

# **Macintosh WordPerfect 4.0**

## **File Format Manual**

**A Guide to  
Understanding and Interfacing to  
Macintosh WordPerfect 4.0**

**January 4, 2011**

## Function Revision History

- 22 Apr 93      New format for manual. Prefix updated to include Macintosh Resource Block.  
30 Apr 93      1st distribution of 3.0 document.  
01 July 93      Alpha revisions  
30 July 93      Beta revisions
1.      **<Mode> = 5 = Decimal align** added to **\$D0/\$06 = Set Justification Mode**
  2.      **<Cell horizontal justification>** eliminated from **\$E2/\$0D = Set Table Cell Vertical Alignment**
  3.      **\$E2/\$0D = Set Table Cell Attributes** changed to a reserved function.
  4.      **<Column justification>**, **<Alignment digits>** and **{Column attributes}** eliminated from **\$E2/\$01 = Table Function**
  5.      **\$18 = Table ON Subfunction** added.
- 01 Sep 93      Final format adjustments and corrections. Borders further clarified. Some subfunctions modified.
- 01 Nov 93
1.      **\$D2/\$02 = Define Paragraph Numbering** clarified.
  2.      **\$D7/\$03 = Define Index Entry** renamed **Mark Index Entry**.
  3.      **\$D7/\$04 = Define Table of Authority Entry** renamed **Mark Table of Authority Entry**.
  4.      Appendix D added.
  5.      **\$D8/\$04 = Insert Box Number**,  
**\$D8/\$05 = Insert Chapter Number**,  
**\$D8/\$06 = Insert Page Number**,  
**\$D8/\$07 = Insert Footnote Number** and  
**\$D8/\$08 = Insert Endnote Number** documentation corrected.
- 02 Apr 97      Updated manual for 4.0 changes. Some graphics changed. Some previously undocumented functions added.
1.      Documented previously existant functions for **\$90-\$93**, **\$9C-\$9D**, **\$A1-\$A2**, **\$A4**, **\$B0-\$B1**, **\$B4**, **\$D9/\$02-\$03**, **\$D9/\$06**, and **\$D9/\$08-\$0A**
- 22 Apr 97      Updates the marker function (**\$CC**) to include indices 44-47.\
- 14 May 97      Added **\$C4** and **\$DA/\$05 - \$DA/\$06**. Modified end-of-line subfunctions. Added  
16 May 97      Added hairline attribute to **\$DF** group.

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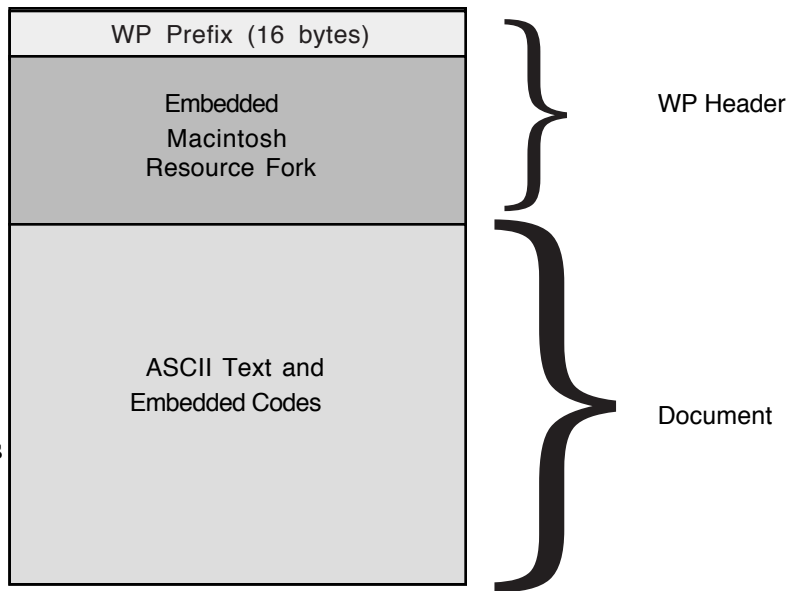


## INTRODUCTION

A WordPerfect 4.0 file consists of a WordPerfect header immediately followed by the WordPerfect document. All data associated with a WordPerfect file are stored in the data fork of a Macintosh file.

The WordPerfect header consists of the WordPerfect prefix and the embedded Macintosh resource fork. The WordPerfect document consists of ASCII text with embedded function codes.

The creator type of 3.0/4.0 files is 'WPC2' and the file type is 'WPD2.' Other associated WordPerfect files that share the same creator type (WPC2) include libraries (WPLB), stationary files (sPD2), temporaries (WPTV), backups (WPBK), help (WP??), and defaults (WPDF). 4.0/3.0 dictionary (DICT) and thesaurus (THES) files have type 'WPCU' as their creator.



### WordPerfect Prefix

The WordPerfect prefix is defined as follows:

4 bytes	File ID
4 bytes	Double word pointer to WP document <sup>1</sup>
1 byte	Product code
1 byte	File type
1 byte	Major version
1 byte	Minor version
2 bytes	Encryption key
2 bytes	Reserved

The WordPerfect products code is:

```
pfwp      equ 1      ;WordPerfect
```

WordPerfect file types are assigned as follows:

```
pfmac     equ 1      ;macro file
```

---

<sup>1</sup> The 32-bit pointer to the WP document is stored in Intel order (i.e. both bytes and words are swapped from regular Macintosh storage order.)

pfhelp	equ	2	;help file
pfkybd	equ	3	;keyboard definition file
pfwpdoc	equ	10	;wordperfect document
pfwpdct	equ	11	;dictionary - wordlist
pfwpth	equ	12	;thesaurus
pfwpmd2	equ	44	;MAC WP 2.0 document
pfwp42d	equ	45	;WP 4.2 document
pfwpspx	equ	46	;spell code module - created external to WPCorp
pfwpdsx	equ	47	;spell dictionary - created external to WPCorp
pfwpsft	equ	48	;MAC Soft (graphics format)

**Embedded Macintosh Resource Fork**

The Embedded Macintosh Resource Fork is defined as follows:

Resource Header

4 bytes	Offset from beginning of resource block to resource data
4 bytes	Offset from beginning of resource block to resource map
4 bytes	Length of resource data
4 bytes	Length of resource map

Note: All offsets and lengths in the resource block are given in bytes.

This is what immediately follows the resource header:

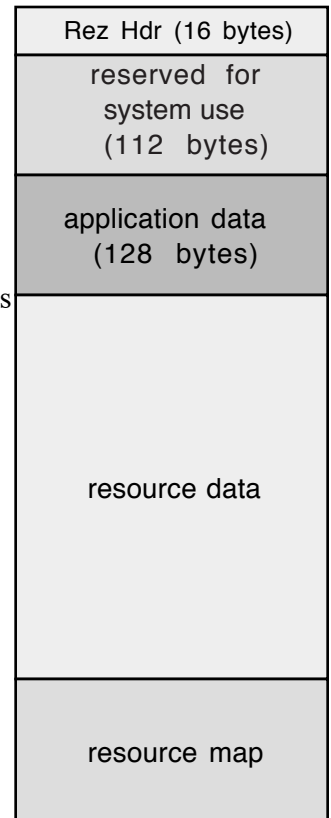
112 bytes	Reserved for system use
128 bytes	Available for application data

The resource data follows the space reserved for the application data. It consists of the following for each resource in the resource block:

4 bytes	Length of following resource data
n bytes	Resource data for this resource

After the resource data, the resource map begins as follows:

16 bytes	0 (reserved for copy of resource header)
4 bytes	0 (reserved for handle to next resource map to be searched)
2 bytes	0 (reserved for file reference number)
2 bytes	Resource file attributes
2 bytes	Offset from beginning of resource map to type list (see below)
2 bytes	Offset from beginning of resource map to resource name list (see below)



After reading the resource map into memory, the Resource Manager stores the indicated information in the reserved areas at the beginning of the map.

The resource map continues with a type list, reference lists, and a resource name list. The type list contains the following:

2 bytes          Number of resource types in the map minus 1

For each type:

4 bytes          Resource type  
2 bytes          Number of resources of this type in the map minus 1  
2 bytes          Offset from beginning of type list to reference list for resources of this type

This is followed by the reference list for each type of resource, which contains a resource reference for each resource of that type. The reference lists are contiguous and in the same order as the types in the type list. The format of a reference list is as follows:

For each reference of this type:

2 bytes          Resource ID  
2 bytes          Offset from beginning of resource name list to length of resource name, or -1 if none  
1 byte          Resource attributes  
3 bytes          Offset from beginning of resource data to length of data for this resource  
4 bytes          0 (reserved for handle to resource)

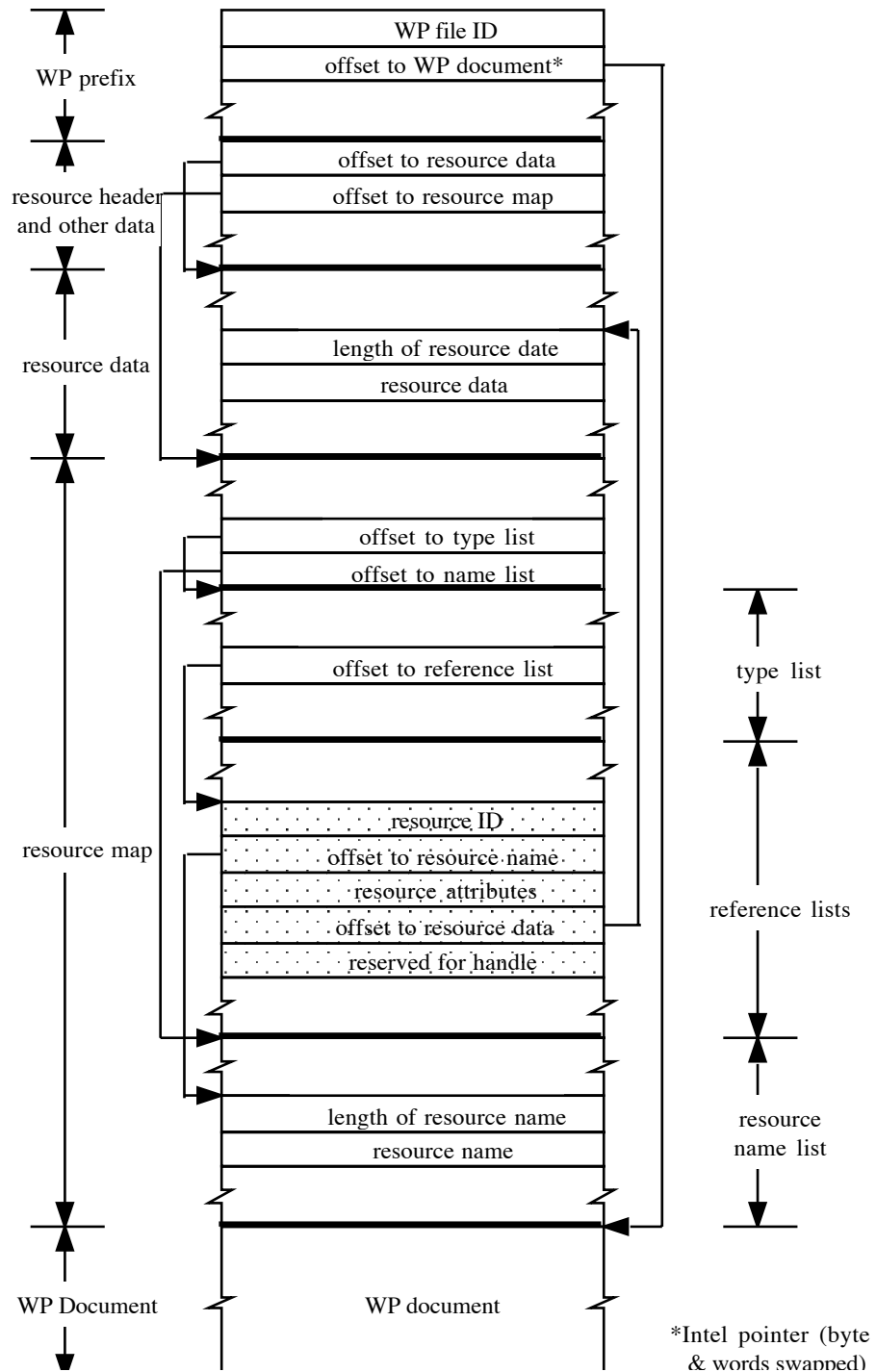
The resource name list follows the reference list and has this format:

For each name:

1 byte          Length of following resource name  
n bytes          Character of resource name

The embedded resource fork consists of such resources as printer job (PJob), printer definition (PtPt), and page setup (PSet). It may also contain macros (Wmac), temporary styles (TStl), styles (Styl), pictures (WBOX, Pict), overlays (WBFN), window definition (WDat), font maps (FNTD) and keyboards (WPkg, WPkr, WPkt, WPkx).

The following figure show where the various offsets lead to in a resource file, in general and also specifically for a resource reference:



## WordPerfect Document

Document formatting is accomplished by embedding function codes in the ASCII text of a document. A WordPerfect function begins and ends with a negative byte (greater than \$7F.) All function codes listed below are represented as base-16 (hexadecimal) numbers. Angle brackets ('<' and '>') enclose internal byte values. Likewise, brackets ('[' and ']') enclose 16 bit words and braces ('{' and '}') enclose 32 bit long words. These delimiters are not actually a part of the function codes. Unless otherwise indicated, all 16 bit words are signed integer values. Likewise, unless otherwise specified, all 32 bit long words are signed fixed point numbers where the upper 16 bits is the integer part and the lower 16 bits is the fractional part.

< >	=	Byte
[ ]	=	Word
{ }	=	32 bit long word
{ [ ] }	=	48 bit double long word
†	=	Formatter supplied value

Individual bits are specified by a bit number beginning with the left or most significant bit. The range is from 0 to 7 with bit 7 being the most significant. Formatter supplied values are indicated with the '†' symbol.

### Single Byte Functions

Single byte functions range from \$80 through \$BF. They may or may not be paired and may change depending upon their function in the file.

#### Single Byte

com<\$97>ment

### Fixed Length Multi-byte Functions

The codes for fixed length multi-byte functions (\$C0 through \$CF) always appear twice - the first occurrence is the "open gate," and a second occurrence is the "closing gate." The length of each function is fixed and listed after the function code. The length listed for this class of functions is the length of the entire function.

#### Fixed Length

can<\$C0><\$D5><\$04><1C><\$C0>t

#### Word Multi-byte

<\$D0><\$06>[\$0006]<\$00><\$02>[\$0006]<\$06><\$D0>

### Variable Length Multi-byte Functions

The codes for variable length multi-byte functions (\$D0 through \$EF) also appear twice - the first occurrence is the function group and is referred to as the "open gate," and a second occurrence is the "closing gate." In addition, each open gate is followed by a sub-group byte and a length word (16 bits). Each closing gate is preceded by the same sub-group byte and a length word. The length of each function when fixed is listed after the function code. The length for this class of functions is the number of bytes following the length word in the function to the end of the function i.e. the length of the entire function minus four.

### Function Orientation

Functions are placed in a document according to the orientation. A "character" orientation means that the function can be inserted anywhere within the document. A

“paragraph” oriented function must be inserted at the beginning of a paragraph. Likewise, “Cell”, “Table”, “Column”, “Page”, and “Document” orientations specify where particular functions need to be inserted. With the exception of “character” orientation, all other functions need to be inserted within paragraph gates (\$AA and \$AB) as well.



## Single Byte Functions

Single Byte Functions are single bytes encountered in a WordPerfect document that range from \$80 to \$BF. They may represent special characters, mode changes, markers or shortened forms of larger multi-byte functions. Single byte functions are self contained and represent both the start and end gates. There is no associated 'old' value and hence are not used in functions with revert operations such as paired styles.

Functions \$80-\$8F are reserved for condensed output and are converted by WP to their corresponding multi-byte function when the file is formatted.

<b>\$80 = Condensed Hard Return</b>	TempHardReturn_	<i>Converted to Hard Return (\$DC/\$02)</i>
<b>\$81 = Condensed Hard Page</b>	TempHardPage_	<i>Converted to Hard Page (\$DC/\$07)</i>
<b>\$82 = Condensed Tab</b>	TempTab_	<i>Converted to Tab (\$C1/\$00)</i>
<b>\$83 = Condensed Back Tab</b>	TempBackTab_	<i>Converted to Back Tab (\$C1/\$03)</i>
<b>\$84 = Condensed Indent</b>	TempIndent_	<i>Converted to Indent (\$C2/\$00)</i>
<b>\$85 = Condensed Left/Right Indent</b>	TempLeftRightIndent_	<i>Converted to L/R Indent (\$C2/\$01)</i>
<b>\$86 = Reserved</b>		
<b>\$87 = Reserved</b>		
<b>\$88 = Reserved</b>		
<b>\$89 = Reserved</b>		

Functions \$8A-\$8F are reserved for the Text Services Manager (TSM).

<b>\$8A = Highlight Off</b>	Highlite0_	
<b>\$8B = Cursor Position</b>	Highlite1_	
<b>\$8C = Raw Text Range</b>	Highlite2_	
<b>\$8D = Selected Raw Text Range</b>	Highlite3_	
<b>\$8E = Converted Text Range</b>	Highlite4_	
<b>\$8F = Select Converted Text Range</b>	Highlite5_	
<b>\$90 = End of Bookmark</b>	EndBookMark_	
<b>\$91 = End of Hyperlink Text</b>	EndHyperText_	
<b>\$92 = Turn Display Off</b>	DisplayOff_	
<b>\$93 = Turn Display On</b>	DisplayOn_	
<b>\$94 = End Center/Align</b>	EndCenAlign_	
<b>\$95 = Begin Character Substitution</b>	CharSub_	CharSub_ function terminates the display of a line. Any end-of-line characters would then be displayed.

Functions \$96-\$99 are soft end-of-line functions not at end-of-line. Corresponding multi-byte functions are found in the End-Of-Line group.

<b>\$96 = Hard Hyphen In Line</b>	HardHyph_	User inserted wrapable
hyphen		
<b>\$97 = Soft Hyphen In Line</b>	SoftHyph_	User inserted warp point
<b>\$98 = Auto Hyphen In Line</b>	AutoHyph_	Auto hyphenator inserted

wrap point

**\$99 = Reserved**

**\$9A = Cancel Hyphenation of Word** WordHyphOff\_

WordHyphOff\_ is placed at the beginning of a word by the hyphenator when the CANCEL option is selected. The word will subsequently not be hyphenated.

**\$9B = Reserved**

**\$9C = Box Number**

TempBoxNumber\_

*Converted to (\$D8/\$04)*

**\$9D = Chapter Number**

TempChapterNumber\_

*Converted to (\$D8/\$05)*

Functions \$9E and \$9F temporarily hide functions in formatted portions of a document. When encountered in unformatted areas, they are deleted and essential 'unhide' the encased functions. They are used to hide functions at the end of a table cell that don't fit in the cell due to fixed cell height or cell spanning a full page.

**\$9E = Hide Functions ON**

HideOn\_

**\$9F = Hide Functions OFF**

HideOff\_

**\$A0 = Hard space**

HardSpace\_

Non-wrap space

**\$A1 = Page Number**

TempPageNumber\_

*Converted to (\$D8/\$06)*

**\$A2 = Footnote Number**

TempFootnoteNumber\_

*Converted to (\$D8/\$07)*

**\$A3 = Table of Contents Placeholder**

TocPageNum\_

*For internal use only.*

**\$A4 = Endnote Number**

TempEndnoteNumber\_

*Converted to (\$D8/\$08)*

**\$A5 = Start of Subtitle Text**

SubtitleMark\_

*For internal use only.*

**\$A6 = End of Centered/Aligned Text**

EndAlign\_

**\$A7 = End of Generated Text**

EndGenText\_

*For internal use only.*

**\$A8 = Center Page Top to Bottom**

CenterPage\_

(Page Oriented)

**\$A9 = Reserved**

Functions \$AA and \$AB encase functions that must appear at the beginning of a paragraph (i.e. \$AA must be preceded by a hard end-of-line, temp end-of-line, or beginning of file file function.) Otherwise, these single byte functions and all functions between them are deleted when formatted.

**\$AA = Beginning of Paragraph ON** ParFuncON\_

**\$AB = Beginning of Paragraph OFF** ParFuncOFF\_

Functions \$AC and \$AD encase functions that can appear anywhere on a line but must remain together (i.e. a footnote style must remain with the footnote.)

**\$AC = Begin Encased Grouping** EncaseOn\_

**\$AD = End Encased Grouping** EncaseOff\_

Functions \$AE and \$AF encase functions that remain valid only in formatted portions of a document. If an unformatted Start Table Header is encountered by the formatter, the encasing functions and all functions in between them are deleted.

<b>\$AE = Start Table Header</b>	TempEncaseOn_	
<b>\$AF = End Table Header</b>	TempEncaseOn_	
<b>\$B0 = Turn Widow/Orphan On</b>	TempWidowOrphanOn_	<i>Converted to (\$D0/\$0D)</i>
<b>\$B1 = Turn Widow/Orphan Off</b>	TempWidowOrphanOff_	<i>Converted to (\$D0/\$0D)</i>

Functions \$B2 and \$B3 are temporary functions placed in the text to signal the display processor to highlight text.

<b>\$B2 = Block ON</b>	BlockOn_	<i>For internal use only.</i>
<b>\$B3 = Block OFF</b>	BlockOff_	<i>For internal use only.</i>

<b>\$B4 = Turn Hyphenation On</b>	TempHyphenationOn_	<i>Converted to (\$D0/\$0E)</i>
<b>\$B5 = Turn Hyphenation Off</b>	TempHyphenationOff_	<i>Converted to (\$D0/\$0E)</i>

Functions \$B6 and \$B7 allow the display processor to keep text selected even when scrolled off the screen.

<b>\$B6 = Reverse Video ON</b>	VirtBlockOn_	<i>For internal use only.</i>
<b>\$B7 = Reverse Video OFF</b>	VirtBlockOff_	<i>For internal use only.</i>

Functions \$B8-\$BE are reserved for internal markers and reference points.

<b>\$B8 = Generate Marker #1</b>	GenerateMark1_	<i>For internal use only.</i>
<b>\$B9 = Generate Marker #2</b>	GenerateMark2_	<i>For internal use only.</i>
<b>\$BA = Search Marker #1</b>	SearchMark1_	<i>For internal use only.</i>
<b>\$BB = Search Marker #2</b>	SearchMark2_	<i>For internal use only.</i>
<b>\$BC = Format to EOL/EOP/EOC</b>	FormatEOx_	<i>For internal use only.</i>
<b>\$BD = Misc Formatter Marker</b>	SpareMark1_	<i>For internal use only.</i>
<b>\$BE = Reformat Line Marker</b>	ReformatMark_	<i>For internal use only.</i>

<b>\$BF = No Operation</b>	NOOP_	NOOP_ is always deleted by WordPerfect if encountered in unformatted text.
----------------------------	-------	----------------------------------------------------------------------------

## Fixed Length Multi-byte Functions

---

Function: **\$C0**  
Name: ExtendedChar\_  
Length: 5

### **\$C0 = Extended Character**

<\$C0> <Mac character†>  
<WP character set #>  
<Character>  
<\$C0>

<Mac character> = Displayed Mac character.

<WP character set #><Character> = WordPerfect character.

The WordPerfect character (<WP character set #><Character>) is used to generate the displayed Mac character (<Mac character>) whenever possible. When this not possible due to an unknown Mac character or because of conversions, then an attempt is made to generate a new <WP character set #><Character> from the <Mac character>.

To convert a WordPerfect character to a Macintosh character, use the following format:

<\$C0> <\$00>  
<WP character set # from WP 5.1>  
<Character from WP 5.1>  
<\$C0>

To convert a Macintosh character to a WordPerfect character, if the character is an ASCII character no conversion is necessary, otherwise <5.1 character set #> and <Character Code> are set to <WP character set #> and <Character> from WP 2.1 for Mac i.e.

<\$C0> <\$00>  
<Character from WP 2.1 Mac>  
<WP character set # from WP 2.1 Mac>  
<\$C0>

When converting to WordPerfect 5.1 and <WP character set #> is negative then <5.1 character set #> should be set to <\$C0> indicating the character can't be mapped i.e.

<\$C0> <\$00>  
<Character from WP 2.1 Mac>  
<\$C0>  
<\$C0>

Note: When in a symbol font, all characters are converted to extended characters with the exception of a space. In non-symbol fonts, characters in the normal character range (\$20-\$7F) are taken out of extended character gates and stored as regular single byte characters.

---

Function: **\$C1**

Name: HorzMove\_

Length: 8

**\$C1/\$00 = Tab**

**\$C1/\$01 = Center**

**\$C1/\$02 = Flush Right**

**\$C1/\$03 = Back Tab**

**\$C1/\$04 = Character Kerning**

**\$C1/\$05 = Tab w/Vertical Line**

**\$C1/\$06 = Fixed Tab**

<\$C1> <Def>  
<Mode/Type†>  
{Horizontal Adjustment†}

<\$C1>

<Def> = 0 = Tab  
1 = Center  
2 = Flush Right  
3 = Back Tab  
4 = Character Kerning  
5 = Tab w/Vertical Line  
6 = Fixed Tab

<Mode/Type> = (msb) 7 = Always 0  
6 }  
5 } = Mode  
4 }  
3 }  
2 } = Type  
1 }  
(lsb) 0 }

Mode = 0 = No leader  
1 = Leader #1 (dots & spaces)  
2 = Leader #2 (dots)  
3 = Leader #3 (dashes & spaces)  
4 = Leader #4 (underline)  
5 = Leader #5  
6 = Leader #6  
7 = Leader #7

Type = 0 = Normal tab  
1 = Centered tab  
2 = Right justified tab  
3 = Character aligned tab  
4 = Bar (Vertical line)

{Horizontal Adjustment} = Fixed point adjustment to current cursor position.

### **Tab**

For <Def> = 0, formatter supplies <Mode/Type> and {Horizontal Adjustment}.

Type = Formatted supplied.  
Mode = Formatted supplied.  
{Horizontal Adjustment} = Formatted supplied.

### **Center Flush Right Back Tab**

For <Def> = 1, 2, or 3, Type is undefined, user supplies Mode, and formatter supplies the {Horizontal Adjustment}.

Type = Undefined.  
Mode = User supplied.  
{Horizontal Adjustment} = Formatter supplied.

### **Character Kerning**

For <Def> = 4, Type is undefined and the user supplies Mode and {Horizontal Adjustment}.

Type = Undefined.  
Mode = User supplied.  
{Horizontal Adjustment} = User supplied.

### **Tab w/Vertical Line**

For <Def> = 5, user supplies <Mode/Type> and {Horizontal Adjustment}. The following Types are defined:

Type = 0 = Top of line  
1 = Middle of line  
2 = Bottom of line

Mode = User supplied.  
{Horizontal Adjustment} = User supplied.

**Fixed Tab**

For <Def> = 6, user supplies <Mode/Type> and  
formatter supplies the {Horizontal Adjustment}.

Type = User supplied.  
Mode = User supplied.  
{Horizontal Adjustment} = Formatter supplied.

---

Function: \$C2  
Name: Indent\_  
Length: 7

**\$C2/\$00 = Left Indent**  
**\$C2/\$01 = Left/Right Indent**

<\$C2> <Def>  
{Margin Adjustment†}  
<\$C2>

<Def> = 0 = Indent  
1 = Left/right indent

{Margin Adjustment} = Formatter supplied fixed point  
adjustment to current margin(s).

Function: \$C3

Name: AttributeOnOff\_

Length: 4

**\$C3 = Attribute ON/OFF**

<\$C3>    <Attribute>  
          <State>

<\$C3>

<Attribute> =

0 = Bold	16 = Small print
1 = Italics	17 = Fine print
2 = Underline	18 = Small caps
3 = Outline	19 = <i>Reserved</i>
4 = Shadow	20 = <i>Reserved</i>
5 = <i>Reserved</i>	21 = <i>Reserved</i>
6 = <i>Reserved</i>	22 = <i>Reserved</i>
7 = <i>Reserved</i>	23 = <i>Reserved</i>
8 = Red line	24 = <i>Reserved</i>
9 = Strike out	25 = <i>Reserved</i>
10 = Subscript	26 = <i>Reserved</i>
11 = Superscript	27 = <i>Reserved</i>
12 = Double underline	28 = <i>Reserved</i>
13 = Extra large print	29 = Misspelled
14 = Very large print	30 =
15 = Large print	31 =

<State> =

(msb) 7 =	Old value (0=Off, 1=On)
6 =	
5 =	
4 =	
3 =	
2 =	
1 =	
(lsb) 0 =	New value (0=Off, 1=On)

Note: The <Attribute> is used as an index to the corresponding bit in the formatter status variable.

If the Attribute ON/OFF function is immediately followed by another Attribute ON/OFF function for the same attribute or the old value equals the new value, then the function is deleted by the formatter.



Function: **\$C4**

Name: EmphasisChar\_

Length: 4

### **\$C4 = Emphasis Character**

<\$C4> <ascii code>

<reserved>

<\$C4>

<ascii code> = Ascii character to display with emphasis

---

Function: **\$C5**

Name: BlockProtect\_

Length: 7

### **\$C5/\$00 = Block Protect ON**

### **\$C5/\$01 = Block Protect OFF**

<\$C5> <Def>  
{Page position†}

<\$C5>

<Def> = (msb) 7 = Old block protect state

6 =

5 =

4 =

3 =

2 =

1 =

(lsb) 0 = 0=Block Protect On, 1=Block  
Protect Off

{Page position} = Fixed point vertical page position of start of  
protected block.

---

Function: **\$C6**

Name: EndIndent\_

Length: 10

### **\$C6 = End of Indent**

<\$C6> {Old temp left margin†}

{Old temp right margin†}

<\$C6>

The End-of-Indent function is written by the forward  
formatter and used to recover temporary margins during back  
formatting.

*For internal use only.* This function should not be inserted  
when creating WordPerfect documents.

Function: **\$C7**                      **Reserved.**  
Name:  
Length: 7

---

Function: **\$C8**                      **\$C8 = Double Byte Script Character**  
Name: SMDblByteChar\_  
Length: 4                              <\$C8>[Character]  
                                         <\$C8>  
                                         [Character] =      Double byte Macintosh script character.

---

Function: **\$C9**                      **Reserved.**  
Name:  
Length: 5

---

Function: **\$CA**                      **Reserved.**  
Name:  
Length: 6

---

Function: **\$CB**                      **Reserved.**  
Name:  
Length: 6

Function: \$CC  
Name: TempMarker\_  
Length: 7

### \$CC = Temp Formatter Marker

<\$CC>            <Mark index>  
                  {Temp mark counter†}  
<\$CC>

<Mark index> =

0 = SelectMark_	26 = InlineMark2_
1 = VirtualMark_	27 = InlineMark3_
2 = SearchMark_	28 = RummageMark1_
3 = NoteMark_	29 = RummageMark2_
4 = NoteMark_	30 = RummageMark3_
5 = BegWordMark_	31 = HyphEntryMark1_
6 = EndWordMark_	32 = HyphEntryMark2_
7 = PrintMark_	33 = HyphEntryMark3_
8 = PrintPreviewMark_	34 = HyphEntryMark4_
9 = SaveStyleMark1_	35 = HyphEntryMark5_
10 = SaveStyleMark2_	36 = GrammarBegin_
11 = AutoFormatMark_	37 = GrammarEnd_
12 = DisplayMark_	38 = GrammarSubDoc_
13 = EndnoteMark_	39 = GrammarSentence_
14 = HyphMark_	40 = DragDropMark1_
15 = EditionMark_	41 = DragDropMark2_
16 = SubSelMark_	42 = DragDropMark3_
17 = WordDelimMark_	43 = DragDropMark4_
18 = FunctionInsertionMark_	44 = FirstHyperLinkMark_
19 = AEBeginMark_	45 = LastHyperLinkMark_
20 = AEEndMark_	46 = BookMark1_
21 = AEBeginMark_	47 = SpellMark_
22 =	
23 = AEEndMark_	
24 =	
25 = InlineMark1_	

*For internal use only.* This function should not be inserted when creating WordPerfect documents.

Function: **\$CD**  
Name: Undo\_  
Length: 9

**\$CD/\$00 = Start of Invalid Text**  
**\$CD/\$01 = End of Invalid Text**  
**\$CD/\$02 = Start of Valid Text**  
**\$CD/\$03 = End of Valid Text**

**<\$CD>**            **<Def>**  
                         **[Count]**  
                         **{Document stamp†}**

**<\$CD>**

**<Def> =**            0 = Start of invalid text  
                         1 = End of invalid text  
                         2 = Start of valid text  
                         3 = End valid text

**[Count] =**            Current level of Undo

**{Document stamp} =**    Time stamp of when document was opened.  
                         If this value does not match current time  
                         stamp, the function (and bracketed data for  
                         invalid gates) are deleted.

Text and function codes between a start of invalid text function and an end of invalid function of a given level and document stamp should be ignored i.e.

**<\$CD><\$00>[Count]{Document stamp}<\$CD>**  
...text and function codes to be ignored...  
**<\$CD><\$01>[Count]{Document stamp}<\$CD>**

Where [Count] & {Document stamp} are equal in both Undo\_ functions

Function: **\$CE**  
Name: LineSpace\_  
Length: 7

**\$CE/\$00 = Temp Character Space Function**  
**\$CE/\$01 = Temp Space-Extra Function**  
**\$CE/\$FF = Temp Char-Extra Function**

**<\$CE>**            **<Def>**  
                         **{Space/Space-extra/Char-extra}**

**<\$CE>**

**<Def> =**            0    {Space/Space-extra/Char-extra} is line space.  
                         1    {Space/Space-extra/Char-extra} is Space-extra.  
                         -1   {Space/Space-extra/Char-extra} is Char-extra.

*For internal use only.* This function should not be inserted when creating WordPerfect documents.

---

Function: **\$CF**  
Name: Marker\_  
Length: 4

**\$CF = Formatter Marker**

<\$CF>[Mark counter†]  
<\$CF>

*For internal use only.* This function should not be inserted when creating WordPerfect documents.

## Variable Length Multi-byte Functions

**\$D0 = Page Format Group**

---

Function: \$D0/\$00

Name: FixedLnHeight\_

Length: 12

Orientation: Paragraph

**\$D0/\$00 = Set Line Size**

<\$D0><\$00>[Length]      {Old line size †}

{New line size}

<PC stuff...>

[Length]<\$00><\$D0>

{Line size} =

0 = Auto line size

Otherwise, set line size to fixed point value.

Note: If the Set Line Size function is immediately followed by another Set Line Size function or the old values equal the new values, then the function is deleted by the formatter.



value, then the function is deleted by the formatter.

Function: \$D0/\$03  
Name: HotZoneSet\_  
Length: 20  
Orientation: Paragraph

**\$D0/\$03 = Set Hyphenation Zone (Hotzone)**

<\$D0><\$03>[Length]    {Old left hzone †}  
                                   {Old right hzone †}  
                                   {New left hzone}  
                                   {New right hzone}  
                                   <PC stuff...>  
 [Length]<\$03><\$D0>

{Left hzone} =            Distance left from right margin where  
 formatter begins looking for a place to break  
 a word down to next line.

{Right hzone} =            Distance right of right margin where  
 formatter limits the length of a line. Only  
 has affect in full justified modes.

Note: Parameters are pixel values expressed as fixed point long  
 words.

If the Set Hyphenation Zone function is immediately  
 followed by another Set Hyphenation Zone function or the  
 old values equal the new values, then the function is deleted  
 by the formatter.

Function: \$D0/\$04  
Name: TabSet\_  
Length: Variable  
Orientation: Paragraph

**\$D0/\$04 = Set Tabs**

<\$D0><\$04>[Length]    <Old def>  
                                   <Old condensed tab table... †>  
                                   <\$FF>  
                                   <New def>  
                                   <New condensed tab table...>  
                                   <\$FF>  
 [Length]<\$04><\$D0>

<def> =            (msb) 7 =  
                                   6 =  
                                   5 =  
                                   4 =  
                                   3 =  
                                   2 =  
                                   1 =



(lsb) 0 = 0=absolute, 1=relative

The condensed tab table consists of a series of entities, each 5 bytes in length, and terminated by a single <\$FF> byte. Each entry is either an individual tab entry (Type 1) or a difference tab entry (Type 2). The old and new tab tables follow the same format.

A type 1 or individual tab entry specifies a single tab point. The tab mode/type is always positive and the tab point is a fixed point number.

<Mode/Type>	Type 1
{Tab point}	Fixed point #

A type 2 or difference tab entry specifies multiple tabs that are equally spaced from the last tab. They all have the same tab mode/type as the last tab. This number of tabs is negative thus differentiating a type 2 from a type 1 entry.

<-# of defined tab points>	Type 2
{Tab difference}	Fixed point #

A tab mode/type is defined as follows:

<Mode/Type> = (msb)	7	=	Always 0
	6	}	= Mode
	5		
	4		
	3	}	= Type
	2		
	1		
(lsb)	0		

**Mode** = 0 = No leader  
 1 = Leader #1 (dots & spaces)  
 2 = Leader #2 ( dots)  
 3 = Leader #3 (dashes & spaces)  
 4 = Leader #4 (underline)  
 5 = Leader #5  
 6 = Leader #6  
 7 = Leader #7

**Type** = 0 = Normal tab  
 1 = Centered tab  
 2 = Right justified tab  
 3 = Character aligned tab  
 4 = Bar (Vertical line)

Notes: 1. A def byte of <\$FF> is both a def and terminator.







Note: If the Page Number Position function is immediately followed by another Page Number Position or the old value equals the new value, then the function is deleted by the formatter.

---

Function: \$D0/\$09	<b>\$D0/\$09 = Set Spacing Between Paragraphs</b>	
Name: ParagraphSpacing_		
Length: 22	<\$D0><\$09>[Length]	<Old def†> {Old spacing before paragraph†} {Old spacing after paragraph†}
Orientation: Paragraph		<New def> {New spacing before paragraph} {New spacing after paragraph} <PC stuff...>
	[Length]<\$09><\$D0>	
	<def> =	0 = Percent 1 = Absolute
	{spacing before paragraph} =	Vertical spacing value added to line size before a paragraph. If {spacing before paragraph} = \$80000000, then the current spacing before paragraph is substituted in the function.
	{spacing after paragraph} =	Vertical spacing value added to line size after a paragraph. If {spacing after paragraph} = \$80000000, then the current spacing after paragraph is substituted in the function.

Note: Parameters are pixel values expressed as fixed point long words.

If the Set Spacing Between Paragraphs function is immediately followed by another Set Spacing Between Paragraphs function or the old values equal the new values, then the function is deleted by the formatter.

---

Function: \$D0/\$0A	<b>\$D0/\$0A = Set Vertical Spacing Between Columns</b>	
Name: ColumnSpacing_		
Length: 12	<\$D0><\$0A>[Length]	{Old spacing†}
Orientation: Column		{New spacing}



3 =  
2 =  
1 = Enable orphan processing  
(1sb) 0 = Enable widow processing

Note: If the Set Widow/Orphan Mode function is immediately followed by another Set Widow/Orphan Mode function or the old value equals the new value, then the function is deleted by the formatter.

---

Function: \$D0/\$0E      **\$D0/\$0E = Set Hyphenation Mode**

Name: HyphenationControl\_

Length: 6

Orientation: Paragraph

<\$D0><\$0E>[Length]      <Old mode†>

<New mode>

<PC stuff...>

[Length]<\$0E><\$D0>

<New mode> = (msb) 7 =

6 =

5 =

4 =

3 =

2 =

1 =

(1sb) 0 = Enable hyphenation processing

Note: If the Set Hyphenation Mode function is immediately followed by another Set Hyphenation Mode function or the old value equals the new value, then the function is deleted by the formatter.

## \$D1 = Font Group

---

Function: \$D1/\$00

Name: Color\_

Length: 16

Orientation: Character

### \$D1/\$00 = Set Text Color

<\$D1><\$00>[Length]    [Old red color†]  
                                 [Old green color†]  
                                 [Old blue color†]  
                                 [New red color]  
                                 [New green color]  
                                 [New blue color]  
                                 <PC stuff...>

[Length]<\$00><\$D1>

[Red color] =

[Green color] =

[Blue color] =

RGB color componets are expressed as unsigned integer values. Each R, G and B can have a value from \$0000 to \$FFFF (or 0 to 65,535.) RBG color is additive; that is, as the value of a component is increased, the amount of that component in the total color increases. An RGB color is black if all three components are set to 0, or white if each component is set to 65,535.

Note: If the Color function is immediately followed by another Color function or the old value equals the new value, then the function is deleted by the formatter.



Function: \$D1/\$01

Name: FontChange\_

Length: Variable

Orientation: Character

### \$D1/\$01 = Set Text Font

<\$D1><\$01>[Length] {Document stamp †}  
[Old font # †]  
[Old font type †]  
[New font # †]  
[New font type †]  
<Font name...> Pascal string  
<PC stuff...>

[Length]<\$01><\$D1>

[Font #] = Macintosh font number. Used to select new font.

[Font type] = Negative => Symbol font  
Positive => Regular font

<Font name...> = Font name.

The following algorithm is used to select a new font:

```
IF {Document stamp} ≠ current document time THEN
  BEGIN
    IF <Font name...> = 0 THEN
      Use [New font #] to create <Font name...>.
    ENDIF
  END
```

<Font name...> is used to create a [New font #].

**ENDIF**

[New font #] is used to select new font.

Note: If the Font Change function is immediately followed by another Font Change function or the old value equals the new value, then the function is deleted by the formatter.

Function: \$D1/\$02

Name: FontSize\_

Length: 8

Orientation: Character

### \$D1/\$02 = Set Font Size

<\$D1><\$02>[Length] [Old font size†]

[New font size]

<PC stuff...>

[Length]<\$02><\$D1>

{font size} =

Integer value for current font size.

Note: If the Font Size Change function is immediately followed by another Font Size Change function or the old value equals the new value, then the function is deleted by the formatter.

---

Function: \$D1/\$03

Name: Leading\_

Length: 12

Orientation: Character

### \$D1/\$03 = Set Line Leading

<\$D1><\$03>[Length] {Old leading†}

{New leading}

<PC stuff...>

[Length]<\$03><\$D1>

{Leading} =

Fixed point leading value added to the bottom of each line. Auto leading is used if {Leading} = \$8000 0000.

Note: If the Leading function is immediately followed by another Leading function or the old value equals the new value, then the function is deleted by the formatter.

Function: \$D1/\$04  
Name: RelFontSize\_  
Length: 26  
Orientation: Character

### \$D1/\$04 = Define Relative Font Sizes

<\$D1><\$04>[Length]      <Old mode flag†>  
                                          [Old Very Small†]  
                                          [Old Small†]  
                                          [Old Large†]  
                                          [Old Very Large†]  
                                          [Old Extra Large†]  
                                          <New mode flag>  
                                          [New Very Small]  
                                          [New Small]  
                                          [New Large]  
                                          [New Very Large]  
                                          [New Extra Large]

[Length]<\$04><\$D1>

<Mode flag> =      (msb) 7 =  
                                          6 =  
                                          5 =  
                                          4 = Extra Large      (0=%, 1=point size)  
                                          3 = Very Large      (0=%, 1=point size)  
                                          2 = Large      (0=%, 1=point size)  
                                          1 = Small      (0=%, 1=point size)  
                                          (lsb) 0 = Very small      (0=%, 1=point size)

[New Very Small] =      Percent or integer point size for very small font attribute.

[New Small] =      Percent or integer point size for small font attribute.

[New Large] =      Percent or integer point size for large font attribute.

[New Very Large] =      Percent or integer point size for very large font attribute.

[New Extra Large] =      Percent or integer point size for extra large font attribute.

Note: If any of the new relative font sizes = \$8000, then the current relative font value is substituted in the function.

If the Define Relative Font Sizes function is immediately followed by another Define Relative Font Sizes function or the old value equals the new value, then the function is deleted by the formatter.



## \$D2 = Definition Group

---

Function: \$D2/\$00      **Reserved**  
 Name:  
 Length:  
 Orientation:

---

Function: \$D2/\$01      **\$D2/\$01 = Set Columns ON/OFF**  
 Name: ColumnDef\_  
 Length: Variable  
 Orientation: Column

<\$D2><\$01>[Length]      <Old def†>  
                                          <Old number of columns†>  
                                          <Old column table...†>  
                                          <New def>  
                                          <New number of columns>  
                                          <New column table...>  
                                          <PC stuff...>

[Length]<\$01><\$D2>

<Def> =                      0 = Columns off (1 column)  
                                          1 = Newspaper columns  
                                          2 = Parallel columns  
                                          3 = Extended columns

Note: If <Def> = 0, then there are no <Number of columns> or <Column table...> parameters.

<Number of columns> =      Number of defined columns.

<Column table...> =      [% size of column 1]  
                                          {Space between columns 1 & 2}  
                                          ....  
                                          [% size of column (n-1)]  
                                          {Space between columns (n-1) & n}  
                                          [% size of column n]

The [% size of column] numbers are binary fractions of the total text area available. Hence, the size of a column is determined by:

[% size of column] x      ( Space between margins - sum of space between columns)

Note: {Space between xxxxx} are a fixed point numbers.

Temp end of columns will be inserted by the formatter to guarantee this function at the beginning of the first column.

Function: \$D2/\$02  
Name: ParNumDef\_  
Length: 52  
Orientation: Paragraph

## \$D2/\$02 = Define Paragraph Numbering

<\$D2><\$02>[Length]    <Old defs #1-8†>.8  
                                 [Old levels #1-8†].8  
                                 <New def #1-8>  
                                 [New level #1-8]  
                                 <PC stuff...>

[Length]<\$02><\$D2>

This function defines paragraph numbering formats, and is typically used to define outlining styles. For instance, for traditional outlines, it would specify that the first level should be an upper case roman numeral followed by a period. A second level paragraph number is composed of an upper case letter followed by a period, etc. Paragraph numbering is limited to eight levels.

Typically there would be a paragraph numbering function at the beginning of an outline section of the document which defines the "starting state." The state is modified automatically by the formatter as paragraph numbers at various levels are inserted into the document.

<def #?> =    These 8 bytes define the format of a paragraph number at the specified level. Each byte is composed of two nibbles \$ps where p is the punctuation and s is the style. Possible values for punctuation are:

- 0 - None
- 1 - A period following the "number"
- 2 - A close paren following the "number"
- 3 - The "number" is enclosed in parenthesis

Possible values for style are:

- 0 - Uppercase Roman numeral (I, II, III, IV, ...)
- 1 - Lowercase Roman numeral (i, ii, iii, iv, ...)
- 2 - Uppercase letter (A, B, C, ...)
- 3 - Lowercase letter (a, b, c, ...)
- 4 - Numeral (1, 2, 3, ...)
- 5 - Level with period (1.1, 1.2, ...)this is

for the "legal" format

As an example, for traditional outlines the values are as follows:

<New def 1> = \$10	Uppercase Roman numeral with a period following the "number"
<New def 2> = \$12	Uppercase letter with a period following the "number"
<New def 3> = \$14	Numeral with a period following the "number"
<New def 4> = \$13	Lowercase letter with a period following the "number"
<New def 5> = \$34	Numeral enclosed in parenthesis
<New def 6> = \$33	Lowercase letter enclosed in parenthesis
<New def 7> = \$21	Lowercase Roman numeral followed by a parenthesis
<New def 8> = \$23	Lowercase Letter followed by a parenthesis

Following are the definitions for the three standard options in the Outlining Dialog of WordPerfect 3.0.

\$"14 13 11 34 33 31 24 23"	Paragraph
\$"10 12 14 13 34 33 21 23"	Outline (illustrated above)
\$"05 05 05 05 05 05 05 05"	Legal

[level #?] = These 8 words define the paragraph number for each of the levels. To set a starting paragraph number for the first level put the value in the first word, and set all other words to zero. Typically only the first level is set, but you can set values for each level.

Note: If the Paragraph Number Definition function is immediately followed by another Paragraph Number Definition function or the old values equal the new values, then the function is deleted by the formatter.

Function: \$D2/\$03

Name: FtnoteOptions\_

Length: Variable

Orientation: Character

### \$D2/\$03 = Define Footnote Options

<\$D2><\$03>[Length] {Old text/footnote separation †}  
{Old space between footnotes †}  
<Old minimum # of footnote lines †>  
<Old footnote options †>  
<Old footnote characters...(6 bytes) †>  
{New text/footnote separation}  
{New space between footnotes}  
<New minimum # of footnote lines>  
<New footnote options>  
<New footnote characters...(6 bytes)>  
<PC Stuff...>

[Length]<\$03><\$D2>

{text/footnote separation} = Space between bottom line of text and beginning of footnote

{space between footnotes} = Space between footnotes on the same page

<min # of footnote lines> = Minimum number of lines allowed in separating a footnote between more than one page

<footnote options> = (msb) 7 = Footnotes at bottom of page  
6 = Line across page  
5 = 2" footnote line  
4 =  
3 =  
2 = Use letters  
1 = Use characters  
(lsb) 0 = Numbering starts on each page

<footnote characters...> = Pascal character string used to generate the footnote reference when character option is selected.



Function: \$D2/\$04

Name: EndnoteOptions\_

Length: Variable

Orientation: Character

## \$D2/\$04 = Define Endnote Options

<\$D2><\$03>[Length]    {Old text/endnote separation †}  
                                  {Old spacing between endnotes †}  
                                  <Old minimum # of endnote lines †>  
                                  <Old endnote options †>  
                                  <Old endnote characters...(6 bytes) †>  
                                  {New text/endnote separation}  
                                  {New spacing between endnotes}  
                                  <New minimum # of endnote lines>  
                                  <New endnote options>  
                                  <New endnote characters...(6 bytes)>  
                                  <PC Stuff...>

[Length]<\$03><\$D2>

{text/endnote separation} = Space between bottom line of text and beginning of endnote

{space between endnotes} = Space between endnotes on the same page

<min # of endnote lines> = Minimum number of lines allowed in separating a endnote between more than one page

<endnote options> =    (msb) 7 = Endnotes at bottom of page  
                                  6 = Line across page  
                                  5 = 2" endnote line  
                                  4 =  
                                  3 =  
                                  2 = Use letters  
                                  1 = Use characters  
                                  (lsb) 0 = Numbering starts on each page

<endnote characters...> = Pascal character string used to generate the endnote reference when character option is selected.

---

Function: \$D2/\$05      **\$D2/\$05 = Define Figure Box Options**

Name: FigureBoxOptions\_

Length: Variable      <\$D2><\$05>[Length]

Orientation: Character

<Old number type†>  
<Old caption position†>  
{Old offset from paragraph†}  
<New number type>  
<New caption position>  
{New offset from paragraph}  
<PC Stuff...>

[Length]<\$05><\$D2>

<Number type> =      0 = Arabic  
                                 1 = Roman (Lower case)  
                                 2 = Roman (Upper case)  
                                 3 = Character

<Caption position> =      (msb) 7 =  
                                         6 =  
                                         5 =  
                                         4 =  
                                         3 =  
                                         2 =  
                                         1 =  
                                 (lsb) 0 =      0 = Under, 1 = Above

{offset from paragraph} =

Note: If the Define Figure Box Options function is immediately followed by another Define Figure Box Options or the old values equal the new values, then the function is deleted by the formatter.

---

Function: \$D2/\$06      **\$D2/\$06 = Define Table Box Options**

Name: TableBoxOptions\_

Length: Variable      <\$D2><\$06>[Length]      <Same as figure box options...>

Orientation: Character      [Length]<\$06><\$D2>

---

Function: \$D2/\$07      **\$D2/\$07 = Define Text Box Options**

Name: TextBoxOptions\_

Length: Variable      <\$D2><\$07>[Length]      <Same as figure box options...>

Orientation: Character      [Length]<\$07><\$D2>

---

Function: **\$D2/\$08**            **\$D2/\$08 = Define User Box Options**  
Name: UserBoxOptions\_  
Length: Variable            <\$D2><\$08>[Length]        <Same as figure box options...>  
Orientation: Character        [Length]<\$08><\$D2>

---

Function: **\$D2/\$09**            **\$D2/\$09 = Define Equation Box Options**  
Name: EquationBoxOptions\_  
Length: Variable            <\$D2><\$09>[Length]        <Same as figure box options...>  
Orientation: Character        [Length]<\$09><\$D2>



[New supUp] =	Position of superscript (% of current font or absolute position)
[New supSize] =	Size of superscript (% of current font or absolute position)
[New subDown] =	Position of subscript (% of current font or absolute position)
[New subSize] =	Size of subscript (% of current font or absolute position)

Note: If the Super/Subscript Mode function is immediately followed by another Super/Subscript Mode or the old values equal the new values, then the function is deleted by the formatter.

---

Function: **\$D2/\$0B**      **\$D2/\$0B = Define Chapter Number Style**

Name: ChapterNumType\_

Length: 6

Orientation: Character

<\$D2><\$0B>[Length]      <Old style†>

<New style>

[Length]<\$0B><\$D2>

<New style> =      0 = Arabic  
                         1 = Roman (Lower case)  
                         2 = Roman (Upper case)  
                         3 = Character

Note: If the Chapter Number Style function is immediately followed by another Chapter Number Style or the old value equals the new value, then the function is deleted by the formatter.



---

Function: \$D2/\$0D      **\$D2/\$0D = Define Page Number Options**

Name: PageNumberOptions\_

Length: Variable      <\$D2><\$0D>[Length]

Orientation: Character

{Document stamp †}

[Old attributes †]

[Old font size †]

[Old font # †]

[New attributes]

[New font size]

[New font # †]

<Font name...>      Pascal string

[Length]<\$0D><\$D2>

[New attributes] =      (msb) 15 =

14 =

13 =

12 =

11 =

10 =

9 =

8 =

7 =

6 =

5 =

4 = Shadow

3 = Outline

2 = Underline

1 = Italics

(lsb) 0 = Bold

[New font size] =      Font size for page numbers.

[New font # †] =      Font number for page numbers. Derived from <Font name...> when {Document stamp} differs from current document time.

<Font name...> =      Pascal string of font name.

Note: If the Page Number Options function is immediately followed by another Page Number Options function or the old values equal the new values, then the function is deleted by the formatter.

## \$D3 = Set Group

---

Function: \$D3/\$00

Name: SetAlignChar\_

Length: 20

Orientation: Character

### \$D3/\$00 = Set Alignment Character

<\$D3><\$00>[Length]      {Old alignment character†}  
                                 {Old separator character†}  
                                 {New alignment character}  
                                 {New separator character}

[Length]<\$00><\$D3>

{character} =              <Def><Mac character><WP char set #><Character>  
                                 or  
                                 <Def><Script ID>[Script character]

If <Def> = 0      *Non script character*

<Mac character†> = Formatter supplied displayable character.

<WP char set #> = WordPerfect character set number.

<Character> =      User supplied character

Note: <WP character set #><Character> is used to generate a <Mac character> whenever possible. When not possible, an attempt is made to generate a new <WP character set #><Character> from the <Mac character>.

If <Def> = 1      *Script character*

<Script ID> =      Script ID

[Script character] = Script character

Note: {Separator character} is currently not supported. If the old values equal the new values, then the function is deleted by the formatter.

---

Function: \$D3/\$01

Name: SetUlineMode\_

Length: 6

Orientation: Character

### \$D3/\$01 = Set Underline Mode

<\$D3><\$01>[Length]      <Old mode†>  
                                 <New mode>

[Length]<\$01><\$D3>

<Mode> =              0 =      Underline characters only  
                                 1 =      Underline characters and spaces  
                                              (Default)  
                                 2 =      Underline characters and tabs



3 = Underline characters, spaces and tabs

Note: If the Set Underline Mode function is immediately followed by another Set Underline Mode function or the old value equals the new value, then the function is deleted by the formatter.

---

Function: **\$D3/\$02**      **\$D3/\$02 = Set Footnote Number**

Name: SetFtnoteNum\_

Length: 8

Orientation: Character

<\$D3><\$02>[Length]      [Old number†]

[New number]

[Length]<\$02><\$D3>

[New number] = Next footnote number

Note: If the Set Footnote Number function is immediately followed by another Set Footnote Number function or the old value equals the new value, then the function is deleted by the formatter.

---

Function: **\$D3/\$03**      **\$D3/\$03 = Set Endnote Number**

Name: SetEndnoteNum\_

Length: 8

Orientation: Character

<\$D3><\$03>[Length]      [Old number†]

[New number]

[Length]<\$03><\$D3>

[New number] = Next endnote number

Note: If the Set Endnote Number function is immediately followed by another Set Endnote Number function or the old value equals the new value, then the function is deleted by the formatter.

---

Function: **\$D3/\$04**      **\$D3/\$04 = Set Page Number**

Name: SetPageNum\_

Length: 10

Orientation: Page

<\$D3><\$04>[Length]      <Old def†>

[Old page number†]

<New def>

[New page number]

[Length]<\$04><\$D3>

|                     |                                                                                 |
|---------------------|---------------------------------------------------------------------------------|
| <def> =             | 0 = Arabic<br>1 = Roman (Lower case)<br>2 = Roman (Upper case)<br>3 = Character |
| [New page number] = | 0, the current page number is not altered<br>≠0, set current page number        |

Note: If the Set Page Number function is immediately followed by another Set Page Number function or the old values equal the new values, then the function is deleted by the formatter.

Function: \$D3/\$05  
Name: LineNumbering\_  
Length: 24  
Orientation: Paragraph

### \$D3/\$05 = Define Line Numbering Options

<\$D3><\$05>[Length]      <Old def†>  
                                 <Old interval†>  
                                 {Old position †}  
                                 [Old starting number †]  
                                 <New def>  
                                 <New interval>  
                                 {New position}  
                                 [New starting number]  
  
[Length]<\$05><\$D3>

|         |       |                                                                                                                                                                                           |
|---------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <def> = | (msb) | 7 = Line numbering ON (0=OFF)<br>6 = Number text lines only<br>5 = Restart numbering on each page<br>4 = Suppress blank line numbers<br>3 = Ignore blank lines<br>2 =<br>1 =<br>(lsb) 0 = |
|---------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

<Interval> = Line numbering interval

{Position} = Fixed point displacement from left edge of paper.

[Starting number] = 0, the current line number is not altered  
≠0, set current line number

Note: If the Set Line Numbering Options function is immediately followed by another Set Line Numbering Options function or the old values equal the new values, then the function is deleted by the formatter.



Function: **\$D3/\$0C**      **\$D3/\$0C = Set Figure Box Number**  
Name: FigureBoxNum\_  
Length: 8      <\$D3><\$0C>[Length]      [Old number†]  
Orientation: Character      [Length]<\$0C><\$D3>      [New number]

[New number] =      Next figure box number

Note: If the Set Figure Box Number function is immediately followed by another Set Figure Box Number function or the old value equals the new value, then the function is deleted by the formatter.

---

Function: **\$D3/\$0D**      **\$D3/\$0D = Set Table Box Number**  
Name: TableBoxNum\_  
Length: 8      <\$D3><\$0D>[Length]      [Old number†]  
Orientation: Character      [Length]<\$0D><\$D3>      [New number]

[New number] =      Next table box number

Note: If the Set Table Box Number function is immediately followed by another Set Table Box Number function or the old value equals the new value, then the function is deleted by the formatter.

---

Function: **\$D3/\$0E**      **\$D3/\$0E = Set Text Box Number**  
Name: TextBoxNum\_  
Length: 8      <\$D3><\$0E>[Length]      [Old number†]  
Orientation: Character      [Length]<\$0E><\$D3>      [New number]

[New number] =      Next text box number

Note: If the Set Text Box Number function is immediately followed by another Set Text Box Number function or the old value equals the new value, then the function is deleted by the formatter.

Function: \$D3/\$0F      **\$D3/\$0F = Set User Box Number**

Name: UserBoxNum\_  
Length: 8  
Orientation: Character

<\$D3><\$0F>[Length]      [Old number†]  
[Length]<\$0F><\$D3>      [New number]

[New number] =      Next user box number

Note: If the Set User Box Number function is immediately followed by another Set User Box Number function or the old value equals the new value, then the function is deleted by the formatter.

Function: \$D3/\$10      **\$D3/\$10 = Set Equation Box Number**

Name: EquationBoxNum\_  
Length: 8  
Orientation: Character

<\$D3><\$10>[Length]      [Old number†]  
[Length]<\$10><\$D3>      [New number]

[New number] =      Next equation box number

Note: If the Set Equation Box Number function is immediately followed by another Set Equation Box Number function or the old value equals the new value, then the function is deleted by the formatter.

Function: \$D3/\$11      **\$D3/\$11 = Set Language**

Name: SetLanguage\_  
Length: 16  
Orientation: Character

<\$D3><\$11>[Length]      <Old script†>  
      <Old language†>  
      [Old region†]  
      <New script>  
      <New language>  
      [New region]  
[Length]<\$11><\$D3>

<New script> =      Used for interpreting two-byte script characters (function \$C8.) Also for determining characteristics such as writing direction, keyboard layout, font compatibility and so forth.

- <New language> = Primary determinant used for selecting auxiliary tools such as speller, thesaurus, hyphenation, sorting and so forth.
- [New region] = Used for determining formats for Date/Time, currency, decimal, thousand, list separators and so forth.

Note: See Appendix B for language code definitions.

If the Set Language function is immediately followed by another Set Language function or the old value equals the new value, then the function is deleted by the formatter.

---

Function: **\$D3/\$12**      **\$D3/\$12 = Set Chapter Number**

Name: SetChapterNum\_

Length: 8

Orientation: Character

<\$D3><\$0C>[Length]      [Old number†]

[New number]

[Length]<\$0C><\$D3>

[New number] =      Next chapter number

Note: If the Set Chapter Number function is immediately followed by another Set Chapter Number function or the old value equals the new value, then the function is deleted by the formatter.

## **\$D4 = Format Group**

*For internal use only.* These functions should not be inserted when creating WordPerfect documents.

---

|                            |                                                |
|----------------------------|------------------------------------------------|
| Function: <b>\$D4/\$00</b> | <b>\$D4/\$00 = Dummy Table Insert Function</b> |
| Name: TableDummyInsert_    |                                                |
| Length: Variable           | <\$D4><\$00>[Length]                           |
| Orientation: Paragraph     | ...<br>[Length]<\$00><\$D>                     |

*For internal use only.* This functions should not be inserted when creating WordPerfect documents.

---

|                            |                                                   |
|----------------------------|---------------------------------------------------|
| Function: <b>\$D4/\$01</b> | <b>\$D4/\$01 = Temporary Smart Quote Function</b> |
| Name: TempSmartQuote_      |                                                   |
| Length: Variable           | <\$D4><\$01>[Length] [Script quote]               |
| Orientation: Character     | [Length]<\$01><\$D4>                              |

*For internal use only.* This functions should not be inserted when creating WordPerfect documents.





## \$D5 = Header/Footer Group

---

Function: \$D5/\$00  
Name: HeaderA\_  
Length: Variable  
Orientation: Page

### \$D5/\$00 = Header A Function

<\$D5><\$00>[Length]      <Format flags>  
                                  {Document stamp†}  
                                  {Ptr to header window†}  
                                  <Old def†>  
                                  {Old height†}  
                                  [Old header length†]  
                                  <Old header...†>  
                                  <New def>  
                                  {New height†}  
                                  [New header length]  
                                  <New header...>

[Length]<\$00><\$D5>

<Format flags> =      (msb) Bit 7 = Always format flag bit  
                                  Bit 6 =  
                                  Bit 5 =  
                                  Bit 4 =  
                                  Bit 3 =  
                                  Bit 2 =  
                                  Bit 1 =  
                                  (lsb) Bit 0 =

<def> =      (msb) Bit 7 =  
                                  Bit 6 =  
                                  Bit 5 =  
                                  Bit 4 =  
                                  Bit 3 =  
                                  Bit 2 =  
                                  Bit 1 = Odd pages  
                                  (lsb) Bit 0 = Even pages

{Height} =      Height of Header A in pixels (Formatter supplied).

[Header length] =      # of bytes in <Header...>.

<Header...> =      A WP document containing Header A.

---

Function: **\$D5/\$01**  
Name: HeaderB\_  
Length: Variable  
Orientation: Page

### **\$D5/\$01 = Header B Function**

<\$D5><\$01>[Length]      <Format flags>  
                                 {Document stamp †}  
                                 {Ptr to header window †}  
                                 <Old def †>  
                                 {Old height †}  
                                 [Old header length †]  
                                 <Old header... †>  
                                 <New def>  
                                 {New height}  
                                 [New header length]  
                                 <New header...>  
  
[Length]<\$01><\$D5>

All function values have definitions corresponding to Header A.

---

Function: **\$D5/\$02**  
Name: FooterA\_  
Length: Variable  
Orientation: Page

### **\$D5/\$02 = Footer A Function**

<\$D5><\$02>[Length]      <Format flags>  
                                 {Document stamp †}  
                                 {Ptr to footer window †}  
                                 <Old def †>  
                                 {Old height †}  
                                 [Old footer length †]  
                                 <Old footer... †>  
                                 <New def>  
                                 {New height}  
                                 [New footer length]  
                                 <New footer...>  
  
[Length]<\$02><\$D5>

All function values have definitions corresponding to Header A.

---

Function: \$D5/\$03  
Name: FooterB\_  
Length: Variable  
Orientation: Page

### \$D5/\$03 = Footer B Function

<\$D5><\$03>[Length]      <Format flags>  
                                 {Document stamp †}  
                                 {Ptr to footer window †}  
                                 <Old def †>  
                                 {Old height †}  
                                 [Old footer length †]  
                                 <Old footer... †>  
                                 <New def>  
                                 {New height}  
                                 [New footer length]  
                                 <New footer...>  
  
[Length]<\$03><\$D5>

All function values have definitions corresponding to Header A.

---

Function: \$D5/\$04  
Name: WaterMarkA\_  
Length: 10  
Orientation: Page

### \$D5/\$04 = Watermark A Function

<\$D5><\$04>[Length]      <Old def †>  
                                 [Old Resource ID †]  
                                 {Old Resource Length †}  
                                 <New def>  
                                 [New Resource ID]  
                                 {New Resource Length}

[Length]<\$04><\$D5>

<def> =                      (msb) Bit 7 =  
                                 Bit 6 =  
                                 Bit 5 =  
                                 Bit 4 =  
                                 Bit 3 =  
                                 Bit 2 =  
                                 Bit 1 = Odd pages  
                                 (lsb) Bit 0 = Even pages

[Resource ID] =              Resource ID number of resource containing watermark.

{Resource Length} =        Length in bytes of resource watermark.  
(0 = No watermark)

---

|                            |                                         |                                                              |
|----------------------------|-----------------------------------------|--------------------------------------------------------------|
| Function: <b>\$D5/\$05</b> | <b>\$D5/\$05 = Watermark B Function</b> |                                                              |
| Name: WaterMarkB_          |                                         |                                                              |
| Length: 10                 | <\$D5><\$05>[Length]                    | <Old def†>                                                   |
| Orientation: Page          |                                         | [Old Resource ID†]                                           |
|                            |                                         | {Old Resource Length†}                                       |
|                            |                                         | <New def>                                                    |
|                            |                                         | [New Resource ID]                                            |
|                            |                                         | {New Resource Length}                                        |
|                            | [Length]<\$05><\$D5>                    |                                                              |
|                            | <def> =                                 | (msb) Bit 7 =                                                |
|                            |                                         | Bit 6 =                                                      |
|                            |                                         | Bit 5 =                                                      |
|                            |                                         | Bit 4 =                                                      |
|                            |                                         | Bit 3 =                                                      |
|                            |                                         | Bit 2 =                                                      |
|                            |                                         | Bit 1 = Odd pages                                            |
|                            |                                         | (lsb) Bit 0 = Even pages                                     |
|                            | [Resource ID] =                         | Resource ID number of resource containing watermark.         |
|                            | {Resource Length} =                     | Length in bytes of resource watermark.<br>(0 = No watermark) |

## \$D6 = Footnote/Endnote Group

---

Function: \$D6/\$00

Name: Footnote\_

Length: Variable

Orientation: Character

### \$D6/\$00 = Footnote Function

<\$D6><\$00>[Length]

<Format flags>

{Document stamp†}

{Ptr to footnote window†}

[Window footnote #†]

{Footnote size on this page†}

[Additional footnote pages†]

{Footnote size on last page†}

{Footnote length†}

[# of footnote pages†] (# of 4 byte entries below)

{# pixels†}

....

[# of break table entries†] (# of 6 byte entries below)

[# of lines†]

{line size†}

....

<Footnote...>

[Length]<\$00><\$D6>

<Format flags> =

(msb) Bit 7 = Always format flag bit

Bit 6 = Footnote in column†

Bit 5 =

Bit 4 =

Bit 3 =

Bit 2 =

Bit 1 =

(lsb) Bit 0 =

{Document stamp†} =

{Ptr to footnote window†} =

[Window footnote #†] =

{Footnote size on this page†} =

Current accumulation of footnote sizes on page (formatter supplied.)

[Additional footnote pages†] =

{Footnote size on last page†} =

{Footnote length†} =

Fixed point pixel length of the formatted footnote (formatter supplied.)

[# of footnote pages†] =

{# pixels†} =

[# of break table entries†] =

[# of lines†] =

{line size†} =

<Footnote...> = WP document containing the footnote.

Note: All formatter supplied values (designated by †) should be set to zero when creating a new footnote. [# of lines†] and {line size†} are not in function if [# of break table entries†] is zero.

Function: \$D6/\$01  
Name: Endnote\_  
Length: Variable  
Orientation: Character

**\$D6/\$01 = Endnote Function**

<\$D6><\$01>[Length]      <Format flags>  
                                  {Document stamp †}  
                                  {Ptr to endnote window †}  
                                  [Window endnote # †]  
                                  {\$00000000}  
                                  [\$0000]  
                                  {\$00000000}  
                                  {Endnote length †}  
                                  [\$0000]  
                                  [# of break table entries †] (# of 6 byte entries below)  
                                         [# of lines †]  
                                         {line size †}  
                                         ....  
                                  <...Endnote text...>

[Length]<\$01><\$D6>

<Format flags> = (msb) Bit 7 = Always format flag bit  
                                  Bit 6 =  
                                  Bit 5 =  
                                  Bit 4 =  
                                  Bit 3 =  
                                  Bit 2 =  
                                  Bit 1 =  
                                  (lsb) Bit 0 =

{Document stamp †} =  
 {Ptr to footnote window †} =  
 [Window footnote # †] =

{Endnote length †} = Fixed point pixel length of the formatted endnote (formatter supplied.)

[# of break table entries †] =  
                                  [# of lines †] =  
                                  {line size †} =

<Endnote...> = WP document containing the endnote.

Note: All formatter supplied values (designated by †) should be set to zero when creating a new footnote. [# of lines†] and {line size†} are not in function if [# of break table entries†] is zero.





## **\$D7 = Generate Group**

---

Function: **\$D7/\$00**      **\$D7/\$00 = Begin Marked Table of Contents Entry**  
Name: StartMarkedTOC\_  
Length: 5      <D7><\$00>[Length]      <Level>  
Orientation: Character      [Length]<\$00><D7>  
  
                                 <Level> =                      TOC level number of marked item

---

Function: **\$D7/\$01**      **\$D7/\$01 = End Marked Table of Contents Entry**  
Name: EndMarkedTOC\_  
Length: 5      <D7><\$01>[Length]      <Level>  
Orientation: Character      [Length]<\$01><D7>  
  
                                 <Level> =                      TOC level number of marked item

---

Function: \$D7/\$02      **\$D7/\$02 = Define Marked Text**  
Name: DefineMarked\_  
Length: Variable      <\$D7><\$02>[Length]      <def,info>      2 Nibbles  
Orientation: Character      <Level 1 def>  
      <Level 2 def>  
      <Level 3 def>  
      <Level 4 def>  
      <Level 5 def>  
      <...concordance filename...>      Pascal String

[Length]<\$02><\$D7>

Table of Contents

<def,...> = 0  
<...info> =      Max level (0-4)

Index

<def,...> = 1  
<...info> =      0=No concordance file  
      1=Concordance file

(Only level 1 def is defined)

List

<def,...> = 2  
<...info> =      List number (0-8)

(Only level 1 def is defined)

Table of Authorities

<def,...> = 3  
<...info> =      Table of authority section number (0-15)

(Only level 1 def is defined)

For all defs:

<Level def> = (msb) 7 = Wrap after last entry  
6 = Blank line between entries  
5 = Disallow underline  
4 =  
3 }  
2 } = Page Mode  
1 }  
(lsb) 0 }

Page Mode = 0 = no page numbers  
1 = page # after text, preceded by 2 spaces  
2 = page # after text, in parentheses, preceded  
by one space  
3 = page # flush right  
4 = page # flush right with dot leader

<...concordance filename...> =

---

Function: \$D7/\$03

Name: IndexEntry\_

Length: Variable

Orientation: Character

**\$D7/\$03 = Mark Index Entry**

<\$D7><\$03>[Length]

<Major heading...>

Pascal String

<Minor heading...>

Pascal String

[Length]<\$03><\$D7>

<Major heading...> =

<Minor heading...> =



---

Function: **\$D7/\$07**      **\$D7/\$07 = Auto Reference Definition**  
Name: AutoRefDef\_  
Length: Variable      <\$D7><\$07>[Length]      <Reference type>      Pascal String  
Orientation: Character      [Length]<\$07><\$D7>      <Tag ID text...>      Pascal String  
      <Text of # being referenced>

<Reference type> =

- 0 = Page #
- 1 = Paragraph #
- 2 = Footnote #
- 3 = Endnote #
- 4 = Figure #
- 5 = Table #
- 6 = Text box #
- 7 = User defined box #
- 8 = Equation box #

<Tag ID text...> =

<Text of # being referenced> =

---

Function: **\$D7/\$08**      **\$D7/\$08 = Auto Reference Tag**  
Name: AutoRefTag\_  
Length: Variable      <\$D7><\$08>[Length]      <Tag ID text...>      Pascal String  
Orientation: Character      [Length]<\$08><\$D7>

<Tag ID text...> =

---

Function: **\$D7/\$09**      **\$D7/\$09 = Include Sub-document**  
Name: IncSubDoc\_      (Not implemented)  
Length: Variable  
Orientation: Character

---

Function: **\$D7/\$0A**      **\$D7/\$0A = Start Sub-document**  
Name: StartSubDoc\_      (Not implemented)  
Length: Variable  
Orientation: Character

---

Function: **\$D7/\$0B**            **\$D7/\$0B = End Sub-document**  
Name: EndSubDoc\_            (Not implemented)  
Length: Variable  
Orientation: Character

---

Function: **\$D7/\$0C**            **\$D7/\$0C = Begin Marked List Entry**  
Name: StartMarkedList\_  
Length: 5                      <\$D7><\$0C>[Length]      <List #>  
Orientation: Character        [Length]<\$0C><\$D7>  
  
                                 <List #> =

---

Function: **\$D7/\$0D**            **\$D7/\$0D = End Marked List Entry**  
Name: EndMarkedList\_  
Length: 5                      <\$D7><\$0D>[Length]      <List #>  
Orientation: Character        [Length]<\$0D><\$D7>  
  
                                 <List #> =

## \$D8 = Display Group

---

Function: \$D8/\$00

Name: Date\_

Length: Variable

Orientation: Character

### \$D8/\$00 = Insert Date/Time

<D8><00>[Length]      <Old format length †>      Pascal string  
{Document time stamp †}  
{Date/Time string width †}  
<# of characters in date/time string †>  
<# of spaces in date/time string †>  
<Date/time string... †>      Pascal string  
<Formatted string...>      Pascal string

[Length]<00><D8>

<Old format length †> =

{Document time stamp †} =

{Date/Time string width †} =

<# of characters in date/time string †> =

<# of spaces in date/time string †> =

<Date/time string... †> = Pascal string containing the displayable date or time

<Formatted string...> = Pascal string containing the format codes for the date or time as follows:

#### Date format string codes:

|              |                                       |
|--------------|---------------------------------------|
| \$01 =       | Day number                            |
| \$02 =       | Day name                              |
| \$03 =       | Day name (abbreviated)                |
| \$04 =       | Month number                          |
| \$05 =       | Month name                            |
| \$06 =       | Month name (abbreviated)              |
| \$07 =       | 2 digit year                          |
| \$08 =       |                                       |
| \$09 =       | 4 digit year                          |
| \$0A =       | 12 hour                               |
| \$0B =       | 24 hour                               |
| \$0C =       | Minute                                |
| \$0E =       | AM/PM                                 |
| \$0F =       | Leading 0 before single digit numbers |
| \$10 =       | Date separator                        |
| \$11 =       | Time separator                        |
| \$12 =       | Number suffix                         |
| \$20-\$7E =  | normal ASCII                          |
| all others = | <i>disallowed</i>                     |

---

Function: **\$D8/\$01**      **\$D8/\$01 = Insert Paragraph Number**  
Name: ParNum\_  
Length: 21  
Orientation: Paragraph

<\$D8><\$01>[Length]      <New level number>  
                                 <New level def†>  
                                 [Old level #1†]  
                                 ....  
                                 [Old level #8†]  
[Length]<\$01><\$D8>

<New level number> =      Low 7 bits are level #, Sign set if level fixed.

<New level def†> =

[Old level #†] =

---

Function: **\$D8/\$02**      **\$D8/\$02 = Overstrike Text**  
Name: OverStrike\_  
Length: Variable  
Orientation: Character

<\$D8><\$02>[Length]      <Def>  
                                 {Widest character width†}  
                                 <characters...>  
[Length]<\$02><\$D8>

<Def> =      0 = Center characters  
                         1 = Left justify  
                         2 = Right justify

{Widest character width†} =

<characters...> =      Characters to be overstruck

---

Function: **\$D8/\$03**      **\$D8/\$03 = Search Character**  
Name: SearchChar\_  
Length: Variable  
Orientation: Character

<\$D8><\$03>[Length]      <Search string...>      Pascal string  
[Length]<\$03><\$D8>

<Search string...> =



---

Function: **\$D8/\$04**      **\$D8/\$04 = Insert Box Number**  
Name: BoxNumber\_  
Length: Variable      <\$D8><\$04>[Length]      {String width †}  
Orientation: Character      <String... †>      Pascal string  
[Length]<\$04><\$D8>  
{String width †} =  
<String... †> =      Displayable Pascal string of current box  
number

---

Function: **\$D8/\$05**      **\$D8/\$05 = Insert Chapter Number**  
Name: ChapterNumber\_  
Length: Variable      <\$D8><\$05>[Length]      {String width †}  
Orientation: Character      <String... †>      Pascal string  
[Length]<\$05><\$D8>  
{String width †} =  
<String... †> =      Displayable Pascal string of current chapter  
number

---

Function: **\$D8/\$06**      **\$D8/\$06 = Insert Page Number**  
Name: PageNumber\_  
Length: Variable      <\$D8><\$06>[Length]      {String width †}  
Orientation: Character      <String... †>      Pascal string  
[Length]<\$06><\$D8>  
{String width †} =  
<String... †> =      Displayable Pascal string of current page  
number

---

Function: **\$D8/\$07**            **\$D8/\$07 = Insert Footnote Number**  
Name: FootnoteNumber\_  
Length: Variable            <\$D8><\$07>[Length]            {String width †}  
Orientation: Character            <String... †>            Pascal string  
                                         [Length]<\$07><\$D8>  
                                         {String width †} =  
                                         <String... †> =            Displayable Pascal string of current footnote  
                                         number

---

Function: **\$D8/\$08**            **\$D8/\$08 = Insert Endnote Number**  
Name: EndnoteNumber\_  
Length: Variable            <\$D8><\$08>[Length]            {String width †}  
Orientation: Character            <String... †>            Pascal string  
                                         [Length]<\$08><\$D8>  
                                         {String width †} =  
                                         <String... †> =            Displayable Pascal string of current endnote  
                                         number



[Length]<\$02><\$D9>

{Document stamp†} =

<def> =

Type of link:

- 0 = within current document
- 1 = within another MacWP document
- 2 = internet address link (will launch browser)
- 3 = link to an internal MacWP macro to execute

<Bookmark name...> = Name of bookmark

<Bookmark address...> = If def = 1 then this is a Macintosh specific alias record to the specified file. If def = 2 or 3 then this is URL or macro name (C string).

---

Function: \$D9/\$04      **\$D9/\$04 = Page Size Override**  
Name: PageSizeOverride\_  
Length: Variable      <\$D9><\$04>[Length]      {Document stamp †}  
Orientation: Character      [Old page orientation †]  
      {Old page width †}  
      {Old page height †}  
      [Old page scale †]  
      {Old GX reference number †}  
      [New page orientation]  
      {New page width}  
      {New page height}  
      [New page scale]  
      {New GX reference number †}  
      <New GX print job...>  
      [Length]<\$04><\$D9>

[Page orientation] =      Pxxx xxFO  
      P =      0 = Reset orientation at end of  
                page  
                1 = Orientation persists until  
                next  
      F =      0 = Normal page orientation  
                1 = Flip page  
      O =      0 = Portrait  
                1 = Landscape

{Page width} =      Page width

{Page height} =      Page height

[Page scale] =      Page scale (Integer value)

{GX reference number} =      GX print job reference number

<GX print job...> =      GX print job structure (defined by Apple)

Note: If no <GX print job...> is found, then a new job is created using  
[New page orientation], {New page width}, {New page height}, and [New  
page scale].



document.

<Product type> = \$01 - WP file

<File type> = \$0A - WP 6.0

[Resource ID] = Associated resource (0=no resource)

The hide function is used by WordPerfect to hide well behaved functions from the body of the document. References outside of the body of the document are not allowed because these parts are not transferred between platforms.

Function: \$D9/\$08  
Name: HTMLHeading\_  
Length: Variable  
Orientation: Character

**\$D9/\$08 = HTML Heading**

<\$D9><\$08>[Length]      <def>  
                                 <old/new†>  
                                 <PC Stuff...>  
[Length]<\$08><\$D9>

<def> = HTML Heading # (0 - 5)

<old/new†> =

Function: \$D9/\$09  
Name: HTMLAttr\_  
Length: Variable  
Orientation: Character

**\$D9/\$09 = HTML Attributes**

<\$D9><\$09>[Length]      <attribute>  
                                 <old/new†>  
                                 <PC Stuff...>  
[Length]<\$09><\$D9>

<attribute> = HTML Attribute #

- 0 = Strong emphasis
- 1 = Name or title of cited work
- 2 = Emphasis
- 3 = Variable phrase or substitutable
- 4 = Source code phrase
- 5 = Keyboard phrase; user input
- 6 = Sample text or characters
- 7 = Typewriter text
- 8 = Blinking text
- 9 = Address
- 10= Preformatted text
- 11= Script text

<old/new†> =

---

Function: **\$D9/\$0A**

Name: HTMLHide\_

Length: Variable

Orientation: Character

**\$D9/\$0A = HTML Hide**

<\$D9><\$0A>[Length]      <Data...>

[Length]<\$0A><\$D9>

<Data...> =

Hidden data



\$DA = Window Group

---

Function: \$DA/\$00  
Name: FigureBox\_  
Length: Variable  
Orientation: Character

**\$DA/\$00 = Figure Box Function**

<\$DA><\$00>[Length]      {Document stamp†}  
                                  {Ptr to Box window†}  
                                  [Figure number†]  
                                  {Page position†}  
                                  [Figure flags]  
                                  [Box ID†]  
                                  <Left align column>  
                                  <Right align column>  
                                  {Original pic width}  
                                  {Original pic height}  
                                  {Sized width of picture}  
                                  {Sized height of picture}  
                                  [Rotation]  
                                  {Horizontal move for crop}  
                                  {Vertical move for crop}  
                                  [Size of box caption]  
                                  <Box type>  
                                  <Sizing options>  
                                  [Resource ID]  
                                  {Vertical offset}  
                                  {Horizontal offset}  
                                  {Box Width}  
                                  {Box Height}  
                                  [Absolute top page position†]  
                                  [Absolute left page position†]  
                                  [Absolute bottom page position†]  
                                  [Absolute right page position†]  
                                  <Wrap mode>  
                                  <# of sub rectangles>  
                                          [Relative Top][Relative Left]  
                                          [Relative Bottom][Relative Right]  
                                  ...  
                                  [Box caption length]  
                                  <Caption...>      (If caption length ≠ 0)  
                                  [Text box text length]  
                                  <Text...>      (If text length ≠ 0)  
                                  <PC Stuff...>

[Length]<\$00><\$DA>

{Document stamp} =      Formatter supplied value to indicate if the box needed to be reformatted.

{Ptr to Box window} =

[Figure number] =      Formatter supplied value of current box number.

{Page position} = Formatter supplied value of current page position (UPLin)

[Figure flags] = cf-p pprw w-hv mmaa

c: 0 = B/W Pic conversion  
1 = Color Pic conversion

f: 1 = Checked for dumping soft  
(internal use only)

ppp: 0 = Full page  
1 = Top  
2 = Middle  
3 = Bottom  
4 = Absolute

rr: 0 = Paragraph  
1 = Page  
2 = Character

w: 0 = Wrap text around box  
1 = No text wrap around box

h: 0 = scale to figure heightwise  
1 = fixed height

v: 0 = scale to figure widthwise  
1 = fixed width

mm: 0 = Relative to margins  
1 = Relative to column margins  
2 = Absolute

aa: 0 = Left  
1 = Right  
2 = Centered  
3 = Left/right justified

**More specifically:**

Paragraph: c--- --00 w--- --aa

aa: 0 = Left  
1 = Right  
2 = Centered  
3 = Left/right justified

Rel Page: c--p pp01 w--- 0maa

ppp: 0 = Full page  
1 = Top  
2 = Middle  
3 = Bottom  
4 = Absolute

m: 0 = Relative to margins  
1 = Relative to column margins

aa: 0 = Left  
1 = Right  
2 = Centered  
3 = Left/right justified

Full Page: c--0 0001 w--- 0---

Abs Page: c--1 0001 w--- 1---

Character: c--p pp10 w--- ----

ppp: 0 = Baseline  
1 = Top  
2 = Middle  
3 = Bottom  
4 = Absolute

[Box ID] =

<Left align column> = Column # to use in getting left margin if aligning to column margins.

<Right align column> = Column # to use in getting right margin if aligning to column margins.

{Original pic width} = Original pic width used to restore %100 of sized picture.

{Original pic height} = Original pic height used to restore %100 of sized picture.

{Sized width of picture} = New width of picture after sizing.

{Sized height of picture} = New height of picture after sizing.

[Rotation] = *(Currently not implemented)*

{Horizontal move for crop} =

{Vertical move for crop} =

[Size of box caption] =

<Box type> =

|     |                                                       |
|-----|-------------------------------------------------------|
| 0 = | text                                                  |
| 1 = | internal graphic (soft w/known rect)                  |
| 2 = | picture                                               |
| 3 = | soft w/unkown rect                                    |
| 4 = | 5.1 table w/unkown rect - used by conversion routines |
| 5 = | 5.1 table - used by conversion routines               |
| 6 = | Quicktime movie box                                   |

<Sizing options> =

|       |                          |
|-------|--------------------------|
| (msb) | 7 =                      |
|       | 6 =                      |
|       | 5 =                      |
|       | 4 =                      |
|       | 3 =                      |
|       | 2 =                      |
|       | 1 = 0 =, 1 = Size once   |
| (lsb) | 0 = 0 =, 1 = Always size |

Note: This is for vertical sizing only in a text box.

[Resource ID] = Resource of type 'WBOX' (0=no picture)

{Vertical offset} = Fixed point number added to final vertical position.

{Horizontal offset} = Fixed point number added to final horizontal position.

{Box Width} = Final box width - includes border and caption

{Box Height} = Final box height - includes border and caption

[Abs top page position] = Absolute position of box on page (Formatter supplied)

[Absleft page position] =

[Abs bottom page position] =

[Abs right page position] =

<Wrap mode> =

<# of sub rectangles> = # of region (rectangle) describing box

[Relative Top][Relative Left]  
[Relative Bottom][Relative Right]  
...

[Box caption length] = # of caption bytes that follow in function

<Caption...> (If caption length ≠ 0)

[Text box text length] = # of text bytes that follow in function

<Text...> (If text length ≠ 0) The <Text...> field contains the markup string of the equation box figure.

---

Function: **\$DA/\$01**  
Name: TableBox\_  
Length: Variable  
Orientation: Character

**\$DA/\$01 = Table Box Function**  
(See Figure Box Function)

---

Function: **\$DA/\$02**  
Name: TextBox\_  
Length: Variable  
Orientation: Character

**\$DA/\$02 = Text Box Function**  
(See Figure Box Function)

---

Function: **\$DA/\$03**  
Name: UserBox\_  
Length: Variable  
Orientation: Character

**\$DA/\$03 = User Box Function**  
(See Figure Box Function)

---

Function: **\$DA/\$04**  
Name: EquationBox\_  
Length: Variable  
Orientation: Character

**\$DA/\$04 = Equation Box Function**  
(See Figure Box Function)

Note: The <Text...> field contains the markup string of the equation box figure.



{Vertical Space} = Vertical space (Fixed or Percent of current line height)

<Shade Pattern #> = Line shading pattern #





## \$DB = Style Group

---

Function: **\$DB/\$00**                    **\$DB/\$00 = End of Style Definition**  
Name: StyleDefEnd\_  
Length: Variable                    <\$DB><\$00>[\$0002]<\$00><\$DB>                    (Preferred)  
Orientation: Paragraph            or  
                                         <\$DB><\$00>[\$0004][\$0004]<\$00><\$DB>

---

Function: **\$DB/\$01**                    **\$DB/\$01 = Begin Start Paragraph Style Definition**  
Name: BeginPairedStyle\_  
Length: Variable                    <\$DB><\$01>[Length]                    {Document stamp†}  
Orientation: Paragraph            [Resource ID†]                    Pascal String  
                                         <Stylename...>                    <Reload flag†>  
                                         [Length]<\$01><\$DB>  
                                         {Document stamp†} =  
                                         [Resource ID†] =  
                                         <Stylename...> =                    Name of style  
                                         <Reload flag†> =

---

Function: **\$DB/\$02**                    **\$DB/\$02 = Begin End Paragraph Style Definition**  
Name: EndPairedStyle\_  
Length: 15                            <\$DB><\$02>[Length]                    {Document stamp†}  
Orientation: Character            [Old Resource ID†]                    {File index†}  
                                         <Reload flag†>  
                                         [Length]<\$02><\$DB>  
                                         {Document stamp†} =  
                                         [Resource ID†] =  
                                         {File index†} =  
                                         <Reload flag†> =



[Length]<\$05><\$DB>  
<Reload flag†>

---

Function: \$DB/\$06      **\$DB/\$06 = Begin End Character Style Definition**  
Name: EndCharStyle\_      (Not implemented)  
Length: Variable  
Orientation: Character      <\$DB><\$06>[Length]      [Old Resource ID†]  
                                         [New Resource ID†]  
                                    {File index†}  
                                    <Stylename...>      Pascal String  
                                    <Reload flag†>  
                                    [Length]<\$06><\$DB>

**Pre-defined Styles:**

- {WP}01 = WP Defaults
- {WP}10 = Top of Document
- {WP}11 = Footnote # in Document
- {WP}12 = Footnote
- {WP}13 = Endnote # in Document
- {WP}14 = Endnote
- {WP}15 = Figure Box Caption
- {WP}16 = Text Box Caption
- {WP}17 = Table Box Caption
- {WP}18 = User Box Caption
- {WP}19 = Equation Box Caption
- {WP}20 = Header
- {WP}21 = Footer
- {WP}22 = Text Box
- {WP}23 = Normal

**Style formats:**

Open style:      <\$DB/\$01>...Style codes...<\$DB/\$00>  
Paragraph Paired style: <\$DB/\$01>...Style codes...<\$DB/\$00>...text...<\$DB/\$02>...Inverse style codes...<\$DB/\$00>  
Formatter style:      <\$DB/\$04>...Style codes.../...Inverse style codes...<\$DB/\$00>

**\$DC = End of Line/Page Group**

---

Function: **\$DC/\$xx**  
 Name: See <Sub-group>  
 Length: Variable  
 Orientation: Character

**\$DC/\$xx = End of Line/Page Function**

<\$DC><sub-group>[Length]      <Sub-functions>...  
 [Length]<sub-group><\$DC>

<Sub-group> =

|        |                     |                                                     |
|--------|---------------------|-----------------------------------------------------|
| \$00 = | SoftEOL_            | Soft end of line                                    |
| \$01 = | SoftEOP_            | Soft end of page/column                             |
| \$02 = | HardEOL_            | Hard end of line                                    |
| \$03 = | HardEOLSoftEOP_     | Hard end of line/soft end of page/column            |
| \$04 = | TempEOL_            | Temporary end of line                               |
| \$05 = | TempEOP_            | Temporary end of page/column                        |
| \$06 = | DormantHardEOL_     | Dormant hard return                                 |
| \$07 = | HardEOP_            | Hard end of page                                    |
| \$08 = | HardEOC_            | Hard end of column                                  |
| \$09 = | HardEOCSoftEOP_     | Hard end of column/Soft end of page                 |
| \$0A = | HardCEOL_           | Hard end of line (HardEOC_ not in columns)          |
| \$0B = | HardCEOLSoftEOP_    | Hard EOL/Soft EOP (HardEOCSoftEOP_ not cols)        |
| \$0C = | HardHyphEOL_        | Hard hyphen at end of line                          |
| \$0D = | HardHyphEOP_        | Hard hyphen at end of page/col                      |
| \$0E = | SoftHyphEOL_        | Soft hyphen at end of line                          |
| \$0F = | SoftHyphEOP_        | Soft hyphen at end of page/col                      |
| \$10 = | AutoHyphEOL_        | Auto hyphen at end of line                          |
| \$11 = | AutoHyphEOP_        | Auto hyphen at end of page/column                   |
| \$12 = |                     | (reserved)                                          |
| \$13 = | HardBOF_            | Hard beginning of file                              |
| \$14 = | TempHardEOC_        | Temporary Hard end of column                        |
| \$15 = | TempHardEOCSoftEOP_ | Temporary Hard EOC/Soft EOP                         |
| \$16 = | TableCell_          | Hard end of table cell                              |
| \$17 = |                     | (reserved)                                          |
| \$18 = | TableRow_           | Hard end of table row/cell                          |
| \$19 = | TableRowSoftEOP_    | Hard end of table row/cell/soft end of page         |
| \$1A = | TableOff_           | Hard end of table row/end of table                  |
| \$1B = | TableOffSoftEOP_    | Hard end of table row/end of table/soft EOP         |
| \$1C = | TableRowEOH_        | Hard end of table row/cell/end of header            |
| \$1D = | TableRowBOHSoftEOP_ | Hard end of table row/cell/soft EOP/start of header |

\$1E =  
\$1F =

(reserved)  
(reserved)

Conversions and search routines should use the following mappings:

|        |                           |     |            |
|--------|---------------------------|-----|------------|
| \$00 = | SoftEOL_                  | --> | Space      |
| \$01 = | SoftEOP_                  | --> | Space      |
| \$02 = | HardEOL_                  | --> | HardEOL_   |
| \$03 = | HardEOLSoftEOP_           | --> | HardEOL_   |
| \$04 = | TempEOL_                  | --> | Deleted    |
| \$05 = | TempEOP_                  | --> | Deleted    |
| \$06 = | DormantHardEOL_           | --> | HardEOL_   |
| \$07 = | HardEOP_                  | --> | HardEOP_   |
| \$09 = | HardEOC_                  | --> | HardEOC_   |
| \$09 = | HardEOCSoftEOP_           | --> | HardEOC_   |
| \$0A = | HardCEOL_                 | --> | HardEOL_   |
| \$0B = | HardCEOLSoftEOP_          | --> | HardEOL_   |
| \$0C = | HardHyphEOL_              | --> | HardHyphen |
| \$0D = | HardHyphEOP_              | --> | HardHyphen |
| \$0E = | SoftHyphEOL_              | --> | Deleted    |
| \$0F = | SoftHyphEOP_              | --> | Deleted    |
| \$10 = | AutoHyphEOL_              | --> | Deleted    |
| \$11 = | AutoHyphEOP_              | --> | Deleted    |
| \$12 = |                           |     |            |
| \$13 = | HardBOF_                  | --> | Deleted    |
| \$14 = | TempHardEOC_              | --> | HardEOC_   |
| \$15 = | TempHardEOCSoftEOP_       | --> | HardEOC_   |
| \$16 = | TableCell_                | --> | TableCell_ |
| \$17 = |                           |     |            |
| \$18 = | TableRow_                 | --> | TableRow_  |
| \$19 = | TableRowHardEOP_          | --> | TableRow_  |
| \$1A = | TableOff_                 | --> | TableOff_  |
| \$1B = | TableOffSoftEOP_          | --> | TableOff_  |
| \$1C = | TableRowEOH_ <sup>2</sup> | --> | TableRow_  |
| \$1D = | TableRowBOHSoftEOP_       | --> | TableRow_  |
| \$1E = |                           |     |            |
| \$1F = |                           |     |            |

When inserting an end-of-line/page function, a short form may be used to increase speed and reduce memory requirements. These functions contain only one [Length] parameter (Length=2). i.e.

<\$DC><EOL Type>[\$0002]<EOL Type><\$DC>

The above functions are to be used at the beginning/end of each line. All sub-functions within the \$DC function are for *internal use only* and should not be inserted when creating WordPerfect documents.

---

<sup>2</sup>Conversions should replace **TableRowBOHSoftEOP\_**, **TableRowEOH\_** and everything in between with one **TableRow\_** function.

## End of Line Subfunctions

The following section documents functions referred to as sub-functions. They exist inside the end-of-line function and are either of fixed length or have a word of variable length. Unlike regular functions, the length is the total size in bytes of the sub-function. Sub-functions are for *internal use only* and should not be inserted when creating a function.

See Appendix D for summary of sub-functions.

Subfunction: **\$00**            **\$00 = End of Line Characters Subfunction**  
Name:        EOLCharsSubFunc\_  
Length:      Variable        <\$00> [Length]  
                                         <Def>                    0=Pascal, 1=Script  
                                         <Characters...>        Pascal or Script String  
                                         [Length]  
                                         <\$00>

The end-of-line-characters sub-function is written by the hyphenation routines and used by display to show alternate hyphenation characters associated with an end-of-line function.

---

Subfunction: **\$01**            **\$01 = End of Paragraph Subfunction**  
Name:        EndParSubFunc\_  
Length:      20                <\$01> [Paragraph #]  
                                         [SoftNewLines]  
                                         [LineNum]  
                                         {UDLinAtBegPar}  
                                         {UDLinAtHardRtn}  
                                         {SpaceAfterParagraph}  
                                         <\$01>

The beginning-of-paragraph sub-function is written by the forward formatter and used by the reverse formatter to determine the position of the beginning of a paragraph for graphic positioning as well as line numbering functions.

---

Subfunction: **\$02**            **\$02 = End of Indent Subfunction**  
Name:        EndIndentSubFunc\_  
Length:      11                <\$02> <Old def>  
                                         {Old TLMar}  
                                         {Old TRMar}

<\$02>

The end-of-indent sub-function is written by the forward formatter when reverting back to original margins after an indent and is used by the reverse formatter to recover indent margins when moving back onto a line.

---

Subfunction: **\$03**                      **\$03 = End of Paragraph HTML Subfunction**

Name:        EOPHTMLSubFunc\_  
Length:      6                      <\$03> {Old HTML flags}  
                                         <\$03>

???

---

Subfunction: **\$04**                      **\$04 = End of Line Subfunction**

Name:        EOLSubFunc\_  
Length:      12                      <\$04> {Old integer part of document position}    UDLin  
                                         [Old fractional part of document position]  
                                         {Old vertical page position}                      UPLin  
                                         <\$04>

The end-of-line sub-function is written by the forward formatter when a line size change is encountered anywhere in the current line and used by the reverse formatter to set the top of line position when moving back onto a line.





---

Subfunction: **\$08**                    **\$08 = Table Cell Line Color Definition Subfunction**

Name:        EOCellLineColorSubFunc\_  
Length:      26                    <\$08> [Cell top border color].3  
                                                 [Cell Left border color].3  
                                                 [Cell Bottom border color].3  
                                                 [Cell Right border color].3  
                                                 <\$08>

The Table Cell Line/Color sub-function is written by the formatter at the end of each table cell when data values have been changed and used by the reverse formatter recover cell line color information.

---

Subfunction: **\$09**                    **\$09 = Table Cell Fill Subfunction**

Name:        EOCellFillSubFunc\_  
Length:      9                        <\$09> [Cell fill background color].3  
                                                 <Cell fill pattern #>  
                                                 <\$09>

The Table Cell Fill sub-function is written by the formatter at the end of each table cell when data values have been changed and used by the reverse formatter recover cell fill information.

---

Subfunction: **\$0A**            **\$0A = End of Table Row Subfunction**  
Name:        EORTableSubFunc\_  
Length:      Variable        <\$0A> [Start Length]  
                                 <Row mode>  
                                 {Row height}  
                                 {BeginOfRow.UPLin}  
                                 {[BeginOfRow.UDLin]}  
                                 {CellInfoFlags}  
                                 [beginRowNumber]        }  
                                 [endRowNumber]        } Cell Info  
                                 [spannedColumns]  
                                 {beginUPLin}  
                                 {[beginUDLin]}  
                                 {endUPLin}  
                                 {textHeight}  
                                 {height}                }  
                                 [End Length]  
                                 <\$0A>

The End of Table Row sub-function is written by the formatter at the end of each table row and used by the reverse formatter to recover row information.

---

Subfunction: **\$0B**            **\$0B = End of Page/Column Subfunction**  
Name:        EOPSubFunc\_  
Length:      39                <\$0B> {Integer part of UDLin}  
                                 [Fractional part of UDLin]  
                                 {UPLin}  
                                 [LineCnt]  
                                 [LineNum]  
                                 [Page #]  
                                 [Real Page #]  
                                 {# footnote pixels on this page}  
                                 [# additional pages of footnotes]  
                                 {# footnote pixels on last page}  
                                 [Current footnote #]  
                                 [Page suppress flag]  
                                 {UDLinAtHadRtn}  
                                 <Center\_Page>  
                                 <\$0B>

The end of page/column sub-function is written by the forward formatter at the end of every page and/or column and used by the reverse formatter to recover various display and formatter values when moving back across a page break.

---

Subfunction: **\$0C**                    **\$0C = Last Column at EOP Subfunction**  
Name:        LastColumnSubFunc\_  
Length:      Variable        <\$0C> [Length]  
                                         <Columns mode>  
                                         <# of Columns>  
                                         [BegColLnNumber]  
                                         [BegColXPgNumber]  
                                         [BegColRPgNumber]  
                                         {BegColFootnoteSize}  
                                         [BegColFootnotePages]  
                                         {BegColNextFootnoteSize}  
                                         [BegColNumFootnotes]  
                                         [BegColPageSuppress]  
                                         {BegColumnUPLin}  
                                         {BegColumnBorderAscent}  
                                         <EndOfColumnValues #1...>  
                                         .....                                         <EndOfColumnValues #n...>  
                                         [Length]  
                                         <\$0C>

The last-column sub-function is written by the forward formatter at the end of the last column and used by the reverse formatter to recover column values when moving back into the last column.

---

Subfunction: **\$0D**                    **\$0D = Old Hole Table Subfunction**  
Name:        OldHoleTableSubFunc\_  
Length:      Variable        <\$0D> [Length]  
                                         [Box ID]  
                                         [Page #]  
                                         [Top UPLin]  
                                         [Left UPCur]  
                                         [Bottom UPLin]  
                                         [Right UPCur]  
                                         [Text wrap flag]  
                                         .....                                         [Length]  
                                         <\$0D>

[Box ID] < 0 indicates the box is to the right of the current position.

The old-hole-table sub-function is written by the formatter at the end of a page and used by the reverse formatter to recover hole positions when moving back on a page.

---

Subfunction: **\$0E**                    **\$0E = Line Break Subfunction**  
Name:        LineBreakSubFunc\_  
Length:      1                        <\$0E>

The line break sub-function is written by the formatter when it is an end of line and Temp-margin-adjustment and Beginning-of-line sub-functions are present or in end-of-column/page functions.

---

Subfunction: **\$0F**                    **\$0F = Cell Break Subfunction**  
Name:        CellBreakSubFunc\_  
Length:      8                        <\$0F> [Old TableColumnNumber]  
                                          [Old TableRowNumber]  
                                          [Old TableRealRowNumber]  
                                          <\$0F>

The Cell break sub-function is written by the formatter when it is an end of cell.

Subfunction: \$10                   **\$10 = Table OFF Subfunction**

Name: TableBreakSubFunc\_

Length: Variable           <\$10> [Start Length]

[TableID1]

[TableID2]

<Outside Top border #>

<Outside Left border #>

<Outside Bottom border #>

<Outside Right border #>

[Outside Top border RGB color].3

[Outside Left border RGB color].3

[Outside Bottom border RGB color].3

[Outside Right border RGB color].3

<Inside Top border #>

<Inside Left border #>

<Inside Bottom border #>

<Inside Right border #>

[Inside Top border RGB color].3

[Inside Left border RGB color].3

[Inside Bottom border RGB color].3

[Inside Right border RGB color].3

[Cell background fill RGB color].3

<Cell fill pattern>

<Table mode>

{Offset from left edge of paper}

{Top gutter}

{Left gutter}

{Bottom gutter}

{Right gutter}

{Left margin at start of table}

{Right margin at start of table}

{TableHeaderIndex}

{Table Header Size}

[Table row #]

[# of table rows defined]

[# of header rows]

[Current table column number]

[# of table columns defined]

{leftMargin}

<mode>

{width}

{decimalOffset}

.....

{rightMargin}

[End Length]

<\$10>

} TableColumnValues







---

Subfunction: **\$17**

Name: TopSpaceSubFunc\_

Length: 22

### **\$17 = Top Page Adjustment Subfunction**

<\$17> {Top margin}  
{Page # size}  
{Header A size}  
{Header B size}  
{Table Header size}  
<\$17>

The top-page-adjustment sub-function is written by the forward formatter if in galley mode and updated as a page is formatted. It is used by display to determine the white space at the top of the page. The white space is equal to the sum of {Top margin} and maximum({Page # size}, {Header A size}, {Header B size}).

---

Subfunction: **\$18**

Name: TopBorderSubFunc\_

Length: 14

### **\$18 = Top Border Adjustment Subfunction**

<\$18> {Outside top space}  
{Border width}  
{Inside top space}  
<\$18>

The top-border-adjustment sub-function is written by the forward formatter if borders are present.

















**\$DD = *Reserved***



## **\$DE = Merge Group**

---

Function: **\$DE/\$00**  
Name: SingleCodes\_  
Length: 5  
Orientation: Character

### **\$DE/\$00 = Merge Code Function**

<\$DE><\$00>[Length]      <Merge code>  
[Length]<\$00><\$DE>

<Merge code> =

- 1 =
- 2 = Define names
- 3 = From keyboard
- 4 = Date
- 5 = End of record
- 6 =
- 7 =
- 8 =
- 9 =
- 10 =
- 11 =
- 12 =
- 13 =
- 14 = Next record
- 15 =
- 16 =
- 17 = Quit
- 18 = End of field
- 19 =
- 20 = To printer
- 21 =
- 22 = Transfer

Function: \$DE/\$01  
Name: MergeMessage\_  
Length: Variable  
Orientaton: Character

### \$DE/\$01 = Output Merge Message

<\$DE><\$01>[Length]      <Def>  
                                 <Action def>  
                                 <Prompt...>  
[Length]<\$01><\$DE>

|                                  |                              |
|----------------------------------|------------------------------|
| <Def> = 1 = Macro File           | File name is a Pascal string |
| 2 = Primary File                 | File name is a Pascal string |
| 3 = Secondary File               | File name is a Pascal string |
| 4 = Field Number                 | Field number is a Pascal str |
| 5 = Field Prompt                 | Null string                  |
| 6 = Field Name                   | Field name is a Pascal str   |
| 7 = <i>unused</i>                |                              |
| 8 = Message (Macro file)         | Prompt is a Pascal string    |
| 9 = Message (Primary file)       | Prompt is a Pascal string    |
| 10 = Message (Secondary File)    | Prompt is a Pascal string    |
| 11 = Message (Field number)      | Prompt is a Pascal string    |
| 12 = Message (Notification)      | Prompt is a Pascal string    |
| 13 = Message (Keyboard response) | Prompt is a Pascal string    |

For <Def> = 2 or 3:

<Action def> = 0 = No prompt  
                  1 = Prompt if file not found during merge

For <Def> = 4, 5, or 6:

<Action def> = 0 = No action  
                  1 = Eliminate blank line if field not found.



|                               |                                     |
|-------------------------------|-------------------------------------|
|                               | 5 =                                 |
|                               | 4 = Border definitions in function  |
|                               | 3 = Fill Pattern values in function |
|                               | 2 = Fill Color values in function   |
|                               | 1 = Border Color values in function |
|                               | 0 = Spacing values in function      |
|                               | (1sb)                               |
| {Top outside space}           |                                     |
| {Left outside space}          |                                     |
| {Bottom outside space}        |                                     |
| {Right outside space}         | = Spacing reserved outside border   |
| {Top inside space}            |                                     |
| {Left inside space}           |                                     |
| {Bottom inside space}         |                                     |
| {Right inside space}          | = Spacing between border and text   |
| [Red color]                   |                                     |
| [Green color]                 |                                     |
| [Blue color]                  | = Border color                      |
| [Fill foreground Red color]   |                                     |
| [Fill foreground Green color] |                                     |
| [Fill foreground Blue color]  | = Foreground fill color             |
| [Fill background Red color]   |                                     |
| [Fill background Green color] |                                     |
| [Fill background Blue color]  | = Background fill color             |
| {Fill pattern #1}             |                                     |
| {Fill pattern #2}             | = Border fill pattern               |
| <Space between borders>       | = Space between each border def     |
| <# of borders defined>        | = Number of border defs             |

Each border def includes the following record:

|                    |                         |
|--------------------|-------------------------|
| <Border def> =     | (msb) 7 =               |
|                    | 6 = Hairline            |
|                    | 5 = Drop shadow         |
|                    | 4 = Rounded corners     |
|                    | 3 = Right               |
|                    | 2 = Bottom              |
|                    | 1 = Left                |
|                    | (1sb) 0 = Top           |
| <Border thickness> | = Border line thickness |
| {Line pattern #1}  |                         |
| {Line pattern #2}  | = Border line pattern   |

Note: If [Border flags] = 0, then there are no other old/new function

values.

A border off function needs only [New border flags] = 0. All other new values are not to be included in function.

---

Function: **\$DF/\$01**      **\$DF/\$01 = Set Paragraph Border On/Off**  
Name: ParBorder\_  
Length: Variable      <\$DF><\$01>[Length]      <....Same as character border....>  
Orientation: Paragraph      [Length]<\$01><\$DF>

---

Function: **\$DF/\$02**      **\$DF/\$02 = Set Column Border On/Off**  
Name: ColBorder\_  
Length: Variable      <\$DF><\$02>[Length]      <....Same as character border....>  
Orientation: Column      [Length]<\$02><\$DF>

---

Function: **\$DF/\$03**      **\$DF/\$03 = Set Page Border On/Off**  
Name: PageBorder\_  
Length: Variable      <\$DF><\$03>[Length]      <....Same as character border....>  
Orientation: Page      [Length]<\$03><\$DF>

---

Function: **\$DF/\$04**      **\$DF/\$04 = Set Figure Box Border On/Off**  
Name: FigureBoxBorder\_  
Length: Variable      <\$DF><\$04>[Length]      <....Same as character border....>  
Orientation: Character      [Length]<\$04><\$DF>

---

Function: **\$DF/\$05**      **\$DF/\$05 = Set Table Box Border On/Off**  
Name: TableBoxBorder\_  
Length: Variable      <\$DF><\$05>[Length]      <....Same as character border....>  
Orientation: Character      [Length]<\$05><\$DF>

Function: **\$DF/\$06**      **\$DF/\$06 = Set Text Box Border On/Off**  
Name: TextBoxBorder\_  
Length: Variable      <\$DF><\$06>[Length]      <....Same as character border....>  
Orientation: Character      [Length]<\$06><\$DF>

---

Function: **\$DF/\$07**      **\$DF/\$07 = Set User Box Border On/Off**  
Name: UserBoxBorder\_  
Length: Variable      <\$DF><\$07>[Length]      <....Same as character border....>  
Orientation: Character      [Length]<\$07><\$DF>

---

Function: **\$DF/\$08**      **\$DF/\$08 = Set Equation Box Border On/Off**  
Name: EquationBoxBorder\_  
Length: Variable      <\$DF><\$08>[Length]      <....Same as character border....>  
Orientation: Character      [Length]<\$08><\$DF>



## \$E0 = Subtitle Group

---

|                        |                                      |                                                                                                                                                                                |
|------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function: \$E0/\$00    | <b>\$E0/\$00 = Subtitle Function</b> |                                                                                                                                                                                |
| Name: Subtitle_        |                                      |                                                                                                                                                                                |
| Length: Variable       | <\$E0><\$00>[Length]                 | [# of regions]                                                                                                                                                                 |
| Orientation: Character |                                      | [Delta UPCur]<br>{Delta UDLin}<br>[Ascent]<br>[Width]<br>....<br>[1/2 space between units]<br>[# of Units]<br>[Unit width]<br>[Unit separator]<br><Unit text...> Pascal String |
|                        | [Length]<\$00><\$E0>                 |                                                                                                                                                                                |

---

|                        |                                      |                                                                                                    |
|------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------|
| Function: \$E0/\$01    | <b>\$E0/\$01 = Set Subtitle Font</b> |                                                                                                    |
| Name: SubtitleFont_    |                                      |                                                                                                    |
| Length: Variable       | <\$E0><\$01>[Length]                 | {Document stamp}                                                                                   |
| Orientation: Character |                                      | [Old font #]<br>[Old font type]<br>[New font #]<br>[New font type]<br><Font name...> Pascal String |
|                        | [Length]<\$01><\$E0>                 |                                                                                                    |

See Font Change (\$D1/\$01.)

---

|                        |                                      |                                                                                       |
|------------------------|--------------------------------------|---------------------------------------------------------------------------------------|
| Function: \$E0/\$02    | <b>\$E0/\$02 = Set Subtitle Size</b> |                                                                                       |
| Name: SubtitleSize_    |                                      |                                                                                       |
| Length: 8              | <\$E0><\$02>[Length]                 | [Old size]<br>[New size]                                                              |
| Orientation: Character | [Length]<\$02><\$E0>                 |                                                                                       |
|                        | [size] =                             | 0 = fine<br>1 = small<br>2 = normal<br>3 = large<br>4 = very large<br>5 = extra large |

---

Function: \$E0/\$03      **\$E0/\$03 = Set Subtitle Face Style**  
Name: SubtitleFace\_  
Length: Variable      <\$E0><\$03>[Length]      [Old face]  
Orientation: Paragraph      [New face]  
                                 [Length]<\$03><\$E0>  
  
                                 [face] =              (msb) 7 =  
                                                                      6 = Extended  
                                                                      5 = Condensed  
                                                                      4 = Shadow  
                                                                      3 = Outline  
                                                                      2 = Underline  
                                                                      1 = Italic  
                                 (lsb) 0 = Bold

---

Function: \$E0/\$04      **\$E0/\$04 = Set Subtitle Position**  
Name: SubtitlePosition\_  
Length: 8              <\$E0><\$04>[Length]      [Old position]  
Orientation: Paragraph      [New position]  
                                 [Length]<\$04><\$E0>  
  
                                 [position] =              0 = below line  
                                                                      1 = above line

## \$E1 = Edition Group

---

|                        |                                                         |                                                                                                                                     |
|------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Function: \$E1/\$00    | <b>\$E1/\$00 = Publish On - Start of Published Text</b> |                                                                                                                                     |
| Name: PublishOn_       |                                                         |                                                                                                                                     |
| Length: 9              | <\$E1><\$00>[Length]                                    | <Def>                                                                                                                               |
| Orientation: Character |                                                         | {Edition ID}                                                                                                                        |
|                        |                                                         | <PC Stuff...>                                                                                                                       |
|                        | [Length]<\$00><\$E1>                                    |                                                                                                                                     |
|                        | <Def> =                                                 | (msb) 7 = Edition being updated<br>(Don't remove sect/alias resources)                                                              |
|                        |                                                         | 6 = Dissallow global adornment                                                                                                      |
|                        |                                                         | 5 =                                                                                                                                 |
|                        |                                                         | 4 =                                                                                                                                 |
|                        |                                                         | 3 =                                                                                                                                 |
|                        |                                                         | 2 =                                                                                                                                 |
|                        |                                                         | 1 =                                                                                                                                 |
|                        |                                                         | (lsb) 0 = PICT only                                                                                                                 |
|                        | {Edition ID} =                                          | A unique number for edition. The low order word is the resource ID of the resource containing sect (section) and alis (alias) data. |

---

|                        |                                                        |                                                                                                                                     |
|------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Function: \$E1/\$01    | <b>\$E1/\$01 = Publish Off - End of Published Text</b> |                                                                                                                                     |
| Name: PublishOff_      |                                                        |                                                                                                                                     |
| Length: 9              | <\$E1><\$01>[Length]                                   | <Def>                                                                                                                               |
| Orientation: Character |                                                        | {Edition ID}                                                                                                                        |
|                        |                                                        | <PC Stuff...>                                                                                                                       |
|                        | [Length]<\$01><\$E1>                                   |                                                                                                                                     |
|                        | <Def> =                                                | (msb) 7 = Edition being updated<br>(Don't remove sect/alias resources)                                                              |
|                        |                                                        | 6 = Dissallow global adornment                                                                                                      |
|                        |                                                        | 5 =                                                                                                                                 |
|                        |                                                        | 4 =                                                                                                                                 |
|                        |                                                        | 3 =                                                                                                                                 |
|                        |                                                        | 2 =                                                                                                                                 |
|                        |                                                        | 1 =                                                                                                                                 |
|                        |                                                        | (lsb) 0 = PICT only                                                                                                                 |
|                        | {Edition ID} =                                         | A unique number for edition. The low order word is the resource ID of the resource containing sect (section) and alis (alias) data. |



- 19 =
- 18 = Small caps
- 17 = Fine print
- 16 = Small print
- 15 = Large print
- 14 = Very large print
- 13 = Extra large print
- 12 = Double underline
- 11 = Superscript
- 10 = Subscript
- 9 = Strike out
- 8 = Red line
- 7 =
- 6 =
- 5 =
- 4 = Shadow
- 3 = Outline
- 2 = Underline
- 1 = Italics
- (lsb) 0 = Bold

[Other global adornment functions] =

<Group><Sub Class> of variable length functions to be stripped from the subscription.

or

<Function><0> of Fixed length or single byte functions to be stripped from the subscription.

**NOTE:** AttributeOnOff\_ (\$C3) should not be part of this list, but globally adorned attributes are set in the {Global adornment attributes} portion of this function.



**\$E2 = Tables Group**

---

|              |                      |                 |
|--------------|----------------------|-----------------|
| Function:    | <b>\$E2/\$00</b>     | <b>Reserved</b> |
| Name:        |                      |                 |
| Length:      | <\$E2><\$00>[Length] | ...             |
| Orientation: | [Length]<\$00><\$E2> |                 |

NOTE: Not to be used to insure compatibility with versions 2.1.

|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Function: \$E2/\$01<br/>         Name: TableDef_<br/>         Length: Variable<br/>         Orientation: Paragraph</p> | <p><b>\$E2/\$01 = Table Function</b></p> <p>&lt;\$E2&gt;&lt;\$01&gt;[Length]    {Document stamp †}<br/>         [Table ID1 †]<br/>         [Table ID2]<br/>         &lt;Outside top border #&gt;    Outside border #<br/>         &lt;Outside left border #&gt;<br/>         &lt;Outside bottom border #&gt;<br/>         &lt;Outside right border #&gt;</p> <p>[Outside top RGB color].3    Outside border color<br/>         [Outside left RGB color].3<br/>         [Outside bottom RGB color].3<br/>         [Outside right RGB color].3</p> <p>&lt;Cell top border #&gt;    Default cell border #<br/>         &lt;Cell left border #&gt;<br/>         &lt;Cell bottom border #&gt;<br/>         &lt;Cell right border #&gt;</p> <p>[Cell top RGB color].3    Default cell RGB<br/>         [Cell left RGB color].3<br/>         [Cell bottom RGB color].3<br/>         [Cell right RGB color].3</p> <p>[Table background fill RGB color].3</p> <p>&lt;Cell fill pattern #&gt;<br/>         &lt;Table mode&gt;<br/>         {Offset from left edge of paper}<br/>         {Top gutter spacing}<br/>         {Left gutter spacing}<br/>         {Bottom gutter spacing}<br/>         {Right gutter spacing}<br/>         [# of rows]<br/>         &lt;# of header rows&gt;<br/>         &lt;# of columns&gt;</p> <p style="padding-left: 40px;">&lt;Column mode&gt;    Repeat block<br/>         &lt;Number format #&gt;    for each<br/>         {Column width}    column<br/>         {Right offset for decimal align}</p> <p>[Length]&lt;\$01&gt;&lt;\$E2&gt;<br/>         {Document stamp †} =    Supplied by formatter</p> <p>[Table ID1] =    Supplied by formatter - incremented with<br/>         each table</p> <p>[Table ID2] =    Must be unique to document</p> |
|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



<Outside top border #>  
 <Outside left border #>  
 <Outside bottom border #>  
 <Outside right border #> = Outside border number

| Type             | Width |
|------------------|-------|
| 0 = None         | 0     |
| 1 = Hairline     | 1     |
| 2 = Single       | 1     |
| 3 = Thick        | 2     |
| 4 = Extra Thick  | 3     |
| 5 = Dashed       | 1     |
| 6 = Dotted       | 1     |
| 7 = Double       | 3     |
| 8 = Double Thick | 4     |

[Outside top RGB color].3  
 [Outside left RGB color].3  
 [Outside bottom RGB color].3  
 [Outside right RGB color].3 =  
 Outside border color

<Cell top border #>  
 <Cell left border #>  
 <Cell bottom border #>  
 <Cell right border #> = Default cell border #

[Cell top RGB color].3  
 [Cell left RGB color].3  
 [Cell bottom RGB color].3  
 [Cell right RGB color].3 = Default cell RGB

[Table background fill RGB color].3

<Cell fill pattern #> = 0-63 from WP Pattern palette

<Table mode> = (msb) 7 = Tables ON  
 6 = Ignore Table locks  
 5 = Formula in Table  
 4 = Before def  
 3 = Hidden functions in table  
 2 }  
 1 } = Table position options  
 (lsb) 0 }

Table position options = 0 = Align with left margin  
 1 = Center between margins  
 2 = Align with right margin  
 3 = Adjust to fit margins  
 4 = Absolute offset from left edge

{Offset from left edge of paper} = Always added to table position.

<# of columns> = Number of columns. (32 Maximum.)

<Column mode> = (msb) 7 = Column cells locked  
6 = Ignore col cells in calculations  
5 = Formula in column  
4 =  
3 =  
2 =  
1 =  
(lsb) 0 =

<Number format #> = Default number format for column.

{Column width} = Fixed point width of table column.

{Right decimal align offset} = Offset from right margin for decimal alignment.

---

Function: \$E2/\$02  
Name: CellSpan\_  
Length: 6  
Orientation: Table Cell

### **\$E2/\$02 = Set Table Cell Span**

<\$E2><\$02>[Length]      <# of horizontally spanned cells>  
[Length]<\$02><\$E2>      <# of vertically spanned cells>

NOTE:      Zero means no joined cells. One joins two cells.

---

Function: **\$E2/\$03**      **\$E2/\$03 = Set Table Cell Top Line**  
Name: CellTopLineDef\_  
Length: 5                    <\$E2><\$03>[Length]      <Top Line Def>  
Orientation: Table Cell      [Length]<\$03><\$E2>

<Top Line Def> =

| Type             | Width |
|------------------|-------|
| 0 = None         | 0     |
| 1 = Hairline     | 1     |
| 2 = Single       | 1     |
| 3 = Thick        | 2     |
| 4 = Extra Thick  | 3     |
| 5 = Dashed       | 1     |
| 6 = Dotted       | 1     |
| 7 = Double       | 3     |
| 8 = Double Thick | 4     |

---

Function: **\$E2/\$04**      **\$E2/\$04 = Set Table Cell Left Line**  
Name: CellLeftLineDef\_  
Length: 5                    <\$E2><\$04>[Length]      <Left Line Def>  
Orientation: Table Cell      [Length]<\$04><\$E2>

<Left Line Def> =      Same as Table Cell Top Line Def

---

Function: **\$E2/\$05**      **\$E2/\$05 = Set Table Cell Bottom Line**  
Name: CellBottomLineDef\_  
Length: 5                    <\$E2><\$05>[Length]      <Bottom Line Def>  
Orientation: Table Cell      [Length]<\$05><\$E2>

<Bottom Line Def> =      Same as Table Cell Top Line Def

---

Function: **\$E2/\$06**      **\$E2/\$06 = Set Table Cell Right Line**  
Name: CellRightLineDef\_  
Length: 5                    <\$E2><\$06>[Length]      <Right Line Def>  
Orientation: Table Cell      [Length]<\$06><\$E2>

<Right Line Def> =      Same as Table Cell Top Line Def

---

Function: **\$E2/\$07**      **\$E2/\$07 = Set Table Cell Top Line Color**  
Name: CellTopLineColor\_  
Length: 10      <\$E2><\$07>[Length]      [Cell Top line Red color]  
Orientation: Table Cell      [Cell Top line Green color]  
      [Cell Top line Blue color]  
      [Length]<\$07><\$E2>  
[Cell Top line color] =      RGB color componets are expressed as unsigned integer values. Each R, G and B can have a value from \$0000 to \$FFFF (or 0 to 65,535.) RGB color is additive; that is, as the value of a component is increased, the amount of that component in the total color increases. An RGB color is black if all three components are set to 0, or white if each component is set to 65,535.

---

Function: **\$E2/\$08**      **\$E2/\$08 = Set Table Cell Left Line Color**  
Name: CellLeftLineColor\_  
Length: 10      <\$E2><\$08>[Length]      [Cell Left line Red color]  
Orientation: Table Cell      [Cell Left line Green color]  
      [Cell Left line Blue color]  
      [Length]<\$08><\$E2>  
[Cell Left line color] =      (See \$E2/\$07 = Table Cell Top Line Color.)

---

Function: **\$E2/\$09**      **\$E2/\$09 = Set Table Cell Bottom Line Color**  
Name: CellBottomLineColor\_  
Length: 10      <\$E2><\$09>[Length]      [Cell Bottom line Red color]  
Orientation: Table Cell      [Cell Bottom line Green color]  
      [Cell Bottom line Blue color]  
      [Length]<\$09><\$E2>  
[Cell Bottom line color] =      (See \$E2/\$07 = Table Cell Top Line Color.)

---

Function: \$E2/\$0A     **\$E2/\$0A = Set Table Cell Right Line Color**  
Name: CellRightLineColor\_  
Length: 10     <\$E2><\$0A>[Length]     [Cell Right line Red color]  
Orientation: Table Cell     [Cell Right line Green color]  
     [Cell Right line Blue color]  
     [Length]<\$0A><\$E2>  
     [Cell Right line color] = (See \$E2/\$07 = Table Cell Top Line Color.)

---

Function: \$E2/\$0B     **\$E2/\$0B = Set Table Cell Fill Color/Pattern**  
Name: CellFill\_  
Length: 11     <\$E2><\$0B>[Length]     [Cell fill background red color]  
Orientation: Table Cell     [Cell fill background blue color]  
     [Cell fill background green color]  
     <Cell fill pattern #>  
     [Length]<\$0B><\$E2>  
     [Cell fill background color] =  
     RGB color componets are expressed as unsigned  
     integer values. Each R, G and B can have a  
     value from \$0000 to \$FFFF (or 0 to 65,535.)  
     RBG color is additive; that is, as the value of a  
     component is increased, the amount of that  
     component in the total color increases. An RGB  
     color is black if all three components are set to  
     0, or white if each component is set to 65,535.  
     <Cell fill pattern #> =

---

Function: \$E2/\$0C     **Reserved**  
Name: CellAttributes\_  
Length: 8     <\$E2><\$0C>[Length]     ...  
Orientation: Table Cell     [Length]<\$0C><\$E2>



---

Function: \$E2/\$0F      **\$E2/\$0F = Set Table Row Mode**  
Name: RowMode\_  
Length: 9      <\$E2><\$0F>[Length]      <Row Mode>  
Orientation: Table Row      [Length]<\$0F><\$E2>      {Row height}

<Row Mode> =      (msb) 7 =  
6 =  
5 =  
4 =  
3 =  
2 =  
1 = Wrap mode:  
0 = multi-line (Default)  
1 = Single line of text (no wrap)

(lsb) 0 = Line height:  
0 = Auto (Default)  
1 = Fixed line height

{Row height} =      Fixed point row height used if fixed line height is selected.

## \$E3 = Math Group

The Math Group functions are only valid in tables. With the exception of the Define Math Number Format function (\$E3/\$04), all other math functions have an associated result string. The association between the math function and its result is maintained by encasing them together as follows:

```
<EncaseOn_>  
  <$E3><$xx>...[Result #†].5...<$xx><$E3>  
  <Result string...>  
<EncaseOff_>
```

When a new [Result #†].5... is generated, the <Result string...> is automatically replaced with a new result string.

The result of formula calculation is stored as a 79-bit two's complement integer multiplied by a scale factor of  $10^7$  (10,000,000). This provides 7 fractional digits of precision with no rounding errors and a range of more than 16 integer digits.

The most significant bit is an error flag. If it is set, an error occurred while the value was being calculated; the third word contains the error number and all other bits are reserved and should be zero. The error number is actually the string number in the STR# resource, ID=TableMathErrorStrs, for an error message.

```
max. value = [$3fff][$ffff][$ffff][$ffff][$ffff] =  
             30,223,145,490,365,729.3676543  
min. value = [$4000][$0000][$0000][$0000][$0000] =  
             -30,223,145,490,365,729.3676544  
error value = [$8000][$0000][Error #][$0000][$0000]
```



|              |              |                                                                                                    |
|--------------|--------------|----------------------------------------------------------------------------------------------------|
| Function:    | \$E3/\$00    | <b>\$E3/\$00 = Insert Math Formula Result</b>                                                      |
| Name:        | MathFormula_ |                                                                                                    |
| Length:      | Variable     | <\$E3><\$00>[Length]                                                                               |
| Orientation: | Character    | [Result #†].5<br>[Formula length]<br><Formula...>                                                  |
|              |              | [Length]<\$00><\$E3>                                                                               |
|              |              | [Result BCD #†].5 = Result of formula calculation                                                  |
|              |              | [Formula length] = Length for following formula                                                    |
|              |              | <Formula...> = Encoded formula bytes consisting of one or more of the following in post-fix order: |
|              |              | \$00 = <i>Disallowed</i> (should never occur)                                                      |
|              |              | \$01 = Add                                                                                         |
|              |              | \$02 = Subtract                                                                                    |
|              |              | \$03 = Multiply                                                                                    |
|              |              | \$04 = Divide                                                                                      |
|              |              | \$05 = Negative (unary minus)                                                                      |
|              |              | \$06 = Positive (unary plus)                                                                       |
|              |              | \$07 = Cell range; followed by:                                                                    |
|              |              | <Starting column offset>                                                                           |
|              |              | [Starting row offset]                                                                              |
|              |              | <Ending column offset>                                                                             |
|              |              | [Ending row offset]                                                                                |
|              |              | \$08 = Cell reference; followed by:                                                                |
|              |              | <Column offset>                                                                                    |
|              |              | [Row offset]                                                                                       |
|              |              | \$09 = Numeric constant; followed by:                                                              |
|              |              | [Constant #].5                                                                                     |
|              |              | <Constant string...>                                                                               |
|              |              | \$0A = Subtotal                                                                                    |
|              |              | \$0B = Total                                                                                       |
|              |              | \$0C = Grand total                                                                                 |
|              |              | \$0D = Average; followed by:                                                                       |
|              |              | <# of parameters>                                                                                  |
|              |              | \$0E = Sum; followed by:                                                                           |
|              |              | <# of parameters>                                                                                  |
|              |              | \$0F-\$FE = <i>Reserved</i>                                                                        |
|              |              | \$FF = <i>Disallowed</i> (should never occur)                                                      |

Note: Offsets are relative to current column/row.

|              |                         |                                                                                   |
|--------------|-------------------------|-----------------------------------------------------------------------------------|
| Function:    | <b>\$E3/\$01</b>        | <b>\$E3/\$01 = Insert Math Sub-Total Result</b>                                   |
| Name:        | MathSubTotal_           |                                                                                   |
| Length:      | Variable                | <\$E3><\$01>[Length]                                                              |
| Orientation: | Character               | [Subtotal #†].5<br>[Formula length]<br><Formula...>                               |
|              |                         | [Length]<\$01><\$E3>                                                              |
|              | {Subtotal width†} =     | Fixed point width of subtotal string                                              |
|              | <Subtotal string...†> = | Converted displayable string of subtotal #                                        |
|              | [Subtotal BCD #†].5 =   | Result of formula calculation                                                     |
|              | [Formula length] =      | Length for following formula                                                      |
|              | <Formula...> =          | Formula used to derive subtotal.<br>(See \$E3/\$00 = Insert Math Formula Result.) |

|              |                      |                                                                                   |
|--------------|----------------------|-----------------------------------------------------------------------------------|
| Function:    | <b>\$E3/\$02</b>     | <b>\$E3/\$02 = Insert Math Total Result</b>                                       |
| Name:        | MathTotal_           |                                                                                   |
| Length:      | Variable             | <\$E3><\$02>[Length]                                                              |
| Orientation: | Character            | [Total #†].5<br>[Formula length]<br><Formula...>                                  |
|              |                      | [Length]<\$02><\$E3>                                                              |
|              | {Total width†} =     | Fixed point width of total string                                                 |
|              | <Total string...†> = | Converted displayable string of total #                                           |
|              | [Total BCD #†].5 =   | Result of formula calculation                                                     |
|              | [Formula length] =   | Length for following formula                                                      |
|              | <Formula...> =       | Formula used to derive subtotal.<br>(See \$E3/\$00 = Insert Math Formula Result.) |



"Text" format, <Format #> = \$00, is a special case that will leave the cell's text untouched (if the cell happens to have a formula, the result will be displayed in the "General" format, <Format #> = \$2F).

## Appendix A - Condensed Output

The standard file output starting with WordPerfect 4.0 is a large reduction in WordPerfect document size realized by altering or deleting the following functions:

1. All "For internal use only" functions are deleted such as:

|          |                              |
|----------|------------------------------|
| \$AE     | Start Table Header           |
| \$AF     | End Table Header             |
| \$B2     | Block ON                     |
| \$B3     | Block Off                    |
| \$B6     | Reverse video ON             |
| \$B7     | Reverse video OFF            |
| \$B8     | Generate Marker #1           |
| \$B9     | Generate Marker #2           |
| \$BA     | Search marker #1             |
| \$BB     | Search marker #2             |
| \$BC     | Format to EOL/EOP/EOC marker |
| \$BD     | Auto format marker           |
| \$BE     | Reformat line marker         |
| \$BF     | Noop                         |
| \$C6     | End of indent                |
| \$CC     | Temp formatter marker        |
| \$CD     | Undo                         |
| \$CE     | Line space function          |
| \$CF     | Formatter marker             |
| \$D4/All | Formatter group              |

2. The functions surrounded by invalid undo gates (\$CD/\$00 to \$CD/\$01), as well as all Undo functions (\$CD) are deleted.
3. The body of all styles should be deleted (\$DB/\$01 to \$DB/\$00, \$DB/\$02 to \$DB/\$00, \$DB/\$03 to \$DB/\$00, and \$DB/\$04 to \$DB/\$00).
4. All temp encasement and encasement bodies should be deleted (\$AE - ... - \$AF).
5. The old values of some variable length functions may be condensed if the open length is adjusted. These include:

|                |                    |                                                                                                               |
|----------------|--------------------|---------------------------------------------------------------------------------------------------------------|
| \$D0/\$04      | Tab set            | Replace old values with <\$FF>                                                                                |
| \$D2/\$01      | Define columns     | Replace old values with <\$00>                                                                                |
| \$D5/\$00-\$03 | Header/Footers     | Replace old header length with [\$0000] and remove old header text                                            |
| #D6/\$00-\$01  | Footnote/Endnote   | Replace [# of footnote pages] and [# of break table entries] with 0 and remove their respective table entries |
| \$D8/\$00      | Date/time function | Replace [old format length] with <\$00>                                                                       |
| \$D8/\$04      | Insert Box Num     | Replace all with \$9C                                                                                         |

|                |                     |                                  |
|----------------|---------------------|----------------------------------|
| \$D8/\$05      | Insert Chapter Num  | Replace all with \$9D            |
| \$D8/\$06      | Insert Page Num     | Replace all with \$A1            |
| \$D8/\$07      | Insert Footnote Num | Replace all with \$A2            |
| \$D8/\$08      | Insert Endnote Num  | Replace all with \$A4            |
| \$DF/\$00-\$08 | Border functions    | Replace old values with [\$0000] |

6. Delete the following end-of-line functions:

|           |                            |
|-----------|----------------------------|
| \$DC/\$04 | Temp end-of-line           |
| \$DC/\$05 | Temp end-of-page           |
| \$DC/\$0E | Soft hyphen at end-of-line |
| \$DC/\$0F | Soft hyphen at end-of-page |
| \$DC/\$10 | Auto hyphen at end-of-line |
| \$DC/\$11 | Auto hyphen at end-of-page |
| \$DC/\$13 | Hard beginning-of-file     |

7. Translate the following end-of-line functions to single byte functions:

|                   |                                                   |
|-------------------|---------------------------------------------------|
| \$DC/\$00 -> Sp   | Soft end-of-line                                  |
| \$DC/\$01 -> Sp   | Soft end-of-page                                  |
| \$DC/\$02 -> \$80 | Hard end-of-line                                  |
| \$DC/\$03 -> \$80 | Hard end-of-line at Soft end-of-page              |
| \$DC/\$06 -> \$80 | Dormant hard end-of-line                          |
| \$DC/\$0A -> \$80 | Hard end-of-column not in column                  |
| \$DC/\$0B -> \$80 | Hard end-of-column/Soft end-of-page not in column |
| \$DC/\$07 -> \$81 | Hard end-of-page                                  |
| \$DC/\$0C -> \$96 | Hard hyphen at end-of-line                        |
| \$DC/\$0D -> \$96 | Hard hyphen at end-of-page/column                 |

8. Translate the following end-of-line functions to shorter functions:

|                          |                            |                                                           |
|--------------------------|----------------------------|-----------------------------------------------------------|
| \$DC/\$08 ->             | \$DC/\$08/\$0002/\$08/\$DC | Hard end-of-column                                        |
| \$DC/\$09 ->             | \$DC/\$08/\$0002/\$08/\$DC | Hard end-of-column/Soft end-of-page                       |
| \$DC/\$14 ->             | \$DC/\$08/\$0002/\$08/\$DC | Temp hard end-of-column                                   |
| \$DC/\$15 ->             | \$DC/\$08/\$0002/\$08/\$DC | Temp hard end-of-column/Soft end-of-page                  |
| \$DC/\$18 ->             | \$DC/\$18/\$0002/\$18/\$DC | Hard end-of-table row/cell                                |
| \$DC/\$19 ->             | \$DC/\$18/\$0002/\$18/\$DC | Hard end-of-table row/cell/Soft end-of-page               |
| \$DC/\$1D...\$DC/\$1C -> | \$DC/\$18/\$0002/\$18/\$DC | Hard end-of-table row/cell/Soft end-of-page - Header info |
| \$DC/\$1A ->             | \$DC/\$1A/\$0002/\$1A/\$DC | Hard end-of-table row/end-of-table                        |
| \$DC/\$1B ->             | \$DC/\$1A/\$0002/\$1A/\$DC | Hard end-of-table row/end-of-table/Soft end-of-page       |
| \$DC/\$xx ->             | \$DC/\$xx/\$0002/\$xx/\$DC | All other EOF sub-functions                               |

9. Translate the following fixed length functions to single byte functions:

|              |      |                   |
|--------------|------|-------------------|
| \$C1/\$00 -> | \$82 | Tab               |
| \$C1/\$03 -> | \$83 | Back Tab          |
| \$C2/\$00 -> | \$84 | Left indent       |
| \$C2/\$01 -> | \$85 | Left/Right indent |

10. Translate the following variable length functions to single byte functions:

|              |              |                                                                                                                   |
|--------------|--------------|-------------------------------------------------------------------------------------------------------------------|
| \$D0/\$0C -> | \$B1 or \$B0 | Widow and orphan on in <New mode> is \$B0. Widow and orphan off in <New mode> is \$B1. Others cases remain as is. |
| \$D0/\$0D -> | \$B5 or \$B4 | Hyphenation mode on in <New mode> is \$B4. Hyphenation mode off in <New mode> is \$B5.                            |

## Appendix B - Importing to WordPerfect

When importing other file formats to WordPerfect, follow these guidelines:

1. Use the Hide Function to preserve unmapable functions:

```
<$D9><$07>[Length]    <Product type>
                        <File type>
                        <Major version>
                        <Minor Version>
                        [Resource ID]
                        <Data...>
[Length]<$07><$D9>
```

2. If more than one function is hidden, then only the first function may have a resource.
3. Use [Resource ID] where possible to avoid making function too large.
4. Either use <PC Stuff...> or <EncaseOn\_>...<EncaseOff\_> to mimic converted functions.

<PC Stuff...> is appended to the end of a WordPerfect function and is used to preserve data for exporting the function back to the same product. <PC Stuff...> is defined as follows:

```
<Group><Subgroup>[Length]
<Old data...>
<New data...>
<PC Stuff...> = <Product type>
                 <File type>
                 <Major version>
                 <Minor Version>
                 <Hidden data...>
[Length]<Subgroup><Group>
```

By encasing both the hidden imported function as well as the WordPerfect equivalent functions, exporting can ignore the WordPerfect functions and output only the hidden function. The format is as follows:

```
<EncaseOn_>
<$D9><$07>[Length]<P><F><M><m>[R]<Hidden function...>[Length]<$07><$D9>
...WordPerfect functions...
<EncaseOff_>
```

5. Hidden functions are not to be written to the clipboard (ie. deleted from copys and pastes.)



## Appendix C - WordPerfect Macintosh Language Codes

The language code is used to determine which “language module” should be used to perform operations on the text that follows. Any operation that could possibly be different based on country, language, or script (writing system) is handled by the language module. For convenience, the language code is divided into three parts.

These parts can be referred to individually, but must be set as one unit. An example of one unit is language compatibility. For instance: while spell-checking French-Canadian text, the CAN-Dictionaire is not found. The French-France dictionary (FRA-Dictionaire) can be used instead. This is done by comparing script and language, but ignoring the region information in the language code.

A brief description of each of the parts of the language code follows:

- <Script> Used for interpreting two-byte characters (function \$C8.) Also for determining characteristics such as writing direction, keyboard layout, font compatibility and so forth.
- <Language> Primary determinant used for selecting auxiliary tools such as speller, thesaurus, hyphenation, sorting and so forth.
- [Region] Used for determining formats for Date/Time, currency, decimal, thousand, list separators and so forth.

Current list of behaviors that are Language-Code dependent:

|                 |                                                                                                                      |
|-----------------|----------------------------------------------------------------------------------------------------------------------|
| Interface       | Items such as Menus, Dialogs, Auxiliary file names, etc. User can select these with the Finder at startup time only. |
| Speller         |                                                                                                                      |
| Thesaurus       |                                                                                                                      |
| Hyphenation     |                                                                                                                      |
| Sort            | Within document only. Dialogs with lists are sorted by the system.                                                   |
| Word Delimiters |                                                                                                                      |
| Case conversion |                                                                                                                      |
| Search          |                                                                                                                      |

**Script ID**

|                  |      |
|------------------|------|
| Amharic .....    | \$1C |
| Arabic .....     | \$04 |
| Armenian .....   | \$18 |
| Bengali .....    | \$0D |
| Burmese .....    | \$13 |
| Chinese .....    | \$02 |
| Devanagari ..... | \$09 |
| Georgian .....   | \$17 |
| Greek .....      | \$06 |
| Gujarati .....   | \$0B |
| Gurmukhi .....   | \$0A |
| Hebrew .....     | \$05 |
| Kanji .....      | \$01 |
| Kannada .....    | \$10 |
| Khmer .....      | \$14 |
| Korean .....     | \$03 |
| Laotian .....    | \$16 |
| Malayalam .....  | \$11 |
| Maldavian .....  | \$19 |
| Mongolian .....  | \$1B |
| Oriya .....      | \$0C |
| Roman .....      | \$00 |
| Russian .....    | \$07 |
| Sindhi .....     | \$1F |
| Sinhalese .....  | \$12 |
| Slavic .....     | \$1D |
| Symbol .....     | \$20 |
| Tamil .....      | \$0E |
| Telugu .....     | \$0F |
| Thai .....       | \$15 |
| Tibetan .....    | \$1A |
| Vietnamese ..... | \$1E |

**Language ID**

|                       |      |
|-----------------------|------|
| Afrikaans .....       | \$0F |
| Arabic .....          | \$18 |
| Catalan .....         | \$0D |
| Chinese .....         | \$15 |
| Cyprian .....         | \$21 |
| Czechoslovakian ..... | \$11 |
| Danish .....          | \$05 |
| Dutch .....           | \$06 |
| English .....         | \$00 |
| Faeroese .....        | \$20 |
| Finnish .....         | \$10 |
| Flemish .....         | \$07 |
| French .....          | \$01 |
| German .....          | \$02 |
| Greek .....           | \$13 |
| Hebrew .....          | \$19 |
| Hindi .....           | \$1C |
| Icelandic .....       | \$0B |
| Italian .....         | \$04 |
| Japanese .....        | \$14 |
| Korean .....          | \$16 |
| Maltese .....         | \$22 |
| Norwegian .....       | \$0A |
| Persian .....         | \$1A |
| Polish .....          | \$0E |
| Portuguese .....      | \$09 |
| Russian .....         | \$12 |
| Spanish .....         | \$08 |
| Swedish .....         | \$03 |
| Taiwanese .....       | \$17 |
| Thai .....            | \$1D |
| Turkish .....         | \$0C |
| Ukrainian .....       | \$1F |
| Urdu .....            | \$1B |
| Yugoslavian .....     | \$1E |

**Region ID**

NORTH AMERICA ..... (\$00xx)  
USA ..... \$0000  
Canada ..... \$0001

**EUROPE..... (\$01xx)**

Albania ..... \$0116  
Austria ..... \$0114  
Belgium ..... \$0105  
Bulgaria ..... \$0113  
Cyprus ..... \$0119  
Czechoslovakia ..... \$0112  
Denmark ..... \$0106  
Faeroe Islands ..... \$0117  
Finland ..... \$010D  
France ..... \$0101  
Germany ..... \$0102  
Greece ..... \$010B  
Hungary ..... \$0111  
Iceland ..... \$011A  
Ireland ..... \$010A  
Italy ..... \$0107  
Malta ..... \$0118  
Netherlands ..... \$0104  
Northern Ireland ..... \$010B  
Norway ..... \$010E  
Poland ..... \$0110  
Portugal ..... \$0109  
Romania ..... \$0115  
Spain ..... \$0108  
Sweden ..... \$010F  
Switzerland ..... \$0103  
United Kingdom ..... \$0100  
Yugoslavia ..... \$011B

**ASIA..... (\$02xx)**

Afganistan ..... \$0208  
Bangladesh ..... \$020B  
Bhutan ..... \$020C  
Burma ..... \$0209  
Cambodia ..... \$0210  
China ..... \$0202  
Hong Kong ..... \$0203  
India ..... \$0205  
Japan ..... \$0200  
Korea ..... \$0201  
Laos ..... \$020F  
Nepal ..... \$020D

Pakistan ..... \$0207  
Sri Lanka ..... \$020E  
Taiwan ..... \$0204  
Thailand ..... \$020A  
Vietnam ..... \$0206

**PACIFIC..... (\$03xx)**

Australia ..... \$0300  
Fiji ..... \$0305  
French Polynesia (Tahiti) ..... \$0309  
Indonesia ..... \$0304  
Malaysia ..... \$0303  
Micronesia ..... \$030A  
New Guinea ..... \$030B  
New Zealand ..... \$0301  
Phillipines ..... \$0306  
Samoa ..... \$0307  
Singapore ..... \$0302  
Solomon Islands ..... \$030C  
Tonga ..... \$0308  
Vanuatu ..... \$030D

**USSR..... (\$04xx)**

Armenia ..... \$0405  
Azerbaijan ..... \$0406  
Byelorussia ..... \$040E  
Estonia ..... \$0402  
Georgia ..... \$0407  
Kazakhstan ..... \$040D  
Kirghizia ..... \$040C  
Latvia ..... \$0403  
Lithuania ..... \$0401  
Moldavia ..... \$0408  
Russia ..... \$0400  
Tajikistan ..... \$0409  
Turkmenistan ..... \$040A  
Ukraine ..... \$0404  
Uzbekistan ..... \$040B

**CENTRAL / SOUTH AMERICA..... (\$05xx)**

Argentina ..... \$0503  
Bahamas ..... \$0520  
Barbados ..... \$0522  
Belize ..... \$0507  
Bolivia ..... \$0504  
Brazil ..... \$0501  
Chile ..... \$0505

|                           |        |
|---------------------------|--------|
| Columbia .....            | \$0506 |
| Costa Rica .....          | \$0502 |
| Cuba .....                | \$0511 |
| Dominican Republic .....  | \$0512 |
| El Salvador .....         | \$0513 |
| Equador .....             | \$0510 |
| French Guiana .....       | \$0514 |
| Grenada .....             | \$0521 |
| Guatemala .....           | \$0508 |
| Guiana .....              | \$0515 |
| Haiti .....               | \$0509 |
| Honduras .....            | \$050E |
| Jamaica.....              | \$0519 |
| Mexico .....              | \$0500 |
| Nicaragua .....           | \$050D |
| Panama.....               | \$050C |
| Paraguay.....             | \$0516 |
| Peru .....                | \$050B |
| Puerto Rico.....          | \$0518 |
| Suriname .....            | \$0517 |
| Trinidad and Tobago ..... | \$0523 |
| Uruguay .....             | \$050A |
| Venezuela.....            | \$050F |

|                           |          |
|---------------------------|----------|
| <b>MIDDLE EAST</b> .....  | (\$06xx) |
| Bahrain.....              | \$060E   |
| Democratic Yemen .....    | \$0608   |
| Iran .....                | \$0603   |
| Iraq .....                | \$0604   |
| Israel.....               | \$0602   |
| Jordan.....               | \$0609   |
| Kuwait .....              | \$060A   |
| Lebanon .....             | \$0605   |
| Oman .....                | \$060B   |
| Qatar.....                | \$060C   |
| Saudi Arabia.....         | \$0600   |
| Syria .....               | \$0601   |
| Turkey .....              | \$0606   |
| United Arab Emerites..... | \$060D   |
| Yemen .....               | \$0607   |

*continued*

|                               |          |
|-------------------------------|----------|
| <b>AFRICA</b> .....           | (\$07xx) |
| Algeria.....                  | \$0700   |
| Anglola .....                 | \$0701   |
| Benin .....                   | \$0702   |
| Bophuthatswana .....          | \$0703   |
| Burkina Faso .....            | \$0704   |
| Cameroon .....                | \$0705   |
| Central African Republic..... | \$0706   |
| Chad .....                    | \$0707   |
| Ciskei.....                   | \$0708   |
| Congo .....                   | \$0709   |
| Côte D'ivioire .....          | \$070A   |
| Djibouti .....                | \$070B   |
| Egypt .....                   | \$070C   |
| Ethiopia .....                | \$070D   |
| Gabon .....                   | \$070E   |
| Gambia .....                  | \$070F   |
| Ghana .....                   | \$0710   |
| Guinea .....                  | \$0711   |
| Guinea Bissau .....           | \$0712   |
| Kenya .....                   | \$0713   |
| Lesotho .....                 | \$0714   |
| Liberia .....                 | \$0715   |
| Libya .....                   | \$0716   |
| Madagascar .....              | \$0717   |
| Malawi.....                   | \$0718   |
| Mali .....                    | \$0719   |
| Mauritania .....              | \$071A   |
| Morocco .....                 | \$071B   |
| Mozambique .....              | \$071C   |
| Namibia.....                  | \$071D   |
| Niger .....                   | \$071E   |
| Nigeria.....                  | \$071F   |
| Rwanda .....                  | \$0720   |
| Senegal .....                 | \$0721   |
| Sierra Lionne .....           | \$0722   |
| Somalia .....                 | \$0723   |
| South Africa .....            | \$0724   |
| Sudan.....                    | \$0725   |
| Swaziland .....               | \$0726   |
| Tanzania .....                | \$0727   |
| Togo .....                    | \$0728   |
| Transkei.....                 | \$0729   |
| Tunisia.....                  | \$072A   |
| Uganda .....                  | \$072B   |
| Venda .....                   | \$072C   |
| Western Sahara .....          | \$072D   |
| Zaire .....                   | \$072E   |
| Zambia.....                   | \$072F   |
| Zimbabwe .....                | \$0730   |





## Appendix D - End of Line Subfunction Summary

|      | Sub-function          | Variables                                                                                                              | Size     |
|------|-----------------------|------------------------------------------------------------------------------------------------------------------------|----------|
| \$00 | EOL characters        | [Start Length]<br><Def><br><Characters...><br>[End Length]                                                             | Variable |
| \$01 | End paragraph         | [Paragraph #]<br>[SoftNewLines]<br>[LineNum]<br>{UDLinAtBegPar}<br>{UDLinAtHardRtn}<br>{SpaceAfterParagraph}           | 20       |
| \$02 | End indent            | <def><br>{old TempLeftMargin}<br>{old TempRightMargin}                                                                 | 11       |
| \$03 | End of Paragraph HTML | {Old HTML flags{                                                                                                       | 6        |
| \$04 | EOL                   | {{Old UDLin}}<br>{Old UPLin}                                                                                           | 12       |
| \$05 | EOL subtitle          | [Begin upcur]<br>[End upcur]<br>{Udlin}<br>[Delta udlin]                                                               | 12       |
| \$06 | End table cell        | [LineCnt]<br><Cell mode><br><Vertical alignment><br><Cell number format><br>[CellFlags]                                | 9        |
| \$07 | End cell line #       | <Cell top border #><br><Cell Left border #><br><Cell Bottom border #><br><Cell Right border #>                         | 6        |
| \$08 | End cell line color   | [Cell top border color].3<br>[Cell Left border color].3<br>[Cell Bottom border color].3<br>[Cell Right border color].3 | 26       |
| \$09 | End cell fill         | [Cell fill background color].3<br><Cell fill pattern #>                                                                | 5        |

|             |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                            |
|-------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <p>\$0A</p> | <p>End table row</p> | <pre>[Start Length] &lt;Row mode&gt; {Row height} {BeginOfRow.UPLin} {[BeginOfRow.UDLIN]} {CellInfoFlags} &lt;Old CellInfo...&gt;:     [beginRowNumber]     [endRowNumber]     [spannedColumns]     {beginUPLin}     {[beginUDLin]}     {endUPLin}     {textHeight}     {height}     ...Repeated for each cell [End Length]</pre>                                                                                                   | <p>23 + (columns x 26)</p> |
| <p>\$0B</p> | <p>End page</p>      | <pre>{[UDLin]} {UPLin} [LineCnt] [LineNum] [XPage] [RealPage] {# footnote pixels on page} [# of pages of footnotes] {# ftnt pixels on next page} [Current footnote #] [PageSuppress] {UDLinAtHardRtn} &lt;Center_Page&gt;</pre>                                                                                                                                                                                                     | <p>39</p>                  |
| <p>\$0C</p> | <p>End column</p>    | <pre>[Start Length] &lt;Columns mode&gt; &lt;# of Columns&gt; [BegColLnNumber] [BegColXPgNumber] [BegColRPgNumber] {BegColFootnoteSize} [BegColFootnotePages] {BegColNextFootnoteSize} [BegColNumFootnotes] [BegColPageSuppress] {BegColumnUPLin} [BegColumnUDLin].3 {BegColumnBorderAscent}     [EOC_LineCnt]     [EOC_XPage]     [EOC_RPage]     {EOC_UPLin}     {[EOC_UDLin]}     ...Repeated for each column [End Length]</pre> | <p>42 + (columns x 16)</p> |



\$0D	Old hole table	[Start Length] [BoxNumber] [PageNumber] [Top] [Left] [Bottom] [Right] [TextWrap] ...Repeated for each hole [End Length]	6 + (holes x 14)
\$0E	Line break		1
\$0F	Cell break	[Old TableColumnNumber] [Old TableRowNumber] [Old TableRealRowNumber]	8

§10	Table off	<pre>[Start Length] [TableID1] [TableID2] &lt;Outside Top border #&gt; &lt;Outside Left border #&gt; &lt;Outside Bottom border #&gt; &lt;Outside Right border #&gt; [Outside Top border RGB color].3 [Outside Left border RGB color].3 [Outside Bottom border RGB color].3 [Outside Right border RGB color].3 &lt;Inside Top border #&gt; &lt;Inside Left border #&gt; &lt;Inside Bottom border #&gt; &lt;Inside Right border #&gt; [Inside Top border RGB color].3 [Inside Left border RGB color].3 [Inside Bottom border RGB color].3 [Inside Right border RGB color].3 [Cell background fill RGB color].3 &lt;Cell fill pattern] &lt;Table mode&gt; {Offset from left edge of paper} {Top gutter} {Left gutter} {Bottom gutter} {Right gutter} {Left margin at start of table} {Right margin at start of table} {tableHeaderIndex} [Table row #] [# of table rows defined] [# of header rows] [Current table column number] [# of table columns defined] &lt;...TableColumnValues...&gt;:     {leftMargin}     &lt;mode&gt;     &lt;numberFormat&gt;     {width}     {decimalOffset}     ...Repeated for each column [End Length]</pre>	116 + (columns x 14)
§11	Column break	<pre>&lt;ColumnNumber&gt; {MaxColumnUDLineEOC-EndColumnUDLin}</pre>	7
§12	Bottom border	<pre>{Inside bottom space} {Border width} {Inside bottom space}</pre>	14
§13	Between border	<pre>{Inside between space} {Border width} {Inside top space}</pre>	14

\$14	Bottom page	{Space to Footnote/Endnote} {Footnote/Endnote Size} {Page # Size} {Footer A Size} {Footer B Size} {Bottom Margin}	26
\$15	Page break	{Page break size} {WhiteSpaceAtROP}	10
\$16	Page orientation	<PageOverrideFlag> [Old PageOrientation] {Old PageWidth} {Old PageHeight} [Old PageScale] {Old GX Format Reference Number} [New PageOrientation] {New PageWidth} {New PageHeight} [New PageScale] {New GX Format Reference Number} <GX Print Job...>	35 + (Print Job)
\$17	Top page	{Top Margin} {Page # Size} {Header A Size} {Header B Size}	18
\$18	Top border	{Outside top space} {Border width} {Inside top space}	14
\$19	New holes	[Start Length] [BoxNumber] [PageNumber] [Top] [Left] [Bottom] [Right] [TextWrap] ...Repeated for each hole [End Length]	6 + (holes x 14)
\$1A	Margins	{Old Left Margin} {Old Right Margin} {New Left Margin} {New Right Margin}	18

§1B	Columns	<pre>[Start Length] &lt;Old def&gt; &lt;Old number of columns&gt; [Old % size of column 1] {Old space between column 1 &amp; 2} ... [Old % size of column n] &lt;New def&gt; &lt;New number of columns&gt; [New % size of column 1] {New space between column 1 &amp; 2} ... [New % size of column n] [End length]</pre>	2 + (columns x 12)
§1C	Table ON	<pre>[Start Length] [Table ID1] [Table ID2] &lt;Outside Top border #&gt; &lt;Outside Left border #&gt; &lt;Outside Bottom border #&gt; &lt;Outside Right border #&gt; [Outside Top border RGB color].3 [Outside Left border RGB color].3 [Outside Bottom border RGB color].3 [Outside Right border RGB color].3 &lt;Inside Top border #&gt; &lt;Inside Left border #&gt; &lt;Inside Bottom border #&gt; &lt;Inside Right border #&gt; [Inside Top border RGB color].3 [Inside Left border RGB color].3 [Inside Bottom border RGB color].3 [Inside Right border RGB color].3 [Cell background fill RGB color].3 &lt;Cell fill pattern&gt; &lt;Table mode&gt; {Offset from left edge of paper} {Top gutter} {Left gutter} {Bottom gutter} {Right gutter} [# of rows] &lt;# header rows&gt; &lt;# of columns&gt;     &lt;Column mode&gt;     &lt;Number format&gt;     {Column width}     {Decimal right offset}     Repeated for each column [End length]</pre>	100 + (columns x 10)

\$1D	Table header	<TableHeaderFlag> [Old font] [Old font size] {Old attributes} [Old justification] [New font] [New font size] {New attributes} [New justification]	23
\$1E	Beg table row	[Start Length] {CellInfoFlags} <New CellInfo...>: [beginRowNumber] [endRowNumber] [spannedColumns] {beginUPLin} {[beginUDLin]} {endUPLin} {textHeight} {height} Repeated for each cell [End length]	6 + (columns x 28)
\$1F	Beg cell fill	[Cell fill background color].3 <Cell fill pattern #>	9
\$20	Beg cell line color	[Cell top border color].3 [Cell Left border color].3 [Cell Bottom border color].3 [Cell Right border color].3	26
\$21	Beg cell line #	<Cell top border #> <Cell Left border #> <Cell Bottom border #> <Cell Right border #>	6
\$22	Beg of cell	<Cell Mode>	3
\$23	Paragraph indent	{Old ParagraphIndent} {New ParagraphIndent}	10
\$24	Temp margin	[Left margin adjustment] [Right margin adjustment]	6
\$25	Line indent	{Line Indent}	6
\$26	Border ascent	[Border Ascent]	4
\$27	BOL	[Top border of line] [Maximum ascent of line] [Maximum descent of line] {Line height}	12
\$28	BOL characters	[Start Length] <Def> <Characters...> [End length]	Variable



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