1528

Bell Laboratories

subject: Changes to Text Processing Software
for UNIX Release 3.0
Charge Case 49579-980
File Case 39382-900

date: April 7, 1980

from: N. E. Bock
PY 3646
2F-203 x3275
3646-800407.01MF

ABSTRACT

Many changes have been made to the Text Processing Software for the UNIX™ Release 3.0 (approximately 140 maintenance requests have been resolved). This memorandum summarizes these changes and addresses five major areas: Programmer's Workbench Memorandum Macros (PWB/MM), *nroff/troff*, UNIX User's Manual Entry Macros, new facilities, and miscellaneous text software.

Items of particular note are: changes made to PWB/MM for conformance to the BTL Office Guide and to include features developed outside Department 3646, changes to *nroff/troff* for improved efficiency, the *nroff* bold and italic feature, an escape feature to allow UNIX command execution from within *nroff/troff* text, additional terminal driving tables, and changes to improve portability.

The software described in this memorandum is now beginning system testing and is subject to change prior to general availability of UNIX Release 3.0.

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MEMORANDUM FOR FILE

1. INTRODUCTION

Many changes have been made to the Text Processing Software for the UNIX™ Release 3.0 (approximately 140 maintenance requests have been resolved). This memorandum summarizes these changes and addresses five major areas: Programmer's Workbench Memorandum Macros (PWB/MM), *nroff/troff*, UNIX User's Manual Entry Macros, new facilities, and miscellaneous text software.

The software described in this memorandum is now beginning system testing and is subject to change prior to general availability of UNIX Release 3.0.

2. PROGRAMMER'S WORKBENCH MEMORANDUM MACROS

Changes to PWB/MM fall into and are described under five categories: enhancements, bug fixes, documentation only changes, BTL Office Guide conformity, and the *mm* command.

2.1 PWB/MM ENHANCEMENTS

New Point Size and Vertical Spacing Macro (.S)

.S [point size] [vertical spacing]

.S has been rewritten to accommodate a second argument for vertical spacing and to offer more flexibility to the user. The first argument still specifies point size. Mnemonics, such as D for default value, C for current value, and P for previous value, are now available and may be used for both point size and vertical spacing arguments.

Arguments may be signed or unsigned. If an argument is negative, the current value is decremented by the specified amount. If the argument is positive, the current value is incremented by the specified amount. If an argument is unsigned, it is used as the new value. .S without arguments defaults to previous (P). If the first argument is specified but the second argument (vertical spacing) is not then the default (D) value is used. The default value for vertical spacing is always 2p greater than the current point size value selected. A null ("") argument for either the first or second argument defaults to the current (C) value.

EXAMPLE (where n is a numeric value):

.S	→	.S P P
.S "" n	→	.S C n
.S n ""	→	.S n C
.S n	→	.S n D
.S ""	→	.S C D
.S "" ""	→	.S C C
.S n n	→	.S n n

By default, PWB/MM initializes point size to 10 and vertical spacing to 12.

If a point size argument is greater than 99, the default point size (D) 10 is restored. If a vertical spacing argument is greater than 99, the default vertical spacing (D) + 2p is used.

EXAMPLE:

.S 12 111	→	.S 12 14
.S 110	→	.S 10 12

Note: Remember, the default vertical spacing setting (D) is dependent upon the current point size.

New User-exit Macro .TY

```
.de TY
1 or more lines of text
..
```

By defining .TY, whose usage is identical to the user-exit macro .TX, the user may replace the word "CONTENTS" on the Table of Contents page.

EXAMPLE:

```
.de TY
..
```

Any text that the user wishes to print may be included in the definition as with .TX.

Memorandum for File Cover Sheet with Abstract and Copy to

.AS [type] [indent]

A Memorandum for File cover sheet with abstract and copy to list may be obtained by specifying .AS 2. This produces two pages with the usual memorandum header information, such as subject, date, from, etc. The first page includes the abstract and copy to list. The second page includes the memorandum type, such as Memorandum for File, Engineer's Notes, etc, followed by the text.

Notations (.NS/.NE) may appear within the Memorandum for File cover sheet. The sequence of calls is as follows:

EXAMPLE:

```
.TL
.AU
.AS 2
.AE
.NS
.NE
.MT
```

Notations are also allowed in the usual memorandum closing location after the .SG. However, notations included on the cover sheet are not repeated. If .AS 2 is not given, any .NS/.NE's before the .MT are saved and output at the end of the document.

If your memorandum requires that you assign a permuted index number (sequence number), or some other additional information, arguments 7 through 9 on the author line may be used.

EXAMPLE:

.AU "N. E. Bock" NEB ... 2F-203 3646-800407.01MF

produces the from block on this memorandum.

New Options for .I/.B and New Font Change Macros

.I [arg1] ... [arg6]
.B [arg1] ... [arg6]

.I and .B now take up to six arguments. Arguments 1, 3, and 5 are italic or bold for .I and .B respectively. Arguments 2, 4, and 6 revert to the previous font.

In addition, 6 new font change macros have been added (these macros are the same as in the UNIX User's Manual Entry Macro package).

.IB, .BI, .RI, .IR, .RB, .BR

where I stands for Italic, B for Bold, and R for Roman.

These macros take up to six arguments. Arguments 1, 3, and 5 are produced in the font specified by the first letter of the macro name, and arguments 2, 4, and 6 are produced in the font specified by the second letter of the macro name.

In *troff*, .I, .B, .BI, .IB, .RI, and .IR separate their arguments with a 1/12 space when one of the alternated fonts is italic.

New Option for Displays

.DS [format] [fill] [right indent]

A third argument has been added to displays (.DS/.DF) to decrease the display line length by the amount of the argument. The argument must be scaled in *troff*, otherwise the default is em's, and the argument must be unscaled in *nroff*, defaulting to en's.

This argument produces a right indent. The user must specify the left indent.

EXAMPLE:

.DS L F 5

creates a display which is indented only from the right, however,

.DS I F 5

creates a display which is indented from both sides.

New String for Indentation of Headings in Table of Contents

.ds Ci indent

The string Ci (Contents indent) may be used to specify the indentation of heading levels in the Table of Contents. The Ci string takes seven arguments which must be scaled.

EXAMPLE:

.ds Ci .25i .5i .75i 1i 1i

or

.ds Ci 0 2n 4n 6n 8n

Each level allowed by the Cl register must be specified in this string. For the above example, Cl must *not* be set to a value greater than 5.

New Register for Page Numbering of Table of Contents

.nr Oc value

The Oc number register allows the user to specify lower-case Roman or Arabic page numbering on the Table of Contents.

Value	Meaning
.nr Oc 0	lower-case Roman (default)
.nr Oc 1	Arabic

New Register for Placement of List of Figures, Tables, Equations, and Exhibits

.nr Cp value

The Cp number register allows the list of figures, tables, equations, and exhibits to be on separate pages following the Table of Contents or to be listed on the Table of Contents page.

Value	Meaning
.nr Cp 0	separate pages following Table of Contents (default)
.nr Cp 1	Table of Contents page

New Strings for Figure, Table, Equation, and Exhibit Titles for Table of Contents

.ds Lf [title]

The user may define strings to be the titles for these sections. The default settings for these strings are as follows:

.ds Lf LIST OF FIGURES
.ds Lt LIST OF TABLES
.ds Lx LIST OF EXHIBITS
.ds Le LIST OF EQUATIONS

New Register for Numbered Paragraphs

.nr Np value

Numbered paragraphs may be obtained by setting the Np number register.

Value	Meaning
.nr Np 0	unnumbered paragraphs (default)
.nr Np 1	numbered paragraphs

If numbered paragraphs are desired then each paragraph (.P) is numbered within first level heading sections, as follows: 1.01, 1.02, 1.03, 2.01, etc.

The P1 (one) number register is available to reset numbered paragraphs. By default, the P1 number register is reset to 0 by the H1 counter.

New Options for Width Control Macro (.WC)

.WC code

The Width Control macro (.WC) has been expanded to control formatting of floating displays with two new options.

Code	Meaning
FB	floater break (default)
-FB	no floater break

These can be used to control breaks caused by floating displays (.DF) when output on the "current page". By default, floating displays cause a break when output on the current page.

New Accent Strings

New strings for letter accents have been added to PWB/MM.

	Input	Output
Grave accent	a*`	à
Acute accent	a*'	á
Circumflex	a*^	â
Tilde	n*~	ñ
Cedilla	c*,	ç
Lower-case umlaut	a*:	ä
Upper-case umlaut	A*;	Ä

Calculation of Cover Sheet Macro Arguments

.CS [pages] [other] [total] [figures] [tables] [references]

The cover sheet macro (.CS) now calculates its arguments as follows:

argument	register value
pages	\nP
other	0
total	\nP + other
figures	\n(Fg
tables	\n(Tb
references	\n(Rf

This automatic calculation may be obtained by calling .CS with no arguments. However, if values need to be over-ridden, i.e., second argument "other", then null arguments may be used.

EXAMPLE:

```
.CS "" 3
```

Null arguments default to values shown in above table.

New Location Codes

.AU name [initials] [location] . . . [arg9]

HOH (Crawford Hill) and WB (West Long Branch) are now available as location codes for Memorandum for File and Released Papers. HOH provides an extra line with "Crawford Hill

Laboratory" on Released Paper format.

New Register for Dot/Dash Separator in Figure, Table, Equation, and Exhibit Captions

.nr Of value

The Of number register allows a period or a dash to be used in separating the figure, table, exhibit and equation captions from titles.

Value	Meaning
.nr Of 0	Figure 1. Title (default)
.nr Of 1	Figure 1 - Title

New Register for Right/Left Adjusted Equation Labels

.nr Eq value

The Eq number register is available to produce left or right adjusted equation labels.

Value	Meaning
.nr Eq 0	right adjusted equation labels (default)
.nr Eq 1	left adjusted equation labels

Note: Left blocked (.DS) and left indented (.DS 1) equations are right adjusted when equation labels are left adjusted (.nr Eq 1).

Alternate Format Page Numbering

The output format of the P number register may now be changed via the .af (alternate format) request.

New Macro for Proprietary Marking (.PM)

.PM [code]

.PM, for Proprietary Marking, appends to the page footer a PRIVATE, NOTICE, BELL LABORATORIES PROPRIETARY, or BELL LABORATORIES RESTRICTED disclaimer. .PM takes one argument.

Code	Meaning
.PM	no proprietary marking
.PM P	PRIVATE disclaimer
.PM N	NOTICE disclaimer
.PM BP	BELL LABORATORIES PROPRIETARY disclaimer
.PM BR	BELL LABORATORIES RESTRICTED disclaimer

The disclaimers are in a form approved for use by the Bell System.

New Stop Code Macro (.RD)

.RD [prompt] [diversion] [string]

.RD (ReaD insertion) allows a user to stop the standard output of a document and to read text from the standard input until 2 consecutive newlines are found. When the newlines are encountered, normal output is resumed. .RD may take 3 arguments.

Note that .RD follows the formatting conventions in effect. For example, the examples below assume that the .RD is invoked in no fill mode (.nf).

The first argument is a prompt.

EXAMPLE:

.RD Name

.RD prints the text "Name:" and then stops the standard output. The user may now fill-in this field. When 2 consecutive newlines are returned, the standard output resumes, until another .RD is encountered or the job terminates.

.RD without a prompt (1st argument) signals the user with a BEL on terminal output.

The second argument, a diversion name, allows the user to save all the entered text typed after the prompt.

EXAMPLE:

.RD Name aa bb

produces

Name: (user types) J. Jones
16 Elm Rd.,
Piscataway

The diversion aa (.aa) would contain:

J. Jones
16 Elm Rd.,
Piscataway

The third argument, a string name, allows the user to save for later reference the first line following the prompt.

EXAMPLE:

.RD Name "" bb

produces

Name: (user types) J. Jones

In both examples, the string bb (*(bb) contains "J. Jones".

Note: A newline followed by a Control D (EOF) also allows the user to resume normal output.

New Macro for Vertical Margins (.VM)

.VM [top] [bottom]

.VM (vertical margin) allows the user to specify extra space at the top and bottom of the page. This space precedes the page header and follows the page footer. .VM takes two arguments. These arguments are scaled in v's.

EXAMPLE:

.VM 10 15

adds 10 blank lines to the default top of page margin, and 15 blank lines to the default bottom of page margin. Both arguments must be positive (default spacing at the top of the page may be changed by re-defining TP).

New Usage of Notation Blocks

.NS [arg]
zero or more lines of notation
.NE

Notation blocks (.NS/.NE) may be used in documents which do not contain an .MT. However, a .br must precede the .NS/.NE in this case. All notations are saved and output at the end of the document.

Resetting of Tabs by Center Blocked Displays

.MT
.ta tab1 tab2 ...

Center blocked displays (.DS CB) no longer reset tabs. Thus, the user may set tabs for the entire document after specifying the memorandum type (.MT).

New Double-line Indent Macro (.nP)

Double indented paragraphs are produced using .nP. Paragraphs are numbered within second level headings.

EXAMPLE:

```
.H 1 first
.H 2 second
.nP
text of paragraph
```

Macro Call Only for Generation of Table of Contents and Cover Sheet

mm [options] file

The user no longer needs to specify the command line option -rB[123] to produce a Table of Contents and/or Cover Sheet. However, the macros .TC and .CS must be used.

New Command Line Option -rE1

mm -rE1 [options] file

In *mm* (*nroff*), the bold printing of subject, date and from fields and the signer's name may be turned on by using the command line option -rE1. By default in *mm*, these fields are not bold. In *mmt* (*troff*), the bold font is on by default and may be turned off with -rE0.

Note: The company name is always emboldened.

Command Line Options to Change Page Width and Page Offset on Preprinted Forms

mm -rA1 -rWn -rOn [options] file

Page Width (5.8 inches) and Page Offset (1 inch) of preprinted forms may be changed by using the command line option -rA1, with -rWn (page width) and/or -rOn (page offset), rather than by using a .AF.

New Command Line Option -rN5

mm -rN5 [options] file

The -rN5 command line option produces section/page numbering like -rN3 and also automatically numbers figure, table, equation, and exhibit captions within first level heading sections.

New Command Line Option -rA2

The -rA2 command line option allows for usage of the Bell Logo, if available, on a printing device (currently available for the Xerox 9700 only).

2.2 PWB/MM BUG FIXES

Fill/No Fill Mode Preserved within Displays

Figure, table, equation, and exhibit captions (.FG, .TB, .EQ, and .EX respectively) preserve the fill/no fill mode within displays. For example, a long figure caption in a no fill display (.DS N) turns on fill mode for the caption, but then restores no fill mode for the display.

Alignment of Captions within Displays

Long figure, table, equation, and exhibit captions now align correctly inside of centered displays (.DS C).

Captions Centered with Respect to Left Margin

Figure, table, equation, and exhibit captions are now correctly centered with respect to left margin rather than to indentations.

Fill/No Fill Mode Restored after Displays

Displays restore fill/no fill mode in the text following the display to the state preceding the display.

Point Size on MFF and Released Papers

In Memorandum for File and Released Paper format, the point size is changed back to the previous (not default) after the title (for Released Papers only) and the .MT.

List Indent

The Li number register (list indent) works as documented.

Floating Displays Forced Out before Signature Line

Any floating display not yet printed is forced out before the signature line in a Memorandum for File.

Page Width and Offset Restored for Table of Contents

If a .TC (Table of Contents) follows a .CS (Cover Sheet), the page width and offset are restored properly.

Indents Restored When Using Continuous Table Headers

Indents are no longer lost when using .TH N (continuous table header macro).

Labeled Footnotes on TM Cover Sheet

Bugs with labeled footnotes on a Technical Memorandum cover sheet have been fixed.

No Bottom of Page Processing in Cover Sheet

The .BS/.BE (bottom of page processing) block of text does not appear on the cover sheet for Technical Memorandum or Released Papers, although it still appears on the Table of Contents.

Centered Captions Outside of Displays

Figure, table, exhibit, and equation captions now center properly outside of displays.

Static Displays Made Consistent with Floating Displays

Static displays (.DS) are now output single spaced in order to be consistent with floating displays (.DF). However, line spacing (.ls) may be set inside of displays.

Cut Marks for Troff

Cut marks for *troff* have been fixed to work properly (for the STARE).

Command Line Option -rN1

The command line option -rN1 now works properly with a one page Memorandum for File.

2.3 PWB/MM DOCUMENTATION ONLY CHANGES

The following are existing features which were previously undocumented or incorrectly documented.

Run-in Headings

Run-in headings which fit on one line are continuously underlined.

Hyphenation Indication

The hyphenation indication character may occur only at the beginning of a word.

Automatically Numbered Footnotes

Automatically numbered footnotes may not be used inside of tables.

Error Message for Page Length Specification

The error message "Cannot do ev" may be caused by a page length specification that is too short.

Naming Conventions for Strings, Macros, and Diversions

Warning: may not use the same name for strings, macros, and diversions within the same document.

Specification of Standard Input

A trailing minus on a *nroff/troff* command line is not needed to specify standard input if an input file is not named.

User-exit Macro .HY

The user-exit macro .HY is called shortly after the .ne request is done for the size of the heading text. The same arguments passed to .HX are passed to .HY. .HY may be used to restore temporary indents which may have been lost during processing.

User-exit Macro .HX

The string }0, used in the .HX, contains the heading mark. Two paddable spaces are appended to this string.

Third Argument to Heading Macro

The heading macro (.H) takes a third argument. This argument is appended to the second argument. It is primarily used for a footnote mark.

Multiple Invocation of -mm

Invoking -mm more than once results in a proper error message and the job terminates.

Non-standard BTL Location Codes and Addresses

An author's location and address, which is a non-standard BTL location code, may be defined before the author line (.AU).

EXAMPLE:

```
.ds xx [location-string]
.AU name initials xx
```

The string xx is a two character name used for the location code. The "location-string" is a one line company address which appears on Released Paper format.

2.4 PWB/MM BTL OFFICE GUIDE CONFORMITY

In order to conform with the BTL Office Guide the following enhancements have been made to PWB/MM. The necessary changes were determined in a series of meetings with the UNIX Task Force of the Word Processing Subcommittee. For further details of these changes and also a list of the accompanying changes made to the BTL Office Guide, see "Final Report on PWB/MM Conformance to the BTL Office Guide", by Nancy W. Smith, November 26, 1979,

Case 39382-900.

New Approval Signature Macro (.AV)

.AV approver's-name

.AV (approval signature) may be placed after the last notation block to generate an approval signature line.

EXAMPLE:

```
.SG
.NS 3
.NS 5
.NE
.AV "approver's name"
```

New Formal Closing Macro (.FC)

.FC [formal closing]

.FC (formal closing) may be placed immediately before the .SG. This produces "Yours very truly," as a formal closing lined up with the signer's name. If a different closing is required, specify that closing as the first argument to .FC.

Second Argument to .MT for Addressee Name

.MT [type] [addressee name]

.MT may take a second argument for addressee's name. The addressee's name appears left adjusted in combination with the page number on the second and following pages.

EXAMPLE:

```
.MT 1 "John Jones"
```

produces:

John Jones - 2

Note: This feature may not be used with Released Paper format (.MT 4 1).

New Macro for Author Title (.AT)

.AT author-title

.AT (author title) allows the user to specify an author's title, (i.e., Head, Education Center) which appears below the signer's name on the signature line.

.AT must be given after the .AU for that author. .AT takes 9 arguments, each argument appears on a separate line following the signer's name.

EXAMPLE:

```
.AU name
.AT "Head, Education Center"
```

New Register for PRIVATE Header

.nr Pv value

The Pv number register outputs the word PRIVATE, centered and underlined on the second line of a document (preceding the page header). This is done by setting the Pv register.

Value	Meaning
.nr Pv 0	do not print PRIVATE (default)
.nr Pv 1	PRIVATE on first page only
.nr Pv 2	PRIVATE on all pages

If Pv is 2, the user definable .TP may not be used as .TP is used by PWB/MM to print PRIVATE on all pages, except on the first page of a memorandum which does not use .TP.

New Reference Macros

```
A line of text to be referenced.\*(Rf
.RS [string name]
reference text
.RF
```

Automatically numbered references may be obtained by typing *(Rf immediately after the text to be referenced. This places the next sequential reference number enclosed in brackets a half-line above the text to be referenced. *Troff* produces the reference number in a smaller point size.

There are two macros used to delimit text for each reference. .RS takes one argument, a string name.

EXAMPLE:

```
.RS AA
reference text
.RF
```

The string AA is assigned the current reference number. It may be used later in the document, as the string call, *(AA, to reference text which must be labeled with a prior reference number. The reference is output enclosed in brackets a half-line above the text to be referenced. No .RS/.RF is needed for subsequent references.

An automatically generated reference page is produced at the end of the document before the Table of Contents and the Cover Sheet are output. The reference page is entitled "References", and is centered and underlined. This page contains the reference text (RS/RF). The user may change the Reference Page title by defining the Reference page string.

EXAMPLE:

```
.ds Rp "New Title"
```

The optional .RP (Reference Page) macro may be used to produce reference pages anywhere within a document (i.e., within heading sections). .RP takes two arguments.

```
.RP [arg1] [arg2]
```

These arguments allow the user to control resetting of reference numbering, and page skipping.

arg1	Meaning
0	reset reference counter (default)
1	do not reset reference counter
arg2	**Meaning**
0	cause a following .SK (default)
1	do not cause a following .SK

Note: Because a reference page is produced automatically at the end of the document, .RP need not be used unless the user wishes to produce reference pages elsewhere in the document.

Page Header

Three blank lines are printed before and after the page header. Previously two blank lines were printed.

Footnote Rule

The footnote rule is one inch long, preceded by at least two blank lines, and followed by one blank line.

TM Number Positioning

The TM line on a technical memorandum is now correctly aligned with the text of the "date" and "from" fields.

Signature Positioning

The signer's name on memoranda is now printed beginning at the center of the page.

Charging and Filing Cases

Charging and Filing Cases on memoranda are handled as follows:

a. If there is a single number for Charging or Filing Case, the number immediately follows the text of the subject separated by a space hyphen space (" - ") and the word "Case".

b. If the Charging and Filing Cases have the same number, "Charging and Filing Case" followed by the number appears on a separate line.

c. If there are different Charging and Filing Cases, "Charging Case" followed by a number, and "File Case" followed by a number appear on separate lines.

Copy to

Continued notations, such as "Copy to", now appear as follows:

Copy to - contd.

List Indent

The Li number register (list indent) defaults to 6 in *nroff* and 5 in *troff*. Previously the values were 5 and 4 for *nroff* and *troff* respectively. The new indent provides two spaces preceding a one digit number and one space preceding a two digit number.

Hyphenation

Hyphenation is turned off by default.

Continuously Underlined Memorandum Type

Memorandum type (.MT) is now continuously underlined.

TM and Released Paper Abstracts

Abstracts no longer appear on page 1. Therefore,

```
        .AS
        .AS ""
        .AS 0
and     .AS 1
```

are now equivalent. See PWB/MM ENHANCEMENTS, for new .AS 2 style.

Abstracts are no longer indented from the right and left margins. To specify an abstract indent, the second argument to .AS may be used.

EXAMPLE:

.AS "" 5

produces an abstract indented 5 spaces from the right and left margins.

New Command Line Option for Draft Copies (-rC4)

mm -rC4 [options] file

The command line option -rC4 for draft copies produces double spacing, and indented paragraphs (with an indent of 10 spaces). The spacing takes effect after the .MT. (The command line option -rC3 remains the same, i.e., single spaced drafts.)

Page Offset

The default page offset in *mm* (*nroff*) is set to 3/4 inch. Since the average terminal prints approximately 1/2 inch from the left margin, the new page offset produces a left margin of 1 1/4 inches. The default page offset in *mm* (*nroff*) for pre-printed forms is 1 inch. This setting may be over-ridden by specifying -rOn on the command line (where n is characters and may equal 0).

Line Length

The line length now defaults to 6.0 inches (both *mm* and *mmt*), and on pre-printed forms (command line option -rA1 or .AF in text file) to 5.8 inches. (Pre-printed forms are *mm* only).

2.5 MM COMMAND (mm,mmt)

New Default Terminal Type

By default, the *mm* shell command will use 450 as the value of term (-T450).

New Option for Non-compacted Macros (-y)

The -y option (replacing old usage of -u option) allows users to request non-compacted macros in the *mm*, *mmt*, and *man* shell procedures.

EXAMPLE:

mm -y [options] file

(Uses -mm rather than -cm.)

New Versatec Printer Option (-Tvp)

The -Tvp option directs the output to a Versatec printer via the *vpr*(1) spooler. This option is available at MH only and may be used with the *mmt* and *man* commands.

New Terminal Type Options

The following are new terminal type options for the *mm* and *man* shell procedures.

-T40/4	Teletype model 40/4
-Ttek, -T4014	Tektronix 4014
-T2640, -T2621, -T2645	hps
-T382	DTC 382
-T1620, -T1620-12	Diablo 1620 (alias -T450, -T450-12)
-T4000A	Trendata 4000A
-T31, -T42	ADM31 and ADM42
-T33, -T35	tty terminals
-T2631	HP2631A line printer
-T2631-e	HP2631A line printer, expanded
-T2631-c	HP2631A line printer, compressed
-TX	text train line printers

3. NROFF/TROFF

Changes to *nroff/ troff* fall into and are described under two categories: enhancements and bug fixes.

3.1 NROFF/TROFF ENHANCEMENTS

Nroff Bold Font Simulation

By default, text which is in bold font in *troff*, is emboldened (default is .bd 3 3) in *nroff*. The user may suppress this overstrike feature by using the *nroff* -u command line option.

EXAMPLE:

nroff -u [options] file

However, -u does not suppress bold produced by terminal hardware.

The -u option may take an argument which is the emboldening factor for the bold font.

EXAMPLE:

nroff -u10 [options] file

makes the emboldening factor 10, which is 10 overstrikes.

The degree of emboldenment may also be controlled by setting the second argument of the .bd request.

EXAMPLE:

.bd 3 0

turns off emboldenment while

EXAMPLE:

.bd 3 3

overstrikes 3 times (default).

Terminals which have hardware bold capability, (such as the DASI 300s or the DTC 382) use that feature rather than emboldenment.

The old -u command line option has been replaced by the new -y command line option.

Escape and BEL Characters

Escape and BEL characters are valid characters in *nroff* and are accepted and passed to the output of the formatter. *Troff* continues to absorb these characters.

New Escape Sequence \gx

New escape sequences are available, \gx and \g(xx , which return the format of number register x(xx) in a form suitable for the .af request. If this is the first reference to the register, then the \g sequence returns the null string.

New Request for Command Execution (.!)

.! program [arg1] [arg2] [arg3] ...

A new *nroff* request, .! , has been added. This allows arbitrary command execution from within *nroff/ troff* text, where the standard output of the command is placed at the point in the text where the command was executed. Standard input for the called program is closed.

Arguments passed to .! are passed as arguments to the program, therefore, quoting conventions are recognized.

Driving Tables

New driving tables have been added.

-TX	text train line printers
-T2631	HP2631A line printer
-T2631-e	HP2631A line printer, expanded
-T2631-c	HP2631A line printer, compressed

The -TX driving table includes special escape sequences denoting EBCDIC character codes that may be used by postprocessors to *nroff*.

All driving tables have been modified to include escape sequences for italic on and off.

The 450-12-8 driving table has been removed.

Hyphenation

Hyphenation is off by default.

Page Stop Option

The -S command line option is removed.

The -s (page stop) command line option now works correctly and causes diagnostics to be output between pages. A bell (ASCII 007) is output for *nroff* and the message "page stop" is output for *troff*.

Transparent Line Mode

The undocumented and unsupported .li (transparent line mode) request has been removed.

Environment Blocks

The environment block no longer depends on the order of definition to be the order of real storage for environment variables. The environment block is now a structure, and is a portable feature. (Note: this feature is invisible to users.)

Fonts, Terms, and Suftab

For portability purposes, fonts, terms, and suftab are now pure data files, not a.out/assembler formats.

Invocation of Multiple Macro Packages

Nroff/Troff accepts any number of different macro packages per run.

EXAMPLE:

nroff -mm -mosd file

Each macro package, however, should only be invoked once.

New Troff Option for Output Device (-T*name*)

troff -T[name] [options] file

The *troff* -T option specifies the output device. By default, the output device is the C/A/T. For UNIX Release 3.0, this is the only supported *troff* output device. (It is expected that future releases may support other devices via this mechanism.)

New Compacted Macros Option (-c*name*)

Compacted macros may be called by replacing the -m option with -c.

EXAMPLE:

nroff -cm -cosd file

If compacted macros do not exist for a particular package, the non-compacted macro package is called automatically. Therefore, -c should always be used.

Print Only Page Option

The + n/-n option for *nroff/ troff* to print specific pages is removed.

Use the -o option documented in the "*Nroff/Troff User's Manual*".

3.2 NROFF/TROFF BUG FIXES

Failed if Statements

A failed .if request, including multi-line cases, ignores the *anything* part, where *anything* represents what is conditionally accepted. For example, automatic incrementing or decrementing of registers does not occur, and strings are not expanded.

Control Characters

A control character may always be separated from a request or macro name by white space (space and/or tabs). This includes end brackets to .de and .ig.

.so Request

Nroff no longer loses the end of the input block when a .so is done with *nroff's* buffer pointers pointing at the end of the input buffer.

This particular problem formerly caused loss of input text after the .so.

Continuous Underlining of Special Characters in Diversions

Continuous underlining (.cu) of special characters within a diversion now works properly and the word buffer size has been increased to allow approximately three lines of continuous underlining.

Compacted Macros

Compacted macros have been redesigned for reliability and simplicity. The only formatter characteristics that may be compacted are: number registers, strings, diversions, macros, traps, and the translation table (.tr).

Compacted macros are used by default in the following macro package shell commands: *mm*, *mmt*, and *man*.

Thetas Fixed for -T37 Driving Table

The upper and lower case thetas in the -T37 driving table have been fixed (they were reversed).

Print Only Page Option with Compacted Macros

The -o command line option works properly with compacted macros.

4. UNIX USER'S MANUAL ENTRY PRODUCTION

Changes to the UNIX User's Manual Entry Production fall into and are described under three categories: enhancements, *man* command, and the UNIX User's Manual Entry Macros conversion *(mancvt)* program. (For historical reasons, the word *page* is often used as a synonym for entry.)

4.1 UNIX USER'S MANUAL ENTRY MACROS ENHANCEMENTS

No Hyphenation for Nroff by Default

Hyphenation is turned off by default for *nroff*, however, it remains on for *troff*.

New Option to .TH

.TH name section [label] [manual name]

.TH now takes a fourth argument which over-rides the default manual name. This allows local manual entries to be developed using this standard package.

EXAMPLE:

.TH CMD 1 local "New Manual Name"

produces:

CMD(1) New Manual Name(local) CMD(1)

New Macro for Proprietary Marking (.PM)

.PM [code]

.PM, for Proprietary Marking, appends to the page footer a PRIVATE, NOTICE, BELL LABORATORIES PROPRIETARY, or BELL LABORATORIES RESTRICTED disclaimer. .PM takes one argument.

Code	Meaning
.PM	no proprietary marking
.PM P	PRIVATE disclaimer
.PM N	NOTICE disclaimer
.PM BP	BELL LABORATORIES PROPRIETARY disclaimer
.PM BR	BELL LABORATORIES RESTRICTED disclaimer

The disclaimers are in a form approved for use by the Bell System.

Paragraph Macro Renamed (.P)

.P

.PP, (for paragraph), has been changed to .P to be standardized with PWB/MM. .P does not take an argument.

Use with Preprocessors (tbl and eqn/neqn)

Preprocessors, such as *tbl* and *eqn/neqn*, may be used with the UNIX User's Manual Entry Macros. For example, the *tbl* macros .TS/.TE and the *eqn/neqn* macros .EQ/.EN may be used.

If *tbl*, *eqn/neqn*, or *cw* (constant width) are used then the first line of input for a manual entry is

'\" x

where x is any combination of the three characters t, e, c for *tbl*, *eqn/neqn*, and *constant width* respectively. *Man* will preprocess its input through the appropriate combination of *tbl*, *eqn/neqn*, and *cw* respectively. There must be exactly one blank between the double quote (") and the x.

4.2 MAN COMMAND

Option for Nroff Output Removed (-n)

The -n option which printed the manual entry on the standard output using *nroff* has been removed. Manual entries will be printed with *nroff* by default.

Option for Tektronix 4014 Renamed (-T4014, -Ttek)

man -T4014 [options] file

The -k option for displaying output on a Tektronix 4014 terminal using *troff* and *tc* has been replaced by the -T4014 or -Ttek terminal type options.

Option for Eqn/Neqn Removed (-e)

The -e option which caused the manual entry to be processed by *eqn/neqn* has been removed. (See "Use with Preprocessors" under UNIX USER'S MANUAL ENTRY MACROS section above for discussion of automatic specification of *eqn/neqn* for given manual entry by author.)

Option for MHCC STARE Facility Renamed (-Tst)

man -Tst [options] file

The -s option which output the manual entry on the MHCC STARE facility is replaced by the -Tst option.

The -s option has been reused for specifying typesetting in small format.

New Option for Directory Searches (-d)

man -d [options] file

By default, the *man* command searches for the manual entry in /usr/man. The -d option will search the current directory for a manual entry. The full file name of the manual entry must be given, e.g., man.1.

Versatec Printer Option Added to Version 7 Macros

man -rV2 [options] file

The Versatec printer option, -rV2 was taken from Version 6 (PWB/UNIX Release 1.2) macros and put into the Version 7 (UNIX Release 3.0) macros.

Option for 12 Pitch Renamed (-12)

man -12 [options] file

The -rV1 option for 12 pitch is replaced by the -12 command line option.

$TERM Values and Variables

man -TTERM [options] file

The *man* command accepts $TERM values on either the *man* command line, e.g. -T450, or through a preset $TERM variable.

New Option for Col (-c)

man -c [options] file

The -c option invokes the *col* program.

New Default Terminal Type

By default, *man* will use 450 as the value of term (-T450).

New Options for Typeset Formats (-t, -s)

man -t [options] file

or

man -s [options] file

The -t option (replacing old usage of -t option) will Typeset the manual entry in the default format (8.5"x11").

The -s option (replacing old usage of -s option) will Typeset the manual entry in the small format (6"x9").

New Option for Non-compacted Macros (-y)

For description of option, see "MM COMMAND" section under same title.

New Versatec Printer Option (-Tvp)

For description of option, see "MM COMMAND" section under same title.

New Terminal Type Options

For description of options, see "MM COMMAND" section under same title.

4.3 UNIX USER'S MANUAL ENTRY MACROS CONVERSION PROGRAM (mancvt)

mancvt file

The *mancvt* procedure is available to convert Version 6 (PWB/UNIX Release 1.2) macros to Version 7 (UNIX Release 3.0) macros. (If you do not convert, you will receive an error message.)

The output is sent to name.m, and error messages are produced for non-convertible macros.

Version 7 (UNIX Release 3.0) is the default version of the UNIX User's Manual Entry Macros (-man). All Version 6 macros should be converted. Version 6 (PWB/UNIX Release 1.2) UNIX User's Manual Entry Macros may be obtained by specifying:

EXAMPLE:

nroff -man6 [options] file

However, this option will not be included in the next UNIX release.

5. NEW FACILITIES

5.1 OPERATIONS SYSTEMS DELIVERABLE DOCUMENTATION (OSDD)

Department 3646 has prepared the necessary enhancements to the Text Processing software so that the Operations Systems Deliverable Documentation (OSDD) format[1] may be produced on UNIX systems using the PWB/MM package.

As per T. L. Powers' letter of September 27, 1979, entitled "Operations Systems Deliverable Documentation Standards", the OSDD Standards have not yet received final approval for distribution and use. The OSDD macro package and shell procedure have been included in UNIX Release 3.0 for those groups wishing to begin experimental use of the OSDD Standards.

All questions regarding the status of the OSDD Standards and the initial use of this macro package should be addressed to G. L. Calesso (PY 3A-122, x7947).

5.2 NL - LINE NUMBERING FILTER

Nl reads lines from the named file or the standard input if no file is named and reproduces the lines on the standard output. Lines are numbered on the left in accordance with command options in effect.

Nl views the text it reads in terms of logical pages. Line numbering is reset at the start of each logical page. Unless signalled otherwise, *nl* assumes the text being read is a single logical page. A logical page consists of a header, a body, and a footer section. Empty sections are valid.

---

1. See *User Guide for the OSDD Adapter Macro Package* by Nancy W. Smith, November 7, 1979, Case 39382-900.

Different line numbering options are independently available for headers, body, and footer, for example, no numbering of header and footer lines while numbering blank lines only in the body.

Command options are available to produce various numbering sequences and numbering styles. See *nl*(1).

6. MISCELLANEOUS TEXT SOFTWARE

This section covers several changes made to miscellaneous parts of the Text Processing software.

6.1 COL

The new -p option will pass unknown escape sequences to output from input. This feature will only work when the excape sequence appears on a line by itself with no reverse line motion into that line.

6.2 TYPO

The *typo* -n option now works as documented.

6.3 SPELL

The *spell* -x option now works as documented.

7. ACKNOWLEDGEMENTS

I wish to thank F. L. Dalrymple and N. W. Smith for their help in preparing this memorandum. With few exceptions, it is their work which I have described.

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PY-3646-NEB

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