SLIDES: A Program to Draw Slides and Posters

by

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ABSTRACT

SLIDES is a program which takes text and commands as input and prepares lettered slides and posters. When run on the time-sharing computer, the program can display its output on an interactive graphics terminal; in batch, it can direct its graphical output to a variety of plotters. The program uses DISSPLA graphical subroutines and standard ANL plotter subroutines. This report contains material written for the beginning user, who should be able to produce useful slides or posters by following the examples. This report also serves as a complete reference for the SLIDES program.
1. INTRODUCTION

1.1 GENERAL DESCRIPTION

SLIDES is a generalized program which letters slides or posters, utilizing DISSPLA graphics subroutines to generate its output. It receives simple, self-descriptive commands and text as its input. The program automatically chooses the size for characters so that the text fills the area of the slide. It can be run interactively under TSO at a Tektronix graphics terminal, or it can be run in batch with output directed to any AMD plotter. When used with the FR80 film recorder at AMD, it produces a slide suitable for a standard slide mount.

SLIDES is capable of various actions with a line of text. It can scale a line relative to another line, underline the line multiple times, center the line, left justify the line to a user-defined edge, or right justify the line to a user-defined edge.

SLIDES is capable of using all of the fonts and all of the alphabets of DISSPLA. It can display text in eleven character styles. It can display text in upper and lower case Roman ("Standard"), Greek, Russian, and Hebrew alphabets. It can display text in standard, italic, and script. It can display mathematical and other symbols. Section 18 of the DISSPLA Intermediate Manual shows most of the styles and alphabets available.

SLIDES is also capable of using all of the string manipulation instructions in DISSPLA. Complex mathematical expressions with multiple levels of subscripting and superscripting, various styles and sizes of brackets, as well as any character style from any alphabet, are possible with these instructions.

SLIDES is device independent, which means that it can plot text on any device. In those cases where specialized features, such as color, are not supported on the device, the feature is simply ignored. SLIDES is capable of using most of the features of the hardware used to generate the slide. When used with the FR80, it can display text in all of the various spot sizes, intensities, and colors.

In this memorandum, we use the word "slide" to refer interchangeably to an area of appropriate size on 35 mm film or to a corresponding area on any other plotting device.
1.2 SIMPLE EXAMPLE PRODUCING SLIDES

The following example (see Figure 1) shows the batch use of the SLIDES program to produce three black-and-white 35 mm slides suitable for mounting in standard slide mounts:

//jobname JOB (Fnnnnn,5,0,2),REGION=250K
username nnnnn accounting
//STEPONE EXEC PGM=G1DATA
//STEPLIB DD DSN=SYS1.PLOTPKG.SLIDES,DISP=SHR
//FT05P001 DD *
&COMMENT THIS EXAMPLE PRODUCES THREE SLIDES
&COMMENT ON BLACK-AND-WHITE 35 mm FILM.
&U35BW
&COMMENT THIS FIRST SLIDE USES ONLY DEFAULT VALUES
THE SLIDES PROGRAM
CONVERTS SIMPLE INPUT TEXT
INTO GRAPHICAL OUTPUT
SUITABLE FOR SLIDES AND SIGNS.
&NEW
&COMMENT THIS SECOND SLIDE SHOWS THE USE OF PARENTHESES
&COMMENT TO CAPITALIZE LETTERS.
(C) CHARACTERS ARE NORMALLY DRAWN IN LOWER CASE.
(L) ETTERS OR (W)ORDS
TO BE CAPITALIZED ARE
ENCLOSED IN PARENTHESES.
&NEW
&COMMENT THIS THIRD SLIDE COMBINES SEVERAL
&COMMENT OPTIONAL COMMANDS.
&FRAME
&SERIF
&LEFT
(T)HERE ARE A NUMBER OF
(ONTAL COMMANDS)
&SCALE .5
TO SELECT CHARACTER STYLES
AND CONTROL THE FORMAT OF THE SLIDES.
&END
//FT06P001 DD SYSOUT=A
//GRAPHICS DD DSN=&&PIX,
/// DISP=(NEW,PASS),
/// UNIT=SASCR,
/// SPACE=(6000,(50,10))
//STEP2 EXEC PGM=SPU35BW,PARM='CINE,COLOR,COMIC,CRAYON,FRMORG,SPOT'
//STEPLIB DD DSN=SYS1.POSTPLOT.G1DATA,DISP=SHR
//GRAPHIN DD DSN=&&PIX,DISP=(OLD,DELETE)
//GRAPHICS DD SYSOUT=U
/*
Figure 1
Three Slides Produced by the Example

the slides program
converts simple input text
into graphical output
suitable for slides and signs.

Characters are normally drawn in lower case.

Letters or WORDS
to be capitalized are
enclosed in parentheses.

There are a number of
OPTIONAL COMMANDS
to select character styles
and control the format of the slides.
Note that the first step in the job ("STEPONE") places intermediate output into a scratch dataset ("&PIX") which serves as input to the second step ("STEPTWO"). See Section 4 for more details on how to compose Job Control Language to run the SLIDES program.

1.3 NOTE ON HOW TO USE THIS MANUAL

For making simple slides or signs in a hurry, you have already read far enough. Copy the example from the preceding section, substituting your text for ours. You should have useful 35 mm film output in much less than a day.

Read further if you want to use some of the extensive facilities of the SLIDES program, or if you are just curious about what it can do. This memorandum contains material written for the beginning user; we hope that it can be understood when read through from beginning to end. This memorandum is also a complete reference for the SLIDES program and contains some sections organized primarily for easy reference.
2. TEXT FOR SLIDES

2.1 PREPARING TEXT FOR SLIDES

The most common error in preparing slides is overcrowding. The following rule of thumb should be strictly followed. "If the slide cannot be read without magnification when held at arms length, it cannot be read at any magnification at any length." Following that rule of thumb, the following suggestions can be made.

- Keep the slide simple. A slide, like a highway billboard, must be quickly read and easily understood.

- Show one idea per slide. Use a slide series for progressive disclosure. Use duplicates to refer to the same slide at different times during the presentation.

- Use key words rather than full sentences. Limit words to about 20 per slide. Include titles to supplement, not duplicate, slide data.

- Use several simple slides rather than one complicated one. Limit display time to a maximum of one minute.

- For a table, use simplified captions; and if possible, round off the numbers. Use no more than four to six columns and a maximum of 10 lines. Use no more than 20 items in any format.

- Use no more than 45 characters per line. Use capital letters for short lines and lower case for longer lines. Use simple lettering styles.

2.2 HOW TO TYPE TEXT

Text input for SLIDES is simple and clear. Type your text line-for-line as you want it to appear on the slide, using columns 1 through 72 of each input record. The text is plotted in the order in which it is entered. The commands which are in effect at the time the line of text is entered are used and affect the processing of the line of text. There is a limit of ten lines per slide image.

Parentheses must be placed around those characters to be capitalized except when in the Instruction mode. See Section 3.4 for a discussion of Instruction mode. Only those characters enclosed in parentheses are capitalized. The parentheses do not appear. If no parentheses are used, the lower case is used for all characters. For example, the following line of text
(J)AMES (R). (J)ONES (PHD)

would appear as

James R. Jones PHD

Parentheses must be placed around those parentheses to be included in the line of text. The text following the parenthesis enclosed in parentheses is not capitalized unless it also is enclosed in parentheses. For example, the following line of text

(WOULD YOU HELP ME ()(PLEASE)(). (MR. (J)ONES?

would appear as

Would you help me (PLEASE) Mr. Jones?

The text for a line is composed of all characters from column one to the last non-blank character before column 73. Completely blank lines are treated as if they contained one blank character and are therefore useful for inserting extra vertical spacing in a slide. To offset text from the left margin, use the $LEFT command or simply insert blank characters at the beginning of the line. To offset text from the right margin, use the $RIGHT command or append trailing blanks enclosed in parentheses.

Lines of text cannot begin with an ampersand (&) because that character is used to identify SLIDES commands. If you require a text line to begin with an ampersand, begin the line with two ampersands (&&). For example, the following line of text

&&AMPERSAND

would appear as

&amphersand
3. COMMANDS FOR SLIDES

SLIDES has 58 commands, each of which begins with an ampersand (&). These commands are simple and self-descriptive. All non-sequence commands are global in scope. They remain in effect across slide boundaries and stay in effect until explicitly changed. All commands set a mode, such as character style, and that mode remains in effect until another command resets this mode. Commands are typed one per line (or card); they can be placed in any order among text lines. They affect succeeding text lines.

3.1 DEFAULT VALUES

The only commands you need to know are &NEW and &END, because the program has been designed to produce good-looking slides with a minimum of user input. Using the default values, the SLIDES program will produce square images without a frame or ANL logo; on film, a blank slide will be inserted between each slide generated by the user. There will be a 0.5 inch margin all around the slide, and text will be centered. Characters will be drawn in the Default font Standard alphabet; this is a simple, unshaded character font. All lines will be the same scale, with &SIZE having no noticeable effect. Text will not be underlined, and will be as bright and clear as possible. These are the commands and default values which are automatically in effect when the program starts:

&ANGLE 90
&BACKGROUND 0 0 0
&CENTER
&COLOR 1 1 1
&COMIC
&CRAYON WHITE
&DEFAULT
&GAPS 10
&INTENSITY 1
&MARGIN .5
&NOANALLOGO
&NOFRAME
&NOINSTRUCTION
&NOUNDERLINE
&page 0 0 11 11
&SCALE 1
&SIZE 100
&SKIP
&SPOTSIZE 0
&STANDARD
3.2 GENERAL FORMAT

Commands follow a simple format. Commands must start with an ampersand (&) in column one of a record. The next four alphameric characters define the command. Characters beyond these four through the first blank are ignored. Therefore, the following specify the same command:

SUNDE
SUNDERLINE
SUNDERNEATH

Some commands require parameters. Parameters must be unsigned numbers. (The parameter on command &CRAYON, however, must be an alphabetic character; see Section 3.4 for a description of the &CRAYON command.) At least one blank must separate parameters. Any character not representing a number or a blank terminates the scan of the parameter list. Parameters are then checked for correctness; default values are supplied for any parameters which were illegal or not specified by the user. The following examples show the values assumed for parameters:

&COLOR .25 .25 .25 Parameter values are .25 .25 .25
&COLOR Parameter values are 1 1 1
&COLOR -1 Parameter values are 1 1 1
&COLOR 11 Parameter values are 1 1 1
&COLOR 0 0 0 Parameter values are 0 0 0

3.3 CATEGORIES OF COMMANDS

This section introduces the SLIDES commands, which can be broken down into seven categories:

SEQUENCE
CONTROL
SIZE AND POSITION
CHARACTER STYLE
ALPHABET
HARDWARE
MISCELLANEOUS

Complete explanations of their syntax, parameters, and operation appear in the alphabetical listing in Section 3.4.

3.3.1 SEQUENCE COMMANDS

The sequence commands terminate groups of commands and text lines and cause the current slide to be plotted.

&END
&NEW
&OVERLAY
&REPEAT
3.3.2 CONTROL COMMANDS

The control commands operate on all succeeding slides. They are normally used before any text lines for the slide in which they are to begin operation.

&MARGIN
&MARGIN
&COMIC
&FRAME
&ITEK
&NOANLLOGO
&NOFRAME
&PAGE
&$16BW
&$16CLR
&$35BW
&$35CLR
&TEKTRONIX
&U35BW

Figure 2 shows the relative sizes and shapes of images set by &ITEK, &$16xx, &$35xx, &TEKTRONIX, and &U35BW commands.

3.3.3 SIZE AND POSITION COMMANDS

The process of scaling the text for a slide is very straightforward and is performed by the program for the user. An understanding of the process will aid the effective use of the size and position commands. The width and height of the slide is determined by the values assigned by the &MARGIN and &PAGE commands, and all other commands affecting page size. The height is top-page-limit minus bottom-page-limit minus 2*margin. The width is right-page-limit minus left-page-limit minus 2*margin. All of the text lines are scaled proportionally to their scaling factor such that no line is longer than the slide is wide. The left and right justification is checked and the text lines are again scaled such that no line is longer than the space in which it is to fit. The height is checked and the text lines are again scaled such that there is at least half the character height between text lines and at the top and bottom of the slide. The &SIZE command is checked, and the text lines are again scaled such that text lines are no taller than size*scale inches.
This Figure shows six different frame sizes superimposed, with a common lower left corner. You can use any of the commands (or $\&$PAGE) to establish frame size regardless of the actual plotter to be used, but the results may be undesirable. For example, you could use the $\&$S35BW command and preview the image on a Tektronix terminal; in that case, the top text line of the slide might not be drawn, and the visible portion would not be centered on the screen.
The line size and position commands control the relative size and position of the lines of text, and are as follows:

&CENTER
&LEFT
&MARGIN
&RIGHT
&SCALE
&SIZE

3.3.4 CHARACTER STYLE COMMANDS

The character style commands specify the particular style to be used when plotting the line of text. The commands are:

&CARTOG
&COMPLX
&DEFAULT
&DUPLX
&FASHON
&FUTURA
&GOTHIC
&LOGO
&SCMPLX
&SERIF
&SIMPXLX
&TRIPLX

They cause succeeding text lines to be plotted in the specified character style; see Figure 3.

The style of the output text is a function of the style chosen (Cartog, Simplx, etc.) and the alphabet chosen (Greek, Russian, etc.). Not all of the styles have all of the alphabets. Refer to the DISSPLA Intermediate Manual for listings of most of the styles, and alphabets, and for how to select the unique characters.

3.3.5 ALPHABET COMMANDS

The alphabet commands specify the particular alphabet to be used when plotting the characters of the text lines. The alphabet commands are:

&GREEK
&HEBREW
&ITALIC
&RUSSIAN
&SCRIPT
&SPECIAL
&STANDARD

These commands cause succeeding text lines to be plotted using
Figure 3
Character Styles Available for Text

Cartog abcDEF123       Gothic abcDEF123

Complx abcDEF123       LOGO ABCDEF123

Default abcDEF123      Scmplx abcDEF123

Duplx abcDEF123        Serif abcDEF123

FASHON ABCDEF123       Simplx abcDEF123

Futura abcDEF123       Triplx abcDEF123
the specified alphabet.

When using the Special alphabet, those characters enclosed in parentheses use the Special alphabet and those not enclosed in parentheses use the Mathematic alphabet. Reference the DISSPLA Intermediate Manual for a listing of the Mathematic alphabet. There is not an upper or lower case in either the Special or Mathematic alphabet; but using the Special alphabet and parentheses, both alphabets are made available.

3.3.6 HARDWARE COMMANDS

The hardware commands control the various options of the PR80 hardware.

&BACKGROUND
&COLOR
&CRAYON
&INTENSITY
&SPOTSIZE

3.3.7 MISCELLANEOUS COMMANDS

The miscellaneous commands provide special features of general use.

&ANGLE
&COMMENT
&GAPS
&INSTRUCTION
&NOINSTRUCTION
&NOSKIP
&NOUNDERLINE
&RESET
&SKIP
&UNDERLINE

3.4 ALPHABETICAL LISTING AND DESCRIPTION OF COMMANDS

In the following listing, optional parameters are shown enclosed in brackets, "[" and "]". You do not type the brackets. Note that no SLIDES command requires the user to supply arguments, but that preceding values cannot be omitted if a later argument is to be supplied (because they are all "positional" parameters).

&ANGLE [degrees]

This command selects the angle of the lines used to shade the characters in the Futura, Logo, Serif, and Fashon styles. Degrees is measured in degrees from horizontal. This command is in effect when program execution begins; it is also activated by the &RESET command. If no value (or an
illegal value) for "degrees" is supplied, the value 90 is assumed.

&ANLLOGO [left [bottom [size [distance [red [green [blue]]]]]]]

This command causes slides to have the Argonne National Laboratory logo when they are plotted. The lower left corner of the logo is at (left, bottom), the size is "size" inches on a side, the distance between shading lines is "distance" inches, and the logo's color is composed of red, green, and blue, where red, green, and blue range from 0 to 1. The default values for left and bottom are both 0; size and distance are 1 inch; and red, green, and blue are 1. All distances are measured in inches. See Section 4.2.4 for a discussion of the use of color.

&BACKGROUND [red [green [blue]]]

This command causes the entire area of the slide (as set by &PAGE or other commands which modify the page size) to be composed of red, green, and blue (which range from 0 to 1). The &BACKGROUND command is in effect at the beginning program execution with red, green, and blue all having the default value of 0. If &BACKGROUND is entered with any or all parameters missing, they will be assumed to be 0. This command is useful only on color film plotters. See Section 4.2.4 for a discussion of the use of color.

&CARTOG

This command selects the DISSPLA Cartog character style.

&CENTER

This command causes succeeding text lines to be centered in the frame width. This command is in effect at the start of program execution and also after the &ITEK, &MARGIN, &PAGE, &RESET, 8S16BW, 8S16CLR, 8S35BW, 8S35CLR, 8TEKTRONIX and 8U35BW commands.

&CINE

This command causes slides to be plotted in the Cine format. The slide will read properly if the film strip is held vertically. Unless &CINE is used, all slides will be in Comic format. This command applies only to the PR80 film plotter.

&COLOR [red [green [blue]]]

This command causes the color of succeeding text lines to be composed of red, green, and blue, where the three parameters range from 0 to 1. The &COLOR command is in effect at the
beginning of program execution with red, green, and blue all
having the default value of 1. If &COLOR is entered with
any or all parameters missing, they will be assumed to be 1.
This command applies only to the FR80 film plotter. See
Section 4.2.4 for a discussion of the use of color.

&COMIC

This command causes slides to be plotted in the comic
format. The slide will read properly if the film strip is
held horizontally. This command is in effect at the
beginning of program execution. This command applies only
to the FR80 film plotter.

&COMMENT

This command is used to generate a comment. It has no
affect on succeeding text lines or slides.

&COMPLX

This command selects the DISSPLA Complx character style.

&CRAYON [text]

This command causes succeeding text lines to be a color
specified by the text string, which may be WHITE, CYAN,
MAGENTA, YELLOW, RED, BLUE, or GREEN. Only the first
character is needed. &CRAYON is the only command whose
parameter is non-numeric. The default value is WHITE. If
the command is entered without any parameters, WHITE is
assumed. This command applies only to the FR80 film
plotter. See Section 4.2.4 for a discussion of the use of
color.

&DEFAULT

This command selects the DISSPLA Default character style.

&DUPLX

This command selects the DISSPLA Duplx character style.

&END

This command causes the current slide to be plotted and the
program to terminate. The program will also process the
last slide and then terminate if it encounters an end-of-
file on its input dataset (FT05F001).

&FASHON

This command selects the DISSPLA Fashon character style.
This command causes a frame to be drawn around the slides when they are plotted. The frame color is composed of red, green, and blue, where red, green, and blue range from 0 to 1. The default values are all 1, which makes white. See Section 4.2.4 for a discussion of the use of color.

This command selects the DISSPLA Futura character style.

This command selects the distance between lines used to shade in the characters in the Futura, Logo, Serif, and Fashion styles. "Distance" is measured in inches. The spacing is 10 inches at the start of program execution and is reset to this value by the &RESET command; a gap of 10 inches normally will not cause any shading. See Section 3.5 for recommended &GAPS values.

This command selects the DISSPLA Gothic character style.

This command selects the DISSPLA Greek alphabet style.

This command selects the DISSPLA Hebrew alphabet style.

This command sets instruction mode, so that text is processed in a special manner. Parentheses are used in the &INSTRUCTION mode to delineate instructions to the string manipulation features of DISSPLA. All string manipulation instructions must be placed in parentheses. All of the string manipulation features of DISSPLA, including those in the Advanced Manual are included in the SLIDES program. The rules, as described in the DISSPLA documentation, are in effect. With these string instructions, complex formulae and text strings can be produced. For further information and examples of use, see the DISSPLA documentation.

This command causes succeeding text lines to have an intensity of "brightness". The parameter must range from 0 to 1, 0 being the least bright and 1 being the most bright.
&INTENSITY is in effect at the beginning of program execution with a value of 1, and reset to that value by the &RESET command. This command applies only to the FR80 film plotter.

&ITALIC

This command selects the DISSPA Italic alphabet style.

&ITEK

This command causes slides produced on unsprocketed 35 mm black and white film to be scaled so that when they are blown up on the Itek printer, the image corresponds to actual inches. The right page limit is set at 21.195, the top page limit at 16.772. This page limit selection should be used with the Comic format. This command is not reset by a &RESET command.

&LEFT [percent]

This command causes succeeding text lines to be left justified by the given percent of the frame width from the left edge. The maximum value should be less than 100. If the &LEFT command is given with no value specified, the percent of justification is assumed to be 0.

&LOGO

This command selects the DISSPA Logo character style.

&MARGIN [size]

This command causes slides to be plotted in the page with a "size" inch margin around all sides. Margin is in effect at the start of program execution with the default value of 0.5 inches. If no value is entered, the value will be assumed to be 0.5 inches.

&NEW

This command causes the current slide to be plotted and input for the next slide to be accepted.

&NOANLLOGO

This command causes the logo not to be drawn when the slides are plotted. Unless &ANLLOGO is used, slides will not have a logo.
This command causes the frame not to be drawn when the slides are plotted. Unless &FRAME is used, slides will not have a frame.

This command causes succeeding text lines to be treated in the normal manner. This command is in effect at the beginning of program execution.

This command causes the slides not to have a blank slide between them. This is useful for movies. Unless &NOSKIP is used, slides will have a blank slide between them.

This command turns off text underlining. It is in effect when the beginning of program execution is put into effect by the &RESET command.

This command causes the current slide image to be plotted and input for the next slide to be placed directly over the previous slide. The &OVERLAY command produces the best results on Tektronix terminals when FT05P001 and FT06P001 are not allocated to the terminal. See Section 3.5 and Figure 4.

This command causes slides to be plotted in a page whose lower left corner is at (left,bottom) and upper right corner is at (right,top). The default values for left and bottom are both 0, right and top are 11 inches. The defaults for right and top are changed by the 8U35BW, 8S35BW, 8S35CLR, 8S16BW, 8S16CLR, 8TEKTRONIX, and 8ITEK commands.

This command causes "times" copies of the current slide to be plotted and the input for the next slide to be accepted. This command will not process overlayed slides properly. If &REPEAT is entered with no parameters, "times" is assumed to be 1, and only one copy will print.
&RESET

This command causes succeeding text lines and slides to be processed with default values of most of the commands. The commands &COMIC and &CINE are not reset. Default page sizes, as selected by &SU35BW, &SU35BW, &SU35CLR, &SU16BW, &SU16CLR, &TEKTRONIX, and &SITEK, are selected. If none of those commands were used, the standard default is selected. See Section 3.1 for a list of default commands and their parameters.

&RIGHT [percent]

This command causes succeeding text lines to be right justified by the given percent of the frame width from the right edge. The maximum value should be less than 100. If &RIGHT is not specified, or is specified but no parameter is given, the value is assumed to be 0.

&RUSSIAN

This command selects the DISSPLA Russian alphabet style.

&SCALE [factor]

This command causes succeeding text lines to be given a size "factor" larger or smaller than a normal line. A normal line is the size a line would be if no lines were Scaled or Sized. If &SCALE is given with no parameter, or is not explicitly specified, the value assumed is 1.

&SCMPLX

This command selects the DISSPLA Scmplx character style.

&SCRIPT

This command selects the DISSPLA Script alphabet style.

&SERIF

This command selects the DISSPLA Serif character style.

&SIMPLX

This command selects the DISSPLA Simplx character style.

&SIZE [size]

This command limits the size of characters to a maximum height of Scale*Size inches. The value assumed for "size" at the start of program execution is 100 inches.
This command causes slides to have a blank slide between them. This should be used if slides are to be mounted.

This command selects the DISSPLA Special alphabet style.

This command causes the succeeding text lines to have a spot size of "size". The parameter "size" must range from 0 to 1, 0 being the smallest, sharpest spot, and 1 being the largest, most diffuse spot. The default value for &SPOTSIZE is zero. This command applies only to the PR80 film plotter.

This command selects the DISSPLA Standard alphabet style.

This command causes slides produced on sprocketed 16 mm black and white film to be scaled to fit in a standard 16 mm frame. The right page limit is 14.718, the top page limit is 11. This page limit selection should be used with the Cine format. This command is not reset by a &RESET command.

This command causes slides produced on sprocketed 16 mm color film to be scaled so that they fit in a standard 16 mm frame. The right page limit is set at 14.718, the left page limit at 11. This page limit selection should be used with the Cine format. This command is not reset by a &RESET command.

This command causes slides produced on sprocketed 35 mm black and white film to be scaled so that they fit in a standard slide mount. The right page limit is set at 11, the left top page limit at 13.23. This command is not reset by the &RESET command.

This command causes slides produced on sprocketed 35 mm color film to be scaled so that they fit in a standard slide mount. The right page limit is set at 11, the top limit at 13.23. This command is not reset by a &RESET command.
STEKTRONIX

This command causes slide images to be scaled so that they fill a Tektronix 4006/401x display screen. The right page limit is set at 14.42, the top limit at 11.

TRIPLEX

This command selects the DISSPLA Triplex character style.

UNDERLINE [times [distance]]

This command causes succeeding text lines to be underlined "times" number of times, each line being "distance" inches below the last. None, the first, or both parameters may be specified. If no parameters are entered, the values 1 "times" and 0.1 inches "distance" are assumed.

U35BW

This command causes slides produced on unsprocketed 35 mm black and white film to be scaled so that they fit in a standard slide mount. The right page limit is set at 16.486, the top page limit at 11. This command is not reset by a @RESET command.

3.5 HINTS ON COMBINING COMMANDS TO PRODUCE SPECIAL EFFECTS

When the final version of the slides is to be prepared using this program, it is a good practice to include the ANL logo and to use the U35BW, S35BW, and S35CLR commands to assure proper scaling for easy slide mounting. It is also suggested that the bolder character fonts of Futura, Fashion, Serif, or Logo be used to improve visibility for the audience. A colored background is pleasing also. To assure solid characters, GAP should be 0.005 for black and white film and 0.01 for color film.

The parameters on the SPAGE, S MARGIN, and S SIZE commands are not checked for reasonable values relative to each other. If they were, the user would have to select these commands in order. The consequence of not checking the parameters is that the user is free to request a page whose upper right corner is in reality lower and left of his lower left corner; or he could select a margin larger than half the height or width; or he could select a SIZE too small to read. In all of these cases, the results are not predictable except that they will be undesirable in general. The user should be aware of this and select values accordingly.

The OVERLAY command is used to place more than one slide image on the same physical slide. By proper use of the OVERLAY and S PAGE commands, it is possible to construct very complex arrangements of text. This is especially useful in producing posters. For example, you can subdivide the standard 11 inch by
11 inch image into four areas and place different text in each; see Figure 4.

$\text{COMMENT} \quad \text{TOP LEFT QUARTER}$
$\text{PAGE} \quad 0 \quad 5 \quad 4 \quad 11$
$\text{FRAME}$
$\text{TOP}$
$\text{LEFT}$
$\text{TEXT}$
$\text{OVERLAY}$
$\text{COMMENT} \quad \text{TOP RIGHT QUARTER}$
$\text{PAGE} \quad 5 \quad 7 \quad 11 \quad 11$
$\text{FRAME}$
$\text{TOP RIGHT TEXT}$
$\text{OVERLAY}$
$\text{COMMENT} \quad \text{BOTTOM LEFT QUARTER}$
$\text{PAGE} \quad 0 \quad 0 \quad 6 \quad 4$
$\text{FRAME}$
$\text{BOTTOM LEFT TEXT}$
$\text{OVERLAY}$
$\text{COMMENT} \quad \text{BOTTOM RIGHT QUARTER}$
$\text{PAGE} \quad 7 \quad 0 \quad 11 \quad 6$
$\text{FRAME}$
$\text{BOTTOM}$
$\text{RIGHT}$
$\text{TEXT}$
$\text{END}$
Figure 4
The \texttt{ECVERLAY} Command Permits Complex Text Arrangements

\begin{center}
\includegraphics[width=\textwidth]{figure4}
\end{center}
4. HOW TO RUN THE SLIDES PROGRAM

The following sections present the "bare" JCL needed to run the SLIDES program today. Eventually a catalogued procedure and a TSO command will be provided to simplify invoking the program. These improvements will coincide either with the next version of the SLIDES program or with the installation of "Graphics 1.0" in Summer 1977.

4.1 HOW TO USE SLIDES ON A TIME-SHARING TERMINAL (INTERACTIVE USE)

This program may be run interactively on a Tektronix graphics time-sharing terminal, models 4006 and 401x. The user can type commands and text in at the keyboard and immediately see the image on the screen. This is particularly useful for (1) first familiarizing yourself with the program, (2) debugging complex text layouts, and (3) producing quick signs via the terminal's associated copier unit.

Step 1: Get into a 200K TSO region.

    LOGON Bnnnnn/yourpassword SIZE(200)

Step 2: Prepare for terminal input and output.

    ALLOCATE DA(*) FI(FT05F001)
    ALLOCATE DA(*) FI(FT06F001)

These two TSO commands associate your time-sharing terminal with FORTRAN's file 5 and file 6, which are used by the SLIDES program. You can allocate FT05F001 to a saved dataset, from which SLIDES will read text and commands. Alternatively you can have SLIDES write a copy of its input into a saved dataset which you have allocated to FT06F001.

Step 3: Run the SLIDES program

    CALL 'SYS1.PLOTPKG.SLIDES'

If the program terminates for some reason, simply repeat this step to run it again; you do not need to sign on again or allocate the datasets again.

Step 4: Type in the SLIDES text and commands.

After each slide is drawn in response to a $NEW or $END command, the SLIDES program will turn on the Tektronix terminals cross-hairs and wait for "graphical input". At this point, you
can press the terminal's MAKECOPY button to produce a permanent copy of the display. To continue after the cross-hairs have been turned on, simply press the SPACE bar (or the SPACE bar followed by the RETURN key, depending on how your terminal is set up). The program will also pause and turn on the cross-hairs after the second and subsequent GNEW commands, unless you use &NOSKIP.

(Please remember to clear the screen with the RESET PAGE key as soon as you are finished with a particular display; this will help extend the useful life of the screen.)

4.2 BATCH USE

Most users will eventually want to submit batch jobs to produce SLIDES output on the Calcomp, FR80, or Statos plotters. Batch jobs—including the necessary IBM Job Control Language, SLIDES commands, and SLIDES text—may be submitted either on punched cards or from a time-sharing dataset.

We recommend using the ANL "data base graphics" approach to produce plotter output from the SLIDES program. Your batch job should contain two steps: step 1 stores a coded version of the graphical output on a temporary disk file; step 2 interprets the coded information produced by step 1 and translates it into actual plotter output. By separating these activities into two steps, you can do most SLIDES runs in Express class. Furthermore this approach highlights the ease with which you can switch your graphical output from one plotter to another.

4.2.1 SPOOLED STATOS FOR DEBUGGING

The Statos electrostatic plotter will produce quick, cheap graphical output suitable for checking SLIDES commands and text. Since the Statos plots on fifteen-inch wide rolls of paper, its output may also be acceptable for producing signs quickly. Use the following Job Control Language to submit a batch job to run the SLIDES programs and direct output to the Statos:
//jobname JOB (Fnnnnn,5,0,2),REGION=250K
//username nnnnn accounting
//STEPONE EXEC PGM=G1DATA
//STEPLIB DD DSN=SYS1.PLOTPKG.SLIDES,DISP=SHR
//PT05F001 DD *

Insert SLIDES commands and text here.

//PT06F001 DD SYSOUT=A
//GRAPHICS DD DSN=&&PIX,
  // DISP=(NEW,PASS),
  // UNIT=SASCR,
  // SPACE=(6000,(50,10))
//STEPTWO EXEC PGM=SPSTATOS
//STEPLIB DD DSN=SYS1.POSTPLOT.G1DATA,DISP=SHR
//GRAPHIN DD DSN=&&PIX,DISP=(OLD,DELETE)
//GRAPHICS DD SYSOUT=S

This JCL requires no tape setup for its graphical output, and consequently should minimize turnaround time. Graphical output is limited, however, to 200 tracks--or about 12 feet of Statos plotter paper.

4.2.2 SPOOLED U35BW

With only two simple changes in the above Job Control Language, you can direct the graphical output to the FR80 recorder for unsprocketed black-and-white film. Film produced in this way is especially well-suited for making prints on the Itek and 3M machines at AMD. Modify the second step to read:

//STEPTWO EXEC PGM=SPU35BW,PARM='CINE, COLOR, COMIC, CPAYON, FRMORG, SPOT
//STEPLIB DD DSN=SYS1.POSTPLOT.G1DATA,DISP=SHR
//GRAPHIN DD DSN=&&PIX,DISP=(OLD,DELETE)
//GRAPHICS DD SYSOUT=U

The 'PARM' list must be used when output is directed to the FR80 and must not be used with any other devices.

4.2.3 OTHER PLOTTERS

With simple changes in the JCL for "STEPTWO", the slide image can be directed to any of the plotters at AMD. For specifics, see AMD Users Guide Chapter 15 (especially Section 15.5, "JCL for Device Independent Graphics").

4.2.4 COLOR

Color film is available on the FR80 plotter in both 16 mm and 35 mm sizes. The 35 mm sprocketed color film is the most desirable medium for slides for presentation, but turnaround time (including exposure at AMD and processing at Graphic Arts) may be too long for some projects. We recommend that you first make
acceptable black-and-white slides and then add the commands necessary for a color run.

The &COLOR, &FRAME, &SLNLOGO, and &PAGE commands specify colors as values between 0 and 1 for red, green, and blue. This can best be understood by picturing a cube with three axes, red, green, and blue. As you move along any axis from 0 to 1, the amount of the color of that axis is added to form the color. For example, a value of .5 red and .5 blue means halfway bright red is to be added to halfway bright blue, giving a half bright purple. Yellow is full brightness red and full brightness green. Decreasing the amount of green will move in the direction of red going through lesser yellow, more red, or through oranges. Understanding the composition of the color cube and how values from 0 to 1 move along three axes of this cube will help select colors more accurately. The following chart lists some representative combinations:

<table>
<thead>
<tr>
<th>red</th>
<th>green</th>
<th>blue</th>
<th>color produced</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>black</td>
</tr>
<tr>
<td>0.0</td>
<td>0.0</td>
<td>1.0</td>
<td>blue</td>
</tr>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>0.0</td>
<td>green</td>
</tr>
<tr>
<td>1.0</td>
<td>0.5</td>
<td>0.0</td>
<td>orange</td>
</tr>
<tr>
<td>1.0</td>
<td>0.0</td>
<td>1.0</td>
<td>purple</td>
</tr>
<tr>
<td>1.0</td>
<td>0.0</td>
<td>0.0</td>
<td>red</td>
</tr>
<tr>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>white</td>
</tr>
<tr>
<td>1.0</td>
<td>1.0</td>
<td>0.0</td>
<td>yellow</td>
</tr>
</tbody>
</table>

Because of the nature of color film, the selection of the color for the background, using the &BACKGROUND command, needs to be thought out carefully. Since text color is added to the background, the color cube described above comes into play. If the background of a slide is bright red, then it is not possible to produce text which is red, pure green, or pure blue. Since the background is red, only colors composed of red plus some other color can be visible. For example, with a red background, a green text line will appear yellow because red plus green is yellow. Therefore, with a red background, only shades of orange, yellow, pink, and magenta are visible. This same condition occurs with a blue or green background. Only text lines whose color is a combination of the background plus the selected color are visible. A wider selection of colors for text lines is possible if the background color is not full intensity. For example, a background of .25 green can have green, almost blue, and almost red text lines.
5. THE FINAL PRODUCT

The SLIDES program will produce an image on a terminal screen, photographic film, or paper. These media vary in output quality as well as in cost and time required for processing. For specifics, see AMD Users Guide Chapter 15 (especially Section 15.1, "Plotting Devices", and Section 15.9, "Film Processing Schedule").

5.1 FILM

The FR-80 film recorder at AMD is currently set up for five kinds of photographic film: (1) 16 mm sprocketed black-and-white, (2) 16 mm sprocketed color, (3) 35 mm sprocketed black-and-white, (4) 35 mm sprocketed color, and (5) 35 mm unsprocketed black-and-white. The black-and-white film is processed at AMD; the 35 mm color film at Graphic Arts; and the 16 mm color film by Kodak.

We recommend using 35 mm unsprocketed black-and-white film whenever possible. You can produce the largest slides image on this size film; therefore, this is the best film for making Itek posters.

Slide images on the sprocketed 35 mm films are aligned precisely for mounting in standard 35 mm slide mounts if you use the SLIDES 8S35BW, 8S35CLR, or 8U35BW command. Do-it-yourself slide mounts are available commercially, or you can have the work done at Graphic Arts.

5.2 PAPER

You can draw slide images directly on paper using the Calcomp or Statos plotters. You can make a copy of the screen image on Tektronix terminals with attached copiers or flat-bed plotters. You can also make prints from film.

We recommend using the Statos plotter rather than one of the Calcomps for plotting directly on paper. The Statos is cheap and fast, especially when you spool the graphical output (see Section 4.2.1). Calcomp plotters are not well suited to filling in the shaded character fonts which are most appropriate for posters, nor is their plotting precision of much value in producing slide images.

There are several machines in the AMD Users' Area (Building 221, Room A-142) for making paper copies of slide images:
Tektronix 4014-1 display screen time-sharing terminal with attached copier. The copier produces 8.5 by 11 sheets of paper suitable for reproduction. This is the quickest way to make a small poster.

3M Model 400 viewer/printer. This machine makes 8.5 by 11 inch prints on dielectric coated paper from 35 mm film.

Itek Model 18-24 viewer/printer. The Itek uses a conventional photographic process to produce prints up to 18 by 24 inches from 35 mm film; the horizontal dimension can be adjusted to produce prints as small as 6 by 18 inches. This is the best way to produce large posters.

Finally, it is possible for the user to submit 35 mm film to Graphic Arts for photographic printing. In this way, you can produce very high quality glossy prints of your text images, but this procedure may be slow and expensive.
6. BIBLIOGRAPHY

The following references will aid in preparation of a technical presentation.


Effective Lecture Slides; Kodak Pamphlet No. S-22

Planning and Producing Slide Programs; Kodak Pamphlet No. S-30


Additional DISSPLA material can be found in the following manuals available from the AMD Documentation Center:

DISSPLA Pocket Manual
DISSPLA Beginners/Intermediate Manual
DISSPLA Advanced Manual
Instructions for Use of New DISSPLA Routines in Version 6.8

Additional material on AMD and the use of its computers and other devices is available from the AMD Documentation Center in the following publication:

AMD Users Guide
7. ERROR MESSAGES

SLIDES is written so that it is difficult to make errors which will cause the program to end. There are, however, three error messages which are printed immediately after the command or text string which caused the error. In all cases, the command or text string is ignored. It is not plotted and has no effect on the rest of the input. The error messages are as follows:

********** MAXIMUM LINES USED - IGNORED

The user has tried to put more than ten lines of text on the slide. This line of text is ignored. If you must have more than ten lines, use the OVERLAY command.

********** NO TEXT IN SLIDE - IGNORED

The user has tried to plot a slide with no text on it. The slide is ignored. Each slide must include at least one line of text, but that line may be blank.

********** UNDEFINED COMMAND - IGNORED

The user has probably misspelled a command. The command is ignored.

If a meaningless value is detected for a command parameter, the default value is used. No error or warning message is given.
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