ARC 32812

Output Processor Users' Guide

Augmentation Research Center

29 JUL 75

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USING THE OUTPUT PROCESSOR

Introduction

Files may be examined in three basic ways: with the Jump command from a display NLS terminal, with the Print command from a typewriter terminal; or you may print the file using the family of Output Processor commands described in this document. The Output Processor is the program that allows you to print NLS files with the capability of flexibly specifying the format. This document is a complete users' guide to the Output Processor.

This first section tells you how to use the Output Processor; the rest of the document should be treated as a reference manual. The following section comprises the major portion of this document; it is a complete list of directives with an explanation of each one's use and effect. Appendix A provides a quick-reference guide to all the directives. Appendix B lists the options for setting values of various types of directives. Appendix C elaborates on the use of Computer Output to Microfilm (COM). An index to the directives is included at the end of this document.

Options for Printing NLS Files

You may choose the printing device and the format in which the NLS file will be printed.

You may print a file on the following devices:

-your typewriter terminal (in TNLS);

-a nearby line printer; or

-a publications-quality Computer Output to Microfilm device, which produces camera-ready copy for offset printing.

The file may be printed by three methods of varying degrees of flexibility:

Method 1: as it appears on your screen or teletype, without pagination;

Method 2: as it appears in NLS, but divided into pages, optionally with the filename and the date on the top of each page; or

Method 3: through the Output Processor, with its wide variety of formats; e.g. divided into pages, with headers, footers, page numbers, margins, type styles, etc.

Commands to Print NLS Files Without Formats

Most Output commands that print the file begin printing from the statement referenced by the CM in TNLS, or the statement at the top of the screen in DNLS. (If you have more than one DNLS window, printing begins from the statement at the top of the window which held the bug at the last Command Accept.) They all respect viewspecs, so you may limit what gets printed with level or line truncation or content analyzer filters; the output may include right or left statement numbers, signatures, and blank lines between statements.

To print the file as it appears on your screen or teletype (Method 1):

-on your typewriter terminal (in TNLS), use the Print command; viewspec "E" (normally in force) divides the output into pages, viewspec "F" cancels the pagination.

-for a high-speed line printer, use the Output Sequential File command. This

produces a sequential file (a stream of characters) copy of your NLS file (with its special internal structure). The sequential file can then be transfered to other sites and to line printers.

To print the file as it appears in NLS, but divided into pages, optionally with the filename and date on the top of each page (Method 2):

-on your typewriter terminal (in TNLS), use the `Output Quickprint File` command; this creates a sequential file. Then use the TENEX COPY command to copy that sequential file to `tty:` (you must type the colon; the file will be printed on your terminal).

-for a local line printer, use the `Output Quickprint File` command; use the TENEX subsystem `SENDPRINT` to copy the resultant sequential file to the proper TIP port.

Note: for any of these devices you may specify `No (headers)` immediately after the command word Quickprint; then the header with the filename and date will not appear on each page.

You must use the Output Processor (Method 3) to print the file with a more detailed format, as described in the remainder of this document.

Controlling the Format

The Output Processor is a program that takes an NLS file and formats it for printing on a line printer, teletype, microfilm, or other output device. The commands `Output Terminal`, `Output Printer`, `Output Remote`, and `Output COM` (explained below) invoke the Output Processor. Each makes a copy of the NLS file with the same content, in a code compatible with the output device you chose.

In making the print copy, the Output Processor formats the NLS file. It breaks the text into pages, numbers the pages, sets up margins, etc. In other words, the file will be printed with a standard and very simple format.

Some elements of this format are affected by the viewspecs in force when the Output command is given; these are line truncation, level truncation, content analyzer, blank lines between statements, level indentation, left or right statement numbers, statement names, and statement signatures. Be sure that the desired viewspecs are in force, i.e. that the Output Processor "sees" everything that you want printed.

IMPORTANT CONCEPT: A format includes many pieces of information (for example margin specifications, headers, whether blank lines are to be printed between statements, etc.). All of these elements are initially set to produce a simple format. You may change any of these elements (including the ones set by viewspecs) by inserting brief instructions in the text. These instructions are called "directives".

Many directives change some element of the format (e.g. move a margin). Other directives cause some immediate action (e.g. start a new page here). In any case, the directive itself is NOT printed by the Output Processor.

Note: Since `Output Sequential` and `Output Quickprint` do not recognize directives, the directives will be printed and will have no effect on the format.

Directives are placed in the file just like any other string of text. They may appear anywhere in the file. To allow the Output Processor to differentiate directives from the text to be printed, a

period (.) must precede each directive and a semicolon (;) must follow it. Directives must begin with a capital letter; the rest may be in either upper or lower case. (E.g. .IFirst=5;)

You can "set up a format" by placing directives in the origin statement to change the initial format to the one you wish to apply for the rest of the file. Then you can go through the file looking for places where special treatment or changes are desired, and place the appropriate directives there.

Some directives take an "argument", that is some value for that element of the format. (E.g. .LM=5; sets the left margin to five characters. The 5 is the argument.) The directive name is followed by an equal sign, then the argument(s). The argument may be a number, or it may be a synonym for a number (e.g. .IFirst=Off; is the same as .IFirst=0;). These synonyms will be offered later in the explanation of each of the directives, and in Appendix B. If you use the synonym, its first letter must also be a capital letter.

Examples of Directives

A few examples of directives:

.YBS=2;	From that point on, two blank lines will be put between every statement.
.IFirst=5;	From that point on, the first line of every statement will be indented five characters.
.TM=3;	This sets the top margin to 3 lines; beginning with the next page, there will be three blank lines at the top of each page.
.GCR;	At that point in the text a carriage return (and line feed) will be inserted.
.H1="Chapter 257";	Beginning with the next page, the heading "Chapter 257" will be printed as the first line below the top margin on every page.

An example of directives placed in text:

If the following paragraphs (with the imbedded directives) were formatted with the Output Processor:

```
This should show you how directives are placed in the
text and have specific effects on the printed format.
.YBS=3; .IFirst=5;

This is the second statement of the .GCR;example.  It will
be printed with the first line indented.  Notice that
there were three blank lines between these two
statements.
```

they would look like this when printed:

```
This should show you how directives are placed in the
text and have specific effects on the printed format.


     This is the second statement of the
example.  It will be printed with the first line
indented.  Notice that there were three blank lines
between these two statements.
```

Output Devices and Commands

Your formatted file may be printed on many different devices. When you have placed directives in the file where special treatment or a change in format is desired, you may create a formatted print file. The Output Processor will adjust the coding of the print file for the specific output device you intend to use.

`Output Terminal` prints directly on your terminal.

The command asks you if you wish form-feeds <CTRL-L> sent to your terminal. If you answer "no" (many terminals cannot interpret form-feeds) you may have form-feeds simulated with a series of line feeds; or they may be ignored (in which case pages will not be of equal length).

The Output Processor can wait for a Command Accept at page breaks to allow time for you to insert a new piece of paper. This might be useful when you wish to print the file on your standard letterhead (as on an IBM 2741 terminal).

`Output Terminal File` creates a standard sequential file (with no special printer codes) suitable for printing on any terminal. (You may at any time copy this file to tty: to print it on your terminal.)

`Output Printer` includes special codes required by high speed line printers attached to TENEX sites. It prints the file on the computer facility's high-speed line printer.

`Output Printer File` creates a sequential file with the same special codes for printing on a line printer at some later date.

`Output Remote printer` sends the output to a TIP port, to allow you to print it on your local line printer.

`Output COM` creates a file in a special format intended for Computer Output to Microfilm devices. See Appendix C for details on this high quality printing system.

You may notice that many of the directives can take a COM argument as well as a printer argument. These arguments can be ignored unless you are formatting for COM.

COM requires some expertise in NLS and in Output Processor formatting. Appendix C explains its use. When you wish to begin using the COM capabilities, you should contact SRI-ARC to explore training, consulting, and contractual arrangements.

There is an NLS user-attachable subsystem called FORMAT that will place directives in your file to create any one of a number of predesigned formats. This should allow you to take advantage of COM's capabilities without having to learn the directives involved. FORMAT will be described at the end of this section.

When you create a print file instead of printing directly, the filename should be the name of a file in your directory. It is a useful convention to give it the same name as the NLS file. It is customary to use "`TXT`", "`PRINT`", or "`COM`" as the filename extensions for terminal, printer, and COM print files respectively (e.g. `FILENAME.TXT` or `FILENAME.PRINT` or `FILENAME.COM`).

The Output Processor begins formatting at the first statement on the display (or, at the statement marked by the CM in TNLS), so ANY OF THE FILE BEFORE THE CURRENT STATEMENT WILL NOT APPEAR IN THE OUTPUT. When you have specified one of the `Output` commands, your terminal will be occupied until the Output Processor is done. You may abort the process with a <CTRL-O>.

In summary, you place directives in your file where you want to change some element of the format or where you wish some special action; then you invoke an Output Processor command, which creates a print file or sends the output directly to some printing device. This allows you great control over the format of your printed output.

Aspects of Formatting

Margins:

The diagram at the end of this section should clarify the relationship of the margin directives. It may be useful to study it as you read the following section.

Each margin is set by a different directive (e.g. BLM for Body Left Margin). All horizontal margins are set with respect to a "left margin base", an imaginary line running down the left side of the page. In other words, when you set the right margin to 65 characters, you are setting it to 65 characters to the right of the left margin base. The left margin base is set with respect to the left-most printing position on the page by the directive LMBase. The initial value of LMBase is zero; therefore if BLM were set to one (to the right of LMBase), the first character will be printed in column two.

Note that the directive LM actually changes three elements of the format: HLM, BLM, and FLM; similarly RM sets HRM, BRM, and FRM.

By changing LMBase, you can move the whole page horizontally across the paper.

On most printers, there are ten characters to the inch. Many printers do not use the first half inch (5 - 6 characters) of the paper.

The actual blank space left for the right margin will be:

```
(width of paper) - (RM) - (LMBase)
       e.g.
(80)             - (72) - (0)       =  8 =  .8"
```

The length of a line will be:

```
(BRM) - (BLM)
       e.g.
(72)  - (0)                         = 72 = 7.2"
```

Nothing may be printed to the left of LMBase. If the left margin (BLM) is set to a negative number (to the left of LMBase), then printing will begin at LMBase.

This may be used as a trick for cancelling indentation of the first few levels. Statement level indenting will be calculated from BLM, even if it is negative. For example, if BLM is set to -3, level one statements (normally having no level indenting) and level two statements (normaly indented 3 characters) will begin at LMBase; level three statements will be indented 3 characters.

All vertical margins are with respect to the top of the page.

Most terminals and line printers print six lines to the inch.

The actual blank space left at the bottom of the page will be:

(YMax) - (BM) - (YPF) - (number of lines in footer)

e.g.

(66) - (56) - (3) - (1) = 6 = 1"

YMax sets the vertical length of the page, initially 66 lines (11").

YPF sets the distance between the body and the footer.

The number of lines in the body will be:

(BM) - (YFH) - (number of lines in and between headers)

e.g.

(56) - (3) - (1) = 52 = 8.7"

YFH sets the distance between the headers and the body.

Headers, Footers and Page Numbers:

You may set a string of text (of any length) to be printed at the top of every page; this is called a "header". You may, in fact, set up to five distinct headers.

Four headers will, if set, be printed just below the top margin. They may be set with the directives H1, H2, H3, and H4.

Once a header is defined, you may turn it off (or on again) with the directives H1Sw, H2Sw, H3Sw, and H4Sw respectively.

A special header, HJournal, is printed in the top margin. Once it is set, it may not be changed nor turned off. This is used by the SENDMAIL subsystem to ensure a uniform label on all Journal files.

The Index to this document lists the directives that control header margins, position within a line, and the distance between headers.

You may define one string of text to be printed at the bottom of every page, called a "footer". The initial setting for the footer string is .GPN;

This causes page numbers to be printed on the bottom of each page. You may use the GPN directive anywhere in the file, in headers, or in the footer. It will always print the current page number at that point.

If you do not wish page numbers printed at the bottom of each page, you may either have some other footer printed by using the directive .F="whatever"; or you may turn off the footer entirely with the directive .FSw=Off;

"Chapters"

Often a file is set up such that every first-level branch might be considered a chapter. You may want to center the chapter titles throughout the file. You may use the directive .PxPShow=1; in the origin statement to center every first-level statement.

You may put the directive .Grab=7; in every first-level statement to ensure that some of the subsequent text of the chapter will appear on the same page as the chapter title. Alternatively, you may wish to begin each chapter on a new page. The directive .PLev=1; will paginate before every first-level statement.

If you are using the chapter titles for one of the headers or the footer, you may change the header in each first-level statement.

If you have set .PLev=1; and wish to change the Footer, put the .F="New Text"; directive in the substatement. If you put it in the first-level statement the footer on the last page of the previous chapter will be affected. I.e. the directives in a statement affect the page on which that statement would have fallen prior to the effect of the directives.

Some typical directives (look them up at your leisure) commonly put in the origin statement to set up a format:

```
< MEYER, SIMPLE.NLS;1, >, 17-NOV-74 16:17 NDM ;;;; .SN=0; .RM=72;
.YBS=1; .H1="TITLE"; .PN=0; .PES;
```

```
< MEYER, COMPLEX.NLS;1, >, 17-NOV-74 16:17 NDM ;;;;. SN=0; .SNF=72;
.RM=65; .PxPShow=1; .LM=-3; .YBS=1,6p; .F="page .GPN;"; .FP=FR;
.H1="TITLE.Split;.GD;";.PN=0;.PES;.PxFShow=1,2;.PxFYD=0;.PxFYS=1;
.PxFYU=1;
```

FORMAT subsystem

The FORMAT user-attachable subsystem is intended to provide tools to help you work with Output Processor directives. You may access it by specifying two commands:

```
Execute Programs Load Program FORMAT OK
```

```
Goto Format OK
```

You then have available a number of commands:

```
Delete (directives in) Statement/Branch/Group/Plex
```

--deletes Output Processor directives in the specified structure.

If directives in the structure you are working on use delimiters other than period and semicolon (because you had changed the delimiters in a previous statement), you must use the command:

```
Delete (directives in) S/B/G/P Delimiters (left) (right)
```

You may bug or type in the left and right directive delimiter characters which you wish the command to use at the beginning of the structure. They may be changed by subsequent directives in the structure.

```
Set Directive (filter)
```

--sets your current Content Analyzer filter to one which only shows statements with Output Processor directives in them. You may then use viewspec i to turn the filter on, and viewspec j to turn it off (show everything).

If directives in the file you are working on use delimiters other than period and semicolon (because you had changed the delimiters in a previous statement), you must use the command:

```
Set Directive (filter) Delimiters (left) (right)
```

You may bug or type in the left and right directive delimiter characters which you wish the program to use. Each new view of the file (a Jump or Print) through this filter

begins with the assumption that the directive delimiters are these new characters. They may be changed by subsequent directives in that view.

`Reset Directive (filter)`

--sets your current Content Analyzer filter to what it was before the `Set Directive (filter)` command.

This only works for one window in DNLS (be careful if you have inserted an edge to split your window).

`Insert Format (in file at) DESTINATION FORMAT-NUMBER TYPEIN-title TYPEIN-author TYPEIN-jnum`

--inserts directives in a file according to a given predesigned format. Most of the formats were designed for COM. The intent is to make it very easy for users less experienced with the Output Processor to take advantage of COM's capabilities.

You must first point to the file (with an address or bug).

The command then lists your choices of formats. Samples of all the formats are available on request from SRI-ARC <25764,>. (Send requests via your architect to FEEDBACK.) You then type the number of the desired format.

Next, unless it is a Journal file, the command asks you to type the title of the document, a list of author idents (which may include organization and group idents), and finally the Journal number (in case you have a preassigned number that you wish put on the print file). You may type a <CTRL-N> to skip any of these fields.

The command will insert the directives necessary to produce the format you chose. It may insert directives in the origin statement, in every level one statement, and in some cases in the statement back from every level one statement. It also creates a title page as the last level-one branch in the file.

The title, authors, and Journal number appear in the title page and in some cases in header or footer directives in the origin statement. The program only inserts text in the file. You may edit any of it as you see fit. For example, if one of the authors does not have an ident, you may add his name to the title page afterwards. Or you may edit the directives to modify the format. (You should feel fairly confident of your understanding of the Output Processor before you attempt to edit the more complex of these formats!)

To be safe you should use this command on files which previously have no directives in them.

Since directives can get in the way of online reading, you may want to:

`-Update File`

`-Execute (command in) Format Format File`

`-Output COM` or `Output Printer`

`-Delete Modifications`

This last command removes the title page and the directives inserted by the Format File command. You are than left with a clean file.

Gaining Experience with the Output Processor

The intent of this section is to provide enough information to the beginning user to experiment with the Output Processor. We suggest that you try some of the directives listed below, using the remainder of this document as a reference guide to the directives. The index can serve as your point of entry to this document for specific formatting questions.

The following directives are the most commonly used.

```
Margins:
   TM          set top margin
   BM          set bottom margin
   LM          set left margin
   RM          set right margin
Pagination:
   PES         paginate at end of statement
   Grab        paginate if can't fit n lines on current page
Headers:
   H1          set header 1 (top of every page)
Footers/Page Numbers:
   F           set footer (bottom of every page)
   FSw         print/don't print footer
   GPN         generate page number in text
Special text:
   GD          generate text for current date
Statement position:
   SP          statement position
Spacing:
   YBS         blank distance (lines) between statements
   YBL         blank distance (lines) between lines
Indenting:
   IFirst      indentation of first line of every statement
```

When you have gained some experience (with the above directives), you may wish to explore these additional commonly used directives:

```
Pagination:
   PBL         paginate before line
   PBS         paginate before statement
   PEL         paginate at end of line
   PLev        paginate before every statement of given level
Headers:
   H1Sw        print/don't print header one
   H1P         position of header one
   H2, H3, H4, HJournal    other headers
Footers/Page Numbers:
   FP          position of footer
   PN          set page number
Statements:
   IgS         ignore this statement
   IgRest      ignore the rest of this statement
```

```
Spacing:
   GYBL     generate blank lines before this line
   GYBS     generate blank lines before this statement
   GYEL     generate blank lines at end of this line
   GYES     generate blank lines at end of this statement
Indenting:
   IRest    indentation of succeeding lines
Numbering:
   SN       left statement numbers on/off
   SNShow   show left statement numbers for given levels
   SNF      right statement numbers on at given position
   SNFShow  show right statement numbers for given levels
   PxN      number every plex of given level
   PxNShow  show plex numbers for given levels
Stop printing:
   Halt     stop printing; as if file ended here
   Post     stop/start printing, but continue reading file
```

You may use the Index as an entry point to the entire reference guide to satisfy specific formatting needs.

Some Details in the Use of the Output Processor

Once you become proficient with the use of Output Processor directives, you may wish to know the following details.

SENDMAIL

When an item is submitted to the Journal (via the SENDMAIL subsystem), the origin statement is replaced as follows:

```
<DIRECTORY>FILENAME etc. ;   .HJOURNAL="senderident
date-and-time  journal#";  Title:
.Hl="title--given--when--submitted";  Author(s): name/ident;
Distribution: name/ident;  Sub-Collections:    ; Clerk:
ident;   .IGD=0; .SNF=HJRM; .RM=HJRM-7; .PN=-1; .YBS=1; .PES;
Origin: origin--statement--of--source--file

.PEL;  .PGN=PGN-1; .GCR;Any--comment--given--at--submission
```

Note that SENDMAIL puts the following Output Processor directives in the Journal file for you:

```
SNF
RM
YBS
```

If you want your file to print in your same format after it is journalized, you must explicitly set or override any directives whose effect is undesirable. The only directive you cannot override is HJOURNAL.

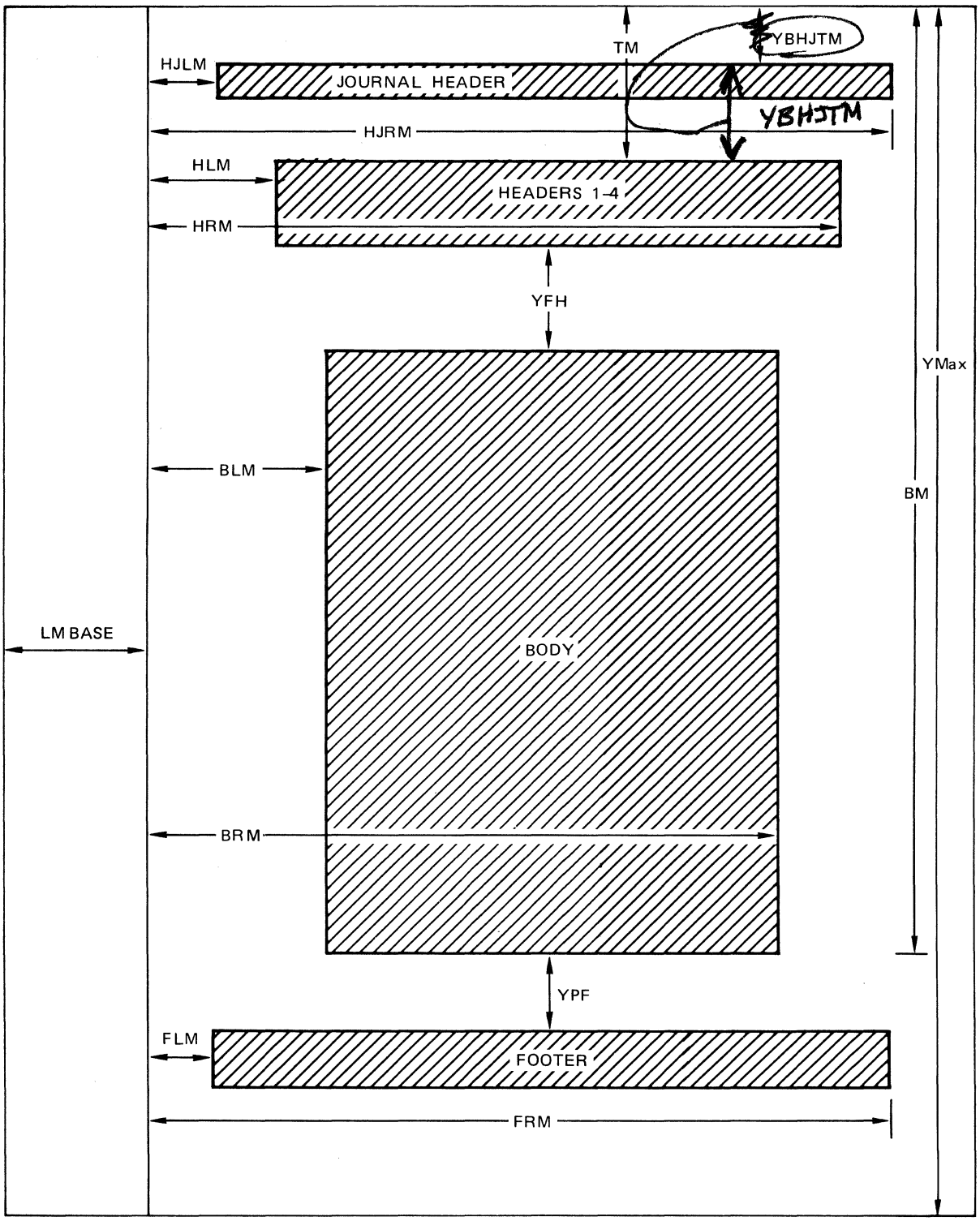
There is a directive (D) which tells the Output Processor to print directives from there on; this is how we got directives to show up at certain points in this document.

There are also directives which change the directive delimiters (DLD and DRD) and which change

the requirements for the case of the first character (DCase). The Output Processor may run a little faster (if the file has a lot of periods in it already) if you use other than the default delimiters (i.e. some uncommon characters). Angle brackets <> are a popular choice.

The equal sign may be replaced by a space in any directive if desired. Spaces just after the left directive delimiter or before the right delimiter are ignored. This provides some flexibility, but may add to the user's confusion.

This document was written online in NLS, formatted with the Output Processor, and directly printed via Computer Output to Microfilm.



NOTE: LM sets HLM, BLM, and FLM
RM sets HRM, BRM, and FRM

SA-3074-1R

DICTIONARY OF DIRECTIVES

BFont Body character Font

BFont=size,face,style

On Output COM, the text of the body will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you don't wish to change the style, the second comma is not necessary. If you wish to change only one of the values, it is usually easier to use the directives Size, Face, Slant, Underline, Monospace, Lightface, or Boldface. See Appendix C for instructions on the use of Output COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce body text bold faced, slanted (italics), and underlined. See Appendix C for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

BLM Body Left Margin

BLM=n,m Initial value: 0 Range: [-131(-8.5), 131(8.5)]

Sets the body left margin to n characters to the right of LMBase, independent of the LM setting. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (BLM=,m), the non-COM value will remain the same. On all devices except COM, the first possible printing position is 0, so all body statements will be indented at least n spaces. This takes effect in the line following the one which includes this directive.

BM Bottom Margin setting

BM=n,m Initial value: 56(10) Range: [1(0.1), 150(11)]

n is the last line on which body text will be printed. Optionally, m may be specified; m is a COM measure which will only have effect on Output COM. If only m is specified (BM=,m), the non-COM value will remain the same. If statement numbers and signatures are being printed as well as the text, and they overlap each other on the last line, then the statement number will be printed on line n+1 and the signature will be printed on line n+2. Any lines consisting only of carriage returns immediately following an automatic pagenation will be discarded. This takes effect on the page which includes this directive, unless this directive moves the bottom margin to a point above the end of the current statement.
The bottom margin must be greater than TM+(height of headers)+YFH. It may not be set so that BM+YPF+(length of footer) exceeds YMax. (If you attempt to do either illegal operation, BM will be adjusted as much as possible within these limits.)

BP Body text Positioning option

BP=n Initial value: 1 Range: [0, 11]

From the occurance of this directive on (until subsequently changed), the text of the body will be justified according to this directive.

```
Off    0   don't format the lines.  May line break in the middle of a word.
FL     1   set lines flush left
FR     2   set lines flush right
C      3   center between left and right margins
OddL   8   set odd pages flush left, even pages flush right
OddR   9   set even pages flush left, odd pages flush right
J     10   set with full justification (COM only)
```

If there is a tab in the line, the line is set flush left. This takes effect in the line which includes this directive. One may use the alphabetic eqivalents instead of the numbers (e.g. BP=OddL). If BP=J, on non-COM devices BP will be flush left.

BRM Body Right Margin

BRM=n,m Initial value: 72(6) Range: [1(0.1), 131(8.5)]

Sets the body right margin to n characters to the right of LMBase, independent of the RM setting. Optionally, m may be specified; m is a COM measure and will only have effect on Output COM. If only m is specified (BRM=,m), the non-COM value will remain the same. There are 77 character positions on the line printer's 8 1/2 by 11 page, but a good practical limit is 72. On Output Teletype, the default is 65. This takes effect in the line following the one which includes this directive.

BoldFace change to BoldFaced type

BoldFace=On/Off

On Output COM, the text of the area in which this directive appears (be it the body, header 1, header 2, etc.) will be set in boldfaced type from that point on. If no argument is given, On will be assumed. Whether the type style is light or bold, it may be set to medium by setting either LightFace or BoldFace to Off. See Appendix C for instructions on the use of Output COM's features.

CBL Columnate Before Line

CBL

For COM only. Columnate (or paginate if Columns=1) before the current line. Directives in this line will affect the page and column in which the line would have appeared had the CBL not been there.

CBS Columnate Before Statement

CBS

For COM only. Columnate (or paginate if Columns=1) before the current statement. Directives in this statement will affect the page and column in which the statement would have appeared had the CBS not been there.

CEL Columnate at End of Line

CEL

For COM only. Columnate (or paginate if Columns=1) at the end of the current line.

CES Columnate at End of Statement

CES

For COM only. Columnate (or paginate if Columns=1) at the end of the current statement.

CFit Columnate to Fit statements

CFit=On/Off

For COM only. From that point on, a new column will be begun if a statement won't entirely fit on the page in that column. Affects the current statement and all thereafter until changed.

CLev Columnate before every statement of level $<=$n

CLev=n

For COM only. A new column will be begun before every statement of level n or above level n. Affects the current statement and all thereafter until changed.

CaseMode force Case of text

CaseMode=n Initial value: 0

Sets case mode of body text (from file).

```
0   current mode;  don't do any changing
1   force all text to lower case
2   print all text as upper case
```

This takes effect just after it appears, and remains in effect until subsequently changed.

Center Center the next n lines

Center=n Initial value: 0

Beginning with this line, center n lines between the margins. The count includes blank lines. If no number is given, 1 will be assumed.

Columns Number of Columns on a page

Columns=n Initial value: 1 Range: [1, 4]

For COM only. Beginning with the next statement, there will be n columns on the page, with XBC between columns. When you change the number of columns, the next statement will appear in the left column below the lowest y coordinate yet written on the page. If you are printing right statement numbers, you will probably want to define them in terms of the apparent right margins (or else the numbers for all the columns will appear in the same place. To do so, redefine SNF and set SNFRel to On (see SNFRel).

D print-Directives switch

D=On/Off Initial value: Off

When D is turned on, it and every directive thereafter will be printed as part of the output (as well as executed). When turned off, this directive and all that follow are not printed (but are executed).

DCase Directive recognition Case

DCase=n Initial value: 2

Sets the case requirements for the first letter of directives and mnemonic arguments.

```
0   will recognize either upper or lower case characters
    as the first letter of the directive
1   will recognize directives beginning with a lower case letter only
2   will recognize directives beginning with an upper case letter only
```

This takes effect immediately after this directive appears, so all succeeding directives will have to conform to this directive's specifications, even another DCase to change things back. This parameter also applies to the alphabetic argument equivalents (the mnemonics like All, None, FL, etc.).

DLD set Directive Left Delimiter

DLD='@ Initial value: '. Range: [0B, 177B]

Normally, the left delimiter of a directive is a ".". This directive will reset it to any desired character. One may NOT set a directive delimiter to letters, numbers, and non-printing characters, This leaves the following characters: ! " # $ % & ' ( ) @ : = ↑ ← [ ] ; < > . , ? + * / - It is alright to set the left and right delimiters to the same character. By setting the delimiters to some little used character, one can get faster response from the output processor. The change takes effect immediately after that directive. From that point on, only directives using the new left delimiter will be recognized.

DRD set Directive Right Delimiter

DRD='@ Initial value: '; Range: [0B, 177B]

Normally, the right delimiter of a directive is a ";". This directive will reset it to any desired character. One may NOT set a directive delimiter to letters, numbers, non-printing characters, and the characters: + - * / This leaves the following characters: ! " # $ % & ' ( ) @ : = ↑ ← [ ] ; < > . , ? It is alright to set the left and right delimiters to the same character. By setting the delimiters to some little used character, one can get faster response from the output processor. The change takes effect immediately after that directive. From that point on, only directives using the new right delimiter will be recognized.

Dash set 'Dash' character for page deliniation

Dash='* Initial value: '- Range: [0B, 177B]

Sets the "dash" character to any desired character for printing at the bottom of the page if the NumDash directive is used. For example, one may print a row of "Q"s at the bottom of each page if one desires. This directive does not apply to dashes within the text. This takes effect on the page which includes this directive, and continues in effect until changed. This is only useful on Output Teletype.

DefSyn Define Synonym for directive

DefSyn [Directive] =UIIII

Defines the name given to be a synonym for the bracketed directive. The name must begin with an upper case letter, so long as DCase=2. The two names can be used interchangeably from that point on.

DefaultFont Default (all) character Font

DefaultFont=size,face,style

On Output COM, the type size, face, and style are controllable for each area of text on the page (the Body, each header, the footer, right statement numbers, etc.). For each of these areas, there is a font directive which controls these parameters (e.g. BFont). The DefaultFont directive sets ALL such font directives to the given values. Its most common use is at the beginning if the file, to set up a particular default font for all font directives. The initial value of DefaultFont (and hence the initial value of all font directives) is 10 point Courier medium. If any of the values are not specified, they will be changed back to 10p, Courier, or Medium, as the case may be. See Appendix C for a complete description of all COM directives.

Size options:

```
from 50 to 2000 thousandths of an inch, or from 4 to 144 points
```

Face options:

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

```
One may combine the four options by adding their numbers or alphanumeric
mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce  text
bold faced, slanted (Italics), and underlined.  See Appendix C for samples.
```

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

Dot Set Dot Character

Dot='- Initial value: '. Range: [0B, 177B]

Normally, when the user executes a DotSplit or DotTo directive, the space is filled with dots (periods). This directive allows the user to reset the "dot" character so that a space may be filled with any character. For example, one may want to fill a space wth dashes (Dot='-), or one might want to fill it with spaces and set DotFont to underlined. The regular Split directive puts nothing in the space.

DotFont Set Dot Character Font

DotFont=size,face,style

On Output COM, the dots produced by the directives DotSplit and DotTo will be set in the type size, face, and style given in this directive, regardless of the font locally in effect at the time a dot directive is invoked. The default font is 10 point Courier medium. If any of the values are not specified, they will not be changed. If you don't wish to change the style, the second comma is not necessary.See Appendix C for instructions on the use of Output COM's features.

Size options:

```
from 50 to 2000 thousandths of an inch, or from 4 to 144 points
```

Face options:

```
Courier      =  0
Directory    =  1
Film         =  2
OCRB         =  3
NMAMicrofont =  4
NewsGothic   =  5
TimesRoman   =  6
```

Style options:

```
One may combine the four options by adding their numbers or alphanumeric
mnemonics, e.g. BStyle=2+4+8 or BStyle=Bold+Slanted+Underlined would both
produce body text bold faced, slanted (italics), and underlined.  See
Appendix C for samples.
```

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
```

```
Underlined =  8
Mono       = 16
```

DotSpacing set Spacing between Dots

DotSpacing=n,m Initial value: 0(.05) Range: [0, 131(8.5)]

Sets spacing between dots generated by DotSplit or DotTo. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specifed (DotSpacing=,m), the non-COM value will remain the same. On non-COM devices, this parameter is the number of spaces between dots; on COM it is the distance between dots. If only the non-COM parameter is specified, the COM value will be calculated from the width of a blank in the current body font. The .05" default for COM is roughly equivalent to "3-to-em" spacing for a 10 point font, a common default for the printing industry. Dots are spaced from the left margin, so all dots on a page will be lined up vertically. On non-COM devices, there will always be at least one space both before and after the dots, except when Dot Spacing=0. On COM, the minimum space before and after the dots will be MIN(sp,DotSpacing)/2.

DotSplit Split lines wth Dots

DotSplit

When this occurs in a line, the text in the line to the left of this directive will be set flush left, and the text to the right of the directive will be set flush right. The area in between will be filled with dots (see Dot, DotFont, and DotSpacing). This is particularly useful in formatting indices and tables of contents.

DotTo fill line segment with Dots

DotTo=n,m Range: [1, 132(8.4)]

Insert dots to the given character position. The character following that directive will be in the nth column. Optionally, m may be specified; m is a COM measure and replaces n on Output COM. If only m is specified (TabTo=,m), this directive will be ignored on non-COM devices. Takes effect immediately and constitutes a line segment break. Will move as little as 2*DotSpacing+1 spaces. If you are on or beyond the given position, nothing will happen. See Dot, DotFont, and DotSpacing.

EvenPage insure on Even Page

EvenPage

The Output Processor will make sure that the page which includes the directive EvenPage will be an even page. If it would fall on an odd page, a pagination will occur before that statement. "Verso" (a printer's term for left or back page) is a synonym for EvenPage.

F sets the text of Footer

F="string" or F="odd", "even"

Sets the text of the footer to the string. The footer is a generalization of the page number field. The default footer is GPN. i.e. once a footer is set, automatic page number generation is cancelled. So if you want a page number at the bottom of the page, you must include a GPN directive in the footer string. If you wish no footer (page numbers) to be printed, set FSw to Off.

The footer string will be printed at the bottom of each page. When two strings are defined, the first will apply to all odd numbered pages and the second will apply to all even numbered pages. Directives may appear in the text of the footer; they will be executed each time the footer is printed. The double-quote mark (") may appear in the text of the footer, so long as it is not immediately followed by the directive right delimiter. Therefore the end of the footer string is a double-quote IMMEDIATELY followed by the directive right delimiter. This directive takes effect on the page which includes this directive.

FFont Footer character Font

FFont=size,face,style

On Output COM, the text of the footer will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you don't wish to change the style, the second comma is not necessary. See Appendix C for instructions on the use of Output COM's features.

Size options:

```
from 50 to 2000 thousandths of an inch, or from 4 to 144 points
```

Face options:

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

```
One may combine the three options by adding their numbers or alphanumeric
```

mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce footer text bold faced, slanted (italics), and underlined. See Appendix C for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

FLM Footer Left Margin setting

FLM=n,m Initial value: 0 Range: [-131(-8.5), 131(8.5)]

Sets the left margin of the footer to n characters to the right of LMBase, independent of the setting of LM. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (FLM=,m), the non-COM value will remain the same. On all devices except COM, the first printing position is 0, so the footer will be indented n spaces. When LM is set, FLM is set to the same value at the same time.

FP Footer Position

FP=n Initial value: 3

Sets the horizontal position of the footer (when one is defined and FSw is On).

FL	1	set lines flush left
FR	2	set lines flush right
C	3	center between left and right margins
OddL	8	set odd pages flush left, even pages flush right
OddR	9	set even pages flush left, odd pages flush right
J	10	set with full justification (COM only)

One may use the alphabetic eqivalents instead of the numbers (e.g. FP=OddL). This takes effect on the page which includes this directive.

FRM Footer Right Margin setting

FRM=n,m Initial value: 72(6) Range: [1(0.1), 131(8.5)]

Sets the footer right margin to n characters to the right of LMBase, independent of the setting of the RM. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (FRM=,m), the non-COM value will remain the same. An 8 1/2 by 11 page has approximately 77 character positions, but a good practical limit is 72. The initial value of FRM with Output Teletype is 65. The new parameter takes effect on the page which includes this directive. When RM is set, FRM is set to the same value at the same time.

FSw Footer Switch

FSw=On/Off

When on, the string defined by the directive F will be printed at the bottom of each page. Page numbers will be replaced, so if you want a page number down there, you must put the GPN directive in the string of the footer. When off, no footers (including no page numbers) will be printed. This directive takes effect on the page which includes this directive.

Face change type Face

Face=n Range: [0, 6]

On Output COM, the text of the area in which this directive appears (be it the body, header1, header 2, etc .) will be set in type face n from that point on. See Appendix C for instructions on the use of Output COM's features.

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Font character Font

Font=size,face,style

On Output COM, the text of the area in which this directive occurs (be it the body, header 1, header 2, etc.) will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you don't wish to change the style, the second comma is not necessary. If you wish to change only one of the values, it is usually easier to use the directive Size, Face, Slant, Underline, Monospace, Lightface, or Boldface. See Appendix C for instructions on the use of Output COM's features.

Size options:

```
from 50 to 2000 thousandths of an inch, or from 4 to 144 points
```

Face options:

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. BStyle=2+4+8 or BStyle=Bold+Slanted+Underlined would both produce body text bold faced, slanted (italics), and underlined. See Appendix C for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

GCR Generate Carriage Return(s)

GCR=n or just GCR Range: [0, 75]

Generates n carriage returns (and line feeds) at that point in the output. GCR without an argument generates one carriage return. May be placed in any text, including in headers and footers. Blank lines following an automatic pagination will be discarded; if you really want them, use the directive GLES, GLEL, GLBS, or GLBL.

GD Generate text for current Date

GD

Generates the text for the current date at that point in the output. It takes 9 character-positions.

GDT Generate text for Date and Time

GDT

Generates the text for the current date, a space, then the current time at that point in the output. It takes 16 character-positions.

GN Generate Number

GN=n

Generates the text for the number n at that point in the output, in the form determined by GNType. The user variable directives (U0 through U9) may prove useful in connection with this directive.

GNType Type of number generated by GN

GNType=n

Controls the type of numbers generated by the GN directive. Takes effect immediately.

```
Dec         1     decimal numbers
LR          2     lower case roman numerals
UR          3     upper case roman numerals
LL          4     lower case letters
UL          5     upper case letters
Oct         6     octal numbers

Parens     10     enclose whichever type of number in (parenthesis)
Brackets   20     enclose in [brackets]
Angles     30     enclose in <angle brackets>
Hyphens    40     enclose in -hyphens-

Period    100     follow number (and enclosure) with a period
Colon     200     follow number (and enclosure) with a colon
```

One may use the alphabetic equivalents instead of the numbers (e.g., either "GNType=231" or "GNType=Dec+Angles+Colon" would produce a number in the form "<n>:").

GPN Generate text for Page Number

GPN=n

Generates the text for the page number at that point in the output in whatever format n dictates. When no argument is given, the page number is generated in whatever type PNType currently dictates. The default of F is GPN=1.

```
Dec         1     decimal numbers
LR          2     lower case roman numerals
UR          3     upper case roman numerals
LL          4     lower case letters
UL          5     upper case letters
Oct         6     octal numbers

Parens     10     enclose whichever type of number in (parenthesis)
Brackets   20     enclose in [brackets]
Angles     30     enclose in <angle brackets>
Hyphens    40     enclose in -hyphens-

Period    100     follow number (and enclosure) with a period
Colon     200     follow number (and enclosure) with a colon
```

One may use the alphabetic equivalents instead of the numbers (e.g., either "GPN=231" or "GPN=Dec+Angles+Colon" would produce a page number in the form "<n>:").

GSp Generate Space(s)

GSp=n or GSp Range: [0, 75]

Generates n spaces at that point in the output; when there is no argument, a single space is generated.

GT Generate text for Time of day

GT

Generates the text for the current time of day at that point in the output. It it takes 7 character-positions.

GTab Generate Tab(s)

GTab=n or GTab Initial value: NLS Range: [0, 10]

Generates n tabs at that point in the output; when there is no argument, one tab is generated. Will tab as little as one space. Printing then begins in the character position following the position where the tabs are set. Tabs are, unless changed in NLS or by a TabStops directive, set in position eight (8), and every eight spaces therafter, up to 72.

GYBL Generate vertical distance Before Line

GYBL=n,m Range: [1, 792]

Generates n lines before the line which includes this directive. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (GYBL=,m), nothing will happen on non-COM devices. The distance will be generated even if this line is the first one on a new page.

GYBS Generate vertical distance Before Statement

GYBS=n,m Range: [1, 792]

Generates n lines before the statement which includes this directive. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (GYBS=,m), nothing will happen on non-COM devices. This applies to the body area only. The distance will be generated even if this is the first statement on a new page.

GYEL Generate vertical distance After Line

GYEL=n,m Range: [1, 792]

Generates n lines after the line which includes this directive. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (GYEL=,m), nothing will happen on non=COM devices.

GYES Generate vertical distance After Statement

GYES=n,m Range: [1, 792]

Generates n lines after the statement which includes this directive. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (GYES=,m), nothing will happen on non-COM devices. This applies to the body area only.

Grab paginate if can't fit n lines on page

Grab=n,m Range: [0, 148(8.5)]

Paginate (or, on COM, columnate) if n lines, beginning with the first line of the current statement, won't fit on the current page. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (Grab=,m), nothing will happen on non-COM devices. When m is specified, the distance is measured from the top of the first line in the current statement. Blank lines are included in this count. This is commonly used for heading widows, i.e. to insure that something like a chapter head isn't the last line on a page.

H1 text of page Header 1

H1="string" or H1="odd", "even"

When defined, this string will be printed at the top of every page, in the position determined by the directive H1P, so long as H1Sw is set to "On". When two strings are defined, the first will apply to all odd numbered pages and the second will apply to all even numbered pages. H is a synonym for H1 (when the number is left off, it assumes you are referring to H1). Directives may appear in the text of headers; they will be executed each time the header is printed. The double-quote mark (") may appear in the text of headers, so long as it is not immediately followed by a comma or the directive right delimiter. Therefore the end of the header string is a double-quote IMMEDIATELY followed by a comma or the directive right delimiter. This directive takes effect on the page following the one which includes this directive.

H1Font Header 1 character Font

H1Font=size,face,style

On Output COM, the text of the header 1 will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you dc not wish to change the style, the second comma is not necessary. See Appendix C for instructions on the use of Output COM's features.

Size options:

```
from 50 to 2000 thousandths of an inch, or from 4 to 144 points
```

Face options:

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

```
One may combine the four options by adding their numbers or alphanumeric
mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce header
1 text bold faced, slanted (italics), and underlined.  See Appendix C for
samples.
```

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

H1P Header 1 Positioning option

H1P=n Initial value: 1

Sets the horizontal position of header one (when H1 is defined and H1Sw is On).

```
FL     1   set lines flush left
FR     2   set lines flush right
C      3   center between left and right margins
OddL   8   set odd pages flush left, even pages flush right
OddR   9   set even pages flush left, odd pages flush right
J     10   set with full justification (COM only)
```

This takes effect beginning on the next occurance of a header. If there is a tab in the line, the line is set flush left. One may use the alphabetic equivalents instead of the numbers (e.g., H1P=OddR). If H1P=J, on the printer it will be set flush left.

H1Sw page Header 1 Switch

H1Sw=On/Off

When on, the string defined by H1 will be printed at the top of every page; when off, header 1 and YBH1H2 won't be printed. This takes effect after the current statement.

H2 text of page Header 2

Works just like H1. Will be printed under H1. The distance between H1 and H2 is determined by the directive YBH1H2, and is initially 0.

H2Font Header 2 character Font

Works just like H1Font.

H2P Header 2 Positioning option

Works just like H1P.

H2Sw page Header 2 Switch

H2Sw=On/Off

When on, the string defined by H2 will be printed at the top of every page, under H1 and HJournal; when off, H2 and YBH2H3 won't be printed. THis takes effect after the current statement.

H3 text of page Header 3

Works just like H1. Will be printed under H2. The distance between H2 and H3 is determined by the directive YBH2H3, and is initially 0.

H3Font Header 3 character Font

Works just like H1Font.

H3P Header 3 Positioning option

Works just like H1P.

H3Sw page Header 3 Switch

Works just like H1Sw.

H4 text of page Header 4

Works just like H1. Will be printed under H3. The distance between H3 and H4 is determined by the directive YBH3H4, and is initially 0.

H4Font Header 4 character Font

Works just like H1Font.

H4P Header 4 Positioning option

Works just like H1P.

H4Sw page Header 4 Switch

Works just like H1Sw.

HJFont Journal Header character Font

Works just like H1Font.

HJLM Journal Header Left Margin

HJLM=n,m Initial Value: 0 Range: [-131(-8.5), 131(8.5)]

Sets the Journal Header left margin to n characters to the right of LMBase, independent of the LM setting. LM does not change HJLM. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (HJLM=,m), the non-COM value will remain the same. On all devices except COM, the first possible printing position is 0. This takes effect on the page following the one which includes this directive.

HJP Journal Header Positioning option

Works just like H1P. By default, HJP=FR.

HJRM Journal Header Right Margin

HJRM=n,m Initial Value: 76(6.5) Range: [-131(-8.5), 131(8.5)]

Sets the Journal Header right margin to n characters to the right of LMBase, independent of the RM setting. RM does not change HJRM. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (HJRM=,m), the non-COM value will remain the same. This takes effect on the page following the one which includes this directive. On Output Teletype, this is defaulted to 72.

HJournal text of Journal page Header

HJournal="string" or HJournal="odd", "even"

The string is printed as a running head above everything else (including the other headers), beginning on the page following the one which includes this directive. If two strings are defined, the first will be printed on all odd numbered pages and the second will be printed on even numbered pages. It is by default set flush to the right margin. It is printed in the top margin so as not to affect the page format (see --YBHJTM). When a file is journalized, HJournal is set by the Journal system to the sender's ident, a space, the date and time of journalization, a space, and the journal number. Once set, the Journal header may not be changed; subsequent HJournal directives will be recognized only so far as to conform to D (directive print switch). See the first section for a list of Journal inserted directives.

HLM Header Left Margin

HLM=n,m Initial value: 0 Range: [-131(-8.5), 131(8.5)]

Sets the left margin of all except the Journal header to n characters to the right of LMBase, independent of the setting of LM. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (HLM=,m), the non-COM value will remain the same. The first possible printing position is 0. Setting LM sets HRM to the same value at the same time.

HRM Header Right Margin

HRM=n,m Initial value: 72(6) Range: [1(0.1), 131(8.5)]

Sets the right margin of all except the Journal header to n characters to the right of LMBase, independent of the setting of RM. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (HRM=,m), the non-COM value will remain the same. There are approximately 77 columns on our printer's 8 1/2 by 11 page, but a good practical limit is 72. The initial value is 65 with Output Teletype. This takes effect on the next occurance of a header. Setting RM sets HRM to the same value at the same time.

Halt ignore rest of input file

Halt

Stops compilation and output of the input file from that point on. It's as if this were the last thing in the file.

ICR Indentation for Carriage Return on previous line

ICR=n,m Initial value: 0 Range: [0, 131(8.5)]

Indents n spaces from level-indented left margin after each carriage return in the text. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified, the non-COM value will remain the same. Does not indent the first line in a statement nor overflow of a line onto the next line. Takes effect on the next line. No indentation will be greater than IMax.

IFirst Indentation for First line of statement

IFirst=n,m Initial value: 0 Range: [0, 131(8.5)]

Indents the first line of each statement n spaces. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (IFirst=,m), the non-COM value will remain the same. Text begins in the n+1th position. Takes effect on the next line. No indentation will be greater than IMax.

IL Indentation per Line in statement

IL=n,m Initial value: 0 Range: [0, 131(8.5)]

Each line of text in a statement is indented n spaces from the beginning of the previous line (NOT necessarily from the first visible), so it's cumulative. Optionally, m may be specified; m is a COM measure and takes effect only on Output COM. If only m is specified (IL=,m), the non-COM value will remain the same. Takes effect on the next line. No indentation will be greater than IMax.

ILCR Indentation per Line-ended-by-CR in statement

ILCR=n,m Initial value: 0 Range: [0, 131(8.5)]

Each occurance of a carriage return (the CR character or a GCR directive) will increment total indentation in that statement by n; i.e. the line resulting from the carriage return and all in the statement thereafter will be indented n more spaces than the previous line. (Zero is off.) Optionally, m may be specified; m is a COM measure and will take effect only on Output COM. If only m is specified (ILCR=,m), the non-COM value will remain the same. Takes effect on the next line. No indentation will be greater than IMax.

ILev Indentation per statement Level

ILev=n,m Initial value: NLS Range: [-131(-8.5), 131(8.5)]

All of each statement is indented n(L-1). It is the amount of indenting for each lower level of statement. The initial value is 3. Optionally, m may be specified; m is a COM measure and takes effect only on Output COM. If only m is specified (ILev=,m), the non-COM value will remain the same. Takes effect on the next statement. This indentation is always performed before any of the other indents are considered. No indentation will be greater than IMax.

IMax Maximum total Indentation

IMax=n,m Initial value: NLS Range: [0, 131(8.5)]

The maximum amount of indenting from the left margin by ALL the other indent options will be n characters to the right of Body Left Margin. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (IMax=,m), the non-COM value will remain the same. The default NLS value is 48. To get any indentation greater than this, you must increase this parameter. Takes effect on the next line.

IOvr Indentation for Overflow of previous line

IOvr=n,m Initial value: 0 Range: [0, 131(8.5)]

Overflow from the previous line in a statement will be indented n spaces from the level indented statement margin. When the output processor can't fit a statement or a line all on one print line, it automatically backs up to the last invisible and begins a new line; this new line is called overflow. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (IOvr=,m), the non-COM value will remain the same. Takes effect on the next line. No indentation will be greater than IMax.

IRel Indentation Relative to first visible in previous line

IRel=n,m Initial value: 0 Range: [0, 131(8.5)]

Each line in a statement is indented n spaces from the position in which the first visible character in the previous line was printed, so it's cumulative. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (IRel=,m), the non-COM value will remain the same. Takes effect on the next statement. No indentation will be greater than IMax.

IRest Indentation for statement lines after first line

IRest=n,m Initial value: 0 Range: [0, 131(8.5)]

All but the first line in a statement will be indented n spaces from the level indented statement margin. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (IRest=,m), the non-COM value will remain the same. Takes effect on the next line. No indentation will be greater than IMax. Leading spaces in each line will be discarded.

ISN Indentation to replace Statement Numbers

ISN=n,m Initial value: 0 Range: [0, 131(8.5)]

If statement numbers are not being printed (SN=Off), then n spaces will be printed before the first character of the first line of tne statement is printed. (These spaces are in addition to any created by other indent options.) Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified (ISN=,m), the non-COM value will remain the same. Takes effect on the next statement. No indentation will be greater than IMax.

IgB Ignore Branch

IgB

The statement in which this directive appears and all its sub-statements will not be printed. If some lines of the statement have already been compiled, they will be printed. The directives before the IgB directive will be executed. After the ignore directive, there will be no scanning for directives and no printing.

IgD Ignore Directives

IgD=On/Off

All directives except IgD will be ignored while IgD=On. Directives will be recognized, however, and treated by the directive D. This applies only to the body area, so directives in the headers and footer will be executed.

IgLS Ignore Line Segment

IgLS

The text of the line segment in which this directive occurs will be ignored. Directive in the line segment are executed, however. A line segment is a string of text terminated by:

1 a tab character or a GT directive
2 a split directive
3 a change in type font, style, or size (on COM only)
4 an end-of-line condition (carriage return or GCR directive, line overflow beyond the right margin, or end-of statement encountered).

IgRest Ignore Rest of statement

IgRest

From that point on, the rest of that statement will be ignored. This includes directives in that last part of the statement. It's as if the statement ended there.

IgS Ignore Statement

IgS

From the line which includes this directive on, the statement will not be printed. Directives in the statement before, but not after, this one will be recognized and executed.

IgText Ignore Text

IgText=On/Off

If IgText is set to On, all text in the file will be ignored until IgText is turned off again. All directives except for IgText will also be ignored. It's as if that section of the file were not there.

LM Left Margin setting

LM=n,m Initial value: 0 Range: [-131(-8.5), 131(8.5)]

The first character printing position will be n characters to the right on LMBase. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (LM=,m), the non-COM value will remain the same. On all non-COM devices, the first possible printing position is 0, so all statements will be indented at least n spaces. Negative left margins can be used when one wants to bring indented statements out to the left edge of the page. Until subsequently changed (by HLM, FLM, BLM), this sets the left margin for the body, the headers (except the Journal header), and the footer, all at once. Takes effect on the next line.

LMBase Base Left Margin

LMBase=n,m Initial value: 0(1.5) Range: [0, 131(8.5)]

Sets a reference position to n characters to the right of zero character position on non-COM devices and to the right of the left edge of the page on COM. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specifed (LMBase=,m), the non-COM value will remain the same. All horizontal margin parameters for COM are with respect to this position. When one sets LM to n, the left margin will be set to n + LMBase from the of zero

position. One may change LM without changing the reference point from which the right margin is calculated, since RM is calculated from LMBase.

LP Line Positioning option

LP=n

Sets the horizontal position of the line which includes this directive.

```
FL      1   set lines flush left
FR      2   set lines flush right
C       3   center between left and right margins
OddL    8   set odd pages flush left, even pages flush right
OddR    9   set even pages flush left, odd pages flush right
J      10   set with full justification (COM only)
```

If there is a tab in the line, the line is always set flush left. Takes effect on the line which includes this directive. One may use the alphabetic eqivalents instead of the numbers (e.g. LP=OddL). If LP=J, on the printer it will be flush left.

Leading print-Leading-spaces switch

Leading=On/Off

Spaces at the beginning of a line are normally printed; e.g. Leading=On. When off, any blank spaces at the beginning of each line will not be printed. The Leading directive doesn't affect indentation at the beginning of a line created by Output Processor directives. Takes effect on the next line.

Lev Level of current statement

This cannot be changed by the user; it is for queries only. i.e. it may be used in the argument of another directive.

LevClip don't print Levels below n

LevClip=n Initial value: NLS Range: [0, 72]

Levels below n will not be printed. Their directives will not be recognized. Similiar to NLS viewspec L, which determines its initial value. Having n greater than the L viewspec at the time at which the file is sent to the output processor is meaningless, since the output processor will only see L levels anyway.

LevShow output only these Levels

LevShow=intervals

Beginning with the next statement, only statements of the given levels will be printed. Directives in unprinted levels will be ignored. The initial value depends on the value of the NLS viewspec L in force at the time of output processing.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n          Level n itself.
<n         Levels 1 thru n-1
<=n        Levels 1 thru n
>n         Levels n+1 thru 12
>=n        Levels n thru 12
(n,m)      Levels n+1 thru m-1
[n,m)      Levels n thru m-1
(n,m]      Levels n+1 thru m
[n,m]      Levels n thru m
"All"/"On"/"Yes"
           Levels 1 thru 12
"None"/"Off"/ No"
           No Levels (resets LevShow)
```

LightFace change to LightFaced type

LightFace=On/Off

On Output COM, the text of the area in which this directive appears (be it the body, header 1, header 2, etc.) will be set in lightfaced type from that point on. If no argument is given, On will be assumed. Whether the type style is light or bold, it may be set to medium by setting either LightFace or BoldFace to Off. See Appendix C for instructions on the use of Output COM's features.

MonoSpace change to MonoSpaced type

MonoSpace=On/Off

On Output COM, the text of the area in which this directive appears (be it the body, header 1, header 2, etc.) will be set in mono spaced type from that point on. If no argument is given, On will be assumed. This directive only has meaning when a type face that is normally proportionally spaced is in effect. Those type faces which may (and will by default) be proportionally spaced are: Courier (#0), NewsGothic (#5), and TimesRoman (#6). See Appendix C for instructions on the use of Output COM's features.

Names print-statement-Names switch

Names=On/Off Initial value: NLS

Statement names will be printed when Names is on; they won't be printed when Names is off. A statement name is as defined in the NLS file. Takes effect on the next statement.

NumDash Number of Dashes at end of page

NumDash=n Initial value: 0,6 Range: [0, 132]

When set to other than 0, n dashes [or whatever character one may set with the directive "Dash"] will be printed at the end of the page to show where the page ends. The initial value is 6 on Output Terminal, and zero on all other devices. This is only useful when outputting on a teletype, it is not typically useful on the printer or on COM.

OddPage insure on Odd Page

OddPage

The Output Processor will make sure that the page which includes the directive OddPage will be an odd page. If it would fall on an even page, a pagination will occur before that statement. "Recto" (printer's term for right page) is a synonym for OddPage.

PBL Paginate Before this Line

PBL

The printer will paginate before the line which includes this directive. The first such will be ignored if a page break automatically occured just before this line. Directives in that line will apply to the previous page as well.

PBS Paginate Before this Statement

PBS

The printer will paginate before the statement which includes this directive. The first such will be ignored if a page break automatically occured just before this statement. Directives in that statement will apply to the previous page as well.

PEL Paginate at End of this Line

PEL

The printer will begin a new page after the line which includes this directive. The first such will be ignored if a page break automatically occured just after this line.

PES Paginate at End of this Statement

PES

The printer will begin a new page after the statement (including statement number and/or signature, if applicable) which includes this directive. The first such will be ignored if a page break automatically occured just after this statement.

PFit Paginate to Fit statements

PFit=On/Off

When on, if a statement won't completely it on the page, the printer will paginate (or, on COM, columnate) before that statement. This applies to all statements so long as this directive remains on. Any lines consisting only of carriage returns immediately following an automatic pagination will be discarded. Takes effect on the current statement.

PLev Paginate before every statement of Level above n

PLev=n Initial value: 0 Range: [0, 35M]

Every time the printer encounters a statement of level n or higher, it will paginate before that statement. Will be ignored if a page break would automatically occur in the same place anyway. To turn off this option, set PLev to zero. This takes effect on the current statement.

PN set current Page Number to n

PN=n Initial value: 1

Sets the current page number to n. Note peculiarity mentioned in PBS and PBL: if PN is in a line containing a PBL or a statement containing a PBS, the PN will affect the page on which it would have appeared had there not been a pagination directive, not the new page on which that line will be printed. The default of F is GPN=1, (initialized at PN=1).

PNType Page Number Type

PNType=n

Controls the type of numbers generated by the GPN directive. Takes effect immediately.

```
Dec         1     decimal numbers
LR          2     lower case roman numerals
UR          3     upper case roman numerals
LL          4     lower case letters
UL          5     upper case letters
Oct         6     octal numbers

Parens     10     enclose whichever type of number in (parenthesis)
Brackets   20     enclose in [brackets]
Angles     30     enclose in <angle brackets>
Hyphens    40     enclose in -hyphens-

Period    100     follow number (and enclosure) with a period
Colon     200     follow number (and enclosure) with a colon
```

One may use the alphabetic equivalents instead of the numbers (e.g., either "PNType=231" or "PNType=Dec+Angles+Colon" would produce a page number in the form "<n>:"). To turn automatic page number generation off, set FSw to Off. (They are being produced because the default of F is GPN=1.)

PShow output only these Pages

PShow=interval

Output only these pages, but format and scan all the other pages for directives. (Zero or "all" means print all pages.) Takes effect on current statement.

"interval" represents an interval of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n           Page n only
<n          Pages 1 thru n-1
<=n         Pages 1 thru n
>n          Pages n+1 thru 12
>=n         Pages n thru 12
(n,m)       Pages n+1 thru m-1
[n,m)       Pages n thru m-1
(n,m]       Pages n+1 thru m
[n,m]       Pages n thru m
"All"/"On"/"Yes"
            Pages 1 thru 12
"None"/"Off"/"No"
            No Pages (resets LevShow)
```

PSw Pagination Switch (no page separation)

PSw=On/Off

When off, no page breaks will be made. The output will be in continuous form. There will be no page number generation, headers, footers, dashes at end of page. Page size and pagination directives will be meaningless.

Photo insert Photograph

Photo=catnum, (x,y), (x,y)

For COM only. The page on which the first character of the statement includes this directive will be printed will have the specified line drawing or half-tone photograph superimposed on the page within the given coordinates. The first number is the catalog number of the photograph. The second number is the x coordinate of the upper-left corner of the photo area; the third number is the y coordnate of the upper-left corner of the photo area. The fourth number is the x coordinate of the lower-right corner of the photo area; the last number is the y coordinate of the lower-right corner of the photo area. All five parameters must be specified. The parenthesis may be left out, and the commas may be optionally replaced by spaces. The photo will be an overlay, so, unless you wish text within the picture area, you must allow room for the photo. The GYBS or GYES might prove helpful for this. Catalog numbers are assigned by Mil Jernigan. Arrangements must be made with Dean Meyer to have a copy of the photo sent to DDSI.

PlexNum Number Plex below current statement

PlexNum=n

The statements in the plex that are exactly one level below the statement in which PlexNum appears are numbered. i.e. The PlexNum directive must be put in the statement one up from the plex you wish numbered. The number goes before leading spaces, at the beginning of the first output line of each statement in the sublist. Plex numbers will replace statement numbers if SN is on. The PlexNums will be printed in the font in which the statement is initialized (as determined by either BFont or the PxFont for that level).

The plex numbers may be in any of the types listed below. If no argument is given, decimal numbers will be assumed. Once you have defined a PlexNum for a branch, any subsequent PlexNum directives IN THAT BRANCH will serve only to change the numbering type. If you wish to number plexes within plexes, use the more versatile PxN and PxNShow directives.

Dec	1	decimal numbers
LR	2	lower case roman numerals
UR	3	upper case roman numerals
LL	4	lower case letters
UL	5	upper case letters
Oct	6	octal numbers
SNum	7	statement number format
DotNum	8	dot number format

```
Parens    10     enclose whichever type of number in (parenthesis)
Brackets  20     enclose in [brackets]
Angles    30     enclose in <angle brackets>
Hyphens   40     enclose in -hyphens-

Period   100     follow number (and enclosure) with a period
Colon    200     follow number (and enclosure) with a colon
```

One may use the alphabetic equivalents instead of the numbers (e.g., either "PlexNum=231" or "PlexNum=Dec+Angles+Colon" would produce plex numbers in the form "<n>:").

Post Post processor switch

Post=On/Off

When Post is on, the formatted file will be sent to the output device or file as usual (post-processed). When Post is off, the Output Processor will format the file as it usually does, reading all the directives and composing all the pages, but the output will not be sent to the device or file. It will be as if that section of the file where Post is off were cut from the output, or as if the printer were turned off while that section was being sent to it. This means the page deliniation will be confused for the hard-copy page corresponding to the place where the Post=Off and then the Post=On appear in the NLS file. You may want to accompany the Post=On with a PBS directive.

PxFShow Plex Format Show

PxFShow=intervals Initial value: None Range: [0, 12]

Blank lines will be inserted in plexes of the listed levels in accordance with PxFLU, PxFLS, and PxFLD. This directive takes effect immediately, and is in addition to any other y distance (e.g. YBS). This stays in effect until changed or turned off (set to Off).

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n          Level n itself.
<n         Levels 1 thru n-1
<=n        Levels 1 thru n
>n         Levels n+1 thru 12
>=n        Levels n thru 12
(n,m)      Levels n+1 thru m-1
[n,m)      Levels n thru m-1
(n,m]      Levels n+1 thru m
[n,m]      Levels n thru m
"All"/"On"/"Yes"
           Levels 1 thru 12
"None"/"Off"/ No"
           No Levels (resets LevShow)
```

PxFYD Plex Format Lines Down

PxFYD=n,m Initial value: 1(12p) Range: [0, 147(11)]

n blank lines will be inserted after a level L statement if the next statement is at level L+1 (one down); i.e. the number of blank lines before the first substatement of every level L statement. L is set by the PxFShow directive. Optionally, m may be specified; m is a COM measure and replaces the value n on Output COM. If only m is specified (PxFYD=,m), the non-COM value will remain the same. This directive takes effect immediately, and is in addition to any other y distance (e.g. YBS).

PxFYS Plex Format Lines Same

PxFYS=n,m Initial value: 1(12p) Range: [0, 147(11)]

n blank lines will be inserted after a statement of level L if the next statement is also of level L; i.e. the number of blank lines between statements of the same level. L is set by the PxFShow directive. Optionally, m may be specified; m is a COM measure and replaces n on Output COM. If only m is specified (PxFYS=,m), the non-COM value will remain the same. This directive takes effect immediately, and is in addition to any other y distance (e.g. YBS).

PxFYU Plex Format Lines Up

PxFYU=n,m Initial value: 2(24p) Range: [0, 147(11)]

n blank lines will be inserted before a level L statement if the preceding statement was at level L+1 (one down); i.e. the number of blank lines before each new branch of level L. L is set by the PxFShow directive. Optionally, m may be specified; m is a COM measure and replaces n on Output COM. If only m is specified (PxFYU=,m), the non-COM value remains the same. This directive takes effect immediately, and is in addition to any other y distance (e.g. YBS).

PxFont Plex character Font

PxFont[lev]=size,face,style

On Output COM, the text of the level specified in the brackets will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you do not wish to change the style, the second comma is not necessary. A BFont directive or other font control directives (Font, Face, Size, etc.) may be placed in the statement if a change is desired. At the end of that statement, the font will be switched back to its value before that statement, even if a BFont or other font control directive appears in the statement. See Appendix C for instructions on the use of Output COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce text bold faced, slanted (italics), and underlined. See Appendix C for samples.

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

PxFontShow Plex formatted type Font Show

PxFontShow=intervals Initial value: 0 Range: [0, 12]

For COM only. Controls the levels on which PxFont will show its effects. If a level is listed in PxFontShow but is not defined in a PxFont directive, their defaults will be assumed. This takes effect on the next statement, and remains in effect until turned off (set to Off). See Appendix C for instructions on the use of all COM features.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n          Level n itself.
<n         Levels 1 thru n-1
<=n        Levels 1 thru n
>n         Levels n+1 thru 12
>=n        Levels n thru 12
(n,m)      Levels n+1 thru m-1
[n,m)      Levels n thru m-1
(n,m]      Levels n+1 thru m
[n,m]      Levels n thru m
"All"/"On"/"Yes"
           Levels 1 thru 12
"None"/"Off"/ No"
           No Levels (resets LevShow)
```

PxI Plex formatted Indentation

PxI[lev]=n,m Initial value: 3(lev-1) Range: [0, 132(8.5)]

The listed levels will, when turned on by PxIShow, be indented n spaces from BLM instead of level indenting (ILev). Optionally, n may be specified; m is a COM measure and replaces n on Output COM. If only m is specified (PxI[lev]=,m), the non-COM value will remain the same. The default on COM is 0.3(lev-1). Takes effect on the next statement.

PxIShow Plex formatted Indentation Show

PxIShow=intervals Initial value: 0 Range: [0, 12]

The listed levels will be indented according to PxI[lev]. This indentation replaces ILev for those levels. This takes effect on the next statement, and remains in effect until turned off (set to Off).

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n          Level n itself.
<n         Levels 1 thru n-1
<=n        Levels 1 thru n
>n         Levels n+1 thru 12
>=n        Levels n thru 12
(n,m)      Levels n+1 thru m-1
[n,m)      Levels n thru m-1
(n,m]      Levels n+1 thru m
[n,m]      Levels n thru m
"All"/"On"/"Yes"
           Levels 1 thru 12
"None"/"Off"/ No"
           No Levels (resets LevShow)
```

PxN Plex Numeral style/level

PxN[level]=n Initial value (for n): 8

This directive specifies the type of "numbering" to be used at each level when that level is being numbered by the PxNShow directive.

```
Dec         1     decimal numbers
LR          2     lower case roman numerals
UR          3     upper case roman numerals
LL          4     lower case letters
UL          5     upper case letters
Oct         6     octal numbers
SNum        7     statement number format
DotNum      8     dot number format

Parens     10     enclose whichever type of number in (parenthesis)
Brackets   20     enclose in [brackets]
Angles     30     enclose in <angle brackets>
```

```
Hyphens   40     enclose in -hyphens-

Period   100     follow number (and enclosure) with a period
Colon    200     follow number (and enclosure) with a colon
```

One may use the alphabetic equivalents instead of the numbers. E.g., either "PxN[2]=231" or "PxN[2]=Dec+Angles+Colon" would produce plex numbers in the form "<n>:" for every level two plex when PxNShow includes 2.

The number goes before the leading spaces, at the beginning of the first output line of each statement in the sublist. Plex numbers will replace statement numbers if SN is on. Takes effect beginning with the next statement.

PxNFont Plex Numeral character Font

PxNFont[level]=size,face,style

On Output COM, the plex numerals of the given level will be set in the type size, face, and style given in this directive. This may be defined for the first twelve levels. "All" may be used in the level parameter. If no level is given, All will be assumed. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you do not wish to change the style, the second comma is not necessary. See Appendix C for instructions on the use of Output COM's features.

Size options:

```
from 50 to 2000 thousandths of an inch, or from 4 to 144 points
```

Face options:

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

```
One may combine the four options by adding their numbers or alphanumeric
mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce plex
numerals bold faced, slanted (italics), and underlined.  See Appendix C for
samples.

Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

PxNFontShow right Plex Numbers Font switch

PxNFontShow=intervals Initial value: 0 Range: [0, 12]

For COM only. With the PxNFont directive, different fonts may be defined for each of the first twelve levels of plex numbers. These will only have effect on the levels listed in the PxNFontShow directive. If the PxNFontShow directive does not include a given level, or if no PxNFontShow directive appears, the plex number will appear in the font at which the statement was initialized (BFont or PxFont for that level). If the PxNFontShow directive includes a level not previously defined by a PxNFont directive, it will appear in the DefaultFont, until subsequently changed.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n          Level n itself.
<n         Levels 1 thru n-1
<=n        Levels 1 thru n
>n         Levels n+1 thru 12
>=n        Levels n thru 12
(n,m)      Levels n+1 thru m-1
[n,m)      Levels n thru m-1
(n,m]      Levels n+1 thru m
[n,m]      Levels n thru m
"All" / "On" / "Yes"
           Levels 1 thru 12
"None" / "Off" / "No"
           No Levels (resets PxNFontShow)
```

PxNShow Plex Number level switch

PxNShow=intervals Initial value: None Range: [0, 12]

Every plex after this directive of the listed levels will be numbered, with the type of number set for that level by PxN. Takes effect on the next statement, and remains in effect until turned off (set to Off).

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n          Level n itself.
<n         Levels 1 thru n-1
<=n        Levels 1 thru n
>n         Levels n+1 thru 12
>=n        Levels n thru 12
(n,m)      Levels n+1 thru m-1
[n,m)      Levels n thru m-1
(n,m]      Levels n+1 thru m
[n,m]      Levels n thru m
"All"/"On"/"Yes"
           Levels 1 thru 12
"None"/"Off"/ No"
           No Levels (resets LevShow)
```

PxP Plex Position for given level

PxP[lev]=n

All statements of the given level will be justified as specified, when PxPShow is on for that level. When PxPShow is not on for a level, statements of that level will be set according to BP (Body Position). PxP may be specified for levels 1 through 12. The default is 3, or C (Centered). If the level is not specified, the plex position of all levels will be set to the given value.

```
FL      1    set lines flush left
FR      2    set lines flush right
C       3    center between left and right margins
OddL    8    set odd pages flush left, even pages flush right
OddR    9    set even pages flush left, odd pages flush right
J      10    set with full justification (COM only)
```

If there is a tab in the line, the line is set flush left. Takes effect on the statement which follows the one which includes this directive. One may use the alphabetic eqivalents instead of the numbers. If PxP[lev]=J, on non-COM devices it will be flush left.

PxPShow Plex Positioning option Show

PxPShow=intervals Initial value: None Range: [1, 12]

This, in conjunction with PxP, allows the positioning of each level independently. The listed levels will be positioned according to PxP[lev]; levels not listed will be positioned according to BP (Body Position). This takes effect on the next statement and remains in effect until changed.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n           Level n itself.
<n          Levels 1 thru n-1
<=n         Levels 1 thru n
>n          Levels n+1 thru 12
>=n         Levels n thru 12
(n,m)       Levels n+1 thru m-1
[n,m)       Levels n thru m-1
(n,m]       Levels n+1 thru m
[n,m]       Levels n thru m
"All"/"On"/"Yes"
            Levels 1 thru 12
"None"/"Off"/ No"
            No Levels (resets LevShow)
```

RM Right Margin setting

RM=n,m Initial value: 72(6) Range: [1(0.1), 132(8.5)]

The right margin will be set to n characters to the right on LMBase, i.e. LM + LMBase will be the last character position in which a character will be printed. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (RM=,m), the non-COM value will remain the same. There are approximately 77 character positions on an 8 1/2 by 11 page on our line printer, but 72 is a good practical limit. Until subsequently changed (by HRM, FRM, BRM), this sets the right margin for the body, the headers (except the journal header), and the footer, all at once. The default value for outut device teletype is 65. This takes effect for the next line segment.

SN print-Statement-Numbers switch

SN=On/Off

When on, statement numbers will be printed in front of each new statement. Takes effect on the next statement. This is completely independent of SNF, so if both are on, two sets of statement numbers will be printed.

SNF right Statement Number Format

SNF=n,m Initial value: NLS Range: [-132(-8.5), 132(8.5)]

SNF defines the position in which to put right statement numbers. Right statement numbers will be printed right justified to that position, after the last of the text of the statement has been printed. When SNF is undefined (set to Off), right statement numbers will not be printed; when SNF is set to some position, the directive SNFShow determines whether or not right statement numbers will be printed.

If SNFRel is Off, n is to the right of LMBase; if SNFRel is On, n is to the right (or if negative to the left) of the apparent right margin. The apparent right margin is the right margin unless multiple columns are being printed, in which case it is the column right margin. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (SNF=,m), the non-COM value will remain the same. When right statement numbers are on in NLS (viewspecs mG), the default will be 72 on non-COM devices, 6.5 on COM.

The output processor will attempt to put statement numbers in the last line of the text. If they would overlap the text, the statement numbers will be printed in the blank line following the statement. If there is no blank line following the statement, it will create one. Two things overlap if there is not at least one space between them. The statement number will always go on the same page as the last line of its statement (unless there is a PEL in that line). SNF is not affected by indentation, LM, nor RM settings. If n<=1 and SNFRel is Off, statement numbers will be printed flush left. SNF may be negative if SNFRel is on; SNF will be right justified n to the left of the right margin (see SNFRel). This takes effect the statement which includes this directive.

SNFFont right Statement Numbers character Font

SNFFont[level]=size,face,style

On Output COM, the right statement numbers of the given level will be set in the type size, face, and style given in this directive. This may be defined for twelve levels. "All" may be used in the level parameter. If no level is given, All will be assumed. If any of the values are not specified, they will not be changed (from DefaultFont). The default is 10 point Courier medium. If you do not wish to change the style, the second comma is not necessary. See Appendix C for instructions on the use of Output COM's features.

Size options:

```
from 50 to 2000 thousandths of an inch, or from 4 to 144 points
```

Face options:

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

```
One may combine the four options by adding their numbers or alphanumeric
mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce right
statement numbers bold faced, slanted (italics), and underlined.   See
Appendix C for samples.
```

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

SNFFontShow right Statement Numbers Font switch

SNFFontShow=intervals Initial value: 0 Range: [0,12]

For COM only. With the SNFFont directive, different fonts may be defined for each of the first twelve levels of statement numbers. These will only have effect on the levels listed in the SNFFontShow directive. If the SNFFontShow directive does not include a given level, or if no SNFFontShow directive appears, the statement number will appear in the font at which the statement was initialized (BFont or PxFont for that level). If the SNFFontShow directive includes a level not previously defined by a SNFFont directive, it will appear in the DefaultFont, until subsequently changed.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n       Level n itself.
<n      Levels 1 thru n-1
```

```
<=n       Levels 1 thru n
>n        Levels n+1 thru 12
>=n       Levels n thru 12
(n,m)     Levels n+1 thru m-1
[n,m)     Levels n thru m-1
(n,m]     Levels n+1 thru m
[n,m]     Levels n thru m
"All"/"On"/"Yes"
          Levels 1 thru 12
"None"/"Off"/ No"
          No Levels (resets LevShow)
```

SNFRel right Statement numbers Relative to right margin

SNFRel=On/Off Initial value: Off

When on, the value of SNF will be taken relative to the apparent right margin. When off, SNF will be counted from LMBase as usual. On COM, one may define more than one column on a page (see Columns). This directive is particularly useful in such a situation, since for more than one column, there are multiple apparent right margins (although only one actual right margin on the page). If right statement numbers are taken relative to the LMBase, the numbers for both columns will appear in the same place. SNFRel will put statement numbers applying to the left column between the columns. SNF may be negative, meaning to the left of the apparent right margin.

SNFShow Show right Statement Numbers for these levels

SNFShow=intervals Initial value: NLS Range: [1, 12]

Right statement numbers will be printed for only the levels listed. The position will be determined by SNF. It takes effect for the next statement, and remains in effect until turned off (set to Off) or changed by a subsequent SNFShow directive.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n         Level n itself.
<n        Levels 1 thru n-1
<=n       Levels 1 thru n
>n        Levels n+1 thru 12
>=n       Levels n thru 12
(n,m)     Levels n+1 thru m-1
[n,m)     Levels n thru m-1
(n,m]     Levels n+1 thru m
[n,m]     Levels n thru m
"All"/"On"/"Yes"
          Levels 1 thru 12
"None"/"Off"/ No"
          No Levels (resets SNFShow)
```

SNFont left Statement Numbers character Font

SNFont[level]=size,face,style

On Output COM, the left statement numbers of the given level will be set in the type size, face, and style given in this directive. This may be defined for twelve levels. "All" may be used in the level parameter. If no level is given, All will be assumed. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you do not wish to change the style, the second comma is not necessary. See Appendix C for instructions on the use of Output COM's features.

Size options:

```
from 50 to 2000 thousandths of an inch, or from 4 to 144 points
```

Face options:

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

```
One may combine the four options by adding their numbers or alphanumeric
mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce left
statement numbers bold faced, slanted (italics), and underlined.   See
Appendix C for samples.
```

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

SNFontShow left Statement Numbers Font switch

SNFontShow=intervals Initial value: 0 Range: [0,12]

For COM only. With the SNFont directive, different fonts may be defined for each of the first twelve levels of statement numbers. These will only have effect on the levels listed in the SNFontShow directive. If the SNFontShow directive does not include a given level, or if no SNFontShow directive appears, the statement number will appear in the font at which the statement was initialized (BFont or PxFont for that level). If the SNFontShow directive includes a level not previously defined by a SNFont directive, it will appear in the DefaultFont, until subsequently changed.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n       Level n itself.
<n      Levels 1 thru n-1
<=n     Levels 1 thru n
```

```
>n        Levels n+1 thru 12
>=n       Levels n thru 12
(n,m)     Levels n+1 thru m-1
[n,m)     Levels n thru m-1
(n,m]     Levels n+1 thru m
[n,m]     Levels n thru m
"All"/"On"/"Yes"
          Levels 1 thru 12
"None"/"Off"/ No"
          No Levels (resets LevShow)
```

SNShow Show left Statement Numbers for these levels

SNShow=intervals Initial value: NLS Range: [1, 12]

Statement numbers will be printed at the front of each statement for only the levels listed. It takes effect for the next statement, and remains in effect until turned off (set to Off).

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n         Level n itself.
<n        Levels 1 thru n-1
<=n       Levels 1 thru n
>n        Levels n+1 thru 12
>=n       Levels n thru 12
(n,m)     Levels n+1 thru m-1
[n,m)     Levels n thru m-1
(n,m]     Levels n+1 thru m
[n,m]     Levels n thru m
"All" / "On" / "Yes"
          Levels 1 thru 12
"None" / "Off" / "No"
          No Levels (resets SNShow)
```

SP Statement Positioning option

SP=n

Sets the horizontal position of the statement which includes this directive. This affects only the current line and any remaining lines in the statement. The default is whatever BP is set to. If SP=J, on the printer it will be flush left.

```
FL     1   set lines flush left
FR     2   set lines flush right
C      3   center between left and right margins
OddL   8   set odd pages flush left, even pages flush right
OddR   9   set even pages flush left, odd pages flush right
J     10   set with full justification (COM only)
```

One may use the alphabetic eqivalents instead of the numbers (e.g. SP=OddL). If there is a tab in the line, the line is set flush left.

SetL Set n lines flush Left

SetL=n

Sets the next n lines, including this one, flush to the indented left margin. If no number is given, 1 is assumed.

SetR Set n lines flush Right

SetR=n

Set the next n lines, including this one, flush to the right margin. If no number is given, 1 is assumed.

SigF statement Signature Format

SigF=n,m Range: [0, 132(8.5)]

When n is greater than 0, statement signatures (the initials of the person who last changed the statement, and the date and time of last change) will be printed, right justified to column n, after the last of the text of the statement has been printed. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is sppecified (SigF=,m), the non-COM value will remain the same. If signatures and blank lines are on in the NLS viewspecs at the time of output through the output processor, the default value will be 60, otherwise 0. The output processor will attempt to put statement signatures in the last line of the text. If they would overlap the text, signatures will be printed in the blank line following the statement. If there are no blank lines between statements, a blank line will be forced into existence to accomodate the signature. Statement numbers have precedence and will be printed first in case of overlap. (Signatures will be printed on the next line.) There are 20 characters in a signature.

Two things overlap if there isn't at least one space between them. Indentation, LM, and RM settings do NOT affect signatures. If n<=20, the signatures will be printed flush left. The signature will always go on the same page a the last line of its statement, unless there is a PEL in the line.

SigFont Signatures character Font

SigFont=size,face,style

On Output COM, the text of the signatures will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you do not wish to change the style, the second comma is not necessary. See Appendix C for instructions on the use of Output COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce signatures text bold faced, slanted (italics), and underlined. See Appendix C for samples.

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

Size Character Size

Size=n Range: [50, 2000]

On Output COM, the text of the area in which this directive appears (be it the body, header 1, header 2, etc.) will be set in n high type from that point on. See Appendix C for instructions on the use of Output COM's features.

Slant change to Slanted type

Slant=On/Off

On Output COM, the text of the area in which this directive appears (be it the body, header 1, header 2, etc.) will be set in slanted type from that point on. Only the News Gothic (#5) and the Times Roman (#6) may be set in slanted type. If no argument is given, On will be assumed. See Appendix C for instructions on the use of Output COM's features.

Split Split this line

Split

When this occurs in a line, the text in the line to the left of this directive will be set flush left, and the text to the right of the directive will be set flush right. This is particularly useful in formatting headers and footers. It was used in the footer of this document.

TM Top Margin setting

TM=n,m Initial value: 3(1) Range: [0, 148(11)]

There will be n blank lines above the first line on the page on which text will be printed. Optionally, m may be specified; m is a COM measure and will only take effect on Output COM. If only m is specified, the non-COM value will remain the same. Takes effect for the next page. If a Journal header is defined, it will be printed in the top margin. It will be followed by YBHJTM blank lines/distance.

TabP Tab Position

TabP=n Initial value: 1 Range: [0, 10]

The line segment which ENDS with a tab will be set according to the value of TabP; therefore there must be a tab after the last visible in the segment for this parameter to take effect. The line segment will be set according to the parameter between the end position of the last line segment and the tab. One may use the alphabetic eqivalents instead of the numbers (e.g. TabP=OddL). If TabP=J, on the printer TabP will be flush left.

```
FL     1   set lines flush left
FR     2   set lines flush right
C      3   center between left and right margins
J     10   set with full justification (COM only)
```

TabStops clear and set Tab Stops

TabStops=n,m,o,p, etc. (a,b,c,d etc.)
Initial value: NLS Range: [0, 144(8.4)]

The previous tab stops will be cancelled and new tab stops will be set in columns n, m, o, and p, etc. When a tab is executed, printing begins in the column in which the tab is set. On Output COM, the distances are interpreted in light of the body character size and face in effect at the time of this directive. Optionally, a,b,c,d etc. may be specified; these are COM measures and only take effect on Output COM. On COM, printing begins with the left edge at these positions. If only the COM measures are given (TabStops=(a,b,c,d,etc.)), the non-COM tabstops will not be changed. The initial array is whatever it was in NLS at the time of output processing (the initial NLS array is 8, 16, 24,...72). One may set up to 20 tab stops.

A shorthand way of specifying both the printer and the COM parameters is available. Three dots means set the rest of the tabstops in intervals equaling the difference between the last two parameters.
For example: TabStops=7,15,...(1.0,...) means the same things as
TabStops=7,15,23,31,39,47,and so on (1.0,2.0,3.0 and so on). Note that the three dots must be preceded by a comma.

TabTo Tab To given character position

TabTo=n,m Range: [1, 132(8.4)]

Tab to the given character position. The character following that directive will be printed in the nth column to the right of LMBase. Optionally, m may be specified; m is a COM measure and replaces n on Output COM. The left edge of the character will begin n distance to the right of LMBase. If only m is specified (TabTo=,m), this directive will be ignored on non-COM devices. Takes effect immediately and constitutes a line segment break. Will tab as little as one space; if you are on or beyond the given position, nothing will happen.

Tabs output: 0=null, 1=tab, 2=space

Tabs=0,1,or2 Initial value: 1

When set to 0, nothing will happen when a tab is encountered in the text; when set to 1, a tab will occur when the tab character is encountered; when set to 2, a single space will be printed when a tab is encountered. Tab characters will tab as little as one space.

Text define a name to print a Text string

Text[Name]="string"

From this point on, the name is a valid directive. When it is enountered as a directive (between the proper delimiters), the string will be printed at that point. (The first character of "Name" must be in the case specified by the DCase directive, normally upper case.)

Trailing print-Trailing-spaces switch

Trailing spaces (at the end of a line) are normally not printed, i.e. Trailing=Off. This is done so that, when you center lines or set lines flush right, spaces at the end of the line will not cause different positioning than might be expected. If you want spaces at the end of each line to be retained, use the directive Trailing=On. This takes effect beginning with the next line segment.

Trun Truncation to n lines

Trun=n

From this point on, all statements will be truncated to n lines (same as NLS viewspec T). The initial value is whatever the NLS viewspec T is set to at the time of output processing. If no number is given, 1 is asssumed.

U0 User variable directive 0

U0 Initial value: 0

May be set and used as a variable, or storage register, by the user. May be anywhere between a very large negative number and a very large positive number.

For example, one may set U0=Dec+Brackets+Colon, then say PxN[3]=U0, or U1=U1+1 and GN=U1.

U1 User variable directive 1
U2 User variable directive 2
U3 User variable directive 3
U4 User variable directive 4
U5 User variable directive 5
U6 User variable directive 6
U7 User variable directive 7
U8 User variable directive 8
U9 User variable directive 9

Underline change to Underlined type

Underline=On/Off

On Output COM, the text of the area in which this directive appears (be it the body, header 1, header 2, etc.) will be set in underlined type from that point on. If no argument is given, On will be assumed. See Appendix C for instructions on the use of Output COM's features.

V: set N Visibles in a specified type face

V1=n Range: [1, 102]

For COM only. The next n visibles will be set in the type font. V is a synonym for V1. If n is not specified, 1 will be assumed. A visible is any string of printing characters surrounded by spaces. If the end of the line segment is encountered before the V1 directive is exhausted, it is from that point on cancelled. See Appendix C for instructions on the use of all COM features.

V1Font set Font for V1 Visibles

V1Font=size,face,style

On Output COM, until subsequently changed. If you do not wish to change the style, the second comma is not necessary, whenever a V1 directive appears, the text of the number of visibles specified in the V1 directive immediately following the V1 directive will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. See Appendix C for instructions on the use of Output COM's features.

Size options:

```
from 50 to 2000 thousandths of an inch, or from 4 to 144 points
```

Face options:

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

```
One may combine the four options by adding their numbers or alphanumeric
mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce  text
bold faced, slanted (italics), and underlined.  See Appendix C for samples.
```

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

V2 set N Visibles in a specified type face

V2=n Range: [1, 102]

For COM only. The next n visibles will be set in the type font, style, and size specified by the last occurance of V2Font. If n is not specified, 1 will be assumed. A visible is any string of printing characters surrounded by spaces. If the end of the line segment is encountered before the V2 directive is exhausted, it is from that point on cancelled. See Appendix C for instructions on the use of all COM features.

V2Font set Font for V2 Visibles

Works just like V1Font.

V3 set N Visibles in a specified type face

V3=n Range: [1, 102]

For COM only. The next n visibles will be set in the type font, style and size specified by the last occurance of V3Font, V3Style, and V3CSz. If n is not specified, 1 will be assumed. A visible is any string of printing characters surrounded by spaces. If the end of the line segment is encountered before the V3 directive is exhausted, it is from that point on cancelled. See Appendix C for instructions on the use of all COM features.

V3Font set Font for V3 Visibles

Works just like V1Font.

VSplit Vertical Split

VSplit

At the occurance of this directive, carriage returns will be inserted such that the rest of the statement will appear at the bottom of the page. This directive will be ignored if there is not enough room for the rest of the statement on the page.

WidowL minimum number of Widowed Lines on next page

WidowL=n Initial value: 2 Range: [0, 148]

From this point on in the document, at least n lines of a statement must appear together on the top of each new page (or, on COM, column). If filling the previous page (column) would leave less than n lines for the next page (column), a pagination (columnation) will occur n lines from the end of the statement (if the statement is at least n lines long). Any lines consisting only of carriage returns immediately following an automatic pagination (columnation) will be discarded. This affects the current statement.

X X-coordinate of current character in thousandths of an inch

This is for queries, only. It may be used in the argument of a directive, but it may not be changed by the user. On the printer or teletype, it is the position in characters. On Output COM, it is in thousandths of an inch.

XBC horizontal distance Between Columns

XBC=n,m Initial value: 0.25 Range: [0, 130(8.5)]

For COM only. When there are more than one columns, there will be n characters after the end of one column before the start of the next. Alternatively, XBC may be specified in COM measure by specifying m instead of (or in addition to, making the n meaningless) the n (XBC=,m). This will take effect at the next occurrance of:

1 a pagination
2 a columnation
3 a change in the number of columns

YBH1H2 distance Between Headers 1 and 2

YBH1H2=n,m Initial value: 0(24p) Range: [0, 147(11)]

There will be n blank lines between the first and the following headers. On COM, the size of the line is calculated using the current values of body character size and YBL. If either of these is subsequently changed, this directive will not adjust and will not produce lines of the same size a blank lines in the body area. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (YBH1H2=,m), the non-COM value will remain the same. This will take effect only when H1 is on and there are defined Headers after H1 on.

YBH2H3 distance Between Headers 2 and 3

YBH2H3=n,m Initial value: 0(24p) Range: [0, 147(11)]

There will be n blank lines between the second and the following headers. On COM, the size of the line is calculated using the current values of body character size and YBL. If either of these is subsequently changed, this directive will not adjust and will not produce lines of the same size a blank lines in the body area. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (YBH2H3=,m), the non-COM value will remain the same. This will take effect only when H2 is on and there are defined Headers after H2 on.

YBH3H4 distance Between Headers 3 and 4

YBH3H4=n,m Initial value: 0(24p) Range: [0, 147(11)]

There will be n blank lines between the third and the following headers. On COM, the size of the line is calculated using the current values of body character size and YBL. If either of these is subsequently changed, this directive will not adjust and will not produce lines of the same size a blank lines in the body area. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (YBH3H4=,m), the non-COM value will remain the same. This will take effect only when H3 is on and there are defined Headers after H3 on.

YBHJTM distance Between HJournal and TM

YBHJH1=n,m Initial value: 0(24p) Range: [0, 147(11)]

There will be n blank lines between the journal header and the top margin. On COM, the size of the line is calculated using the current values of body character size and YBL. If either of these is subsequently changed, this directive will not adjust and will not produce lines of the same size a blank lines in the body area. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (YBHJTM=,m), the non-COM value will remain the same. This will take effect only when HJ is defined.n If one subsequently moves the top margin, this parameter stays the same so the Journal header will follow the move in TM.

YBL distance Between Lines in a statement

YBL=n,m Initial value: 0(2p) Range: [0, 149(11)]

There will be n blank lines between lines within a statement (doesn't affect spce between statements -- se YBS). On COM, the size of a line is calculated using the current values of body character size and YBL. If either of these is subsequently changed, this directive will not adjust and will not produce lines of the same size as blank lines in the text of the body. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (YBL=,m), the non-COM value will remain the same. This affects the body area only, and takes effect immediately.

YBS distance Between Statements

YBS=n,m Initial value:0(2or14p) Range: [0, 147(11)]

There will be n blank lines between the last line of one statement and the beginning of the next. On COM, the size of a line is calculated using the current values of the body character size and YBL. If either of these is subsequently changed, this parameter will not adjust and will produce blank lines of a different size than those produced by the body text. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (YBS=,m), the non-COM value will remain the same. This takes effect immediately.

YFC distance Following change in Columns

YFC=n,m Initial value: 0.5 Range: [0, 147(11)]

n lines will be generated after each change in the number of columns (Columns) takes place. Alternatively, m may be specified; m is a COM measure and replaces the n if it is also there. This is for COM only. The actual blank space after a change in the number of columns will be YFC + YBS. The top of each column will be lined up. See Appendix C for a complete explanation of all COM features.

YFH distance Following Headers

YFH=n,m Initial value: 3(0.5) Range: [0, 148(11)]

There will be n blank lines following the last header before the text begins. This is effective only if at least one header has been defined and is being printed. On COM, the size of a line is calculated using the current values of the body character size and YBL. If either of these is subsequently changed, this directive will not adjust, so it will produce lines of different size than those in the body text. Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (YFH=,m), the non-COM value will remain the same.

YMax Maximum vertical distance on a page

YMax=n,m Initial value: 66(11) Range: [1, 150(11)]

YMax sets the length of a "logical" page, the page of print. Its principal functions are to determine the spacing on Output Teletype and to allow larger than 11" pages on non-COM devices.

YMax must always be greater than BM+YPF+(number of lines in footer); the Output Processor will not allow you to set any of these three parameters such that the total exceeds YMax. (If you attempt to do so, it will increase the parameter only as much as it can.) Increasing YMax will not affect any of these parameters, however, so you must subsequently increase one or more of them to make use of the additional space on the page.

Most printers have physical pages of 66 lines. You may use more than one physical page to produce a long logical page (for instance if you plan on photo-reducing the printer output). Pagination is done so that a new logical page always begins at the top of a new physical page.

Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (YMax=,m), the non-COM value will remain the same. On COM, however, all pages are 8 1/2 by 11 inches, or 612 by 792 points, so YMax is virtually useless.

YPF vertical distance Preceeding Footer

YPF=n,m Initial value: 5(30p) Range: [0, 148(11)]

There will be n blank lines between the end of the body text and the footer (whose default is GPN). Optionally, m may be specified; m is a COM measure and only takes effect on Output COM. If only m is specified (YPF=,m), the non-COM value will remain the same.

APPENDIX A
QUICK-REFERENCE DIRECTIVE LIST

Name	Min	Max	ValType	Init	When	Description
BFont			*Font		I	body type font
BLM	-131	131	Number	0	NL	body left margin
	-8.5	8.5	*COMMes	0		
BM	1	150	Number	56	CS	bottom margin
	0.0	11.0	*COMMes	10		
BP	0	11	Number	1	CL	body text position
BRM	1	131	Number	72	NL	body right margin
	0.1	8.5	*COMMes	6		
BoldFace	0	1	*Switch	Off	I	change character style to bold face
CBL			*Null		CS	columnate before line
CBS			*Null		CS	columnate before statement
CEL			*Null		CS	columnate at end of line
CES			*Null		CS	columnate at end of statement
CFit			*Switch	Off	CS	columnate to fit statements
CLev			*Number	0	CS	columnate before every level <=n
CaseMode	0	2	Number	0	I	force case to: 1=lower, 2=upper
Center	0	35M	Num/Null	0	CL	center the next n lines
Columns	1	4	*Number	1	NS	number of columns per page
D			Switch	Off	I	print-directives in text switch
DCase	0	2	Number	2	I	directive case: 0=any 1=lower 2=upper
DLD	0B	177B	Character	'.	I	set directive left delimiter
DRD	0B	177B	Character	';	I	set directive right delimiter
Dash	0B	177B	Character	'-	CS	set 'dash' character for NumDash
DefSyn			String		I	define synonym for directive
DefaultFont			*Font		I	set all font parameters
Dot	0B	177B	Character	'.	CS	set 'dot' character
DotFont			*Font		I	dot character Font
DotSpacing	0	66	Number	0	I	spacing between dots
	0.0	8.4	*COMMes	.05		
DotSplit			Null		I	split line with dots
DotTo	0	132	Number		I	insert dots to horizontal position
	0.0	8.4	*COMMes			
EvenPage			Null		CS	ensure this an even numbered page
F			String	"GPN"	CS	set text of footer
FFont			*Font		I	footer type font
FLM	-131	131	Number	0	NL	footer left margin
	0.0	8.5	*COMMes	0		
FP	0	9	Number	3	CS	footer position
FRM	1	131	Number	72	NL	footer right margin
	0.1	8.5	*COMMes	6		
FSw			Switch	On	CS	footer switch
Face			*Font		I	change area character Face
Font			*Font		I	change area character Font
GCR	0	75	Num/Null		I	generate carriage return(s)

* For COM only. Values in inches. See Appendix C.

Name	Min	Max	ValType	Init	When	Description
GD			Null		I	generate text for current date
GDT			Null		I	generate text for date and time
GN			Number		I	generate text for number
GNType			NumType	1	I	set type for generated numbers
GPN			Num/Null		I	generate text for page number
GSp	0	75	Num/Null		I	generate space(s)
GT			Null		I	generate text for time of day
GTab	0	10	Num/Null		I	generate tab(s)
GYBL	1	75	Number		CL	generate distance before line
	0.0	11.0	*COMMes			
GYBS	1	75	Number		CS	generate distance before statement
	0.0	11.0	*COMMes			
GYEL	1	75	Number		CL	generate distance at end of line
	0.0	11.0	*COMMes			
GYES	1	75	Number		CS	generate distance at end of statement
	0.0	11.0	*COMMes			
Grab	0	148	Number		CS	paginate if can't fit n dist. on page
	0.0	11.0	*COMMes			
H1			String	Null	CS	text of first page header
H1Font			*Font		I	header 1 type font
H1P	1	11	Number	1	CL	header 1 position
H1Sw			Switch	On	CS	header 1 switch
H2			String	Null	CS	text of second page header
H2Font			*Font		I	header 2 type font
H2P	1	11	Number	1	CL	header 2 position
H2Sw			Switch	On	CS	header 2 switch
H3			String	Null	CS	text of third page header
H3Font			*Font		I	header 3 type font
H3P	1	11	Number	1	CL	header 3 position
H3Sw			Switch	On	CS	header 3 switch
H4			String	Null	CS	text of fourth page header
H4Font			*Font		I	header 4 type font
H4P	1	11	Number	1	CL	header 4 position
H4Sw			Switch	On	CS	header 4 switch
HJFont			*Font		I	journal header type font
HJLM	-131	131	Number	0	NL	journal header left margin
	-8.5	8.5	*COMMes	0		
HJP	1	11	Number	1	CL	journal header position
HJRM	-131	131	Number	76	NL	journal header right margin
	0.1	8.5	*COMMes	6.5		
HJournal			String	Null	CS	text of journal page header
HLM	-131	131	Number	0	NL	header left margin
	0.0	8.5	*COMMes	0		
HRM	1	131	Number	72	NL	header right margin
	0.1	8.5	*COMMes	6		
Halt			Null		I	ignore rest of input file
ICR	0	131	Number	0	NL	indent after CR on previous line
	0.0	8.5	*COMMes	0		

* For COM only. Values in inches. See Appendix C.

Name	Min	Max	ValType	Init	When	Description
IFirst	0	131	Number	0	NS	indent first line of statement
	0.0	8.5	*COMMes	0		
IL	0	131	Number	0	NL	indentation per line in statement
	0.0	8.5	*COMMes	0		
ILCR	0	131	Number	0	NL	indent per line-ended-by-CR in stmnt
	0.0	8.5	*COMMes	0		
ILev	-131	131	Number	NLS	NL	indentation per statement level
	-8.5	8.5	*COMMes	0.1		
IMax	0	131	Number	NLS	NL	maximum total indentation
	0.0	8.5	*COMMes	0.1		
IOvr	0	131	Number	0	NL	indent for overflow of previous line
	0.0	8.5	*COMMes	0		
IRel	0	131	Number	0	NS	indent from first vis in previous line
	0.0	8.5	*COMMes	0		
IRest	0	131	Number	0	NL	indent all lines after first in stmnt
	0.0	8.5	*COMMes	0		
ISN	0	131	Number	0	NS	indent to replace st numbers
	0.0	8.5	*COMMes	0		
IgB			Null		I	ignore branch
IgD			Switch	Off	I	ignore directives
IgLS			Null		I	ignore line segment
IgRest			Null		I	ignore rest of statement
IgS			Null		I	ignore statement
IgText			Switch	Off	I	ignore text
LM	-131	131	Number	0	NL	left margin
	-8.5	8.5	*COMMes	0		
LMBase	0	131	Number	0	NL	left margin base
	0.0	8.5	*COMMes	1.5		
LP	0	11	Number		CL	line position
Leading			Switch	On	NL	print-leading-spaces switch
Lev			QueryOnly	NLS	I	level of current statement
LevClip	0	72	Number	NLS	NS	don't print levels below n
LevShow	0	72	Intervals	NLS	NS	output only these levels
LightFace	0	1	*Switch	Off	I	change character style to light face
MonoSpace	0	1	*Switch	Off	I	change character style to monospace
Names			Switch	NLS	NS	print-statement-names switch
NumDash	0	132	Number	0/6	CS	number of dashes at end of page
OddPage			Null		CS	ensure this an odd numbered page
PBL			Null		CL	paginate before this line
PBS			Null		CS	paginate before this statement
PEL			Null		NL	paginate at end of this line
PES			Null		NS	paginate at end of this statement
PFit			Switch	Off	CS	paginate to fit entire statements
PLev	0	35M	Number	0	CS	new pg before every stmnt of level <=n
PN	4B11	35M	Number		CC	set current page number to n
PNType	0	6	NumType	1	CS	page number type
PShow	4B11	35M	Interval	All	CS	output only these pages
PSw			Switch	On	CS	pagination switch [no pg seperation]

* For COM only. Values in inches. See Appendix C.

Name	Min	Max	ValType	Init	When	Description
Photo			Num/COMMes		CS	superimpose Photo
PlexNum	0	8	Number	0	NS	number plex below current statement
Post			Switch		I	post processor switch
PxFShow	Off	63	Intervals	Off	I	plex format show
PxFYD	0	147	Number	1	I	plex format distance down
	0.0	11.0	*COMMes	12p		
PxFYS	0	147	Number	1	I	plex format distance same
	0.0	11.0	*COMMes	12p		
PxFYU	0	147	Number	2	I	plex format distance up
	0.0	11.0	*COMMes	24p		
PxFont			*Font		NS	plex type font / level
PxFontShow	Off	12	*Intervals	Off	NS	plex formatted show font for levels
PxI	0	132	Num	3(Lev-1)	NS	plex level indentation for given level
	0.0	8.5	*COM	.3(Lev-1)		
PxIShow	Off	12	Intervals	Off	NS	plex formatted indentation/level switch
PxN			Number	8	NS	plex numeral type for given level
PxNFont	0	12	*Font		NS	plex numeral font for given level
PxNFontShow	0	12	*Intervals	Off	NS	plex numerals font show switch
PxNShow	Off	12	Intervals	Off	NS	plex numberer level switch
PxP	0	11	Number	1	CS	plex position for given level
PxPShow	Off	12	Intervals	Off	NS	plex position level switch
RM	1	132	Number	72	NLS	right margin
	0.1	8.5	*COMMes	6		
SN			Switch	NLS	NS	print-statement-numbers switch
SNF	0	132	Number	NLS	CS	right statement number position
	0.0	8.5	*COMMes	0or6.5		
SNFFont	0	12	*Font		I	right st nums set font for given level
SNFFontShow	0	12	*Intervals	Off	NS	right st nums show font for given levels
SNFRel			Switch	Off	CS	right st num position relative to RM
SNFShow	1	63	Intervals	NLS	NS	show rt st nums for given levels
SNFont	0	12	*Font		I	left statement numbers type font
SNFontShow	0	12	*Intervals	Off	NS	left st nums show font for given levels
SNShow	1	63	Intervals	NLS	NS	show left st nums for given levels
SP	0	11	Number	0	CL	statement position
SetL	0	35M	Num/Null	0	CL	set next n lines flush left
SetR	0	35M	Num/Null	0	CL	set next n lines flush right
SigF	0	132	Number	NLS	CS	statement signature position
	0.0	8.5	*COMMes	0or5		
SigFont			*Font		I	signatures type font
Size	0.05	2.0	*Font	0.139	I	change area character size
Slant	0	1	*Switch	Off	I	slant area characters
Split			Null		I	split this line here
TM	0	148	Number	3	CS	top margin
	0.0	11.0	*COMMes	1.0		
TabP	1	10	Number	1	NS	tab line segment position
TabStops	0	144	Intervals	NLS	I	clear and set tab stops
	0	8.4	*Intervals	NLS		

* For COM only. Values in inches. See Appendix C.

Name	Min	Max	ValType	Init	When	Description
TabTo	0	132	Number		I	tab to character position
	0.0	8.4	*COMMes			
Tabs	0	2	Number	1	I	output tab as: o=null, 1=tab, 2=space
Text			String		I	define directive to print a text string
Trailing			Switch	Off	NLS	print-trailing-spaces switch
Trun	0	35M	Num/Null	NLS	CS	truncate each statement to n lines
U0	4B11	35M	Number	0	I	user directive
U1	4B11	35M	Number	0	I	user directive
U2	4B11	35M	Number	0	I	user directive
U3	4B11	35M	Number	0	I	user directive
U4	4B11	35M	Number	0	I	user directive
U5	4B11	35M	Number	0	I	user directive
U6	4B11	35M	Number	0	I	user directive
U7	4B11	35M	Number	0	I	user directive
U8	4B11	35M	Number	0	I	user directive
U9	4B11	35M	Number	0	I	user directive
Underline	0	1	*Switch	Off	I	underline characters
V1	1	102	*Num/Null	1	I	set n visibles in V1 type font
V1Font			*Font		I	set V1 font
V2	1	102	*Num/Null	1	I	set n visibles in V2 type font
V2Font			*Font		I	set V2 font
V3	1	102	*Num/Null	1	I	set n visibles in V3 type font
V3Font			*Font		I	set V3 font
VSplit			Null		I	vertical split
WidowL	0	148	Number	2	CS	minimum num of widow lines on next page
X			QueryOnly	0	I	x-coor of current character
XBC	0	130	Number	0	NS	distance between columns
	0.0	8.5	*COMMes	0.25		
YBH1H2	0	147	Number	0	I	distance between headers 1 and 2
	0.0	11.0	*COMMes	2p		
YBH2H3	0	147	Number	0	I	distance between headers 2 and 3
	0.0	11.0	*COMMes	2p		
YBH3H4	0	147	Number	0	I	distance between headers 3 and 4
	0.0	11.0	*COMMes	2p		
YBHJTM	0	147	Number	0	I	distance between HJournal and TM
	0.0	11.0	*COMMes	2p		
YBL	0	149	Number	0	I	distance between lines in a statement
	0.0	11.0	*COMMes	2p		
YBS	0	147	Number	NLS	CS	distance between statements
	0.0	11.0	*COMMes	2or14p		
YFC	0	147	Number	0	I	distance following change in Columns
	0.0	11.0	*COMMes	0.5		
YFH	0	148	Number	3	CS	distance following header(s)
	0.0	11.0	*COMMes	0.5		
YMax	1	150	Number	66	CS	vertical size of a page
	0.1	11.0	*COMMes	11.0		
YPF	0	148	Number	3	CS	distance preceeding footer
	0.0	11.0	*COMMes	30p		

EXPLANATION OF COLUMNS

Name -- Name of directive. [Note: When using directive names in a file they must begin with an upper-case letter (unless the value of DCase has been changed to Lower or Either); however, subsequent letters may be either upper-case, lower-case, or any mixture thereof -- i.e., "IgD", "IGD", "Igd", and "IGd" are all equivalent.]

Min -- Minimum value to which directive may be set.

Max -- Maximum value to which directive may be set.

ValType -- Type of value in argument of directive

See Appendix B.

Init -- Initial value of directive.

"NLS" means whatever viewspecs are in force at the time when the file is sent to the output processor.

When -- "When" directive takes effect:

```
  I = Immediately (following occurrence of directive)
 CL = (at beginning of) Current Line
 NL = (at beginning of) Next Line
 CS = (at beginning of) Current Statement
 NS = (at beginning of) Next Statement
NLS = (at beginning of) Next Line Segment
```

A line segment is a string of text terminated by:

1. a tab character or a GT directive
2. a split directive
3. a change in type font, style, or size (on COM only)
4. an end-of-line condition (carriage return or GCR directive, line overflow beyond the right margin, or end-of statement encountered).

APPENDIX B
OPTIONS FOR DIRECTIVE ARGUMENTS

In all cases, the alphabetic mnemonic equivalents listed below can be substituted for the numbers as the arguments of directives. The directive "SN" is a switch which is either on or off; "SN=On", "SN=Keep", "SN=Print", and "SN=1" are all equivalent. [As with directive names, the case of the first letter of each of these symbols is governed by the value of the DCase directive; remaining letters may be either upper- or lower-case. The default (unless you explicitly change it with the DCase directive) requires directive and argument names to begin with an upper-case letter.]

Null

The directive requires no argument (e.g. GPN, Halt).

Switch

```
On     = 1
Off    = 0
True   = 1
False  = 0
Yes    = 1
No     = 0
Keep   = 1
Delete = 0
Print  = 1
NoPrint = 0
```

Number

Any integer number; the following mnemonics may substitute for the extremes:

```
None   =   0
All    = 35M   (Largest Positive Number)
```

May be negative (precided by a -). In some cases a negative number does not make sense, where the directive argument tells the Output Processor how many of something to affect (e.g. Center, SetL, SetR).

Numbering Types
(PNType, GPN, PlexNum)

```
Dec      =  1   Decimal Numbers
LR       =  2   Lower Case Roman Numbers
UR       =  3   Upper Case Roman Numbers
LL       =  4   Lower Case Letters
UL       =  5   Upper Case Letters
Oct      =  6   Octal Numbers
SNum     =  7   Statement Number Format (PlexNum only)
DotNum   =  8   Dot Number Format (PlexNum only)

Parens   = 10   Enclose Number in (Parenthesis)
Brackets= 20    Enclose Numbers in [Brackets]
Angles   = 30   Enclose Number in <Angle Brackets>
Hyphens  = 40   Enclose Numbers in -Hyphens-

Period   = 100  Follow Numbers (and Enclosure) with a period
Colon    = 200  Follow Numbers (and Enclosure) with a colon
```

One may combine the three options; e.g. PlexNum=231 or PlexNum=Dec+Angles+Colon would produce plex numbers in the form "<n>:".

Interval

```
n          n itself.
<n         1 thru n-1
<=n        1 thru n
>n         n+1 and greater
>=n        n and greater
(n,m)      n+1 thru m-1
[n,m)      n thru m-1
(n,m]      n+1 thru m
[n,m]      n thru m
All / On / Yes
None / Off / No
When applied to levels, the maximum number is 12.
```

Intervals

A set of intervals, separated by commas (e.g. LevShow=<3,4,>5).

Character

Any character preceded by a single quote (e.g. DLD='<).

String

Any string of text enclosed in double quotes (e.g H1="string...").

All the headers and the footer allow you to define two strings, separated by a comma. The first string will be printed on the odd numbered pages, the second on the even.

Horizontal Positioning (H1P, FP, LP, SP, BP)

FL	=	1	Set Flush to Left Margin
FR	=	2	Set Flush to Right Margin
C	=	3	Center Between Left and Right Margins
OddL	=	8	Set Odd/Even Pages Flush Left/Right
OddR	=	9	Set Odd/Even Pages Flush Right/Left
J	=	10	Set with Full Justification (Output COM only)

DCase and CaseMode

Either	=	0	Either or "Current" Case
Lower	=	1	Lower Case
Upper	=	2	Upper Case

Font (COM only)

The type size, then the font, then the style, all separated by commas (e.g. Font=8p,2,Bold).
If any field is left out, that parameter is not changed from its previous value (e.g. Font=,,Slanted or Font=8p,TimesRoman).

COM Measurements and Type Size

number	1/1000th inch
number with decimal point	inches
number followed by upper or lower case "P" may but need not have decimal point	points
number followed by upper or lower case "C"	1/1000th centimeter
number with decimal point followed by "C"	centimeters

Type Faces

```
Courier       =  0
Directory     =  1
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Type Style

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or 14 or Bold+Slanted+Underlined would all produce bold faced, slanted (italics), and underlined text. See Appendix C.

Directives as Arguments and Query Only Directives

Any dirctive which represents a single value (e.g. margins, PN, U0) may be used as the argument of another directive. The other directive has as its argument the value of that parameter at that point in the output. Arguments may be combined with plus or minus signs to represents some value. (E.g. .PN=PN+1;)

Directives which take both printer and COM values will represent the value appropriate to the type of device in the current output. Font directives may not be used as arguments.

Some directives may only be used as the argument of other directives (e.g. Lev). These are the "query only" directives. (listed in the index) They represent some value which the user is not allowed to change.

APPENDIX C
OUTPUT COM
Computer Output to Microfilm

Computer Output to Microfilm (COM) allows you to print your formatted NLS files in a variety of type faces and with very high quality. It allows other features, such as full justification and more than one column of text on a page.

The subsystem FORMAT is intended to allow users only generally familiar with this process to use COM. It allows you to apply any one of a number of predesigned formats to your file. These formats are particularly intended for COM. This subsystem is described in the first section.

This Appendix will help you learn to format files for COM. It assumes some user proficiency with the Output Processor using other output devices. These capabilities should be acquired in conjunction with your architect and ARC staff. Consulting, operational details, and billing will be handled on an individual basis.

When Output COM is specified, the Output Processor compiles a sequential print file coded for Computer Output to Microfilm devices, then places it in the <COM> directory. The ARC staff transfers the files to a magnetic tape and sends them to a COM vendor when either the accumulated demand warrants it or when special arrangements are made.

The vendor produces microfilm from the tape on their Computer Output to Microfilm device. The microfilm is used to produce inexpensive Xerox CopyFlo proof copies or high-quality camera-ready photo-copies. The hard copy (proofs or camera-ready copy) is sent to you and the microfilm is archived by the COM vendor.

Generally one initially asks for films and proofs. If the proofs look good, the user may ask that the same films be used to produce camera-ready copy. The camera-ready copy may be sent to a print shop where offset plates are made and printed. You may keep the camera-ready copy in case more copies are needed later. (The film remains archived by the COM vendor for backup.)

The vendor we currently use is Data Dissemination Systems Inc. (DDSI), 2217 Purdue Street, Los Angeles 90064. Their phone number is (213)477-1401. Our sales representative is Bill Phillips; our operational contact is Ted Spires. DDSI uses a III Comp80 COM device.

It takes about one week to produce films and proofs from a tape or to produce camera-ready copy from films.

COM devices provide much greater flexibility in format and content than do line printers. This document was produced via COM.

On DDSI's COM machine, users have a choice of seven type faces, two of which are of type-set quality. Boldface on four of the fonts, and italics on three of the fonts are available. It can underline and columnate. The Comp80 offers a range of type sizes and leading (distance between lines), from 1/20" to 2 inches. It can set lines fully justified, right and left. This appendix will explain how to use these features.

For each of the parameters of the overall format, initial values have been set such that the default output will closely resemble output produced on a line printer. Any line printer format will have a similar looking counterpart on COM.

As for any other device, COM directives are placed in the text to change specific values or cause some immediate action. All of the directives that apply to other devices also apply to COM. In addition there are a number of directives which ONLY apply to COM (e.g. controlling type size and face, columns, etc.).

For example, you may set up type styles, columns, etc., at the beginning of a file as you would margins. You may change the type style or number of columns at any point in the text with a directive.

All COM output is on an 8 1/2 by 11 inch page. (This is equivalent to 612 by 792 points, in printers' terminology.) Formatting should be done with that in mind. You can photographically reduce or enlarge the whole page when the offset plates are made from the film. Of course all measurements change proportionally.

When outputting to any other device, all directives in the NLS file pertaining only to COM will be ignored. They will be recognized as directives in that they normally won't be printed in the text, but they will have no effect.

Measurements: All of the measurements specifiable on the terminal or line printer also apply to COM (margins, distance between statements, etc.). On COM, you have the option of specifying all such in points, inches, or centimeters as well as characters or lines. (A point is 1/72 of an inch). This allows finer control of positions and distances. In addition, measurements like type size become relevant.

Every directive that specifies a measurement can take two arguments, separated by a comma. The first is the standard non-COM measurement (characters or lines). The second is a COM measurement; this will only be recognized on Output COM.

If both a non-COM and a COM value are secified (e.g. RM=65,6.0), the COM value will apply for Output COM and the non-COM value will apply on all other devices.

Either argument may appear alone. If a non-COM measurement appears alone (e.g. RM=65), the current body character size and YBL are used to calculate the size of a line or character on COM. Thus the resultant COM measurement will be a function of the current type size and YBL.

If only the COM value appears (e.g. RM=,6.0), the directive will only have an effect on Output COM. On all other devices that parameter will remain the same.

COM measurements (the second argument) will be interpreted as follows:

number	1/1000th inch
number with decimal point	inches
number followed by upper or lower case "P" may but need not have decimal point	points
number followed by upper or lower case "C"	1/1000th centimeter
number with decimal point followed by "C"	centimeters

For example, 1000 = 1.0 = 72p = 2540C = 2.54C

Everything is calculated to the nearest 1/1000th of an inch.

Margins: Margins are set for COM using the same directives as for the other devices. They may be specified using any of the measurement scales described in the previous section.

As on all other devices, horizontal margins are set with respect to the left margin base (LMBase); see the note on "Margins" in the first section of this document.

The default for LMBase is 108 points, or 1.5". If it and the left margin are both set to zero, you may put a character at the edge of the page (not possible on most other devices).

Note that, if you only specify the printer value, a COM value will be calculated. However, since it will be a function of the current type size, an explicitly specified COM value will be much more predictable.

Type Font Directives: You may specify the character size, type face, boldness, slanting, underlining, and monospacing or proportional spacing for each area of text on the page, as well as for individual visibles. Directives that do this are listed in the Index.

There are a number of types (areas) of text on the page:

- body
- statements of a given level in the body
- each of the headers
- footer
- left statement numbers
- right statement numbers
- statement signatures
- preset plex numbers

For each area of text there is a font directive (e.g. BFont for body font specification, H1Font for header 1 font, etc.). The argument of these font directives consists of three numbers: the character size, the type face, and the type style. They must be separated by commas.

e.g. BFont=size,face,style

These three fields of a font directive will be discussed separately below.

If any of the numbers is left out, that parameter retains its previous value. Trailing commas may be omitted. E.g.:

BFont=size,face
BFont=,face,style
BFont=,face

In addition, there is a directive called "Font" which behaves the same as the other font directives, but affects whatever area it appears in. For example, if a Font directive appeared in the body text, it would do exactly the same thing as a BFont directive.

If you wish to change only one of the parameters, the following directives provide short-cuts:

Size=n
Face=n
Slant=On/Off
Underline=On/Off
MonoSpace=On/Off
LightFace=On/Off
BoldFace=On/Off

Like the directive Font, these will change the type style of whatever text area they appear in. No matter what the boldness, turning either LightFace or BoldFace to Off will return the intensity to medium.

There is a directive called "DefaultFont" which will set all the area font directives to the given values. Its most common use is at the beginning of the file to set the default font to be other than the initial value of 10 point Courier medium.

With the directives PxFont and PxFontShow, one may set the font for all statements of a given level. Directives changing the size, face, or style within a statement controlled by a PxFont directive will

apply only to the remainder of that statement; they will not actually change the body font for the rest of the file.

With the directives V1Font and V1, or V2 or V3, one may change the font for just a few visibles; it will automatically revert to the font just before the V1 directive occurred.

If there is a directive changing the type font in a footer or header string, the change will happen at that point. The next time that footer or header is printed, it will begin in the new font (not as it was originally set).

Type Size: Through COM, there is a range of type sizes available: from 50/1000" to 2 inches, or from 4 to 144 points. Samples of some of these sizes can be found at the end of this appendix. Type size may be set in the first field of a font directive, or by a separate directive.

The type size specified is the height of the envelope which would include every character in the alphabet; i.e. from the top of a capital letter to the bottom of a lower case "p". The height of a capital letter is 13/20 times the specified type size.

For reference, most line printers and terminals print in 10 point type with approximately 2 point inter-line leading (YBL=,2p). These are the default values.

You may change the character size at any point in the line. The effect is immediate. The body character size may be changed in the middle of a line; the output processor will compose the full line, then fix the bottom edge of it such that the top of the largest character is YBL beneath the bottom of the previous line (i.e. there will be no overlapping lines).

A CHANGE IN TYPE SIZE CHANGES THE NUMBER OF CHARACTERS THAT WILL FIT ON A LINE! The following table gives character widths:

```
Courier        (#0)    proportionally spaced
Directory      (#1)    width = 72/100 times character size
Film           (#2)    width = 72/100 times character size
OCRB           (#3)    width = 72/100 times character size
NMAMicrofont   (#4)    width = 72/100 times character size
NewsGothic     (#5)    proportionally spaced
TimesRoman     (#6)    proportionally spaced
```

The section on measurements describes how you specify size.

Type Face: DDSI offers seven type faces. Samples of all of these may be found at the end of this appendix. They may be set for any text area at any time, either as part of a font directive or in separate directives; the effect is immediate. The index lists these directives.

Face options, DDSI:

```
Courier        =  0
Directory      =  1
Film           =  2
OCRB           =  3
NMAMicrofont   =  4
NewsGothic     =  5
TimesRoman     =  6
```

Samples are provided at the end of this Appendix.

Type Style: On COM, for any given area one may specify underlining, slanting, and three degrees of boldness. These options are illustrated at the end of this appendix. They may be set as part of a font directive or in separate directives; the effect is immediate. The index lists these directives.

Style options:

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

You may combine the four options by adding their numbers or alphabetic equivalents, e.g. 2+4+8 or 14 or Bold+Slanted+Underlined would all produce bold faced, slanted (italics), and underlined text.

News Gothic and Times Roman are high quality fonts. Since they are produced in a differrent way, bold and light face have no effect on these two. Only these two and Courier may be slanted.

Only Courier, NewsGothic, and TimesRoman may be proportionally spaced (each character a different width). They normally will be unless you specify otherwise (each character the same width) with the MonoSpace directive or by adding Mono to the style parameter. One usually wants to monospace tables, where character columns must line up.

Columns: Printing on COM may be done in up to four columns of text per page. The Index of this document provides an example of the use of columns.

The Columns directive changes the number of columns on a page. (The default page has one column.) XBC sets the horizontal distance between columns. The default is 8 points. The directive YFC sets additional vertical distance after every change in Columns. The actual vertical distance will be YFC + YBS.

On COM, all pagination directives except PBS, PES, PBL, and PEL refer to columnation instead of pagination. There are CBS and CES directives to columnate before or at the end of a statement. CBL and CEL directives columnate before or at the end of a line. CLev and CFit work the same as PLev and PFit, but they are only recognized in Output COM.

When the number of columns is changed, you might imagine an artificial top margin YFC + YBS distance down from the bottom-most line on the page so far. All succeeding output begins from that point downward.

SNFRel is useful if you wish to use right statement numbers with columnated output.

When you paginate, you may do so at a point where one column has been filled and the other is only half full. You may want to insert a CEL directive at the proper point in the text to balance the columns (so that they are the same length). The use of COM Test files (described below) will help you know where to put such a directive before you send the file to COM.

Output: Once you have set up the NLS file to include all the desired COM directives, you should test it, then send it through COM.

The TEST process creates a printer file which, in a special format, tells you exactly what the COM output will look like. You may copy it to your terminal or local line printer, as described in the first section.

To produce a COM Test file:

Output COM Test File FILENAME OK

This file may then be copied to a line printer or to your terminal via the TENEX subsystem SENDPRINT.

Format of COM Test output:

```
["n" means "some number", "xyz" means a string of text]
    ###    a new line of output
    n    vertical position of bottom of line
    (n)  horizontal position of beginning and end of line
    xyz  position of line within horizontal limits
    n    number of text segments in line (if more than one)

    -n-  individual text segments (if more than one)
    n    number of characters in text segment
    (n)  length of text segment
    xyz  font for that text segment

    ""   content of text segment
```

Example:

```
    ### 1.139 (2.58 7.5) Flush Left     2 Text Segments:
    -1- ----- ---------- ----------  16 Char (1.79 )  12p Courier
        "To demonstrate: "
    -2- ----- ---------- ----------  24 Char (2.307)  10p Courier
        "This example is made up."
    ### 1.139 (2.58 7.5) Flush Left   53 Char (4.021)   8p Film
        "The above two were the same line; this is a new line."
```

Each different font (size, face, or style) requires a new text segment; they are all part of the same line however. You sometimes will see text segments of zero length; they will not affect your output.

The following command will process an NLS File that has been set up for COM:

Output COM OK

The file will be formatted into a sequential file which will be put into directory <COM>. ARC can then send it to the COM vendor at the next opportunity. You should inform FEEDBACK of the presence of your COM file.

Formatting Suggestions: Formatting is, for the most part, a matter of function and taste. In our various experiences, however, we have begun to learn what is generally pleasing. If no directives are included, the COM output will very much resemble the output of our line-printer. In this section, we will offer a few suggestions on directives which you may wish to use as a starting point for developing a format suited to your document and tastes.

The two graphic arts fonts (News Gothic and Times Roman) produce a much higher quality output, and should be used liberally. Their proportional spacing gets much more information in the same amount of space.

We have found that 8 point News Gothic and 9 point Times Roman are quite readable, and esthetically more pleasing than 10 point for regular text. It also allows much more information on the page. You may wish to include as your first directive `.DefaultFont=8p,5,0;`

If you have blank lines on in NLS or have a `.YBS=1;` directive in the file, you will get 14 points between statements. Generally 6 to 8 points is quite adequate. You may wish to include in the origin statement `.YBS=1,6p;`

If you wish to expand the margins, it is reasonable to set `.LMBase=,1.0;` Then you may reset the right margin to `.RM=,6.5;` This will give you one inch margins all the way around. You may wish to

enlarge the text area even further, depending on the overall format (for instance, if you are not printing right statement numbers and are concerned with compaction).

If you are printing in more than one column (e.g. `.Columns=2;`), we have found that for most formats the 0.25 inches between columns is too small. You will probably want to increase it to `.XBC=,0.5;`

The user program FORMAT is available for automatically formatting a document. See the first section for a description of this program.

This document is printed in the following type fonts:

- Cover
  - title -- 24 point Times Roman
  - "Augmentation Res..." -- 12 point News Gothic
  - "Stanford Res..." -- 8 point News Gothic
- Headers and Footers
  - 8 point News Gothic
- Section titles
  - 14 point News Gothic
- Table of Contents
  - 10 point News Gothic monospaced
- Using the Output Processor
  - 10 point News Gothic justified
  - YBL = 2 points, YBS = 8 points
- Description of Directives
  - directive names -- 12 point Times Roman
  - explanations -- 10 point News Gothic
  - lower levels -- 8 point Film bold
  - YBL = 2 points, YBS = 12 points
- Appendix A
  - column header -- 8 point Times Roman monospaced
  - list -- 8 point News Gothic monospaced
  - YBS = 4 points
  - Footer note -- 8 point Times Roman
- Appendix B
  - types -- 12 point Times Roman
  - options -- 8 point News Gothic mono
- Appendix C
  - text -- 10 point News Gothic
  - sub-titles -- 12 point News Gothic
  - lower levels (like this) -- 8 point News Gothic
  - YBL = 2 points, YBS = 8 points
- Index
  - subjects -- 10 point News Gothic
  - sub-subjects -- 8 point News Gothic
  - references -- 6 point News Gothic slanted
  - YBL = 2 points, YBS = 4 points

We suggest liberal use of Output COM Test to avoid costly errors.

COURIER

24pts	bold	When the Sun, Moon,
	med.	When the Sun, Moon,
	light	When the Sun, Moon,
18pts	bold	When the Sun, Moon, and J
	med.	When the Sun, Moon, and J
	light	When the Sun, Moon, and J
16pts	bold	When the Sun, Moon, and Jupi
	med.	When the Sun, Moon, and Jupi
	light	When the Sun, Moon, and Jupi
14pts	bold	When the Sun, Moon and Jupiter a
	med.	When the Sun, Moon and Jupiter a
	light	When the Sun, Moon and Jupiter a
12pts	bold	When the Sun, Moon and Jupiter are at
	med.	When the Sun, Moon and Jupiter are at
	light	When the Sun, Moon and Jupiter are at
10pts	bold	When the Sun, Moon and Jupiter are at syzygy
	med.	When the Sun, Moon and Jupiter are at syzygy
	light	When the Sun, Moon and Jupiter are at syzygy
8pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle
	light	When the Sun, Moon and Jupiter are at syzygy the cradle
6pts	bold	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who
	light	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who
4pts	bold	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive suc
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive suc
	light	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive suc

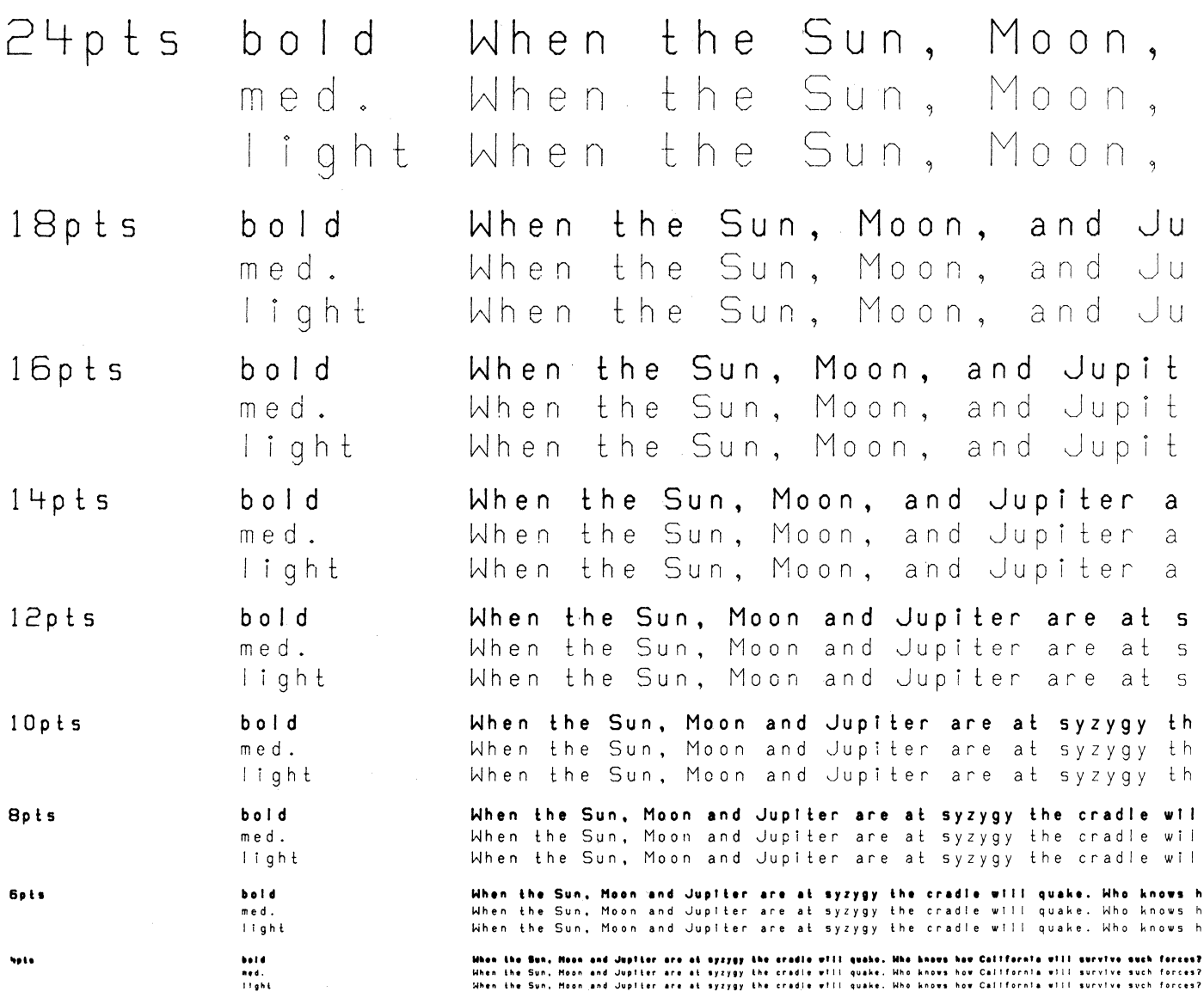
COURIER SLANTED

24pts	bold	When the Sun, Moon,
	med.	When the Sun, Moon,
	light	When the Sun, Moon,
18pts	bold	When the Sun, Moon, and J
	med.	When the Sun, Moon, and J
	light	When the Sun, Moon, and J
16pts	bold	When the Sun, Moon, and Jupi
	med.	When the Sun, Moon, and Jupi
	light	When the Sun, Moon, and Jupi
14pts	bold	When the Sun, Moon and Jupiter a
	med.	When the Sun, Moon and Jupiter a
	light	When the Sun, Moon and Jupiter a
12pts	bold	When the Sun, Moon and Jupiter are at
	med.	When the Sun, Moon and Jupiter are at
	light	When the Sun, Moon and Jupiter are at
10pts	bold	When the Sun, Moon and Jupiter are at syzygy
	med.	When the Sun, Moon and Jupiter are at syzygy
	light	When the Sun, Moon and Jupiter are at syzygy
8pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle
	light	When the Sun, Moon and Jupiter are at syzygy the cradle
6pts	bold	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who
	light	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who
4pts	bold	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such f
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such f
	light	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such f

DIRECTORY

24pts	bold	When the Sun, Moon,
	med.	When the Sun, Moon,
	light	When the Sun, Moon,
18pts	bold	When the Sun, Moon, and Ju
	med.	When the Sun, Moon, and Ju
	light	When the Sun, Moon, and Ju
16pts	bold	When the Sun, Moon, and Jupit
	med.	When the Sun, Moon, and Jupit
	light	When the Sun, Moon, and Jupit
14pts	bold	When the Sun, Moon, and Jupiter a
	med.	When the Sun, Moon, and Jupiter a
	light	When the Sun, Moon, and Jupiter a
12pts	bold	When the Sun, Moon and Jupiter are at s
	med.	When the Sun, Moon and Jupiter are at s
	light	When the Sun, Moon and Jupiter are at s
10pts	bold	When the Sun, Moon and Jupiter are at syzygy tl
	med.	When the Sun, Moon and Jupiter are at syzygy tl
	light	When the Sun, Moon and Jupiter are at syzygy tl
8pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle wi
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle wi
	light	When the Sun, Moon and Jupiter are at syzygy the cradle wi
6pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows
	light	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows
4pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces
	light	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces

FILM


24pts bold When the Sun, Moon,
med. When the Sun, Moon,
light When the Sun, Moon,
18pts bold When the Sun, Moon, and Ju
med. When the Sun, Moon, and Ju
light When the Sun, Moon, and Ju
16pts bold When the Sun, Moon, and Jupit
med. When the Sun, Moon, and Jupit
light When the Sun, Moon, and Jupit
14pts bold When the Sun, Moon, and Jupiter a
med. When the Sun, Moon, and Jupiter a
light When the Sun, Moon, and Jupiter a
12pts bold When the Sun, Moon and Jupiter are at s
med. When the Sun, Moon and Jupiter are at s
light When the Sun, Moon and Jupiter are at s
10pts bold When the Sun, Moon and Jupiter are at syzygy th
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light When the Sun, Moon and Jupiter are at syzygy th
8pts bold When the Sun, Moon and Jupiter are at syzygy the cradle wil
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light When the Sun, Moon and Jupiter are at syzygy the cradle wil
6pts bold When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows h
med. When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows h
light When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows h
4pts bold When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces?
med. When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces?
light When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces?

OCRB

24pts	bold	When the Sun, Moon,
	med.	When the Sun, Moon,
	light	When the Sun, Moon,
18pts	bold	When the Sun, Moon, and Ju
	med.	When the Sun, Moon, and Ju
	light	When the Sun, Moon, and Ju
16pts	bold	When the Sun, Moon, and Jupit
	med.	When the Sun, Moon, and Jupit
	light	When the Sun, Moon, and Jupit
14pts	bold	When the Sun, Moon, and Jupiter a
	med.	When the Sun, Moon, and Jupiter a
	light	When the Sun, Moon, and Jupiter a
12pts	bold	When the Sun, Moon and Jupiter are at
	med.	When the Sun, Moon and Jupiter are at
	light	When the Sun, Moon and Jupiter are at
10pts	bold	When the Sun, Moon and Jupiter are at syzygy t
	med.	When the Sun, Moon and Jupiter are at syzygy t
	light	When the Sun, Moon and Jupiter are at syzygy t
8pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle w
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle w
	light	When the Sun, Moon and Jupiter are at syzygy the cradle w
6pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who know
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who know
	light	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who know
4pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such fo
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such fo
	light	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such fo

NMA MICROFONT

24pts	bold	When the Sun, Moon,
	med.	When the Sun, Moon,
	light	When the Sun, Moon,
18pts	bold	When the Sun, Moon, and Ju
	med.	When the Sun, Moon, and Ju
	light	When the Sun, Moon, and Ju
16pts	bold	When the Sun, Moon, and Jupit
	med.	When the Sun, Moon, and Jupit
	light	When the Sun, Moon, and Jupit
14pts	bold	When the Sun, Moon, and Jupiter a
	med.	When the Sun, Moon, and Jupiter a
	light	When the Sun, Moon, and Jupiter a
12pts	bold	When the Sun, Moon and Jupiter are at s
	med.	When the Sun, Moon and Jupiter are at s
	light	When the Sun, Moon and Jupiter are at s
10pts	bold	When the Sun, Moon and Jupiter are at syzygy th
	med.	When the Sun, Moon and Jupiter are at syzygy th
	light	When the Sun, Moon and Jupiter are at syzygy th
8pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle wil
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle wil
	light	When the Sun, Moon and Jupiter are at syzygy the cradle wil
6pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows h
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows h
	light	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows h
4pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces?
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces?
	light	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces?

NEWS GOTHIC

24pts	bold	When the Sun, Moon, and
	med.	When the Sun, Moon, and
	light	When the Sun, Moon, and
18pts	bold	When the Sun, Moon, and Jupiter
	med.	When the Sun, Moon, and Jupiter
	light	When the Sun, Moon, and Jupiter
16pts	bold	When the Sun, Moon, and Jupiter are
	med.	When the Sun, Moon, and Jupiter are
	light	When the Sun, Moon, and Jupiter are
14pts	bold	When the Sun, Moon and Jupiter are at sy
	med.	When the Sun, Moon and Jupiter are at sy
	light	When the Sun, Moon and Jupiter are at sy
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	med.	When the Sun, Moon and Jupiter are at syzygy t
	light	When the Sun, Moon and Jupiter are at syzygy t
10pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle
	light	When the Sun, Moon and Jupiter are at syzygy the cradle
8pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
	light	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
6pts	bold	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
	light	When tne Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
4pts	bold	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces? But what can be done
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces? But what can be done
	light	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces? But what can be done

NEWS GOTHIC SLANTED

24pts	bold	When the Sun, Moon, and
	med.	When the Sun, Moon, and
	light	When the Sun, Moon, and
18pts	bold	When the Sun, Moon, and Jupiter
	med.	When the Sun, Moon, and Jupiter
	light	When the Sun, Moon, and Jupiter
16pts	bold	When the Sun, Moon, and Jupiter are
	med.	When the Sun, Moon, and Jupiter are
	light	When the Sun, Moon, and Jupiter are
14pts	bold	When the Sun, Moon and Jupiter are at sy
	med.	When the Sun, Moon and Jupiter are at sy
	light	When the Sun, Moon and Jupiter are at sy
12pts	bold	When the Sun, Moon and Jupiter are at syzygy t
	med.	When the Sun, Moon and Jupiter are at syzygy t
	light	When the Sun, Moon and Jupiter are at syzygy t
10pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle
	light	When the Sun, Moon and Jupiter are at syzygy the cradle
8pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
	light	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
6pts	bold	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
	light	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
4pts	bold	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces? But what can be done
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces? But what can be done
	light	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces? But what can be done

TIMES ROMAN

24pts	bold	When the Sun, Moon, and
	med.	When the Sun, Moon, and
	light	When the Sun, Moon, and
18pts	bold	When the Sun, Moon, and Jupiter
	med.	When the Sun, Moon, and Jupiter
	light	When the Sun, Moon, and Jupiter
16pts	bold	When the Sun, Moon, and Jupiter are
	med.	When the Sun, Moon, and Jupiter are
	light	When the Sun, Moon, and Jupiter are
14pts	bold	When the Sun, Moon and Jupiter are at sy
	med.	When the Sun, Moon and Jupiter are at sy
	light	When the Sun, Moon and Jupiter are at sy
12pts	bold	When the Sun, Moon and Jupiter are at syzygy t
	med.	When the Sun, Moon and Jupiter are at syzygy t
	light	When the Sun, Moon and Jupiter are at syzygy t
10pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle
	light	When the Sun, Moon and Jupiter are at syzygy the cradle
8pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
	light	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
6pts	bold	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
	light	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
4pts	bold	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces? But what can be done
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces? But what can be done
	light	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces? But what can be done

TIMES ROMAN SLANTED

24pts	bold	When the Sun, Moon, and
	med.	When the Sun, Moon, and
	light	When the Sun, Moon, and
18pts	bold	When the Sun, Moon, and Jupiter
	med.	When the Sun, Moon, and Jupiter
	light	When the Sun, Moon, and Jupiter
16pts	bold	When the Sun, Moon, and Jupiter are
	med.	When the Sun, Moon, and Jupiter are
	light	When the Sun, Moon, and Jupiter are
14pts	bold	When the Sun, Moon and Jupiter are at sy
	med.	When the Sun, Moon and Jupiter are at sy
	light	When the Sun, Moon and Jupiter are at sy
12pts	bold	When the Sun, Moon and Jupiter are at syzygy t
	med.	When the Sun, Moon and Jupiter are at syzygy t
	light	When the Sun, Moon and Jupiter are at syzygy t
10pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle
	light	When the Sun, Moon and Jupiter are at syzygy the cradle
8pts	bold	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
	med.	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
	light	When the Sun, Moon and Jupiter are at syzygy the cradle will quake. Wh
6pts	bold	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
	light	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California
4pts	bold	When the Sun, Moon, and Jupiter are at syzyg; the cradle will quake. Who knows how California will survive such forces? But what can be done
	med.	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces? But what can be done
	light	When the Sun, Moon, and Jupiter are at syzygy the cradle will quake. Who knows how California will survive such forces? But what can be done

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