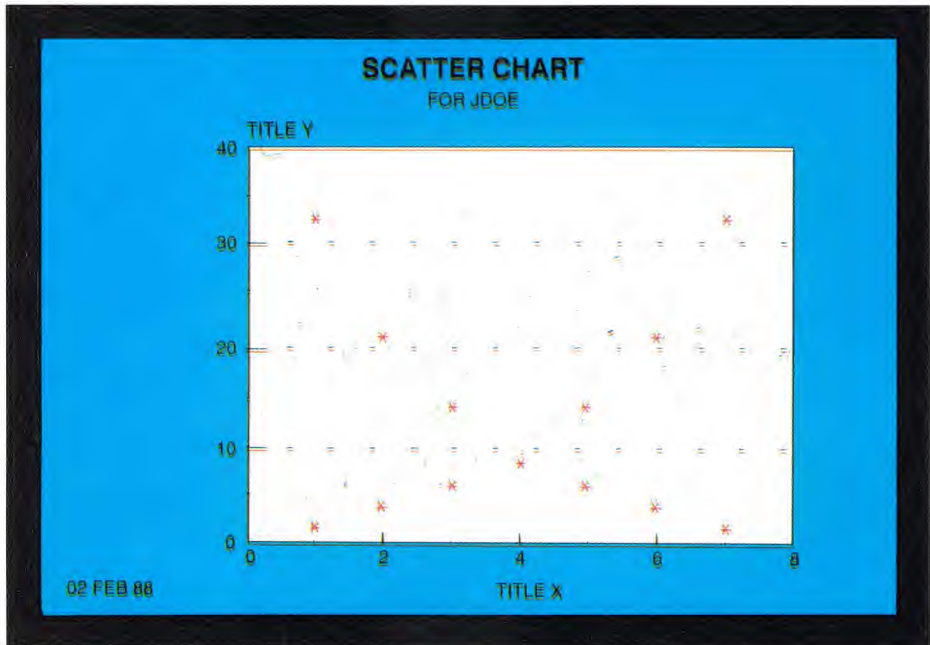


## Scatter Charts (SCAT)

---

```
LINE▶ 1    FMT▶  RL▶      SHFT▶    HLD CHRS▶  HLD LN▶  ▶    fcs    ▶
.DATE      16:26:16  RID    865A   02 FEB 88  JDOE
.SCATTER CHART FOR JDOE
.▶         Press F1 or enter RSM when report is updated
.TEXT COLOR ---> BLACK
.SCREEN COLOR -> TURQUOISE
.BACKGROUND ---> WHITE
.NOTE BOX ----->
.NOTE POSITION >
.TITLE -----> SCATTER CHART
.SUBTITLE -----> FOR JDOE
.DATE -----> 02 FEB 88
.X AXIS TITLE -> TITLE X
.Y AXIS TITLE -> TITLE Y
.X MINIMUM ----->
.X MAXIMUM ----->
.Y MINIMUM ----->
.Y MAXIMUM ----->
.MARKER SYMBOL-> 3
.LINEAR FIT --->          (Y, N, OR COLOR)
.PARABOLIC FIT->          (Y, N, OR COLOR)
.DISPLAY GRID LINES? -> Y    (Y OR N)
.-----
.COLOR -----> RED
*      X      .      Y      .
*=====
1      2
2      4
3      6
4      9
5     14
6     21
7     33
1     33
2     21
3     14
4      9
5      6
6      4
7      2
```

---



# Target Charts (TARGET)

---

A target chart is in the form of a bull's eye target. The data values in your report are represented by markers. These markers are placed on the target according to their relationship to the bull's eye and the target's outer edge.

Here is a blank input report for a target chart:

LINE▶ 1	FMT▶ 0 RL▶	SHFT▶	HLD CHRS▶	HLD LN▶	▶	fcs
.DATE	14:14:13	RID	866A	02 FEB 88	JDOE	
.TARGET CHART FOR JDOE						
.▶ Press F1 or enter RSM when report is updated						
.TEXT COLOR --->						
.SCREEN COLOR ->						
.TITLE ----->						
.DATE ----->						
.INITIALS ----->						
.MIN SCALE --->						
.MAX SCALE --->						
.INVERT SCALE -> (Y/N)						
.	.	1	.	2	.	3
.	.	.	.	.	.	4
.	.	.	.	.	.	5
.MARKER						
.CAPTIONS -->						
*LABELS .*****.*****.*****.*****.*****.*****						
*=====,=====,=====,=====,=====,=====.						

## Target Charts (TARGET)

### CREATING A TARGET CHART

To create a target chart, use the following table to fill in the fields on the input report. When you are finished, press XMIT to update the screen, then press F1.

#### In Field:

#### Enter:

---

TEXT COLOR	The color you want for the text and border. See Table A-1 for available colors. The default is white.
SCREEN COLOR	The color you want for the screen. See Table A-1 for the available colors. The default is black.
TITLE	A title (optional) up to 40 characters. Places a title at the top of your chart the same color as TEXT COLOR.
DATE	The date (optional) up to 18 characters. If you enter Y, today's date appears in the format DD MMM YY, but you can enter the date in any format you want. The date is placed in the lower left corner of the screen.
INITIALS	Three characters (optional) to personalize your chart, usually your initials. These characters appear in the lower right corner the same color as TEXT COLOR.
MIN SCALE and MAX SCALE	Values for the scale of the chart. The MIN SCALE default is zero. You are required to enter a value for MAX SCALE; there is no default value. The MIN SCALE value is placed at the bull's eye, the MAX SCALE value at the outer edge. These values also appear in the lower right corner of the screen.
INVERT SCALE	Y to place the MAX SCALE value at the bull's eye and the MIN SCALE value on the outer edge. The default is N.

(continued)

(continued)

**In Field:**

**Enter:**

---

**MARKER CAPTIONS**      A caption (10 characters maximum) for the legend that describes each marker on the chart. Each column in the report produces a different marker symbol:

- ☐ Column 1 — circle
- ☐ Column 2 — triangle
- ☐ Column 3 — square
- ☐ Column 4 — vertical rectangle
- ☐ Column 5 — horizontal rectangle
- ☐ Column 6 — diamond

The legend is placed along the right side of the chart. If you leave these fields blank, no entries are made in the legend.

**LABELS**

A label and a data value for each marker caption. Enter labels in the column below the word LABELS on the input report. Then enter the data values for each marker caption in the appropriate column. At least two labels and two data values are required. A label legend is placed along the left side of the chart.

---

## Target Charts (TARGET)

### COMPLETED TARGET CHART

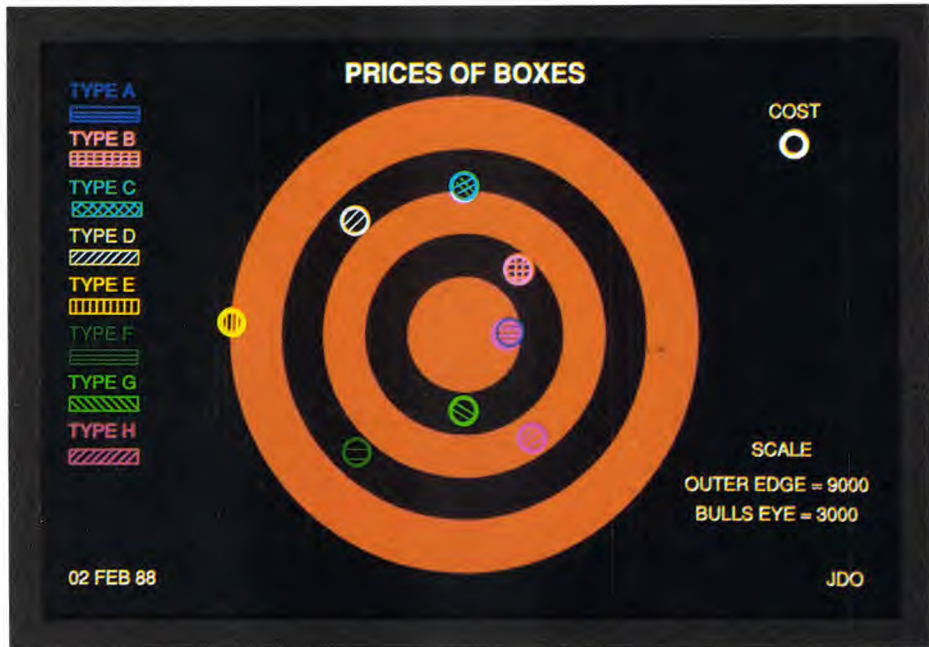
Here is a completed input report, followed by the target chart that it produces:

---

```
LINE▶ 1    FMT▶ 0 RL▶    SHFT▶    HLD CHRS▶    HLD LN▶    ▶    fcs
.DATE      14:14:13  RID   866A   02 FEB 88  JDOE
.TARGET CHART FOR JDOE
.▶         Press F1 or enter RSM when report is updated
.TEXT COLOR ---> WHITE
.SCREEN COLOR -> BLACK
.TITLE -----> PRICES OF BOXES
.DATE -----> 02 FEB 88
.INITIALS -----> JDO
.MIN SCALE -----> 3000
.MAX SCALE -----> 9000
.INVERT SCALE -> N (Y/N)
.           .   1   .   2   .   3   .   4   .   5   .   6
.           .----- .----- .----- .----- .----- .-----
.           .       .       .       .       .       .
.MARKER     .       .       .       .       .       .
.CAPTIONS --> COST
*LABELS     .*****.*****.*****.*****.*****.*****
*=====,=====,=====,=====,=====,=====,
TYPE A      4000
TYPE B      5125
TYPE C      6753
TYPE D      7000
TYPE E      8999
TYPE F      7000
TYPE G      4555
TYPE H      6258
```

---

## Target Charts (TARGET)



## Text Charts (TEXT)

---

You can write anything you want on text charts, so they're useful for presentations and overheads. Here is a chart input report for a text chart:

```
LINE▶ 1      FMT▶ 0 RL▶      SHFT▶      HLD CHRS▶      HLD LN▶      ▶      fcs
.DATE                14:28:03 RID      867A   02 FEB 88  JOE
.TEXT CHART FOR JOE
.▶              Press F1 or enter RSM when report is updated
.LINE TYPE: T, *, -, &, D, I, B, P, S, M, L, C, F, O
.COLORS: 0-BLACK, 1-RED, 2-GREEN, 3-YELLOW, 4-BLUE, 5-MAGENTA, 6-CYAN, 7-WHITE,
.8-GRAY, 9-TAN, 10-AQUA, 11-LIME, 12-VIOLET, 13-HOT PINK, 14-TURQUOISE, 15-PINK
*T.C .              TEXT / PARAMETERS
*.,=.,=====.,=====.
```



## CREATING A TEXT CHART

There are three fields of parameters for the text chart: Line type code (T), line color (C), and the text or parameter specification (TEXT/PARAMETERS). Each row produces one line of text for the finished chart. Line type and color codes are listed in the header of the chart input report.

Use the following table to fill in the fields. See "Maximum Characters" in this section for information about entering text. When you finish the whole screen, press XMIT, then press F1.

**In Field:**

**Enter:**

---

T	Line type code, as described in the list below. (These line types are not the same as MAPPER system line types, such as tab and asterisk lines.)
T	Prints title text in large type (22-point), centered and underlined. Title text is double spaced; its continuation text (&) is single spaced.
*	Prints text preceded by a bullet, in medium type (18-point), left justified. Continuation text (&) is not bulleted.
-	Prints text preceded by a dash, in small type (16-point), indented from the left margin. Continuation text (&) is not preceded by a dash.
&	Prints continuation text in the same size type as the line of which it is a continuation, indented from the left margin. Use continuation text whenever the preceding text exceeds the maximum amount of characters.

*(continued)*

## Text Charts (TEXT)

*(continued)*

**In Field:**

**Enter:**

---

- D Prints current date in small type (11-point) in the lower left corner of the chart in the format DD MMM YY if not otherwise specified in the first 9 character positions of the TEXT field (columns 7 through 15). You have a color choice for the date.
- I Prints up to 12 characters at bottom center of chart (usually initials) in small type (11-point). You have a color choice for the initials.
- B Prints blank line to help you adjust vertical spacing. The run ignores a color and text entry with this parameter.
- P Prints up to 12 characters in lower right corner of chart (usually a page number) in small type (11-point). Type up to three characters in the first three character positions of the text field (columns 7 through 9). You have a color choice for the page number.
- S Prints small size characters (16-point), left justified and not preceded by a bullet or a dash.
- M Prints medium size characters (18-point), left justified and not preceded by a bullet or a dash.
- L Prints large size characters (22-point), left justified and not preceded by a bullet or a dash.

*(continued)*

*(continued)***In Field:****Enter:**

In addition to the line type codes above, there are three other codes (C, F, and O) you can use in the T field:

- C Specifies background color for the screen. The default color is black. Be careful when selecting color combinations; if you select the same color for the text and the screen, your text disappears.
- F Specifies font. Type the number for the font (1 to 28) or spell out the number (for example, one, two, three, and so on) in the TEXT/PARAMETERS field. Your site should have a description of fonts. Refer to the table following this one for the maximum number of characters you can use for each font.
- O Specifies option. Spell out one of the following options in the TEXT/PARAMETERS field:
  - ☐ DELETE —delete line from top of chart
  - ☐ CENTER —center S, M, and L lines
  - ☐ NORMAL (or blank) —return to left justification of S, M, and L lines.

- C A number for the line or TEXT COLOR. Available colors are listed near the top of the chart input report.

The run selects colors if you leave them out. Black is not visible on a black screen, but it will plot.

*(continued)*

## Text Charts (TEXT)

*(continued)*

**In Field:**

**Enter:**

---

TEXT/PARAMETERS      The text for T, \*, -, &, D, I, P, S, M, and L line types, up to the number of characters allowed for the line. Or enter the information for the F and O parameters as previously explained.

You must enter at least one line type and its text.

In text charts, type one apostrophe for each apostrophe in your text.

---

## MAXIMUM CHARACTERS

The following table shows how many characters, including spaces, you can enter for the various line types.

---

Line Type	With High Quality Font	Without High Quality Font
T	54	42
*	73	73
-	73	73
&	73	73
S	73	73
M	68	73
L	54	41

---

**NOTE:** Using high quality fonts may slow down the processing of your chart. You can change fonts as often as you wish; however, once you switch fonts you cannot return to the default (lower quality) font.

### Text Charts (TEXT)

### COMPLETED TEXT CHART

Complete the input report and press **XMIT** to put the information in the next available report in the same type.

Here is a completed input report and the text chart it produces:

```

LINE▶ 1      FMT▶ 0 RL▶      SHFT▶      HLD CHRS▶      HLD LN▶      ▶      fcs
.DATE          14:28:03  RID      867A  02 FEB 88  JDOE
.TEXT CHART FOR JDOE
.▶          Press F1 or enter RSM when report is updated
.LINE TYPE: T, *, -, &, D, I, B, P, S, M, L, C, F, O
.COLORS: 0-BLACK, 1-RED, 2-GREEN, 3-YELLOW, 4-BLUE, 5-MAGENTA, 6-CYAN, 7-WHITE,
.8-GRAY, 9-TAN, 10-AQUA, 11-LIME, 12-VIOLET, 13-HOT PINK, 14-TURQUOISE, 15-PINK
*T.C .          TEXT / PARAMETERS
*==,==,=====,=====,====.
F  THREE
C 7
T 0  TEXT CHART FOR EXAMPLE PIE CHART
B
* 1  SEGMENT A
- 1  COST AVERAGE $40 (FOR 40% OF TOTAL)
- 1  INCREASED COMPARED TO LAST YEAR
B
* 2  SEGMENT B
- 2  COST AVERAGE $35 (FOR 35% OF TOTAL)
- 2  INCREASED COMPARED TO LAST YEAR
B
* 4  SEGMENT C
- 4  COST AVERAGE $25 (FOR 25% OF TOTAL)
- 4  DECREASED COMPARED TO LAST YEAR
D 4  02 FEB 88
I 1  JDOE
P 2  1

```

## TEXT CHART FOR EXAMPLE PIE CHART

### ● SEGMENT A

- COST AVERAGE \$40 (FOR 40% OF TOTAL)
- INCREASED COMPARED TO LAST YEAR

### ● SEGMENT B

- COST AVERAGE \$35 (FOR 35% OF TOTAL)
- INCREASED COMPARED TO LAST YEAR

### ● SEGMENT C

- COST AVERAGE \$25 (FOR 25% OF TOTAL)
- DECREASED COMPARED TO LAST YEAR

02 FEB 88

JDOE

1

# Time Line Charts (TIMEL)

---

Time line charts represent time spans. They are especially useful for work projects, to show start dates and deadlines.

Here is a blank chart input report for a time line chart:

LINE▶ 1	FMT▶ 0 RL▶	SHFT▶	HLD CHRS▶	HLD LN▶	▶	fcs
.DATE	12:41:48	RID	54A	02 FEB 88	JDOE	
.TIMELINE CHART FOR JDOE						
▶	Press F1 or enter RSM when report is updated					
.TEXT COLOR	----					
.SCREEN COLOR	-->					
.TITLE	----->					
.MARK1	----->					
.MARK2	----->					
.MARK3	----->					
.MARK4	----->					
.DATE LINE	----					
.FORMAT	----->					
.MINIMUM DATE	->					
.MAXIMUM DATE	->					
.1st COLOR	----					
.2nd CDLOR	----					
.3rd COLOR	----					
.4th COLOR	----					
.						
.BAR COLOR	----->RED	BLUE	GREEN	YELLOW		
.FILL PATTERN	----->1	2	3	4		
.TITLE	.SDATE	.CDATE	.CDATE	.CDATE	.EDATE	.MARK1 .MARK2 .MARK3 .MARK4 .
*=====,=====,=====,=====,=====,=====,=====,=====,=====.						



## Time Line Charts (TIMEL)

### CREATING A TIME LINE CHART

To create a time line chart, use the following table to fill in the fields on the input report. When you are finished, press **XMIT** to record your entries, then press **F1**.

**In Field:**

**Enter:**

---

TEXT COLOR	The color you want for the text and border. See Table A-1 for available colors. The default is white.
SCREEN COLOR	The color you want for the screen. See Table A-1 for available colors. The default is black.
TITLE	A title (optional) up to 40 characters. Places a title at the top of your chart the same color as TEXT COLOR.
MARK1 MARK2 MARK3 MARK4	Up to 10 characters that define milestone dates, such as Final Test. These dates are represented on the time line by marker symbols. The text you type in these four fields is placed in a legend at the bottom of the chart. To place the marker symbols, see MARK1 through MARK4 later in this table. The default is no legend.
DATE LINE	Y to place on the chart a vertical line representing the current date. The color of this line is the same as the TEXT COLOR; the current date is placed at the bottom of the line. The line won't appear if today's date isn't within the range of dates on the chart. The default is no current date.
FORMAT	One of two options (default m):  m Displays the date graduations in months. If there are less than 32 days between the minimum and maximum date, this option automatically uses a daily format for a period of 32 days.

*(continued)*

(continued)

**In Field:**

**Enter:**

---

	<p>w Displays the date graduations in weeks. The dates listed in the header are Friday dates. If there are less than 32 days between the minimum and maximum date, this option automatically uses a daily format for a period of 32 days.</p>
MINIMUM DATE	<p>The lowest date on the chart, in the format YYMMDD. In some cases this date is rounded to the previous Friday's date. If there is a date in your text that falls before the minimum date specified, an arrow (pointing to the left) appears on the line in the graph containing that date.</p>
MAXIMUM DATE	<p>The highest date on the chart, in the format YYMMDD. This date is rounded to the end of the month, a Friday date, if the date is less than 32 days from the minimum date. If there is a date in your text that falls after the maximum date specified, an arrow (pointing to the right) appears at the end of the line in the graph containing that date.</p>
1st COLOR 2nd COLOR 3rd COLOR	<p>The meaning of the bar colors representing the first, second, and third center dates (CDATE). These dates usually pertain to a task that is done over a period of time, such as Write Software. You can type up to 20 characters. Each definition appears in a legend at the bottom of the chart.</p>
4th COLOR	<p>The meaning of the bar color representing the EDATE. You can type up to 20 characters. This definition appears in a legend at the bottom of the chart.</p>

(continued)

## Time Line Charts (TIMEL)

*(continued)*

**In Field:**

**Enter:**

---

BAR COLOR	A color name (or its first six letters) to represent each time period specified by the CDATEs and EDATE. See Table A-1 for available colors. The defaults are shown on the screen.
FILL PATTERN	A fill pattern number to represent each time period specified by the CDATEs and EDATE. See Table A-2 for available patterns. The default patterns are shown on the screen.
TITLE	The title for the current time line.
SDATE	The project's starting date, in the format YYMMDD.
CDATE	The center dates of each task defined in 1st COLOR, 2nd COLOR, 3rd COLOR, and 4th COLOR, in the format YYMMDD.
EDATE	The ending date of the project in the format YYMMDD.
MARK1 MARK2 MARK3 MARK4	Dates that mark milestones in the project (if any), using the following symbols:  <input type="checkbox"/> MARK1 triangle  <input type="checkbox"/> MARK2 square  <input type="checkbox"/> MARK3 circle  <input type="checkbox"/> MARK4 diamond

---

### TIPS AND SUGGESTIONS

You can have up to 50 individual time lines on the chart. However, the titles begin to overwrite each other at a certain point, depending on the output device. When this happens, break the data into two or more charts.

The year of the starting date appears below the title, followed by one of three things:

- ☐ Quarters of years (if your chart spans many years)
- ☐ Months (if your chart spans months)
- ☐ Days (if span is 32 days or less)

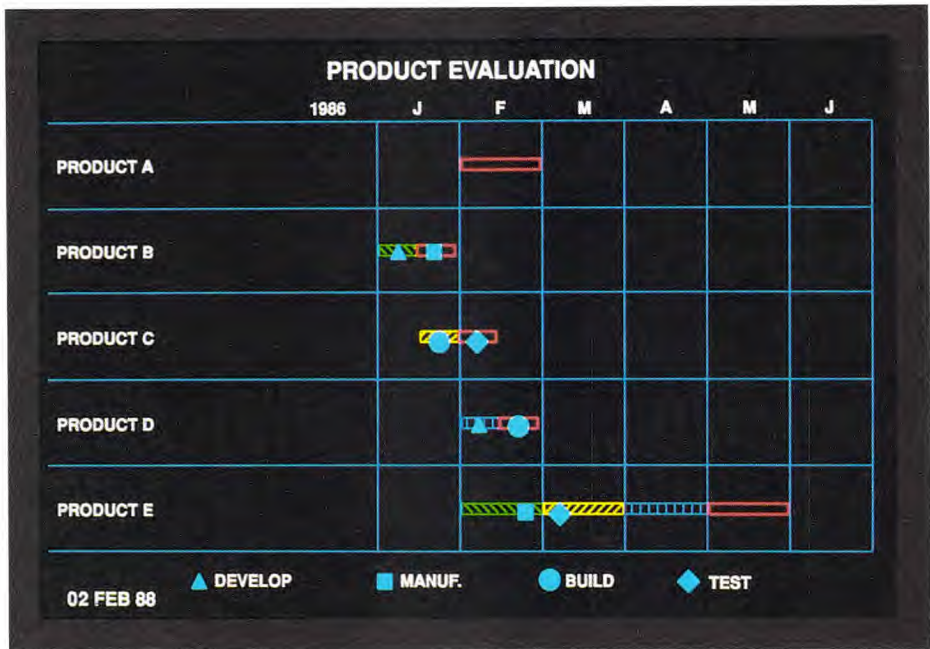
## Time Line Charts (TIMEL)

### COMPLETED TIME LINE CHART

Here is a completed input report and the time line chart it produces:

LINE▶ 1	FMT▶	RL▶	SHFT▶	HLD CHRS▶	HLD LN▶	▶	fcs	▶
.DATE 02 FEB 88	12:41:48	RID	54A	02 FEB 88	JDOE			
.TIMELINE CHART FOR JDOE								
.▶ Press F1 or enter RSM when report is updated								
.TEXT COLOR --->	WHITE							
.SCREEN COLOR ->	BLACK							
.TITLE ----->	PRODUCT EVALUATION							
.MARK1 ----->	DEVELOP							
.MARK2 ----->	MANUF.							
.MARK3 ----->	BUILD							
.MARK4 ----->	TEST							
.DATE LINE ---->								
.FORMAT ----->								
.MINIMUM DATE ->								
.MAXIMUM DATE ->								
.1st COLOR ---->								
.2nd COLOR ---->								
.3rd COLOR ---->								
.4th COLOR ---->								
.BAR COLOR ----->	GREEN	YELLOW	BLUE	RED				
.FILL PATTERN ----->	1	2	3	4				
* TITLE	.SDATE	.CDATE	.CDATE	.CDATE	.EDATE	.MARK1	.MARK2	.MARK3 .MARK4 .
*=====	=====	=====	=====	=====	=====	=====	=====	=====
PRODUCT A	880201				880301			
PRODUCT B	880101	880115			880131	880107	880122	
PRODUCT C	880115		880131		880215		880122	880207
PRODUCT D	880201			880215	880228	880207	880222	
PRODUCT E	880201	880301	880401	880501	880601		880222	880307

# Time Line Charts (TIMEL)



## 3. Creating Organization Charts

---

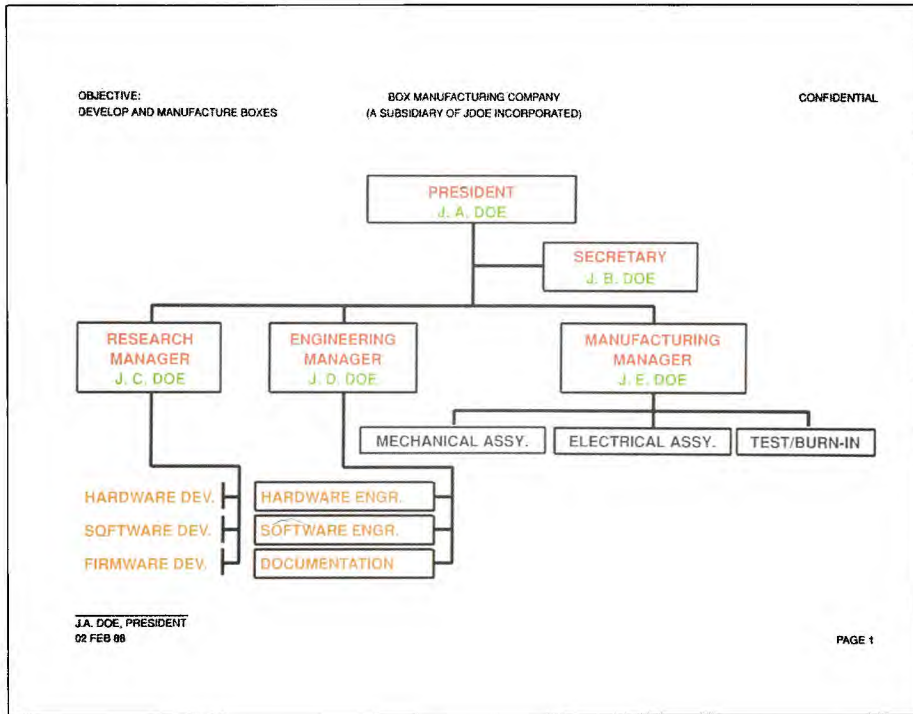
This section shows how to create an organization chart using the Generate Organization Chart (GOC) function. This section contains the following topics:

- ☐ About the GOC Function
- ☐ GOC Commands
- ☐ Tips and Suggestions for GOC Commands
- ☐ Generating an Organization Chart
- ☐ Example Organization Charts

# About the GOC Function

---

The GOC function allows you to create *organization charts* like the one shown below. This chart shows the organization of a fictitious company. You can see how the company is organized by a quick glance at the chart.

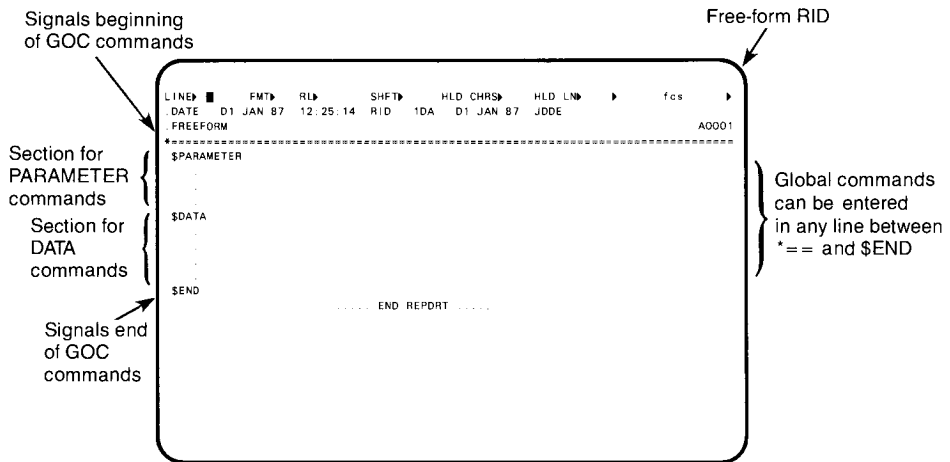


This section contains a procedure and some examples that will help you learn how to create organization charts. The commands that produced the above chart are shown in "Example Organization Charts" in this section.



## HOW THE GOC FUNCTION WORKS

To make an organization chart, instead of entering data in a chart input report, you enter global parameters, data commands, and global commands in a freeform report. You then process these commands using the GOC function. The next illustration shows how you enter parameters and commands on a freeform report.



To process the report, the GOC function scans the lines after the *header-divider line* (\*=) until it detects the first nonblank character (blank lines are ignored). When it detects the \$PARAMETERS command, the GOC function looks for global parameters on the subsequent lines. Anything other than a global parameter or global command is treated as an error at this point.

The GOC function continues scanning the global parameters until it detects a \$DATA command. It then looks for data commands on the subsequent lines. The \$END command signals the end of the commands.

## About the GOC Function

When the GOC function draws your chart, it automatically makes the boxes the right height and width (according to the number of characters) and puts the boxes in the correct places. All you have to do is type names and specify the various levels of management.

**NOTE:** When we refer to boxes, we mean the blocks of text representing names and titles, regardless of whether they have boxes around them.

## HOW TO CREATE AN ORGANIZATION CHART

To make an organization chart, it's helpful to first make a sketch of how you want the levels and boxes organized and whose names will be on each level. After you have made a sketch, follow these steps:

1. Check the form types in your mode for a *freeform type*.
2. Use the AR (Add Report) function to get a blank freeform report.
3. Type the GOC commands on the report, using the SOE Update function. These commands are explained in the next subsection, "GOC Commands." See "Tips and Suggestions for GOC Commands" in this section for help with entering commands.
4. After you enter the GOC commands in the report, enter **goc** on the control line to display the function request message. Refer to "Generating an Organization Chart" in this section for help with filling in the function request message.
5. Answer the questions on the function request message and press **XMIT**. The chart is displayed on your screen. Displayed charts are not the same as a plotted output (the letters are too large to fit in the boxes) but the charts are correct. You can use the screen display, however, to check the correct placement and number of boxes at each level.

To return to the text screen:

- ☐ On a PC, hold shift and press **Esc**.
- ☐ On a UTS-60, hold shift and press **Display 1-2**.

# GOC Commands

---

This subsection begins with a quick reference of all the GOC commands: global parameters, data commands, and global commands. Following this are instructions for using these commands. For help with entering these commands in a report, see "Tips and Suggestions for GOC Commands" and "Example Organization Charts" later in this section.

## QUICK REFERENCE TO COMMANDS

Following is a quick reference to the GOC commands.

### Global Parameters

Begin the global parameters section with the \$PARAMETERS command.

---

Parameter	Description
BACKGROUND	Sets chart background color
COLOR	Sets screen color (default black)
COLUMNS	Displays lowest level as two vertical columns
CONFIDENTIAL	Adds "CONFIDENTIAL" to upper right corner
FONT	Sets character font
HORIZONTAL	Displays lowest level horizontally
IGNORE	Ignores \$DATA command errors
LEVEL	Defines new level
PAGE	Adds page number to chart
PLOTTER	Outputs result on graphics plotter
SCOPE	Displays result on graphics terminal
STAGGER	Displays lowest level as two horizontal rows
SUB-LEVEL	Defines sublevel
VERTICAL	Displays lowest level vertically

---

## Data Commands

Begin with the data commands section with the \$DATA command.

Command	Description
\$APPROVED	Adds approval lines in specified position
\$BLANK	Adds blank line in data
\$BOX	Draws a box around each item
\$BOX-COLOR	Draws colored boxes around each item
\$CONFIDENTIAL	Adds message regarding confidentiality of chart
\$DASHED	Draws dashed lines for each item
\$DATE	Adds date in format M DD, YYYY
\$DATE0	Adds date in format YMMDD
\$DATE1	Adds date in format YYMMDD
\$DATE2	Adds date in format DD MMM YY
\$DATE3	Adds date in format YDDD
\$DATE4	Adds date in format YYDDD
\$DATE5	Adds date in format DDMMYY
\$DATE6	Adds date in format MM/DD/YY
\$DATE7	Adds date in format MONTH DD, YYYY
\$DATE8	Adds date in format MMDDYY
\$DUTIES*	Adds duties lines to top of chart
\$END	Marks end of GOC commands
\$JUSTIFY	Justifies text within boxes
\$LEVEL	Begins level for following data lines
\$LINE-COLOR	Draws colored lines to connect items
\$LOWERCASE	Preserves uppercase/lowercase of text
\$MISSION*	Adds mission lines to top of chart
\$NO-BOX	Omits boxes for each item
\$OBJECTIVE*	Adds objective lines to top of chart
\$PAGE	Adds page identifier
\$RESPONSIBILITY*	Adds responsibilities lines to top of chart

\*Only one of these can be used in each organization chart.

*(continued)*

## GOC Commands

*(continued)*

---

Command	Description
\$SIGNATURE	Adds signature lines to specified position
\$SOLID	Draws solid lines for each item
\$SUB-LEVEL	Begins sublevel for following data lines
\$TITLE	Specifies title of chart
\$UPPERCASE	Converts all characters to uppercase

---

## Global Commands

Global commands can be placed on any line in the report. The abbreviated command names appear in parentheses after the command; for example, \$COMMENT (\$COM).

---

Command	Description
\$COMMENT (\$COM)	Add comment to GOC command report
\$FILLER (\$FILL)	Set character for leading/trailing spaces
\$INCLUDE (\$INC)	Start logic sequence (\$INCLUDE/\$ENDI)
\$ENDI	End logic sequence of \$INCLUDE
\$SET	Assign TRUE or FALSE value for logic sequence of the \$INCLUDE command

---

## GLOBAL PARAMETERS

Begin the global parameter portion of the report with the \$PARAMETERS (\$PRAM) command. Then enter the global parameters that you want, as shown on the following pages. Global parameters pave the way for the data commands by defining where the data command information is placed on the chart.

Entries in the global parameter section are freeform, except for the command lines. You can place more than one command on a line, but separate each command from other commands with at least one space.

## BACKGROUND (BACK)

Specifies the background color of the screen. If you specify an item (text, lines, or boxes) the same color as the new background color, the item is displayed in black. If PLOTTER is specified, this command is ignored.

Format: **BACKGROUND,color**

where *color* is a color name for the background. See Table A-1 for available colors. The default is black.

## COLOR

Eliminates all colors from an existing chart. When you want a black and white plotter output but your chart is in color, use this command to change the colors to black and white.

Format: **COLOR,condition**

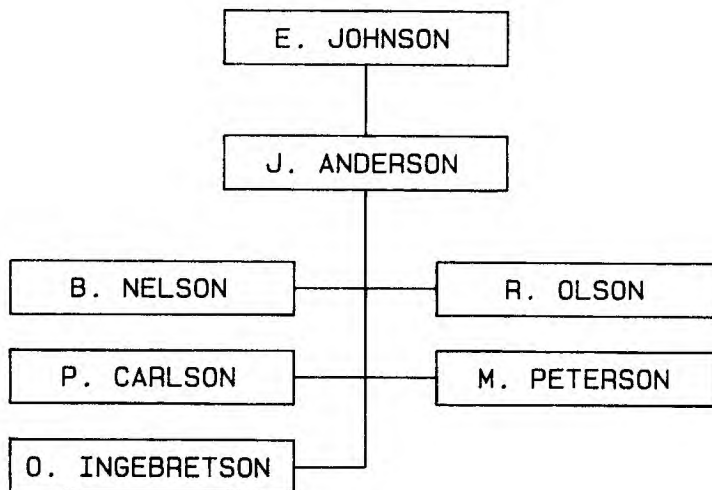
where *condition* is on (the default, to use all colors as specified) or off (for black and white plotter output).

## GOC Commands

### COLUMNS (COL)

Arranges the bottom level into a maximum of two vertical columns, as shown in the next illustration. This command is valid for upper level management charts only; these charts have only one name at each level except the bottom level. When you use this command, type Y for the Upper Level Chart option on the GOC function request message (see "Generating an Organization Chart" in this section).

Format: **COLUMNS**





**CONFIDENTIAL (CONF)**

Places the word CONFIDENTIAL on the chart.

Format: **CONFIDENTIAL,color,position**

where:

*color* is a color name for the word. See Table A-1 for available colors.

*position* is a two-character abbreviation that specifies where to place the word. The default is UR (upper right). See Table 3-1 for available positions.

**FONT**

Specifies the character font to be used. Available fonts are shown in Appendix B.

Format: **FONT,n**

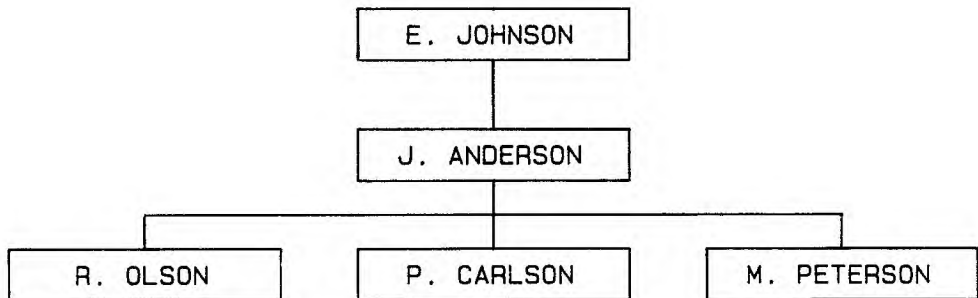
where *n* is a number (0-28) of the character font to be used for text. The default is 0. If you specify a number other than 0, type Y for the Optimize Results option on the GOC function request message (see "Generating an Organization Chart" in this section).

## GOC Commands

### HORIZONTAL (HORIZ)

Arranges the bottom level of boxes in a horizontal sequence, as shown below. This command is not valid for upper level charts.

Format: **HORIZONTAL**



### IGNORE

Ignores any errors encountered in the \$DATA section, such as extra noncommand lines and command line errors.

Format: **IGNORE**

## LEVEL

Defines a level of boxes. You need one LEVEL command for each level of boxes.

Format: **LEVEL**,*n*,*qty*,*color1*,*color2*,...

where:

*n* is a label that identifies the level. Enter any character from 0-9 or A-Z. The first level encountered by the GOC function is the top level on the chart, the second level encountered is next, and so on. A minimum of one level and a maximum of 12 levels are allowed.

*qty* is a number (0-255) that specifies the maximum lines of text on this level. Use 0 only if you want to split the bottom level into more than two columns. To do this, there must be three or more levels, the bottom level must be vertical, and the 0 must be used for the level next to the bottom. Then, the text you enter for the bottom level is split into more than two columns. 0 overrides the *qty* specified in the VERTICAL command.

*color1*,*color2*,... are color names that define the color of each line of text. See Table A-1 for available colors. The default is white. See "Tips and Suggestions for GOC Commands" in this section for more information about this subfield.

## GOC Commands

### PAGE

Places the word PAGE and a page identifier on the chart.

Format: **PAGE**,*pageid,position,color*

where:

*pageid* is a one- to four-character page identifier, such as a page number.

*position* is a two-character abbreviation that specifies where to place the text. The default is LR (lower right). See Table 3-1 for available positions.

*color* is a color name for the text. See Table A-1 for available colors. The default is white.

### PLOTTER (PLOT)

Creates the code for plotting.

Format: **PLOTTER**,*size,orientation*

where:

*size* is SMALL paper (8 1/2 x 11 inches) or LARGE paper (11 x 15 1/4 inches). The default is SMALL.

*orientation* is the width of the paper: WIDE (11 inches) or TALL (8 1/2 inches). This field is valid only if *size* is SMALL. The default is WIDE.

## SCOPE

Displays the chart on a graphics terminal.

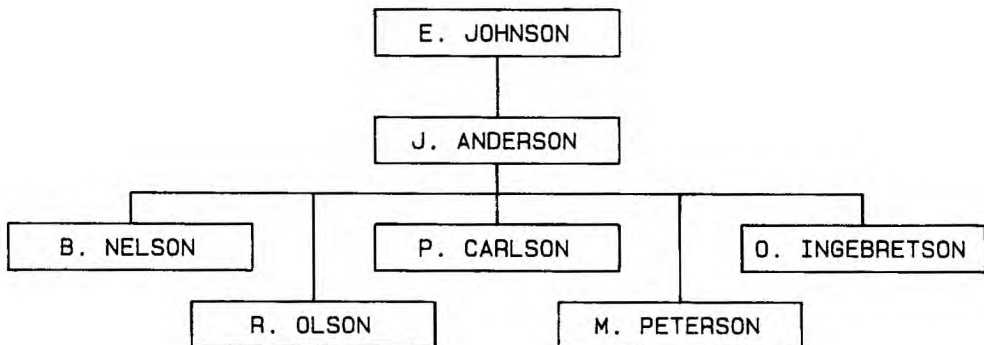
Format: **SCOPE,type**

where *type* is PCC, PCE, PCS, UTS 60, AQUASTAR, or AQUA (same as AQUASTAR). The default is UTS 60.

## STAGGER (STAG)

Displays the bottom level of boxes as two horizontal, staggered rows, no matter how many boxes are at this level. This command is valid for upper level management charts only; these charts have only one name at each level except the bottom level. When you use this command, type Y for the Upper Level Chart option on the GOC function request message (see "Generating an Organization Chart" in this section).

Format: **STAGGER**



## GOC Commands

### SUB-LEVEL

Indicates a nonsupervisory type staff position (that is, secretary, technician, and so on) as a sublevel of the previous level. An example of a sublevel (Secretary J.B. Doe) is shown in the first example chart in this section.

You cannot define more than one sublevel per level. This command is not meaningful for the bottom level and is ignored if used. You must enter this command after its corresponding LEVEL command.

Format: **SUB-LEVEL**,*n,qty,color1,color2,...*

where:

*n* is the label you specified in the corresponding LEVEL command. Enter any character from 0-9 or A-Z. The first level encountered by the GOC function is the top sublevel on the chart, the second level is next, and so on. A minimum of one level and a maximum of 12 levels are allowed.

*qty* is a number (1-255) that specifies how many lines are in the sublevel. This number must be less than or equal to the number of lines in the corresponding LEVEL command.

*color1,color2,...* are color names that define the color of each line of text. See Table A-1 for available colors. The default is white. See "Tips and Suggestions for GOC Commands" in this section for more information about this subfield.



**VERTICAL (VERT)**

Displays the bottom level of the boxes in a vertical sequence. This command is not valid for upper level charts.

Format: **VERTICAL**,*type*

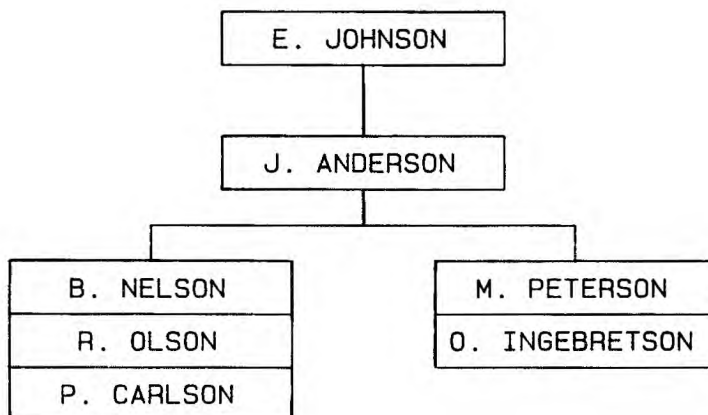
where *type* specifies the arrangement of the bottom level boxes:

- ☐ **STACK (STK)** stacks the boxes with no space between them.
- ☐ **SPREAD** spreads the boxes out, leaving spaces between them.

If *type* is **STACK**, you can specify another option to obtain the result shown next.

Format: **VERTICAL,STACK**,*qty*

where *qty* is a number (0-99) that specifies the maximum number of boxes to display before automatically splitting the boxes into two columns.



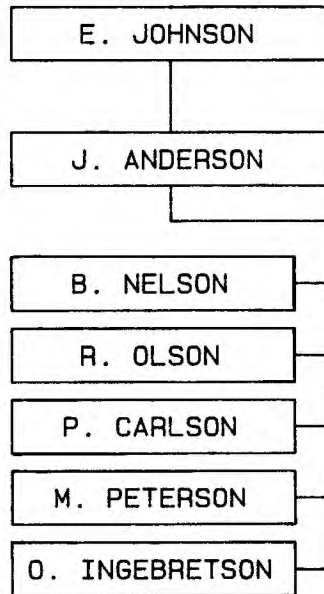
## GOC Commands

If *type* is SPREAD, you can specify another option to obtain the result shown next.

Format: **VERTICAL,SPREAD,position**

where *position* indicates where to place the boxes for the spread.  
The following positions are available:

- ☐ L (or LEFT) positions the boxes to the left of the connecting line.
- ☐ R (or RIGHT) positions the boxes to the right of the connecting line.





## DATA COMMANDS

Begin the data portion of the report with the \$DATA command. Then enter the data commands you want, as shown on the following pages. Data commands provide names and titles and other visible data on the chart. These commands are valid only within the portion of commands following the \$DATA command.

In this portion, you may not enter more than one command on a line.

### \$APPROVED (\$APPR)

Indicates that the text on the following lines (maximum of six) is to be placed on the chart with a solid signature line above it.

This command is the same as the \$SIGNATURE command, except that the word APPROVED: precedes the signature line. The total number of SIGNATURE and APPROVED commands per chart cannot exceed two of each command.

Format: **\$APPROVED**,*position,line-flag,color*

where:

*position* is a two-character abbreviation that specifies where to place the text. The default is LL (lower left). See Table 3-1 for available positions.

*line-flag* is the letters **nl** (or **no-line**) to indicate that you do not want a line drawn above the signature information. If you don't enter **nl**, a line is drawn. The color of the line is determined by the current \$LINE-COLOR.

*color* is a color name for the text. The default is white.

## GOC Commands

The following example places an approval consisting of four lines of red text in the upper right corner of the chart. There is no signature line, but the word APPROVED: still accompanies the text.

```
$APPROVED,UR,NL,RED  
J. Q. Public  
Group Manager  
Techno-Hi, Inc.  
11/1/89
```

### **\$BLANK (\$B)**

Inserts a blank line into the text that follows these commands: \$LEVEL, \$SUB-LEVEL, \$SIGNATURE, \$APPROVED, \$DUTIES, \$MISSION, \$OBJECTIVE, or \$RESPONSIBILITY. This command produces a blank line one character long. If you want more than one blank character (to control box width), use a row of filler characters (see "Global Commands," \$FILLER, in this section) to get a blank line.

Format: **\$BLANK**

### **\$BOX**

Draws boxes around each item at every level or sublevel until you use the \$NO-BOX command to change to no boxes.

Format: **\$BOX**

### **\$BOX-COLOR (\$BCOLOR)**

Draws boxes around items in a specified color. To change box color, use another \$BOX-COLOR command.

Format: **\$BCOLOR,color**

where *color* is a color name for the text. The default is white.

**\$CONFIDENTIAL (\$CONF)**

Places a message on the chart regarding confidentiality. Only one \$CONFIDENTIAL command per chart is allowed. It overrides the CONFIDENTIAL global parameter.

Format: **\$CONFIDENTIAL**,*position,color text*

where:

*position* is a two-character abbreviation that specifies where to place the text. The default is UR (upper right). See Table 3-1 for available positions.

*color* is a color name that specifies the text color.

*text* is the actual text.

The following example places red text, Restricted Distribution, in the lower left corner of the chart.

**\$CONFIDENTIAL,LL,RED Restricted Distribution**

**\$DASHED (\$DASH)**

Draws all connecting lines as dashed lines until you use the \$SOLID command to change to solid lines.

Format: **\$DASHED**

**\$DATA**

Indicates the beginning of the data commands.

Format: **\$DATA**

## GOC Commands

### \$DATE

Adds the current date or any given date to a chart. The formats for the date command are:

- ☐ \$DATE : month dd, yyyy
- ☐ \$DATE0: ymmdd
- ☐ \$DATE1: yymmdd
- ☐ \$DATE2: dd mmm yy
- ☐ \$DATE3: yddd
- ☐ \$DATE4: yyddd
- ☐ \$DATE5: ddmmyy
- ☐ \$DATE6: mm/dd/yy
- ☐ \$DATE7: month dd,yyyy
- ☐ \$DATE8: mmddyy

Only one \$DATE or \$DATE $n$  command per chart is allowed.

Format: **\$DATE $n$ ,*position,color* [date]**

where:

***$n$***  is a number (0-8) that specifies the date format. The default is month dd, yyyy.

***position*** is a two-character abbreviation that specifies where to place the date. The default is LL (lower left). See Table 3-1 for available positions.

***color*** is a color name for the text.

*date* is optional. The default is the current date. If you type a date, type it in the format you want.

The following example places the date 881231 in green text in the lower left corner of the chart.

**\$DATE1,,GREEN 881231**

## **\$DUTIES**

Adds text lines (a maximum of six) to the chart as a block of information only, with no boxes or lines drawn around them. You can use only one of the following commands for each organization chart: \$DUTIES, \$OBJECTIVE, \$MISSION, or \$RESPONSIBILITY.

Format: **\$DUTIES**,*position,color*

where:

*position* is a two-character abbreviation that specifies where to place the text. The default is UR (upper right). See Table 3-1 for available positions.

*color* is a color name that specifies text color.

## **\$END**

Signals the end of the commands. The GOC function ignores anything following the \$END command.

Format: **\$END**



## GOC Commands

### \$JUSTIFY (\$JUST)

Arranges text left, right, or center justified at levels and sublevels. The justification remains the same until you change it using another \$JUSTIFY command.

Format: **\$JUSTIFY,type**

where *type* is one of the following:

- ☐ **l** or **left**      Left-justify the text
- ☐ **c** or **center**    Center-justify the text (default)
- ☐ **r** or **right**     Right-justify the text

### \$LEVEL (\$LVL)

Indicates that the following lines contain the text for the specified level. There are two formats for this command. Format 1 draws the level as specified; format 2 does not draw the level.

Format 1: **\$LEVEL,n,color1,color2,...**

where:

*n* is the label you assigned to the LEVEL global parameter.

*color1,color2,...* are color names for each line of text; these colors override the colors defined in the LEVEL global parameter for this level. Any color set with the \$LEVEL command remains in effect until it is changed by another \$LEVEL command for the same level. The format is the same as for the LEVEL global parameter.

There must be the same number (or multiples) of lines of text following this command as defined by *qty* in the LEVEL global parameter. If the GOC function detects more lines of text, it displays an error message. (Use the IGNORE global parameter to make the GOC function ignore any extra text.) Missing lines of text are automatically displayed as blank lines, providing that there is at least one valid text line.

If you have individuals at the bottom level, you may enter the names without typing \$LEVEL,*n* before each name.

The following example shows how to use the \$LEVEL command with format 1.

**\$PARAMETERS**

**PLOTTER**

**HORIZONTAL**

**LEVEL,1,2, GREEN(2)**

**LEVEL,2,1,YELLOW**

**LEVEL,3,1,BLUE**

**\$DATA**

**\$LEVEL,1**

**A. Taylor**

**Sheriff**

**\$LEVEL,2,V**

**\$LEVEL,3**

**B. Fife**

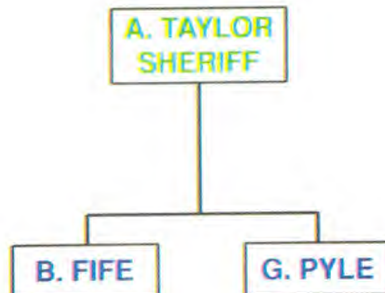
**G. Pyle**

Level 1 text, Line 1 (green)

Level 1 text, Line 2 (green)

No Level 2 text

Level 3 text (blue)



## GOC Commands

Format 2: **\$LEVEL,*n*,VOID** or **\$LEVEL,*n*,V**

where *n* is the label you assigned to the LEVEL global parameter. This format indicates a missing box at any level other than the top or bottom. Do not type text lines following this command format. Type N for the Upper Level option in the GOC function request message (see "Generating an Organization Chart" in this section); if you type Y this command format is treated as Format 1. To see how this command works, see the example in "Example Organization Charts" in this section.

### **\$LINE-COLOR (\$LCOLOR)**

Uses lines of a specified color to connect boxes, until you issue another \$LINE-COLOR command.

Format: **\$LINE-COLOR,*color***

where *color* is a color name for the lines. See Table A-1 for available colors.

### **\$LOWERCASE (\$LOW)**

Displays all alphabetic characters exactly as typed, with uppercase letters in uppercase and lowercase letters in lowercase.

Format: **\$LOWERCASE**



**\$MISSION (\$MISS)**

Indicates that the text on the following lines (maximum of six) is to be added to the chart as a block of information only, with no boxes or lines drawn around it. You can use only one of the following commands for each organization chart: \$DUTIES, \$OBJECTIVE, \$MISSION, or \$RESPONSIBILITY.

Format: **\$MISSION,position,color**

where:

*position* is a two-character abbreviation that specifies where to place the text. The default is UR (upper right). See Table 3-1 for available positions.

*color* is a color name for the text.

**\$NO-BOX (\$NOBX)**

Specifies that no boxes be drawn around items at any level or sublevel until you use the \$BOX command to have boxes drawn.

Format: **\$NO-BOX**

## GOC Commands

### **\$OBJECTIVE (\$OBJ)**

Indicates that the text on the following lines (maximum of six) is to be added to the chart as a block of information only, with no boxes or lines drawn around it. You can use only one of the following commands on each chart: \$DUTIES, \$OBJECTIVE, \$MISSION, or \$RESPONSIBILITY.

Format: **\$OBJECTIVE**,*position,color*

where:

*position* is a two-character abbreviation that specifies where to place the text. The default is UR (upper right). See Table 3-1 for available positions.

*color* is a color name for the text.

### **\$PAGE**

Adds text that identifies the page. This command overrides the PAGE global parameter. Only one \$PAGE command is allowed.

Format: **\$PAGE**,*position,color text*

where:

*position* is a two-character abbreviation that specifies where to place the text. The default is LR (lower right). See Table 3-1 for available positions.

*color* is a color name for the text.

*text* is the actual text that identifies the page.

The example below places the text, Book Five, Chart 2 of 6, in the lower center of the chart.

**\$PAGE,LC,YELLOW BOOK FIVE, Chart 2 of 6**

**\$RESPONSIBILITY (\$RESP)**

Indicates that the text on the following lines (maximum of six) is to be added to the chart as a block of information only, with no boxes or lines drawn around it. You can use only one of the following commands for each organization chart: \$DUTIES, \$OBJECTIVE, \$MISSION, or \$RESPONSIBILITY.

Format: **\$RESPONSIBILITY**,*position,color*

where:

*position* is a two-character abbreviation that specifies where to place the text. The default is UR (upper right). See Table 3-1 for available positions.

*color* is a color name for the text.

## GOC Commands

### \$SIGNATURE (\$SIGN)

Indicates that the text on the following lines (maximum of six) is to be placed on the chart, with a solid signature line above the text.

This command is the same as the \$APPROVED command, except that the signature line is not preceded by the word APPROVED:. The total number of SIGNATURE and APPROVED commands cannot exceed two of each command.

Format: *\$SIGNATURE,position,line-flag,color*

where:

*position* is a two-character abbreviation that specifies where to place the text. The default is LL (lower left). See Table 3-1 for available positions.

*line-flag* is the letters **nl** (or **no-line**), to indicate that you do not want a line drawn above the signature information. If you don't enter **nl**, a line is drawn. The color of the line is determined by the current \$LINE-COLOR.

*color* is a color name for the text. The default is white.

The following example shows how to add four lines of yellow text to the lower left corner of the chart with a red line for a signature above them:

```
$LINE-COLOR,RED
$SIGNATURE,YELLOW
J. Q. Public
Group Manager
A B & C
11/1/87
```

**\$\$SOLID**

Draws all connecting lines as solid lines until you enter a \$DASHED command. The default is solid lines.

Format: **\$\$SOLID**

**\$\$SUB-LEVEL (\$SUB)**

Indicates that the text that follows is the text for the specified sublevel. The format for the text is the same as the \$LEVEL command, except that you may enter a list of names (without typing \$\$SUB-LEVEL,n before each name) at any level but the bottom.

Format: **\$\$SUB-LEVEL,n,position,color1,color2,...**

where:

*n* is the label you assigned in the SUB-LEVEL global parameter.

*position* indicates where to place the sublevel box. The default is directly below the main level box. The other two positions are:

- |  |   |
|--|---|
| <input type="checkbox"/> <b>l or left</b>  | Places the sublevel box to the left of the main level.  |
| <input type="checkbox"/> <b>r or right</b> | Places the sublevel box to the right of the main level. |

*color1,color2,...* are color names for the text. These colors override the colors defined by the SUB-LEVEL global parameter for this sublevel. Any color set with the \$\$SUB-LEVEL command remains in effect until you change it with another \$\$SUB-LEVEL command for the same level. The format is the same as for the SUB-LEVEL command.



## GOC Commands

### \$TITLE

Specifies the title to be used on the chart. You may use a maximum of two title commands on a chart; the second title uses a character size slightly smaller than the first.

Format: **\$TITLE**,*position,color text*

where:

*position* is a two-character abbreviation that specifies where to place the title. The default is UC (upper center). See Table A-5 for available positions.

*color* is a color name for the title.

*text* is the text for the title.

The example below places a red title, Manufacturing and Production, in the upper center of the chart.

**\$TITLE,RED Manufacturing and Production**

### \$UPPERCASE (\$UP)

Displays all alphabetic characters as uppercase, whether you have entered them as lowercase or uppercase. The characters remain in uppercase until changed using the \$LOWERCASE command.

Format: **\$UPPERCASE**

## GLOBAL COMMANDS

Global commands can appear on any line in the GOC command report between the header-divider line and the \$END command. You can use a global command more than once in the report.

### \$COMMENT (\$COM)

To include comments on the report that you do not wish to print on the chart, begin the command line with a period (.) in column one. GOC interprets the line as a comment and ignores it. To use a character other than the period to denote comments, use the \$COMMENT command to change the comment character.

Format: **\$COMMENT,x**

where **x** is any character other than A-Z. (If you use the \$ character for x, all lines are interpreted as valid lines.)

The following example contains explanations for each line.

<b>.Prepared by JRD</b>	Line beginning with period is ignored
<b>*on 4/30/89</b>	Line not beginning with period is printed
<b>\$COMMENT,*</b>	Comment character changed to *
<b>*for board meeting</b>	Line beginning with * is ignored
<b>.of Newcomp, Inc.</b>	Line not beginning with * is printed

### \$ENDI

See "\$SET" in this section for a full explanation of this command.

Format: **\$ENDI**

## GOC Commands

### \$FILLER (\$FILL)

The GOC function automatically arranges text according to your specified justification (see "\$JUSTIFY" in this section). If you try to arrange text by leaving blank spaces, the GOC function ignores them. To leave spaces you must use the filler character (\).

To change to a different filler character, use the \$FILLER command. This command works with the following data commands: \$APPROVED, \$CONFIDENTIAL, \$DATE (and \$DATE0-8), \$DUTIES, \$LEVEL, \$MISSION, \$OBJECTIVE, \$PAGE, \$RESPONSIBILITY, \$SIGNATURE, \$SUB-LEVEL, and \$TITLE.

Format: **\$FILLER,*x***

where *x* is any character other than A-Z. (If you use the \$ character for *x*, there is no filler character.)

The following example contains explanations:

```
$LEVEL,3
this line has 27 characters
\this line has 29 characters\
 \ this line has 31 characters \
$FILLER,#                               Change filler character to #
$LEVEL,3
#this line has 29 characters#
$FILLER,$                               Change to no filler character
$LEVEL,3
#this line is printed as is
```

### \$INCLUDE (\$INC)

See "\$SET" in this section for a full explanation of the \$INCLUDE command.

Format: **\$INCLUDE,*name***

where *name* is the name you defined in the \$SET command.



## \$SET

Sometimes you may want to make a variation of a chart, such as one with only a specific department or one containing only upper management positions. Instead of preparing separate reports for these variations, you can include all information in one report and select the commands you want to include using the \$SET, \$INCLUDE, and \$ENDI commands.

You use \$INCLUDE and \$ENDI to select names throughout the report that you want to include (or exclude) on chart variations. Use the \$INCLUDE command at the beginning of the selected names to label the names, and type the \$ENDI command at the end of the selected names. Use the \$SET command to define the assigned label as true or false. When you define a label as true, all commands assigned that label are included on the chart. When you define a label as false, all commands assigned that label are excluded from the chart.

Format: **\$SET**,*label*,*condition*

where:

*label* is a *string* of up to eight characters or numbers. Commas (,) are not allowed.

*condition* can be true, t, false, or f.

In the following example, the commands assigned **label1** are included on the chart because the \$SET command has defined them as TRUE. The commands assigned **label2** are excluded from the chart because label2 is FALSE. Using a variety of labels, and controlling them with the \$SET command, gives you a lot of flexibility as to which names are included on your chart.

## GOC Commands

<b>\$SET, LABEL 1, T</b>	Define label1 as true
<b>\$SET, LABEL 2, F</b>	Define label2 as false
<b>\$INCLUDE, LABEL 1</b>	Label1 is true; include next commands
<b>\$LEVEL, 1</b>	
Y. CARLSON	
H. ANDERSON	
<b>\$END I</b>	End label1 commands
<b>\$INCLUDE, LABEL 2</b>	Label2 is false; exclude next commands
<b>\$LEVEL, 1</b>	
F. JOHNSON	
N. LARSON	
<b>\$END I</b>	End label2 commands

**NOTE:** If you nest the **\$INCLUDE** commands, the outermost **\$INCLUDE** command with a label defined as false has priority.

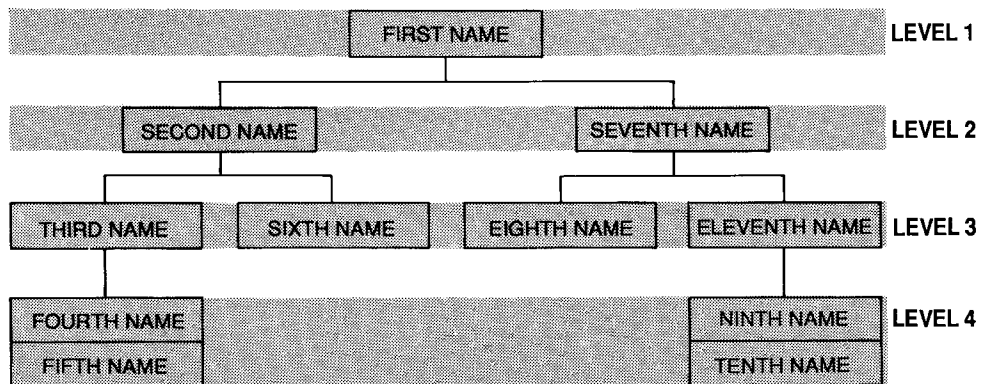
# Tips and Suggestions for GOC Commands

---

When you type GOC commands, use the following guidelines:

- When you enter the \$LEVEL and \$SUBLEVEL commands, refer to your sketch and enter the names (and titles, if any) in the order shown in the example below. This example shows the commands that produce the chart on the next page; this is a four-level chart, but you use the same principle for any number of levels.

Begin by typing the top level name. Continue entering one name per level until you get to the bottom level. Then return to the topmost level in the same branch. Continue entering names, one per level, in this manner. When all of the names in one branch are entered, go to the topmost name in the next branch and continue.



## Tips and Suggestions

Here is the order in which the names were entered for the previous chart:

```
$PARAMETERS
  LEVEL , 1 , 1
  LEVEL , 2 , 1
  LEVEL , 3 , 1
  LEVEL , 4 , 1
$DATA
  $LEVEL , 1
    FIRST NAME
  $LEVEL , 2
    SECOND NAME
  $LEVEL , 3
    THIRD NAME
  $LEVEL , 4
    FOURTH NAME
    FIFTH NAME
  $LEVEL , 3
    SIXTH NAME
  $LEVEL , 2
    SEVENTH NAME
  $LEVEL , 3
    EIGHTH NAME
  $LEVEL , 4
    NINTH NAME
    TENTH NAME
  $LEVEL , 3
    ELEVENTH NAME
$END
```

- ☐ For some commands you can specify additional information using *subfields*. For example, the following command has two subfields to specify plotter paper size and orientation:  
**PLOTTER, SMALL, TALL.**
- ☐ You can enter subfields for a command in any order, and use only the subfields you want. Use commas to separate subfields and commands. For example: **CONFIDENTIAL, RED, UR.**

- ❑ You can abbreviate some command names. Abbreviated command names are shown in parentheses in this section, following the name of the command.
- ❑ If the data on a line exceeds the width of the screen, type a semicolon (;) and continue the data on the next line.
- ❑ Spell out color names.
- ❑ For the LEVEL and SUB-LEVEL commands, to use the same color for more than one line of text, type a color followed by the number of lines in parentheses, as follows:

LEVEL, 1, 3, BLUE(1), RED(2)

In the preceding command the first line of text is blue and the next two lines are red.

- ❑ Freeform data lines are used as they appear, including spaces. You may type data in either uppercase or lowercase. The dash (-) character and the underline (   ) character are interchangeable.
- ❑ The GOC function detects commands only when the first nonblank character on a line is a \$ character, or when the command is in the global parameter section. Any other occurrence of \$ is treated as literal data for the chart.
- ❑ The GOC function ignores tab characters, subfields that are not used by a command, and any leading spaces within a subfield.
- ❑ If you use a parameter or data command more than once in a report, the GOC function uses only the last command given (except for the APPROVED and SIGNATURE commands).
- ❑ To get help with a particular command, you can enter **help goc,command,xxx** where xxx is the command name. To see examples of the commands, enter **help goc,examples**.

## Tips and Suggestions

Table 3-1 shows the various positions you can use for placing text on organization charts.

*Table 3-1. Screen Positions for GOC Function*

Position	Abbreviation
Upper Left	UL
Upper Center	UC
Upper Right	UR
Lower Left	LL
Lower Center	LC
Lower Right (default)	LR
Middle Left	ML
Middle Right	MR

See the illustration on the next page for default positions.

This illustration shows the order in which text items are placed on organization charts when you place more than one item at the same position. The letters in parentheses are the abbreviations defined in the preceding table. The asterisks indicate default positions.

---

(UL)	(UC)	(UR)
\$CONFIDENTIAL	\$CONFIDENTIAL	*\$CONFIDENTIAL
\$PAGE	\$PAGE	\$PAGE
\$TITLE1	*\$TITLE1	\$TITLE1
\$TITLE2	*\$TITLE2	\$TITLE2
\$DATE	\$DATE	\$DATE
\$OBJECTIVE	\$OBJECTIVE	*\$OBJECTIVE
\$SIGNATURE	\$SIGNATURE	\$SIGNATURE
\$APPROVED	\$APPROVED	\$APPROVED
(ML)		(MR)
\$CONFIDENTIAL		\$CONFIDENTIAL
\$PAGE		\$PAGE
\$TITLE1		\$TITLE1
\$TITLE2		\$TITLE2
\$DATE		\$DATE
\$OBJECTIVE		\$OBJECTIVE
\$SIGNATURE		\$SIGNATURE
\$APPROVED		\$APPROVED
(LL)	(LC)	(LR)
\$OBJECTIVE	\$OBJECTIVE	\$OBJECTIVE
*\$SIGNATURE	\$SIGNATURE	\$SIGNATURE
*\$APPROVED	\$APPROVED	\$APPROVED
\$TITLE1	\$TITLE1	\$TITLE1
\$TITLE2	\$TITLE2	\$TITLE2
\$PAGE	\$PAGE	*\$PAGE
*\$DATE	\$DATE	\$DATE
\$CONFIDENTIAL	\$CONFIDENTIAL	\$CONFIDENTIAL

---

The data commands \$DUTIES, \$MISSION, and \$RESPONSIBILITY have the same placement as \$OBJECTIVE on the preceding chart.

# Generating an Organization Chart

---

After you type the GOC commands, you are ready to see your chart. First you must display the GOC *function request message*, as shown next. Enter:

GOC

For fast access to the GOC function request message, enter:

GOC {-|rt}

where:

- is the report or result on display.

rt is the name of the report.

Both of the preceding methods display the GOC function request message, shown below. Answer the questions as instructed in the table that follows, then press XMIT.

GENERATE ORGANIZATION CHART	
Report	Upper Level Chart N,
Eliminate All Text N,	Ignore Errors N,
Ignore Character Size N,	Use Fixed Character Size N,
Optimize Results N,	Output Graphics N,
Unpacked Result N,	Output Size Information N,



## Generating an Organization Chart

**In Field:**

**Enter:**

---

Report	The name of the report containing the chart data. To use the report displayed before you requested GOC, leave a dash in this field.
Upper Level Chart	Y for charts with COLUMN or STAGGER bottom levels (see "Global Parameters" in this section). These charts are typically for upper level management.
Eliminate All Text	Y to eliminate all text from the chart, producing a chart containing only boxes.
Ignore Errors	Y to ignore invalid and/or improperly used commands and subfields.
Ignore Character Size	Y if you don't want to see if the resulting character size is in the correct range for the selected display device.
Use Fixed Character Size	Y to select a fixed character size (dependent on the selected display device).
Optimize Results	Y to produce a result and then link to the Graphics Scaler (GS) function with the optimize options selected. (This may reduce the number of characters required to generate a chart.)
	<b>NOTE:</b> You must select this field if you use the FONT command.
Output Graphics	Y to display the chart on the screen. (If you typed Y for Optimize Results, the results are optimized with the GS function before being displayed.)

*(continued)*

## Generating an Organization Chart

*(continued)*

**In Field:**

**Enter:**

---

Unpacked Results	Y to produce a result with each code on a separate line, which is easier to read and edit. This field is ignored if you enter Y for Optimize Results.
Output Size Information	Y to append the input line count, output line count, and buffer size to the end of the result.

---

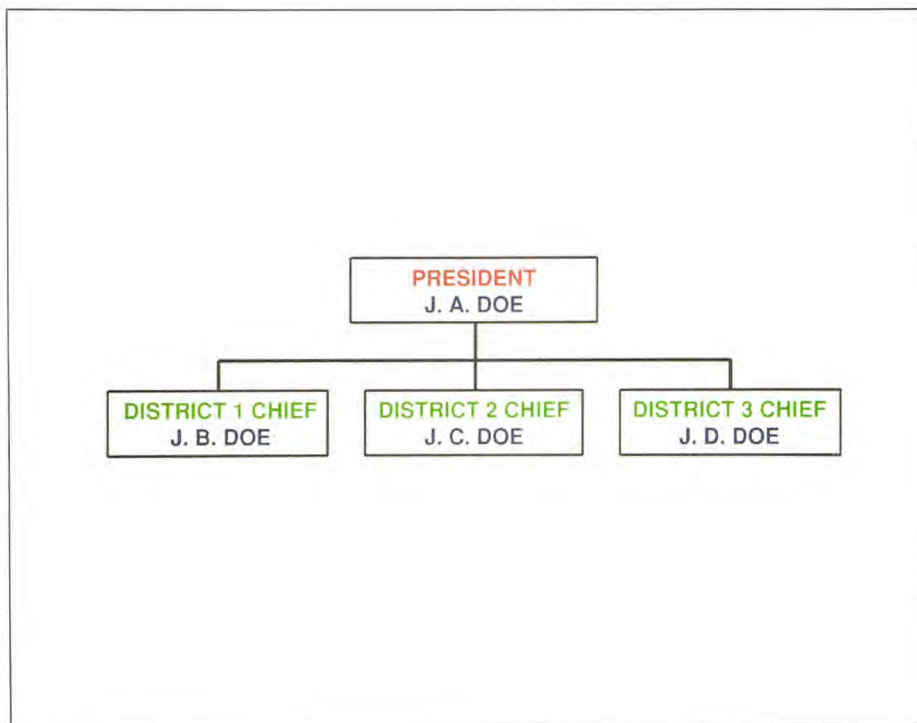
## Example Organization Charts

---

To create the example charts in this subsection, follow the steps in "How to Create an Organization Chart" in this section. For step 3, type the commands shown in the following examples. If you have a plotter, load it with paper and turn on the power.

For these examples, we have indented the commands to help you understand them better. When you type your own reports, you can indent the commands or type them all at the left margin.

The first example is a two-level chart, created by the parameter and data commands on the following page. Some of the commands are followed by a description.



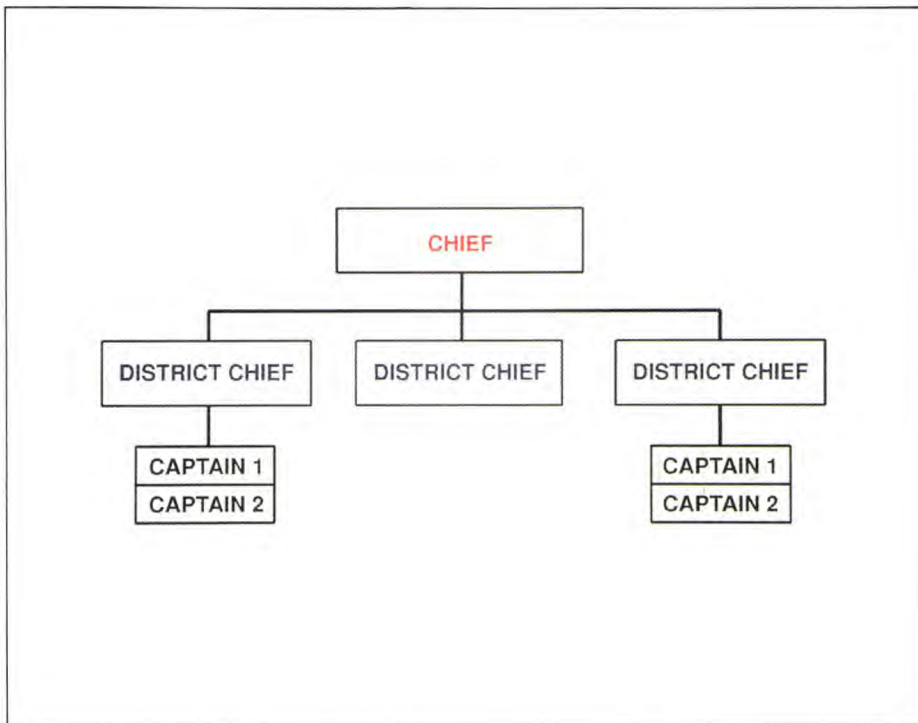
## Example Organization Charts

Here are the parameters and commands for the preceding chart. The right column contains comments about certain commands.

<b>\$PARAMETERS</b>	Begin global parameters
<b>HORIZONTAL</b>	Arrange bottom level of boxes horizontally
<b>PLOTTER, SMALL</b>	Use 8-1/2 x 11 inch plotter paper
<b>LEVEL, 1, 2, RED, BLUE</b>	Define level 1, with 2 lines of text
<b>LEVEL, 2, 2, GREEN, BLUE</b>	Define level 2, with 2 lines of text
<b>\$DATA</b>	Begin data commands
<b>\$LEVEL, 1</b>	Use next two lines as level 1 text
<b>PRESIDENT</b>	
<b>J. A. DOE</b>	
<b>\$LEVEL, 2</b>	Use next two lines as level 2 text
<b>DISTRICT 1 CHIEF</b>	
<b>J. B. DOE</b>	
<b>\$LEVEL, 2</b>	
<b>DISTRICT 2 CHIEF</b>	
<b>J. C. DOE</b>	
<b>\$LEVEL, 2</b>	
<b>DISTRICT 3 CHIEF</b>	
<b>J. D. DOE</b>	
<b>\$END</b>	End of commands

The following example uses global commands in addition to global parameters and data commands. To do this example, either delete the commands from your previous report or add a new freeform report.

## Example Organization Charts



Here are the parameters and commands for the preceding chart:

### **\$PARAMETERS**

```
PLOTTER, SMALL
LEVEL, 1, 3, RED(2), BLUE
LEVEL, 2, 3, BLUE(3)
LEVEL, 3, 1
$SET, VARNAME1, T
$SET, VARNAME2, F
$FILLER, *
$DATA
$COMMENT, =
=SECTION FOR CHIEF
$LEVEL, 1
```

Begin global parameters

Define level 1, with 3 lines of text  
Define level 2, with 3 lines of text  
Define level 3, with 1 line of text  
Set name (varname1) to TRUE  
Set name (varname2) to FALSE  
Change filler character to \*  
Begin data commands  
Change comment character to =  
Comment  
Use next 3 lines as level 1 text

*(continued)*

## Example Organization Charts

*(continued)*

★	Blank line
CHIEF	
★	
=SECTION FOR 1ST DIST. CHIEF	
\$LEVEL, 2	Use next 3 lines as level 2 text
DISTRICT CHIEF	
★	
\$INCLUDE, VARNAME1	Varname1 is true, so include next lines
\$LEVEL, 3	
CAPTAIN 1	
\$LEVEL, 3	
CAPTAIN 2	
\$ENDI	End \$INCLUDE
=SECTION FOR 2ND DIST. CHIEF	
\$LEVEL, 2	Use next 3 lines as level 2 text
★	
DISTRICT CHIEF	
★	
\$INCLUDE, VARNAME2	Varname2 is false, so exclude next lines
\$LEVEL, 3	
CAPTAIN 1	
\$LEVEL, 3	
CAPTAIN 2	
\$ENDI	End \$INCLUDE
=SECTION FOR 3RD DIST. CHIEF	
\$LEVEL, 2	Use next 3 lines as level 2 text
★	
DISTRICT CHIEF	
★	
\$INCLUDE, VARNAME1	Varname1 is true, so include next lines
\$LEVEL, 3	
CAPTAIN 1	
\$LEVEL, 3	
CAPTAIN 2	
\$ENDI	End \$INCLUDE
\$END	End of commands

## Example Organization Charts

The commands that created the chart at the beginning of this section (BOX MANUFACTURING COMPANY) are shown next.

### \$PARAMETERS

PLOTTER, SMALL

LEVEL, 1, 2, RED, GREEN

SUB, 1, 2, RED, GREEN

Add sublevel to level 1

LEVEL, 2, 3, RED, RED, GREEN

LEVEL, 3, 1, BLUE

LEVEL, 4, 1, YELLOW

CONFIDENTIAL

Put 'CONFIDENTIAL' in upper right corner

PAGE, 1, LR

Put 'PAGE 1' in lower right corner

VERT, SPREAD

Arrange bottom level vertically, spaced

### \$DATA

\$LEVEL, 1

PRESIDENT

J. A. DOE

\$SUB, 1

Use next two lines for sublevel text

SECRETARY

J. B. DOE

\$LEVEL, 2

RESEARCH

MANAGER

J. C. DOE

\$LEVEL, 3, VOID

No third level for this branch

\$LEVEL, 4

\$NO-BOX

No boxes around the next text

HARDWARE DEV.

SOFTWARE DEV.

FIRMWARE DEV.

\$LEVEL, 2

\$BOX

Use boxes around the next text

ENGINEERING

MANAGER

J. D. DOE

\$LEVEL, 3, VOID

No third level for this branch

\$LEVEL, 4

(continued)

## Example Organization Charts

*(continued)*

```
$BOX
  HARDWARE ENGR.
  SOFTWARE ENGR.
  DOCUMENTATION
$LEVEL,2
  MANUFACTURING
  MANAGER
  J. E. DOE
$LEVEL,3
  MECHANICAL ASSY
$LEVEL,3
  ELECTRICAL ASSY
$LEVEL,3
  TEST/BURN-IN
$TITLE BOX MANUFACTURING COMPANY           Main title
$TITLE (A SUBSIDIARY OF JDOE, INCORPORATED) Subtitle
$OBJECTIVE,UL
  OBJECTIVE:
  DEVELOP AND
  MANUFACTURE BOXES
$SIGNATURE,L
  J. A. DOE, PRESIDENT
  DEC 1986
$END
```



## 4. Creating Other Types of Charts

---

This section contains instructions for producing charts from MAPPER reports, and for producing signs. This section contains the following topics:

- ☐ Creating Simple Charts from Reports (GR Run)
- ☐ Creating Customized Charts from Reports (GRID Run)
- ☐ Making Signs (SIGN Run)

## Creating Simple Charts from Reports (GR)

---

The GR run graphs data directly from column-formatted MAPPER reports, producing simple, quick charts without your having to enter the data on a blank chart input report. To use the GR run:

1. Display and prepare the report or result you want to chart. The example in this section shows you how to do this.
2. Enter **gr** on the control line of the chart.
3. Enter the *options* and *parameters* as described in this section and press **XMIT** to display the chart.

You then see the *report data* displayed in chart form.

An example of a GR run begins on the next page.



## Creating Simple Charts from Reports

3. Enter **tot\*** on the control line. The *function mask* is displayed:

TOTALIZE									
.	CORPORATE FACTORS BASE								C000224
* PRODUCT	. SUB	. PRODU	. WHOLE	. RETAIL	. SALES	. SPACE	. DEMO	.	.
* TYPE	. KEY	. COST	. SALES	. \$\$\$\$	. COMMISS	. REQ	. QUANTITY	. DEMO RESULTS	.
*=====,=====,=====,=====,=====,=====,=====,=====,=====,=====.									

4. Prepare the function mask. For this example, type **o** and **s** on the blank line above the mask, as shown next. Tab to the PRODUCT TYPE field and type **s**. Tab to the DEMO QUANTITY field and type **+**.

TOTALIZE									
o s									
.	CORPORATE FACTORS BASE								C000224
* PRODUCT	. SUB	. PRODU	. WHOLE	. RETAIL	. SALES	. SPACE	. DEMO	.	.
* TYPE	. KEY	. COST	. SALES	. \$\$\$\$	. COMMISS	. REQ	. QUANTITY	. DEMO RESULTS	.
*=====,=====,=====,=====,=====,=====,=====,=====,=====,=====.									
s +									

## Creating Simple Charts from Reports

5. Press **RETURN** to move the cursor to the next line, then press **XMIT** to create the result, shown next.

line	1	fmt	rl	shft	hld chrs	hld ln	RESULT
.DATE	01 FEB 88	13:44:56	RID	22	02 FEB 88	JDOE	
.@	CORPORATE FACTORS BASE						C000224
* PRODUCT	. SUB	.PRODUC.	WHOLE	.RETAIL.	SALES	.SPACE.	DEMO
* TYPE	. KEY	. COST	. SALE\$	. \$\$\$\$	.COMMISS.	REQ	.QUANTITY.DEMO RESULTS.
*=====,=====,=====,=====,=====,=====,=====,=====.							
BLACKBOX1	A	13500	16875	23625	2362.50	100	1
BLACKBOX2	A	13600	17000	23800	2380.00	110	2
BLACKBOX3	A	13700	17125	23975	2397.50	120	4
BLACKBOX4	B	13800	17250	24150	2415.00	130	10
BLACKBOX5	B	13900	17375	24325	2432.50	140	50
BLACKBOX6	C	14000	17500	24500	2450.00	150	100
BLACKBOX7	C	14100	17625	24675	2467.50	160	10
BLACKBOX8	D	14200	17750	24850	2485.00	170	20
BLACKBOX9	D	14300	17875	25025	2502.50	180	40
GREENBOX1	E	13700	17125	23975	2397.50	200	80
GREENBOX2	E	13900	17375	24325	2432.50	210	160
GREENBOX3	E	41700	52125	72975	2467.50	220	5
GREENBOX4	F	14300	17875	25025	2502.50	230	15
GREENBOX5	G	14500	18125	25375	2537.50	240	25
GREENBOX6	H	14700	18375	25725	2572.50	250	1
GREENBOX7	I	14900	18625	26075	2607.50	260	2
GREENBOX8	J	15100	18875	26425	2642.50	270	3
GREENBOX9	K	15300	19125	26775	2677.50	280	4

## Creating Simple Charts from Reports

6. Call the GR run by entering **gr** on the control line. The function mask is displayed.

```

                                GRAPH
.                                CORPORATE FACTORS BASE                                C000224
* PRODUCT . SUB .PRODUCT. WHOLE .RETAIL. SALES .SPACE. DEMO .
* TYPE   . KEY . COST . SALE$ . $$$$ .COMMISS. REQ .QUANTITY.DEMO RESULTS.
*=====,=====,=====,=====,=====,=====,=====,=====,=====,

```

7. Prepare the function mask according to the type of chart you want to create (see "GR Run Options" and "GR Run Parameters" in this section).

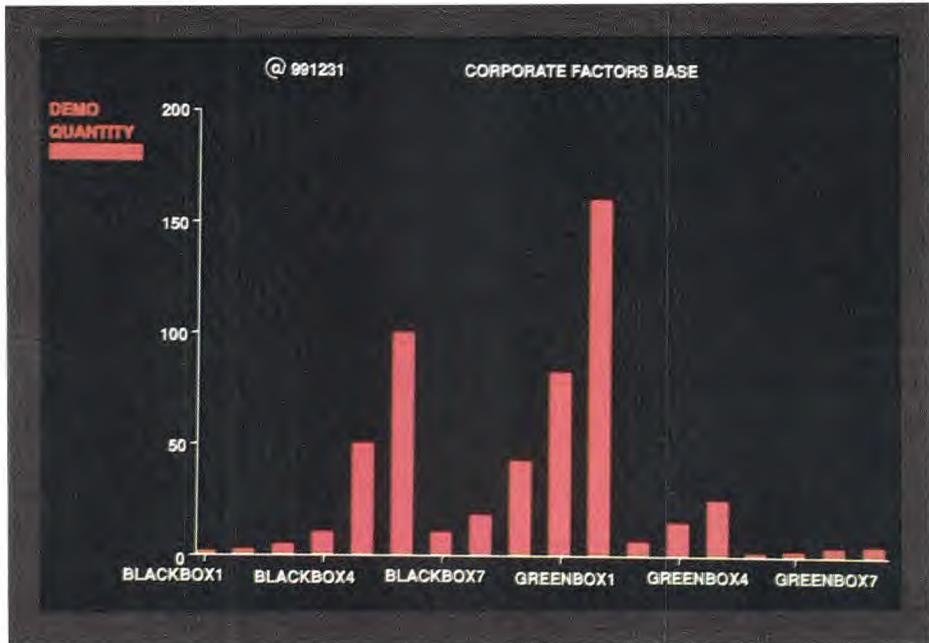
For this example, type **b** (bar chart) above the mask, as shown next. Tab to the PRODUCT TYPE field and type **l** (lowercase L). Type **x** in the DEMO QUANTITY field (the data in this column becomes the data lines on the chart). For this example the default colors and patterns are used.

```

                                GRAPH
b
.                                CORPORATE FACTORS BASE                                C000224
* PRODUCT . SUB .PRODUCT. WHOLE .RETAIL. SALES .SPACE. DEMO .
* TYPE   . KEY . COST . SALE$ . $$$$ .COMMISS. REQ .QUANTITY.DEMO RESULTS.
*=====,=====,=====,=====,=====,=====,=====,=====,=====,
l                                     x

```

- Press **RETURN** to move the cursor to the next line, then press **XMIT** to display the chart, shown next.



- Press **F1** to display the original result. Then press **F1** to display the primitive graphics code.

If you want to plot the chart but don't want to save the primitive graphics code, enter **chart,p** on the control line.

To save the primitive graphics code for use with other runs or to plot the chart on paper, use the Duplicate Report (XR) or Replace Report (REP) function.

## Creating Simple Charts from Reports

### GR RUN OPTIONS

Following are the options available in the GR run:

- ☐ **l**        vertical line chart (default)
- ☐ **b**        vertical comparative bar chart
- ☐ **h**        horizontal line chart
- ☐ **bh**      horizontal comparative bar chart
- ☐ **s**        stacked bar chart
- ☐ **f**        filled line chart
- ☐ **m**        mixed bar and line chart
- ☐ **c**        scatter chart
- ☐ **x**        pareto chart
- ☐ **p**        pie chart

For example, to create a filled horizontal line chart type FH. See the following instructions for the type of chart you are making.

### GR RUN PARAMETERS

Below the GR run function mask, type parameter values in three rows, as explained on the following pages for each type of chart. The first row specifies the fields you want used in your chart, the second row specifies the pattern, and the third row specifies color.

On monochrome terminals, default patterns are used for each column. On color terminals, default colors are used.

When you have finished filling in these parameters, press **XMIT**.



### Bar and Line Chart Parameters

In the first row, type **l** (lowercase L) in the field you want to use for x axis labeling, and **x** in the columns whose data you want to graph. You can have from one to six x columns.

In the second row, specify the fill pattern for each column marked with an x in the first row. See Table A-2 for pattern numbers.

In the third row, indicate the color number (see Table A-1) for each field marked with an x in the first row.

### Mixed Bar and Line Chart Parameters

In the first row, type **l** (lowercase L) in the column that represents the x axis label. Type **b** in the columns that you want represented by bars. Type **x** in the columns that you want represented by lines.

The total number of b fields and x fields must be at least two, with a maximum of six.

In the second row, specify the fill pattern for each column marked with a b or an x in the first row. You cannot use a solid fill pattern (0) with a mixed chart. See Table A-2 for pattern numbers.

In the third row, indicate the color number for each field marked with a b or an x in the first row. See Table A-1 for available colors.

### Pareto Chart Parameters

Type **l** (lowercase L) in one column to mark the label column. Type **x** in the column that contains the data to be charted.

The second and third row parameters are the same as for the bar and line charts.

## Creating Simple Charts from Reports

### Pie Chart Parameters

In the first row, type **l** (lowercase L) in the field you want to use for x axis labeling, and **x** in the column whose data you want to graph. Normally, you specify one **l** column and one **x** column. If you specify more than one **x** column, the pie segments are constructed from the values on only the first line of each selected column.

The second and third row parameters are the same as for the bar and line charts.

### Scatter Chart Parameters

In the first row, type **x** in the column that represents the x axis values on your chart. Type **y** in the column that contains the y axis values.

In the second row, type your selection of marker symbol below the x field. See Table A-4 for available selections. The default is 3 (an asterisk).

The third row parameter is the same as for the bar and line chart. The default is magenta.

## Creating Customized Charts from Reports (GRID)

---

The GRID run takes data from your reports and creates a completed input report for the type of chart you want. This saves you the trouble of retyping the data into a chart input report. Once you have an input report, you can change options until you have the colors and line styles you want. The result is in the same mode and type as your data report.

To save the input report produced by a GRID run, you need a freeform report to replace (REP) it into, such as a type A report. You might want to reserve a freeform report prior to calling the GRID run.

To use the GRID run:

1. Display and prepare the report you want to chart (see the example in this section), and enter **grid** on the control line. Or, enter:

**grid,*rt***

where *rt* is the RID.

2. Enter the options and parameters as described in this section, and press XMIT to display the chart.

You then see the report data displayed in chart form.

The GRID run depends on column-formatted data. Your report must have a header-divider (\*=) line, or you get an error message.

An example of a GRID run begins on the next page.

## Creating Customized Charts from Reports (GRID)

### EXAMPLE GRID RUN

Here is an example GRID run for you to do:

1. Sign on as JDOE in department 7 (**jldoe,7,jldoe**).
2. Enter the RID that you want to display. For this example, enter **1c**. A screen similar to the one below is displayed.

LINE▶ 1	FMT▶	RL▶	SHFT▶	HLD CHRS▶	HLD LN▶	▶	fcs ▶
.DATE		13:44:56	RID	1C	02 FEB 88	JDOE	
.			CORPORATE FACTORS BASE				C000224
* PRODUCT	. SUB	.PRODUC.	WHOLE	.RETAIL.	SALES	.SPACE.	DEMO .
* TYPE	. KEY	. COST	. SALE\$	. \$\$\$\$	.COMMISS.	REQ	.QUANTITY.DEMO RESULTS.
*=====,=====,=====,=====,=====,=====,=====,=====.							
BLACKBOX1	A	13500	16875	23625	2362.50	100	1
BLACKBOX2	A	13600	17000	23800	2380.00	110	2
BLACKBOX3	A	13700	17125	23975	2397.50	120	4
BLACKBOX4	B	13800	17250	24150	2415.00	130	10
BLACKBOX5	B	13900	17375	24325	2432.50	140	50
BLACKBOX6	C	14000	17500	24500	2450.00	150	100
BLACKBOX7	C	14100	17625	24675	2467.50	160	10
BLACKBOX8	D	14200	17750	24850	2485.00	170	20
BLACKBOX9	D	14300	17875	25025	2502.50	180	40
GREENBOX1	E	13700	17125	23975	2397.50	200	80
GREENBOX2	E	13900	17375	24325	2432.50	210	160
GREENBOX3	E	14100	17625	24675	2467.50	220	5
GREENBOX4	F	14300	17875	25025	2502.50	230	15
GREENBOX5	G	14500	18125	25375	2537.50	240	25
GREENBOX6	H	14700	18375	25725	2572.50	250	1
GREENBOX7	I	14900	18625	26075	2607.50	260	2
GREENBOX8	J	15100	18875	26425	2642.50	270	3
GREENBOX9	K	15300	19125	26775	2677.50	280	4

3. Display the SEARCH function mask, shown next, by entering **s-** on the control line.

## Creating Customized Charts from Reports (GRID)

SEARCH																
*	PRODUCT	.	SUB	.	PRODUC.	WHOLE	.	RETAIL	.	SALES	.	SPACE	.	DEMO	.	
*	TYPE	.	KEY	.	COST	.	SALE\$	.	\$\$\$\$	.	COMMISS.	REQ	.	QUANTITY	.	DEMO RESULTS.
*	=====	.	=====	.	=====	.	=====	.	=====	.	=====	.	=====	.	=====	.

4. Prepare the function mask. For this example, type the **d** option above the function mask, as shown next. Tab to the PRODUCT TYPE field and type **blackbox/**.

SEARCH																
<b>d</b>																
*	PRODUCT	.	SUB	.	PRODUC.	WHOLE	.	RETAIL	.	SALES	.	SPACE	.	DEMO	.	
*	TYPE	.	KEY	.	COST	.	SALE\$	.	\$\$\$\$	.	COMMISS.	REQ	.	QUANTITY	.	DEMO RESULTS.
*	=====	.	=====	.	=====	.	=====	.	=====	.	=====	.	=====	.	=====	.
	<b>blackbox/</b>															

5. Press **RETURN** to move the cursor to the next line. Then press **XMIT** to create the result, shown next.



## Creating Customized Charts from Reports (GRID)

line▶ 1	fmt▶	rl▶ -	shft▶	hld chrs▶	hld ln▶	▶	RESULT ▶
.DATE 01 FEB 88	13:44:56	RID	1C	02 FEB 88	JDOE		
.	CORPORATE FACTORS BASE						C000224
* PRODUCT	. SUB	.PRODUC.	WHOLE	.RETAIL.	SALES	.SPACE.	DEMO .
* TYPE	. KEY	. COST	. SALE\$	. \$\$\$\$	.COMMISS.	REQ	.QUANTITY.DEMO RESULTS.
*=====,=====,=====,=====,=====,=====,=====,=====.							
BLACKBOX1	A	13500	16875	23625	2362.50	100	1
BLACKBOX2	A	13600	17000	23800	2380.00	110	2
BLACKBOX3	A	13700	17125	23975	2397.50	120	4
BLACKBOX4	B	13800	17250	24150	2415.00	130	10
BLACKBOX5	B	13900	17375	24325	2432.50	140	50
BLACKBOX6	C	14000	17500	24500	2450.00	150	100
BLACKBOX7	C	14100	17625	24675	2467.50	160	10
BLACKBOX8	D	14200	17750	24850	2485.00	170	20
BLACKBOX9	D	14300	17875	25025	2502.50	180	40
..... END REPORT .....							

- Enter **xr** on the control line. This copies the result and stores it as another report in type C.
- Enter **grid** on the control line. A function mask is displayed.

.	CORPORATE FACTORS BASE						C000224
* PRODUCT	. SUB	.PRODUC.	WHOLE	.RETAIL.	SALES	.SPACE.	DEMO .
* TYPE	. KEY	. COST	. SALE\$	. \$\$\$\$	.COMMISS.	REQ	.QUANTITY.DEMO RESULTS.
*=====,=====,=====,=====,=====,=====,=====,=====.							

## Creating Customized Charts from Reports (GRID)

8. Prepare the function mask according to the type of chart you want to create (see "GRID Run Options" and "GRID Run Parameters" in this section).

For this example, type **p** (pie chart) above the mask, as shown next. Tab to the PRODUCT TYPE field and type **l** (lowercase L). Tab to the DEMO QUANTITY field and type **x**.

<b>b</b>	CORPORATE FACTORS BASE										C000224
.											
*	PRODUCT	. SUB	. PRODU	. WHOLE	. RETAIL	. SALES	. SPACE	. DEMO	.	.	.
*	TYPE	. KEY	. COST	. SALES	. \$\$\$\$	. COMMISS	. REQ	. QUANTITY	. DEMO	RESULTS	.
*	=====	. =====	. =====	. =====	. =====	. =====	. =====	. =====	. =====	. =====	.
<b>l</b>										<b>x</b>	

9. Press **RETURN** to move the cursor to the next line, then press **XMIT**. The following input report is displayed. Before pressing **F1** to display the chart, you can save the result using **XR** or **REP**, then update the input report with the options you want.

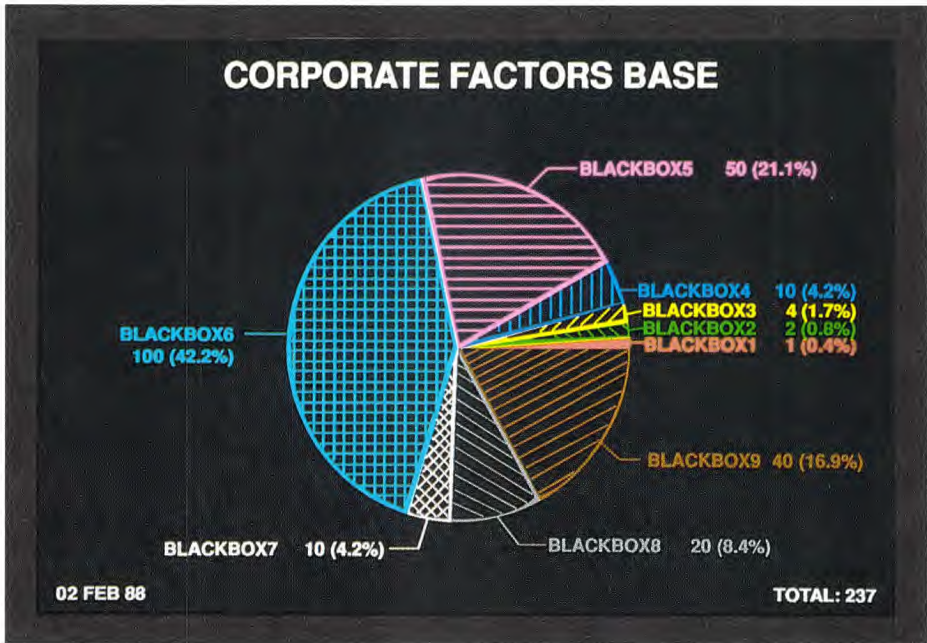
## Creating Customized Charts from Reports (GRID)

```
line▶ 1    fmt▶  r▶    shft▶    hld chrs▶    hld ln▶    ▶    RESULT ▶
.DATE 02 FEB 88 13:38:52    REPORT GENERATION    JDOE
.PIE CHART FOR JDOE
.▶          <<DEPRESS F1 OR ENTER 'RSM' WHEN REPORT IS UPDATED>>
.TITLE -----> CORPORATE FACTORS BASE
.SUBTITLE ----->
.DATE -----> Y
.INCLUDE LEADING $? ----->
.DISPLAY PERCENTAGE ONLY? -> N
.DISPLAY TOTAL? -----> Y
.
.                                FOREGROUND BACKGROUND
*NAME          VALUE          EXPLODE? COLOR          COLOR          PATTERN
*=====,=====,=====,=====,=====,=====,=====
BLACKBOX1          1
BLACKBOX2          2
BLACKBOX3          4
BLACKBOX4         10
BLACKBOX5         50
BLACKBOX6        100
BLACKBOX7         10
BLACKBOX8         20
BLACKBOX9         40
```

10. To display the chart, shown next, type the run name (**pieg** in this example).

If you want to plot the chart but don't want to save the primitive graphics code, enter **chart,p** on the control line.





## GRID RUN OPTIONS

Specify the type of chart you want to create by typing one of the following options on the blank line above the **GRID** run function mask. Then press **TAB** to begin entering parameter values.

- ☐ **b** comparative bar chart
- ☐ **c** scatter chart
- ☐ **p** pie chart

For a line chart, don't type any option above the function mask.

## Creating Customized Charts from Reports (GRID)

### GRID RUN PARAMETERS

Below the function mask, you type one row of parameters. The type of chart you are making determines which parameters you enter.

#### Pie, Bar, and Line Chart Parameters

Type **l** in the fields you want to use as x axis labels (bar and line charts) or as slice labels. If you do not type an **l**, the system gives you a choice of several labels such as WEEKS, YEARS, or FISCAL MONTHS.

Type numbers from 1 to 6 in the fields whose data you want represented on the chart. Place the numbers in the order you want the lines, bars, or slices to appear. The headings for these fields become the captions of the represented data.

**NOTE:** Instead of using numbers, you can use parameters to subtotal (like the TOT function) from your function mask and create the input report. To do this, enter an **s** in one field to detect up to six differences (which become the captions in the chart). Enter a **+** in fields for which you want to get data from the S field (which becomes the data for the captions). Enter **l** in the fields you want to use as labels.

#### Scatter Chart Parameters

Type **x** in the column that represents the x axis values on your chart. Type **y** in the column that contains the y axis values.

You can use the SIGN run to create customized signs with large size text. To start the SIGN run, enter **sign** on the control line. The following message is displayed:

Enter the RID of the report you want to use or, if no report exists, enter the letter of a type (such as A), and a report is added for you. Write down the report number and press F1.

The blank SIGN report is displayed. Fill it in as shown next.

```
LINE▶ 1      FMT▶   RL▶       SHFT▶    HLD CHRS▶  HLD LN▶          ▶         fcs ▶  
.DATE 12:00:00  RID  1B  02 FEB 88  JDOE  
.  
.SIGN FOR JDOE  
.  
.  
*****THE DO IT YOURSELF CUSTOM SIGN MAKER *****  
.  
WHAT COLOR DO YOU WANT THE SCREEN?--->  
WHAT COLOR DO YOU WANT THE BORDER?---> NONE                SQUARE CHARS-> YES  
WHAT SIZE, IN INCHES, DO YOU WANT THE SIGN?...WIDTH-->11  HEIGHT -> 8.5  
WHAT RELATIVE SIZE SPACING DO YOU WANT BETWEEN LINES?-> .5  
.  
.. .U.           ..  
*O.CF.L.SIZE.COLOR .C.             TEXT  
*=.,=.,=.,=====.=.,=====.
```

## Making Signs

Fill in the fields as follows. The first six fields affect the entire sign; the rest of the fields are for individual lines. When finished, press **XMIT**; then press **F1** to display the chart.

### In Field:

### Enter:

---

SCREEN COLOR	The background color for the sign. See Table A-1 for color names. The default is black.
BORDER COLOR	The color you want for the border. See Table A-1 for available colors. The default color is NONE.
SQUARE CHARS	YES if you want the character height and width to be the same. The default is yes.
SIGN WIDTH	The width of the sign, in inches. Range is from .5 to 15.75. The default is 11.
SIGN HEIGHT	The height of the sign, in inches. Range is from .5 to 12.13. The default is 8.5.
SPACING BETWEEN LINES	The spacing between the lines of text, in inches. The default is .5.
O (OPTION OF CONTINUATION LINE)	Leave blank to start a new line, or type one of these options: <ul style="list-style-type: none"><li>- To continue the previous line. The continuation is placed on the same line as the previous line.</li></ul>

*(continued)*

(continued)

**In Field:**

**Enter:**

---

	<p>m To add space characters at the beginning of the next line. If you enter m, type the number of spaces you want to add in the CF field. Following this, the remaining fields on this line are ignored.</p>
CF (CHARACTER FONT)	<p>The number (1-28) of the font you want to use. See Appendix B for examples. Some fonts may cause lines of text to exceed the boundaries or cause errors. If this happens, adjust the text string by placing tab codes on both sides of the string.</p>
UL (UNDERLINE)	<p>Y to underline the characters on this line. The default is no underline.</p>
SIZE (OF CHARACTERS)	<p>The character size ratio (positive numbers only). For example, to make one line 1 1/2 times bigger than another line, make one line size 1.5 and the other size 1.</p>
COLOR	<p>The color for the text on this line. See Table A-1 for color names. The default is white.</p>
C (CENTER TEXT)	<p>Y to center the new line (as opposed to flush left). To center a continuation line, see the M option in the O field.</p>
TEXT	<p>The text for the line. Leading and trailing spaces are ignored. To have leading or trailing spaces, use tab codes.</p>

---

To display a sign that has already been created, display the sign report and enter **sign** on the control line.

## Making Signs

Here is an example of a completed SIGN report:

```

LINE# 1      FMT#  RL#  SHFT#  HLD CHR#  HLD LN#  fcs
.DATE 12:00:00      RID 1B  02 FEB 88  JDOE

.SIGN FOR JDOE

.>

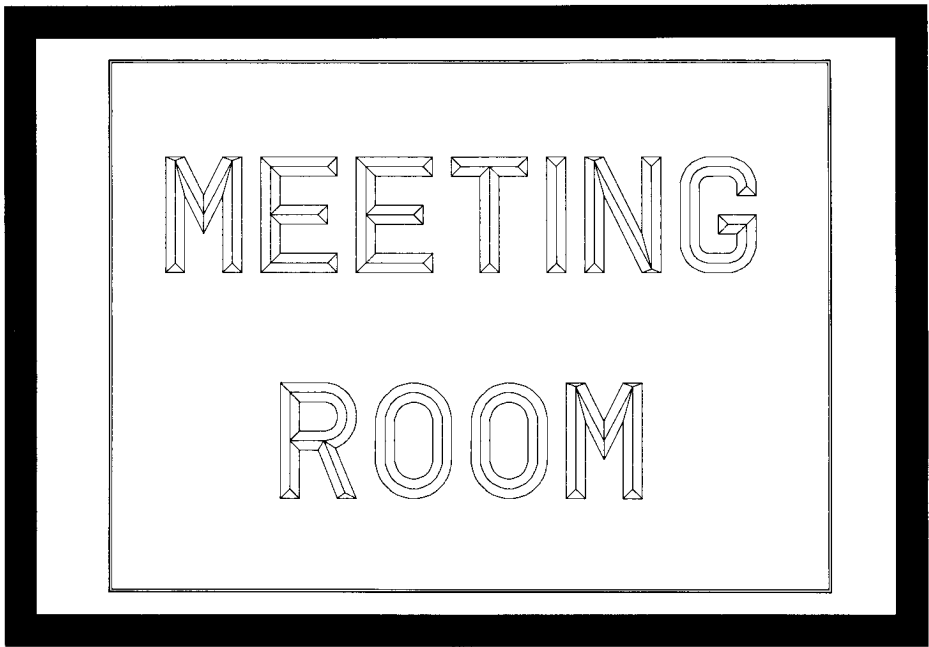
.*****THE DO IT YOURSELF CUSTOM SIGN MAKER *****
.
WHAT COLOR DO YOU WANT THE SCREEN?--> black
WHAT COLOR DO YOU WANT THE BORDER?--> white          SQUARE CHARS-> YES
WHAT SIZE, IN INCHES, DO YOU WANT THE SIGN?...WIDTH-->11  HEIGHT -> 8.5
WHAT RELATIVE SIZE SPACING DO YOU WANT BETWEEN LINES?-> .5

.
. . .U. . .
*O.CF.L.SIZE.COLOR .C.          TEXT
*=_._.=,==,=====,=====
18 1  white  y MEETING
18 1  white  y ROOM

```



This is the sign created by the preceding SIGN report:



## 5. Managing Charts

---

This section contains instructions for managing, in the following ways, the charts you have created. This section contains the following topics:

- ☐ Using an Index List Report (DISPLAY Run)
- ☐ Graphing Multiple Charts (MULTI Run)
- ☐ Using the Graphics Scaler (GS) Function
- ☐ Plotting at Remote Terminals (PLOTIT Run)



## Using an Index List Report (DISPLAY Run)

---

You can use the DISPLAY run for four operations:

- ☐ Creating an index list report (DISPLAY,NEW)
- ☐ Adding to the list the primitive graphics code of the charts you wish to display (DISPLAY,ADD)
- ☐ Displaying the charts manually (DISPLAY,RUN)
- ☐ Cycling through the charts automatically (DISPLAY,CYC)

This section shows how to do all of these operations.

Before using the DISPLAY run, save the primitive graphics code for the charts you want to display and write down the RID numbers of the reports that contain the primitive code.

### CREATING AN INDEX LIST REPORT

An index list report is a list of charts that you have created. To create an index list report, use the command:

**DISPLAY,NEW,*t***

where *t* is the form type where you want to create an index list report.

For example, **DISPLAY,NEW,C** adds an index list report in form type C and displays it. Use NEW once for each index list report you want to build. Be sure to write down the report number for future use.

## ADDING A REPORT TO THE LIST

To add a chart to the index list report, display the report containing the chart's primitive graphics code. Then use the command:

**DISPLAY,ADD,*rid***

where *rid* is the            of the index list report you created with  
DISPLAY,NEW.

For example, **DISPLAY,ADD,2C** adds the RID of the report on display to the index list report.

If you have a result on display, this command saves it first, then adds it to the index list report. Usually the results you want to add to an index list report are the results from charts you want to save. After viewing the chart, press **F1** to display the primitive graphics code result.

## CYCLING THE DISPLAY OF INDEXED CHARTS

To sequentially display the listed charts on the screen like a slide show, do one of the following:

- ☐ To display manually, use the command:

**DISPLAY,RUN,*rid*[*l*]**

where:

*rid* is the RID of the index list report containing the charts you wish to display.

*l* is the line number of the chart in the index list report you wish to begin with. The default is 5, the first chart listed. Use this field only if you want to start with a chart further down the list.

## Using an Index List Report (DISPLAY Run)

For example, to display the charts contained in index list report 21A, beginning with the third chart, you would enter **DISPLAY,RUN,21A,7.**

To display each subsequent chart in the list, press **F1**. You can display the listed charts one time each; then return to the text display.

- ☐ To cycle through the charts automatically, use the command:

**DISPLAY,CYC,*rid*[,*cyc?*,*interval*]**

where:

*rid* is the RID of the index list report containing the charts you wish to display. Follow with two commas (,,) if specifying *cyc?* and *interval*.

*cyc?* is one of the following:

- ☐ Y        Cycle until you press MSG WAIT.
- ☐ N        Cycle once. This is the default.
- ☐ 1-99     Cycle number of times entered.

*interval* is the number of seconds between displays. The default is 3.

For example, the following command displays the charts contained in index list report 21A. The list is cycled five times with 4-second intervals between each chart.

**DISPLAY,CYC,21A,,5,4**

To stop the run when a chart finishes drawing, press **MSG WAIT**. To resume the cycle, press **F1**.

### CONTROLLING THE CYCLE WITH FUNCTION KEYS

With DISPLAY,RUN, you can use *function keys* F1, F2, F3, and F4, as shown below, after each display.

With DISPLAY,CYC, press MSG WAIT before using the function keys. When you press MSG WAIT, a screen is displayed that allows you to roll through your index list report or specify a line number for the next chart that you want to display. These are the same functions as RL and LINE on a standard MAPPER report control line.

- ☐ F1 Resumes the DISPLAY run at the next sequential line of the index list report
- ☐ F2 Backs up one line in the index list report and displays it
- ☐ F3 Starts over from the beginning of the index list report
- ☐ F4 Terminates the DISPLAY run

# Graphing Multiple Charts (MULTI Run)

---

The MULTI run lets you display two, three, or four charts on the screen and plot them. You use the menus provided by the MULTI run to select the layout you want, depending on how many charts you are putting together.

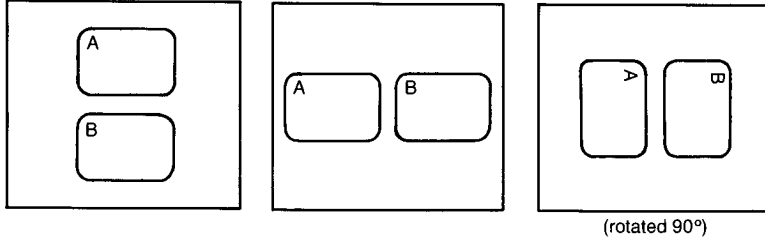
This is a plot combining two charts, a text chart and a pie chart.



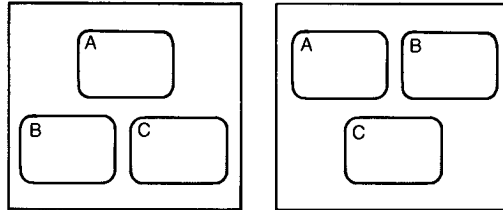
## CHART LAYOUTS

The available layouts are shown below.

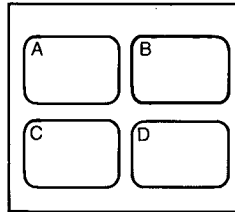
2 Charts = 3 Layouts



3 Charts = 2 Layouts



4 Charts = 1 Layout



With two charts you can choose from three layouts. The individual charts on the first two layouts shown here are 50 percent of normal size. If you are plotting, you can use the third layout. It is rotated 90 degrees and each chart is 60 percent of normal size.

With three charts you can choose from two layouts. With four charts you have one layout to use.



## Graphing Multiple Charts (MULTI Run)

### TIPS AND SUGGESTIONS

The MULTI run processes only primitive graphics code, not completed input reports. If you use charts created with expanded syntax and processed with the GS function, keep in mind that each final chart is much smaller than the original.

Because of restrictions on character sizes, you should use as few characters as possible. If possible, use a five-character caption. If you can't use five characters, try switching some of the columns to keep the characters from overlapping.

The MULTI run ignores any background color other than black, so for best results use a black background for your charts. Otherwise, the colors may not have the same effect they had on a colored background. If you plot the charts and specify black text, the charts plot correctly but the text does not appear on the screen.

For best efficiency, use 80-character reports for your primitive graphics code.

### HOW TO USE THE MULTI RUN

To use the MULTI run, follow these steps:

1. Enter **multi**. A menu is displayed asking if you want two, three, or four charts.
2. Tab to the number of charts you want and press **XMIT**. The plotter selection screen is displayed. Choose the options you need and press **XMIT**.
3. The next step depends on how many charts you selected:
  - ☐ For two or three charts, a screen is displayed giving you a choice of layouts. Tab to the layout you want and press **XMIT**. A screen asking for modes and report numbers is displayed. Type the modes and report numbers of the reports containing the primitive graphics code for the charts. Press **XMIT** to display the finished chart.

## Graphing Multiple Charts (MULTI Run)

- ☐ For four charts, a screen is displayed asking for modes and report numbers. Type them and press **XMIT** to display the finished chart.
- 4. After the chart is displayed and you are ready to continue, press **F1** to display a result containing the primitive graphics code for the chart. To save this result, either replace it into an existing report (REP) or duplicate it (XR).

If you prefer, you can use the following method to use the MULTI run. With or without the report on display, enter:

```
multi,q[f,sn,psiz?,transpcy?],m,t,r,m,t,r[,m,t,r,m,t,r]
```

where:

*multi* is the name of the MULTI chart run to link to or start.

*q* is a number (2, 3, or 4) that specifies the quantity of charts being placed on one chart

*f* is a number (1, 2, or 3) that specifies the format for the MULTI charts, as shown in "Chart Layouts" in this section:

- ☐ two charts: format 1, 2, or 3
- ☐ three charts: format 1 or 2
- ☐ four charts: leave blank

*sn* is the station number of the plotter. Fill in only if you want your chart plotted.

Include the next two subfields only if you filled in *sn*.

*psiz?* is the paper size. Type Y for 11 x 17 inch paper. The default is N (8 1/2 x 11 inches).

*transpcy?* Type Y if you are making transparencies. The default is N.



## Graphing Multiple Charts (MULTI Run)

*m,t,r* is the mode, type, and RID number of the reports containing the primitive code. You must specify at least two reports.

# Using the Graphics Scaler (GS) Function

---

The Graphics Scaler (GS) function allows you to change the size of your charts, rotate them, and offset them on the page or screen. You also use the GS function to convert expanded syntax into primitive graphics code (see Section 6).

To display the GS function request message, display the report containing the primitive graphics code or expanded syntax that you wish to work with. On the control line, enter:

**GS**

For fast access to the GS function request message, enter:

**GS {-rl}**

where:

- is the report or result on display.

rl is the name of the report.

Either of the above methods displays the GS function request message, shown below. Answer the questions as instructed in the table that follows, then press XMIT.

Report -	Maximum Y 23999 (0 - 32767)	
IN/OUT Format N	(A, R, O, C, S, N, or Blank)	
Ignore Errors N	Unpacked Results N	Graphics Active N
Expanded Syntax N	Ignore HIGH-TEXT N	Output Graphics N
Scaling Factor 1.0	(0.0 - 32767.0)	
Offset Values	X 0	Y 0
Rotation Angle 0.0	X 0	Y 0
Result Info	(L, Q, B, or Blank)	

## Using the Graphics Scaler (GS) Function

The GS function starts processing data after it encounters a header-divider (\*=) line in the report. It processes only the first 80 columns of data and the result occupies 80 columns or less. (The GS function always outputs the first move as an absolute move, even if a move isn't there or if the r option is selected in the IN/OUT Format field.)

### In Field:

### Enter:

---

Report	The name of the report that contains the primitive code. To use the report that was displayed when you requested GS, leave a dash in this field.
Maximum Y	The maximum Y value for your terminal or plotter (0-32767). If 0, the value defaults to 32767. See Figure 6-1 in Section 6 to determine the maximum Y.
IN/OUT Format	One of the following options: <ul style="list-style-type: none"><li>n Normal mode (to ignore leading spaces, and so on). This is the default.</li><li>a For result with all absolute commands.</li><li>r For result with all relative commands, when possible.</li><li>o To optimize the resulting code.</li><li>c To optimize and combine successive commands into a single command separated with commas.</li><li>s For strict interpretation of primitive graphics code. If you use this option, answer N to the Ignore Errors, Unpacked Results, Graphics Active, and Expanded Syntax selections. If you do not select this option, all lowercase characters not in a text string are interpreted as uppercase characters.</li></ul>

*(continued)*

*(continued)*

**In Field:**

**Enter:**

---

Ignore Errors	Y to truncate values out of range and ignore invalid commands or sequences.
Unpacked Results	Y to display the result in an unpacked format with one command per line. Enter N if you will be displaying the chart on the screen.
Graphics Active	Y if you are assuming that the graphics processor is active. This assumes that a ZI (INITIALIZE GRAPHICS) command preceded the data being processed. No closing ZT (TERMINATE GRAPHICS) command is required to end the data. Enter N if you will be displaying the chart on the screen.
Expanded Syntax	Y to process expanded syntax.
Ignore HIGH-TEXT	Y if you don't want to convert to high quality text, even if CT2 (high precision text command) or rotated text is encountered.
Output Graphics	Y to display the chart on the screen. If you use this option, answer N to the Unpacked Results and Graphics Active selections.
Scaling Factor	A number (0.0 through 32767.0) to be used for scaling appropriate parameters. The default is 1.0). If 0 is entered, 1.0 is used. A scale factor of 2.0 produces a result twice as large; a scale factor of 0.5 produces a result half as large, and so on.

*(continued)*

## Using the Graphics Scaler (GS) Function

*(continued)*

**In Field:**

**Enter:**

---

Offset Values XY	X and Y values (-9999999999 to 9999999999) to offset the chart. An X-offset value is added to all absolute X components. A Y-offset value is added to all absolute Y components.
Rotation Angle XY	An angle (-360.0 to 360.0) to rotate the chart. A positive number rotates the chart counterclockwise; a negative number rotates the chart clockwise. The default is 0. The X and Y are absolute values (-9999999999 to 9999999999) that define a point about which the chart rotates.
Result Info	One of the following options, to append information to the end of the result:  l    X,Y limits q    Character in/out quantities b    Both limits and quantities

---

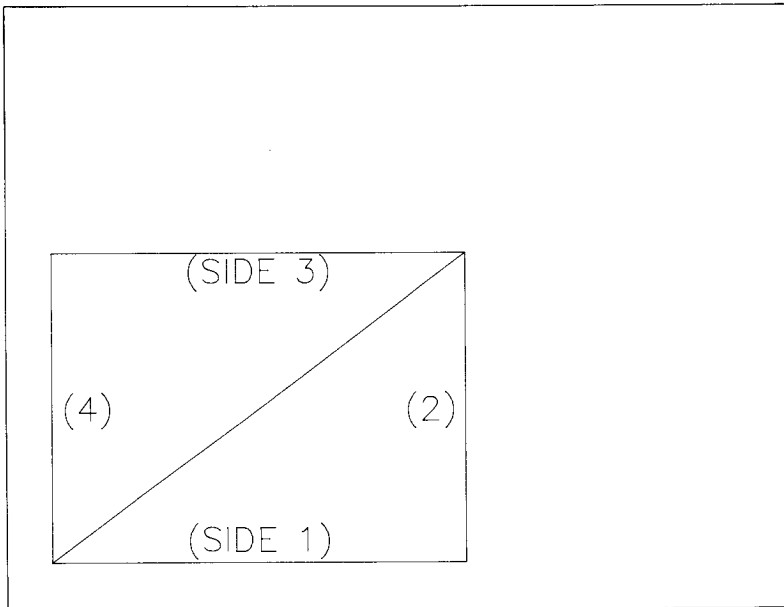
## EXAMPLES OF THE GS FUNCTION

The examples on the next few pages show rotation, scaling, and offsetting using the GS function.

### Basic Plot

The first example shows a basic plot created with the following primitive graphics code commands:

```
ZIZO1ZS1R  
A0,0  
D20000,0,0,15000,-20000,0,0,-15000,20000,15000  
CZ1200,1200CT2CF3  
A10000,500CJ2,3'(SIDE 1)'  
A17000,7500CJ3,2'(2)'  
A10000,13500CJ2,3'(SIDE 3)'  
A400,7500CJ3,2'(4)'  
ZT
```

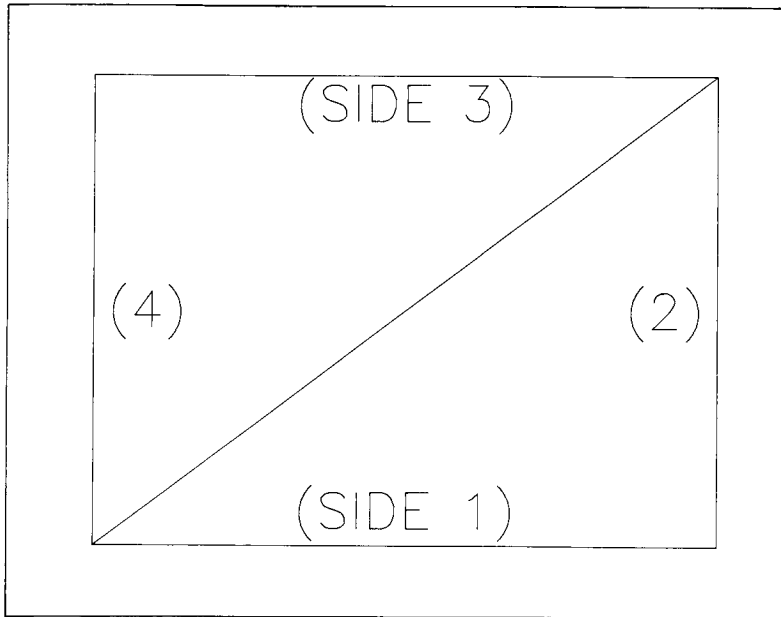


## Using the Graphics Scaler (GS) Function

### Scaled Plot

The next example was created using the same commands as the preceding example. The following was entered on the GS function request message:

Scaling Factor: 1.5

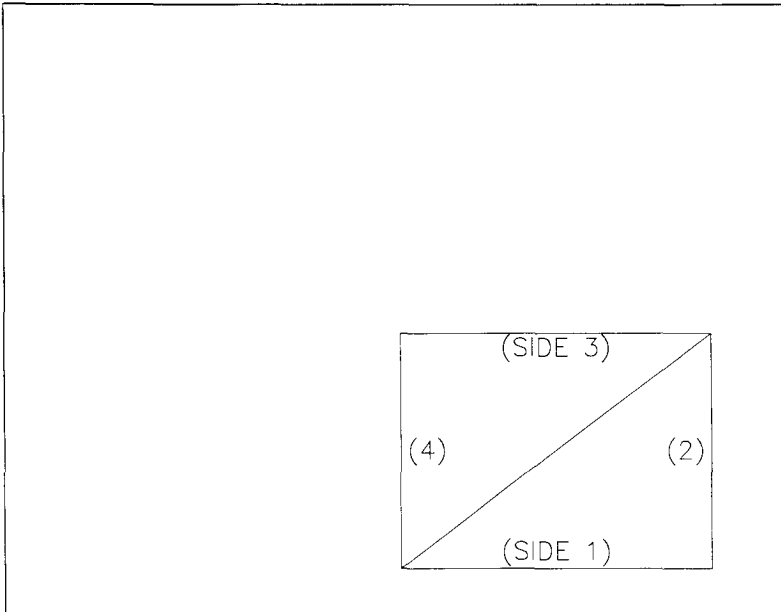


### Scaled and Offset Plot

The next example was created using the same commands as the basic plot. The following was entered on the GS function request message:

Scaling Factor: 0.75

Offset Values: X=15000, Y=0





## Using the Graphics Scaler (GS) Function

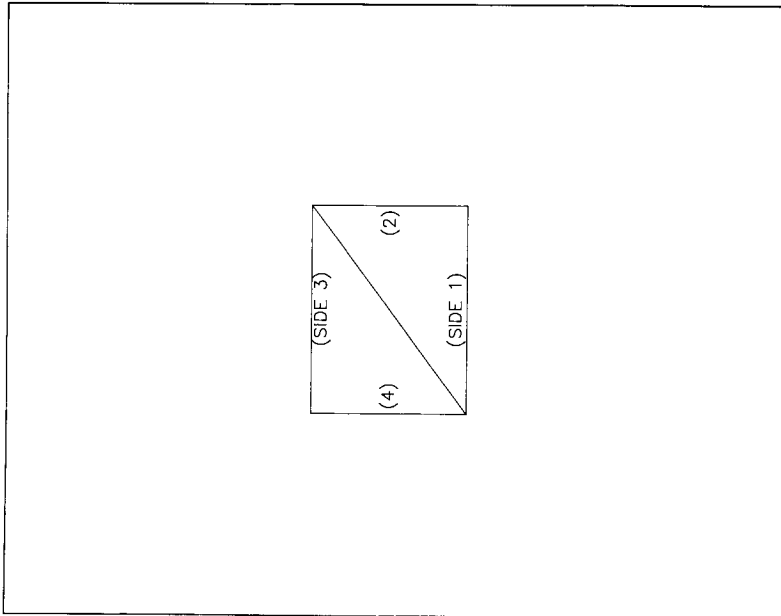
### Scaled, Offset, and Rotated Plot

The next example was created using the same commands as the basic plot. The following was entered on the GS function request message:

Scaling Factor: 0.5

Offset Values: X=12000, Y=9000

Rotation Angle: 90, X=16000, Y=12000



## Plotting at Remote Terminals (PLOTIT Run)

---

With the PLOTIT run you can do remote plotting on a UTS 30 or UTS 60 terminal. You can use PLOTIT alone or with the CHART runs.

- To use the PLOTIT run alone, display the primitive graphics code for the chart you want to plot before starting the run. Then, enter on the control line:

**PLOTIT,plotstation,sendingstation**

where:

*plotstation* is the number of the station you are sending the plot to. The station must be currently assigned to the MAPPER system.

*sendingstation* is the number of the station you are executing the PLOTIT run from, to receive error information (if any).

- When you use the CHART runs to specify a chart to be plotted, display the chart input report you want to plot, and enter the above command on the control line. The CHART runs automatically format all information needed by the PLOTIT run, and queue the reports to the plotter. The charts are plotted in the order they are sent.

If the station you send to is busy, you will receive the error message shown next.

## Plotting at Remote Terminals (PLOTIT Run)

Unable to complete your plot request.

Would you like to retry?

Enter Y or N

To retry, enter Y. To terminate the run, enter N.

If the station number you specified is not currently assigned to the MAPPER system, the run displays an error message and a result containing your primitive graphics code is displayed on the screen.

## TIPS AND SUGGESTIONS

The PLOTIT run assumes that you are using an automatic paper feed plotter (7550).

The PLOTIT run may require a special setup for your site. Have your MAPPER coordinator reference HELP COORD,GRAPHICS for information on "Special Setup for PLOTIT Run."

## 6. Writing Graphics Code

---

When you create charts using runs described in previous sections, the chart data is translated into primitive graphics code; you have probably seen this code displayed as a result. You can also write your own primitive graphics code to create graphics, following the instructions in this section.

This section contains the following topics:

- ☐ About Graphics Code
- ☐ Using Primitive Graphics Code
- ☐ Using Expanded Syntax

To read about the development of primitive graphics code, see Appendix C.

# About Graphics Code

---

Primitive graphics code and expanded syntax allow you to create graphics from commands that you enter in a freeform report.

When you display primitive graphics code for a chart created with the CHART run, you see the *packed* version of the code. In packed code, all of the commands are placed one after the other, with no space between them. Because of this, packed code is difficult to read.

To make the code easier to read you can use the GS (Graphic Scaler) function, or the BRG (Break Graphics) run statement (refer to the Run Design Reference) to display the *unpacked version*, where each code is placed on a separate line.

When you write your own primitive graphics code and expanded syntax, you will probably write in the same format as the unpacked version, like the sample shown next.

```
LINE▶ 1    FMT▶  RL▶    SHFT▶    HLD CHRS▶    HLD LN▶    ▶    fcs    ▶
DATE      10:35:19  RID  879A   02 FEB 88   JDOE
WATER REQUIREMENTS -
DEVICE TYPE UTS60, ASPECT RATIO .732421875
*=====
ZI 00000
XO 00001
LB 00007
ZN 00000
LT 00000
LS 00001
PE 00002
A 00000, 00000
C 32767, 00000
, 32767, 23998
, 00000, 23998
, 00000,00000
CJ 00001, 00002
```

## NOTATION USED IN THIS SECTION

This section uses the following symbols to represent values in primitive graphics code:

- A to Z      Used for primitive graphics code and expanded syntax commands. Use uppercase letters only.
- (*x,y*)      A point specified by *x* and *y* values in an x-y coordinate system, shown in Table 6-1. The origin (0,0) is at the lower left corner of the display or plotting surface. The *x* and *y* values are integers between -32767 and 32767 (or less, depending on the aspect ratio of the display or plotter).

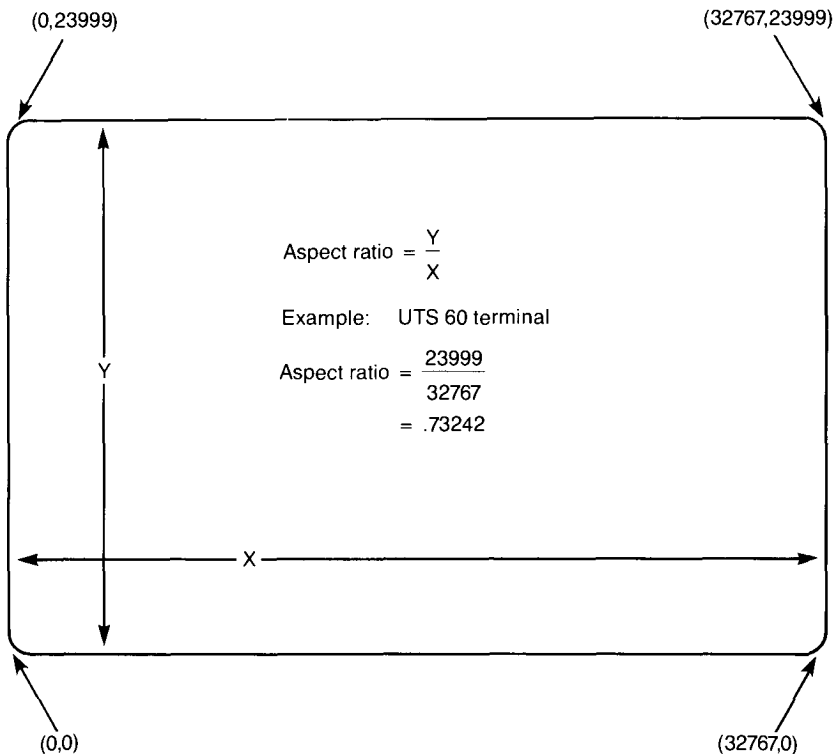
See Table 6-1 to determine aspect ratio. The table shows the maximum *y* (vertical) coordinate available on each device. The maximum *x* (horizontal) coordinate is 32767 for all devices. The *aspect ratio* is the percentage of 32767 units in the *y* direction.

*Table 6-1. Aspect Ratios for Output Devices*

DEVICE NAME	DEVICE TYPE MNEMONIC	MAXIMUM Y COORDINATE	ASPECT RATIO
UTS 60	6S	23999	.732421875
UTS 30	3S	23999	.732421875
PC with CGA monitor	PCC	21818	.665863031
PC with EGA monitor	PCE	26147	.797967467
PC with Unisys high resolution monitor	PCS	21818	.665863031
UTS 400 Master	400	21844	.6666666666
Intercolor Scope	ISC	25197	.769
AQUASTAR	AQUA	21049	.6424148607
8 1/2 x 11 Plot	HP4 or HP8	24143	.7368431052
11 x 17 Plot	HP4 or HP8	22145	.67582167263

## About Graphics Code

The following diagram shows how to use the coordinates in Table 6-1 to specify locations on the screen. This example is for a UTS 60 terminal.



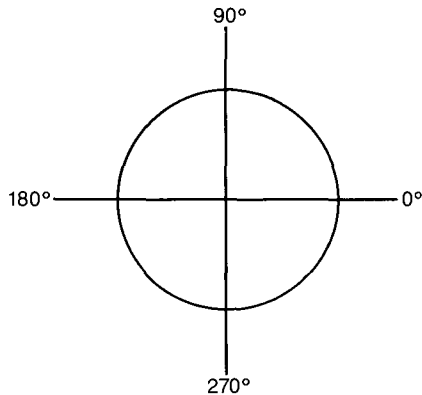
*Figure 6-1. Coordinates on a UTS 60 Terminal*

*r* The radius of an arc, circle, or sector. This value can be either a real number or an integer between 0 and 32767 (see Table 6-1).

*r1,r2* The two radii of an ellipse, where *r1* is the radius along the x axis and *r2* is the radius along the y axis.

*sa, ea*

The starting angle and ending angle of an arc or sector. In the range of 0 to 360.0, as shown in Figure 6-2, these can have any number of leading zeros or spaces and are delimited by a comma or new command. These values are floating-point numbers.



*Figure 6-2. Rotation Angles*

[ ]

Brackets are used around optional entries. If you enter the option, do not type the brackets.

CP

The abbreviation for **current position**. Your next command will originate from this point on the screen. When the CP coordinates are described, capital letters X and Y are used. The current position is therefore labeled CP(X,Y). The default is 0,0 (lower left corner).



# Using Primitive Graphics Code

---

To use primitive graphics code, follow these steps:

1. Check the form types in your mode for a freeform type.
2. Use the AR (Add Report) function to get a blank freeform report.
3. Type the primitive graphics code into the report, using the SOE Update function. These commands are explained in "Primitive Graphics Code Commands" in this section. Keep the following in mind when entering commands:
  - Always begin with a ZI (Initialize Graphics) command, and end with a ZT (Terminate Graphics) command. All other commands are optional.
  - The system reads the code in sequential order, so enter commands in the order you want them to be displayed.
4. After you enter the commands in the report, enter **g** - on the control line to display the graphic. (To display an existing report containing primitive graphics code, enter **g** on the control line and specify the report number when requested.)

To plot the graphic, type **chart,p** on the control line.

To add more details to a graphic created with primitive graphics code, use expanded syntax, described later in this section.

## QUICK REFERENCE TO COMMANDS

The tables on the next few pages are quick references to primitive graphics code commands.

The following table lists primitive graphics code commands by name:

Name	Format
Activate Workstation	ZAX
Arc	Mr,sa,ea
Background Color	LBX
Circle	Or
Close Workstation	ZCX
Deactivate Workstation	ZDX
Fill Color	LFx
Initialize Graphics	ZIX
Line Color	LLX
Move Absolute	AX,y
Move Relative	BX,y
Open Workstation	ZOX
Paper Size	R
Pen Speed	Q
Polygon Absolute	Gx <sup>1</sup> ,y <sup>1</sup> [x <sup>2</sup> ,y <sup>2</sup> ,...,x <sup>n</sup> ,y <sup>n</sup> ]
Polygon Relative	Hx <sup>1</sup> ,y <sup>1</sup> [x <sup>2</sup> ,y <sup>2</sup> ,...,x <sup>n</sup> ,y <sup>n</sup> ]
olyline Absolute	Cx <sup>1</sup> ,y <sup>1</sup> [x <sup>2</sup> ,y <sup>2</sup> ,...,x <sup>n</sup> ,y <sup>n</sup> ]
Polyline Relative	Dx <sup>1</sup> ,y <sup>1</sup> [x <sup>2</sup> ,y <sup>2</sup> ,...,x <sup>n</sup> ,y <sup>n</sup> ]
Polymarker Absolute	Ex <sup>1</sup> ,y <sup>1</sup> [x <sup>2</sup> ,y <sup>2</sup> ,...,x <sup>n</sup> ,y <sup>n</sup> ]
Polymarker Relative	Fx <sup>1</sup> ,y <sup>1</sup> [x <sup>2</sup> ,y <sup>2</sup> ,...,x <sup>n</sup> ,y <sup>n</sup> ]
Rectangle Absolute	IX,y
Rectangle Relative	JX,y
Redraw All Segments	ZNx
Sector	Kr,sa,ea
Set Character Justification	CJX,y

(continued)

## Using Primitive Graphics Code

*(continued)*

---

Name	Format
Set Character Path	CP $x$
Set Character Size	CZ $x,y$
Set Character Space	CS $x$
Set Character Type	CT $x$
Set Deferral State	ZS $x$
Set Fill Area Interior	PIX
Set Fill Area Style	PH $x$
Set Font	CF $x$
Set Line Style	LS $x$
Set Marker Color	SIX
Set Marker Type	S $x$
Set Polygon Edge Style	PE $x$
Set Viewport	VV $x^1,x^2,y^1,y^2$
Terminate Graphics	ZT
Text Color	LT $x$

---

The following table lists primitive graphics code commands by format:

Format	Name
$AX,y$	Move Absolute
$BX,y$	Move Relative
$Cx^1,y^1[,x^2,y^2,...,x^n,y^n]$	Polyline Absolute
$CFX$	Set Font
$CJX,y$	Set Character Justification
$CPX$	Set Character Path
$CSX$	Set Character Space
$CTX$	Set Character Type
$CZX,y$	Set Character Size
$Dx^1,y^1[,x^2,y^2,...,x^n,y^n]$	Polyline Relative
$Ex^1,y^1[,x^2,y^2,...,x^n,y^n]$	Polymarker Absolute
$Fx^1,y^1[,x^2,y^2,...,x^n,y^n]$	Polymarker Relative
$Gx^1,y^1[,x^2,y^2,...,x^n,y^n]$	Polygon Absolute
$Hx^1,y^1[,x^2,y^2,...,x^n,y^n]$	Polygon Relative
$IX,y$	Rectangle
$JX,y$	Rectangle Relative
$Kr,sa,ea$	Sector
$LBX$	Background Color
$LFX$	Fill Color
$LLX$	Line Color
$LSX$	Set Line Style
$LTx$	Text Color
$Mr,sa,ea$	Arc
$Or$	Circle
$PEX$	Set Polygon Edge Style
$PHX$	Set Fill Area Style
$PLX$	Set Fill Area Interior
$Q$	Pen Speed

(continued)

## Using Primitive Graphics Code

*(continued)*

---

Format	Name
R	Paper Size
SX	Set Marker Type
SLX	Set Marker Color
VVX <sup>1</sup> ,X <sup>2</sup> ,Y <sup>1</sup> ,Y <sup>2</sup>	Set Viewport
ZAX	Activate Workstation
ZCX	Close Workstation
ZDX	Deactivate Workstation
ZIX	Initialize Graphics
ZNX	Redraw All Segments
ZOX	Open Workstation
ZSX	Set Deferral State
ZT	Terminate Graphics

---

If you don't know what command to use but understand the general function that you want to do, refer to the following table and find the appropriate command in "Primitive Graphics Code Commands" in this section.

Function	Commands
Control	Activate Workstation Deactivate Workstation Initialize Graphics Open Workstation Close Workstation Paper Size Pen Speed Redraw All Segments Set Deferral State Terminate Graphics
Creating shapes	Arc Circle Move Absolute Move Relative Polyline Absolute Polyline Relative Polymarker Absolute Polymarker Relative Polygon Absolute Polygon Relative Rectangle Absolute Rectangle Relative Sector

*(continued)*

## Using Primitive Graphics Code

*(continued)*

---

Function	Commands
Using characters	Set Font Set Character Justification Set Character Path Set Character Space Set Character Size Set Character Type Text Color
Polygon attributes	Background Color Fill Color Set Fill Area Interior Set Fill Area Style Set Polygon Edge Style
Marker attributes	Set Marker Color Set Marker Type
Line attributes	Line Color Set Line Style
View operations	Set Viewport

---

## PRIMITIVE GRAPHICS CODE COMMANDS

These commands are in alphabetical order by function. Use the quick reference tables on the preceding pages to find the commands you need.

### Activate Workstation

Selects the view surface (*x*) that will receive all subsequent commands (until deselected with Deactivate Workstation). On devices that have control of separate graphics and text display screens, this command also enables the graphics display. In most cases, you do not need to use this command.

Format: **ZA*x***

where *x* is a number specifying which screen to activate.

### Arc

Draws an arc with its radius centered at CP(X,Y). The arc starts at angle *sa* and ends at angle *ea*. Arcs are drawn in a counterclockwise direction. If *sa* and *ea* are the same, a single dot is drawn at distance *r* from CP(X,Y).

Format: **Mr,*sa,ea***

where:

*r* is a number from 1 to 32767, indicating the length of the arc's radius.

*sa* is a number from 0 to 359.0, specifying where the arc starts. See Figure 6-2 for coordinates.

*ea* is a number from 0 to 359.0, specifying where the arc ends. See Figure 6-2 for coordinates.



## Using Primitive Graphics Code

### Background Color

Specifies the color of the background. All subsequent polygon fills using patterns are filled with the color specified by this command. The UTS 60 terminal uses this command only if followed immediately by the Redraw All Segments command. The ISC model G terminal ignores this command.

Format: **LB***x*

where *x* is a color number from Table A-1.

### Circle

Draws a circle centered about CP(X,Y). The circle is considered a polygon and is therefore affected by all polygon attribute commands, but CP(X,Y) remains unchanged.

Format: **Or**

where *r* is a number from 1 to 32767, indicating the length of the circle's radius.

### Close Workstation

Stops all activity for view surface *x* and releases all items (objects and text) from view surface *x*. The system may or may not clear the display; it is recommended that you do not clear it.

Format: **ZC***x*

where *x* is a number that specifies which screen to close.

### Deactivate Workstation

Deselects view surface  $x$ . After this command, the specified surface does not receive any more commands. Whatever is on the display is not destroyed.

Format: **ZD $x$**

where  $x$  is a number that specifies which screen to deactivate.

### Fill Color

Sets the polygon fill color to  $x$ . Color  $x$  is the foreground color for all subsequent polygon fills using patterns.

Format: **LF $x$**

where  $x$  is a color number from Table A-1.

### Initialize Graphics

Always enter this command first, to initialize graphics within the controlling device. This command does not initialize a given display surface or its parameters. If a device has been selected when the ZI command is encountered, a deselect does not occur; the device is assumed to be deselected.

Format: **ZI[ $x$ ]**

where  $x$  is a positive integer referring to the revision level of the graphics code. The base level is blank, or 0.

## Using Primitive Graphics Code

### Line Color

Specifies line color. All subsequent lines are drawn in the specified color.

Format: **LLx**

where **x** is a color number from Table A-1.

### Move Absolute

Moves the current position (CP) to location (x,y). The default CP is 0,0.

Format: **Ax,y**

where **x,y** are coordinates that specify where you want to place the current position. See Table 6-1 for possible coordinates.

### Move Relative

Moves the current position CP(X,Y) to location (x+X,y+Y).

Format: **Bx,y**

where **x,y** are coordinates that you want to add to the current coordinates x,y. To move right, use a positive number for x; to move left, use a negative number. To move up, use a positive number for y; to move down, use a negative number.

In the next example, B40,60 sets the CP to (140,160).

```
A100,100  
B40,60
```

### Open Workstation

Initializes view surface  $x$ . Surface number 1 is assigned to the primary view surface of the graphics processor. In most cases you'll use this surface. Any images on display before the command is received are erased. If a plotter with a paper-advance feature is being used, a new sheet of paper is advanced.

Format: **ZO $x$**

where  $x$  is a number that specifies which screen to open.

### Paper Size

Sets plotter paper size. If this command is included after completed initialization, the paper size is set to 8 1/2 by 11 inches. If this command is not used, the paper size is 11 by 17 inches.

Format: **R**

### Pen Speed

Reduces plotter pen speed. If this command is included after completed initialization, the plotter's pen speed is reduced to slow. If this command is not used, the pen speed is normal.

Format: **Q**

## Using Primitive Graphics Code

### Polygon Absolute

Draws a polygon, from the current point CP(X,Y) to all points listed, in sequential order. The last point is the original CP(X,Y), which does not change. All points are placed at the specified coordinates. Specify the edge style with the Set Polygon Edge Style command. Specify the interior pattern with the Set Fill Area Interior command.

Format:  $Gx^1,y^1[,x^2,y^2,.....,x^n,y^n]$

where  $x^1,y^1,...$  are coordinates x,y for each point of the polygon.  
See Table 6-1 for possible coordinates.

### Polygon Relative

Draws a polygon. Draws the sides of the polygon from the current point CP(X,Y) to all points listed, in order. The last point is the original CP(X,Y), which does not change. The first point is relative to CP(X,Y), and each subsequent point is relative to the previous point. Specify the polygon edge style with the Set Polygon Edge Style command. Specify the polygon interior pattern with the Set Fill Area Interior command.

Format:  $Hx^1,y^1[,x^2,y^2,.....,x^n,y^n]$

where  $x^1,y^1,...$  are coordinates x,y for each point of the polygon.  
Use positive numbers for x and y to move right and up; use negative numbers to move left and down.

### Polyline Absolute

Draws a line from the current point CP(X,Y) to all points listed, in order. All points are placed on the screen at the specified coordinates. The CP is set at the last point encountered.

Format:  $Cx^1,y^1[,x^2,y^2,.....,x^n,y^n]$

where  $x^1,y^1,...$  are coordinates defining the points of the polyline.  
See Table 6-1 for possible coordinates.



The next example draws a line from point 200,200 to point 600,600, then to point 800,800, the last point on the line.

**C200,200,600,600,800,800**

### Polyline Relative

Draws a line from the current point CP(X,Y) to all points listed, in order. The first point is relative to CP(X,Y), and each subsequent point is relative to the previous point. The CP is set at the last point encountered.

Format: **D** $x^1,y^1[,x^2,y^2,....,x^n,y^n]$

where  $x^1,y^1,....$  are coordinates x,y for each point on the polyline, relative to the previous point. To move right, use a positive number for x; to move left, use a negative number. To move up, use a positive number for y; to move down, use a negative number.

For example, assuming that the original CP is 500,500, the points for this command:

**D100,100,200,300,400,400**

are placed at the following locations:

CP(X,Y)	(x,y)	LOCATION
(500,500)	(100,100)	600,600
(600,600)	(200,300)	800,900
(800,900)	(200,400)	1000,1300 (new CP)

## Using Primitive Graphics Code

### Polymarker Absolute

Draws current marker type (see "Set Marker Type" in this section) at all points listed, according to specified coordinates. The CP is set at the last point encountered.

Format:  $Ex^1,y^1[,x^2,y^2, \dots, x^n,y^n]$

where  $x^1,y^1, \dots$  are coordinates that define the location of each marker. See Table 6-1 for possible numbers.

### Polymarker Relative

Draws the current marker type (see "Set Marker Type" in this section) at all points listed, in relative positions. The first point is relative to CP(X,Y), and each subsequent point is relative to the previous point. The CP is set at the last point encountered.

Format:  $Fx^1,y^1[,x^2,y^2, \dots, x^n,y^n]$

where  $x^1,y^1, \dots$  are coordinates that define the location of each marker, relative to the previous point.

For example, assuming that the original CP is (100,100), the markers for this command:

**F200,300,200,400,300,400**

are placed at the following locations:

CP(x,y)	(x,y)	Location
(100,100)	(200,300)	300,400
(300,400)	(200,400)	500,800
(500,800)	(300,400)	800,1200 (new CP)

**Rectangle Absolute**

Draws a rectangle according to its diagonally opposite corners, CP(X,Y) and (x,y). Places (x,y) at the coordinates you specify. The boundary lines of the rectangle are parallel to the current x axis and y axis. The original CP(X,Y) remains unchanged.

Format: **I**x,y

where x,y are coordinates that define the location of the corner that is diagonally opposite from the CP. See Table 6-1 for available coordinates.

**Rectangle Relative**

Draws a rectangle according to its diagonally opposite corners, CP(X,Y) and (x,y). Places (x,y) at a point relative to CP(X,Y). The boundary lines of the rectangle are parallel to the current x axis and y axis. The original CP(X,Y) remains unchanged.

Format: **J**x,y

where x,y are coordinates relative to CP that define the location of the corner diagonally opposite from the CP.

**Redraw All Segments**

Clears the screen of workstation x to the background color and redraws all items associated with the selected surfaces. For Hewlett-Packard pen plotters that have a paper advance feature, this command advances a new sheet. It does not clear the display surface or redraw segments. ISC model G terminals ignore this command.

Format: **ZN**x

where x is the number of the workstation you want to clear.



### Sector

Draws a sector, which looks like a slice of pie. A sector is bounded on one side by an arc drawn from the start angle *sa* to the end angle *ea*. The other two sides are bounded by two radial lines, one from the center point CP(X,Y) to the start of the arc, the other from the end of the arc to the center point.

Because a sector is considered a polygon, it is affected by all polygon attribute commands. If *sa* and *ea* are the same, a single dot is drawn at distance *r* from CP(X,Y). Arcs are drawn in a counterclockwise direction.

Format: *Kr,sa,ea*

where:

*r* is a number from 1 to 32767 that indicates the length of the circle's radius.

*sa* is the starting angle of the sector. See Figure 6-2 for possible numbers.

*ea* is the ending angle of the sector. See Figure 6-2 for possible numbers.

**Set Character Justification**

Sets the current justification for text strings.

Format: **CJ***x,y*

where:

*x* is one of the following justification values:

- ☐ 0 Left
- ☐ 1 Right
- ☐ 2 Center
- ☐ 3 Off

*y* is one of the following justification values:

- ☐ 0 Top
- ☐ 1 Bottom
- ☐ 2 Center
- ☐ 3 Off

## Using Primitive Graphics Code

### Set Character Path

Specifies the way a text string is placed on the screen.

Format: **CP***x*

where *x* is a number that represents the direction, as shown below.

<i>x</i>	Direction	Example
0	Right	RIGHT
1	Left	TFEL
2	Up	P U
3	Down	D O W N

### Set Character Size

Sets the character size.

Format: **CZ***x,y*

where *x* and *y* are numbers (0 to 32767) representing the character size. The *x* value specifies the width of the character box and the *y* value specifies the height of the character box. Placement of the character within the character box is determined by the font selected.

**NOTE:** The numbers for the *x,y* values stated above are for Hewlett-Packard plotters. Other devices may interpret these numbers differently.

**Set Character Space**

Adjusts spacing between characters in character boxes defined by the Set Character Size command.

Format: **CS***x*

where *x* is a negative or positive number from 0 to 32767 (floating-point real number). For the graphics terminal, this command is interpreted as **CS***x,y* where *y* is the vertical height between boxes and equals the value set for *x*.

**Set Character Type**

Sets the precision of how characters are drawn, which is used by all following string commands.

Format: **CT***x*

where *x* is a number (0, 1, or 2) that specifies precision as follows:

<i>x</i>	PRECISION
0	String (default; use for quick output)
1	Character
2	Stroke (draws each line of a character; high quality output)

## Using Primitive Graphics Code

### Set Deferral State

Specifies when you want the plotter to print the graphic.

Format: **ZSx**

where **x** is a number (0, 1, 2, or 3) that specifies deferral as follows:

<b>x</b>	<b>WHEN TO PRINT</b>
----------	----------------------

- |   |                          |
|---|--------------------------|
| 0 | As soon as possible      |
| 1 | Before next input global |
| 2 | Before next input local  |
| 3 | At some time             |

### Set Fill Area Interior

Selects the current polygon fill.

Format: **PIx**

where **x** is a number that specifies the type of fill you want for subsequent polygons, as shown next.

<b>x</b>	<b>FILL</b>
----------	-------------

- |   |   |
|---|---|
| 0 | Hollow (no fill)  |
| 1 | Plain (solid fill; default)                                       |
| 4 | Current pattern   |
| 5 | Current pattern over a solid fill of the current background color |
| 6 | Transparent (overlay of color planes on raster devices)           |

If you select value 4 or 5, use the Set Fill Area Style to specify a pattern style. Values 2 and 3 are reserved for future use. The UTS 60 terminal recognizes only patterns 0 and 1.

### Set Fill Area Style

If you selected value 4 or 5 in the **Set Fill Area Interior** command, use this command to specify the pattern style.

Format: **PH $x$**

where  $x$  is a pattern style number from Table A-3.

### Set Font

Sets the current character font. To see font examples, enter **chart,e** and select CHARACTER FONTS AVAILABLE, or see Appendix B.

Format: **CF $x$**

where  $x$  is a number that specifies the font type. Only font 1 is defined as the domestic, or hardware generated, font. Fonts 2 through 20 are reserved for future standard definition. Hewlett-Packard plotters recognize fonts specified between 1 and 5 since they are hardware-generated fonts. Other devices can use only font 1.

### Set Line Style

Specifies the line style. This command does not affect the lines drawn for polygons.

Format: **LS $x$**

where  $x$  is a line style number from Table A-2.

## Using Primitive Graphics Code

### Set Marker Color

Specifies marker color.

Format: **SI $x$**

where  $x$  is a color number from Table A-1.

### Set Marker Type

Sets current marker symbol to  $x$ .

Format: **S $x$**

where  $x$  is a marker style number from Table A-3.

### Set Polygon Edge Style

Specifies the edge style for all subsequent polygons.

Format: **PE $x$**

where  $x$  is a value that specifies marker symbol style, as shown below.

$x$	EDGE STYLE
-----	------------

- |   |  |
|---|--|
| 1 | Same as the polygon interior                   |
| 2 | Solid edge in the current line color (default) |

The UTS 60 terminal ignores this command and always draws an edge.



## Set Viewport

Defines the size of the current viewport for ISC terminals only.

Format: `VV $x^1,x^2,y^1,y^2$`

where  $x^1,x^2,y^1,y^2$  are numbers from 0 to 32767 that specify the size of the viewport's sides. See Table 6-1. The viewport's sides are vertical, and the top and bottom are horizontal. The default value is the entire view surface.

## Terminate Graphics

When the system encounters this command, it stops reading primitive graphics code. Always enter this command last. No action is taken on any subsequent characters unless the Initialize Graphics command is encountered again.

Format: `ZT`

## Text Color

Specifies color for subsequent text.

Format: `LT $x$`

where  $x$  is a color number from Table A-1.



# Using Expanded Syntax

---

You can use expanded syntax to draw graphics that are difficult to do with primitive graphics code (such as ellipses) and to add details to charts.

You enter expanded syntax commands in a freeform report or into a primitive graphics code report and process them with the GS function. The result is a series of primitive graphics code commands. This new result can then be displayed on the screen or plotted by the plotter.

To use expanded syntax, follow the steps below. Refer to the examples later in this section to see how the commands look on the screen.

1. Check the form types in your mode for a freeform type, and use the AR (Add Report) function to get a blank freeform report; or display an existing report containing primitive graphics code.
2. Type the expanded syntax commands in the report, using the SOE Update function. The system reads the code in sequential order, so enter commands in the order you want them to be read. All commands are explained in "Expanded Syntax Commands" in this section.

The format for an expanded syntax command is: **/COMMAND/**

3. After you enter the commands in the report, enter **gs** on the control line to display the function request message.
4. Answer the questions on the function request message (see "Using the Graphics Scaler" in Section 5 for instructions) and press **XMIT**. Your graphic is displayed.

## SPECIFYING COLOR

The normal format for specifying a color in primitive graphics code is by color number, according to Table A-1. With expanded syntax all commands that use colors can also use the following format to specify the color:

*command:color:*

where:

*command* is any command that uses color:

- ☐ LB            Set background color
- ☐ LF            Set fill color
- ☐ LL            Set line color
- ☐ LT            Set text color
- ☐ ST            Set marker color
- ☐ /GR.../       Generate grid
- ☐ /TC.../       Translate colors

*color* is any color name from Table A-1.

For example, if you want all lines to be red, you can type:

**LL:RED:**

If you want fill color of blue, type:

**LF:BLUE:**

To generate a GRID of 1000 units with color values of tan, green, and cyan:

**/GR1000,:TAN:,:GREEN:,:CYAN:/**

## QUICK REFERENCE TO COMMANDS

Use this list as a fast reference for expanded syntax commands.

Name	Command
CALL MACRO	<i>/CMn[.qty,rv1,rv2, . . . , rv10]/</i>
CLOSED ELLIPSE	<i>/OCr1,r2[.sa,ea]/</i>
COMMENT	<i>/.comment string/</i>
COMPLEMENT ROTATION ANGLE	<i>/CA/</i>
DEFINE MACRO	<i>/DM[nn][command]\</i>
DRAW TO MARK	<i>/DMKn0,n1,...,n9/</i>
END OF TEXT	<i>/ET/</i>
GENERATE GRID	<i>/GRz,c1,c2,c3/</i>
FILLED ELLIPSE	<i>/OFr1,r2[.sa,ea]/</i>
GENERATE POLYGON TO MARK	<i>/PMKn0,n1,...,n9/</i>
HOLLOW ELLIPSE	<i>/OVR1,r2[.sa,ea]/</i>
INCREMENT BACKGROUND COLOR	<i>/ICBx/</i>
INCREMENT FILL COLOR	<i>/ICFx/</i>
INCREMENT LINE COLOR	<i>/ICLx/</i>
INCREMENT MARKER COLOR	<i>/ICMx/</i>
INCREMENT ROTATION ANGLE	<i>/IAx.x/</i>
INCREMENT SCALE FACTOR	<i>/ISx.x/</i>
INCREMENT TEXT COLOR	<i>/ICTx/</i>
LINE FEED DOWN	<i>/LF[D]/</i>
LINE FEED UP	<i>/LFU/</i>
MARK CURRENT POSITION	<i>/MKn/</i>
MOVE TO ABSOLUTE POINT	<i>/AOVx,y,r1,r2,angle/</i>
MOVE TO RELATIVE POINT	<i>/BOVx,y,r1,r2,angle/</i>
MULTIPLY SCALE FACTOR	<i>/XSx.x/</i>
NEW ROTATION ANGLE	<i>/NAX.x/</i>
NEW SCALE FACTOR	<i>/NSx.x/</i>
POSITION TO MARK	<i>/PMn/</i>
RESET COLOR INDEX	<i>/RC/</i>
START OF TEXT	<i>/ST/</i>
TRANSLATE COLOR INDEX	<i>/TCox1,nx1[,ox2,nx2,...,oxn,nxn]/</i>
UNDERLINE TEXT	<i>/UL/</i>

## EXPANDED SYNTAX COMMANDS

The following commands are organized alphabetically by name. Each example includes primitive graphics code commands with one or more expanded syntax commands.

### Call Macro

After you have defined a macro with the **DEFINE MACRO** command, you can call it one or more times. This command calls macro *nn*.

Format: */CMn[,qty,rv1,rv2,...,rv10]/*

where:

*n* is the number of the macro you want to call.

*qty* is the number of times you want to repeat the macro. Type a number between 1 and 32767.

*rv1, rv2,...,rv10* are floating-point numbers from -32767.0 to +32767.0, which replace values used by **DMn** (Define Macro). These numbers are converted to integers if the command requires integers. Any scaling, offsetting, or rotation is done when the macro uses the number. All nonexistent replacement values are treated as 0. The replacement values cannot be used to pass in text strings or accept color numbers. See "Define Macro" in this section for more information.

Following is an example of how to use replacement values with the **DM** and **CM** commands. Notice that when a command calls for two numbers, two sequential numbers are taken from the set (such as 12000,2000 for the **J** command).

```
ZI
A1500,1500
/DM20$1LL$2J$3,$4\ /
/CM2,1,1500.4,12000,2000/
/CM2,1,1100.2,8000.2,1000.6/
ZT
```

## Using Expanded Syntax

Resulting primitives:

```
ZI 00000
A 01500,01500
LS 00001
O 01500
LL 00004
J 12000,02000
O 01100
LL 00002
J 08000, 01001 (Note the rounding.)
ZT
```

### Closed Ellipse

Draws a full or partial closed ellipse.

Format: `/OCr1,r2[,sa,ea]/`

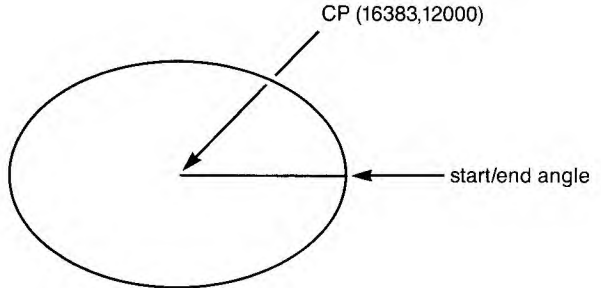
where:

*r1,r2* are numbers from 1 to 32767 that specify the length of the x axis radius and the y axis radius, respectively.

*sa,ea* are numbers that define the start angle and end angle of a partial ellipse. If you do not specify these, a full ellipse is drawn. See Figure 6-2 for possible numbers.

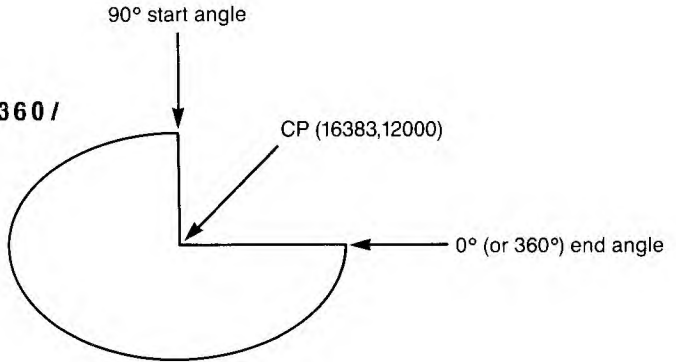
The next example is a closed full ellipse. Notice that a line is drawn along the x axis from the center point to the right edge of the ellipse.

```
ZI
ZO1
R
A16383,12000
LL1
LF1
/OC3000,2000/
ZT
```



The next example is a closed partial ellipse.

```
ZI
ZO1
R
A16383,12000
LL1
/OC3000,2000,90,360/
ZT
```



## Comment

Adds a comment to a set of commands.

Format: */.comment string/*

where *comment string* is the text of the comment. All characters are ignored until the trailing / is reached. You cannot use the / character as part of your text.

Apostrophes (') cause the system to scan text strings incorrectly. Do not use them.

Another way to add a comment is to enclose text in parentheses. For example, (COMMENT) and /.COMMENT/ are both read as comments.

## Using Expanded Syntax

In the next example, notice that the comment string is ignored when the graphic is drawn.

```
ZI
ZO1
R
LL1
A10000,12000
D15000,0
/.this is a comment string/
ZT
```



## Complement Rotation Angle

Sets the rotation angle to the complement of the current rotation angle (CRA). The rotation angle is then  $360 - \text{CRA}$ . See also "New Rotation Angle" and "Increment Rotation Angle" in this section.

Format: **/CA/**

The next example shows that the original rotation is 30 degrees (NA30). This angle is incremented 30 degrees (IA30) so the rotation is at 60 degrees ( $30 + 30$ ). The complement angle is then requested (CA), so the ending angle of rotation is 300 ( $360 - 60$ ).

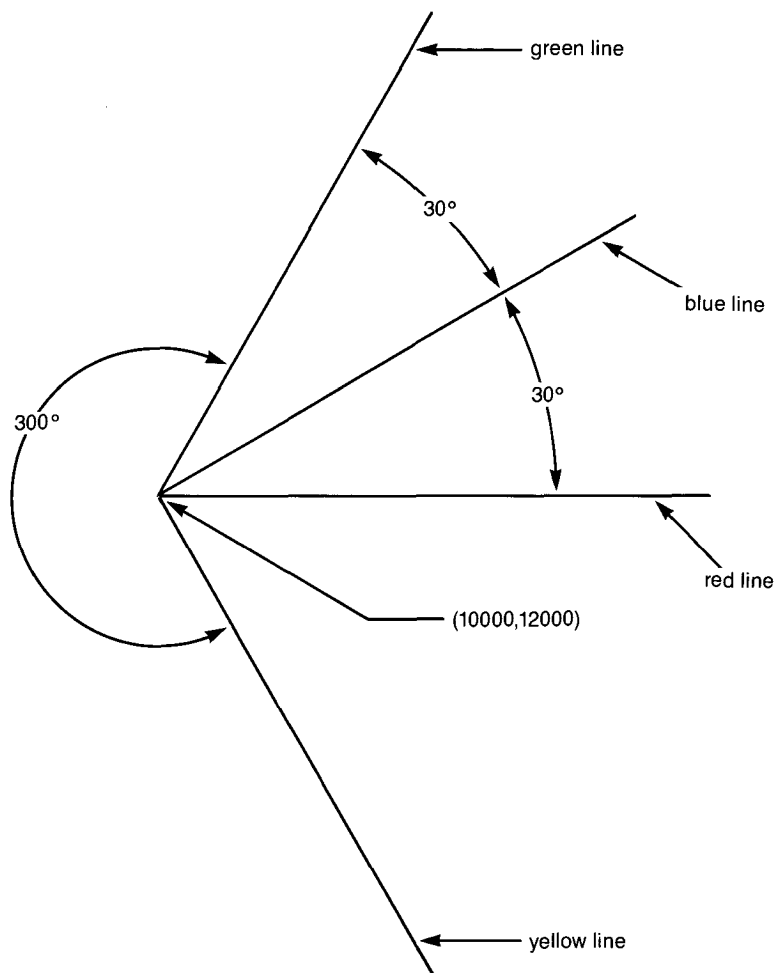
```

Z1
ZO1
R
LL1
A10000,12000
D10000,0
B-10000,0
LL4
/NA30/
/.start of angle = 30 degrees/
D10000,0
LL2
B-10000,0
/IA30/
/.angle now = 60 degrees/
D10000,0
LL3
B-10000,0
/CA/
/.angle now = 300 degrees/
D10000,0
ZT

```



## Using Expanded Syntax



## Define Macro

A macro is a string of primitive graphics code or other expanded syntax that performs a specific operation. This command defines that operation, so that you can quickly call it to use anywhere in the report. You can also use this command to clear a specific macro or to clear all macros.

Format: `/DM[n][command]\`

where:

*n* is a number from 0-99 that you assign to the macro.

*command* is a set of commands in primitive graphics code or expanded syntax.

To specify commands that will have replacement values, number each command using \$*n* (\$1, \$2, ...). These may be repeated and used in any sequence in the CM command. See "Call Macro" in this section for more information.

Be sure to include a forward slash (\) after the command, as shown above. Do not leave any space between the *n* and the command. Use the CALL MACRO command to use the macro.

To define a different macro but use a number *nn* already defined, clear the specific macro *n*. To do this, enter only the number of the macro, as follows: `/DMn\`.

To clear all macros, use the command `/DM/`.

The following example defines macro 1 (DM1) that sets line color to color 1 (LL1) and the fill area interior to hollow (PI0). The macro then draws a rectangle with one corner being the CP, and its diagonally opposite corner being 2000 to the right and 1000 up (J2000,1000).

## Using Expanded Syntax

```
Z I
Z O1
R
/DM1LL1P I O J 2000,1000\ /
Z T
```

### Draw to Mark

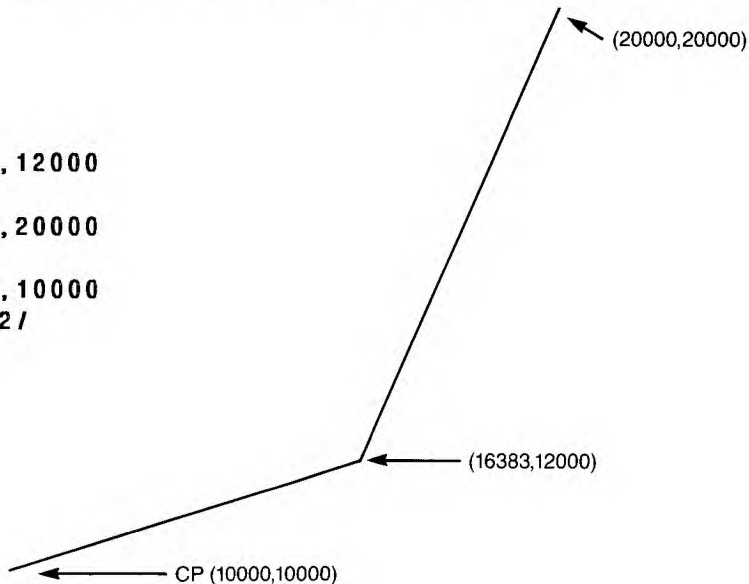
Draws a polyline from CP to points that you have specified in the MARK CURRENT POSITION command. The last mark is not connected to the CP. To draw a closed polygon, see "Generate Polygon to Mark" in this section.

Format: `/DMK $n^0, n^1, \dots, n^9$ /`

where  $n^0, n^1, \dots, n^9$  are numbers of marks that you want to connect with a line.

The following example draws a line from the CP to marks 1 and 2, whose location was recorded in the MK commands.

```
Z I
Z O1
R
LL 1
A16383,12000
/MK1 /
A20000,20000
/MK2 /
A10000,10000
/DMK1,2 /
Z T
```



**End of Text**

Moves the CP to the end of the last text string.

Format: **/ET/**


The following example shows how to move the CP to the end of the last text string and continue with a new text string.

```

Z I
Z O 1
R
L T 1
C Z 3 8 3 , 3 8 3
A 2 0 0 0 , 1 2 0 0 0
' t h i s   i s   a   t e x t   s t r i n g '
/ E T /
'   p u t   t h i s   a t   t h e   e n d '
Z T

```

(2000,12000)



this is a text string put this at the end

## Using Expanded Syntax

### Grid

Draws a grid, using the current line style. This command is not affected by scaling, offsetting, or rotation values. In turn, this command does not alter the current position (CP) or current line color. The grid is drawn from 0 to 32767 in the x direction and from 0 to the maximum y in the y direction.

Format: **/GRz,c1,c2,c3/**

where:

**z** is a number that specifies the size of the basic square unit, from 500 to 32767.

**c1** is a color number from Table A-1 that specifies the color for the lines defining one unit. The default is the current line color.

**c2** is a color number from Table A-1 that specifies the color for the lines defining five units and the grid border. The default is color **c1**.

**c3** is a color number from Table A-1 that specifies the color for the center horizontal and vertical lines. If you do not specify **c3**, no center lines are drawn.

### Filled Ellipse

Draws a full or partial closed ellipse, and fills it with the current fill color (see "Increment Fill Color" in this section).

Format: **/OFr1,r2[,sa,ea]/**

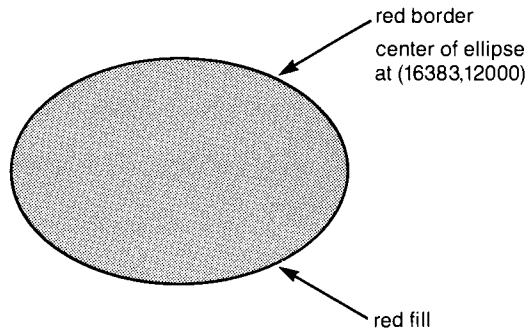
where:

**r1,r2** are numbers from 1 to 32767 that specify the length of the x axis radius and the y axis radius, respectively.

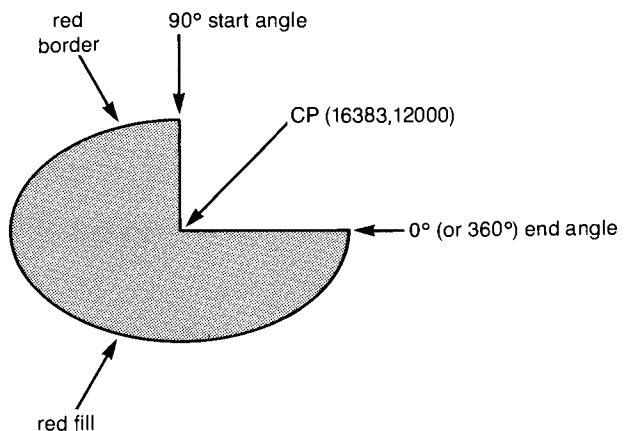
**sa,ea** are the start angle and end angle of a partial ellipse. If you do not specify these, a full ellipse is drawn.

The next two examples show a full and a partial ellipse.

```
ZI
ZO1
R
A16383,12000
LL1
LF1
/OF3000,2000/
ZT
```



```
ZI
ZO1
R
A16383,12000
LL1
LF1
/OF3000,2000,90,360/
ZT
```



## Using Expanded Syntax

### Generate Polygon to Mark

Draws a closed polygon from CP to points that you have specified in the MARK CURRENT POSITION command.

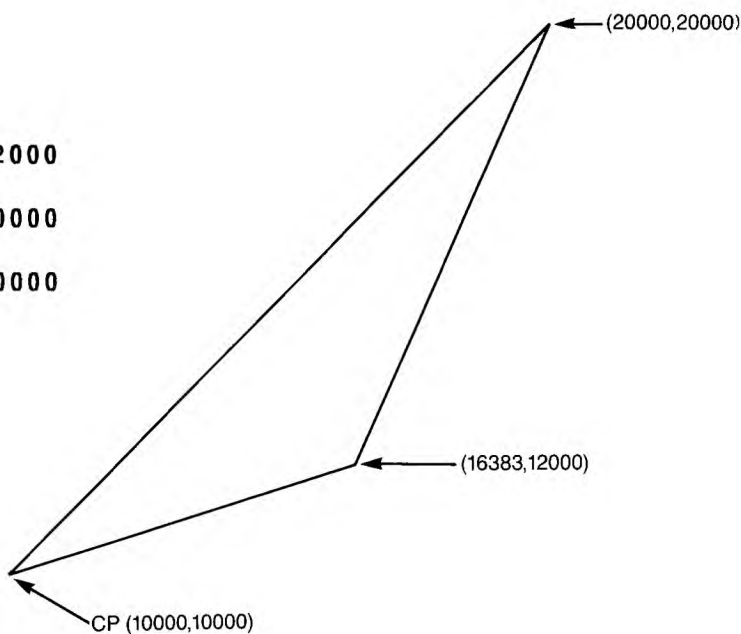
Format: **/PMK** $n^0,n^1,...,n^9$ **/**

where  $n^0,n^1,...,n^9$  are the marks that define the polygon's shape.

After the last mark the line returns to the CP to close the polygon.

The next example draws a closed polygon, using the marks defined in the MK commands.

```
ZI
ZO1
R
PI0
LL1
A16383,12000
/MK1/
A20000,20000
/MK2/
A10000,10000
/PMK1,2/
ZT
```



## Hollow Ellipse

Draws a hollow ellipse.

Format: **/OV***r1,r2***[,sa,ea]/**

where:

*r1,r2* are numbers from 1 to 32767 that specify the length of the x axis radius and the y axis radius, respectively.

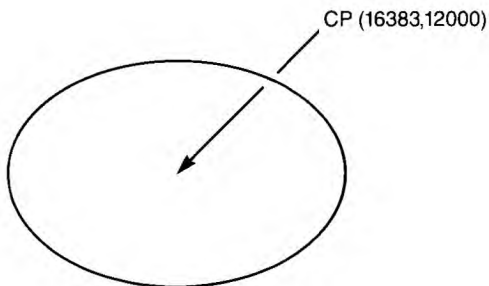
*sa,ea* are numbers from 0 to 360 that define the start angle and end angle of a partial ellipse. If you do not specify these, a full ellipse is drawn. See Figure 6-2 for angle positions.

The next two examples show full and partial hollow ellipses.

```

Z I
Z O1
R
A16383,12000
LL1
/OV3000,2000/
Z T

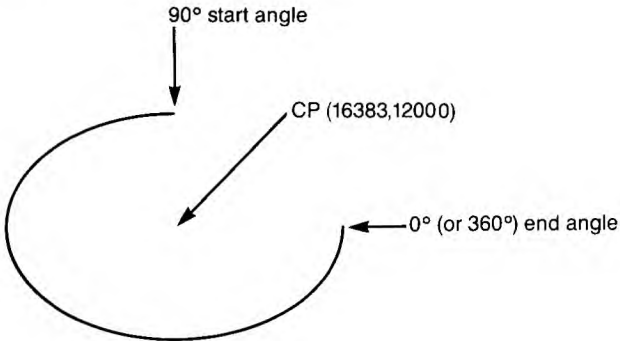
```





## Using Expanded Syntax

```
ZI  
ZO1  
R  
A16383,12000  
LL1  
/OV3000,2000,90,360/  
ZT
```



## Increment Background Color

Changes the background color.

Format: **/ICBx/**

where **x** is an integer that increments (to +15) or decrements (to -15) the color numbers on Table A-1.

The following example changes the background color from 3 (LB3) to 4 by incrementing the color one number (ICB1).

```
ZI  
ZO1  
R  
LB1  
/ICB1/  
ZN  
ZT
```

## Increment Fill Color

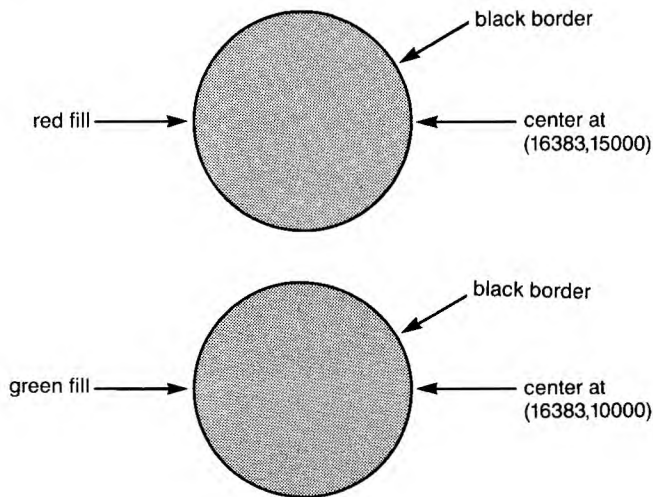
Changes the fill color for ellipses and polygons.

Format: **/ICF*x*/**

where *x* is an integer that increments (to +15) or decrements (to -15) the color numbers on Table A-1.

The following example changes the fill color from 5 (LF5) to 7 by incrementing the color two numbers (ICF2).

```
ZI
ZO1
R
A16383,15000
PI1
LF1
O2000
/ICF1/
A16383,10000
O2000
ZT
```



## Using Expanded Syntax

### Increment Line Color

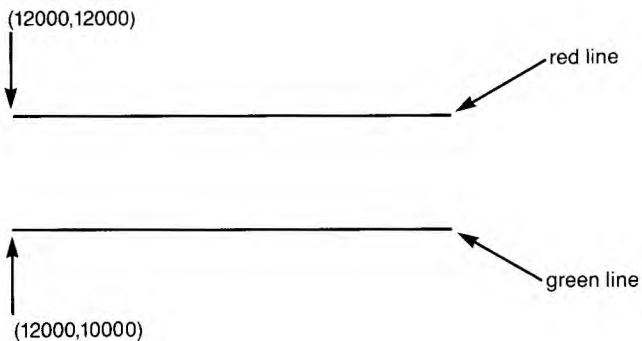
Changes the line color.

Format: **/ICL***x***/**

where *x* is an integer that increments (to +15) or decrements (to -15) the color numbers on Table A-1.

The following example changes the line color from 12 (LF12) to 9 by decrementing the color three numbers (ICL-3).

```
ZI
ZO1
R
A12000,12000
LL1
LS1
C20000,12000
/ICL1/
A12000,10000
C20000,10000
ZT
```



**Increment Marker Color**

Changes the marker color.

Format: **/ICMx/**

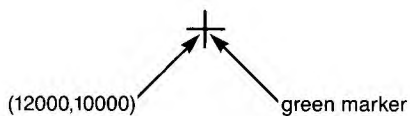
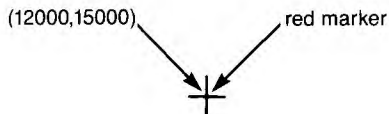
where **x** is an integer that increments (to +15) or decrements (to -15) the color numbers on Table A-1.

The following example changes the marker color from 14 (SI14) to 15 by incrementing the color one number (ICM1).

```

Z I
Z O 1
R
A 12000, 15000
S 2
S I 1
F,
/ ICM 1 /
A 12000, 10000
F,
Z T

```



## Using Expanded Syntax

### Increment Rotation Angle

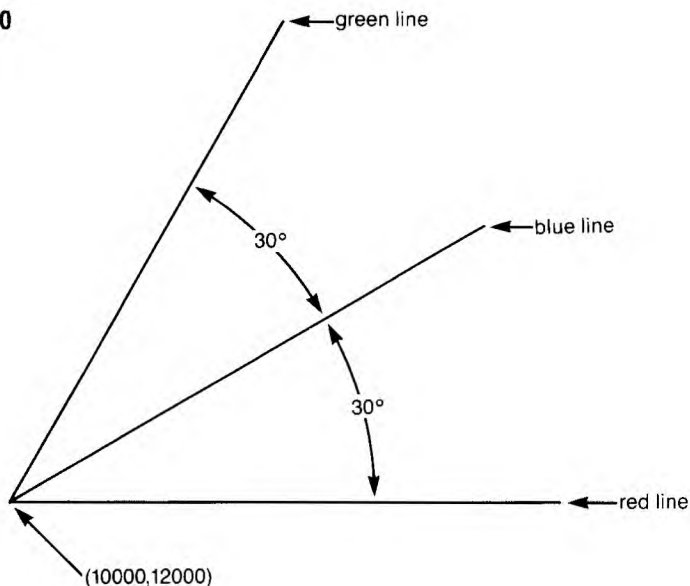
Changes the relative coordinate system by rotation in a positive or a negative direction.

Format: **/IAx.x/**

where **x.x** is the rotation angle that increments the Current Rotation Angle (CRA). Type a positive number (to 360.0) or a negative number (to -360.0).

The next example shows that the original rotation is 45 degrees (NA45). This angle is then incremented 20 degrees (IA20) so the rotation is at 65 degrees (45 + 20).

```
ZI
ZO1
R
LL1
A10000,12000
D10000,0
B-10000,0
LL4
/NA30/
D10000,0
LL2
B-10000,0
/IA30/
D10000,0
ZT
```



**Increment Scale Factor**

Changes the scale of an object by incrementing the Scale Factor (SF).

Format: **/ISx.x/**

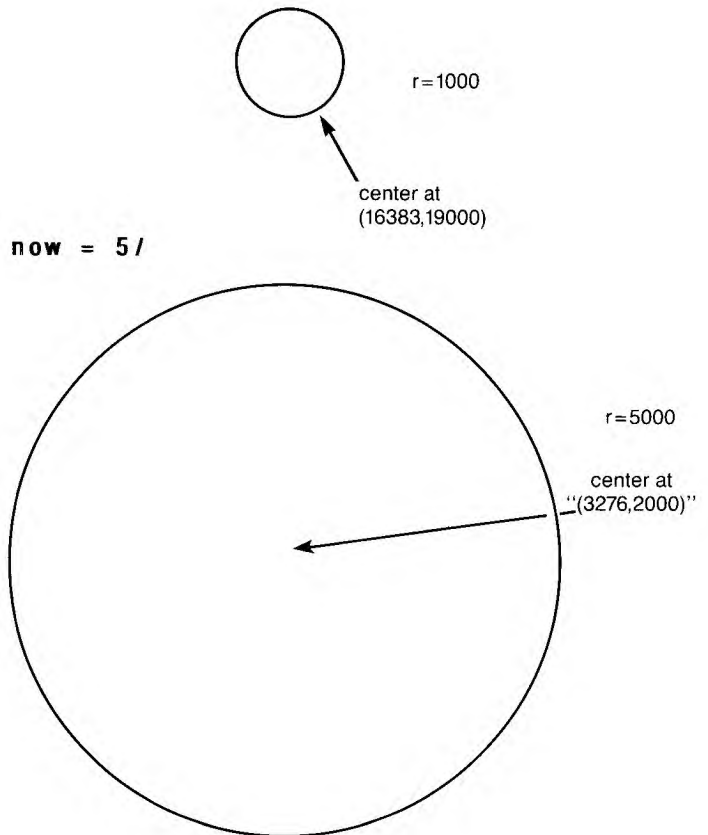
where **x.x** is a number that defines how large you want the object in reference to the original plot. See the following example.

The following example sets the scale at 0.5 (NS0.5), so the objects you draw are half their normal size. The scale is then incremented by 1 (IS1) so the objects drawn are 1.5 times larger than normal size.

```

Z I
Z O1
R
A16383,19000
LL1
P10
/NS1/
O1000
/IS4/
/.scale factor now = 5/
A3276,2000
O1000
Z T

```



## Using Expanded Syntax

### Increment Text Color

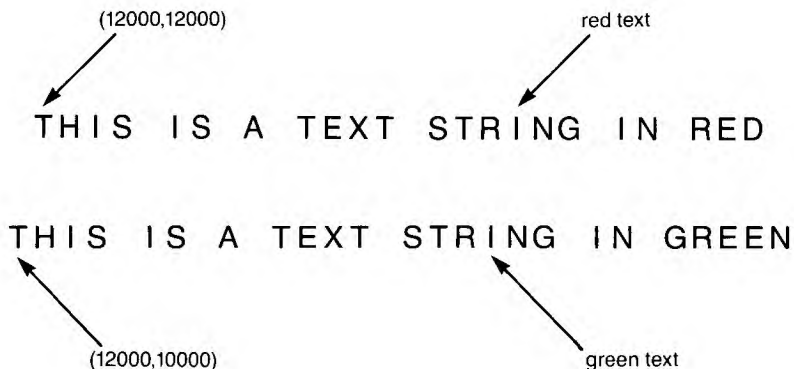
Changes the text color.

Format: **/ICTx/**

where **x** is an integer that increments (to +15) or decrements (to -15) color numbers on Table A-1.

The following example changes the text color from 1 (LT1) to 3 by incrementing the color two numbers (ICT2).

```
ZI
ZO1
R
A12000,12000
CZ500,500
CJ2,2
LT1
'THIS IS A TEXT STRING IN RED'
/ICT1/
A12000,10000
'THIS IS A TEXT STRING IN GREEN'
ZT
```



**Line Feed Down**

Moves CP down a distance twice the height of the current font and to the same left margin as the previous text string.

Format: **/LF[D]/**

The following example writes one line of text at 10000,12000, then moves down twice the height of the current font (LF) and writes a second line of text.

```

Z I
ZO I
R
LT I
CZ500,500
A10000,12000
'LINE ONE OF TEXT'
/LF/
'THIS IS LINE TWO'
Z T

```



(10000,12000)

```

LINE ONE OF TEXT
THIS IS LINE TWO

```



## Using Expanded Syntax

### Line Feed Up

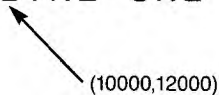
Moves the CP up a distance twice the height of the current font and to the same left margin as the previous text string.

Format: **/LFU/**

The following example writes one line of text at 10000,12000, then moves up twice the height of the current font (LFU) and writes a second line of text.

```
ZI
ZO1
R
LT1
CZ500,500
A10000,12000
'LINE ONE OF TEXT'
/LFU/
'THIS IS LINE TWO'
ZT
```

```
THIS IS LINE TWO
LINE ONE OF TEXT
```



**Mark Current Position**

Marks the current position, saving its coordinates for use with other commands, such as DRAW TO MARK, GENERATE POLYGON TO MARK, and POSITION TO MARK. This command does not place a marker at the CP; it just saves the coordinates.

Format: **/MK*n*/**

where *n* is a number (0-9) that labels the mark.

The following example moves the current position to 16383,12000 (A16383,12000) and defines it as mark1 (MK1), then moves the current position to 20000,20000 (A20000,20000) and defines it as mark2.

```

Z I
Z O1
A16383,12000
/MK1/
A20000,20000
/MK2/
Z T

```

## Using Expanded Syntax

### Move to Absolute Point on Ellipse

Moves to a specified point on the circumference of an ellipse and assigns that point as the new CP. You specify the center of the ellipse using absolute coordinates.

Format: `/AOVx,y,r1,r2,angle/`

where:

`x,y` are numbers that define the absolute coordinates of the center of an ellipse. See Table 6-1 for possible coordinates.

`r1,r2` are numbers from 1 to 32767 that indicate the length of the radii of the ellipse. See Figure 6-2 for possible numbers.

`angle` is a number that specifies a point on the circumference of the ellipse. This point becomes the new CP. See Figure 6-2 for angles.

### Move to Relative Point on Ellipse

Moves to a specified point on the circumference of an ellipse, and assigns that point as the new CP. You specify the center of the ellipse using relative coordinates.

Format: `/BOVx,y,r1,r2,angle/`

where:

`x,y` are the relative coordinates of the center of an ellipse. See Table 6-1 for possible coordinates.

`r1,r2` are numbers from 1 to 32767 that indicate the length of the radii of the ellipse. See Figure 6-2 for possible numbers.

`angle` is a number that specifies a point on the circumference of the ellipse. This point becomes the new CP. See Figure 6-2 for possible angles.

**Multiply Scale Factor**

Changes the scale of a plot by multiplying the current Scale Factor (SF).

Format: **/XS*x.x*/**

where *x.x* is a number between 0 and 32767.0 that you want to multiply the SF by. If you multiply by 0, the SF = 1. The resulting SF affects commands following the MULTIPLY SCALE FACTOR command.

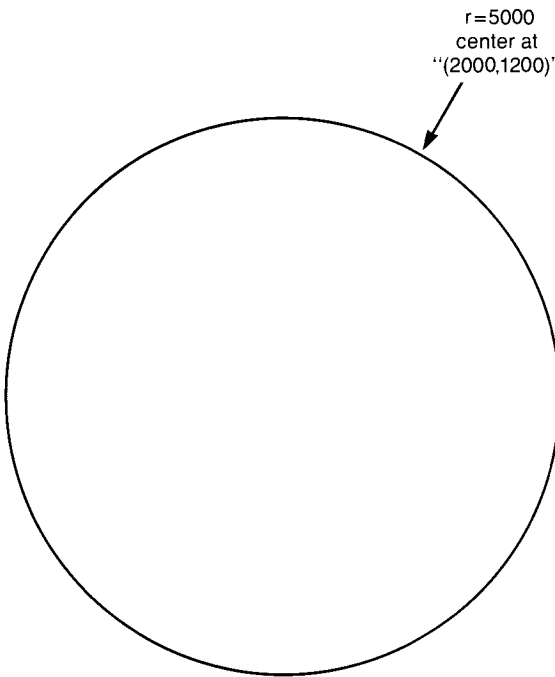
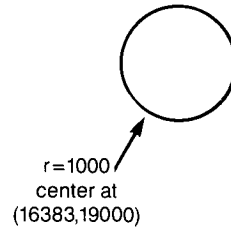
The following example multiplies the scale factor by 5 (XS5) so the objects drawn are 5 times larger than normal size.

```

Z I
Z O I
R
A 16383,19000
LL 1
P I 0
O 1000
/ XS5 /
A 2000,1200
O 1000
Z T

```

## Using Expanded Syntax



**New Rotation Angle**

Changes the Current Rotation Angle. (This also changes the relative coordinate system.)

Format: **/NAx.x/**

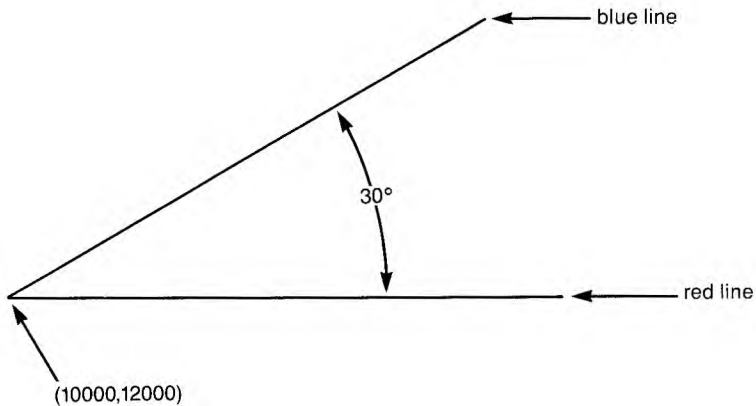
where **x.x** is the new rotation angle that changes the Current Rotation Angle (CRA). Type a positive number (to 360.0) or a negative number (to -360.0).

The following example changes the rotation angle to 30 (NA30).

```

Z I
Z O1
R
LL 1
A10000,12000
D10000,0
B-10000,0
LL 4
/NA30/
D10000,0
Z T

```



## Using Expanded Syntax

### Position to Mark

Moves the CP to marks that you have defined in the MARK CURRENT POSITION command.

Format: **/PM*n*/**

where *n* is the number of the saved mark (0 to 9).

The following example moves the CP to the position defined by the MK1 command, which is 16383,12000.

```
ZI
ZO1
R
A16383,12000
/MK1/
A20000,20000
/PM1/
ZT
```

**Reset Color Index**

Resets the color numbers back to original after you have used the TRANSLATE COLOR INDEX command.

**NOTE:** For all color increment commands, if the value is omitted or a 0 is entered, a value of +1 is used. If the increment value is odd, a result of 0 (normally black) is never generated.

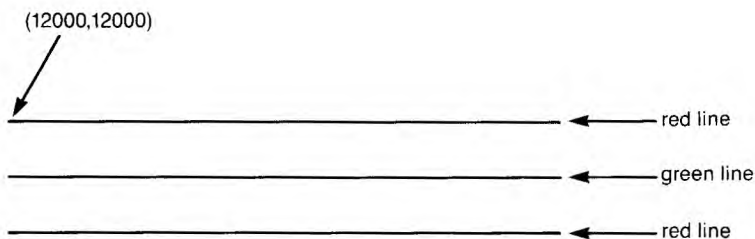
Format: **/RC/**

In the following example, the color number that was translated with the TC command is changed back to its original color (as listed in Table A-1).

```

ZI
ZO1
R
PI0
LL1
A12000,12000
D10000,0
B-10000,-1000
/TC1,2/
LL1
D10000,0
B-10000,-1000
/RC/
LL1
D10000,0
ZT

```





## Using Expanded Syntax

### Scale Factor

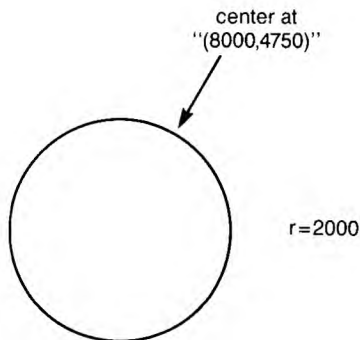
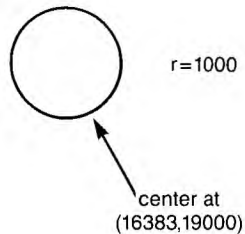
Scale Factor (SF) is normally set at 1, meaning the coordinates you specify for commands are actual size. This command changes the scale of the plot by setting a new SF.

Format: `/NSx.x/`

where `x.x` is a number between 0.0 and 32767.0 that becomes the new SF. The resulting SF affects subsequent commands only.

The following example sets the new scale factor to 2 (NS2).

```
ZI
ZO1
R
A16383,19000
LL1
PI0
O1000
/NS2/
A8000,4750
O1000
ZT
```



**Start of Text**

Moves the CP to the start of the previous text string.

Format: **/ST/**


The next example shows how you can overstrike text. The ST command brings the CP to the beginning of the text 'this is a text string,' and places the next line of text, 'XXX,' over the previous string.

```

Z1
ZO1
R
LT1
CZ500.500
A10000,12000
'this is a text string'
/ST/
CZ383.383
'xxx'
ZT

```

**x x x s i s a t e x t s t r i n g**



(10000,12000)

## Using Expanded Syntax

### Translate Color Index

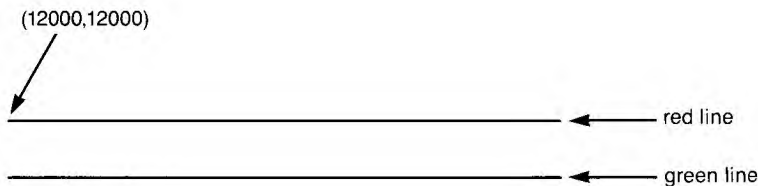
Translates an original color number (from Table A-1) to a different number.

Format: `/TCox1,nx1[,ox2,nx2,...,oxn,nxn]/`

where `ox` is the old color number, and `nx` is the new one. The old number is interpreted as the new number for all subsequent color numbers. You can translate as many colors as you want by specifying the pair of values (up to `oxn,nxn`, where <sup>n</sup> is the maximum number of colors allowed).

In the following example, color 1 is translated to be color 2. Wherever color 1 is specified in subsequent commands, color 2 will be used in its place.

```
Z I
ZO 1
R
PI 0
LL 1
A 12000, 12000
D 10000, 0
B - 10000, - 1000
/TC 1, 2 /
LL 1
D 10000, 0
Z T
```



**Underline Text**

Underlines the last text string, using the color specified as the Line Color Index in the primitive graphics code.

Format: **/UL/**

The primitive graphics command CT2 may be necessary for this to work correctly.

The next example shows how to underline a text string.

```

Z1
ZO1
R
LT1
LL1
CZ500,500
A2000,12000
'Underline this string'
/UL/
ZT

```

Underline this string



## A. Color and Style Tables

---

Depending upon the type of display or plotter you use, you can have many different colors and patterns in your charts. (See "Required Equipment" in Section 1 for a description of the equipment you need.)

In this appendix, Tables A-1 through A-4 show the available colors, patterns, line styles, and marker symbols.

## Color and Style Tables

*Table A-1. Colors for Charts*

Color Name	Number*	Pen Stall**
black	0	1
red	1	3
green	2	4
yellow	3	5
blue	4	2
magenta	5	7
cyan	6	2
white	7	1
gray	8	1
tan	9	5
aqua	10	8
lime	11	6
violet	12	7
hot pink	13	3
turquoise	14	8
pink	15	3

\* Use for TEXT chart and graphics code only.

\*\* Actual color plotted.

When working with colors:

- ☐ To specify a color to be used on a chart, type a color name (for example, enter **red** to specify the color red). For text charts, primitive graphics code, and expanded syntax, use color numbers instead of names.
- ☐ Do not select the same color for text and screen color. White text, for example, will not show up on a white screen.

- If you have a plotter, put the indicated pen color in the numbered pen stall. On a four-pen plotter you can enter only black, blue, red, or green, but you can put any colors you want in the pen stalls. If you specify a color not available on your terminal or plotter, the system selects another color for it.

*Table A-2. Fill Patterns*

Fill Pattern	Number
None (just a border)	N
Solid	0
45 degree left (\\ \\)	1
45 degree right (/ / /)	2
Vertical lines	3
Horizontal lines	4
Vertical/horizontal crosshatch	5
45 degree crosshatch	6
(Varies by device)	over 6

## Color and Style Tables

*Table A-3. Line Styles*

Line Style	Number
Solid	1
Short dashes	2
Dots	3
Dashes and dots	4
Very short dashes	5
Medium dashes	6
Long dashes	7
One dash - two dots	8
Widely spaced dots	9

*Table A-4. Symbols for Marked Points*

Marker Symbol	Number
Dot (period)	1
Plus sign (+)	2
Asterisk (*)	3
Circle (capital O)	4
X (capital X)	5
(Varies by device)	(over 5)



## B. Graphics Fonts

---

This appendix shows the available font styles for use with graphics.

## Graphics Fonts

### Font 1: Basic Roman

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
QRSTUVWXYZabcdefghijklmnopqrstuvwxyz  
0123456789!  
"#\$%&'()\*+,-./:;  
=>,?@[\\{|}

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
QRSTUVWXYZABCDEFGHIJKL  
MNOPQRSTUVWXYZ  
0123456789!  
"#\$%&'()\*+,-./:;  
=>,?@[\\{|}

## Font 2: Basic Greek

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWX abcdef  
 ghijklmnopqrstuv  
 wx 0123456789!  
 "\$%&'()\*+,-./:;  
 =>,@[\]{}

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠ  
 ΡΣΤΥΦΧΨΩ ΑΒΓΔΕΖ  
 ΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧ  
 ΨΩ 0123456789!  
 "\$% &'()\*+,-./:;  
 =>,@[\]{}

## Graphics Fonts

### Font 3: Simplex Roman

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz0123456789!  
"#\$%&'()\*+,-./:;  
=>,?@[\\{|}

ABCDEFGHIJKLMNOP  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz 0123456789!  
"#\$%&'()\*+ - . / : ;  
= > , ? ° × \ . ‘ | ’

**Font 4: Simplex Greek**

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWX abcdef  
 ghijklmnopqrstuv  
 wx 0123456789!  
 "#\$&'()\*+,-./:;  
 =>,@[\|{}

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠ  
 ΡΣΤΥΦΧΨΩ αβγδεζ  
 ηθικλμνξοπρστυφχ  
 ψω 0123456789!  
 "#\$ &'()\*+ -./:;  
 =>,?°×\· ‘|’

## Graphics Fonts

### Font 5: Simplex Script

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz0123456789!  
"#\$%&'()\*+,-./:;  
=>,@[\]()

ABCDEFGHIJKLMNO P  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz 0123456789!  
"#\$ %&'()\*+ -./:;  
=> ,?°×\ . ' |'

**Font 6: Complex Roman**

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz0123456789!  
 "\$%&'()\*+,-./:;  
 <=>,?@[\\] {}|

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz 0123456789!  
 "\$%&'()\*+ -./:;  
 <=>,?@[\\] {}|

## Graphics Fonts

### Font 7: Complex Greek

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMN  
OPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz  
0123456789!  
"#\$%&'()\*+,-./:;  
<=>,@[\]{}|

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠ  
ΡΣΤΥΦΧΨΩ αβγδεζ  
ηθικλμνξοπρστυφχ  
ψω 0123456789!  
"#\$%&'()\*+,-./:;  
<=>,@[\]{}|



**Font 8: Complex Italic**

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz0123456789!  
 "\$%&'()\*+-./:;  
 <=>,@[\]()

*ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz 0123456789!  
 "\$%&'()\*+ -. / : ;  
 <=> , ? @ [ \ ] { | }*

## Graphics Fonts

### Font 9: Complex Script

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz0123456789!  
"#\$%&'()\*+-./:;  
=,?\

ABCDEFGHIJKLMNOP  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz 0123456789!  
"#\$%&'()\*+ -. / : ;  
= , ? \

**Font 10: Complex Cyrillic**

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz0123456789!  
 "#\$%&'()\*+`-./:;  
 <=>,@[\\_]~

АБВГДЕЖЗИЙКЛМНОП  
 РСТУФХЦЧШЩаббвгде  
 жзийклмнопрстуфх  
 цчшщ 0123456789!  
 "#\$%&'()\*+Я-./:;  
 <=>,@[\\_]Ю{|}э

## Graphics Fonts

### Font 11: Duplex Roman

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz0123456789!  
"#\$%&'()\*+-./:;  
=,?\

ABCDEFGHIJKLMNOP  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz 0123456789!  
"#\$%&'()\*+ -. / : ;  
= , ? \

**Font 12: Triplex Roman**

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz0123456789!  
 "#\$%&'()\*+-./:;  
 =,?\

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz 0123456789!  
 "'\$'&'()\*+ -./:;  
 = ,? \

Font 13: Triplex Italic

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
QRSTUVWXYZabcdefghijklmnopqrstuvwxyz  
0123456789!  
"#\$%&'()\*+,-./:;  
=,?\

*ABCDEFGHIJKLMNOPQRSTUVWXYZ*  
*QRSTUVWXYZabcdefghijklmnopqrstuvwxyz*  
*0123456789!*  
*"#\$%&'()\*+,-./:;*  
*=,?\*

# Font 14: Gothic German

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz0123456789!  
 "\$%&'()\*+-./:;  
 =,?\{\}

A B C D E F G H I J K L M N O P  
 Q R S T U V W X Y Z a b c d e f  
 g h i j k l m n o p q r s t u v  
 w x y z 0 1 2 3 4 5 6 7 8 9 !  
 " ' \$ % & ' ( ) \* + - . / : ;  
 = , ? \ s ß þ

## Graphics Fonts

### Font 15: Gothic English

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
QRSTUVWXYZabcdefghijklmnopqrstuvwxyz  
0123456789!  
"#\$%&'()\*+,-./:;  
=,?\

A B C D E F G H I J K L M N O P  
Q R S T U V W X Y Z a b c d e f  
g h i j k l m n o p q r s t u v  
w x y z 0 1 2 3 4 5 6 7 8 9 !  
" ' \$ % & ' ( ) \* + - . / : ;  
= , ? \



Font 16: Gothic Italian

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMN  
 OPQRSTUVWXYZ  
 abcdefghijklm  
 nopqrstuvwxy  
 z0123456789!  
 " # \$ % & ' ( ) \* +  
 - . / : ;  
 = , ? \

A B C D E F G H I J K L M N O P  
 Q R S T U V W X Y Z a b c d e f  
 g h i j k l m n o p q r s t u v  
 w x y z 0 1 2 3 4 5 6 7 8 9 !  
 " ' \$ % & ' ( ) \* + - . / : ;  
 = , ? \

## Graphics Fonts

### Font 17: Solid

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz0123456789!  
"#\$%&'()\*+-./:;  
<=>,?[ ] | ~

**ABCDEFGHIJKLMNOP  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz 0123456789!  
"#\$%&'()\*+ -. / : ;  
<=>, ? [ ] | ♥**

Font 18: Carved

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz0123456789!  
 "#\$%&'()\*+,-./:  
 <=>,?[ ]~

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz 0123456789!  
 "#\$%&'()\*+,-./:  
 <=>,?[ ] | ♥

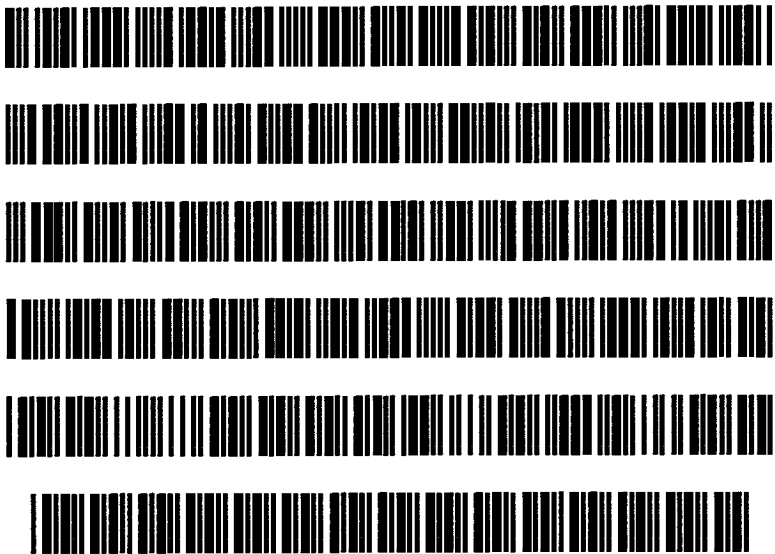
Graphics Fonts

Font 19: Bar Code

This font contains "3 of 9" bar code. The only valid characters in this font are:

ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789-.\*\$/+%(space)

Lowercase a-z are converted to uppercase A-Z in this font. This font is for graphic display purposes and may or may not be read by a bar code reader.



## Font 20: Miscellaneous Characters

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789!  
 "\$%&()\*+,-./:;  
 <>?@[\\]{}~

≡ ≤ ≥ ∞ ~ ^ ˇ ˘ ˙ ˚ ˛ √ ∩ ∪  
 ∩ ∪ ∈ → ↑ ← ↓ ∂ ∇ √ ∫ ∫° ∞ Ъ Ы  
 Ь Э Ъ Ы Ь Ю ♠ ♥ ♦ ♣ ♠® ♠™ ○ □  
 △ ◇ ☆ ★ ° ‹ › ‖ ± ∓ × · ÷ ≠ †  
 © 🌲 ʀ ʁ ☾ ☾ ⬮ ⬭ ⬮ ⬭ ⬮ ⬭ ⬮ ⬭  
 ♂ ♀ ♁ 🔔 Σ ↗ Π ♁ ⋈ ⋈ ⋈

## Graphics Fonts

### Font 21: International — USA

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMN  
OPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz  
0123456789!  
"#\$%&'()\*+,-./:;  
<=>,@[\]\_{}~^

ABCDEFGHIJKLMN  
OPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz  
xyz 0123456789!  
"#\$%&'()\*+,-./:;  
<=>,@[\]\_{}~^

**Font 22: International — Denmark/Norway**

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz0123456789!  
 "#\$%&'()\*+`-./:;  
 <=>,?[ \\_ {} ~ ^

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz 0123456789!  
 "#\$%&'()\*+`-./:;  
 <=>,?@ÆØÅ\_æøå-^

## Graphics Fonts

### Font 23: International — France

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
QRSTUVWXYZabcdefghijklmnopqrstuvwxyz  
0123456789!  
"#\$%&'()\*+,-./:;  
<=>,?[ \\_{}~^

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
QRSTUVWXYZabcdefghijklmnopqrstuvwxyz  
ghijklmnopqrstuvwxyz  
wxyz 0123456789!  
"£\$%&'()\*+,-./:;  
<=>,?à°ç§\_éùè..^



**Font 24: International — Germany**

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz0123456789!  
 "#\$%&'()\*+`-./:;  
 <=>,?[ \\_{}~^

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz 0123456789!  
 "#\$%&'()\*+`-./:;  
 <=>,?§ÄÖÜ\_äöüß^

## Graphics Fonts

### Font 25: International — Italy

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz0123456789!  
"#\$%&'()\*+`-./:;  
<=>,?@[ \\_{}~^

ABCDEFGHIJKLMNOP  
QRSTUVWXYZabcdef  
ghijklmnopqrstuv  
wxyz 0123456789!  
"£\$%&'()\*+ù-./:;  
<=>,?§°#é\_àòèì^

**Font 26: International — Spain**

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz0123456789!  
 "#\$%&'()\*+-./:;  
 <=>,@[\]\_{|~^

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz 0123456789!  
 "Pt\$%&'()\*+ -./:;  
 <=>,<?§iÑ¿\_°ñ ~^

## Graphics Fonts

### Font 27: International — Sweden/Finland

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
QRSTUVWXYZabcdefghijklmnopqrstuvwxyz  
0123456789!  
"#\$%&'()\*+,-./:;  
<=>,@[\]\_{}~^

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
QRSTUVWXYZabcdefghijklmnopqrstuvwxyz  
ghijklmnopqrstuvwxyz  
wxyz 0123456789!  
"#\$%&'()\*+,-./:;  
<=>,@[\]\_{}~^

**Font 28: International — United Kingdom**

The characters in this font style correspond to the following keys:

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz0123456789!  
 "#\$%&'()\*+`-./:;  
 <=>,@[\]\_{}~^

ABCDEFGHIJKLMNOP  
 QRSTUVWXYZabcdef  
 ghijklmnopqrstuv  
 wxyz 0123456789!  
 "£\$%&'()\*+`-./:;  
 <=>,@[\]\_{}~^

## C. Primitive Graphics Code Development

---

This appendix contains a brief explanation of primitive graphics code design. This appendix contains the following topics:

- ☐ The Purpose of Primitive Graphics Code
- ☐ Communications
- ☐ Restrictions

### THE PURPOSE OF PRIMITIVE GRAPHICS CODE

The Graphics Standards Planning Committee of SIGGRAPH-ACM proposed a graphics standard which has become known as the Core System. This system provides a common interface between graphics application software and graphics display/input devices. With this system, the applications package does not have to use a different protocol for each specific graphic device.

The Core System was designed for graphics in the general or business environment. Since a protocol could not be defined to suit all purposes, Core/GKS compatibility was chosen for use with MAPPER graphics. For MAPPER color graphics, this system is called primitive graphics code.

Primitive graphics code is device-independent, and is a base level user interface to a display or plotter.

One of the objectives of primitive graphics code is to encourage nonprogrammers to create their own custom graphs. During development, three main points emerged:

1. Commands that permit relative moves (such as Move Relative and Polygon Relative) greatly reduce the complexity of creating custom graphs.
2. The extension commands of Rectangle, Arc, Sector, Circle, and fixed fill patterns also greatly reduce complexity.
3. Commands for Line and Marker functions are not needed. Instead, Polyline or Polymarker commands of dimension 1 can be used.

### COMMUNICATIONS

Under the current communications protocol (standard U200 message format), the character stream may be routed either to an alpha processor or to a graphics processor. All characters following an <ESC> Z a sequence are sent to the graphics processor until either an <ETX> or <ESC> Z b sequence is received. The graphics processor interprets all primitive graphics code after it receives an Initialize Graphics command and ignores any after a Terminate Graphics command.

### RESTRICTIONS

Primitive graphics code was implemented to standardize generation of graphic images. There are limitations depending on the microcode level for the terminal, however. Each graphics device has microcode (either software or firmware) that translates the primitive graphics code into device-specific graphics commands.

Due to different devices, not all commands are handled exactly the same. However, there are few discrepancies and where they exist, they are noted with the description of the specific command.



## B

### **bar chart**

A chart that uses horizontal or vertical bars to represent data. Bar charts are useful for comparing values that change over time.

## C

### **call**

The abbreviation you use to request a function or run statement.

### **character set**

The characters allowed in the reports of a form type. These include full character set, limited character set, and full character set upper.

### **chart input report**

A report that you fill in with data you want to chart. After you have finished filling in the chart input report, it is called a completed input report.

### **column**

- (1) A character position in a report; for example, the first character position on the left side of a report is column 1.
- (2) Entries arranged vertically on the screen.

### **completed input report**

A report that contains data to be charted by a specific color graphics run, such as PIEG.

### **control line**

The top line of the screen with control positions for vertical line and horizontal positioning. *See also* control position.

## Glossary

### control position

One of the six fields (LINE, FMT, RL, SHFT, HLD CHRS, HLD LN) on the control line used to manipulate the display of a report or result.

### coordinator

*See* MAPPER system coordinator.

### current position

The point on the screen where your next command originates from when using primitive graphics code and expanded syntax commands.

### cursor

The character (█) on the screen that can be moved anywhere to enter data. The cursor shows your current location on the screen.

## D

### data

Information that you provide, such as the numerical data for a line chart.

### database

The information files stored in the MAPPER system that form the basis of reports.

### date format

A format that defines how a date is to be displayed; for example, *DD MMM YY* displays a date as 14 MAR 88.

### date line

Line 1 of each report showing the date and time of the last update, the report number, the report creation date, and the user-id of the last person to update the report. The date line is counted as one of the header lines.

### default

A preset value or condition that the system uses whenever you do not choose a specific selection.

**demonstration database**

The reports, set up in the demonstration mode, in which you can practice manual functions and run statements. The demonstration database is usually in mode 0, but this may vary from site to site. To access the demonstration database, use the JDOE sign-on or switch to the demonstration mode while using your own sign-on.

**display**

(1) The terminal screen you look at while using MAPPER software. (2) To present data on the screen.

**E****END REPORT line**

The last line of a displayed report or result.

**enter**

To type information and press XMIT, transmitting the information from the terminal to the computer.

**error message**

A message the MAPPER system displays on the top line of the screen, either warning you of a possible problem or telling you something is wrong.

**expanded syntax commands**

A set of graphics commands processed by the GS (Graphics Scaler) run statement to create charts or modify existing charts. The GS statement translates the expanded syntax commands (stored in a freeform report) into primitive graphics code, which can be displayed or plotted. *See also* primitive graphics code.

### F

#### **fast access**

A form of function or run requests that allows you to bypass the function request messages or menus.

#### **FCS**

*See* full character set.

#### **field**

(1) A defined part of a line of data, separated by tab positions from other fields. Each field is a unique entity, such as a status code or a shipping date, and corresponds to a column of data in a report. (2) A defined part of the run statement format. Fields are separated from one another by a space. (3) A segment of the screen. (4) A position in a system message where data is entered (for example, the **Report** field in a function request message).

#### **field headers**

The titles for report fields. These titles appear above each field at the beginning of a report, immediately preceding the header-divider line.

#### **form type**

A group of reports in a mode. All reports within a form type have the same headers and line length. Each form type of a mode is identified by a letter from B to I. Type A is accessible to all modes in a MAPPER system. Each form type in the MAPPER system is also identified by a unique octal number called the form type number.

#### **form type number**

The octal number that identifies the form type and mode within the system. Each type has a unique number, such as 0010 for type E in mode 0.

**format**

- (1) The specific variation of the report within a form type (for example, basic format, format 1, format 2, and so on), each of which displays a different selection of columns of data in the report. The formats are defined in the RID 0 of that form type.
- (2) The specific syntax requirements for run statements, which vary from one statement to another.

**freeform report**

A report without a columnar structure determined by the RID 0 of its type. You can use freeform reports for memos, bulletins, run control reports, or ad-hoc columnar reports.

**freeform type**

A form type used for freeform reports. Type A is a freeform type accessible from all modes in the system.

**full character set (FCS)**

The character set that allows uppercase and lowercase letters, stored internally as ASCII characters. *See also* character set. *Contrast with* limited character set.

**function**

- (1) An operation you perform on one or more reports or on a result, such as matching, searching, or sorting.
- (2) A mathematical calculation, date or time conversion, or character expression used with the CAL function.

**function call**

*See* manual function call.

**function keys**

The keys on your terminal keyboard (for example, F1 or F2) programmed to perform MAPPER functions when you press them.

**function mask**

A screen of report headers below which you enter parameters as instructions for a manual function.

## Glossary

### **function request message**

A MAPPER system message that solicits information needed to perform a manual function.

## H

### **header-divider line**

The line beginning with an asterisk and made up of equal signs and periods that separates the headers from the data; counted as one of the header lines. Many functions rely on the header-divider line to determine where headers end and data begins.

### **header lines**

The lines including and following the date line that show the type letter and report number, names of fields, and the header-divider line.

### **headers**

*See* field headers.

### **home position**

The upper left corner of the screen.

## I

### **idle logo**

The screen you see before signing on to the MAPPER system. The logo shows your system name, your station number, and the level of MAPPER software. The word IDLE in your IDLE logo shows your station is inactive.

### **index list report**

A report created by the DISPLAY run to list the charts you have created. The index list report can also be used with the DISPLAY run to display the charts sequentially.

## J

### JDOE database

*See* demonstration database.

### justify

To position data within a field or variable. For example, if data in a field is left-justified, it begins in the leftmost column of that field.

## L

### LCS

*See* limited character set.

### limited character set (LCS)

The character set that allows uppercase letters only, stored internally as Fielddata characters. *See also* character set. *Contrast with* full character set.

### line chart

A chart that uses lines in an x-y coordinate plane to represent data. Line charts are useful for presenting values that change over time or the relationship between two factors.

### line type

One of the four kinds of lines in the MAPPER database, using line type designators in column 1 to specify the line type:

Tab (□): column-formed edited (□ represents an invisible tab character).

Asterisk (\*): column-formed nonedited.

Period (.): comment, nonedited.

Nontab (any valid character): column-formed edited (may not start with a tab character, asterisk, or period).

## Glossary

### **line type designator**

A character used in column 1 of a report line to specify one of four line types. *See also* line type.

### **line 0**

The first line of a report, never visible on the screen, containing system information about the report: the form type letter, report number, write password, read password, number of header lines, and the number of lines. This information is stored with the report and can be displayed with the Line Zero function or run statement.

### **line 1**

*See* date line.

## **M**

### **manual function call**

The abbreviation used to request a function (for example, TOT for the Totalize function).

### **MAPPER software**

The multiactivity real-time program that creates an end-user environment for file management and report generation. *See also* MAPPER system.

### **MAPPER system**

A file management system that allows the user to maintain and manipulate a large amount of data in a report-structured database.

### **MAPPER system coordinator**

The person who manages the database of the MAPPER system. This person configures the system, registers new users and new or updated runs, and coordinates the system user group.



**MAPPER system operator**

The person responsible for daily operations including mounting recovery tapes, performing the purge and cycle/merge processes, starting the MAPPER system, and executing the PREMAP or PRESTR runstreams. This responsibility is specifically defined by systems operations at each site.

**menu**

A list of items on a screen from which one item can be selected, either by tabbing to the selection and transmitting, or by typing in a letter, number, or character string, and then transmitting.

**mixed bar and line chart**

A chart that combines the bar chart and the line chart.

**mode**

A group of eight form types (B through I). Each user signs on into a specific mode assigned by the MAPPER system coordinator. Users in a particular department may have one or more modes to work in.

## N

**nontab line**

A line starting with any character except tab, asterisk, or period. These lines act as tab lines except no tab character is in column 1; they usually have an alphabetic or numeric character in column 1. Nontab lines can be manipulated separately from tab lines by keying off the leftmost position.

## Glossary

### O

#### **option**

A selection that you can make for special operation of a manual function or run statement. If no option is used, the default operation occurs.

#### **organization chart**

A chart created with the GOC function that shows how a company or other organization is structured.

### P

#### **packed primitive graphics code**

One type of format for primitive graphics code in a MAPPER result or report. In this format, the commands are strung together, not separated by spaces or other characters. *Contrast with* unpacked primitive graphics code.

#### **parameter**

An item of information supplied to a function or run to indicate specific values or fields to process.

#### **pareto chart**

A bar chart combined with a line chart that accumulates the percentage of each bar in the order drawn. Pareto charts are useful for showing the cumulative effect of data represented by a bar chart.

#### **period line**

A line beginning with a period in column 1. Period lines can be used as comment lines following data lines. They cannot be shifted and are limited to 80 characters in length. They cannot be displayed or processed in different formats. Because they are not controlled by the tab positions and input edit codes of RID 0, they can be used for comments.

**pie chart**

A chart composed of a circle cut into segments representing various data values. Pie charts are useful for representing parts of a whole, such as percentages.

**primitive graphics code**

A set of commands that allows the MAPPER system to display charts on different types of output devices. You can also create your own graphics by entering primitive graphics code in a freeform report. Primitive graphics code can be stored in MAPPER reports.

## R

**radar chart**

A chart that uses rays to represent a data scale. Each set of data is represented by a line; these lines are drawn through the data points on the rays. Radar charts are useful for comparing cyclical relationships in data.

**report**

The set of data that you work with in the MAPPER system. Reports are identified either by a unique report number and form type letter or by a meaningful name you have given the report using the NAME run.

**report headers**

*Synonymous with field headers.*

**report identifier (RID)**

A specific report identified by a unique report number and form type letter. For example, RID 2B refers to report 2 in type B.

**result**

A temporary copy of data obtained by executing a manual function or run. It is held in scratch storage until released, duplicated, or replaced into a permanent report.

## Glossary

### **resume**

To continue a function or run that was halted by a display. Press **F1** or enter **rsm** in the control line to resume an operation.

### **RID**

*See* report identifier.

### **run**

A series of instructions that the MAPPER system interprets to produce a report or perform other tasks such as updating reports.

### **run call**

A name assigned to a run. Used to access the run and execute it; for example, **HELP** and **FCC**.

## S

### **scatter chart**

A chart that uses marker points in an x-y coordinate plane to show the relationship between two sets of data.

### **SOE**

*See* start of entry.

### **start of entry (SOE)**

The character represented on the screen by this symbol: **►**. Used with the **Soc Update** function and data manipulation functions.

### **station number**

The unique identifier for your terminal on the MAPPER system.

### **string**

A series of alphabetic or numeric characters that you specify.

### **system coordinator**

*See* MAPPER system coordinator.

## T

### tab

To press **TAB FWD** or **TAB BACK** to move the cursor from one tab character position to another.

### target chart

A chart in which the data scale is represented by concentric rings in the form of a target. The data points are drawn on the chart in the rings corresponding to their value. Target charts are useful for comparing values of items.

### text chart

A chart that contains text. Text charts are useful for presenting outlines or reports.

### 3D bar chart

A chart that is similar to a bar chart except that the entire chart appears to be three dimensional.

### time line chart

A chart that uses bars to represent time spans. Markers identify specific dates on the bars. Time line charts are useful for project planning and projections.

### type

*See* form type.

## U

### Universal Terminal System (UTS)

A family of terminals and related hardware.

### unpacked primitive graphics code

One type of format for primitive graphics code in a MAPPER result or report. In this format, each command is on a separate line. *Contrast with* packed primitive graphics code.

## Glossary

### **user registration**

The process by which the MAPPER system coordinator enters into the user registration report (mode 218, type F) a user-id, sign-on password, sign-on department number, and sign-on mode for each user.

### **UTS**

*See* Universal Terminal System.

## **X**

### **x axis**

The horizontal (left to right) axis on a bar, line, mixed bar and line, scatter, pareto, or 3D bar chart.

## **Y**

### **y axis**

The vertical (bottom to top) axis on a bar, line, mixed bar and line, scatter, pareto, or 3D bar chart.



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