and Apple Macintosh Applications Microsoft® MS®-DOS, Windows®, Windows NT®,

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Sample RTF Reader Program Rich Text Format (RTF) Specification and Subject:

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ΙΝΤΚΟDUCTION

The Rich Text Format (RTF) Specification is a method of encoding formatted text and graphics for easy transfer between applications. Currently, users depend on special translation software to move word-processing documents between different MS-DOS®, Windows, OS/2, Macintosh, and Power Macintosh applications.

The RTF Specification provides a format for text and graphics interchange that can be used with different output devices, operating environments, and operating systems. RTF uses the AUSI, PC-8, Macintosh, or IBM PC character set to control the representation and formatting of a document, both on the screen and in print. With the RTF Specification, documents created under different operating systems and with different software applications can be transferred between those operating systems and applications. RTF in print. Word 6.0 (and later) for the Macintosh and Power Macintosh have a tile type of "RTF."

Software that takes a formatted file and turns it into an RTF file is called a writer. An RTF writer separates the application's control information from the actual text and writes a new file containing the text and the RTF groups associated with that text. Software that translates an RTF file into a formatted file is called a reader.

Included with the RTF specification is a sample RTF reader application (see "Appendix A: Sample RTF Reader Application" beginning on page 2 of this document). It is designed for use with the specification Note, assist those users developing their own RTF readers. The file included with this Application Note, Rtfreadr.exe, contains the sample RTF reader program itself. This file and its use are described in Rtfreadr.exe, contains the sample RTF reader program itself. This file and its use are described in assist those of sample RTF reader program itself. This file and its use are described in any other type of support for the sample RTF reader code or the RTF specification.

RTF Version 1.5 has been updated to include all new control words introduced by Microsoft Word for Windows.

ХАТИҮЗ ЯТЯ

An RTF file consists of unformatted text, control words, control symbols, and groups. For ease of transport, a standard RTF file can consist of only 7-bit ASCII characters. (Converters that communicate with Microsoft Word for Windows or Microsoft Word for the Macintosh should expect 8-bit characters.) There is no set maximum line length for an RTF file.

A control word is a specially formatted command that RTF uses to mark printer control codes and information that applications use to manage documents. A control word cannot be longer than 32 characters. A control word takes the following form:

>LetterSequence<Delimiter>

Note that a backslash begins each control word.

The LetterSequence is made up of lowercase alphabetic characters between "a" and "z" inclusive. RTF is case sensitive, and all RTF control words must be lowercase.

The delimiter marks the end of an RTF control word, and can be one of the following:

- \langle A space. In this case, the space is part of the control word.
- A digit or a hyphen (-), which indicates that a numeric parameter follows. The subsequent digital sequence is then delimited by a space or any character other than a letter or a digit. The parameter can be a positive or a negative number. The range of the values for the number is generally –32767 through 32767. However, Word tends to restrict the range to –31680 through 31680. Word allows values in the range -2,147,483,648 to 2,147,483,648 to 3,147,483,648 for a small number of keywords (specifically /bin, heydttm, and some picture properties). An RTF parser must handle an arbitrary string of digits as a legal value for a keyword. If a numeric parameter immediately follows the control word, this parameter nonnumeric character in the same manner as any other control word.
- \langle Any character other than a letter or a digit. In this case, the delimiting character terminates the control word but is not actually part of the control word.

If a space delimiter, including spaces, will appear in the document. For this reason, you should use spaces only where necessary; do not use spaces merely to break up RTF code.

A control symbol consists of a backslash followed by a single, nonalphabetic character. For example, /~ represents a nonbreaking space. Control symbols take no delimiters.

A group consists of text and control words or control symbols enclosed in braces ({ }). The opening brace ({) indicates the start of the group and the closing brace (}) indicates the end of the group. Each group include groups for forts, styles, screen color, pictures, footnotes, comments (annotations), headers and footers, summary information, fields, and bookmarks, as well as document-, section-, paragraph-, and groups and document-formatting properties are included, they must precede the first plain-text character in the document. These groups form the RTF file header. If the group for tonts is included, it should precede the first plain-text character in the document. These groups form the RTF file header. If the group for tonts is included, it should precede the first plain-text character in the document. These groups form the RTF file header. If the group for fonts is included, it should precede the first plain-text character in the group for styles. If any group is not used, it can be omitted. The group for styles. If any group is not used, it can be omitted. The groups are discussed in the following the group for styles. If any group is not used, it can be omitted. The groups are discussed in the following the group for styles. If any group is not used, it can be omitted. The groups are discussed in the following the group for styles.

The control properties of certain control words (such as bold, italic, keep together, and so on) have only two states. When such a control word has no parameter or has a nonzero parameter of 0, it is assumed that the control word the property. For example, /b turns on bold, whereas /b0 turns off bold.

Certain control words, referred to as destinations, mark the beginning of a collection of related text that is could appear at another position, or destination, within the document. Destinations may also be text that is where the footnote text follows the control word. Page breaks cannot occur in destination text. Destination control words and their following text must be enclosed in braces. No other control words or text may appear within the destination group. Destinations added after the RTF Specification published in the March 1987 Microsoft Systems Journal may be preceded by the control symbol /*. This control symbol

identifies destinations whose related text should be ignored if the RTF reader does not recognize the destination. (RTF writers should follow the convention of using this control symbol when adding new destinations or groups.) Destinations whose related text should be inserted into the document even if the RTF reader does not recognize the destination should not use /*. All destinations that were not included in the March 1987 revision of the RTF Specification are shown with /* as part of the control word.

Formatting specified within a group affects only the text within that group. Generally, text within a group inherits the formatting of the text in the preceding group. However, Microsoft implementations of RTF assume that the footnote, annotation, header, and footer groups (described later in this chapter) do not inherit the formatting of the preceding text. Therefore, to ensure that these groups are always formatted correctly, you should set the formatting within these groups to the default with the **/sectd**, **/pard**, and **/plain** control words, and then add any desired formatting.

The control words, control symbols, and braces constitute control information. All other characters in the file are plain text. Here is an example of plain text that does not exist within a group:

The phrase "This is plain text" is not part of a group and is treated as document text.

As previously mentioned, the backslash (/) and braces ({ }) have special meaning in RTF. To use these characters as text, precede them with a backslash, as in //, /{, and /}.

CONVENTIONS OF AN RTF READER

The reader of an RTF stream is concerned with the following:

- . Separating control information from plain text.
- . Acting on control information.
- \langle Collecting and properly inserting text into the document, as directed by the current group state.

Acting on control information is designed to be a relatively simple process. Some control information simply contributes special characters to the plain text stream. Other information serves to change the program state, which includes properties of the document as a whole, or to change any of a collection of group states, which apply to parts of the document.

As previously mentioned, a group state can specify the following:

- \langle The destination, or part of the document that the plain text is constructing.
- \langle Character-formatting properties, such as bold or italic.
- \langle Paragraph-formatting properties, such as justified or centered.
- \langle Section-formatting properties, such as the number of columns.
- . Table-formatting properties, which define the number of cells and dimensions of a table row.
- In practice, an RTF reader will evaluate each character it reads in sequence as follows:
- \langle If the character is an opening brace ({), the reader stores its current state on the stack. If the character is a closing brace (}), the reader retrieves the current state from the stack.

- V If the character is a backslash (/), the reader collects the control word or control symbol and its parameter, if any, and looks up the control word or control symbol in a table that maps control words to actions. It then carries out the action prescribed in the table. (The possible actions are discussed below.) The read pointer is left before or after a control-word delimiter, as appropriate.
- If the character is anything other than an opening brace ({), closing brace (}), or backslash (), the reader assumes that the character is plain text and writes the character to the current destination using the current formatting properties.

If the RTF reader cannot find a particular control word or control symbol in the look-up table described above, the control word or control symbol is bove, the control word or control symbol should be ignored. If a control word or control symbol is no state change should occur. When a closing brace (}) is encountered, the current state should be then it defines a destination group and was itself preceded by an opening brace ({}). The RTF reader a control word is control word, then it defines a destination group and was itself preceded by an opening brace ({}). The RTF reader should be the current state should be saved on the stack, thereby resetting the current state. If the /* control symbol precedes a control word, discard all text up to and including the closing brace (}) that closes this group. All RTF reader may skip past the recognize all destinations defined in the March 1987 RTF Specification. The reader may skip past the group, but it is not allowed to simply discard the control word. Destinations defined since March 1987 are marked with the /* control symbol.

Note All RTF readers must implement the * control symbol so that they can read RTF files written by newer RTF writers.

For control words or control symbols that the RTF reader can find in the look-up table, the possible actions are as follows.

	Description	Action
ibed in affer an it the mples ooter , oote oote	The RTF reader changes the destination to the destination description description description changes are legal only immediately a opening brace ({). (Other restrictions may also apply; for example footnotes cannot be nested.) Many destination changes imply that current property settings will be reset to their default settings. Example of control words that change destination are /footnote , /header , /f /hifo , /fonttbl , /stylesheet , and /colortbl . This Application <i>N</i> identifies all destination control words that control words where they appear in control word tables.	Change Destination
ntry. endix tion control me a	The RTF reader changes the property as described in the table er The entry will specify whether a parameter is required. The "Appe C: Index of RTF Control Words" section at the end of this Applica Note also specifies which control words require parameters. If a parameter is needed and not specified, then a default value will I used. The default value used depends on the control word. If the word does not specify a default, then all RTF readers should assurt default of 0.	Change Formatting Property
S	The reader inserts into the document the character code or codes described in the table entry.	Insert Special Character
an to s s	The reader inserts into the document the character code or codes described in the table entry and performs whatever other action the entry specifies. For example, when Microsoft Word interprets /par , paragraph mark is inserted in the document and special code is rule could the paragraph properties belonging to that paragraph mark	Preet Special Character and Perform Action

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This Application Note describes RTF using the following syntax, based on Backus-Naur Form.

gninsəM xsinyS

Item a and/or item b, in any order.	а&в
Item a or item b.	а b
ltem a followed by item b.	а b
Zero or more repetitions of item a.	a*
One or more repetitions of item a.	9+
ltem a is optional.	3?
The (terminal) control word a, with a parameter.	N 6 10 6
The (terminal) control word a, without a parameter.	A
.lsnimterminal.	<text></text>
A literal.	'S'
Binary data.	ATAQ8#
Hexadecimal data.	ATAD2#
Text (without control words).	#PCDATA

CONTENTS OF AN RTF FILE

An RTF file has the following syntax:

<File> </br>

This syntax is the standard RTF syntax; any RTF reader must be able to correctly interpret RTF written to this syntax. It is worth mentioning again that RTF readers do not have to use all control words, but they must be able to harmlessly ignore unknown (or unused) control words, and they must correctly skip over destinations marked with the *l** control symbol. There may, however, be RTF writers that generate RTF that does not conform to this syntax, and as such, RTF readers should be robust enough to handle some minor variations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct RTF readers APT readers and the robust enough to handle some minor wariations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct RTF readers and the sould be readers in any correct variations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct variations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct variations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct variations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct variations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct variations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct variations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct variations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct variations. Nonetheless, if an RTF writer generates RTF contex and the specification the specific

Header

The header has the following syntax:

<hetader> /rtf <charset> /deff? <fonttbl> <filetbl>? <colortbl>? <stylesheet>? <listtables>?

Each of the various header tables should appear, if they exist, in the above order. Document properties can occur before and between the header tables. A property must be defined before being referenced. Specifically:

- \langle The style sheet must occur before any style usage.
- . The font table must precede any reference to a font.
- The /deff keyword must precede any text without an explicit reference to a font, because it specifies the font to use in such cases.

An entire RTF file is considered a group and must be enclosed in braces. The **/rtfW** control word must follow the opening brace. The numeric parameter **M** identifies the major version of the RTF Specification used. The RTF standard described in this Application Vote, although titled as version 1.5, continues to correspond syntactically to RTF Specification version 1. Therefore, the numeric parameter **M** for the **/rtf** control word should still be emitted as 1.

Character Set

After specifying the RTF version, you must declare the character set used in this document. The control word for the character set must precede any plain text or any table control words. The RTF Specification currently supports the following character sets.

Unicode RTF

Word 97 is a partially Unicode-enabled application. Text is handled using the 16-bit Unicode character encoding scheme. Expressing this text in RTF requires a new mechanism, because until this release (version 1.5), RTF has only handled 7-bit characters directly and 8-bit characters encoded as hexadecimal. The Unicode mechanism described here can be applied to any RTF destination or body text.

This keyword is followed immediately by equivalent character(s) in AUSI representation. In this way, old readers will ignore the **/uN** keyword and pick up the ignore the next **N** characters, where **N** corresponds to the last **/ucN** value encountered.

As with all RTF keywords, a keyword-terminating space may be present (before the ANSI characters) which is not counted in the characters to skip. While this is not likely to occur (or recommended), a **/bin** keyword, its argument, and the binary data that follows are considered one character for skipping purposes. If an RTF acope delimiter character (that is, an opening or closing brace) is encountered while the scanning skippable data, the skippable data is considered to be ended before the delimiter. This makes it possible for a reader to perform some rudimentary error recovery. To include an RTF delimiter in skippable data, it must be represented using the appropriate control symbol is considered with a backslash,) as in plain using the appropriate control symbol is considered a single character for the purposes of counting skippable characters.

An RTF writer, when it encounters a Unicode character with no corresponding AUSI character, should output **/uN** followed by the best AUSI representation it can manage. Also, if the Unicode character translates into an AUSI character stream with count of bytes differing from the current Unicode Character Byte Count, it should emit the **/uCN** keyword prior to the **/uN** keyword to notify the reader of the change.

RTF control words generally accept signed 16-bit numbers as arguments. For this reason, Unicode values greater than 32767 must be expressed as negative numbers.

This keyword represents the number of bytes corresponding to a given **/uN** Unicode character. This keyword may be used at any time, and values are scoped like character properties. That is, a **/ucN** keyword applies only to text following the grevious **/uc** value is restored. The reader must keep a stack of counts seen and use the most recent one to skip the appropriate number of characters when it encounters a **/uN** keyword. When leaving an RTF group which specified a **/uc** value, the reader must keep a stack of counts seen and use the most recent one to skip the appropriate number of characters when it the reader must revert to the previous value. A default of 1 should be assumed if no the reader must revert to the previous value. A default of 1 should be assumed if no the reader must revert to the previous value. A default of 1 should be assumed if no the reader must revert to the previous value.

A common practice is to emit no AUSI representation for Unicode characters within a Unicode destination context (that is, inside a **/ud** destination.). Typically, the destination will contain a **/uc0** control sequence. There is no need to reset the count on leaving the **/ud** destination as the scoping rules will ensure the previous value is restored.

Document Text

Nou/

Nu/

Document text should be emitted as ANSI characters. If there are Unicode characters that do not have corresponding ANSI characters, they should be output using the **/ucN** and **/uN** keywords.

For example, the text LabTValue (Unicode characters 0x004c, 0x0061, 0x0062, 0x0393, 0x0056, 0x0061, 0x006c, 0x0065, 0x0065, 0x0061, 0x006c, 0x0065, 0x0065, 0x0061, 0x006c, 0x0065, 0x

Lab/u915Gvalue

Jx9T noitsnit29D

Destination text is defined as any text represented in an RTF destination. A good example is the bookmark name in the **/bkmkstart** destination.

Any destination containing Unicode characters should be emitted as two destinations within a **/upr** destination to ensure that old readers can read it properly and that no Unicode character encoding is lost when read with a new reader.

For example, a bookmark name LabrValue (Unicode characters 0x004c, 0x0061, 0x0062, 0x0393, 0x0056, 0x0056, 0x0393,

{\u00ed left Laberatt Laberatue}{/*/udf/*/bkmkstart Lab/u915 Value}}

The first sub-destination contains only ANSI characters and is the representation that old readers will see. The second sub-destination is a **/*/ud** destination which contains a second copy of the **/bkmkstart** destination. This copy can contain Unicode characters and is the representation that Unicode-aware readers must pay attention to, ignoring the ANSI-only version.

Font Table

The \fonttbl control word introduces the font table group. Unique \f w control words define each font available in the document, and are used to reference that font throughout the document. This group has the syntax listed in the following table.

<codepage></codepage>	/cbð
<fontfname></fontfname>	'{/*' \fontfile <codepage>? #PCDATA '}'</codepage>
<fonttype></fonttype>	∫tfnil \ftfruetype
<dm9tno1></dm9tno1>	'{' ? <stsb> ?<əmsnttnoi> <əqyttnoi> dmətnoi/ '*/}'</stsb>
<9msntlstnot>	'{ /*' \falt #PCDATA '}'
<9msntnot>	#PCDATA
> <nontaggedname< th=""><th>9msnì/*/ ∉</th></nontaggedname<>	9msnì/*/ ∉
<əsonsq>	 clata>
<fpre>fprq></fpre>	\tpression in the second se
<fcharset></fcharset>	ţeyarset
<viimstroot></viimstroot>	/fnil /froman /fswiss /fmodern /fscript /fdecor /ftech /fbidi
<muntiol></muntiol>	A
	<codepage>? <fontaltname>? ';' <</fontaltname></codepage>
<ofnitnot></ofnitnot>	<fontnum><fontnamentamily><fond>?<fond>?<fond>?<fondagggddaggddaggddaggddaggddaggddaggdda< th=""></fondagggddaggddaggddaggddaggddaggddaggdda<></fond></fond></fond></fontnamentamily></fontnum>
<ld><fonttbl></fonttbl></ld>	'{' +(('{' <ohithetarian ('="" <="" <<="" ohithetarian="" th=""></ohithetarian>

Note for <fontembs that either <fontinames or <datas must be present, although both may be present. All fonts available to the RTF writer can be included in the font table, even if the document doesn't use all the fonts.

RTF also supports font families, so that applications can attempt to intelligently choose fonts if the exact font is not present on the reading system. RTF uses the following control words to describe the various font families.

ibidì/	Arabic, Hebrew, or other bidirectional font	Miriam
lîtêch	technical, symbol, and mathematical fonts	Symbol
/fdecor	Decorative fonts	Old English, ITC Zapf Chancery
)fscript	Script fonts	Gursive
/fmodern	Fixed-pitch serif and sans serif fonts	Courier New, Pica

If an RTF file uses a default font, the default font number is specified with the /deffN control word, which must precede the font-table group. The RTF writer supplies the default font number used in the creation of the document as the numeric argument \mathbf{N} . The RTF reader then translates this number used in the font table font the document as the numeric argument \mathbf{N} . The RTF reader then translates this number used in the font the font table into the most similar font available on the reader's system.

The following control words specify the character set, alternative font name, pitch of a font in the font table, and non-tagged font name.

If /tprq is specified, the N argument can be one of the following values.

əulsV	Pitch
0	Default pitch
٢	Fixed pitch
5	Variable pitch

Pont Embedding

RTF supports embedded fonts with the **/fontemb** group located inside a font definition. An embedded font can be specified by a file name, or the actual font data may be located inside the group. If a file name is specified, it is contained in the **/fontfile** group. The **/cpg** control word can be used to specify the character set for the file name.

RTF supports TrueType, and other embedded fonts. The type of the embedded font is described by the following control words.

Embedded font type	Control word
Unknown or default font type (the default)	lintt/
TrueType font	/fttruetype

frode Page Support

A font may have a different character set from the character set of the document. For example, the Symbol font has the same characters in the same positions both on the Macintosh and in Windows. RTF describes this with the **/cpg** control word, which names the character set used by the font. In addition, file names the document; the **/cpg** control word can change the character set tor these file names as well. However, all RTF documents must still declare a character set (that is, **lans**, **las**, **las**, **loc**, or **loca**) to maintain backward compatibility with earlier RTF readers.

The table below describes valid values for $\ensuremath{\mathsf{cpg.}}$

 Dirited States IBM Rabic (ASMO 708) Arabic (ASMO 708) Arabic (ASMO 409+, BCON V4) Arabic (transparent Arabic) BM multilingual BM multilingual BM multilingual BM multilingual Arabic (transparent Arabic) BM multilingual BM multilingu
 Nerabic (ASMO 708) Arabic (ASMO 708) Arabic (ASMO 449+, BCON V4) Arabic (transparent Arabic) Arabic (transparent Arabic) Arabic (transparent ASMO) Arabic (transparent ASMO) Mindows 3.1 (United States and Western Europe) Portuguese Portuguese Babie Portuguese Babie Babie
 Arabic (ASMO 449+, BCON V4) Arabic (transparent Arabic) Arabic (transparent Arabic) Arabic (transparent ASMO) Arabic (transparent ASMO) Mindows 3.1 (United States and Western European Mindows 3.1 (United States and Western Europe) Portuguese Batern European Portuguese Portuguese Batern European Soviet Union Mindows 3.1 (Eastern European) Windows 3.1 (Cytilic)
 Alo Frabic (transparent Arabic) Arabic (transparent Arabic) Arabic (transparent ASMO) Arabic (transparent SMO) Mindows 3.1 (United States and Western Europe) Bortuguese Portuguese Bortuguese Hebrew Arabic Bortuguese Bortuguese Merech Canadian Arabic Bortuguese Morwegian Soviet Union Windows 3.1 (Eastern European)
 A1 Arabic (Nafitha Enhanced) Arabic (transparent ASMO) Morudows 3.1 (United States and Western European Moruguese Bastern European Portuguese Bodies Hebrew Bodies Soviet Union Soviet Unio
 20 Arabic (transparent ASMO) 19 Windows 3.1 (United States and Western Europe) 50 Windows 3.1 (United States and Western Europe) 52 Eastern European 53 French Canadian 54 Arabic 56 Soviet Union 56 Soviet Union 55 Vindows 3.1 (Eastern European) 55 Windows 3.1 (Cyrillic)
 Mindows 3.1 (United States and Western Europe) Mindows 3.1 (United States and Western European Eastern European Portuguese Hebrew Hebrew Krabic Morwegian Soviet Union Soviet Union Mindows 3.1 (Eastern European) Windows 3.1 (Cyrillic)
 50 IBM multilingual 52 Eastern European 53 Hebrew 54 Portuguese 55 Norwegian 550 Windows 3.1 (Cyrillic) 251 Windows 3.1 (Cyrillic)
 52 Eastern European 60 Portuguese 62 Hebrew 63 French Canadian 64 Arabic 65 Norwegian 65 Soviet Union 32 Japanese 250 Windows 3.1 (Cyrillic) 251 Windows 3.1 (Cyrillic)
 Fortuguese French Canadian French Canadian Arabic Morwegian Soviet Union Soviet Union Japanese Windows 3.1 (Eastern European) Windows 3.1 (Cyrillic)
 Mebrew French Canadian French Canadian Arabic Morwegian Soviet Union Soviet Union Soviet Union Mindows 3.1 (Eastern European) Windows 3.1 (Cyrillic)
 53 French Canadian 64 Arabic 65 Norwegian 65 Soviet Union 32 Japanese 250 Windows 3.1 (Cyrillic) 251 Windows 3.1 (Cyrillic)
64 Arabic 65 Norwegian 86 Soviet Union 32 Japanese 250 Windows 3.1 (Eastern European) 251 Windows 3.1 (Cyrillic)
65 Norwegian 66 Soviet Union 32 Japanese 250 Windows 3.1 (Eastern European) 251 Windows 3.1 (Cyrillic)
66 Soviet Union 32 Japanese 250 Windows 3.1 (Eastern European) 251 Windows 3.1 (Cyrillic)
32 Japanese 250 Windows 3.1 (Eastern European) 251 Windows 3.1 (Cyrillic)
250 Windows 3.1 (Eastern European) 251 Windows 3.1 (Cyrillic)
251 (Cyrillic) Cyrillic) 251 (Cyrillic)

File Table

The **/filetbl** control word introduces the file table destination. The only time a file table is created in RTF is when the document contains subdocuments. This group defines the files referenced in the document and has the following syntax:

'{' +('{' <ohielit' '*/}'

 'filetbl> '}') 'itiletbl>

#PCDATA

Note that the file name can be any valid alphanumeric string for the named file system, indicating the complete path and file name.

/filetbl A list of documents referenced by the current document. The file table has a structure analogous to the style or font table. This is a destination control word word output as part of the document header. /file Marks the beginning of a file group, which lists relevant information about the referenced file. This is a destination control word. /file Marks the beginning of a file group, which lists relevant information about the referenced file. This is a destination control word. /fielative/N File ID number. Files are referenced later in the document using this number. /fielative/N File ID number. Files are referenced later in the document using this number. /frelative/N Corrent is saved to the path C.Private/Resume/File1. Goc, then that entry in the file table document. For example, if a meanings of the file has been moved to another folder or disk. The access to the file, or find it if the file has been moved to another folder or disk. The access to the file, or find it if the file has been moved to another folder or disk. The access to the file or more the relevance file system. /fvaliddos MScintosh tile system. /fvaliddos MScintosh file system. /fvalidhtfs MFPS file system. /fvalidhtfs Network file system. This control word may be used in on the file system. /fvalidhtfs MScintosh file system. /fvalidhtfs MScintosh file system. /fvalidoss MScintosh file system.	Control word	Definițion
\fileMarks the beginning of a file group, which lists relevant information about the referenced file. This is a destination control word.\fidWFile ID number. Files are reterenced later in the document using this number.\frelativeNThe character position within the path (starting at 0) where the referenced file's path atarts to be relative to the path C:/Private/Resume/Edu/FileS.doc, then that enty in the file table of relative PB, to point at the character "e" in "edu". This allows preservation astarts to be relative to the path C:/Private/Resume/Edu/FileS.doc, then that enty in the file table of relative paths.\frelativeNThe character position within the path (starting at 0) where the referenced file's path astarts to be relative to the path C:/Private/Resume/Edu/FileS.doc, then that enty in the file table of relative paths.\frelativeNThe character position within the path (starting at 0) where the referenced file's path astarts to be relative to the path C:/Private/Resume/Edu/FileS.doc, then that allows preservation of relative paths.\frelativeNCurrently only filled in for paths from the Macintosh file system. It is an operating- system-specific number tor identifying the file, which may be used to speed up masings of the file, or thind in the file has been moved to another toller or disk. The future.\free filedosMScintosh operating system.mM control word may be defined tor other tile system.\free filedosMScintosh operating system.\free filedosMScintosh file system.	ld19li1/	A list of documents referenced by the current document. The file table has a structure analogous to the style or font table. This is a destination control word output as part of the document header.
YieldFile ID number. Files are referenced later in the document using this number./tieldiventialFile ID number. Files are referenced later in the document using this number./trelativeNThe character position within the path (starting at 0) where the referenced file's path document. For example, if a document is saved to the path C:/Private/Resume/File1.doc and its file table on telative path C:/Private/Resume/Edu/File2.doc, then that entry in the file table of relative paths./tosins the path C:/Private/Resume/Edu/File2.doc, then that entry in the file table of relative paths./tosinamn/tosinamn/tosinamn/tosindos	9liì/	Marks the beginning of a file group, which lists relevant information about the referenced file. This is a destination control word.
\frelativeNThe character position within the path (starting at 0) where the referenced file's path starts to be relative to the path C:/Private/Resume/File1.doc and its file table document is saved to the owning document. For example, if a will be \frelative193 for the path C:/Private/Resume/File1.doc and its file table will be \frelative193 for the file table for the owning document. For example, if a document is saved to the path C:/Private/Resume/File1.doc and its file table will be \frelative193 for the file table for the file table asystem-specific number for identifying the file, which may be used to speed up asystem-specific number for identifying the file, which may be used to speed up future.\fraatidadsMacintosh operating system name for this number is the "file id." Additional meanings of the \footnumN control word may be defined for ordisk. The future.\fraatidadsMS-DOS file system.\fraatidadsMS-DOS file system.\fraatidadsMS-SOS\fraatidadsMS-SOS\fraatidadsMS-SOSMotive fileSystem-sectionMathematicMS-SOSMS-SOSMS-SOSMS-SOSMS-SOSMS-SOSMS-SOSMS-SOSMS-SOSMS-SOSMS-SOSMS-SOSMS-SOSMS-SOSMS-SOS	Nbii/	File ID number. Files are referenced later in the document using this number.
\formundCurrently only filled in for paths from the Macintosh file system. It is an operating- system-specific number for identifying the file, which may be used to speed up macintosh operating system name for this number is the "file id." Additional macintosh operating system name for this number is the "file id." Additional fusultance\fvalidacMacintosh operating system name for this number is the "file id." Additional macintosh operating system name for this number is the "file id." Additional future.\fvalidacMacintosh operating system name for this number is the "file id." Additional macintosh operating system name for this number is the "file id." Additional future.\fvalidacMacintosh operating system name for this number is the "file id." Additional future.\fvalidacMacintosh operating system name for this number is the "file id." Additional future.\fvalidacMacintosh file system.\fraite system.Macintosh file system.\fraite system.Macintosh file system.\fraite function with any of the previous file source control words.\fraitefunctionMacintosh file system.\fraitefunctionMacintosh file system.Macintosh </td <td>Məvitslə1t∕</td> <td>The character position within the path (starting at 0) where the referenced file's path starts to be relative to the path of the owning document. For example, if a document is saved to the path C:\Private\Resume\File2.doc, then that entry in the file table will be \frelative18, to point at the character "e" in "edu". This allows preservation of relative paths.</td>	Məvitslə1t∕	The character position within the path (starting at 0) where the referenced file's path starts to be relative to the path of the owning document. For example, if a document is saved to the path C:\Private\Resume\File2.doc, then that entry in the file table will be \frelative18, to point at the character "e" in "edu". This allows preservation of relative paths.
/fvalidmacMacintosh file system./fvaliddosMS-DOS file system./fvalidhtfsNTFS file system./fvalidhtfsHPFS file system./fnetworkNetwork file system.finetworkNetwork file source control word may be used in conjunction with any of the previous file source control words.	Vmunsoì/	Currently only filled in for paths from the Macintosh file system. It is an operating- system-specific number for identifying the file, which may be used to speed up access to the file, or find it if the file has been moved to another folder or disk. The Macintosh operating system name for this number is the "file id." Additional meanings of the /fosnum/ control word may be defined for other file systems in the future.
/fvaliddosMS-DOS file system./fvaliddosMS-DOS file system./fvalidntfsNTFS file system./fnetworkMetwork file system. This control word may be used in conjunction with any of the previous file source control words.)fvalidmac	Macintosh file system.
/fvalidntfsNTFS file system./fvalidntfsHPFS file system. This control word may be used in conjunction with any of the/fnetworkNetwork file source control words.	sobbilsvł/	MS-DOS file system.
/fvalidhpfsHPFS file system./fnetworkNetwork file system. This control word may be used in conjunction with any of the previous file source control words.	sttnbilsvt/	NTFS file system.
If network Network file system. This control word may be used in conjunction with any of the previous file source control words.	słqdbilsvł/	HPFS file system.
	/fnetwork	Network file system. This control word may be used in conjunction with any of the previous file source control

Color Table

<9msn 9lif>

The /colortbl control word introduces the color table group, which defines screen colors, character colors, and other color information. This group has the following syntax:

-			
	:olordet>+ '}	/ /colortbl <c< th=""><th><colortbl></colortbl></th></c<>	<colortbl></colortbl>

<colordef> /red ? & /green ? & /blue ? ;'

The following are valid control words for this group.

Control word Meaning

Vəuld/	xəbni əula
/greenV	Sreen index
/red/	xəbni bəЯ

Each definition must be delimited by a semicolon, even if the definition is omitted. If a color definition is omitted, the RTF reader uses its default color. The example below defines the default color table used by Word. The first color is omitted, as shown by the semicolon following the **/colortbl** control word. The missing definition indicates that color 0 is the 'auto' color.

0/p1ue0:/red0/green0/p1ue0:/red0/green0/b1ue255;/red0/green255/b1ue255;/red0/green255/b1ue255;/red0 /green0/b1ue255;/red0/green286/b1ue0;/red255/green255/b1ue0;/red255/green255/b1ue255;/red0 /green0/b1ue128;/red0/green128/b1ue0;/red128/green255/b1ue0;/red255/green255/b1ue255;/red0 /green0/b1ue158;/red0/green128/b1ue0;/red128/green255/green255/b1ue0;/red128/green255/b1ue255;/red0 /green0/b1ue0;/red0/green128/b1ue0;/red128/green255/green255/b1ue0;/red128/green255/b1ue255;/red0 /green0/b1ue0;/red0/green128/b1ue0;/red0/green255/green255/b1ue0;/red0 /green0/b1ue0;/red0/green255/green255/green255;/red0/green255/green255/green255/green252;/red0 /green0/b1ue0;/red0/green258/b1ue0;/red128/green252;/red0/green252;/red0 /green252/green258/green258/b1ue0;/red128/green252;/red0 /green252/green258/green258/green252;/red0/green252;/red0 /green252/green258/green252;/red0 /green252/green258/green252;/red0 /green252/green258/green252;/red0 /green252/green258/green258/green252;/red0 /green252/green258/green258/green252;/red0 /green252/green258/green258/green252 /green252/green258/green258/green252 /green252/green258/green258/green252 /green2522/green258/green258/green252 /green252 /green252

The foreground and background colors use indexes into the color table to define a color. For more information.

The following example defines a block of text in color (where supported). Note that the cf/cb index is the index of an entry in the color table, which represents a red/green/blue color combination.

```
\{ \ following the background is color 2. 
 The background is color 1 and the foreground is color 2. 
 \}
```

If the file is translated for software that does not display color, the reader ignores the color table group.

Style Sheet

The \stylesheet control word introduces the style sheet group, which contains definitions and descriptions of the various styles used in the document. All styles in the document's style sheet can be included, even if not all the styles are used. In RTF, a style is a form of shorthand used to specify a set of character, paragraph, or section formatting.

The style-sheet group has the following syntax:

<key></key>	ATADATA
<keys></keys>	(/shift? & /כנרו? א אונ?) <key></key>
<stylename></stylename>	#PCDATA
<formatting></formatting>	+(standet> standet> <tabdet> <tablet> </tablet></tabdet>
<n9bbid></n9bbid>	uəppiys\
<autoupd></autoupd>	pdnoines
<txen< td=""></txen<>	txəus)
<bskipe </bskipe bessed>	uopəseqs\
<aditive></aditive>	/additive
<keycode></keycode>	,{, /k∈λcoqe <keλ≥> ,},</keλ≥>
<styledef></styledef>	sp sɔ[, s
<style></style>	

For <style>, both <styledet> and <stylename> are optional; the default is paragraph style 0. Note for <stylename> that Microsoft Word for the Macintosh interprets commas in #PCDATA as separating style synonyms. Also, for <key>, the data must be exactly one character.

Mnî∕	Specifies a function key where $oldsymbol{N}$ is the function key number. Used to describe shortcut-key codes for styles.
ltto/	The CTRL modifier key. Used to describe shortcut-key codes for styles.
ttida/	The SHIFT modifier key. Used to describe shortcut-key codes for styles.
tis/	The ALT modifier key. Used to describe shortcut-key codes for styles.
/keycode	This group is specified within the description of a style in the style sheet in the RTF header. The syntax for this group is '{/*'/keycode <keys>}' where <keys> are the characters used in the key code. For example, a style, Normal, may be defined {/s0 {/*/keycode /shift/ctrl n}Normal;} within the RTF style sheet. See the Special Character control words for the characters outside the alphanumeric range that may be used.</keys></keys>
n ∍bbi d <i>≥</i> /	Style does not appear in the Styles drop-down list in the Style dialog box ¹ (on the Format menu, click Styles).
pdno₁nes∖	Automatically update styles.
Vtxənz/	Defines the next style associated with the current style; if omitted, the next style is the current style.
Vnobəssda/	Defines the number of the style on which the current style is based (the default is 222—no style).
9vijidda/	Deed in a character style definition $(\{t^{\prime\prime}, \mathbf{cs}_{-}\})$. Indicates that character style attributes are to be added to the current paragraph style attributes, rather than setting the paragraph attributes to only those defined in the character style definition.
Nsb/	Designates section style.
Ns/	Designates paragraph style.
W22/*/	Designates character style. Like <i>/s</i> , <i>/cs</i> is not a destination control word. However, it is important to treat it like one inside the style sheet; that is, <i>/cs</i> must be prefixed with <i>/</i> * and must appear as the first item inside a group. Doing so ensures that readers that do not understand character styles will skip the character style information correctly. When used in body text to indicate that a character style has been applied, do not include the <i>l</i> * prefix.
Control word	prinsəM

The following is an example of an RTF style sheet

{/stylesheet{/fs20 /spasedon222/snext0{/*/Keycode /shift/ctr1 n} Normal;}{/s1/qr /fs20 /spasedon0/snext1 FLUSHRIGHT;}{/s2/fi-720/li720/fs20/ri2880/spasedon0/snext2 IND;}}

and RTF paragraphs to which the styles are applied:

/widowctrl/ftnbj/ftnrestart /sectd /linex0/endnhere /pard/plain /fts0 This is Normal style. /par /pard/plain /s1/qr/fts0 This is right justified. I call this style FLUSHRIGHT. /par /pard/plain /s2/fi-720/li720/fts20/ri2880 This is an indented paragraph. I call this style IND. It produces This is an indented paragraph. I call this style IND. It produces

¹ The hidden style property can only be accessed using Visual Basic for Applications.

Some of the control words in this example are discussed in later sections. In the example, note that the properties of the style were emitted following the application of the style. This was done for two reasons: (1) to allow RTF readers that don't support styles to still retain all formatting; and, (2) to allow the additive model for styles, where additional property changes are "added" on top of the defined style. Some RTF readers may not "apply" a style upon only encountering the style number without the accompanying formatting informatting information because of this.

eldsT fsiJ

Word 97 stores bullets and numbering information very differently from earlier versions of Word. In Word 0.6, for example, number formatting data is stored individually with each paragraph. In Word 97, however, all of the formatting information is stored in a pair of document-wide list tables which act as a style sheet, and each individual paragraph stores only an index to one of the tables, like a style index.

There are two list tables in Word: the List table (destination **/listtable**), and the List Override table (destination **/listoverridetable)**.

The first table Word stores is the List table. A List table is a list of lists (destination **/list**). Each list contains a number of list properties that pertain to the entire list, and a list of levels (destination **/listlevel)**, each of which contains properties that pertain only to that level.

vindningisətizii/	I IT THE LIST RESTRATE AT EACH SECTION; U IT NOT. USED TOT WOLD A.U COMPAUDINTY ONLY.
Nəlqmistsil/	1 if the list has one level; 0 if the list has nine levels
Vbiətslqmətteil/	Each list should have a unique template ID as well, which also should be randomly generated. The template ID cannot be -1. The value N is a long integer.
	value N is a long integer. The list ID cannot be between -1 and -5.
Nbiteil/	Each list must have a unique list ID that should be randomly denerated. The

Top-level List Properties

ςιθνθι τει

Each list contains a number one or nine list levels depending upon whether the **/listsimple** flag is set. Each list level contains a number of properties that specify the formatting for that level, such as the start-at value, the text string surrounding the number, its justification and indents, and so on.

N	N specifies the start-at value for the level
<u>Vievelstartat</u>	lovel edt ret eulev te trete edt seitienen M
Control word M	pninsəM

	ann aval al /} " bns alr	is a destination control word.
jxəjləvəl/	өч⊥ әц⊥	argument for this level should be the number format string for this level.
Nəɔsqaləvəl/	iniM sısq valic	imum distance from the right edge of the number to the start of the start of the start of the start of the start (used for Word 7.0 compatibility only). This keyword will only be a if the /leveloldW keyword is emitted.
Ntnəbniləvəl/	iniM for / ievé	imum distance from the left indent to the start of the paragraph text (used Word 7.0 compatibility only). This keyword will only be valid if the eloldN keyword is emitted.
Vievelprevspace <i>N</i>	1i 1 0.7 Dilev	this level includes the indentation from the previous level (used for Word compatibility only); otherwise, the value is 0 . This keyword will only be d if the /leveloldN keyword is emitted.
/ievelprevM	the ' the '	this level includes the text from the previous level (used for Word 7.0 patibility only); otherwise, the value is 0 . This keyword will only be valid if /leveloldN keyword is emitted.
	элэј	
Whielevel	۲ <u>۱</u>	Right justified
	ŀ	Center justified
N⊃įl∍v∍l/	0	Leit justified
	555	No number
	23	Bullet (no number at all)
	22	Arabic with leading zero (01, 02, 03,, 10, 11)
	L	Ordinal text number (First, Second, Third)
	9	Cardinal text number (One, Two Three)
	S	Ordinal number (1st, 2nd, 3rd)
	4	Lowercase letter (a, b, c)
	5	Uppercase letter (A, B, C)
	7	
	ŀ	
	0	Arabic (1, 2, 3)
Nəînl∍vəl/	əq2	cities the number type for the level:

level is reached.

DuidtoN

Space

.noitinitab

2

L

	dsT 0
Nwollofləvəl/	Specifies which character follows the level text:
	because the level place holders have indices 1, 3, and 5. This is a destination control word.
	<pre>{/levelnumbers /'01/'03/'05}</pre>
/levelnumbers	The argument for this destination should be a string that gives the offsets into the /leveltext of the level place holders. In the above example, "1.1.1.", the /levelnumbers RTF should be

In addition to all of these properties, each list level can contain any character properties (all of which addition to all of these properties, each of which must be of a special type: **jclisttab**. These paragraph properties will be indents, and tabs—each of which must be of a special type: **jclisttab**. These paragraph properties will be automatically applied to any paragraph in the list.

1 if this level does not restart its count each time a number of a higher level is reached, 0 if this level does restart its count each time a number of a higher

1 if any list numbers from previous levels should be converted to arabic numbers; 0 if they should be left with the format specified by their own level's

List Override Table

Vitsiseronlevel/

Vispellevel/

The List Override table is a list of list overrides (destination **/listoverride**). Each list override contains the **listid** of one of the lists in the List table, as well as a list of any properties it chooses to override. Each paragraph will contain a list override index (keyword **Is**) which is a 1-based index into this table. Most list overrides don't override any properties—instead, they provide a level of indirection to a list. There are and are numbered along with the other members of the list, but have different formatting properties; and, (2) start-at overrides, which allow a paragraph to be part of a list overrides. (1) formatting overrides, which allow a paragraph to be part of a list and are numbered along with the other members of the list, but have different formatting properties; and, (2) start-at overrides, which allow a paragraph to be part of a list overrides which allow a paragraph to be part of a list overrides. The first element in the document with each list overrides of a list, but have a values. The first element in the document with each list override index takes the start-at values. The first element in the document with each list override index takes the start-at values. The first element in the document with each list override index takes the start-at values of a list override specifies as its value.

List overrides have a few top-level keywords, including a **/listoverridecount**, which contains a count of the number of levels whose format is overridden. This **/listoverridecount** should always be either 1 or 9, depending upon whether the list to be overridden is simple or multilevel. All of the actual override information is stored within a list of list override levels (destination **/lfolevel**).

Control word Meaning	
VlistidN Should exactly match the Vlistid Vlistid Visite V	edf one of the lists in the List table. The
//////////////////////////////////////	ithin this list override (from 0 or 9).
/Istoretain (besed-f) and the value of this value should never be zero inside the value should never be zero.	override in the /listoverride table. This are a /listoverride, and must be unique for ment. The valid values are from 1 to 2000.

List Override Level

Each list overtide level contains flags to specify whether the formatting or start-at values are being overtideen for each level. If the format flag (listoverrideformat) is given, a start-at value must be provided. If the start-at flag (listoverridestart) is given, a start-at value must be provided. If the start-at flag (listoverridestart) is given, a start-at value must be provided. If the start-at flag (listoverridestart) is given, a start-at value must be provided. If the start-at is overridden but the format is not, then a levelstartat should be provided in the lfolevel itself. If both start-at and format are overridden, put the levelstartat inside the listlevel contained in the lfolevel.

V1smrofebirsevotsil/	Number of list override levels within this list override (should be either 1 or 9).
V11st29bi119v012il/	Should exactly match the listID of one of the lists in the List table. The value V is a long integer.
Control word	ธินเนธิ์

Track Changes (Revision Marks)

This table allows tracking of multiple authors and reviewers of a document, and is used in conjunction with the character properties for tracking changes (using revision marks).

Control word	Definition
/*/revtbl	This group consists of subgroups that each identify the author of a revision in the document, as in {Author1;}. This is a destination control word.
	Revision conflicts, such as one author deleting another's additions, are stored as one group, in the following form:
	CurrentAuthor/'00/' <length author's="" name="" of="" previous="">PreviouaButhor/'00 PreviousRevisionTime</length>
	The 4 bytes of the Date/Time (DTTM) structure are emitted as ASCII characters, so

The 4 bytes of the Date/Time (DTTM) structure are emitted as ASCII characters, so values greater than 127 should be emitted as hexadecimal values enclosed in quotation marks.

Bit numbers	Information	Աձոցe
N 9-0	ətuniM	0–26
H 01-9	Hour	0-53
] 91-11	Day of month	15-1
N 61−91	AnoM	1-12
70–28 ک	Үеаг	= Year - 1900
58-31 C	Day of week	(162) 0-(nu2) 0

All time references for revision marks use the following bit field structure, DTTM.

Document Area

Once the RTF header is defined, the RTF reader has enough information to correctly read the actual document text. The document area has the following syntax.

<document> <info>? <docfmt>* <section>+

Information Group

The **/info** control word introduces the information group, which contains information about the document. This can include the title, author, keywords, comments, and other information specific to the file. This information is for use by a document-management utility, if available.

This group has the following syntax.

jaki jwoj jąki jyki jwiuj jzecj	<9mit>
'{' \buptim <time '}'<="" <time="" th=""><th><mitqud></mitqud></th></time>	<mitqud></mitqud>
'{' <pre>> mitin</pre>	<mitninq></mitninq>
'{' \révtim < time' }'	<re><re>tim></re></re>
'{' \creatim <time> '}'</time>	<creatim></creatim>
'{' ATAD34 #PCDAT# '}'	<hi>hlinkbase></hi>
'{' ATADO9# mmoooob' '}'	<umbody></umbody>
'{' ATADJ4# fn9mmoo'' '}'	<comment></comment>
'{' \keywords #PCDATa '}'	<keywords></keywords>
{' /category #PCDATA '}'	<category></category>
'{' /operator #PCDATA '}'	<operator></operator>
{' ATADD4# y nsqnort' }'	<company></company>
{, /manager #PCDATA '}'	<manager></manager>
,{ /suthor #PCDATA '}'	<author></author>
'{' /subject #PCDATA '}'	<subject></subject>
'{' \fitle #PCDAT# } '	<9ltit>
'{' <title>? & <subject>? & <author>? & <manager>? & <company>? <operator>? & <comment>? & /version? & <comment>? & /version? & </comment></comment></operator></company></manager></author></subject></title>	<ofni></ofni>

Some applications, such as Word, ask the user to type this information when saving the document in its native format. If the document is then saved as an RTF file or translated into RTF, the RTF writer specifies this information using the following control words. These control words are destinations and both the control words and the text should be enclosed in braces ({ }).

-	
pninsəM	Control word

/comment
/keywords
∕category
/operator
∕combsny
/manager
/author
tɔəjduɛ/
)title

h T 9264nild/	The base address that is used for the path of all relative hyperlinks inserted in the document. This can be a path or an Internet address (URL).
а Лаоссотт	Comments displayed in the Summary Into or Properties dialog box in Word. This is a destination control word.
Version V	Version number of the document.

The **/userprops** control word introduces the user-defined document properties. Unique **/propname** control words define each user-defined property in the document. The group has the following syntax.

levynil/	kval>
lsvaitsval	<lstaticval></lstaticval>
/broptype	<pre><pre>cptype></pre></pre>
,{, /bropname #PCDATA '}	<pre><pre>cpropname></pre></pre>
<pre><pre><pre>cproptype><staticval><linkval>?</linkval></staticval></pre></pre></pre>	<pre><pre>ofniqo<</pre></pre>
,{/ , ,/nserbrops (,{, <brobiuto> ,},) ,}</brobiuto>	/nserprops

Control Word	prinsəM
/bropname	The name of the user-defined property.
levoitsta/	The value of the property.
lsvynil/	The name of a bookmark that contains the text to display as the value of the property.
/broptype	/proptypeN Specifies the type of the property.

For /proptype, the N argument can have the following values.

gninsəM

Control word

Description	əulsV
Integer	3
Real number	S
Date	L
Boolean	11
tx9T	30

	6,000,000	'eniom			בוונבו	ດແກບເມລິ	1110A		11.51	
primollof edt	paibulaai	Spiom	loutaon	othor	anter	vilenitemotile	new	rotinw	вте	PAT

Nanimbə/	Total editing time (in minutes)
/puptim	Backup time
/printim	Last print time
/revtim	emit noiziveA
mitsəro/	Creation time
VernV	Internal version number
VernV /	Internal version number

Nbi/	Internal ID number
/nofcharsws	Number of characters not including spaces
/nofchars/	Number of characters including spaces
Nabrovida <i>N</i>	Number of words
N≳∋g₅qîon/	Number of pages
Noes/	Seconds
Vnim/	ətuniM
№л4/	Hour
Ν χb/	Ωау
Nom/	dtnoM
∕yrN	Year

Any control word described in the previous table that does not have a numeric parameter specifies a date; all dates are specified with the /yr /mo /dy /hr /min /sec controls. An example of an information group follows:

```
{/info{/title The Panda's Thumb}{/author Stephen J Gould}{/keywords
science natural history }}
```

Document Formatting Properties

001069M

Control word

After the information group (if there are any), there may be some document formatting control words (described as <doctmt> in the document area syntax description). These control words specify the attributes of the document, such as margins and footnote placement. These attributes must precede the first plain-text character in the document.

The control words that specify document formatting are listed in the following table (measurements are in twips; a twip is one-twentieth of a point). For omitted control words, RTF uses the default values.

ətslqmət/*/	Destination. The argument is the name of a related template file; it must be enclosed in braces. This is a destination control word.
əlittxən/*/	Destination. The argument is the name of the file to print or index next; it must be enclosed in braces. This is a destination control word.
/fracwidth	Uses fractional character widths when printing (QuickDraw only).
Vinestart V	Beginning line number (the default is 1).
ojnenqy/	Toggles automatic hyphenation (the default is off). Append 1 or leave control word by itself to toggle property on; append 0 to turn it off.
/hyphcaps	Toggles hyphenation of capitalized words (the default is on). Append 1 or leave control word by itself to toggle property on; append 0 to turn it off.
Mວ s anoordγ//	M is the maximum number of consecutive lines that will be allowed to end in a hyphen. 0 means no limit.
Ν ͻͽολη	Hyphenation hot zone in twips (the amount of space at the right margin in which words are hyphenated).
Ndsff9b/	Default tab width in twips (the default is 720).

)private	osdO	olete destination. It has no leading /*. It should be skipped.
	2	Best fit
	٢	Euli page
	0	enoN
NAzwaiv/	ni nA	nteger (0 to 2) that represents the zoom kind of the document.
Nəlsəzwəiv/	(the Zoon	m level of the document; the N argument is a value representing a percentage default is 100).
	S	weiv tuova Layout view
	4	weiv IsmioN
	3	waiv tramucod taste
	2	weiv enituO
	٢	Page Layout view
	0	anoN
\viewkind		
	ni nA	nteger (0-5) that represents the view mode of the document.
Document views	z bns ni nA	zoom level nteger (0-5) that represents the view mode of the document.
/fromtext Document views	oibnl z bns i nA	sates document was originally plain text. zoom level nteger (0-5) that represents the view mode of the document.
/fromtext Document views	2 Indic and z An ir	E-mail (for formatting e-mail, and used by WordMail) sates document was originally plain text. zoom level nteger (0-5) that represents the view mode of the document.
/fromtext Document views	۱ 2 andic and z الماند	Letter (for formatting letters, and used by Letter Wizard) E-mail (for formatting e-mail, and used by WordMail) sates document was originally plain text. zoom level nteger (0-5) that represents the view mode of the document.
/fromtext Document views	0 2 Indic and z and z	General Document (for formatting most documents, the default) Letter (for formatting letters, and used by Letter Wizard) E-mail (for formatting e-mail, and used by WordMail) safes document was originally plain text. zoom level
/doctype// /fromtext Document views	ni nA 0 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	nteger (0-2) that describes the document type for AutoFormat. General Document (for formatting most documents, the default) Letter (for formatting letters, and used by WordMail) E-mail (for formatting e-mail, and used by WordMail) sates document was originally plain text. zoom level
/windowcaption /doctype// /fromtext Document views	Sets An ir 0 2 2 2 1ndic 2 2 2 2 2 2 2 2 2 2 2 3 2 3 2 3 3 1 3 3 1 3 1	the caption text for the document window. This is a string value. General Document (for formatting most documents, the default) Letter (for formatting letters, and used by Letter Wizard) E-mail (for formatting e-mail, and used by WordMail) aftes document was originally plain text. zoom level nteger (0-5) that represents the view mode of the document.
/deflangfe /windowcaption /fromtext /fromtext	Defa steS n ir n n n z bnb n sond z n n f n f n f n f n f n f f f f f f f	ault language ID for Asian versions of Word. the caption text for the document window. This is a string value. Deneral Document (for formatting most documents, the default) Letter (for formatting letters, and used by Letter Wizard) E-mail (for formatting e-mail, and used by WordMail) safes document was originally plain text. zoom level nteger (0-5) that represents the view mode of the document.
/deflang/ /deflangfe /windowcaption /doctype/ /fromtext	Deff See See Doto Sets Sets An ir 0 1 2 2 2 2 2 2 2 2 2 2 2 3 1 0 3 3 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3	ines the default language used in the document used with a /plain control word. a the section "Character Formatting Properties" on page 34 of this Application e for a list of possible values for N . ault language ID for Asian versions of Word. the caption text for the document window. This is a string value. Ceneral Document (for formatting most documents, the default) Letter (for formatting letters, and used by Letter Wizard) E-mail (for formatting e-mail, and used by WordMail) E-mail (for formatting e-mail, and used by WordMail) mages document was originally plain text. Zoom level
/doctemp /deflang/ /windowcaption /doctype/ /fromtext /fromtext	Doc Wor See Note Note Sets Sets An ir 0 1 2 2 2 3 2 3 2 3 3 3 3 3 3 3 3 3 3 3 3	 cument is a boilerplate document. For Word for Windows, this is a template; for rid for the Macintosh, this is a stationery file. rid for the Macintosh, this is a stationery file. ines the default language used in the document used with a /plain control word. the section "Character Formatting Properties" on page 34 of this Application to the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" of word. the caption text for the document window. This is a string value. Ceneral Document (for formatting most documents, the default) theter (for formatting etters, and used by WordMail) E-mail (for formatting e-mail, and used by WordMail) E-mail (for formatting e-mail, and used by WordMail) the fore to matting e-mail, and used by WordMail) the section (for formatting e-mail, and used by WordMail)
/bsover /deflang/ /deflangfe /deflangfe /doctype/ /fromtext /fromtext	Prin Doc Wor See Note See See An ir C C C C C C C C C C C C C C C C C C C	 Its PostScript over the text. Sument is a boilerplate document. For Word for Windows, this is a template; for the for the Macintosh, this is a stationery tile. Sines the default language used in the document used with a /plain control word. Ithe section "Character Formatting Properties" on page 34 of this Application of the section "Character Formatting Properties" on page 34 of this Application of the section "Character Formatting Properties" on page 34 of this Application of the section "Character Formatting Properties" on page 34 of this Application of the section "Character Formatting Properties" on page 34 of this Application of the section "Character Formatting Properties" on page 34 of this Application of the section "Character Formatting Properties" on page 34 of this Application of the section "Character Formatting Properties" on page 34 of this Application of the section "Character Formatting Properties" on page 34 of this Application of the section "Character Formatting Properties" on page 34 of this Application of the section "Character Formatting Properties" on page 34 of this Application of the section "Character Formatting Properties" on page 34 of this Application of the caption text for the default is a string value. Ceneral Document (for tormatting most documents, the default) Ceneral Document (for formatting most documents, the default) E-mail (for formatting letters, and used by Letter Wizard) E-mail (for formatting e-mail, and used by WordMail) E-mail (for formatting e-mail, and used by WordMail) Com level
/defformat /doctemp /doctemp /deflangfe /windowcaption /doctype/ /fromtext	Tells Prin Poor Wor See Note Sees Sets An ir 0 1 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	s the RTF reader that the document should be saved in RTF format. Its PostScript over the text. Sument is a boilerplate document. For Word for Windows, this is a template; for ind for the Macintosh, this is a stationery file. The section "Character Formatting Properties" on page 34 of this Application to the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of this Application the section "Character Formatting Properties" on page 34 of the Application the section "Character Formatting most document type for AutoFormat. Defeneral Document (for formatting most documents, the default) the caption text for the document type for AutoFormat. E-mail (for formatting letters, and used by WordMail) E-mail (for formatting e-mail, and used by WordMail) the section level zoom level provel
/makebackup /defformat /doctemp /doctemp /doctypeV /doctypeV /doctypeV	Bace Tells Prin Pooc Wore Seee Note Sets Defa Sets Defa An ir 0 1 2 1 1 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	stup copy is made automatically when the document is saved. s the RTF reader that the document should be saved in RTF format. Its PostScript over the text. The PostScript over the text. Sument is a boilerplate document. For Word for Windows, this is a template; for ines the default language used in the document used with a \plain control word. The section "Character Formatting Properties" on page 34 of this Application intes the default language used in the document used with a \plain control word. The section "Character Formatting Properties" on page 34 of this Application intes the default language used in the document type for AutoFormat. The caption text for the document window. This is a string value. General Document (for formatting most documents, the default) Letter (for formatting letters, and used by Letter Wizard) E-mail (for formatting letters, and used by Letter Wizard) E-mail (for formatting letters, and used by WordMail) Coment was originally plain text. E-mail (for formatting e-mail, and used by WordMail) Toom level

Footnote numbering—Roman lowercase (i, ii, ii, _)	/ttnnrlc
Footnote numbering—Alphabetic uppercase (A, B, C, _))ttnnauc
Footnote numbering—Alphabetic lowercase (a, b, c, _)	olsnnfl/
Footnote numbering—Arabic numbering (1, 2, 3, _)	/ftnnar
.Continuous endnote numbering (the default).	/aftnrstcont
Restart endnote numbering each section.	/aftnrestart
Continuous footnote numbering (the default).	/ftnrstcont
Footnote numbers restart at each section. Microsoft Word for the Macintosh uses this control to restart footnote numbering at each page.	/ftnrestart
Restart footnote numbering each page.	/tinrstpg
Beginning endnote number (the default is 1).	Ntretentie/
Beginning footnote number (the default is 1).	Vinsiani/
Endnotes beneath text (top justified).	[tnt]s/
Endnotes at bottom of page (bottom justified).	įdntis/
Endnotes at end of document.)aenddoc
Endnotes at end of section (the default).	sətonbnəs/
Footnotes at the bottom of the page (bottom justified).	[dn]
Footnotes beneath text (top justified).	[tnt]
Footnotes at the end of the document.)/suddoc
Footnotes at the end of the section (the default).	sətonbnə/
Text argument is a notice for continued endnotes. This is a destination control word.	nontis/
Text argument separates continued endnotes from the document. This is a destination control word.)aftnsepc
Text argument separates endnotes from the document. This is a destination control word.	qəsnits/
Text argument is a notice for continued footnotes. This is a destination control word.	nont)/
Text argument separates continued footnotes from the document. This is a destination control word.)ttnsepc
Text argument separates footnotes from the document. This is a destination control word.	dəsntt/
For backward compatibility, if \fet1 is emitted, \endfores or \endfore will be emitted along with \aendrotes or \aendrotes and use the endnote control words, and use the endnote control words instead.	
2 Footnotes and endnotes both.	
1 Endnotes only.	
0 Footnotes only or nothing at all (the default).	
Footnote/endnote type. This indicates what type of notes are present in the document.	N191/
	Foundes and En

/otbirul	Combine table borders as done in Word 5.x for the Macintosh. Contradictory table border is resolved in favor of the first cell.
/sprsspbf	Suppress space before paragraph property after hard page or column break.
	spacing larger than Auto at the top of a page.
/sprstsp	Suppress extra line spacing at top of page. Basically, this means to ignore any line
)c∧ume	Treat old-style escaped quotation marks (/") as current style ("") in mail merge data documents.
/nocolbal	Don't balance columns.
/noextraspri	Don't add extra space to line height for showing raised/lowered characters.
/brcolbl	Print all colors as black.
/wraptrsp	Wrap trailing spaces onto the next line.
hnidston/	Don't add automatic tab stop for hanging indent.
Compatibility Opti	SUO
səlytsini/	Update document styles automatically based on template.
Linked Styles	
/widowctrl	Enable widow and orphan control.
NtnstartN	Beginning page number (the default is 1).
adsoebnel/	Landscape format.
	Viscingp.
	Switches margin definitions on left and right pages. Used in conjunction with
demosi/	r acing pages (acinates oud/even neaders and guiters).
viugianii/	Bollom margin in twips (the detadit is 1440). Eacing pages (activetes odd/even pageders and gutters)
Vigiem/	(0144) in twing (116 default is 1440).
/margr/v	Kight margin in twips (the default is 1800).
/margi <i>N</i>	Left margin in twips (the default is 1800).
	defined forms under Windows NI.
	SDK (DMPAPER_ values). Values greater than or equal to 42 correspond to user-
Nzsq/	Used to differentiate between paper sizes with identical dimensions under Windows 1.1
/paperh <i>W</i>	Paper height in twips (the default is 15,840).
/paperw/	Paper width in twips (the default is 12,240).
Page Information	
idonntis/	Endnote numbering—Chicago Manual of Style (*, †, ‡, \$)
)aftnnruc	Endnote numbering—Roman uppercase (I, II, III, _)
)aftnnrlc	Endnote numbering—Roman lowercase (i, ii, iii, _)
)aftnnauc	Endnote numbering—Alphabetic uppercase (A, B, C, _)
olenntte/	Endnote numbering—Alphabetic lowercase (a, b, c, _)
\aftnnar	Endnote numbering—Arabic numbering (1, 2, 3, _)
itnnchi	Footnote numbering—Chicago Manual of Style (*, †, ‡, §)
/ftnnruc	Footnote numbering—Roman uppercase (I, II, II, _)

	200isions
This document is protected for revisions. The user can edit the document, but revision marking cannot be disabled.	/revprot
	Revision Marks
This document has print form data only on.	/printdata
This document currently has a forms drop-down box or check box selected.	/formdisp
This document has form field shading on.	\formshade
This document has no unprotected areas.	/allprot
This document is protected for forms.	/formprof
	Forms
Advance to next tab stop like WordPerfect 6.x.	/wptab
Set the width of a space like WordPerfect 5.x.	dsdw/
Do full justification like WordPerfect 6.x for Windows.	tsįqw/
Does nothing. This keyword should be ignored.	/sprstsm
Suppress extra line spacing at bottom of page.	/sbrsbsp
Lines wrap like Word 6.0.	/oldlinewrap
(Japanese).	
Don't translate backslash to Yen sign. Option for compatibility with Word 6.0	/noxlattoyen
Don't underline trailing spaces. Option for compatibility with Word 6.0 (Japanese).	/uonitrispc
Don't add space for underline. Option for compatibility with Word 6.0 (Japanese).	/nospaceforul
No external leading. Option for compatibility with Word for the Macintosh 5.x	bselon/
Small caps like Word for the Macintosh 5.x.	/wewcsp
Use printer metrics to lay out document.	/lytprtmet
Don't center exact line height lines.	/lytexcttp
Expand character spaces on line-ending with SHIFT+RETURN. Option for compatibility with Word 6.0 (Japanese).	/exbshrtn
Don't balance SBCS/DBCS characters. Option for compatibility with Word 6.0 (Japanese).	dbd2nldtnb/
Print body before header/footer. Option for compatibility with Word for the Macintosh 5.x.	/pdbfhdr
Don't add leading (extra space) between rows of text	/truncex
Round down to the nearest font size instead of rounding up.	/truncatefont /teight
Substitute tonts based on size tirst.	size/
Suppress extra line spacing like WordPertect version 5.x.	/abrsinsp
Zvow vata (manual) page breaks and column breaks in trames.	/prktrm
unupered pages.	, 1. 1
If a paragraph has a left border (not a box) and the Different Odd And Even or Mirror Margins check box is selected, Word will print the border on the right for odd	/swpbdr
Metafiles are considered transparent; don't blank the area behind metafiles.	transmf

/ltrdoc	This document will have English-style pagination (the default).
/rtldoc	This document will be formatted to have Arabic-style pagination.
Bidirectional Con	itrols
/annotprot	This document is protected for comments (annotations). The user cannot edit the document but can insert comments (annotations).
onnA) stnammoD	tations)
Nısdv∋ı/	Vertical lines mark altered text, based on the argument: 0 for no marking; 1 for left margin; 2 for right margin; 3 for outside (the default: left on left pages, right on right pages).
/revpropM	for bold; 2 for italic; 3 for underline (the default); 4 for double underline.

Note that the three document-protection control words (**Iformprot**, **Irevprot**, and **Iannotprot**) are mutually exclusive; only one of the three can apply to any given document. Also, there is currently no method for storing passwords in RTF, so any document that associates a password with a protection level will lose the password protection in RTF.

For more information about bidirectional controls, see "Bidirectional Language Support" in this Application Note.

der style, and border spacing keywords for page borders are the same as the keywords h borders.	The color, width, bor defined for paragrap
Align paragraph borders and table edges with page border.	/babrdrsnap
40 Page border measure from edge of page. Always display in front option is set to off.	
32 Page border measure from edge of page. Always display in front option is set to on.	
Page border measure from text. Always display in front option is set to off.	/pgbrdropt <i>N</i>
Page border art; the N argument is a value from 1-165 representing the number of the border.	/brdrart/
Page border right.	/bgbrdrr
Page border left.	/bgbrdrl
Page border bottom.	/bdprdrb
Page border top.	/pgbrdrt
Page border surrounds footer.	/pgbrdrfoot
Page border surrounds header.	/bdprdrhead

Section Text

Page Borders

Each section in the RTF file has the following syntax:

<section> <section>* <hd><section>* <bdots </pre>

At the beginning of each section, there may be some section-formatting control words (described as <sectmt> in the section text syntax description). These control words specify section-formatting properties, which apply to the text following the control word, with the exception of the section-break control words (those beginning with /**sbk**). Section-break control words describe the break preceding the text. These control words can appear anywhere in the section, not just at the start.

Note that if the **/secta** control word is not present, the current section inherits all section properties defined in the previous section.

The section-formatting control words are listed in the following table.

Nbomenil/	Line-number modulus amount to increase each line number (the default is 1).
Line Numbering	
loɔtədənil/	Line between columns.
Nwloo/	Width of column in twips; used to override the default constant width setting for variable-width columns.
Visioj/	Space to right of column in twips; used to specify formatting for variable-width columns.
Nonloo/	Column number to be formatted; used to specify formatting for variable-width columns.
Nxsloo/	Space between columns in twips (the default is 720).
Nsloo/	Number of columns for "snaking" (the default is 1).
sumuloD	
/spkoqq	Section break starts at an odd page.
/abkeven	Section break starts at an even page.
/spkpage	Section break starts a new page (the default).
/spkcol	Section break starts a new column.
/spkuoue	No section break.
Section Break	
b9Actuniocked	This section is unlocked for forms.
Miviɔəɛnq/	Used for multilevel lists. This property sets the default numbering style for each corresponding /pnlvIN control word (bullets and numbering property for paragraphs) within that section. This is a destination control word.
Nsb/	Designates section style. If a section style is specified, style properties must be specified with the section.
Vnxsnid/	N is the printer bin used for the pages of the section.
Wnxstnid/	M is the printer bin used for the first page of the section. If this control is not defined, then the first page uses the same printer bin as defined by the / binsxnW control.
/endnhere	Endnotes included in the section.
btoektd	Reset to default section properties.
toect	New section.
Control word	prinsaM

/bduncltr	Page-number format is uppercase letter.
/bdulcrm	Page-number format is lowercase roman numeral.
/bɑunc.u	Page-number format is uppercase roman numeral.
/bduqec	Page-number format is decimal.
∖pgny∛	Page number is ${\bf N}$ twips from the top margin (the default is 720). This control word is understood but not used by current versions (6.0 or later) of Word.
Mxnpq/	Page number is ${f N}$ twips from the right margin (the default is 720). This control word is understood but not used by current versions (6.0 or later) of Word.
/pgnrestart	Page numbers restart at / pgnstarts value.
/bducont	Continuous page numbering (the default).
/pgnstarts/	Beginning page number (the default is 1).
Page Numbers	
∕footeryN	Footer is M twips from the bottom of the page (the default is $Y20$).
/headery <i>W</i>	Header is N twips from the top of the page (the default is 720).
pqəltit/	First page has a special format.
uxsdɔspul/	Page orientation is in landscape format. To mix portrait and landscape sections within a document, the /landscape control should not be used so that the default for a section is portrait, which may be overridden by the /Indscpaxn control.
/margmirsxn	Switches margin definitions on left and right pages. Used in conjunction with \facingp .
Mnx≳r∋tiug/	N is the width of the gutter margin for the section in twips. A /sectd resets the value to that specified by /gutterN from the document properties. If Facing Pages is turned off , the gutter will be added to the left margin of all pages. If Facing Pages is turned on , the gutter will be added to the left and on odd-numbered pages and the right side of even-numbered pages.
Mnxsdg1sm/	N is the bottom margin of the page in twips. A /sectd resets the value to that specified by /margbN in the document properties.
Mnxetgtsm/	N is the top margin of the page in twips. A \sectd resets the value to that specified by \margitumedry limety and the secument properties.
Mnxsıgısm/	W is the right margin of the page in twips. A \sectd resets the value to that specified by \margr{uargr{d}}
/marglsxn//	N is the left margin of the page in twips. A /sectd resets the value to that specified by /margIN in the document properties.
Mnxadgq/	N is the page height in twips. A /sectd resets the value to that specified by /paperh/ in the document properties.
Muxewpq/	N is the page width in twips. A /sectd resets the value to that specified by /paperwW in the document properties.
Page Information	
/linecont	Line numbers continue from the preceding section.
əpsqqənil/	Line numbers restart on each page.
/linerestart	Line numbers restart at /linestarts value.
VetartsVil/	Beginning line number (the default is 1).
N∕xəui∖	Distance from the line number to the left text margin in twips (the default is 360). The automatic distance is 0.

the border.	
Page border art; the N argument is a value from 1-165 representing the number of	/brdrartV
Pade border right.	/paprdrr
Pade border left.	/paprdrl
Page border bottom.	/bdprdrb
Page border top.	/bdbrdrt
Page border surrounds footer.	/pgbrdrfoot
Page border surrounds header.	/bdbrdrhead
	Page Borders
5 Text flows vertically, non-vertical font	
4 Text flows left to right and top to bottom, vertical	
3 Text flows right to left and top to bottom	
2 Text flows left to right and bottom to top	
1 Text flows top to bottom and right to left, vertical	
0 Text flows left to right and top to bottom	
Section property for specifying text flow.	wolîtx9t <i>8/</i>
	MOI-1 1XƏ I
	<u> </u>
This section will snake (newspaper style) columns from left to right (the default).	/ltrsect
This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from left to right (the default).	/rtlsect /ltrsect
trols This section will snake (newspaper style) columns from right to right (the default). This section will snake (newspaper style) columns from left to right (the default).	Bidirectional Con
Text is justified vertically. trols This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from left to right (the default).	/vertalj Bidirectional Con /Itrsect
Text is centered vertically. Text is justified vertically. This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from left to right (the default).	/vertalc /vertalj Bidirectional Con /rtlsect /ltrsect
Text is bottom-aligned. Text is centered vertically. Text is justified vertically. This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from left to right (the default).	/vertalb /vertalc Bidirectional Con /rtlsect /ltrsect
Text is top-aligned (the default). Text is bottom-aligned. Text is centered vertically. Text is justified vertically. This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from left to right (the default).	/vertalt /vertalb /vertalc Bidirectional Con /rtlsect /ltrsect
nt Text is top-aligned (the default). Text is bottom-aligned. Text is centered vertically. Text is justified vertically. This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from left to right (the default).	Vertical Alignmer /vertalt /vertalc /vertalc /vertalj Bidirectional Con /rtlsect /ltrsect
En-dash (–) separator character. It Text is top-aligned (the default). Text is bottom-aligned. Text is justified vertically. Trols This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from left to right (the default). This section will snake (newspaper style) columns from left to right to left.	/pgnhnsn Vertical Alignmer /vertalt /vertalc /vertalj Bidirectional Con /rtlsect //trsect
Em-dash () separator character. En-dash () separator character. Text is top-aligned (the default). Text is bottom-aligned. Text is justified vertically. This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from left to right (the default).	/pgnhnsm /vertical Alignmer /vertalt /vertalc /v
Colon separator character. Em-dash () separator character. Text is top-aligned (the default). Text is bottom-aligned. Text is justified vertically. Text is justified vertically. Trols Trols This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from left to right (the default).	\pgnhnsc \pgnhnsm \vertalt \vertalt \vertalt \vertalc \vertalc bidirectional Con \rtlsect \rtlsect
Period separator character. Colon separator character. Em-dash () separator character. Text is bottom-aligned (the default). Text is bottom-aligned. Text is centered vertically. Text is centered vertically. Trols Trols This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from left to right (the default).	/pgnhnsp /pgnhnsn /pgnhnsn /vertalt /vertalt /vertalt /vertalb
Hyphen separator character. This separator and the successive ones appear between the heading level number and the page number. Period separator character. Colon separator character. Em-dash () separator character. Text is top-aligned (the default). Text is bottom-aligned. Text is justified vertically. Text is justified vertically. Tris section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from right to left.	/pgnhnsh /pgnhnsc /pgnhnsn /vertalt /vertalt /vertalt /vertalc
Indicates which heading level is used to prefix a heading number to the page atyles. 0 specifies to not show heading level (the default). Values 1-9 correspond to heading levels 1 through 9. Hyphen separator character. This separator and the successive ones appear between the heading level number and the page number. Period separator character. Em-dash (—) separator character. Itaxt is bottom-aligned. Text is bottom-aligned. Text is contered vertically. Text is contered vertically. Text is contered vertically. Text is contered vertically. Text is justified vertically. This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from right to left.	/pgnhnM /pgnhnsh /pgnhnsn /vertalt
Page-number format is lowercase letter. Indicates which heading level is used to prefix a heading number to the page number. This control word can only be used in conjunction with numbered heading styles. O specifies to not show heading level (the default). Values 1-9 correspond to styles. O specifies to not show heading level (the default). Values 1-9 correspond to heading levels 1 through 9. Period separator character. Colon separator character. Em-dash () separator character. Text is bottom-aligned (the default). Text is bottom-aligned. Text is pottom-aligned. Text is justified vertically. Text is justified vertically. Text is justified vertically. Text is justified vertically. This section will snake (newspaper style) columns from right to left. This section will snake (newspaper style) columns from right to left.	/pgnlcltr /pgnhn/ /pgnhnsh /pgnhnsn /vertalt

ipilA	n paradraph borders and table edges with page border.
to o i 10	Page border measure from edge of page. Always display in front option is set If.
o oj	·u
32	Page border measure from edge of page. Always display in front option is set
8	Page border measure from text. Always display in front option is set to off.
	8 32 40 40 40 40 40 40

The color, width, border style, and border spacing keywords for page borders are the same as the keywords defined for paragraph borders.

Peaders and Footers

Headers and footers are RTF destinations. Each section in the document can have its own set of headers and footers if no headers or footers are defined for a given section, the headers and footers from the previous section (if any) are used. Headers and footers have the following syntax:

/footerl /footerr /footerf	/header /footer /headerl /headerr /headerf	<hd><hd><hd><hd><hd><hd><hd><hd><hd><hd></hd></hd></hd></hd></hd></hd></hd></hd></hd></hd>
	'{' <hdrefi> <pre>para>+ '}' <hdrefi< pre=""></hdrefi<></pre></hdrefi>	<htps: securi<="" security.com="" td="" www.security.com=""></htps:>

Note that each separate <hdrftr> group must have a distinct <hdrctl> introducing it.

Control word	gninsəM
/header	Header on all pages. This is a destination control word.
/footer	Footer on all pages. This is a destination control word.
/headerl	Header on left pages only. This is a destination control word.
/headerr	Header on right pages only. This is a destination control word.
/headerf	Header on first page only. This is a destination control word.
l191001/	Footer on left pages only. This is a destination control word.
/footerr	Footer on right pages only. This is a destination control word.
łtooterf	Footer on first page only. This is a destination control word.

The /headert, /headert, /footerl, and /footerr control words are used in conjunction with the /facingp control word. Many RTF readers will not function correctly if the appropriate document properties are not set. In particular, if /facingp is not set, then only /header and /footer should be used; if /facingp is set, then only /header and /footer should be used; if /facingp is not set, then only /header and /footer should be used; if /facingp is set, then only /header and /footer should be used; if /facingp is not set, then only /header and /footer should be used; if /facingp is set, then only /header if /headerl, /headert, /footerl, and /footer should be used. Combining both /facingp is set. You can use /header if if the appropriate document properties are not set. In You should not use /header to set the header for both pages when /facingp is set. You can use /header if if the appear. For more information, see "Document Formatting Properties" on page 30 of this Application Note.

If the previous section had a first page header or footer and had /titlepg set, and the current section does not, then the previous section's first page header or footer is disabled. However, it is not destroyed; if subsequent sections have /titlepg set, then the first page header or footer is restored.

Paragraph Text

There are two kinds of paragraphs: plain and table. A table is a collection of paragraphs, and a table row is a continuous sequence of paragraphs partitioned into cells. The **/intbl** paragraph-formatting control word identifies the paragraph as part of a table. For more information, see "Table Definitions" on page 30 of this

Application Note. This control is inherited between paragraphs that do not have paragraph properties reset with /**pard**.

<(ə)>	<textpar>+ /cell</textpar>
<ru><<ru>KO</ru></ru>	<td< td=""></td<>
<textpar></textpar>	<pre><char>+) (/par <partar>* <apoctl>* <tabdef>? <shading>? (/subdocument </shading></tabdef></apoctl></partar></char></pre>
<pre>cpata></pre>	<textpar> <row></row></textpar>

Paragraph Formatting Properties

These control words (described as <partmt> in the paragraph-text syntax description) specify generic paragraph, paragraph formatting properties. These control words can appear anywhere in the body of the paragraph, not just at the beginning.

Note that if the **/pard** control word is not present, the current paragraph inherits all paragraph properties defined in the previous paragraph.

The paragraph-formatting control words are listed in the following table.

/dc	Centered.
įp/	Justified.
/dt	Right-aligned.
lp/	Left-aligned (the default).
tnəmngilA	
/sp\z	Side by-side paragraphs.
/pagebb	Break page before the paragraph.
Mləvələnilîuo∕	Outline level of paragraph. The N argument is a value from 0-8 representing the outline level of the paragraph. In the default case, no outline level is specified (same as body text).
ənilon/	No line numbering.
NIəvəl/	N is the outline level of the paragraph.
/keepn	Keep paragraph with the next paragraph.
/widctlpar	Widow/orphan control is used for the current paragraph. This is a paragraph property used to override the absence of the document-level /widowctrl
/nowidctlpar	No widow/orphan control. This is a paragraph-level property and is used to override the document-level /widowctrl .
/keep	Keep paragraph intact.
ldtni/	Paragraph is part of a table.
/hyphar	Toggles automatic hyphenation for the paragraph. Append 1 or nothing to toggle property on; append 0 to turn it off.
Ns/	Designates paragraph style. If a paragraph style is specified, style properties must be specified with the paragraph. ${f N}$ references an entry in the stylesheet.
/pard	Resets to default paragraph properties.
/bar	New paragraph.
Control word	eninsəM

	-
Text in this paragraph will be displayed with left-to-right precedence (the default).	/ltrpar
Text in this paragraph will be displayed with right-to-left precedence.	/rtlpar
SIO.	Bidirectional Conti
This indicates that a subdocument in a master document/subdocument relationship should occur here. N represents an index into the tile table. This control word must be the only item in a paragraph.	Mîn∋mu⊃obdu <i>z</i> /
	Subdocuments
۲ Multiple line spacing, relative to "Single."	
0 "At Least" or "Exactly" line spacing.	
Line spacing multiple. Indicates that the current line spacing is a multiple of "Single" line spacing. This control word can follow only the / sl control word and works in conjunction with it.	₩îluml <i>e/</i>
spacing is automatically determined by the tallest character in the line; if \mathbf{N} is a spacing is automatically determined by the tallest character in the line; if \mathbf{N} is a positive value, this size is used only if it is tallet than the tallest character (otherwise, the tallest character is used); if \mathbf{N} is a negative value, the absolute value of \mathbf{N} is used, even if it is shorter than the tallest character.	
Space between lines. If this control word is missing or if /s11000 is used, the line	VIs/
Space after (the default is 0).	Nss/
Space before (the default is 0).	Nds/
	Spacing
Right indent (the default is 0).	/ri/
Left indent (the default is 0).	N !I\
First-line indent (the default is 0).	Nii/
	Indentation

sqeT

Any paragraph may have its own set of tabs. Tabs must follow this syntax:

pninsəM	Control word
/tldot /tlhyph /tlul /tlth /tleq	<bs9lds1></bs9lds1>
/tqr /tqc /tqdec	<tabkind></tabkind>
dt/ ? tablead>?	 bartab>
<tabkind>? <tablead>? \tx</tablead></tabkind>	
+ (<tab> <tab>)</tab></tab>	<tabdat></tabdat>

/tldot	Leader dots.
Ndi/	Bar tab position in twips from the left margin.
)tqdec	Decimal tab.
/tqc	Centered tab.
/tqr	Flush-right tab.
N×1/	Tab position in twips from the left margin.

ţi

p9l1/	Leader equal sign.
Կֈֈ	Leader thick line.
/tlul	Leader underline.
,tlhyph	Leader hyphens.

Bullets and Numbering

Mord 6.0/95 RTF

Definition

Control word

To provide compatibility with existing RTF readers, all applications that can automatically format paragraphs with bullets or numbers will also emit the generated text as plain text in the **/pntext** group. This will allow existing RTF readers to capture the plain text and safely ignore the autonumber instructions. This group precedes all bulleted or numbered paragraphs, and will contain all the text and formatting that would be auto-generated. It should precede the '{'/*/pn _ '}' destination, and it is the responsibility of RTF readers that understand the '{'/*/pn _ '}' destination.

<pre><pre>pntxta></pre></pre>	'{'ATADO9# sixin / '}'
<dtxtd></dtxtd>	'{' \prtfdDd# dfxfnq / '}'
<tsujnst></tsujnst>	/budc /budl /budu
<pre>>pnfmt></pre>	/pnnumonce? & /pnkang? & /pnrestart? /pnstart? & /pnkang? & /pnrestart?
<jnud></jnud>	winnd/ ənoninnd/ dbinnq/ binnd/ binnd/ binnd/
<pre>cpnchrfmt></pre>	/pnrf? & /pnfs? & /pnb? & /pni? & /pncaps? & /pnscaps? & <pnul>? & /pnstrike? & /pncf? /pncf? /pncf? /pncf?</pnul>
olympic	/pncard /pndec /pnucltr /pnucrm /pnicltr /pnicrm /pnord /pnordt
<pre>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>></pre>	<pre>style> & <pre>pntttb< & <pre>style> & <pre>style> & <pre>style> & <pre>style> & <pre>style</pre></pre></pre></pre></pre></pre></pre>
<laveline <laveline="" <li=""><laveline <li=""></laveline></laveline>	/bulvi /pnivibit /pnivibody /pniviconŧ
<pre>cbubrops></pre>	,{, > > >
<pre><pre>choice</pre></pre>	'{' \pntext <char> '}'</char>
<pre>cpnpara></pre>	<pre><pre>cprext> <pre>cprext></pre></pre></pre>
<lvi><lvi><pre>buseclvl></pre></lvi></lvi>	,{, >busectvt >busectvt >busectvt
<ud></ud>	<pre>consectivis <pre>consectivis</pre></pre>

Settings below marked with an asterisk can be turned off by appending 0 to the control word.

γpodivinq∕	Simple paragraph numbering (corresponds to level 10).
)tdiving	Bulleted paragraph (corresponds to level 11). The actual character used for the bullet is stored in the /pntxtb group.
Wiving/	Paragraph level, where N is a level from 1 to 9. Default set by /pnsecIvIN section formatting property.
ud\	Turns on paragraph numbering. This is a destination control word.
jxəjnq/	This group precedes all numbered/bulleted paragraphs, and contains all autogenerated text and formatting. It should precede the '{/*'/pn _ '}' destination, and is the responsibility of RTF readers that understand the '{/*'/pn _ '}' destination to ignore this preceding group. This is a destination control word.

dtxtnd/	Text before. This group contains the text that precedes the number. This is a destination control word.
stxind/	Text after. This group contains the text that succeeds the number. This is a destination control word.
Ntrstard/	Start at number.
/budt	Right-justified numbering.
bud\	Lett-justified numbering.
/budc	Centered numbering.
/bubtev	Used for multilevel lists. Include information from previous level in this level; for example, 1, 1.1, 1.1.1, 1.1.1
Nqand∕	Distance from number text to body text.
W tnəbninq/	Minimum distance from margin to body text.
N≥inq/	Font size (in half-points).
\n 1nq/	Font number.
/pncf/	Foreground color—index into color table (the default is 0).
/pnstrike	Strikethrough numbering.*
wlund/	Word underline.
əuou nud\	Turns off underlining.
dblurid∕	Double underline.
pjnud\	Dotted underline.
nud	*.enihebnu suounitno.
/buscsps	*.gninedmun sqsJ llsm2
/bucsba	*.gnin9dmun zqsJ IIA
inq/	*.puinedmun silstl
qud\	*.goinadmun bloð
/pnordt	Ordinal text numbering (First, Second, Third).
/buord	Ordinal numbering (1st, 2nd, 3rd).
/bulcrm	Lowercase roman numbering. (i, ii, ii).
/pnicitr	Lowercase alphabetic numbering (a, b, c).
/bunctm	Uppercase roman numbering (I, II, III).
/buncltr	Uppercase alphabetic numbering (A, B, C).
/buqec	Decimal numbering (1, 2, 3).
/bucard	Cardinal numbering (One, Two, Three).
/pnrestart	Restart numbering after each section break. Note that this control word is used only in conjunction with the Heading Numbering feature (applying multilevel numbering to Heading style definitions).
, buenag	Paragraph uses a hanging indent.
/buscross	Number across rows (the default is to number down columns).
·	a table).
/buunmonce	Number each cell only once in a table (the default is to number each paragraph in
/pnlvlcont	Continue numbering but do not display number ("skip numbering").

Note that there is a limit of 32 characters total for the sum of text before and text after for simple numbering. Multilevel numbering has a limit of 64 characters total for the sum of all levels.

Word 97 RTF

Control word

Each paragraph that is part of a list must contain some keyword to indicate which list it's in, and which level of the list it belongs to. Word 97 also provides the flat text representation of each number (in the vumber, along with appropriate character properties, inserted into their document at the beginning of the paragraph. Any RTF reader that does understand Word 97 numbering should ignore the entire /listtext destination.

txətteil/	Contains the flat text representation of the number, including character properties. Should be ignored by any reader that understands Word 97 numbering. This is a destination control word.
IvIi/	The 0-based level of the list to which the paragraph belongs. For all simple lists, this should always be 0 . For multilevel lists, it can be 0-8.
sl/	Should exactly match the Is for one of the list overrides in the List Override table.

REVISION MARKS FOR PARAGRAPH NUMBERS

BninsM

Track Changes (Revision mark) properties for paragraph numbers

Paragraph numbers and ListNum fields track revision information with special properties applied to the paragraph mark and ListNum fields track revision. The special properties hold the "old" value of the number—the value it held when revision-mark tracking began. At display time, Word checks the number's current value and compares it with this "old" value to tell if it has changed. If the numbers are different, the old value shows up as deleted and the new value as inserted; if the numbers are the same, Word displays the new value normally, with no revision information. If there was no old value, the new value shows up as deleted and the RTF specifications for these special properties.

₩ ɔînınq/	Vine-item array containing the number format codes of each level (using the same values as the /levelnfc keyword). The number format code is represented as a short integer.
∖pnrrgbW	Vine-item array of indices of the level place holders in the /pnrxst array.
	pnrxst is a 32-item Unicode character array (double bytes for each character) with a length byte as the first number—it has the actual text of the number, with "level" place holders written out as digits from 0-8.
\prixstN	The keywords /pnrxst , /pnrrgb , /pnrpnbr , and /pnrnfc describe the "deleted number" text for the paragraph number. Their values are binary. Each of these keywords is represented as an array. The deleted number is written out with a /pnrstart keyword, followed by the array's keyword, followed by the first byte of the array, followed by the array's keyword, followed by the third byte of the array's keyword, followed by the array's keyword, followed by the third byte of the array, followed by the array's keyword, followed by the third byte of the array's keyword, and so on. This sequence is followed by the /pnrstop keyword.
/burnot	Indicates if the paragraph number for the current paragraph is marked as "inserted."
/pnrdate/	Time of the revision. The 32-bit DTTM structure is emitted as a long integer.
	Note This keyword is used to indicate paragraph number revisions.
/pnrauth/	Index into the revision table. The content of the ${f M}$ th group in the revision table is considered to be the author of that revision.

/pnrstopM	The /pnrxst, /pnrrgb, /pnrpnbr , and /pnrnfc arrays are each terminated by the
NtrstartV	The \prixst, \prirgh, \pripris t, and \prinfc arrays are each preceded by the \prixst, \prirgh . \pristart keyword, whose argument is 0-3 depending on the array.
\pripnbrM	Nine-item array of the actual values of the number in each level. The number is represented as a long integer

/pnrstop keyword, whose argument is the number of bytes written out in the array.

:əlqmsx3

lists the values of each array. Let's take an example of the number "3-4b." which represents the third level of the list. The following table

Comment	Binary	Array
The length of the string is 5. Then, first level (level 0), followed by a dash, followed by the second and third levels (levels 1 and 2), followed by a period.	/\02/\00- /\02/\00-	burxst
The level place holders are at indices 1, 3, and 4 in the string.	101/103/104	Pnrrgb
The nfc values are Arabic (0), Arabic (0), and lowercase letter (4).	40'/00'/00'/	Pnrnfc
The numbers or 3, 4, and 2 (b)	/'03/'04/'02	Porpobr

Here is the RTF for this number:

9 /prrxstd/01exrng/01exrng/01exrng/01errst45/pnrxst3/01errst3/pnrxst3/01errst3/prxst4/01errst3/pnrxst4

/pnrstopl2

Ofretert0/

6dojsjud/ /burrdp0/burrdp0/burrdp0 /burrdp0/burrdp0/burrdp0 /burrgbl/purrgb3/purrgb4 /pnrstartl

81qojarq/ /printco/print /prrnfc0/pnrnfc0/pnrnfc0/pnrnfc0/pnrnfc0 /printco/printco/printco/printco/printc4 /pnrstart2

/pnrstart3

/burbupr0/burbupr0/burbupr0 /burbupr0/burbupr0/burbupr0 /burbupr0/burbupr0/burbupr0 /burbupr0/burbupr0/burbupr0 /burbupr0/burbupr0/burbupr0 /purprbvd/purpr0/purprbvd/purpr2 /purpnbr0/purpnbr0/purpnbr4 /burbupr0/burbupr0/burbupr3
/burbupr0/burbupr0/burbupr0

)prrstop36

example from above. The deleted value is "3-4b." The RTF would then be	siqmes edt exervie
	:əlqma
The /dfrxst array is terminated by the / dfratop keyword.	/dfrstop
The /dfrxst array is preceded by the / dfrstart keyword.	/dfrstart
Unicode character array with a length byte.	texnib/
Time of the revision. The 32-bit DTTM structure is emitted as a long integer.	Natsbr1b/
Note This keyword is used to indicate the deleted value of a ListNum field.	
Index into the revision table. The content of the ${f N}$ th group in the revision table is considered the author of that revision.	MdfrauthV
Revision mark) properties for ListNum fields	Track Changes (
ຍnins∋M	Control word

sхЭ

Ctlaxrtb/Ola

/dfrsst0/dfrsst0/dfrsst0/dfrsst0/dfrst0pl0/

where 5 is the length byte, 51 is Unicode for "3", 45 is Unicode for "-", 52 is Unicode for "4", and so on.

Paragraph Borders

Paragraph borders have the following syntax:

/brdrs /brdrth /brdrsh /brdrdb /brdrdot /brdrdssh /brdrhair	 brdrk>
<pre>cprqrk> /prqrw; /prsb; /prqrcf;</pre>	 brdr>
/brdrt /brdrb /brdrl /brdrr /brdrbtw /brdrbar /box	 brdrseg>
(<pre>cebs< cebs</pre> (<pre>cebs</pre> (brdrdef>

/brdrs	Single-thickness border.
xod/	Border around the paragraph (box paragraph).
/prdrbar	Border outside (right side of odd-numbered pages, left side of even-numbered pages).
/brdrbtw	Consecutive paragraphs with identical border formatting are considered part of a single group with the border information applying to the entire group. To have borders around individual paragraphs within the group, the /brdrbtw control must be specified for that paragraph.
/brdrr	Border right.
/brdrl	Border left.
/prdrb	Border bottom.
/brdrt	Border top.
Control word	gninsəM

NgnibsAz/	$oldsymbol{N}$ is the shading of the paragraph in hundredths of a percent.
Control word	pninsəM
<16q>	/bghoriz /bgu&rt /bgfdiag /bgbdiag /bgcross /bgdkhoriz /bgdkvert /bgdkfdiag /bgdkbdiag /bgdkcross /bgdkhoriz
<pre>contexts</pre>	(ation (a

Paragraph shading has the following syntax:

Paragraph Shading

/brspM	Space in twips between borders and the paragraph.
/brdrcf/	${\bf N}$ is the color of the paragraph border, specified as an index into the color table in the RTF header.
/wwibid/	N is the width in twips of the pen used to draw the paragraph border line. N cannot be greater than 75. To obtain a larger border width, the lbrdth control word can be used to obtain a width double that of N .
/brdrengrave	Engrave border.
/prdremboss	Emboss border.
/brdrdashdotstr	Striped border.
/prdrwavydb	Double wavy border.
/brdrwavy	Wavy border.
/prdrtnthtnlg	Thin thick thin border (large).
/prdrthtnlg	Thin thick border (large).
/prdrtnthlg	Thick thin border (large).
/prdrtnthtnmg	Thin thick thin border (medium).
/prdrthtnmg	Thin thick border (medium).
/prdrtnthmg	Thick thin border (medium).
/prdrtnthtnsg	Thin thick thin border (small).
/prdrthtnsg	Thin thick border (small).
/prdrtnthsg	Thick thin border (small).
/brdrtriple	Triple border.
/prdrdashdd	Dot dot dash border.
/prdrdashd	Dot dash border.
/prdrdashsm	Dash border (small).
/brdrhair	Hairline border.
/prdrdash	Dashed border.
/brdrdot	Dotted border.
/prdrdb	Double border.
/prdrsh	Shadowed border.
/prdrth	Double-thickness border.

document's color table.

V16q5/	${f N}$ is the background color of the background pattern, specified as an index into the
Vtsqt)/	N is the fill color, specified as an index into the document's color table.
/pdqkqcross	Specifies a dark diagonal cross background pattern for the paragraph.
/pdqkcross	Specifies a dark cross background pattern for the paragraph.
/bgdkbdiag	Specifies a dark backward diagonal background pattern for the paragraph (////).
/bgdkfdiag	Specifies a dark forward diagonal background pattern for the paragraph (<i>IIII</i>).
/bgdkvert	Specifies a dark vertical background pattern for the paragraph.
/pdqkhoriz	Specifies a dark horizontal background pattern for the paragraph.
/pdqcross	Specifies a diagonal cross background pattern for the paragraph.
/pdctoss	Specifies a cross background pattern for the paragraph.
bsibdpd/	Specifies a backward diagonal background pattern for the paragraph (////).
bsibìpd/	Specifies a forward diagonal background pattern for the paragraph (////).
/bgvert	Specifies a vertical background pattern for the paragraph.
/pdµoriz	Specifies a horizontal background pattern for the paragraph.

Positioned Objects and Frames

The following paragraph-formatting control words specify the location of a paragraph on the page. Consecutive paragraphs with the same frame formatting are considered part of the same frame. For two framed paragraphs to appear at the same position on a page, they must be separated by a paragraph with different or no frame information.

Note that if any paragraph in a table row has any of these control words specified, then all paragraphs in the table row must have the same control words specified, either by inheriting the properties from the previous paragraph or by re-specifying the controls.

Paragraph positioning has the following syntax:

<tsibv></tsibv>	/bosλ; /bosu6dλ; /bosλt; /bosλii; /boshp; /bosλc; & /spslock
<əmsıtv>	/bʌwɛðʒ /bʌbðʒ /bʌbsɛsʒ
<tr<<td><td< th=""><th>/bozx; /bozu6dx; /bozxc; /bozxi; /bozxo; /bozxi; /bozxi;</th></td<></tr<<td>	/bozx; /bozu6dx; /bozxc; /bozxi; /bozxo; /bozxi; /bozxi;
<əmɛıìd>	/bywcð¿ /bybð¿ /bycoլჴ
<dropcap></dropcap>	/qkobcabli? & ∖qkobcapt?
<txtwrap></txtwrap>	/nowrap? & /dxfrtext? & /dfrmtxtx? &/dfrmtxty?
<vertpos></vertpos>	<t< th=""></t<>
<pre><pre>voicpos></pre></pre>	 steine> &
<əzisəmsı}>	¿ usqe i % ¿msqei
<ap><aborements< a=""></aborements<></ap>	 size> & <horzpos> & <vertpos> & <vertpos> & vertpos> & vertpos> & vertpos> > > ></vertpos></vertpos></horzpos>

Control word Meaning

.sqiwt ni əmath of the width of the frame in twips.

μητα	ament appropriate letrovision and se approval as l
/bµաւმ	Use the margin as the horizontal reference frame.
Horizontal Positio	uc
Nd2ds/	N is the height of the frame in twips. A positive number indicates the minimum height of the frame. A value of zero indicates that the height of the frame adjusts to the contents of the trame. This is the default for frames where no height is given.

Mysoul	emert eggereter edt te enhe det mert geiwt M daeneren edt greitige
/pvpara	Positions the reference frame vertically relative to the top of the top left corner of the next unframed paragraph in the RTF stream.
βd∧d∖	Positions the reference frame vertically relative to the page.
խտուց	Positions the reference frame vertically relative to the margin. This is the default if no vertical frame positioning information is given.
Vertical Position	
xsod/	Positions the paragraph to the left within the reference frame. This is the default if no horizontal positioning information is given.
/bosxr	Positions the paragraph to the right within the reference frame.
oxsod\	Positions the paragraph horizontally outside the reference frame.
ixsoq/	Positions the paragraph horizontally inside the reference frame.
/boexc	Centers the frame horizontally within the reference frame.
Nxgənsoq/	Same as /posx but allows arbitrary negative values.
Nxsoq/	Positions the frame $oldsymbol{N}$ twips from the left edge of the reference frame.
/bµcol	Use the column as the horizontal reference frame. This is the default if no horizontal reference frame is given.
6dyd\	Use the page as the horizontal reference frame.
/bµաւმ	Use the margin as the horizontal reference frame.
Horizontal Positio	u

tuoγ≥out	Positions the paragraph vertically outside the reference frame.
niγzoq∕	Positions the paragraph vertically inside the reference frame.
∕ον €ιΙ αγ	Text flows underneath frame.
VtrmtxtyV	$oldsymbol{N}$ is the vertical distance in twips from text on both sides of the frame.
/dfrmtxtx/	N is the horizontal distance in twips from text on both sides of the frame.
Vtx9trtxb/	Distance in twips of a positioned paragraph from text in the main text flow in all directions.
/nowrap	Prevents text from flowing around the positioned object.
Text Wrapping	
∕abslock	Locks a frame anchor to the current paragraph that it is associated with.
/bosyb	Positions the paragraph at the bottom of the reference frame.
/bosyc	Centers the paragraph vertically within the reference frame.
typosyt	Positions the paragraph at the top of the reference frame.
livsod/	Positions the paragraph vertically to be in-line.
νγ β ∋n≳oq/	Same as /posy but allows arbitrary negative values.
Nysod/	Positions the paragraph $oldsymbol{N}$ twips from the top edge of the reference frame.
/pvpara	Positions the reference frame vertically relative to the top of the top left corner of the next untramed paragraph in the RTF stream.
նզ∨գ∕	Positions the reference frame vertically relative to the page.
խտուց	Positions the reference frame vertically relative to the margin. This is the default if no vertical frame positioning information is given.
Vertical Position	

	2 Margin drop cap
	າ In-text drop ເສp
VtropcaptN	Type of drop cap:
/dropcapli/	Number of lines drop cap is to occupy. The range is 1 through 10.
Drop Caps	

The following is an example of absolute-positioned text in a document:

/pard /pvpg/phpg/posxc/posyt/absw5040/dxfrtest173 First APO para

/pard /phmrg/posxo/posyc/dxfrtextll52 Second APO para

znoitinited eldeT

There is no RTF table group; instead, tables are specified as paragraph properties. A table is represented as a sequence of table rows. A table row is a continuous sequence of paragraphs partitioned into cells. The table row begins with the /trowd control word and ends with the /tow control word. Every paragraph that is contained in a table row must have the /intbl control word specified or inherited from the previous paragraph. A cell may have more than one paragraph in it; the cell is terminated by a cell mark (the /cell control word), and the row is terminated by a row mark (the /tow control word). Table rows can also be positioned. In this case, every paragraph in a table row must have the same positioning controls (see the captored. In this case, every paragraph in a table row must have the same positioning controls (see the positioned. In this case, every paragraph in a table row must have the same positioning controls (see the provisioned. In this case, every paragraph in a table row must have the same positioning controls (see the previous row; therefore, a series of table rows may be introduced by a single

An RTF table row has the following syntax, as shown in the general paragraph-text syntax shown on page 23 of this Application Note.

<textpar>+ /cell</textpar>	
<pre><tbldef> <cell>+ \row</cell></tbldef></pre>	<rom></rom>

A table definition has the following syntax:

<cellright></cellright>	/clbrdrr clbrdrs
<cellbot></cellbot>	/clbrdrb clbrdr>
<te><th< th=""><th>/clbrdrl <pre>clbrdr</pre></th></th<></te>	/clbrdrl <pre>clbrdr</pre>
<celltop></celltop>	/clbrdrt brdr>
<telldef></telldef>	(/ clmgf ? & /clmrg ? <celltop>? & <cellleft>? & <cellbot>? & <celltop>? & <celltop< th=""></celltop<></celltop></celltop></celltop></celltop></celltop></celltop></celltop></celltop></celltop></celltop></celltop></celltop></celltop></celltop></cellbot></cellleft></celltop>
<rowvert></rowvert>	/trbrdrv
<rowhor></rowhor>	/trbrdrh brdr>
<rowright></rowright>	/trbrdrr brdr>
<td< th=""><th>/trbrdrb brdr></th></td<>	/trbrdrb brdr>
<rowbot></rowbot>	/trbrdrl brdr>
<rowtop></rowtop>	/ttbrdrt brdr>
 stinwwo1>	/ltrrow /rtlrow
<re><rowjust></rowjust></re>	/trdl /trdc /trdc
<†9bldt>	\trowd \trysph <rowlust>? & <rowwrite>? & \tribit? & \trrh? \trhdr? & \trkeep? <rowright>? & <rowhor>? & <rowvert>? & \tribit? & \tribit? & \trrh? \trhdr? & \trkeep? <celldef>+</celldef></rowvert></rowhor></rowright></rowwrite></rowlust>

Note for <tbldef> that the number of /cellxs must match the number of /cells in the /row.

The following control words further define options for each row of the table.

001069M

Control word

/trbrdrv	Table row border vertical (inside).
/trbrdrh	Table row border horizontal (inside).
/trbrdrr	Table row border right.
/trbrdrb	Table row border bottom.
/trbrdrl	Table row border left.
/trbrdrt	Table row border top.
Row Borders	
/ltrrow	Cells in this table row will have left-to-right precedence (the default).
/rtlrow	Cells in this table row will have right-to-left precedence.
Bidirectional Cont	rols
/trkeep	Table row keep together. This row cannot be split by a page break. This property is assumed to be off unless the control word is present.
/trhdr	Table row header. This row should appear at the top of every page the current table appears on.
\trth\	Height of a table row in twips. When 0, the height is sufficient for all the text in the line; when positive, the height is guaranteed to be at least the specified height; when negative, the absolute value of the height is used, regardless of the height of the text in the line.
Vtrleft/V	Position of the leftmost edge of the table with respect to the left edge of its column.
/trdc	Centers a table row with respect to its containing column.
/trqr	Right-justifies a table row with respect to its containing column.
/trql	Left-justifies a table row with respect to its containing column.
Row Formatting	
/clmrg	Contents of the table cell are merged with those of the preceding cell.
/clmgf	The first cell in a range of table cells to be merged.
∖trgaphM ∖trgaphM	Half the space between the cells of a table row in twips. Defines the right boundary of a table cell, including its half of the space between cells.
/tcelld	Sets table cell defaults.
/trowd	Sets table row defaults.

)clvertalc	Text is centered vertically in cell.
/clvertalt	Text is top-aligned in cell (the default).
Vertical Text Alig	nment
V16d5l2/	N is the background color of the background pattern.
Visqtolo/	N is the line color of the background pattern.
/cipdqkqcross	Specifies a dark diagonal cross background pattern for the cell.
/clbgdkcross	Specifies a dark cross background pattern for the cell.
/clbgdkbdiag	Specifies a dark backward diagonal background pattern for the cell (////).
/clbgdkfdiag	Specifies a dark forward diagonal background pattern for the cell (////).
/clbgdkvert	Specifies a dark vertical background pattern for the cell.
/clbgdkhor	Specifies a dark horizontal background pattern for the cell.
/clbgdcross	Specifies a diagonal cross background pattern for the cell.
/clbgcross	Specifies a cross background pattern for the cell.
)clbgbdiag	Specifies a backward diagonal background pattern for the cell (////).
)clbgfdiag	Specifies a forward diagonal background pattern for the cell (////).
/clbgvert	Specifies a vertical background pattern for the cell.
/clbghoriz	Specifies a horizontal background pattern for the cell.
Ngnbdslo/	N is the shading of a table cell in hundredths of a percent. This control should be included in RTF along with cell border information.
Cell Shading and	Background Pattern
/clbrdrr	Kight table cell border.
/clbrdrl	Left table cell border.
/clbrdrt	Top table cell border.
/clbrdrb	Bottom table cell border.
Cell Borders	

The following is an example of table text:

/cltxtbrl

/cltxlrtb

/clvertalb

/par /trowd /trqc/trgaphl08/trrh280/trleft36 /clbrdrt/brdrth /clbrdrth /clbrdrth /clbrdrt/brdrdb /cellx3636/clbrdrth /cell /pard /intbl /cell /pard /intbl /cell /pard /intbl /cell /pard /intbl /row /trowd /trqc/trgaphl08/trrh280/trleft36 /clbrdrt/brdrdb /trowd /trqc/trgaphl08/trrh280/trleft36 /clbrdrt/brdrdb

Vertical text aligned right (direction top down).

Vertical text aligned left (direction bottom up).

Text is bottom-aligned in cell.

```
/cellx3636/clbrdrt/brdrdb /clbrdr /brdrdb
/clbrdrb/brdrsh/brdrdb
/celbrdrb/brdrsh/brdrdb /clbrdr /brdrdb
/cellx7236/clbrdrt/brdrdb /cellx10836/pard
/intbl /cell /pard /intbl /cell /pard
/intbl /row /pard
```

Character Text

Character text has the following syntax:

	<10C> <dook></dook>
<data></data>	#PCDATA <spec> <loos <do="" =""> <do> <ido> <ido> <ido> <ido> <ido> <ido> <ido> </ido></ido></ido></ido></ido></ido></ido></do></loos></spec>
<tstext></tstext>	+(+ <ata> *<tmt>)</tmt></ata>
<char></char>	<pre>cbtext> <atext> '{' <char'> '}'</char'></atext></pre>

Font (character) Formatting Properties

These control words (described as <chriftet> in the syntax description) change font (character) formatting properties. A control word preceding plain text turns on the specified attribute. Some control words (indicated in the following table by an asterisk following the description) can be turned off by the control word followed by 0. For example, */b* turns on bold, while */b0* turns off bold.

The font (character)-formatting control words are listed in the following table.

pninsəM	Control word
Reset font (character) formatting properties to a default value defined by the application (for example, bold, underline and italic are disabled; font size is reset to 12 pt). The associated font (character) formatting properties (described in the section "Associated Font (character) Properties" on page 37 of this Application Wote) are also reset.	nislq/
Animated text properties.	Ntx9tmins∕
strigij segev sej t	
2 Blinking background	
3 Sparkle text	
4 Marching black ants	
5 Marching red ants	
6 Shimmer	
.bold.	q\
*.slstits IIA	/csps
Character scaling value. The N argument is a value representing a percentage (the default is 100).	Wxəlsəsisdə/
Marks the text as deletion revision marked.*	bətələb/
Subscript position in half-points (the default is 6).	Nub/
Emboss.	/embo
Engrave.	/impr

	tells which character set they do belong to. Macintosh character sets are represented by values greater than 255. The values for N correspond to the values for the /fcharset control word.
Nedoo/	Indicates any characters not belonging to the default document character set and
Neo/	Designates character style. If a character style is specified, style properties must be specified with the character run. \mathbf{N} refers to an entry in the style table.
/itrch	The character data tollowing this control word will be treated as a left-to-right run (the default).
/rtich	The character data following this control word will be treated as a right-to-left run.
Vdɔ/	Background color (the default is 0).
Nto/	Foreground color (the default is 0).
^\	Hidden text.*
/anber	Superscripts text and shrinks point size according to font information.
N du∕	Superscript position in half-points (the default is 6).
evswlu/	.9ave underline.
wlu/	Word underline.
(Jilth	Thick underline
əuouln/	Stops all underlining.
dblu/	Double underline.
ppyseblu∕	Dot dot dash underline.
pyseblu∕	Dot dash underline.
dseblu∕	Dash underline.
plu/	Dotted underline.
lu/	Continuous underline. /uI0 turns off all underlining.
/strikedl	Double strikethrough.
/strike	Strikethrough.*
peys/	*.wobsh2
sdess/	*.sletiqes llem2
ltuo/	*.əniltuO
١١	talic.*
Nsì/	Font size in half-points (the default is 24).
Nł/	Font number. N refers to an entry in the font table.
/kerning/	Point size (in half-points) above which to kern character pairs. /kerning0 turns off kerning.
₩ıbnqxə/	Expansion or compression of the space between characters in twips; a negative value compresses. For backward compatibility, both /expndtw and /expnd should be emitted.
Nbnqxə/	Expansion or compression of the space between characters in quarter-points; a negative value compresses (the default is 0).
/uosupersub	Turns off superscripting or subscripting.
qns\	Subscripts text and shrinks point size according to font information.

The $\ensuremath{\text{plain}}$ control word resets the language property to the language defined by Ngnsl/

The following table defines the standard languages used by Microsoft. This table was generated by the

- Applies a language to a character. ${\boldsymbol N}$ is a number corresponding to a language.

- /deflang/ in the document properties.

amen apeup	dl əpsupnsı
agengnel oN	0040x0
nsinsdlA	0141c
Srabic	r0401
eseyeg	1240x0
Belgian Dutch	£180x0
Belgian French	0x080c
Brazilian Portuguese	9140x0
Bulgarian	2040x0
Catalan	0×0403
Croato-Serbian (Latin)	ь140x0
ςzecµ	204050
AsinsD	9040x0
Dutch	0×0413
English (Australian)	0x0c09
(.Y.U) dsilgn∃	6080×0
(.S.U) dsilgn∃	0×0409
AsinniA	d040x0
French	0x040c
French (Canadian)	0x0c0c
ດອເຫສກ	7040x0
Сгеек	8040x0
Hebrew	b040x0
nsinspauH	9040x0
lcelandic	1040x0
nsilstl	0r410
Japanese	1140×0
Korean	2140x0
Norwegian (Bokmal)	4140×0
Norwegian (Nynorsk)	4180×0
Asilo9	0×0412
Portuguese	9180×0
DinemoA-otaedA	7140×0

Unicode group for use with TrueType and Unicode.

Farsi (Persian)	0×0429
Tsonga	1540×0
Tswana	0×0432
sbnav	0×0433
хрозя	0×0434
nınz	0×0432
Afrikaans	0×0436
Sesotho (Sotho)	0×0430
Urdu	0×0420
Turkish	1140×0
Traditional Chinese	4040×0
івАТ	9140x0
nsilstl sziw2	0180x0
nsmısə Cerman	7080x0
Swiss French	001x0
dsibawS	b140x0
(nsɔixəM) dzinsq2	в080x0
(nsilitss) dzinsq2	в040x0
Slovak	d140x0
Simplified Chinese	4080x0
Serbo-Croatian (Cyrillic)	в180x0
nsiszuA	0×0419
nsinsmoA	8140x0

To read negative /expnd values from Word for the Macintosh, an RTF reader should use only the low-order 6 bits of the value read. Word for the Macintosh does not emit negative values for /expnd. Instead, it treats values from 57 through 63 as -7 through -1, respectively (the low-order 6 bits of 57 through 63 are the same as -7 through -1).

Character Borders and Shading

Ngnbdad/

Character shading has the following syntax.

Character border (border always appears on all sides).	/cµprdr
ิธุกาศรอM	Control word
/chbghoriz /chbgvert /chbgfdiag /chbgbdiag /chbgcross /chbgdkross /chbgdkhoriz /chbgdkvert /chbgdkfdiag /chbgdkbdiag /chbgdkcross /chbgdkdcross	<taq></taq>
(/cysyqud <bst; cycbat;<="" cyctbat;="" th=""><th><shading></shading></th></bst;>	<shading></shading>

Character shading. The ${f N}$ argument is a value representing the shading of the text

in hundredths of a percent.

Specifies a dark diagonal cross background pattern for the text.	/cµpdqkqcıozz
Specifies a dark cross background pattern for the text.	/cµpdqkcLoss
Specifies a dark backward diagonal background pattern for the text (////).	/chbgdkbdiag
Specifies a dark forward diagonal background pattern for the text (////).	/chbgdkfdiag
Specifies a dark vertical background pattern for the text.	/cµpdqkvert
Specifies a dark horizontal background pattern for the text.	/cµpdqkµoriz
Specifies a diagonal cross background pattern for the text.	/cµpdqctoss
Specifies a cross background pattern for the text.	/cµpdcLoss
Specifies a backward diagonal background pattern for the text (////).	bsibdpdda/
Specifies a forward diagonal background pattern for the text (////).)chbgfdiag
Specifies a vertical background pattern for the text.	/chbgvert
Specifies a horizontal background pattern for the text.	/cµpdµoriz
N is the fill color, specified as an index into the document's color table.	Vtsddodo/
N is the color of the background pattern, specified as an index into the document's color table.	Vtsqtədə/

The color, width, and border style keywords for character borders are the same as the keywords for paragraph borders.

Vrevdttmdel V	Time of the deletion. The 32 -bit DTTM structure is emitted as a long integer.
	considered to be the author of that deletion.
Mebdfuever	si aldet noisiver adt di guorn dit adt to tratico adT aldet noisiver adt otni xabul
NerdateN	Time of the revision. The 32-bit DTTM structure is emitted as a long integer.
	Note This keyword is used to indicate formatting revisions, such as bold, italic, and so on.
Vdfusio/	Index into the revision table. The content of the ${f M}$ th group in the revision table is considered to be the author of that revision.
Vmttbvər/	Time of the revision. The 32-bit DTTM structure is emitted as a long integer.
Vrðusvər/	Index into the revision table. The content of the ${f M}$ th group in the revision table is considered to be the author of that revision.
/revised	Text has been added since revision marking was turned on.
Track Changes (R	sevision Mark) properties
Control word	prinseM

Associated Character Properties

Bidirectional-aware text processors often need to associate a Latin (or other left-to-right) font with an Arabic or Hebrew (or other right-to-left) font. The association is needed to match commonly used pairs of fonts in name, size, and other attributes. Although RTF defines a broad variety of associated character property and share any implementation may choose not to implement a particular associated character property and share the property between the Latin and Arabic fonts.

Property association uses the following syntax:

<atext> <atext

<itrun> /rtich /af & <aprops>* /itrch <ptext>

<rp><rtirun>

Here are some examples of property association:

/ltrch/af2/ab/au/rtlch/u Sample Text

This is a right-to-left run. Text will use the default bidirectional font, and will be underlined. The left-toright font associated with this run is font 2 (in the font table) with bolding and underlining.

/plain/rtlch/ltrch Sample Text

Control word

This is a left-to-right run. The right-to-left font and the left-to-right font use the default font (specified by /deft).

/rtlch/af5/ab/ai/ltrch/u Sample Text

PainseM

This is a left-to-right run. The right-to-left font is font 5, bold and italicized. The left-to-right font is the default font, underlined. If the reader does not support underlining in the associated font, both fonts will be underlined.

The property association control words (described as <aprops> in the syntax description) are listed in the following table by an asterisk following the description) can be turned off by the control word followed by 0.

AupN Superscript position in half-points (the default is 6).
Associated font is word underline.
Aulnone Associated font is no longer underlined.
Auldb Associated font is double underline.
Auld Associated font is dotted underline.
Aul Associated font is continuous underline. Aul0 turns off all underlining for the alternate font.
.trike Associated font is strikethrough.
*.wobsrla si trof betraisossA bsrlas/
*.elstides lisms ei trot betsissee A secondare *.
*.eniltuo zi trot betsioozzA laout
Alangy Language ID for the associated font. (This uses the same language ID code described on page 35 of this Application Note.)
.aitalic i talic.
NatsV. (45 si flue default is the default is 24).
AtV (0 si tlus teb eta font number (the default is 0).
AaexpndN Expansion or compression of the space between characters in quarter-poin negative value compresses (the default is 0).
AdnV Associated font is subscript position in half-points (the default is 6).
Associated foreground color (the default is 0).
*.slatidas lla si tont bataiseA espectate
*.blod si trot bətsioossA ds/

<u>paithgildpiH</u>

This property applies highlighting to text. The formatting is not a character format, so it cannot be part of a style definition.

ied text. N specifies the color.	Highlights the specif	Nîdpildpid/

For /highlight, the N argument can have the following values:

uo	Descriptio	ənleV
	Black	٢
	ənla	5
	Суап	3
	Green	4
	binəgeM	G
	БеЯ	9
	wolləY	L
	pəsnuŊ	8
	Dark Blue	6
L	Dark Cyan	01
ue	Dark Gree	11
lenta	Dark Mag	15
	Dark Red	13
MC	Dark Yelic	14
	Dark Gray	9 L
λ	Light Gra	91

Special Characters

The RTF Specification includes control words for special characters (described as <spec> in the charactertext syntax description). If a special-character control word is not recognized by the RTF reader, it is ignored, and the text following it is considered plain text. The RTF Specification is flexible enough to allow new special characters to be added for interchange with other software.

The special RTF characters are listed in the following table.

gninsəM	word	Control
---------	------	---------

and the set of the set	/cyba
ne Current time (as in headers).	/chtim
Current date in abbreviated format (for example, Thu, Oct 28, 1997).	/cµqb
ا Current date in long format (for example, Thursday, October 28, 1997).	/cµqb
te Current date (as in headers).	/cµqsi

<i>ų</i> ų,	A hexadecimal value, based on the specified character set (may be used to identify 8-bit values).
	reader.
/*	Marks a destination whose text should be ignored if not understood by the RTF
/: _	Specifies a subentry in an index entry.
١	Nonbreaking hyphen.
-\	Optional hyphen.
~\	Nonbreaking space.
h	Formula character. (Used by Word 5.1 for the Macintosh as the beginning delimiter for a string of formula typesetting commands.)
/rdblquote	Right double quotation mark.
)ldblquote	Left double quotation mark.
/rquote	Right single quotation mark.
ətoupl/	Left single quotation mark.
təllud/	Bullet character.
əɔɐdsuə/	Nonbreaking space equal to width of character "n" in current font. Some old RTF writers use the construct ' (enspace)' (with two spaces before the closing brace) to trick readers unaware of (enspace into parsing a regular space. A correct reader should interpret this as an /enspace and a regular space.
/smspace	Nonbreaking space equal to width of character "m" in current font. Some old RTF writers use the construct '{ lemspace }' (with two spaces before the closing brace) to trick readers unaware of lemspace into parsing a regular space. A reader should interpret this as an lemspace and a regular space.
/sebna/	.(−) dash-n∃
/emdash	.(—) Asab-m∃
(tab	Tab character.
Ntdpisdlttos/	Nonrequired line height. This is emitted as a prefix to each line.
softline/	Nonrequired line break. Emitted as it appears in galley view.
/softcol	Nonrequired column break. Emitted as it appears in galley view.
/softpage	Nonrequired page break. Emitted as it appears in galley view.
ənil/	Required line break (no paragraph break).
/column	Required column break.
/bsge	Required page break.
,sect	End of section and paragraph.
/bsr	End of paragraph.
/row	End of table row.
/cell	End of table cell.
/cµţţuzebc	Anchoring character for footnote continuation.
/chftnsep	Anchoring character for footnote separator.
/chatn	Annotation reference (annotation text follows in a group).
/chftn	Automatic footnote reference (footnotes follow in a group).
/sectnum	Current section number (as in headers).

įwz/	Zero-width joiner. This is used for ligating (joining) characters.
/rtlmark	The following characters should be displayed from right to left; usually found at the start of \rtich runs.
/ltrmark	The following characters should be displayed from left to right; usually found at the start of /ltrch runs.

255 characters for better text transmission over communication lines.) control word. (You may also want to insert a carriage-return/linefeed pair without backslashes at least every the character is preceded by a backslash. You must include the backslash; otherwise, RTF ignores the A carriage return (character value 13) or linefeed (character value 10) will be treated as a **/par** control if

Zero-width nonjoiner. This is used for unligating a character.

therefore, an RTF writer should always emit the control word for tabs. A tab (character value 9) should be treated as a /tab control word. Not all RTF readers understand this;

The following are the code values for the special characters listed.

Document Variables

[uwz/

Document variables are definable and accessed through macros. The group has the following syntax.

Control Word	Definition
<vartype></vartype>	#PCDATA
<9m6n16v>	#PCDATA
<docvar></docvar>	/docvar
<variables></variables>	,{/ _* , <qocʌsı>,{, <ʌsɪusɯə ,}, ,{, <ʌsɪtext> ,}, ,},</qocʌsı>

Bookmarks

/ docvar

specified bookmark, and /*/bkmkend, which indicates the end of the specified bookmark. This destination may specify one of two control words: /*/bkmkstart, which indicates the start of the

Bookmarks have the following syntax:

<bookstart> | <bookend> <pook>

. A group that defines a document variable name and its value.

Ś

'{/*' /bkwkend #PCDAT# '}'	<bookend></bookend>
'{/*' /bkmkstart (/ bkmkcolt ? & /bkmkcoll ?) #PCDATA '}'	 bookstart>

:eldmsxe gniwollot ent ni nworls si ynsmyood A

pninseM

Control Word

structure a paradigm.{/bkmkend paradigm} {/bkmkstart paradigm} Kuhn calls such a presupposed a presupposed structure to which it fits the data. relationships, actually creates (or already participates in) discovering in experience certain structured /pard/plain /fs20 Kuhn believes that science, rather than

bookmark start and the bookmark end may be in any order. bookmark tag is "paradigm." Each bookmark start should have a matching bookmark end; however, the The bookmark start and the bookmark end are matched with the bookmark tag. In the example, the

5 of a table. example, {/*/bkmkstart/bkmkcolf2/bkmkcolf5 file1 places the bookmark "Table1" on columns 2 through assumed. These controls are used within the /*/bkmkstart destination following the /bkmkstart control. For first column is assumed. /bkmkcollN is used to denote the last column. If it is not used, the last column is /bkmkcolf V is used to denote the first column of a table covered by a bookmark. If it is not included, the

Pictures

picture destination has the following syntax: keyword is preceded by /*/shppict destination control keyword as described in the following example. A (the default) or binary format. Pictures are destinations, and begin with the /pict control word. The /pict An RTF file can include pictures created with other applications. These pictures can be in hexadecimal

<data></data>	ATAD2# (ATAD8# nid /)
<ofileinfo></ofileinfo>	qqdəiq/ & qmdəiq/
<9zistoiq>	(/picw& /pich) /picwgoal? & /picctopr? & /picccalex? & /picccaley? & /picccaled? & /piccropt? & /piccropp? & /piccropr? & /piccropl?
<ofiniqsmtid></ofiniqsmtid>	səsyddibiwmdwl & sənsiqmdwl & ləxiqssidmdwl
cttype>	/emfidip /bngblip /jpegblip /macpict /pmmetafile /wmetafile /dibmap /bitmapinfo> /wbitmap
<pre><pict></pict></pre>	\{ \pict (bict (bict> & chdr>? & <picttype> & <pictsize> & <metafileinfo>?) data> '}'</metafileinfo></pictsize></picttype>

twip is one-twentieth of a point. These control words are described in the following table. Some measurements in this table are in twips; a

toiqqhanon/	Specifies that Word 97 has written a ${pict}$ destination that it will not read on input. This keyword is for compatibility with other readers.
/shppict	Specifies a Word 97 picture. This is a destination control word.
dild <code>pəqi/</code>	Source of the picture is a JPEG.
dildpnq/	Source of the picture is a PNG.
qildîmə/	Source of the picture is an EMF (enhanced metatile).
dild}mo/	(elitetem besgedge) 3M3 ge si eruteig edt te enue2

uvoZ Vqsmtidw/ tnəbi əAT n ənt	Source of the picture is a Windows device-dependent bitmap. The N argument identifies the bitmap type (must equal 0). The information to be included in RTF from a Windows device-dependent bitmap is the result of the GetBitmapBits function.
ədT İədi əzə Atəb	The information to be included in RTF from a Windows device-independent bitmap is the concatenation of the BITMAPINFO structure followed by the actual pixel data.
noS Nqsmiidib/ Inabi	Source of the picture is a Windows device-independent bitmap. The N argument identifies the bitmap type (must equal 0).
V our Sour Jype	Source of the picture is a Windows metafile. The ${f N}$ argument identifies the metafile type (the default is 1).
JuoZ Vəlitstəmmq/ İype.	Source of the picture is an OS/2 metatile. The N argument identifies the metatile type. The N values are described on page 43 of this Application Note.
macpict Sour	Source of the picture is QuickDraw.

:əlqmsx3

{{.... for for the set of th

For more information on the **GetDIBits** and **GetBitmapBits** functions and the structure of Windows deviceindependent and device-dependent bitmaps, see Volume 1 and Volume 2 of the Programmer's Reference in the Microsoft Windows 3.1 Software Development Kit. For best device-independence and interoperability with Microsoft products, however, use of the /wbitmap and /dibitmap control words is discouraged. Rather, bitmaps should be embedded within Windows metafiles and the /wmetafile control word used. For more information on embedding bitmaps within metafiles, see Volume 1 and Volume 2 of the Programmer's Reference in the Microsoft Windows 3.1 Software Development Kit.

/picscaley/	Vertical scaling value. The N argument is a value representing a percentage (the default is 100).
Vxəlsəsəiq/	Horizontal scaling value. The N argument is a value representing a percentage (the default is 100).
Vlsopdoid/	Desired height of the picture in twips. The N argument is a long integer.
Vlsogwoid/	Desired width of the picture in twips. The N argument is a long integer.
Vhoiq/	y Ext field if the picture is a Windows metafile; picture height in pixels if the picture is a bitmap or from QuickDraw. The N argument is a long integer.
/woid/	x E x t field if the picture is a Windows metafile; picture width in pixels if the picture is a bitmap or from QuickDraw. The N argument is a long integer.
Picture Size, Scalin	g, and Cropping
Wsəłyddłbiwmdw/	Specifies the number of bytes in each raster line. This value must be an even number because the Windows graphics device interface (GDI) assumes that the bit values of a bitmap form an array of integer (two-byte) values. In other words, /wbmwidthbytes times 8 must be the next multiple of 16 greater than or equal to the 'picw (bitmap width in pixels) value.
W z enslqmdw/	Number of bitmap color planes (must equal 1).
	and 24 (RGB).
Mləxiqatidmdw/	Number of adjacent color bits on each plane needed to define a pixel (the default is 1). Possible values are 1 (monochrome), 4 (16 colors), 8 (256 colors)
Bitmap Information //wbmbitspixel/	Number of adjacent color bits on each plane needed to define a pixel (the default is 1). Possible values are 1 (monochrome), 4 (16 colors), 8 (256 colors)

w lottos demtidw/	word is optional. If no other picture type is specified, the picture is assumed to be a	
Npstqild/	A mostly unique identifier for a picture, where N is a long integer value.	
XXXXX biuqild/	Used as: {*\bitput in the sixXXX bit identification number for the image.	
Niquqild/	M represents units per inch on a picture (only certain image types need or output this)	
Wnid/	The picture is in binary format. The numeric parameter ${f N}$ is the number of bytes that follow. Unlike all other controls, this control word takes a 32-bit parameter.	
Picture Data		
Nqqdəiq/	Specifies the bits per pixel in a metafile bitmap. The valid range is 1–32, with 1, 4, 8, and 24 being recognized.	
/bicpmb	Specifies whether a metafile contains a bitmap.	
Metafile Information		
/piccropr/	Right cropping value in twips. A positive value crops toward the center of the picture; a negative value crops away from the center, adding a space border around picture (the default is 0).	
Viqoropiv/	Left cropping value in twips. A positive value crops toward the center of the picture; a negative value crops away from the center, adding a space border around picture (the default is 0).	
	מיסמות הוכנתוב (נוגב תבומתו נא ס)י	
/piccropb/	Bottom cropping value in twips. A positive value crops toward the center of the picture; a negative value crops away from the center, adding a space border	
VpiccroptN VpiccropbN	Top cropping value in twips. A positive value crops toward the center of the around picture; a negative value crops away from the center, adding a space border bicture; a negative value crops away from the center, adding a space border picture; a negative value crops away from the center, adding a space border of the picture; a negative value crops away from the center, adding a space border of the picture; an equative value crops away from the center, adding a space border of the picture; an equative value crops away from the center, adding a space border of the picture.	
/picprop /piccropt// /piccropb//	Indicates there are shape properties applied to an inline picture. This is a destination control word. Top cropping value in twips. A positive value crops toward the center of the around picture; a negative value crops away from the center, adding a space border of the picture; a negative value crops away from the center, adding a space border of the picture; a negative value crops away from the center, adding a space border of the picture; a negative value crops away from the center, adding a space border of the picture; a negative value crops away from the center, adding a space border of the picture; a negative value crops away from the center, adding a space border of the picture; a negative value crops away from the center, adding a space border of the picture.	

441 6 She 6 ٤. ь. niW әч⊥

argument	N	Lype
	١	MM_TEXT
	2	MM_LOMETRIC
	3	MM_HIMETRIC
	4	MM_LOENGLISH
	9	HSIJ9N3IH_MM
	9	S9IWT_MM
	L	MM_ISOTROPIC
	8	OI9O9TO2INA_MM

Windows 3.1 Software Development Kit. For more information about these types, see volume 1 of the Programmer's Reference in the Microsoft

can be one of the following types.	the V argument	,beificed,	li \pmmetafile
------------------------------------	-----------------------	------------	----------------

argument	Туре
\$000×0	YAAATIBAA_U9
8000×0	PU_PELS
0×000C	PU_LOMETRIC
0100×0	PU_HIMETRIC
⊅100×0	PU_LOENGLISH
8r00x0	PU_HIENGLISH
0×001C	PU_TWIPS

For more information about these types, see volume 2 of the OS/2 Programmer's Reference.

Be careful with spaces following control words when dealing with pictures in binary format. When reading tiles, RTF considers the first space after a control word the delimiter and subsequent spaces part of the document text. Therefore, any extra spaces are attached to the picture, with unpredictable results.

RTF writers should not use the carriage-return/lineteed (CR/LF) combination to break up pictures in binary format. If they do, the CR/LF combination is treated as literal text and considered part of the picture data.

The picture in hexadecimal or binary format follows the picture-destination control words. The following example illustrates the destination format:

Objects

Microsoft OLE links, Microsoft OLE embedded objects, and Macintosh Edition Manager subscriber objects are destinations that contain a data part and a result part. The data part is generally hidden to the application that produced the document. A separate application uses the data and supplies the appearance of the data. This appearance is the result part of the object.

The representation of objects in RTF is designed to allow RTF readers that don't understand objects or don't use a particular type of object to use the current result in place of the object. This allows the appearance of the object to be maintained through the conversion even though the object functionality is lost. Each object comes with optional information about the object, a required destination that contains the object data, and an optional result that contains the current appearance of the object. This result the object data, and an optional result that contains the current appearance of the object. This result

When the object is an OLE embedded or linked object, the data part of the object is the structure produced by the **OLESaveToStream** function. Some OLE clients rely on the OLE system to render the object and a copy of the result is not available to the RTF writer for that application. For these cases, the object result can be extracted from the structure produced by the **OLESaveToStream function**. For information about the **OLESaveToStream** function, see the Microsoft Object Linking and Embedding Software Development Kit.

The syntax for this destination is:

An object type of Macintosh Edition Manager subscriber.	dusido/
An object type of OLE autolink.	/objautlink
An object type of OLE link.	}/objlink
object is assumed to be of type /objemb .	
An object type of OLE embedded object. If no type is given for the object, the	dməįdo/
	Object Type
prinsəM	Control word
.{, /result <para>+ '}'</para>	<result></result>
'{' cotsect <data< '*="" th="" }'<=""><th><tosico<< th=""></tosico<<></th></data<>	<tosico<< th=""></tosico<<>
'{' <ststate <="" <dtstate="" td=""></ststate>	<sbilalias></sbilalias>
'{' \objdata (<objaias>? & <objsect>?) '*/}'</objsect></objaias>	<stabjdata></stabjdata>
wįdo/ & Aįdo/	<wdido></wdido>
/objsetsize? & /objslign? & /objscalex? & /objscaley? /objscopl? & /objslign? & /objscalex? & /objscaley?	<9zisįdo>
/rsltrtf /rslttxt /rsltpict /rsltbmp	<rsittype></rsittype>
/rsltmerge? & <rslttype>?</rslttype>	<rol><l< th=""></l<></rol>
'{' <əmi } əmi}ido/ '*/}'	<əmitjdo>
'{' ATADD4 smsnjdo/ '*/}'	<9msnįdo>
'{/ * ' \objclass #PCDAT# zssloido/ '*/}'	<objclass></objclass>
/linkselt? & /objlock? /objupdate?	<bomido></bomido>
xoojdo lmłnįdo dm9ɔijdo/ duqjdo/ duzįdo/ ynilłusįdo/ ynilįdo/ dm9įdo/	<9qttdo>
('{' /object (<objtype> & <objmod>? & <objclass>? & <objname>? & <objclass>? & <objclass?? &="" <ob<="" <objclass??="" th=""><th><jdo></jdo></th></objclass??></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objclass></objname></objclass></objmod></objtype>	<jdo></jdo>

/objlock	Locks the object from any updates.
łləs Ani l/	The object is a link to another part of the same document.
Object Informatio	UC
xooįdo/	An object type of OLE control.
lmthįdo/	An object type of HTML control.
/objicemb	An object type of MS Word for the Macintosh Installable Command (IC) Embedder.
duqįdo/	An object type of Macintosh Edition Manager publisher.
dusįdo/	An object type of Macintosh Edition Manager subscriber.
\objautlink	An object type of OLE autolink.
/Anilįdo	An object type of OLE link.
	.ametao/ eqvi o ed or bemissa si ibelao

916bqu[do/

The result destination is optional in the tobject destination. It contains the last update of the result of the object. The data of the result destination should be standard RTF so that RTF readers that don't understand objects or the type of object represented can use the current result in the object's place to maintain appearance. This is a destination control word.	nucan
Uses the formatting of the current result whenever a new result is obtained.	/rsitmerge
Forces the result to be plain text, it possible.	/rsittxt
Forces the result to be a bitmap, it possible.	/rsitbmp
Forces the result to be a Windows metatle or MacPict image tormat, it possible.	/rsitpict
Forces the result to be rich text format, if possible.	tritt
	Object Result
This subdestination contains the section record for the publisher object for the Macintosh Edition Manager. This is a destination control word.	tobjsect/
This subdestination contains the alias record for the publisher object for the Macintosh Edition Manager. This is a destination control word.	ssilsįdo/
This subdestination contains the data for the object in the appropriate format; OLE objects are in OLESaveToStream format. This is a destination control word.	stsbįdo/
	Object Data
	N (albasido)
	Wxelsosido/
W is the horizontal scaling percent (who:	Vidorojdo/
W is the right and distance in twips.	vigorojdo/
W is the lotter distance in twips.	vaqorolao/
N is the top cropping distance in twips.	
paseline. This is needed to place Math Type equations correctly in line.	<i>N</i> ,
N is the distance in twips the objects should be moved vertically with respect to the	Nyansrijdo/
${f N}$ is the distance in twips from the left edge of the objects that should be aligned on a tab stop. This is needed to place Equation Editor equations correctly in line.	Nnpilsįdo/
Forces the object server to set the object's dimensions to that specified by the client.	szistseido∕
representation.	_
N is the original object width in twips, assuming the object has a graphical	Nwįdo/
N is the original object height in twips, assuming the object has a graphical representation.	Ndįdo∕
tion, Cropping, and Scaling	Object Size, Posi
Describes the time that the object was last updated.)objtime
The text argument is the name of this object. This is a destination control word.)objname
The text argument is the object class to use for this object; ignore the class specified in the object data. This is a destination control word.	sssicido/
values in the <objeize> control words, but reasonable values should always be provided for these to maintain backwards compatibility.</objeize>	

Forces an update to the object before displaying it. Note that this will override any

When Word is used as an editor for Mail, the following control word can be emitted. It is not seen in other situations.

	gninsəM	Control Word
sed in the RTF stream when Word is started as contains attachments. The control word tells chment should be placed. It does not define the	Object attachment placeholder. U a mail editor and the message where in the text stream the atta actual attachment.	hqttsįdo/

Macintosh Edition Manager Publisher Objects

Word for the Macintosh writes publisher objects for the Macintosh Edition Manager in terms of bookmarks (see "Bookmarks" on page 41 of this Application Note). The range of publisher objects are marked as bookmarks, so these controls are all used within the **/bkmkstart** destination. The RTF syntax for a publisher object is:

cpubobject> '{/*' /bkmkstart /bkmkpub /pubauto? (<objalias>? & <objaect>) #PCDATA '}'

/рқшқbпр	The bookmark marks a Macintosh Edition Manager publisher object.
	Buinsem

Drawing Objects

Word 6.0/95 RTF

Drawing objects and the drawing primitives enumerated within drawing object groups use the syntax described by the following tables.

<xodtx9tqb></xodtx9tqb>	/dptxbx/dptxbxmar'!' /dptxbxtext <para>+'}'</para>
<dprect></dprect>	/qbɪect (/qbɪonuqɪ)১
<ənilqb>	<tqp> <tqpine <<="" <dppine="" th=""></tqpine></tqp>
<dpsimpledpk></dpsimpledpk>	<dpline> <dprect> <dprect> <dpellipse> <dppolyline> <dparc></dparc></dppolyline></dpellipse></dprect></dprect></dpline>
<əlqmizqb>	<dpsimpledpk> <dphead> <dpprops></dpprops></dphead></dpsimpledpk>
<inourado></inourado>	<pre><dbugges< pre=""><dbugges< pre=""><dbugges< pre=""><dbugges< pre=""><dbugges< pre=""><dbugges< pre=""></dbugges<></dbugges<></dbugges<></dbugges<></dbugges<></dbugges<></pre>
	Schiftsodoos Schoettetremaos Schooseens Scolpress converse tuellearth
<dogram< td=""><td> dagroup / dagroup dagroup / dagroup dagroup / dugroup / dugro</td></dogram<>	 dagroup / dagroup dagroup / dagroup dagroup / dugroup / dugro
<ofniqb></ofniqb>	<dpgroup> <dpsinple> <dpsinple></dpsinple></dpsinple></dpgroup>
<dolock></dolock>	∕dolock
<dodhgt></dodhgt>	∂oqy∂t
<qopy></qopy>	∖dobypage ∖dobypara ∖dobymargin
<xdob></xdob>	\dobxpage /dobxcolumn /dobxmargin
<реәцор>	<qopx> <qop\> <qoqudt> <qoquck>;</qoquck></qoqudt></qop\></qopx>
<op></op>	'{' <otinidb> <bsdr '*="" td="" }'<=""></bsdr></otinidb>

<pbead></pbead>	əzis∧dp∖ əzisxdp∖ ∧dp∖ xdp∖
<tqppt></tqppt>	∧ydbty ∧ xydpγ
<ənilyloqqb>	/qbbolyline (/dppolygon)? /dppolycount <dppt>+</dppt>
<dparc></dparc>	∖dparc /dparcflipx? /dparcflipy}
<əsqilləqb>	asqilladb/

Note that in <dpgroup> the number of <dpinto>s is equal to the argument of **/dpcount**, whereas in <dppolytime> the number of <dpproupt.

The following elements of the drawing-object syntax pertain specifically to callout objects:

/apcoborder	<coborder></coborder>
/dpcominusy	<vsunimoo></vsunimoo>
/dpcominusx	<xsunimo>></xsunimo>
/dpcobestfit	<cobestfit></cobestfit>
/dpcosmarta	<cosmartattach></cosmartattach>
/dpcoaccent	<tnessessessessessessessessessessessessess< th=""></tnessessessessessessessessessessessessess<>
/ qbcos	<cosngle></cosngle>
/dpcotright /dpcotsingle /dpcotdouble /dpcottriple	<cotype></cotype>

The remaining elements of the drawing object syntax are properties applied to individual drawn primitives:

/dpcodtop | /dpcodcenter | /dpcodbottom | /dpcodabs

<arrowstartfill> / dpastartl / dpastartw</arrowstartfill>	<endstylestart></endstylestart>
/dpfillbgpal	<isilbgpal></isilbgpal>
/qbtiilbgcr /dptiilbgcg /dptiilbgcbc <fiilbgpal>?</fiilbgpal>	<fillbgrgb></fillbgrgb>
/dpfillbggray	<fillbggray></fillbggray>
<fillbggray> <fillbgrgb></fillbgrgb></fillbggray>	<fillcolorbg></fillcolorbg>
/dpfillfgpal	<isilifgpal></isilifgpal>
/ dptillfgcr / dpfillfgcg / dpfillfgcb illfgpal ?	<fillfgrgb></fillfgrgb>
γαρτίΠίθgray	<fillfggray></fillfggray>
<fillfggray> <fillfgrgb></fillfgrgb></fillfggray>	<fillcolorfg></fillcolorfg>
<fillcolortg> <fillcolorbg> \dpfillpat</fillcolorbg></fillcolortg>	<sqorghilprops></sqorghilprops>
lapinepal	<lsqnil></lsqnil>
<pre>/dplinecor \dplinecog \dplinecob</pre>	<dp><dp><dp></dp></dp></dp>
γaplinegray	ksigray>
	
/dplinedadodo /dplinedadodo	<əlytsənil>
	
	<dpprops></dpprops>

/dpastartsol | /dpastarthol

<arrange >

<codescent>

lodbn9kdb/ | losbn9kdb/

Apeysdp\ xpeysdp\ mopeysdp

<arrowendfill> / dpaendl / dpaendw

<wode>

<arrowendfill>

endstyleend>

The following table describes the control words for the drawing object group in detail. All color values are RGB values between 0-255. All distances are in twips. All other values are as indicated.

Angle of callout's diagonal line is restricted to one of the following: 0, 30, 45, 60, 0 90. If this control word is absent, the callout has an arbitrary angle, indicated by th coordinates of its primitives.	Vsoodb/
	Callouts
Y-size of the drawing primitive.	N ∍zi z γ qb/
Y-offset of the drawing primitive from its anchor.	Nγqb/
X-size of the drawing primitive.	N∋zi≳xqb/
X-offset of the drawing primitive from its anchor.	Nxqb/
6	Position and Size
lext box drawing primitive.	xdxiqb/
Rectangle drawing primitive.	/qbrect
Polyline drawing primitive.	/dppolyline
Polygon drawing primitive (closed polyline).	/qbbolygon
Line drawing primitive.	ənilqb/
Ellipse drawing primitive.	əsqilləqb/
Callout drawing primitive, which consists of both a polyline and a text box.	/dpcallout
Arc drawing primitive.	/dparc
End group of drawing primitives.	/qbeuq@conb
Number of drawing primitives in the current group.	Ntnuooqb/
Begin group of drawing primitives.	/qbâւonb
Se	Drawing Primitive
The drawing object is positioned at the following numeric address in the z-ordering	M³gdbob/
The drawing object is margin relative in the y-direction.	/dobymargin
The drawing object is paragraph relative in the y-direction.	/qopλbsɪs
The drawing object is page relative in the y-direction.	/qop\bsge
The drawing object is margin relative in the x-direction.	/dobxmargin
The drawing object is column relative in the x-direction.	/qopxcolumn
The drawing object is page relative in the x-direction.	əbɛqxdob/
The drawing object's anchor is locked and cannot be moved.	/qolock
Indicates a drawing object is to be inserted at this point in the character stream. This is a destination control word.	op\
Definition	Control word

Blue value for line color. Green value for line color. Red value for line color.	Vdocənilqb/ Vgocənilqb/ Vrocənilqb/
	Line Style
drawn counter-clockwise. This indicates that the end point of the arc is below the start point. Arcs are drawn counter-clockwise.	/dparcflipy
This indicates that the end point of the arc is to the right of the start point. Arcs are	/dparcflipx
	Arcs
Number of vertices in polyline drawing primitive.	/dppolycount <i>N</i>
Y-coordinate of the current vertex (only for lines and polylines). The coordinate order tor a point must be x, y.	₩ţţdd⊳/
X-coordinate of the current vertex (only for lines and polylines). The coordinate order for a point must be x, y.	Wxiqqb/
Se	Lines and Polyline
Rectangle is a round rectangle.	/qbroundr
Group that contains the text of the text box.	/dptxbxtext
Internal margin of the text box.	Vısmxdxiqb/
setangles	A bus sexed txeT
The line callour.	and model
Single line callout.	/qbcofsingle
Right angle callout.	/qbcotright
Double line callout.	/dpcotdouble
Auto-attached callout. Polyline will attach to either the top or bottom of the text box depending on the relative quadrant.	brosmarta/
of the text box.	
Offset of callout This is the distance between the end of the polyline and the edge	Viasitooodb/
itext box talls in quadrants in or in relative to polyline origin.	/dpcominusx
Length of callout.	/qbcoleudty/
The descent of the callout	Ninescent V
Top-attached callout.	/qbcoqtob
Center-attached polyline.	/dpcodcenter
Bottom-attached polyline.	/qbcoqpottom
Absolute distance-attached polyline.	/dpcodabs
Visible border on callout text box.	/qbcoporqer
Best fit callout (x-length of each line in callout is similar).	/dpcobestfit
Accent bar on callout (vertical bar between polyline and text box).	/dpcoaccent

/dpfillbggray <i>N</i>	Grayscale value for background fill (in half-percentages).
lsqgdliitqb/	Render fill background color using the PALETTERGB macro instead of the RGB macro in Windows.
/dpfillbgcr/	Red value for background fill color.
/dpfillbgcg/	Green value for background fill color.
Vdɔpdlliiqb/	Blue value for background fill color.
Fill Pattern	
	с санде
/apastartww	
/dpastartsol	Solid staft arrow (lines only).
	3 rstde
	Z Medium
	llsm2 t
/dpastartIV	Length of start arrow, relative to pen width:
/dpastarthol	Hollow start arrow (lines only).
	3 Large
	muibeM S
	llem2 t
/wbn9sqb/	Width of end arrow, relative to pen width:
losbn9sqb/	Solid end arrow (line senil).
	3 ୮୨୫.୦୫
	muibeM S
	llsm2 t
Vlbn9sqb/	Length of end arrow, relative to pen width:
lodbn9cdb/	Hollow end arrow (lines only).
Arrow Style	
₩wənilqb/	Thickness of line (in twips).
bilosənilqb/	Solid line style.
wollodənilqb/	Hollow line style (no line color).
/dplinegray <i>N</i>	Grayscale value for line color (in half-percentages).
tobənilqb/	Dotted line style.
/dssbenildb/	Dashed line style.
obobsbənilqb/	Dashed-dotted line style.
obsbənilqb/	Dashed-dotted line style.
lsqənilqb/	Render line color using the PALETTERGB macro instead of the RGB macro in Windows.

	loringe in alline / out diverside privary of paretter lit solutions ret oldelieve
ht to test of the Y-offset of the	of the shadow.
het io testio-X Nxbshadb/	of the shadow.
/dpshadow Current drawir	rrent drawing primitive has a shadow.
wobsd2	
/dpfillfggrayN Grayscale valu /dpfillpatN Index into a lig	ex into a list of fill patterns. See below for list.
dpfillfgpal Render fill fore אפרוס in Wing	nder till foreground color using the PALETTERGB macro instead of the RGB cro in Windows.
/dpfillfgcrN Red value for	d value for foreground fill color.
h aulav neen value t	een value for foreground fill color.
AptilltgcbN Blue value for	ie value for foreground fill color.

The following values are available for specifying fill patterns in drawing objects with the /dpfillpat control word.

Fill pattern	9ulsV
Clear (no pattern)	0
(%001) bilo2	١
%9	5
%0L	3
50%	4
52%	5
30%	9
*07	L
%09	8
%09	6
%02	01
%92	11
%08	15
%06	13
Dark horizontal lines	 71
Dark vertical lines	51 GL
ראנג ופנר-מופלסטפו וועפג (///) ראנג ופנר-מופלסטפו (///)	2 F 9 L
(///) אונים אדפר (///) אונים אדפר (///) אונים אדפר	81
באוע קווט ווופא Dark trellis lines	61
Light horizontal lines	50
Light vertical lines	51
(///) seni langagent et (///)	52

- (///) sənil linopaid-tidht-tid
- 24 Light grid lines
- 25 Light trellis lines

Word 97 RTF for Drawing Objects (Shapes)

Basic Format

The basic format for drawing objects in RTF is as follows

{ /shpralt { /spp { /snight /*/ } } } }

The first destination (**/shp**) is always present. This control word groups everything related to a shape together. Following the destination change, comes basic information regarding the shape. The following keywords with values can appear in any order after the "{ /shp" control word.

Control word	
Shape keywords	
V 1Ĵ9lq1≥/	The value $oldsymbol{N}$ is a measurement in twips. Specifies position of shape from the left of the anchor.
Nqoiqda∕	The value $oldsymbol{N}$ is a measurement in twips. Specifies position of shape from top of the anchor.
NmottodqAz/	The value $oldsymbol{N}$ is a measurement in twips. Specifies position of shape from bottom of the anchor.
Nîdpright <i>N</i>	The value ${\bm N}$ is a measurement in twips. Specifies position of shape from right of the anchor.
V bilqd <i>l</i> ≥/	A number that is unique to each shape. This keyword is primarily used for linked text boxes. The value ${\bf N}$ is a long integer.
Nzqri∕	Describes z-order of shape. It starts at 0 for the back most shape and proceed to N for the top most shape. The shapes that appear inside of the header document will have z-order as compared to the z-order of the shapes in the header will have z-order and the back-most shape in the header will also have z-order number 0, and the back-most main-document shape will also have z-order number 0.
/shpfhdrW	0 if the shape is in the main document. 1 if the shape is in the header document.
əbsqxdqda?/	The shape is positioned relative to the page in the x (horizontal) direction.
/sybpxmargin	The shape is positioned relative to the margin in the x (horizontal) direction.
/sybpxcolumn	The shape is positioned relative to the column in the x (horizontal) direction.
eppymatoin /shphymatoin	The shape is positioned relative to the page in the y (vertical) direction.
/spuphosis	The shape is positioned relative to the paradraph in the v (vertical) direction.
n ind (aduo)	

ith the exception of the	/shpitoduction of apply for shapes that are within a group. For	u
	Note A { /shpgrp } can be substituted for a { /shpgrp accomplish groups).	O;
	(lsuzu zs zmeji-duz lls bns) qńz/ }	
	nzu za zmeji-duz lla bna) qńz/ } qręyńz/ }	
	For example: For example:	.(c
/sybâ⊾b	Specifies a group shape. The parameters following this keyword s those following /shp . The order of the shapes inside a group is fr z-order.	ui c
/shprslt	This is where the Word 6.0/95 drawn object RTF can be placed.	
	Note For linked text boxes, the first text box of the linked set has t all following text boxes will not have a /shptxt field.	0
	<pre>{ xodyst for the current textbox }</pre>	
/sµbtxt	Text for a shape. The text must come after all the other propertie (inside the /shpinst destination) in the following format:	
/shplockanchor	Lock anchor for shape.	
	txej woled zi eqn	
	0 Text is below shape	
Ntxtwldtqda/	Describes relative z-ordering.	
	3 Wrap only on largest side	
	2 Wrap right side only	
	ז Wrap left side only	
	0 Wrap both sides of shape	
/shpwrkN	Wrap on side (for types 2 and 4 for / shpwrM).	
	5 Wrap text through shape	
	4 Wrap tightly around shape	
	3 None (wrap as if shape isn't present)	
	2 Wrap around shape	
	Nrap around top and bottom of shape (no text allowed beside	
NrwqAz/	Describes the type of wrap for the shape.	

about groups, see the "Introduction" section of this Application Note. !M

Drawing Object Properties

The { /*/ } to be a bounded by the followed by

The bulk of a shape is defined as a series of properties. Following the $\{ /*/ahpinat$ is a list of all the properties of a shape each in the following format:

{ { noitemtoin TendertyVargent vs/ } { smsNytreqorg ns/ } qs/ }

The control word for the drawing object property is **/sp.** Each property has a pair of name (**/sn**) and value (**/sv**) control words placed in the shape property group. For example, the vertical flip property is represented as:

```
{{v 1} v}
```

Here, the name of the property is **fFlipV** and the value is 1, which indicates **True**. All shape properties follow this basic format. Only properties that have been explicitly set for a shape are written out in RTF format. Other properties assume the default values (a property may be set to the default value explicitly).

The following table describes all the names of properties for drawing objects along with the type of their corresponding value.

No points edit mode.	Boolean	fLockVerticies
No cropping this shape.	Boolean	fLockCropping
No selecting this shape.	Boolean	fLockAgainstSelect
Lock aspect ratio.	Boolean	fLockAspectRatio
Lock rotation.	Boolean	fLockRotation
		Госк
.(anoitscilqqA		
Do not display or print (only set through Visual Basic for	Boolean	nəbbiHt
Specified whether the shape is a button.	Boolean	nottuBslt
Place the shape behind text.	Boolean	fBehindDocument
Bottom wrapping distance from text.	EMU	dyWrapDistBottom
Right wrapping distance from text.	EMU	tdgiAtsiQqsrWxb
Top wrapping distance from text.	EMU	doTtsiDqsrWyb
Left wrapping distance from text.	EMU	tfstLeft
Points of the text wrap polygon.	Αιιαλ	pWrapPolygonVertices
Shape name (only set through Visual Basic® for Applications).	String	əmɛNzW
See below for values. 0 indicates user-drawn freeforms and polygons.		ShapeType
Horizontal flip, applied after the rotation.	Boolean	Hqiləə
Vertical flip, applied after the rotation.	Boolean	VqiIT
Rotation of the shape.	əlpnA	Rotation
		Object Type
pninsəM	Type of Value	<u>Property</u>

gtextSize	bəxi٦	Default point size.
		5 Spread words out to fit width
		4 Spread letters out to the width
		3 Right justify
		ک لـeft justify
		1 Center text on width
		0 Stretch each line of text to the width
npilAtxstp		Alignment on curve:
gtextUNICODE	String	Unicode text string.
WordArt Effect		
		4 Horizontal ISSA IstrozitoH
		tnot IIJSA-non mottod ot qoT 6
		1 to 1 IDSA-non dot of mottod S
		tnot IIDSA mottod ot qoT t
		0 Horizontal INDSA-non IstnozinoH
wol∃txəTltxt		Text flow:
		6 Bottom Centered Baseline
		5 Bottom Centered
		4 Middle Centered
		3 Top Centered
		2 Bottom
		1 Middle
		doT 0
anchorText		Text anchor point:
		երոսցի հ
		3 Top Bottom
		2 None
		1 Tight
		0 Square
txəTqsrW		Wrap text at shape margins:
dyTextBottom	EMU	Bottom internal margin of the text box.
tdpiAtxaTxb	EMU	Right internal margin of the text box.
doTîxəTyb	EMU	Top internal margin of the text box.
ţţəTtxəTxb	EMU	Left internal margin of the text box.
Text Box		
fLockAgainstGrouping	Boolean	Do not group this shape.
fLockAdjustHandles	Boolean	Do not adjust.
fLockText	Boolean	Do not edit text.

pictureBiLevel	Boolean	Display bi-level.
pictureGray	Boolean	Display grayscale.
smmsƏərutoiq	bəxi٦	Gamma correction setting.
PictureBrightness	bəxi٦	Brightness setting.
pictureContrast	bəxi٦	Contrast setting.
pictureTransparent	Color	Transparent color.
		14 Link to file; do not save picture with document
		10 Link to file; save with document
		0 No links (default)
sgslAdiq		Flags for linked to file pictures:
əmsNdiq	String	Picture file name for link to file pictures.
diq	Picture	Binary picture data.
cropFromRight	bəxi٦	Right cropping percentage.
cropFromLeft	bəxi٦	Left cropping percentage.
cropFromBottom	bəxi٦	Bottom cropping percentage.
cropFromTop	bəxi٦	Top cropping percentage.
Picture		
gtextFStrikethrough	Boolean	Strikethrough font (if available).
gtextFSmallcaps	Boolean	Small caps font (if available).
wobsd21tx9tg	Boolean	Shadow font (if available).
gtextFUnderline	Boolean	Underline font (if available).
gtextFltalic	Boolean	.(aldelieve ti) trot cilet
gtextFBold	Roolean	Bold font (if available).
gtextFDxMeasure	Boolean	When laying out characters, measure distances along the x-axis rather than along the path.
gtextFNormalize	Boolean	Stretch individual character heights independently to fit.
gtextFBestFit	Boolean	Scale text laid out on a path to tit the path.
קופגורסוווווארונ	UB9100d	when laying out the characters, consider the giyph bounding box rather than the nominal font character bounds.
	Boolean	Stretch the text to int shares area area at the attract
		character advance by the gtextSpacingratio.
trovi nove	Boolean	Adjust the spacing between characters rather than the
atextEKern	nseloo8	If the foot supports character pair kerning use it
gtextFVertical	Boolean	If an @ font is available use it; otherwise, rotate individual
		False if these properties are ignored.
ţxətƏt	Boolean	True if the text effect properties (gtext*) are used.
gtextFont	String	Font name.
gricsdStxstg	bəxi٦	Adjust the spacing between characters (1.0 is normal).

		14 Link to file; do not save picture with document
		10 Link to file; save with document
		0 No links (default)
sgaliqildlii		Flags for fills:
əmsNqil8lli†	B ring	Picture file name for custom fills.
qil8lli†	Picture	Pattern/texture picture for the fill.
fillBackOpacity	bəxi٦	Opacity for shades only. Normal is 1.0.
fillBackColor	Color	Background color.
۲illOpacity (۲i	bəxi٦	Opacity. Normal is 1.0.
fillColor	Color	Foreground color.
		əlgnAllif ərt gnizu əbsrlð 🛛
		5 Shade from shape outline for end point
		5 Shade from bounding rectangle to end point
		4 Shade from start to end points
		3 A picture centered in the shape
		2 A texture (pattern with its own color map)
		(qɛmtid) nıətteq A t
		0 A solid color
θqγTlliŤ	əqvt Iliə	Type of fill:
Eill		
əulsV0t1suįbs III∃	Integer	.eulev teujust value.
əulsV9tsujbs əulsV0ttsujbs Fiil	Integer Integer	.eulev tedjust value. Tenth adjust value.
əulsV81suįbs əulsV91suįbs 9ulsV011suįbs ⊟iii	Integer Integer Integer	Eighth adjust value. Ninth adjust value. Tenth adjust value.
əulsVTtsuįbs əulsV8tsuįbs eulsV9tsujbs eulsV0ttsuįbs III∏	Integer Integer Integer	Seventh adjust value. Eighth adjust value. Ninth adjust value. Tenth adjust value.
əulsVðtsuįbs əulsV7tsuįbs əulsV8tsuįbs 9ulsV9tsuįbs 9ulsV0ttsuįbs 1⊪∃	Integer Integer Integer Integer	Sixth adjust value. Seventh adjust value. Eighth adjust value. Ninth adjust value. Tenth adjust value.
eulsV∂tsuįbs eulsV∂tsuįbs eulsV7tsuįbs eulsV8tsuįbs eulsV9tsuįbs fili =	Integer Integer Integer Integer Integer	Fifth adjust value. Sixth adjust value. Seventh adjust value. Eighth adjust value. Ninth adjust value. Tenth adjust value.
eulsVAtsuįbs eulsV∂tsuįbs eulsVôtsujbs eulsVTtsujbs eulsV8tsujbs eulsV9tsujbs eulsV0ttsujbs fii⊺	Integer Integer Integer Integer Integer	Fourth adjust value. Fifth adjust value. Seventh adjust value. Eighth adjust value. Minth adjust value. Tenth adjust value.
eulsV£1suįbs eulsV£1sujbs eulsV∂1sujbs eulsV∂1sujbs eulsV71sujbs eulsV91sujbs eulsV91sujbs fii]	Integer Integer Integer Integer Integer Integer	Third adjust value. Fourth adjust value. Fifth adjust value. Seventh adjust value. Eighth adjust value. Ninth adjust value. Tenth adjust value.
eulsVS1sulbs eulsVS1sulbs eulsVA1sulbs eulsV61sulbs eulsV61sulbs eulsV81sulbs eulsV91sulbs eulsV91sulbs eulsV011sulbs fiil	Integer Integer Integer Integer Integer Integer	Second adjust value. Third adjust value. Fourth adjust value. Sixth adjust value. Seventh adjust value. Eighth adjust value. Minth adjust value. Tenth adjust value.
eulsVS1sulbe eulsVS1sulbe eulsVS1sulbe eulsV81sulbe eulsV61sulbe eulsV81sulbe eulsV81sulbe eulsV91sulbe eulsV011sulbe fiil	Integer Integer Integer Integer Integer Integer Integer	interpretation varies with the shape type. Adjust values alter the geometry of the shape in smart ways. Second adjust value. Fourth adjust value. Fifth adjust value. Sixth adjust value. Seventh adjust value. Eighth adjust value. Tenth adjust value. Tenth adjust value.
evisoria di constructione entrevento di constructione entr	İnteger İnteger İnteger İnteger İnteger İnteger İnteger	v First adjust value from an adjust handle. The alter the geometry of the shape in smart ways. Second adjust value. Fourth adjust value. Sixth adjust value. Seventh adjust value. Eighth adjust value. Tinth adjust value. Tenth adjust value. Tenth adjust value. Tenth adjust value. Tenth adjust value.
, pSegmentInfo adjust2value adjust2value adjust3value adjust6value adjust6value adjust9value adjust9value adjust9value adjust10value	Array Integer Integer Integer Integer Integer Integer Integer Integer	The segment information. First adjust value from an adjust handle. The alter the geometry of the shape in smart ways. Second adjust value. Third adjust value. Fourth adjust value. Sixth adjust value. Seventh adjust value. Eighth adjust value. Tinth adjust value. Tenth adjust value. Forth adjust value. Tenth adjust value.
o pyerticies pSegmentInfo adjustValue adjust2Value adjust3Value adjust4Value adjust6Value adjust8Value adjust9Value adjust10Value adjust10Value	Array Array Integer Integer Integer Integer Integer Integer Integer Integer	The points of the shape. The segment information. First adjust value from an adjust handle. The alter the geometry of the shape in smart ways. Second adjust value. Third adjust value. Fifth adjust value. Sixth adjust value. Seventh adjust value. Eighth adjust value. Tinth adjust value. Seventh adjust value. Fighth adjust value. Finth adjust value. Fighth adjust value.
geoBottom pyerticies pSegmentInfo sdjustYalue adjust2Value adjust4Value adjust6Value adjust6Value adjust7Value adjust7Value adjust9Value adjust9Value adjust9Value fiil	Long integer Array Array Integer Integer Integer Integer Integer Integer Integer Integer Integer	Bottom edge of the bounds of a user-drawn shape. The points of the shape. The segment information. First adjust value from an adjust handle. The alter the geometry of the shape in smart ways. Second adjust value. Third adjust value. Fourth adjust value. Sixth adjust value. Sixth adjust value. Eighth adjust value. Tith adjust value. Seventh adjust value. Tith adjust value. Fighth adjust value. Tith adjust value.
geoRight geoBottom pyerticies pSegmentInfo psegmentInfo adjust2Value adjust2Value adjust3Value adjust6Value adjust6Value adjust6Value adjust6Value adjust6Value adjust7Value adjust7Value adjust9Value adjust10Value adjust10Value	Long integer Long integer Array Array Integer Integer Integer Integer Integer Integer Integer Integer Integer Integer	Right edge of the bounds of a user-drawn shape. Bottom edge of the bounds of a user-drawn shape. The points of the shape of a user-drawn shape. The segment information. First adjust value from an adjust handle. The alter the geometry of the shape type. Adjust values after the geometry of the shape in smart ways. Third adjust value. Fourth adjust value. Fourth adjust value. Sixth adjust value. Sixth adjust value. Bighth adjust value. Finth adjust value. Minth adjust value. Finth adjust value. Fighth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value. Finth adjust value.
geoTop geoRight geoBottom pyerticies pSegmentInfo adjustValue adjust2Value adjust2Value adjust2Value adjust3Value adjust4Value adjust6Value adjust6Value adjust7Value adjust10Value adjust10Value	Long integer Long integer Array Array Integer Integer Integer Integer Integer Integer Integer Integer Integer Integer	Top edge of the bounds of a user-drawn shape. Right edge of the bounds of a user-drawn shape. Bottom edge of the bounds of a user-drawn shape. The points of the shape of a user-drawn shape. The segment information. First adjust value from an adjust handle. The alter the geometry of the shape type. Adjust values interpretation varies with the shape in smart ways. Second adjust value. Third adjust value. Fourth adjust value. Fifth adjust value. Sixth adjust value. Fifth adjust value. Sixth adjust value. Fifth adjust value. Sixth adjust value. Fifth adjust value.
geoLeft geoRight geoRight geoBottom pyerticies pyerticies pSegmentInfo adjust2Value adjust2Value adjust3Value adjust4Value adjust6Value adjust6Value adjust6Value adjust6Value adjust8Value adjust8Value adjust8Value adjust8Value adjust8Value adjust8Value	Long integer Long integer Long integer Array Array Integer Integer Integer Integer Integer Integer Integer Integer Integer Integer	Left edge of the bounds of a user-drawn shape. Top edge of the bounds of a user-drawn shape. Bottom edge of the bounds of a user-drawn shape. The points of the shape of a user-drawn shape. The segment information. First adjust value from an adjust handle. The after the geometry of the shape type. Adjust values interpretation varies with the shape type. Adjust values after the geometry of the shape in smart ways. Third adjust value. Third adjust value. Fourth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Bith adjust value. Seventh adjust value. Bithh adjust value. Third adjust value. Bithh adjust value. Fifth adjust value. Bithh adjust value. Fifth adjust value. Bithh adjust value. Fifth adjust value. Bithh adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifthh adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value. Fifth adjust value.

		du
Pattern for the line	Picture	ail8lli3anil
cilalliaguil adt dtiw llit hagratteg t		
. Som to Solid the line color		ad (Laun
Type of line.	agyt agi l	anvTanil
Background color of the pattern	Color	lineBackColor
Color of the line.	Color	lineColor
· · · · ·		әиід
The shape is filled.	Boolean	iFilled
See fillOriginX definition.	bəxi٦	YniginOsqaAllif
See fillOriginX definition.	bəxi٦	XniginOəqsA2IIif
See fillOriginX definition.	bəxi٦	YniginOllif
Note that all these values are fixed point fractions of the relevant width or height.		
allow an arbitrary position in the texture (relative to the top-left proportion of the texture's height and width) to be aligned on an arbitrary position on the shape (relative to the top-left proportion of the width and height of the bounding box).		
۲niginOəqaASIli		
XnigiזOэqɕΛSIIiŦ		
FillOriginY		
When a textured fill is used, the texture may be aligned to with shape (fFillShape)—if this is done, the default alignment is to the top left. The values	bəxi٦	XnigiıOllif
Custom or preset color ramps for graduated fills on shapes.	Array	erolo29bsd2llif
See fillToLeft definition.	bəxi٦	mottoBoTllif
See fillToLeft definition.	bəxi٦	tdpiAoTllif
See fillToLeft definition.	bəxi٦	qoToTllif
The fillToLeft , fillToTop , fillToRight , and fillToBottom values define the "focus" rectangle for concentric shapes; they are specified as a fraction of the outer rectangle of the shade.	Fixed	jî∋JoTlliî
Linear shaded fill focus percent.		fillFocus
Fade angle number of degrees.	bəxiA	əlpnAlli†
The pattern or tile will be expanded to approximately this size.	EMU	зhріэНІІі
The pattern or tile will be expanded to approximately this size.	EMU	dibiWili†

		#eccel Q looied
		AVIDE .
		Medium
		Varrow
lineStartArrowWidth		rt arrow width:
bsədwoาıAbn∃ənil		ا هدره type (same values as for lineStartArrowhead) المراه
		Double chevron arrow
		Сһеугол аггом
		Open arrow
		loval
		bnomsiQ
		Stealth arrow
		wonA
		pnidtoN
bsədworıAfıstZənil		rt arrow type:
		Long dash dot dot
		tob dash dot
		tob dasa
		цsep биот
		yseQ
		Dot
		Dash dot dot (Windows)
		(swobniW) tob AssD
		(SwobniW) to D
		(swobniW) dɛɕɑ
_		piloS
pnidssDanil		:Duida:
		Three lines, thin, thick, thin
		Double lines, reverse order
		Double lines, one thick, one thin
		Double lines of equal width
		Single line (of width lineWidth)
lineStyle	0.117	style:
htpiWenil	EMU	dtbiw é
tdpieHlliJenil	EMU	the parteen
dtbiWlliJanil	EMI	
		Link to file. An not save picture with document
ຣຸມັຍາຖານຈາກກ		be for parterned miles.
aneltaildaail		rearing the reariest of an
Specular amount for the material.	bəxi٦	tmA1slu09q2GC0
---	-------------------	-------------------------
		3-D Effects
Switches the shadow on or off.	Boolean	wobedSt
See the definition for shadowOriginX.	bəxi٦	YniginOwobsdS
the shape – this position is determined based on a the shape – this position is determined based on a proportion of the rotated shape width and height. The shape will be rotated and then positioned such that the point is at (0,0) before the transformation is applied.		
Define the position of the origin relative to the center of	bəxi٦	ZnipinOwobaha
See definition for shadowScaleXToX.	bəxi٦	shadowWeight
See definition for shadowScaleXToX.	bəxi٦	YavitoerspectiveY
See definition for shadowScaleXToX.	bəxi٦	XəvitoəqerspectiveX
See definition for shadowScaleXToX.	bəxi٦	YoTY9lso2wobshz
See definition for shadowScaleXToX.	bəxi٦	YoTX9lso2wobshz
See definition for shadowScaleXToX.	bəxi٦	XoTY9lso2wobshz
The shadowScaleXToX to shadowWeight define a 3x2 transform matrix that is applied to the shape to generate the shadow.	bəxi 1	XoTX9lso2wobsda
Double shadow ottset toward the bottom.	EWO	YieshObnoseZwobsha
Double shadow ottset toward the right.	EMU	X19211Obnoce2wobsrl2
Shadow offset toward the bottom.	EWO	YjezijOwobsriz
Shadow offset toward the right.	EWO	XfeetiOwobsrle
Opacity of the shadow. Normal is 1.0.	bəxi٦	vijosqOwobsda
Embossed color.	Color	3 AbildpiHwobs As
Foreground color.	Color	shadowColor
6 Emboss or engrave		
4 Perspective shadow cast in drawing space		
3 Rich perspective shadow (cast in shape space)		
2 Rich perspective shadow (cast relative to shape)		
1 Double offset shadow		
wobsds testion 0		
Type of shadow:		ədyīwobsha
		wobed2
.enil a saH	Boolean	θuiJt
End arrow length (same values as for lineStartArrowLength).		htpnsLwortAbn∃snil
End arrow width (same values as for lineStartArrowWidth).		lineEndArrowWidth
2 Fong		
muibəM t		
0 Short		
Start arrow length:		lineStartArrowLength

Ine X values and Y values are a traction of the geometry width and height, with (0,0) being at the center of the geometry. The Z value is in absolute units.		
If fC3DRotationCenterAuto is True the rotation will be about the center of the 3-D bounding cube of the 3-D group; otherwise, the rotation center will be about c3DRotationCenterX, c3DRotationCenterY, and c3DRotationCenterZ.		
Rotation center (Y).	bəxi٦	c3DRotationCenterY
The X and Y values are a 16.16 fraction of the geometry width and height, with (0,0) being at the center of the geometry. The X value must be in absolute units (EMUs).		
Rotation center (X).	bəxi٦	c3DRotationCenterX
If fC3DRotationCenterAuto is True the rotation will be about the center of the 3-D bounding cube of the 3-D group; otherwise, the rotation center will be about c3DRotationCenterX, c3DRotationCenterY, and c3DRotationCenterZ.	Boolean	tuArətnəOnoitstoAQEOt
c3DRotationAxisX, Y, and Z parameter sections)		-
The rotation about the axis (defined above in the	əlpnA	c3DRotationAngle
See the c3DYRotationAxisX definition.	Long integer	C3DRotationAlsz
See the c3DYRotationAxisX definition.	Long integer	YaixAnoitstoAD53
These specify the rotation axis. Only their relative magnitudes matter.	Long integer	C3DRotationAxisX
Degrees about x-axis.	əlpnA	c3DXRotationAngle
If fc3DconstrainRotation is False, the final rotation results from a single rotation of c3DrotationAngle about the axis specified by c3DrotationAxisX, c3DrotationAxisY, and c3DrotationAxisZ.		
If fc3DconstrainRotation (a Boolean property which defaults to True) is True the rotation is restricted to x-y rotation and the final rotation results from first rotating by c3DYRotationAngle degrees about the y-axis and then by c3DXRotationAngle degrees about the z-axis.		
Degrees about y-axis.	əlpnA	elgnAnoitstoAYGc3
Light the face of the shape.	Boolean	fc3DLightFace
Extrusion color is set explicitly.	Boolean	fc3DUseExtrusionColor
Τrue if shape uses metallic specularity, False if it does not.	Boolean	cillst9MG551
True if shape has a three-dimensional (3D) effect, False if it does not.	Boolean	13D
Color of the extrusion.	Color	c3DExtrusionColor
Extrusion amount backward.	EMU	c3DExtrudeBackward
Extrusion amount forward.	EMU	c3DExtrudeForward
Specular edge thickness.	EMU	c3DEdgeThickness
Shininess of the material.	bəxi٦	ssəninin8 D ɛɔ
Diffusion amount for the material.	bəxi٦	tmAəɛuffuGCɛɔ

		orthographic.
fc3DParallel	Boolean	True if the fill has parallel projection, False if it does not.
c3DFillIntensity	bəxi٦	Theoretical maximum is 1, but can be higher.
c3DFillZ	Long integer	See c3DfillX definition.
c3DFillY	Long integer	See c3DfillX definition.
c3DFillX	רong integer	Fill light source direction; only their relative magnitudes matter. This direction defines a second light source arbitrarily called the "fill light." Generally this will be positioned 90-180 degrees away from the key light and very roughly in front of the scene to fill in any harsh shadows. This fill will be dim compared to the first light source. Theoretically it should be non-harsh, but harsh fill lighting looks better sometimes.
		be higher.
c3DKeyIntensity	bəxi٦	Fixed point intensity. Theoretical maximum is 1, but can
c3DKeyZ	Long integer	See c3DKeyX definition above.
c3DKeyY	Long integer	See c3DKeyX definition above.
сзDКеуХ	Long integer	 Key light source direction. Values may be any number; only their relative magnitudes matter.
γjiznəjnljnəidmAGCວ	bəxi٦	bensew biovs of (1. of 0) wol ed bluods vitenatin theidmA out appearance.
c3DSkewAmount	bəxi٦	Percentage skew amount.
c3DSkewAngle	bəxi٦	Skew angle.
C3DOriginY	bəxi٦	See the definition for c3DOriginX.
		These values are 16.16 numbers that specify the position of the origin within the shape bounding box as multiples of the width and height of that bounding box and relative to the center (that is, they are displaced from the center). When these values are applied, the actual transformed shape path is used rather than the shape geometry (compare with the shadow and perspective values which necessarily work on the geometry bounding box not the actual points). This means that a shape that extends outside the geometry bounding box (such as a text effect) is handled "correctly" for the calculation of the 3-D origin.
VIIIBUOGED		define the origin relative to which the viewpoint origin is measured.
csuzviewpoint		
	EMU	Y view point.
τιιοφωρινχαεο		X View point.
, .,		το κευαεί α ponuquid cripe
		1 Kender as a wire trame
c3DRenderMode	Long Integer	0 Render with full detail
c3DRotationCenterZ	EMU	See c3DRotationCenterY above.

		·	
e if the callout length is specified; False if it is not. If e, use dxyCalloutLengthSpecified. If False, the Best option is on.	Tru Tru Fit	nsəlooð	bəiiiəəq2dignəJiuollsƏi
e if Auto attach is on. False if it is off. If this is True, the converter should occasionally invert the drop ance.	Tru ther tsib	Roolean	fCalloutDropAuto
out has a text border.	llbJ	Boolean	fCalloutTextBorder
out has an accent bar.	Call	Boolean	1681n9ccentBar
tis a callout.	sirt	Boolean	tuolleOf
he case where fCalloutLengthSpecified is True , this the actual distance.	holc In ti	∩М∃к	dxyCalloutLengthSpecified
cod is 3, then this holds the actual drop distance.	lt st	EMU	dxyCalloutDropSpecified
Specified by dxyCalloutDropSpecified	3		
Bottom	2		
Center	٢		
doT	0		
ont quob type:	llbJ		sbcoq
90 degrees	S		
60 degrees	4		
43 degrees	3		
30 degrees	2		
algns ynA	١		
ioni angle:	llbJ		sbcos
ance from box to first point.	tsiQ	EMU	dsðtuollsOyxb
Three segments	4		
Two segments	3		
One segment	2		
Right angle	ŀ		
iout type:	Call		spcot
			Callout
e if fill lighting harsh, False if it is not.	Πru	Boolean	fc3DFillHarsh
e if key lighting is harsh, False if it is not.	nιΤ	Boolean	fc3DKeyHarsh

The format of the value depends on the property name it is paired with. Many values are simple single numbers. Distances are expressed in EMU units. There are 12700 EMU units in a point hence 914400 in an inch and 360000cm⁻¹. Fractional or fixed values are expressed using units that are 1/65536th of a whole. Angles are expressed as fractions of a degree. Colors are 24 bit color values. Booleans have two possible values: 1 for **True** and 0 for **False**.

Arrays are formatted as a sequence of number separated by semicolons. The first number tells the size of each element in the array in bytes. The number of bytes per element may be 2, 4, or 8. When the size of the element is 8, each element is represented as a group of two numbers. The second number tells the number of element is the array. For example, the points of a square polygon are written as:

{{0,01,0};{001,001};{0,001};{0,0};\$; **va**}

The ShapeType property can have the following possible values.

Description	əulsV
Freeform or non-autoshape	0
Rectangle	L
Round rectangle	2
esqill∃	3
Diomsid	- 7
Isosceles triangle	ç 2
Kight triangle	9
rataiieiogram Tigogga	o 1
	0
	U F
Plus Sidn	11
	40
WOINA	13
Thick arrow	14
Home plate	91
	91
Balloon	21
Is92	81
Arc	6٤
əuiJ	50
Plaque	12
Uan	52
Donut	53
elqmis txəT	54
Text octagon	52
Text hexagon	92
Text curve	22
Text wave	82
Text ring	50
lext on curve	30
iext ou ling	15
	10
	27 77
	<i>VV</i>

Up Down Arrow Callout	82
Left Right Arrow Callout	۶۱
Down Arrow Callout	08
Up Arrow Callout	62
Right Arrow Callout	82
Left Arrow Callout	LL
Quad Arrow	92
Picture Frame	52
Heart	74
Lightning Bolt	٤٢
lrregularSeal2	72
lrregularSeal1	12
Worn Arrow dU	02
Vertow Kight Arrow	69
womA qU	89
Down Arrow	۷9
Verrow Verrow	99
Folded Corner	65
əveW	79
Wedge Ellipse Callout	63
Wedge RRect Callout	29
Wedge Rect Callout	19
Seal32	09
9tls92	69
Seal8	28
No Smoking	29
Pentagon	99
Chevron	55
SnoddiЯ	75
Ribbon	23
Accent Border Callout 3	52
Accent Border Callout 2	19
Accent Border Callout 1	09
Border Callout 3	46
Border Callout 2	48
Border Callout 1	747
Accent Callout 3	97

Accent Callout 2

94

Quad Arrow Callout

83

- 122 Flow Chart Punched Tape
- 121 Flow Chart Punched Card
 - 120 Flow Chart Connector
- 119 Flow Chart Manual Operation
 - 118 Flow Chart Manual Input
 - 117 Flow Chart Preparation
 - 116 Flow Chart Terminator
 - 115 Flow Chart Multidocument
 - 114 Flow Chart Document
 - 113 Flow Chart Internal Storage
- 112 Flow Chart Predefined Process
 - 111 Flow Chart Input Output
 - 110 Flow Chart Decision
 - 109 Flow Chart Process
 - 2 noddiЯ seqill3 801
 - 107 Ellipse Ribbon
 - 106 Cloud Callout
 - 105 Curved Down Arrow
 - 104 Curved Up Arrow
 - 103 Curved Left Arrow
 - 102 Curved Right Arrow
 - 101 Uturn Arrow
 - 100 Notched Circular Arrow
 - 99 Circular Arrow
 - 98 Horizontal Scroll
 - 97 Vertical Scroll
 - 96 Smiley Face
 - 95 Block Arc
 - 94 Notched Right Arrow
 - 93 Striped Right Arrow
 - 92 Seal24
 - womA tnea 16
 - 90 Bent Up Arrow
 - wonA qU field 88
 - 88 Right Brace
 - 87 Left Brace
 - 86 Right Bracket
 - 85 Left Bracket
 - 84 Bevel

- Flow Chart Or 124 Flow Chart Summing Junction 153
- Flow Chart Collate 152
- Flow Chart Sort 156
- Flow Chart extract 127
- Flow Chart Merge 128
- Flow Chart Offline Storage 150
- Flow Chart Online Storage 130
- Flow Chart Magnetic Tape 131
- Flow Chart Magnetic Disk 132
- Flow Chart Magnetic Drum 133
- Flow Chart Display 134
- Flow Chart Delay 132
- Text Plain Text
- 136
- qotS txeT 137
- Text Triangle 138
- Text Triangle Inverted 130
- Text Chevron 140
- Text Chevron Inverted 141
- First Ring Inside 145
- First Ring Outside 143
- Text Arch Up Curve 144
- Text Arch Down Curve 142
- Text Circle Curve 971
- Text Button Curve 747
- Text Arch Up Pour 148
- Text Arch Down Pour 146
- Text Circle Pour 120
- Text Button Pour 191
- Text Curve Up 125
- Text Curve Down 123
- Text Cascade Up 124
- Text Cascade Down 122
- fevsW txeT 120
- **Text Wave2** 197
- Text Wave3 128
- 1ext Wave4 126
- Text Deflate 191 Text Inflate ۱90
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- 162
 Text Inflate Bottom

 163
 Text Deflate Bottom
- 164 Text Inflate Top
- 165 Text Deflate Top
- 166 Text Deflate Inflate
- 167 Text Deflate Inflate Deflate
- 168 Text Fade Right
- 169 Text Fade Left
- ۲0 Text Fade Up
- 171 Text Fade Down
- 172 Text Slant Up
- 173 Text Slant Down
- qU ns⊃ tx∍T ۵۲۱ Lp
- 175 Text Can Down
- 176 Flow Chart Alternate Process
- 177 Flow Chart Off-Page Connector
- 178 Callout 90
- 179 Accent Callout 90
- 180 Border Callout 90
- 181 Accent Border Callout 90
- 182 Left Right Up Arrow
- nuS £81
- 184 Moon
- 185 Bracket Pair
- 186 Brace Pair
- 187 Seal4
- aveW alduod 881
- 201 Host Control
- 202 Text Box
- The following keywords are related to defining a hyperlink hanging off of a shape (that is, all of them are inside of a {ap {ap ... } {ap fo define a property that is inside of a {ap ... } {ap fo define a property that is inside of a {ap ... } {ap for a shape (the this:

{ /bl { /blic RTF-string } { /blsrc RTF-string } } }

The three groups can be in any order. These provide the three strings needed to describe a hyperlink fully.

/Pitr	Source string for hyperlink.
/Pisrc	Friendly name for hyperlink.
Control word Hyperlink property	For shapes

Microsoft Technical Support

Footnotes

The /footnote control word introduces a footnote. Footnotes are destinations in RTF. A footnote is anchored to the character that immediately precedes the footnote destination (that is, the footnote moves with the character to which it is anchored). If automatic footnote numbering is defined, the destination can be preceded by a footnote reference character, identified by the control word /chftn. No Microsoft product supports footnotes within headers, footers, or comments (annotations). Placing a footnote within headers, footers, or comments (annotations). Placing a footnote within headers, footers, or comments (annotations). Placing a footnote within headers, footers, or comments (annotations). Placing a footnote within headers, footers, or comments (annotations).

Footnotes have the following syntax.

Here is an example of a destination containing footnotes:

/ftnbj/ftnrestart \sectd \linemodulere \pard\plain /ftnbj/ftnrestart \sectd \linemodulere or amply annotated.\chftn /rill70 \fs20 {\pu6 Mead's landmark study has been amply annotated.\chftn {\footnote \pard\plain \s246 \fs20 {\up6\chftn }See Sahlins, Bateson, and deerts for a complete bibliography.} It was her work in America during the Second World War, however, that forms the basis for the paper. As others have noted, \chftn {\footnote \pard\plain \s246 \fs20 {\up6\chftn} } footnote \pard\plain \s246 \fs20 {\up6\chftn} footnote \pard\plain \s246 \fs20 {\up6\chftn} } /par

To indicate endnotes, the following combination is emitted: /footnote/ftnalt. Existing readers will ignore the /ftnalt control word and treat everything as a footnote.

For other control words relating to footnotes, see the sections titled "Document Formatting Properties" (page 16), "Section Formatting Properties" (page 16), and "Special Characters" (page 38) in this Application Note.

(anoitstonnA) atnammoD

RTF comments (annotations) have two parts; the author ID (introduced by the control word /atnid) and the annotation text (introduced by the control word /annotation); there is no group enclosing both parts. No Microsoft product supports comments (annotations) within headers, footers, or footnotes. Placing an annotation within headers, footers, or footnotes. Placing an annotation within headers, footers, or footnotes, part of the annotation is an RTF destination. Comments (annotations) are anchored to the character that immediately precedes the annotation.

If an annotation is associated with an annotation bookmark, the following two destination control words precede and follow the bookmark. The alphanumeric string ${f N}$, such as a long integer, represents the bookmark name.

'{' N bn9t15k/ '* / }'	<atrifend></atrifend>
'{' N 	<atristart></atristart>

Comments (annotations) have the following syntax:

'{' + <astronaction ('*="" <atronaction="" th="" }'<=""><th><anotee></anotee></th></astronaction>	<anotee></anotee>
'{/*' \atinauthor #PCDAT '}'	<atnauthor></atnauthor>
'{/ *' atnid #PCDATA '}'	 annotid>
<annotid> <atnauthor> <atntime>? /chatn <atnicn>? <annotdef></annotdef></atnicn></atntime></atnauthor></annotid>	<annot></annot>

'{' <toid> noints/ '*/}'</toid>	<atnicn></atnicn>
{' <9mit> 9mitnts/ '*/}'	<atntime></atntime>
'{' \ fərnfs/ '*/}'	<atnref></atnref>

:awollot text follows: An example of annotation text follows:

```
An example of a paradigm might be Newtonian physics or
Darwinian biology.{/v/fsl6 {/atnid bz}/chataf/*/annotation
/pard/plain /s224 /fs20 {/field{/fldinst page //#'"Page:
'#'/line'"}{/fsl6 /chatn }
How about some examples that deal with social science?
That's what this paper is about.}}
```

Comments (annotations) may have optional time stamps (contained in the /atntime destination) or icons (contained in the /atnice destination).

sbl9i7

The /field control word introduces a field destination, which contains the text of fields. Fields have the following syntax:

<tieldrs1t></tieldrs1t>	'{' \fildrsit <para>+' </para>
<tldatt></tldatt>	tidalt/
<tsnibleit></tsnibleit>	'{' ? <tlbbi> +<para>+ <para> telloit '*/}'</para></para></tlbbi>
<bomblait></bomblait>	/tlddirty? & /tldedit? & /tldlock? & /tldpriv?
<black </black 	'{' <field <fieldmod="">? <fieldinst> <fieldraft> '}'</fieldraft></fieldinst></field>

There are several control words that alter the interpretation of the field. These control words are listed in the following table.

Control word	BuinsəM
\flddirty	A formatting change has been made to the field result since the field was last updated.
tib9blt/	Text has been added to, or removed from, the field result since the field was last updated.
/fidlock	Field is locked and cannot be updated.
/fldpriv	Result is not in a form suitable for display (for example, binary data used by fields whose result is a picture).

Two subdestinations are required within the /tield destination. They must be enclosed in braces ({ }) and begin with the following control words.

ູບາ່າເຮອM	Control word
Field instructions. This is a destination control word.	tenibli/
Most recent calculated result of the field. This is a destination control word.	/fldrslt

If the instruction for a field contains a file name, then the /cpg control can be used to define the character set of the file name. See "Code Page Support" on page 9 of this Application Note for details.

The **/fidrsit** control word should be included even if no result has been calculated because most readers (even those readers that do not recognize fields) can generally include the value of the **/fidrsit** destination (even those readers. A field result should not start with a table, because this will break some RTF readers.

An example of some field text follows:

You can use the **Vildalt** control word to specify that the given field reference is to an endnote. For example, the following field in RTF is a reference to a footnote

{{l flainst NOTEREF _RefNumber } {/flainst NOTEREF _RefNumber }

The following is an example of a reference to an endnote

{/field{/*/fldingt NOTEREF _RefNumber /fldalt } {/fidialt I}}

If the specified field is a form field, the /*/datafield destination appears as a part of <char> and contains the binary data of a form field instruction. For example:

Note that the **/datatield** destination requires the **/*** prefix. The /fldtype, /date, /time, and /wpegn field keywords should be ignored.

Form Fields

Control word	ษาเกษ
/formfield	Group destination keyword indicating start of form field data.
Vəqyiii/	Form field type:
	0 Text
	1 Check box
	2 List
Vqlədnwo]]/	1 if there is associated Help text (defined under \ffhelptext), 0 otherwise.
Visiznwoii/	1 if there is associated status line text (defined under /ffstattext), 0 otherwise
/ffprot <i>N</i>	1 if this field is protected, 0 otherwise.
N∋zizî}/	Type of size selected for check box field:
	otuA 0
	1 Exact

Type of text field:

sointa vob		
	entr	cies.
Waartt/	SAA	111 to reducing adt of M aready t-M of 0 most serils / blait must a rot blait this
111/	tsiJ	t of text for list field. This is a destination control word.
/ffexitmcr	osM Ron	cro to be executed upon exit from this form field (string). This is a destination atrol word.
/ffentrymcr	лол Nac	cro to be executed upon entry into this form field (string). This is a destination ntrol word.
tx9ttstat/	Stat	tus line text (string). This is a destination control word.
tthelptext	lləH	p text (string). This is a destination control word.
/ffformat	For	mat for text field (string). This is a destination control word.
/ffdefre <i>s</i>	Def	sult entry for list field (for example 0 = first list item, $1 = second$ list item).
ttaettext/	Def	fault text for text field (string). This is a destination control word.
əmɛnìì/	roT	m field name (string). This is a destination control word.
Neqdîî/	эчЭ	eck box size (half-point sizes).
nəlxsmîì/	unN	mber of characters for text field.
Nxodteileedft/	ΊΪ	this field has list box attached to it, 0 otherwise.
Vɔlɕɔərîî/	Ίľ	the tield should be calculated on exit, 0 otherwise.
	5	Calculation
	4	Current time
	З	Current date
	2	Date
	٢	Number
	0	Regular text
		. –

seintna xebnl

VfftypetxtV

The \xe control word introduces an index entry. Index entries in RTF are destinations. An index entry has the following syntax:

'{' ATACDAT# }' '	<fxe></fxe>
'{' /txe <char>+ '}'</char>	<9x1>
'{' \xe (\xet ? & \ bxe ? & \ixe ?) <char>+ (<txe> <txe>)? '}'</txe></txe></char>	<xbi></xbi>

If the text of the index entry is not formatted as hidden text with the /v control word, the text is put into the document as well as into the index. For more information on the /v control word, see "Character Formatting Properties" on page 34 of this Application Note. Similarly, the text of the /txe subdestination, described later in this section, becomes part of the document if it is not formatted as hidden text.

The following control words may also be used.

Control word Meaning

to the ASCII value of a letter between A and Z.	
Allows multiple indexes within the same document. N is an integer that corresponds	Nî9x/

Text argument is a bookmark for the range of page numbers. This is a destination control word.	rxe) اrxe BookmarkVame
Text argument to be used instead of a page number. This is a destination control word.	txeT ext
Formats the page number or cross-reference in italic.	9xi/
Formats the page number or cross-reference in bold.)pxe

Table of Contents Entries

The /tc control word introduces a table of contents entry, which can be used to build the actual table of contents. The /tcn control word marks a table of contents entry that will not have a page number associated with it; this is used in place of /tc for such entries. Table of contents entries are destinations, and they have the following syntax:

<toc> {{ /tc | /tcu (/tcl': & /tcl':) <char>+ '}'

As with index entries, text that is not formatted as hidden with the \mathbf{v} character-formatting control word is put into the document. The following control words can also be used in this destination.

prins9M	Control word
Type of table being compiled. \mathbf{N} is mapped by existing Microsoft software to a letter between A and Z (the default is 67, which maps to C, used for tables of contents).	Vtot/
Level number (the default is 1).	Vici/

Bidirectional Language Support

Control word

PainseM

RTF supports bidirectional writing orders for languages such as Arabic. The controls are described below (as well as in the appropriate sections throughout this Application Note). Also refer to the associated character Properties" on page 37 of this Application Note.

All the control words relating to bidirectional language support are repeated here for convenience.

/ltrdoc	Text in this document will be displayed from left to right unless overridden by a more specific control (the default).
/rtldoc	Text in this document will be displayed from right to left unless overridden by a more specific control.
/ltrsect	This section will thread columns from left to right (the default).
/rtlsect	This section will thread columns from right to left.
/ltrrow	Cells in this table row will have left-to-right precedence (the default).
/rtlrow	Cells in this table row will have right-to-left precedence.
/ltrpar	Text in this paragraph will be displayed with left-to-right precedence (the default).
/rtlpar	Text in this paragraph will be displayed with right-to-left precedence
/ltrmark	The following characters should be displayed from left to right.
/rtlmark	The following characters should be displayed from right to left.
/ltrch	The character data following this control word will be treated as a left-to-right run (the default).
/utich	The character data following this control word will be treated as a right-to-left run.

NOITADIJ99A AEADER APPLICATION

The GC0165 disk included with this Application Note contains the sample RTF reader program RTFREADR.EXE, which will help you create an RTF reader for your own application when used in conjunction with the Microsoft Rich Text Format Specification and the information below.

Note The sample RTF reader is not a for-sale product, and Microsoft does not provide technical or any other type of support for the sample RTF reader code or the RTF specification.

How to Write an RTF Reader

There are three basic things that an RTF reader must do:

- 1. Separate text from RTF controls.
- 2. Parse an RTF control.
- 3. Dispatch an RTF control.

Separating text from RTF controls is relatively simple, because all RTF controls begin with a backslash. Therefore, any incoming character that is not a backslash is text and will be handled as text. (Of course, what one does with that text may be relatively complicated.)

Parsing an RTF control is also relatively simple. An RTF control is either (a) a sequence of alphabetic character.

Dispatching an RTF control, on the other hand, is relatively complicated. A recursive-descent parser tends to be overly strict because RTF is intentionally vague about the order of various properties relative to one another. However, whatever method you use to dispatch an RTF control, your reader should do the following:

. Ignore control words you don't understand.

Many readers crash when they come across an unknown RTF control. Because Microsoft is continually adding new RTF controls, this limits an RTF reader to working with the RTF from one particular product (usually some version of Word for Windows).

.*/ bnstsrebnu syswlA $\,$ $\,$

One of the most important things an RTF reader can do is to understand the /* control. This control introduces a destination that is not part of the document. It tells the RTF reader that if the reader does not understand the next control word, then it should skip the entire enclosing group. If your reader does follows this rule and the one above, your reader will be able to cope with any future change to RTF should should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to cope with any future change to RTF should be able to RTF should be able to RTF should be able to RTF should be able to RTF should be able to RTF should be able to RTF should be able to

. Remember that binary data can occur when you're skipping RTF.

A simple way to skip a group in RTF is to keep a running count of the opening braces that the reader has encountered in the RTF stream. When the reader sees an opening brace, it increments the count, when the reader sees a closing brace, it decrements the count. When the count becomes negative, the end of the group has been found. Unfortunately, this doesn't work when the RTF file contains a **/bin** control; the reader must explicitly check each control word found to see if it's a **/bin** control, and, if a **/bin** control is found, skip that many bytes before resuming its scanning for braces.

A Sample RTF Reader Implementation

The Microsoft Word Processing Conversions group uses a table-driven approach to reading RTF. This approach allows the most flexibility in reading RTF, with the corresponding problem that it's difficult to detect incorrect RTF. An RTF reader that is based on this approach is presented below. This reader works exactly as described in the RTF specification and uses the principles of operation described in the RTF.

The RTF reader consists of four files:

- \langle Rtfdecl.h, which contains the prototypes for all the functions in the RTF reader
- \langle . Rtftype.h, which contains the types used in the RTF reader
- \langle Rtfreadr.c, which contains the main program, the main loop of the RTF reader, and the RTF control parser
- \langle . Rtfactn.c, which contains the dispatch routines for the RTF reader

Rtfdecl.h and Rtfreadr.c

Rttdecl.h is straightforward and requires little explanation.

rtfreadr.c is also reasonably straightforward; the function **ecRtfParse** separates text from RTF controls and hardles text, and the function **ecParseRtfKeyword** parses an RTF control and also collects any parameter that follows the RTF control.

Rtftype.h

Rtftype.h begins by declaring a sample set of character, paragraph, section, and document properties. These structures are present to demonstrate how the dispatch routines can modify any particular property and are not actually used to format text.

For example, the following enumeration describes which destination text should be routed to:

typedef enum { rdsNorm, rdsSkip } RDS;

Because this is just a sample RTF reader, there are only two destinations; a more complicated reader, would add an entry to this enumeration for each destination supported [for example, headers, footnotes, endnotes, comments (annotations), bookmarks, and pictures].

The following enumeration describes the internal state of the RTF parser:

typedef enum { risNorm, risBin, risHex } RIS;

This is entirely separate from the state of the dispatch routines and the destination state; other RTF readers may not necessarily have anything similar to this.

The following structure encapsulates the state that must be saved at a group start and restored at a group

:puə

```
{
typedef struct save
{
typedef struct save *pWext;
typede;
typede;
type tab;
type tab;
type tab;
type tab;
type tab;
type tab;
type tab;
type tab;
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type tab;
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type tab;
type tab;
type tab;
type tab;
typ
```

The following enumeration describes a set of classes for RTF controls:

typedef enum {kwdChar, kwdDest, kwdProp, kwdSpec} KWD;

Use kwdChar for controls that represent special characters (such as /-, /{, or /}).

Use kwdDest for controls that introduce RTF destinations.

Use kwdProp for controls that modify some sort of property.

Use kwdSpec for controls that need to run some specialized code.

The following enumeration defines the number of PROP structures (described below) that will be used. There will typically be an **iprop** for every field in the character, paragraph, section, and document properties.

```
typedef enum {ipropBold, ipropItalic, ipropUnderline, ipropLeftInd,
ipropRightInd, ipropFirstInd, ipropCols, ipropPgnX, ipropPgnY,
ipropYaPage, ipropYaBage, ipropPgnStart, ipropSbk,
ipropPgnFormat, ipropFacingp, ipropLandscape, ipropJust,
ipropPard, ipropPlain,
ipropMax} IPROP;
```

The following structure is a very compact way to describe how to locate the address of a particular value in one of the property structures:

```
Lypedef enum {propChp, propPap, propSep, propDop} PROPTYPE;
Lypedef struct propmod
{
    ACTN actn;
    ACTN actn;
    int offset;
} PROP;
```

typedef enum {actnSpec, actnByte, actnWord} ACTN;

The actn field describes the width of the value being described: if the value is a byte, then actn is actn byte; if the value is a word, then actn is actnWord; if the value is neither a byte nor a word, then actn is actnWord; if the value is neither a byte nor a word, then you can use actnSpec to indicate that some C code needs to be run to set the value is located within the CHP which property structure is being described; propChp indicates that the value is located within the CHP structure; propPap indicates that the value is located within the PAP structure, and so on. Finally, the offset field contains the offset of the value is located within the PAP structure. The offset of the value is used to indicate that the value is located within the the test of the structure.

The following structure describes how to parse a particular RTF control:

```
typedef enum {ipfnBin, ipfnHex, ipfnSkipDest } IPFN;
typedef enum {idestPict, idestSkip } IDEST;
typedef struct symbol
{
char *szKeyword;
int dflt;
bool fPassDflt;
int idx;
} SYM;
```

ldx is a generalized index; its use depends on the kwd being used for this control.

- , If kwd is kwdChar, then idx is the character that should be output.
- \langle If kwd is kwdDest, then idx is the idest for the new destination.

fPassDflt controls, but controls that take parameters should not.)

- If kwd is kwdProp, then idx is the iprop for the appropriate property.
- \langle If kwd is kwdSpec, then idx is an ipfin for the appropriate function.

With this structure, it is very simple to dispatch an RTF control word. Once the reader isolates the RTF control word and its (possibly associated) value, the reader then searches an array of SYM structures to find the RTF control word. If the control word is not found, the reader ignores it, unless the previous control was I^* , in which case the reader must scan past an entire group.

normally set a particular value. For example, the various section break controls typically have nonzero

If the control word is found, the reader then uses the kwd value from the SYM structure to determine what to do. This is, in fact, exactly what the function ecTranslateKeyword in the file RTFACTN.C does.

Rtfactn.c

Rtfactn.c contains the tables describing the properties and control words, and the routines to evaluate properties (ecTranslateKeyword).

The tables are the keys to understanding the RTF dispatch routines. The following are some sample entries from both tables, along with a brief explanation of each entry.

The Property Table. This table must have an entry for every iprop.

actnByte, propChp, offsetof(CHP, fBold), // ipropBold

This property says that the *ipropBold* property is a byte parameter bound to chp.fBold.

actnWord, propPap, offsetof(PAP, xaRight), // ipropRightInd

This property says that **ipropRightInd** is a word parameter bound to **pap.xaRight**.

actnWord, propSep, offsetof(SEP, cCols), // ipropCols

This property says that **ipropCols** is a word parameter bound to **sep.cCols**.

actnSpec, propChp, 0, 0, actnSpec, propPlain

This property says that **ipropPlain** is a special parameter. Instead of directly evaluating it, ecApplyPropChange will run some custom C code to apply a property change.

The Control Word Table.

"b", l, fFalse, kwdProp, ipropBold,

This structure says that the control **/b** sets the ipropBold property. Because **fPassDflt** is **False**, the reader only uses the default value if the control does not have a parameter. If no parameter is provided, the reader uses a value of 1.

"abknone", abkNon, fTrue, kwdProp, ipropSbk,

This entry says that the control **/sbknone** sets the **ipropSbk** property. Because **fPassDflt** is **True**, the reader always uses the default value of **sbkNon**, even if the control has a parameter.

"par", 0, iFalse, kwdChar, 0x0a,

This entry says that the control /par is equivalent to a 0x0a (linefeed) character.

"tab", 0, fFalse, kwdChar, 0x09,

This entry says that the control /tab is equivalent to a 0x09 (tab) character.

"hin", 0, fFalse, kwdSpec, ipfnBin,

This entry says that the control **/bin** should run some C code. The particular piece of C code can be located by the **ipfnBin** parameter.

"fonttbl", 0, fFalse, kwdDest, idestSkip,

This entry says that the control /fonttbl should change to the destination idestSkip.

Notes on Implementing Other RTF Features

The table-driven approach to dispatching RTF controls used by the sample converter does not implement any syntax checking. For most controls, this is not a problem; a control simply modifies the appropriate property. However, some controls, such as those for tabs and borders, are dependent on other control words either before or after the current control word.

There are some standard techniques for handling these features.

Tabs and Other Control Sequences Terminating in a Fixed Control

The best way to implement these types of control sequences is to have a global structure that represents the current state of the tab descriptor (or other entity). As the modifiers come in, they modify the various fields of the global structure. When the fixed control at the end of the sequence is dispatched, it adds the entire descriptor and reinitializes the global variable.

Borders and Other Control Sequences Beginning with a Fixed Control

The best way to implement these types of control sequences is to have a global pointer that is initialized when the fixed control is dispatched. The controls that modify the fixed control then modify fields pointed to by the control.

Other Problem Areas in RTF

Style Sheets

Style sheets can be handled as destinations; however, styles have default values, just as every other control does. RTF readers should be sure to handle a missing style control as the default style value (that is, 0).

Property Changes

Some RTF readers use various bits of RTF syntax to mark property changes. In particular, they assume that property changes will occur only after a group start, which is not correct. Because there is a variety of ways to represent identical property changes in RTF, RTF readers should look at the changes in the properties and not at any particular way of representing a property change. In particular, properties can be changed explicitly with a control word or implicitly at the end of a group. For example, these three sequences of RTF have exactly the same semantics, and should be translated identically:

- {nisgs blog 0i/ silsJl blog i/ blod d/} >
- {nises blod{ silst blod i/} blod d/} $\$
- {nises blog d/nisid/ pilsil blog i/ blod d/} $\$

sbləi٦

All versions of Microsoft Word for Windows and version 6.0 and later of Microsoft Word for the Macintosh have fields. If you're writing an RTF reader and expect to do anything with fields, keep the following notes in mind:

- Field instructions may have arbitrary amounts of character formatting and arbitrarily nested groups.
 While the groups by the time you know which field you are working with. If you then expect to be able
 to skip to the end of the field instructions, you'll have to know how many groups have started so that you
 to skip to the end properly.
 can skip to the end properly.
- Some fields, the INCLUDE field in particular, can have section breaks in the field results. If this occurs, then the fields, the section properties must not be restored when the field results contain section breaks.

səldsT

Tables are probably the trickiest part of RTF to read and write correctly. Because of the way Microsoft word processors implement tables, and the table-driven approach of many Microsoft RTF readers, it is very easy to write tables in RTF that will crash Microsoft word processors when you try to read the RTF. Here are some guidelines to reduce problems with tables in RTF:

- / Place the entire table definition before any paragraph properties, including /pard.
- \langle Make sure the number of cells in the RTF matches the number of cell definitions.
- A Some controls must be the same in all paragraphs in a row. In particular, all paragraphs in a row must have *lintbl* specified.
- (Do not use the **/sbys** control inside a table. **/sbys** is a holdover from Word for MS-DOS and early versions of Word for the Macintosh. Word for Windows and current versions of Word for the Macintosh translate **/sbys** as a table. Because Word for Windows and Word for the Macintosh do not support nested translate **/sbys** is a table.
- Cell definitions starting before the left margin of the paper begins (that is, the parameter plus the left margin is negative) are always in error.
- Even though nested tables are not explicitly defined in RTF, and Word for Windows and Word for the Macintosh do not support nested tables, you must still save table properties when changing destinations because tables can be nested inside other destinations—that is, you can have a table that contains a footnote or an annotation, and the footnote or annotation can contain another table.

spnitsil :1-A xibn9qqA

Rtfdecl.h

```
Microsoft Technical Support
// RTF ended during an open group.
                                                #define ecUnmatchedBrace
                                           3
// Too many '/ Too many exhausted
                                           7
                                                #define ecStackOverflow
                                               #define ecStackUnderflow
                   '{ behotemnU \\
                                           τ
              ;θατ] ε,δατητλεν] //
                                                          #define ecoK 0
                                               // RTF parser error codes
                                                      extern FILE *fpIn;
                                             extern bool fSkipDestIfUnk;
                                                     extern long lParam;
                                                      extern long cbBin;
                                                     extern SAVE *psave;
                                                         extern DOP dop;
                                                         exfern SEP sep;
                                                         extern PAP pap;
                                                         extern CHP chp;
                                                         extern RIS ris;
                                                         extern RDS rds;
                                                      extern int cGroup;
                                            // RTF variable declarations
                                               int ecParseHexByte(void);
                      int ecParseSpecialProperty(IPROP iprop, int val);
                                  int ecParseSpecialKeyword(IPFN ipfn);
                                          int ecChangeDest(IDEST idest);
                           int ecApplyPropChange(IPROP iprop, int val);
                                          int ecEndGroupAction(RDS rds);
                                                int ecPrintChar(int ch);
       int ecTranslateKeyword(char *szKeyword, int param, bool fParam);
                                                 int ecParseChar(int c);
                                        int ecParseRtfKeyword(FiLE *fp);
                                                int ecPopRtfState(void);
                                               int ecPushRtfState(void);
                                               int ecRtfParse(FiLE *fp);
                                              // RTF parser declarations
```

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```
אַקאָר אַאַדאָד דאינאַצ //
                                                                                                                                                                    іль хакідіс;
                                                            ν/ τορ πατgin in twips
                                                                                                                                                                        ідоТьү эпі
                                                          אַדָר מיז אָדע אַדע אַדע אַדע אַדע אַדע
                                                                                                                                                                       ілт хаьеft;
                                                          // bage height in twips
                                                                                                                                                                       тис ХаРаде;
                                                            // bøde wiqth in twips
                                                                                                                                                                       ілт хаРаде;
                                                                                                                                                                                                              }
                                                                                                                                                typedef struct doc_prop
                                                                                     // SEction Properties
                                                                                                                                                                                                } REF;
                        // how the page number is formatted
                                                                                                                                                             PGN PgnFormat;
                   // Υ ροείτίοη οί ραθε πυπλέτ in twips
                                                                                                                                                                         іпс уаРдп;
                    // χ position of page number in twips
                                                                                                                                                                          тис хаРдп;
                                                               // section break type
                                                                                                                                                                              iyda yaz
                                                                 >> number of columns
                                                                                                                                                                           ialoDo Jni
                                                                                                                                                                                                              }
                                                                                                                                              typedef struct sect_prop
                                                    typedef enum {pgUec, pgURom, pgLRom, pgUtt, pgLt; pGN;
                                                    typedef enum {abkCol, abkEvn, abkOdd, abkPg} SBK;
                                                                              // БАтадгарћ Рторетсіез
                                                                                                                                                                                                ; ₽A₽;
                                                                            noitsbilitaut //
                                                                                                                                                                        ijauį TSUL
                                         // first line indent in twips
                                                                                                                                                                    ілатічых таі
                                                       sdiwi the state of the st
                                                                                                                                                                     ілт хакідіг;
                                                          sqiwi ni indent in twips
                                                                                                                                                                       int xaLeft;
                                                                                                                                                                                                              }
                                                                                                                                              typedef struct para_prop
                                                                             TSUL { TJaui, JustC, JustC, JustC, JustC } muns 19b9qYJ
                                                                               // CHaracter Properties
                                                                                                                                                                                                 GHD {
                                                                                                                                                                char fItalic;
                                                                                                                                                          char fUnderline;
                                                                                                                                                                       cysr fBold;
                                                                                                                                                                                                              }
                                                                                                                                              typedef struct char_prop
                                                                                                                                                                     #define fFalse 0
                                                                                                                                                                       f surTt snifsb#
                                                                                                                                                               typedef char bool;
                                                                                                                                                                                         Rtitype.h
^{//} End of file reached while reading RTF
                                                                                                                                 L
                                                                                                                                                            #define ecEndOfFile
                                                      // Assertion failure
                                                                                                                                 9
                                                                                                                                                            #define ecAssertion
                // RTF table (sym or prop) invalid
                                                                                                                                 S
                                                                                                                                                              #define ecBadTable
      // invalid hex character found in data
                                                                                                                                                           #define ecinvalidHex
                                                                                                                                 ₽
```

```
typedef struct symbol
                      typedef enum {kwdChar, kwdDest, kwdProp, kwdSpec} KWD;
                                  typedef enum {idestPict, idestSkip } IDEST;
                        typedef enum {ipfnBin, ipfnHex, ipfnSkipDest } IPFN;
                                                                       £αΟצα {
       // offset of value from base of structure
                                                             ije offset;
                   // structure containing value
                                                           PROPTYPE prop;
                                 >// size of value
                                                                ACTN actn;
                                                                             }
                                                        typedef struct propmod
                 typedef enum {propChp, propPap, propSep, propDop} PROPTYPE;
                            typedef enum {actnSpec, actnByte, actnWord} ACTN;
                                              ipropMax } IPROP;
                 iproplust, ipropPard, ipropPlain, ipropSectd,
       ipropSbk, ipropPgnFormat, ipropFacingp, ipropLandscape,
       ίρτορΧαRight, ipropYaTop, ipropYaBottom, ipropPgnStart,
             ίτργορβαηΥ, τργορΧαΡαge, τργορΥαθαge, τργορΧαLeft,
           ipropRightInd, ipropFirstInd, ipropCols, ipropPgnX,
         typedef enum {ipropBold, ipropItalic, ipropUnderline, ipropLeftInd,
                                       // Μυάτ τγρες οί ρτορεττίες ατε τλετε?
                                                                       ; SAVE {
                                                                  RIS ris;
                                                                  RDS rds;
                                                                  idob dop;
                                                                  :dəs das
                                                                  iqsq 4A4
                                                                  CHD CYD:
                                 эльг тхэп //
                                                      struct save *pNext;
                  γ/ Δεοδετέγ εανε ετευσέμεε
                                                          typedef struct save
   // Rtf Internal State
                               typedef enum { risNorm, risBin, risHex } RIS;
// Rtf Destination State
                                       typedef enum { rdsNorm, rdsSkip } RDS;
                               // DOcument Properties
                                                                        } DOD {
                  // landscape or portrait??
                                                         cysr flandscape;
                    // facing pages enabled?
                                                           cysr fFacingp;
            // εταττίης page number in twips
                                                            int pgnStart;
                   // bottom margin in twips
                                                             іпт уавоттот;
```

```
char *szKeyword; // RTF keyword
int dflt; // default value to use
bool fPassDflt; // true to use default value from this table
kWD kwd; // index into property table if kwd == kwdProp
int idx; // index into destination table if kwd == kwdDest
// character to print if kwd == kwdChar
```

:WAS {

}

```
printf("Parsed RTF file OK/n");
                                    əslə
printf("error %d parsing rtf/n", ec);
      if ((ec = ecRtfParse(fp)) != ecOK)
                                        {
                           :[ uznjəz
 printf ("Can't open test file!/n");
                                        }
                                (q1!) li
     i(""", "]] i = d]
                                 isə tri
                                iqi* alif
                                            }
                main(int arge, char *argv[])
                                           11
     // Main loop. Initialize and parse RTF.
                                          11
                         // %%Function: main
                                           //
                                 file *fpin;
                                ; SAVE * PSANe;
                                    DOP dop;
                                    :dəs das
                                    PAP pap;
                                     снь суь:
                                    RIS ria;
                                     RDS rds;
                                long lParam;
                                 iong cbBin;
                         iAnUlljaeqtiX21 lood
                                  iquores dri
                        "d.loeblt" ebuloni#
                        "nclude "rtftype.h.
                          <d:>finclude<d:</pre>
                         <didilbta> sbuloni#
                          *include <stdio.h>
```

Rich Text Format (RTF) Specification and Sample RTF Reader Program

Rtfreadr.c

```
:sə uznşəz
                                  if ((ec = ecParseRtfKeyword(fp)) != ecOK)
                                                                      :'//' sass
                                                                      угөзү ;
                                                             :sə uznqəz
                                        if ((ec = ecPopRtfState()) != ecoK)
                                                                      csse '}':
                                                                     preak;
                                                             :sə uznşəz
                                       if ((ec = ecPushRtfState()) != ecOK)
                                                                       :'}' 9265
                                                                               }
                                                                     (цр) црэтма
                                                                                   }
                                                                                əsīs
                                                                                   {
                                                                  teturn ec;
                                            if ((ec = ecParseChar(ch)) != ecOK)
                                                                                   }
                                                                                    directly
// if we're parsing binary data, handle it
                                                                  (ni8sir == sir) li
                                                       return ecstackUnderflow;
                                                                     if (cGroup < 0)
                                                                                       }
                                                         Muile ((ch = getc(fp)) != EOF)
                                                                              :0 = q dri
                                                                        int cWibble = 2;
                                                                                 isə tri
                                                                                 :ປວ ງມາ
                                                                                            }
                                                                        ecktfParse(FILE *fp)
                                                                                         циτ
                                                                                          11
                                        // Send text to ecParseChar for further processing.
                                  , Push and pop state at the start and end of RTF groups;
                                // Isolate RTF keywords and send them to ecParseRtfKeyword;
                                                                                  :[ dəis //
                                                                                          11
                                                                   // %%Function: ecRtfParse
                                                                                          11
                                                                                           {
                                                                               :0 uznjəz
```

;(dl)esolol

```
// switch

                                              угөзү
   (mroWair =! air) sals bns //
                                                   {
                                               {
                                                      :mroNsir = sir
                                      :0 = q
                                :S = 91ddiN5
                              :sə uznşəz
         if ((ec = ecParseChar(b)) != ecOK)
                                              }
                                   (∋ĺddiN⊃!) li
                                      ;--slddiNc
                                              {
                                           {
                  p += (cyar) cy - 'A';
               ixeturn ecInvalidHex;
              if (cy < 'A' || ch > 'F')
                                           }
                                        əsīs
                                           {
                  р += (суях) су – 'а';
               return ecInvalidHex;
              if (cy < 'a' || ch > 'f')
                                          }
                           if (islower(ch))
                                               }
                                            əsīs
                       p += (cysr) cy - '0';
                               if (isdigit(ch))
                                    ;₽ >> d = d
                        return ecAssertion;
                             (x9Hair =! air) li
                // рагзілд ћех дађа
                                                   }
                                                əsīs
                                                   {
                                 :sə uznşəz
            if ((ec = ecParseChar(ch)) != ecOK)
                                                  }
                                 (mioNair == air) li
                                                :Jlusl9b
                                              preak;
// cr and lf are noise characters...
                                              :s0x0 92s5
                                              :b0x0 9265
                                              preak;
```

```
цαт
                                                                        11
          // Always restore relevant info from the top of the SAVE list.
                                                // call ecEndGroupAction.
// If we're ending a destination (that is, the destination is changing),
                                                                        //
                                             // %Function: ecPopRtfState
                                                                        11
                                                                         {
                                                         return ecok;
                                                            :++dnoz92
                                                    ;w9N9vszq = 9vszq
                                                       :mroNair = air
                                               psaveNew -> ris = ris;
                                               psaveNew -> rds = rds;
                                               ;qob = qob <- w9N9vsaq
                                               ;qsa = qsa <- wsNsvaq
                                               ;qsq = qsq <- wsNsvag
                                               basveNew -> chp = chp;
                                           isonexe = jxsMq <- wsMsvsq</pre>
                                          return ecstackOverflow;
                                                       (w9M9vszq!) li
                              SAVE *psaveWew = malloc(sizeof(SAVE);
                                                                         }
                                                     ecPushRtfState(void)
                                                                       цuт
                                                                        11
              // Save relevant info on a linked list of SAVE structures.
                                                                        11
                                            // %%Function: ecPushRtfState
                                                                        11
                                                                         {
                                                         return ecoK;
                                         return ecUnmatchedBrace;
                                                      (0 < quores) li
                                         return ecStackUnderflow;
                                                      (0 > quorbo) li
                                             әтійм //
                                                                     {
                                                                {
                              (nifair =! air) safs //
```

```
cysr szKeyword[30];
                                        суях <sub>*</sub>Бсу:
                                    int param = 0;
                              cysr fNeg = fFalse;
                             char fParam = fFalse;
                                            :up ជាក្
                                                      }
                          GCD3rseRtfKeyword(File *fp)
                                                    цuт
                                                     11
 // call ecTranslateKeyword to dispatch the control.
// get a control word (and its associated value) and
                                             :2 də18 //
                                                     11
                     // %%Function: ecParseRtfKeyword
                                                     11
                                                      {
                                      return ecok;
                                   free(psaveOld);
                                         :--dnozĐo
                             idxeve = psave->pNext;
                                 psave0ld = psave;
                                 isir<-svag = sir
                                 :sb1<-svsg = sb1</pre>
                                 dop = psave->dop;
                                 ;q92<-9vsq = q92
                                 faq = psave->pap;
                                 cyb = basve->chp;
                                                  {
                                :sə uznşəz
   if ((ec = ecEndGroupAction(rds)) != ecOK)
                                                  }
                           if (rds != psave->rds)
                     return ecStackUnderflow;
                                       (9vsag!) li
                                            isə tri
                                   ib109vsag* 3VA2
                                                      }
                                   (biov)etstataqoqoe
```

```
11
                         // Route the character to the appropriate destination stream.
                                                                                      11
                                                             // %%Function: ecParseChar
                                                                                      11
                                                                                       {
                              i(maralateKeyword(szKeyword, param, fParam);
                                                                :(dj 'uɔ)ɔəəbun
                                                                     ('' =! do) li
                                                                                   {
                                                            рагат = -рагат;
                                                                      (£Neg) ìi
                                                    lParam = atol(szParameter);
                                                            param = -param;
                                                                      (tasV1) li
                                                     param = atoi(szParameter);
                                                                   *pch = '\0';
                                                        *pch++ = (char) ch;
                           tor (pch = szParameter; isdigit(ch); ch = getc(fp))
// α digit after the control means we have a parameter
                                                                ieurTì = merefì
                                                                                   }
                                                                   ((ds)jigibai) li
                                                                                   {
                                                        return ecEndOfFile;
                                                    ŗţ ((cy = defc(tp)) == EOE)
                                                                 isurit = true;
                                                                                  }
                                                                     (,-, == up) jț
                                                                       *pch = '\0';
                                                            *pch++ = (char) ch;
                                 tox (bcy = szKeyword; isalpha(ch); ch = getc(fp))
                                                                                   {
                              return ecTranslateKeyword(szKeyword, 0, fParam);
                                                           szKeyword[1] = '\0';
                                                      szkeyword[0] = (char) ch;
                                                                                  }
                    // a control symbol; no delimiter.
                                                                 ((dɔ)sdqlszi!) li
                                                            return ecEndOfFile;
                                                        if ((cy = detc(fp)) == EOF)
                                                             srameter[0] = [0]
                                                               szKeyword[0] = '\0';
                                                              char szParameter[20];
```

```
Page 104
```

```
{
                                                           return ecok;
                                                            futchar(ch);
// unfortunately, we don't do a whole lot here as far as layout goes...
                                                                           }
                                                        есРтіпtСhar(іпt ch)
                                                                         циτ
                                                                         11
                                    // Send a character to the output file.
                                                                         11
                                                 // %%Function: ecPrintChar
                                                                          11
                                                                           {
                                                                       {
                                                       return ecok;
                                       // handle other destinations....
                                                               :diusisb
                                            return ecPrintChar(ch);
         // Output a character. Properties are valid at this point.
                                                           case rdsNorm:
                                                       return ecok;
                                            ./ Toss this character.
                                                           case rdsSkip:
                                                                       }
                                                           (sbr) dojiwa
                                                     :mroNsir = sir
                                     if (ris == risBin && --cbBin <
                                                                           }
                                                        ecParseChar(int ch)
                                                                         цuт
```

Microsoft Technical Support

ipropItalic,	KwdProp,	fFalse,	'τ	' "Ì"	
,eni1reb00aciine,	kwdProp,	,9als¶î	'τ	'"n"	
ipropBold,	, кмдРтор,	fFalse,	'τ	, "d"	
xbi	kwd	fPassDflt	qĘŢ¢	қєλмолд	//

SXW rgsymRtf[] = {

// Keyword descriptions

: {

ipropSectd	//		' 0	, qə2qorq	, səqZntsa
ipropPlain	//		' 0	brobCyb'	actnSpec,
ipropPard	//		' 0	propPap,	, seq&rtse
jzulqordi	//	ʻ(lavi	, TAG) lojezllo	, qaqqorq	астлВуте,
ipropLandscape	//	, (sqsssbralt	, TOT) fot9allo	propDop,	, әстлВуте,
ipropFacingp	//	, (qpribs¶ì	,900)lojezllo	propDop,	астлВуте,
ipropPgnFormat	//	pgnFormat),	, GES) lotesllo	topSep,	астлВуте,
γqSqorqi	//	, (ਮੱda	, qas) totealto	,qs2qorq	астлВуте,
τρτορ ^ρ gnStart	//	pgnStart),	,900)lojezllo	propDop,	, broWntbs
mojjo£sYqorqi	//	, (тојјоЯву	, TOT) lojezllo	propDop,	, broWntbs
qoTsYqorqi	//	, (qoTsy	, TOT) fot9allo	propDop,	, broWntbs
ірторХа R іght	//	, (таріяьх	, 400) lojezllo	bropDop,	, broWntbs
żłedzalett	//	, (јђельх	, 900) lojsziło	propDop,	, broWntbs
żpropYaPage	//	, (spage) ,	, 900) lojsziło	propDop,	, broWntbs
ipropXaPage	//	, (spaga),	, 900) lojsziło	propDop,	, broWntbs
τρτορ ⁹ αn ⁷	//	, (np ^g an)	, 91fsetof (SEP,	,qs2qorq	, broWntbs
τρτορ [₽] дnX	//	, (ng¶ax),	offsetof(SEP,	'dəgdoıd	, broWntbs
żpropCols	//	, (аГоЭэ	, 91fsetof (SEP,	,qs2qorq	, broWntbs
bnltari¶qorqi	//	, (јатічых	, 4A4) loj9zllo	propPap,	, broWntbs
pultupiyqorqi	//	, (эйріяьх	, 4A4) loj9allo	propPap,	, broWntbs
ipropLeftInd	//	, (јђельх	, qAq)loj9zllo	propPap,	, broWntbs
ipropUnderline ģ	//	(ənilrəbnUl	, GHD) lojszlło	' đųეđoлđ	, этүвитрь
οίΓε3Ιqorqi	//	, (bilatlì	, THS) lojezllo	' dygdoad	, әстпвуте,
ipropBold	//	,(bloat	offsetof(CHP,	'dqgdoad	, әстпвуте,

```
PROP rgprop [ipropMax] = {
```

```
// Property descriptions
```

```
// RTF parser tables
```

```
C.NTDATN.C

should category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category category ca
```

'dītasasəbi	kwanezc'	,9216'11	' 0	, "aoccomm",
, qixl2rsəbi	kwqDeat,	fFalse,	° 0	"creatim",
,qiASJaəbi	, таэдрүү	, salsīt	' 0	' " ງຕອຫຫດວ "
,qix2zesbi	, таэдрүү	, salsīt	' 0	, "colortbl",
, qiy8Jasbi	, таэдрүү	,9ala¶i	' 0	'_uījdng_
, qiy8Jasbi	, Jaeubwa	,9ala¶i	' 0	' "zoyjne"
'xəHuidı	kwaspec,	,9sisit	' O	·
' ls9UqrXSniqı	kwaSpec,	,9216'it	۰ د	, , , , , ,
, ni8niqi	kwdSpec,	tFalse,	' O	'"ntid"
· - ·	кмаСћаг,	,921531	' O	'_əqonbrqpz_
,	кмдСлаг,	fFalse,	' O	"iətoupídbí
'60×0	кмаСћат,	tFalse,	' O	,"tab",
, 50x0	кмаСћат,	tFalse,	' O	,"b0x0/"
, 50x0	кмаСћат,	tFalse,	' O	,"s0x0/"
, s0x0	кмдСћаг,	fFalse,	' O	"par",
ipropLandscape,	кмаРгор,	, surīt	́т	, "aqsszbral"
ipropFacingp,	kwdProp,	, surīt	΄τ	"tacingp",
· _ · · · · · · · · · · · · · · · · · ·	KMQLTOD,	'ənılı	́т	' "Jasjangq"
TpropiaBotcom,	, j- kwdProp,	tFalse,	'0₽₽T	"margo",
, qoʻrayqoyqı	у јр	, 9216'11	1044T	" " י " שינאבע "
,	у је	'estrai	1008T	
TPropadiet (Kwaptop,	, Set bit	1000L	(
, 905487401q1	уу	, 921611	1084GT	, "nisqsg"
, seedexaorde,	кмартор,	, SZISTI	007JL	, "W19qbg"
'asnedozdī	ултарынон кмартор,	'ənırı	(สารทโ	""
'asnedozdī	у	'ən.ıı	(หารทโ	, "1±".
tasnodotat		(antit	(diadul	" тБ
tandotat	KwdProp,	(<u>2011</u> 1	(Jacut	"[d]"
	KwdProp,	(on 111	(топпед	, tototueq
temaoBangadi	KwdProp,	(aniti		"at[D[ubd]
temaoBangadi	KwdFrop,	(aniti		"at[bilubd"
temaoBangadi	KwdFrop,	(an III	(moxueq	
temroFangarai	kwdProp	(on the	(anglibu	
temaoBangarai	KwdProp,	(octurit	Dallec	"pandec"
į buobbaux	KwdProp	(Setbit	0	
(vaaqorqi		(00111		
Ad2gorgi	KwdProp	(onition 1	apkou	
	kwdProp.	. 9UYTł	, modd .	"spkodd"
, Ad2aorai	kwdProp,	, əurTl	, avā Ada	, "nəvəxda"
, ipropSbk,	KwdProp,	, surTì	, foðáda	, "Iobkcol",
' ydSqorqi	, kwdProp,	, ∋uīTì	, noWÁda	, " snonxda "
ipropCols,	, kwdProp,	fFalse,	'τ	,"aloo"
,prijsiristind,	kwdProp,	fFalse,	' 0	′"⊥∃"
, prightind,	kwdProp,	fFalse,	' 0	' <u>"</u> i'"
,briðfelfind,	умд⊾хор,	fFalse,	' 0	ʻ " יֿד "

```
суях "Бр:
                                                                       }
                          ecApplyPropChange(IPROP iprop, int val)
                                                                    цuт
                                                                     11
                                                                     //
 // Set the property identified by _iprop_ to the value _val_.
                                                                     11
                                  \/ %%Eunction: ecApplyPropChange
                                                                     11
                   i(MYS)losis / (ltAmyzer)losis = xsMmyzi thi
                                                                 : {
           , \ \ i
                    кмдСћаг,
                                   fFalse,
                                                             ' _ \ \ _
                                                   ' 0
           ' , { ,
                                                              ' " { "
                    кмдСћаг,
                                   fFalse,
                                                  ' 0
           ' , } ,
                                                              ' " } "
                    кмдСћаг,
                                   fFalse,
                                                   ' 0
    ,qixStasbi
                                   fFalse,
                                                             ' "9x"
                    , таэПьмя
                                                   ' 0
    ,qixStasbi
                                                            '"əxı"
                    , Ja9GbwA
                                   ,9als¶ì
                                                  ' 0
    ,qiASJa9bi
                                                          '"9ĹJÌJ"
                    , Ja9GbwA
                                   ,9als¶ì
                                                   ' 0
    , di XZJasebi
                                                   ' 0
                                                             ' "bj"
                    'ls9GbwX
                                   ,9als¶ì
    ,qixStasbi
                    kwdDest,
                                                       ,"Josťdua"
                                    ,9alsīt
                                                   ' 0
                , таэдbwא
                                              ' 0
                               ,9alsīt
                                                    ,"J99fa9LYJa"
,qixStasbi
                                                            '_əxz
    'dīxstsbi
                    , JasaGbwA
                                   ,921s3ì
                                                   ' 0
    ,qixl2tasbi
                    , таэПьмя
                                   ,9als¶ì
                                                   ' 0
                                                         '"ωτινθα"
    ,qixStasbi
                                   ,9als¶ì
                                                   "privatel", 0,
                    ,Ja9GbwA
                                                       '"mitanirag"
    ,qixl2tasbi
                    'jz9Qbw%
                                   ,9alsīt
                                                   ' 0
    'dīxstsbi
                    kwqDest,
                                   ,921s91
                                                   ' 0
                                                           ' "Joiq"
    ,qixStasbi
                                                   "operator", 0,
                    ,Ja9QbwA
                                    ,9als¶ì
    ,qixStasbi
                    ,Jz9GbwA
                                    fFalse,
                                                   ' 0
                                                      '_splowda''
    'dīxstsbi
                    kwqDest,
                                   ,921s91
                                                   ' 0
                                                           '"ojuț"
    ,qixl2tasbi
                    'jz9Qbw%
                                   ,9alsīt
                                                   ' 0
                                                       , пеадетт ,
    ,qixStasbi
                    ,таэдbwא
                                   ,9alsīt
                                                   ' 0
                                                       '_ттэрвэй"
    ,qixl2tasbi
                    kwqDest,
                                    ,9alsīt
                                                   ' 0
                                                       "headerf",
                                                         " ћеадет",
    ,qixl2tasbi
                    , Jasubwi
                                   , salsīt
                                                   ' 0
                                                   ' 0
    ,qixStasbi
                    , таэдbwא
                                                       '"bq9znji"
                                    fFalse,
    ,qixStasbi
                    ,Ja9GbwA
                                    fFalse,
                                                   ' 0
                                                         '"dəsull"
    ,qixl2tasbi
                    , таэПьмя
                                   ,9alsīt
                                                   ' 0
                                                          '_upujj_
    ,qixStasbi
                    kwqDest,
                                    ,9als¶ì
                                                   '0 '"stontool"
    ,qixStasbi
                    kwdDest,
                                    fFalse,
                                                   ' 0
                                                       ,qixStasbi
                                                       "footerl"
                    ,Ja9QbwA
                                    fFalse,
                                                   ' 0
                                                       ,"lrstool"
    ,qixl2tasbi
                    , таэПьмЯ
                                    ,9alsīt
                                                   ' 0
    'dīxstasbi
                    kwqDest,
                                    fFalse,
                                                   ' 0
                                                         '"19Jool"
    ,qixl2tasbi
                    , таэПьмя
                                    ,9alsīt
                                                   ' 0
                                                       '"Idjjnoì"
```

```
// Set a property that requires code to evaluate.
                                                                  11
                             // %%Function: ecParseSpecialProperty
                                                                  11
                                                                   {
                                                   return ecok;
                                                               {
                                         teturn ecBadTable;
                                                       :Jluslsb
                                                     preak;
                return ecParseSpecialProperty(iprop, val);
                                                 :seqEntse esss
                                                     угөзү
               iLsv = ((jesllo.[qorqi]qorqp+dq) (* jni)*)
                                                 :broWntos easo
                                                     preak;
           pb[rgpropietor].offset] = [dotpietor].val;
                                                 case actnByte:
                                                               }
                                    (rtch (rgprop[iprop].actn)
                                                               {
                                                     preak;
                                    return ecBadTable;
                       (rgprop[iprop.[qorqi]qorqp) li
                                                       :diusleb
                                                     preak;
                                         bp = (כטאד אַ) אָכטָלי
                                                  csse propChp:
                                                     preak;
                                         pb = (char *)&pap;
                                                  case propPap:
                                                     preak;
                                         pp = (cysr *)&sep;
                                                  case propSep:
                                                     угөзү
                                         bp = (כטאר *)גּלסף;
                                                  csse propDop:
                                                               }
                                    switch (rgprop[iprop].prop)
     . don't do anything.
                                               return ecoK;
') II we're skipping text,
                                            if (rds == rdsSkip)
```
```
if (0 == (browyakzs.[mysi]ltsmyspr ,tsrword) ii
                                        (++mysi ;xsMmysi > mysi ;0 = mysi) rol
                                           // εθατομ τοι εεκθγωοτά τη ταεγπαττ
                                                                      :w⊼s፣ ኋu፣
                                                                                   }
                       ecTranslateKeyword(char *szKeyword, int param, bool fParam)
                                                                                 цuт
                                                                                 11
                                             fFalse if it did not.
                                                                                 11
(find if the control had a parameter; (that is, if param is valid)
                                                                         .merant \/
                                                                          :шелед //
                                 The parameter of the RTF control.
                                       The RTF control to evaluate.
                                                                      :prowyskeyword:
                                                                          :sindui //
                                                                                 11
                   // Search rgsymRtf for szKeyword and evaluate it appropriately.
                                                                          .6 q9J2 //
                                                                                 11
                                                 // %%Function: ecTranslateKeyword.
                                                                                  11
                                                                                   {
                                                             return ecBadTable;
                                                                               {
                                                         return ecBadTable;
                                                                       :diusleb
                                                               return ecok;
                                              i((qea)loesia ,0 ,qea%)leamem
                                                               case ipropSectd:
                                                               return ecok;
                                              nemset(chp, 0, sizeof(chp));
                                                               case ipropPlain:
                                                               return ecok;
                                              i((qsq)losziz ,0 ,qsq3)lesmem
                                                                case ipropPard:
                                                                               }
                                                                 awitch (iprop)
                                                                                   }
                                      ecParseSpecialProperty(IPROP iprop, int val)
                                                                                 цuт
```

```
//
```

```
// gon't do anything
                                                  return ecok;
     , it we're skipping text,
                                              if (rds == rdsSkip)
                                                                       }
                                             ecChangeDest(IDEST idest)
                                                                    цuт
                                                                      11
                     ... There's usually more to do here than this...
                    // Change to the destination specified by idest.
                                                                      11
                                           // %%Function: ecChangeDest
                                                                      11
                                                                       {
                                                return ecBadTable;
                                                                  {
                                            return ecBadTable;
                                                          :Jlusleb
          ide construct (rdsymRtf[idy];
idy construction (rdsymRtf[idy];
idy construction (rdsymRtf[idy];
idy construction (rdsymRtf[idy]);
                                                     csse kwdSpec:
                    :Ja9ObwX 9ass
                     i(xbi.[mYai]lJAmYagr)radOsaraGos nrujor
                                                     сязе кwdChar:
       return ecApplyPropChange(rgsymRtf[isym].idx, param);
                             param = rgsymRtf[isym].dflt;
                    (msrsf! || Jlldsssfl.[mysi]JJAmysp1) ii
                                                      case kwdProp:
                                                                  }
                                      (bwitch (rgsymft[isym].kwd)
                                          fSkipDestIfUnk = fFalse;
 // found it! use kwd and idx to determine what to do with it.
                                                                  {
                                                  return ecok;
                                     fSkipDestIfUnk = fFalse;
        // else just discard it
        // εγτρ της destination
                                           rds = rdsSkip;
// if this is a new destination
                                         (AnUlljaeQqiASl) li
                                                                  }
                                             (xsMmyai == myai) li
      // control word not found
                                                    preak;
```

```
;xsHair = air
                                                                                                                                                                                                                                             :xəHnîqi əzsə
                                                                                                                                                                                                                                                          preak;
                                                                                                                                                                                       ieurT1 = AnUllJzeuqiAS1
                                                                                                                                                                                                                           case ipfnSkipDest:
                                                                                                                                                                                                                                                         угөзү ;
                                                                                                                                                                                                                      cbBin = lParam;
                                                                                                                                                                                                                              iniazir = zir
                                                                                                                                                                                                                                              case ipfnBin:
                                                                                                                                                                                                                                                                                             }
                                                                                                                                                                                                                                             (ијді) Ирјіма
           // the /bin keyword, ignore it.
                                                                                                                                                                                                                                  return ecok;
it (ris aright a strong to the second strong the strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong strong st
                                                                                                                                                                                                                                                                                                             }
                                                                                                                                                                                   ecParseSpecialKeyword(IPFN ipfn)
                                                                                                                                                                                                                                                                                                    цuт
                                                                                                                                                                                                                                                                                                        11
                                                                                 // Evaluate an RTF control that needs special processing.
                                                                                                                                                                                                                                                                                                        11
                                                                                                                                                                   // %%Function: ecParseSpecialKeyword
                                                                                                                                                                                                                                                                                                         //
                                                                                                                                                                                                                                                                                                             {
                                                                                                                                                                                                                                                  return ecok;
                                                                                                                                                                                                                                                                                                             }
                                                                                                                                                                                                               ecEndGroupAction(RDS rds)
                                                                                                                                                                                                                                                                                                    цuт
                                                                                                                                                                                                                                                                                                       11
                                                                          // If there's any cleanup that needs to be done, do it now.
                                                                                 // The destination specified by rds is coming to a close.
                                                                                                                                                                                                                                                                                                        11
                                                                                                                                                                                       // %%Function: ecEndGroupAction
                                                                                                                                                                                                                                                                                                        11
                                                                                                                                                                                                                                                                                                             {
                                                                                                                                                                                                                                                  return ecoK;
                                                                                                                                                                                                                                                                                             {
                                                                                                                                                                                                                                                        preak;
                                                       // when in doubt, skip it...
                                                                                                                                                                                                                          tds = rdsSkip;
                                                                                                                                                                                                                                                                 :diusleb
                                                                                                                                                                                                                                                                                             }
                                                                                                                                                                                                                                          (Jasbi) doliwa
```

```
break;
default:
return ecBadTable;
}
return ecOK;
}
```

Makefile

¡do.rbssrltr ;do.nJosfJr :sxs.rbssrltr [un> ¡do.nJosfJr ;do.rbssrltr Anil

ή.9qyjir ή.15sbjir s.nissiir :jóo.nissiir

rtfreadr.obj: rtfreadr.c rtfdecl.h rtftype.h

TAM907 TX3T (SUOI893V NAI8A) 090W :8 XIQN399A

This appendix contains the changes to the Rich Text Format (RTF) specification for the Japanese version of Word (all platforms). In this section, Word J refers to the Japanese version of Word and RTF-J refers to the Japanese version of Word and RTF-J refers to the interpretation of STF-J and some behaviors of Word J.

This appendix is meant to be used in conjunction with the full RTF specification, assumes you have read the rest of this document, and does not contain the necessary information to implement an RTF reader or writer by itself. If you have any questions, please refer to the main specification first.

с-этя

There is a Japanese local RTF specification, called RTF-J, that is somewhat different from the standard RTF specification. Although Word 7.0 J does not write RTF-J, it can read RTF-J files. It retains the text strings in the file and disregards unknown control words.

Escaped Expressions

An escape expression (for example, //hh, //, or /{) is usable in all RTF control words.

:TetirW

In general RTF should be written out with all characters above 0x80 in the escaped form, /hh.

Sharacter code	Write out as
0X00 <= ch < 0X20	Escaped (/'hh)
08x0 <= ch < 0x80	Raw (non-escaped) character
x80 <= cµ <= 0xFF	Escaped (/'hh)

For comparibility, there is an RTFParam option in the

HKEY_CURRENT_USERF/Software/Microsoft/Word/7.0FE/ section of the registry database that determines whether raw 8-bit characters or escaped characters are used for the double-byte characters in */stylesheet*, */fonttbl*, */bkmkstart*, and */bkmkend*. This option is valid only when writing out the RTF; it does not affect RTF reading behavior.

[Microsoft Word]

RTFParam=7 (the default) uses an escaped expression when the character is above 0x80.

RTFParam=8 uses raw 8-bit characters for *\stylesheet*, *\fonttbl*, *\bkmkstart*, and *\bkmkend* (does not escape even if trailing-byte was an RTF special character such as /, {, or }).

Reader:

When the RTF reader encounters raw characters in the leading-byte range of the double-byte character, it regards the next character as the trailing byte of the double-byte character and combines the two characters into one double-byte character.

 Validity	Trailing byte	byte byte
Valid (standard format for double-byte character)	(17x0) (17x0)	pədess∃

Raw	Escaped	bilsvnl
wsЯ	МаЯ	Valid (RTF-J format for double-byte character)
pədecsa	Escaped (other)	Valid (standard format for double-byte character)

Character Set

Word J specifies the character set in the font table using **/fcharset**. Word J interprets **/cpg437** as **/fcharset** and and **/cpg932** as **/fcharset128** if it encounters these control words when reading RTF. If both **/fcharset** and **/cpg** appear in the font table, **/cpg** is ignored.

Character Mapping

Word maps single-byte characters according to character set information (for example, Macintosh to ANSI) and leaves double-byte characters unmapped.

Font Family

/qpcy

Definition and the interpretation in Word	KIF-J CONTOI WOLDS
brow ai acitotorarotai odt bao acitiaitod	obyeur lentere L TTC

/fjminchou and /fjgothic	RTF-J uses /tjminchou and /tjgothic to specify font family. Word J interprets these as /finil , which is the default font family.
siį/	RTF-J uses /jis as a control word for character set. Word J interprets this as /ansi , which is the default character set used if the character set is not defined.

ShiftJIS Font Without /cpg or /fcharset

If **/cpg** or **/fcharset** control words are not present, Word J uses the text metrics of the font before determining the character set of these fonts. If the font is unknown, Word J assumes it is SHIFTJIS_CHARSET.

Composite Fonts (Associated Fonts for International Runs)

Word J defines control words to specify composite fonts as associated character properties. These control words follow the rule of associated character properties and understand font designation (**laf**). All other <a href="mailto-sage are ignored in Word J.

hich	For the characters in the high-ANSI (0x80–-0xFF) area.
/юср	Specifies a run of the characters in the low-AUSI (0x00-0x7F) a
Control word	Definition
<dbr></dbr> dbrun>	/loch /af & <aprops> /hich /af & <aprops> /dbch <pre>ptext></pre></aprops></aprops>
<hi>kisbrun></hi>	/loch \af & <aprops> /dbch \af & <aprops> /hich <pre>cprops> /hich <pre>cprops</pre></pre></aprops></aprops>
<losbrun></losbrun>	<pre>/hich \arkat{s} & <aprops> /dbch \arkat{s} & <aprops> /loch <pre>/sext></pre></aprops></aprops></pre>
<atest></atest>	<losbrun> <hi>dbrun> <dbrun> <dbrun></dbrun></dbrun></hi></losbrun>

Specifies a run of the double-byte characters.

rea.

should be used for compatibility with applications that have transparent readers. Word J writes out associated character properties in the styles. In the style sheet, the <dbrun> definition

{lstylesheet{loch/af5/hich/af5/dbch/f27/fs20/snext0 Normal;}

If the composite font definition matches the style, only the control word (/loch, /hich, or /dbch) will be used

to distinguish the type of run, along with the font information for transparent readers.

```
{{stylesheet{<u>loch.af5/dbch/f27</u> [s20/snext0 Normal;]}
{/fortbl{prds/fprds/fprds/fisherent/fs/fs/fprds/fprdharent/sinsh(ff)}
```

```
{red/
         {/qpcy/f27/'82/'c5/'82/'b7/'81B}
                           { Ja9T <u>31/dool</u>/
{/qpcu/f27/fs20 /'82/'b1/'82/'ea/'82/'cd}
                                /pard/plain
```

rules below. doesn't match), Word J will apply appropriate fonts to each character run in the style using the bulleted If one or all of /loch, /hich, and /dbch are missing from the style sheet definition (or the character set

below 0x80 as a **/loch** run. Characters above or equal to 0x80 will be determined using the following rules: If the composite font control words are missing from the character run, Word J will interpret all characters

double-byte character, it will be treated as a **/dbch** run (one double-byte character). For example: If the character is in the leading-byte range and the next character is in the trailing-byte range of a

6747/99'/

:əlqmsxə the trailing-byte range, it will be treated as a /hich run (two high-ANSI or low-ANSI characters). For If the character is in the leading-byte range of a double-byte character but the next character is not in

Ϋá٦٦'/99'/

run, it will be treated as a **/hich** run (one high-ANSI character). For example: If the character is in the leading-byte range of a double-byte character and is the last character in the

69/parà

run (one high-AUSI character). For example: If the character is not in the leading-byte range of a double-byte character, it will be treated as a /hich

Ϋӹ⊣⊣/

loch

New Control Words Created by Word 6J

Description **Control word**

Associated Character Properties

The text consists of single-byte low-ANSI (0x00–0x7F) characters.

Νwodadgb/	Show M th horizontal grid (the default is 3).
/dgvorigin V	Grid vertical origin in twips (the default is 1984).
/dghorigin /	Grid horizontal origin in twips (the default is 1701).
Nəɔsqavgb/	Grid vertical spacing in twips (the default is 120).
Nəɔɛqឧdbb/	Grid horizontal spacing in twips (the default is 120).
dɛnəp/	Snap to grid.
/gutterprl	Parallel gutter.
bnsqx9į/	Expanding justification.
/jcompress	Compressing justification (default).
/*/Ichars	List of leading kinsoku characters.
s'shars/*/	List of following kinsoku characters.
/vertdoc	Vertical rendering.
/porzdoc	Horizontal rendering.
Document Forms	atting Properties
/striked	Double strikethrough.
/charscalex	Character width scaling.
ระการวรร/	Over comma accent.
/accdot	Over dot accent.
anoncos/	No accent characters (over dot / over comma).
əvewlu/	Wave underline.
lith	Thick underline.
/ulhair	Hairline underline.
ppyseblu/	Dash-dot-dotted underline.
pyseblu/	Dash-dotted underline.
yseblu/	Dashed underline.
Character Proper	səit
/prdrdashdd	Dash-dotted border.
/prdrdashd	Dash-dotted border.
/prdrdash	Dashed border.
Borders	
/abch	רוב נבער כטופופוס טו מטמטוב-מעוב כוומומרובוס.
, /vich	The text consists of double-byte charactere
	ereterede (TTV) (0000) 19144 deid obrid olegio to otoiogoo tvot odT

Print two logical pages on one physical page.

Show Mth vertical grid (the default is 0).

fwoonone/

Nwodsvgb/

/Inongrid Define line based on the grid.

/nooverflow	No overflow period and comma.
pp/	Distributed.
lnowwrap	No word wrapping.
/nocwrap	No character wrapping.
Рагадгарћ Ргоре	ries
əxd/*/	"Yomi" (pronunciation) for index entry.
Index Entries	
/frmtxtbrlv	Frame box flows top to bottom and right to left, vertical.
/frmtxIrtbv	Frame box flows left to right and top to bottom, vertical.
/frmtxbtlr	Frame box flows left to right and bottom to top.
frmtxtbrl	Frame box flows right to left and top to bottom.
/frmtxlrtb	Frame box flows from left to right and top to bottom (default).
Frame Properties	
/dptxtbrlv	Text box flows from top to bottom and right to left, vertically.
/dptxlrtbv	Text box flows from left to right and top to bottom, vertically.
/dptxbtlr	Text box flows from left to right and bottom to top.
/dptxtbrl	Text box flows from right to left and top to bottom.
/dptxlrtb	Text box flows from left to right and top to bottom (default).
Drawing Objects	
əvɕwlunq≀	Wave underline.
µthnnd∖	Thick underline.
/pnulhair	Hairline underline.
ppysepinnd/	Dash-dotted underline.
pysepinnd/	Dash-dotted underline.
yseblund≀	Dashed underline.
ແມນການອາຊາ	20 numbered list in circle (//circlenum).
bsdorinq/	46 phonetic double-byte katakana characters (/*iroha/*dbchar).
sdoring/	46 phonetic katakana characters in "iroha" order (/*iroha).
buisnq	46 phonetic double-byte katakana characters (/*aiueo/*dbchar).
niend	46 phonetic katakana characters in "aiueo" order (/*aiueo).
۳nndbng/	Kanji numbering without the digit character (/*dbnum1).
buq€cq	Double-byte decimal numbering ()*arabic/*dbchar).
muN bns stellua	bering

Auto spacing between DBC and English.

eydleqse/

811 e	Page
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asprum kuo specing between Dec and numbers. facenter Font alignment – Manging. facenter Font alignment – Manging. facenter Font alignment – Veholding variable. facenter Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font alignment – Upholding variable. favar Font align for align character. Zero-width braket opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. Used to insert break opportunity between two characters. Zero-width nonbreak opportunity. U	tobmlt	Leader middle dots.
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AsspnumAuto spacing between DBC and numbers.AsspnumAuto spacing between DBC and numbers.AtabangFont alignment → Langing.AscenterFont alignment → Center.AscenterFont alignment → Center.AstromanFont alignment → Center.AstromanFont alignment → Roman (default).AstromanFont alignment → Upholding variable.AstromanFont alignment → Upholding tixed.AstromanFont alignment → Upholding tixed.AstromanFont alignment → Upholding tixed.AstromanFont alignment → Upholding tixed.AstrosectPonble-byte decimal numbering.AstromanKanji numbering with the digit character.ApgndbrumdKanji numbering with the digit character.Special CharactersSection Formath between two.Special CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial CharactersCharactersAbecial Char	oquwz\	Zero-width nonbreak opportunity. Used to remove break opportunity between tw characters.
Asprum Auto spacing between DBC and numbers. fahang Font alignment → Hanging. facenter Font alignment → Center. farenter Font alignment → Center. farenter Font alignment → Center. farenter Font alignment → Dholding variable. faret faret faret faret faret faret faret faret faret faret faret faret faret faret faret font alignment → Upholding tixed. faret font alignment → Upholding tixed. faret faret faret faret faret faret for alignment → Upholding tixed. faret fa	oqwz\	Zero-width break opportunity. Used to insert break opportunity between two characters.
Auto spacing between DBC and numbers.Auto spacing between DBC and numbers.AtabangFont alignment → Hanging.AtacenterFont alignment → Center.AtacenterFont alignment → Center.AtaromanFont alignment → Center.AtaromanFont alignment → Upholding variable.AtaromanFont alignment → Upholding tixed.AtaromanFont alignment → Upholding tixed.AtaromanFont alignment → Upholding tixed.AtaromanFont alignment → Upholding tixed.AtarotactPortical rendering.AtarotactVertical rendering.AtarotactVertical rendering.AtarotactVertical rendering.AtarotactVertical rendering.AtarotactVertical rendering.AtarotactVertical rendering.AtarotacterVertical rendering. </td <th>Special Characte</th> <td>ers</td>	Special Characte	ers
Auto spacing between DBC and numbers. Asspnum Auto spacing between DBC and numbers. Assenter Font alignment → Langing. Ascenter Font alignment → Center. Ascenter Font alignment → Center. Ascenter Font alignment → Upholding variable. Astronan Font alignment → Upholding variable. Astronan Font alignment → Upholding variable. Astrosch Font alignment → Upholding tixed. Astrochect Pertical rendering. Astrosch Pondering. Astrosch Pondering. Astrosch Pondering.	թաոսզքս6d∖	Kanji numbering with the digit character.
Auto spacing between DBC and numbers.Auto spacing between DBC and numbers.AlabangFont alignment → Hanging.AlacenterFont alignment → Center.AlacenterFont alignment → Center.AlaticedFont alignment → Center.AlaticedFont alignment → Upholding variable.AlaticedFont alignment → Upholding tixed.AlaticedFont alignment → Upholding tixed.AlaticedFont alignment → Upholding tixed.AlaticedFont alignment → Upholding tixed.AlaticedFont alignment → Upholding tixed.AlaticedPontal rendering.AlaticedVertical rendering.AlaticedDouble-byte decimal numbering.AlaticedDouble-byte decimal numbering.	աոսզքսɓd\	Kanji numbering without the digit character.
Auto spacing between DBC and numbers.Auto spacing between DBC and numbers.AlangingFont alignment → Hanging.AlacenterFont alignment → Center.AlacenterFont alignment → Center.AlacenterFont alignment → Upholding variable.AlarisedFont alignment → Upholding variable.AlarisedFont alignment → Upholding tixed.AlarisectPontalignment → Upholding tixed.AlarisectPontalignment → Upholding tixed.	/bduqecq	Double-byte decimal numbering.
Auto spacing between DBC and numbers.Auto spacing between DBC and numbers.AspangFont alignment → Hanging.AacenterFont alignment → Center.AacenterFont alignment → Center.AatisomanFont alignment → Noholding variable.AatistedFont alignment → Upholding fixed.Action Formatting PropertiesAnorzsectHorizontal rendering.	10921197/	verticai rendering.
Auto spacing between DBC and numbers.fashangFont alignment → Hanging.fastangFont alignment → Center.facenterFont alignment → Coman (default).fastomanFont alignment → Upholding variable.fastixedFont alignment → Upholding tixed.fastixedFont alignment → Upholding tixed.	,,	
Auto spacing between DBC and numbers.Auto spacing between DBC and numbers.fashangFont alignment → Hanging.facenterFont alignment → Center.fastenterFont alignment → Upholding variable.fastadiFont alignment → Upholding variable.	/porzsect	Horizontal rendering.
Auto spacing between DBC and numbers.Auto spacing between DBC and numbers.fahangFont alignment → Center.faromanFont alignment → Center.faromanFont alignment → Center.faromanFont alignment → Center.faromanFont alignment → Center.	Section Formatti	ing Properties Horizontal rendering.
Auto spacing between DBC and numbers.fahangFont alignment → Center.facenterFont alignment → Center.faromanFont alignment → Center.	/fafixed Section Formatti horzsect	Font alignment → Upholding fixed. ing Properties Horizontal rendering.
Auto spacing between DBC and numbers. fahang Font alignment → Hanging. facenter Font alignment → Center.	\favar \fafixed Section Formatti horzsect	Font alignment → Upholding variable. Font alignment → Upholding fixed. Horizontal rendering.
tabaum Auto spacing between DBC and numbers. Font alignment → Hanging.	ıfaroman ıfavar ∫afixed Section Formatti Aborzsect	Font alignment → Koman (detault). Font alignment → Upholding variable. Font alignment → Upholding fixed. Horizontal rendering.
aspunn bus spacing between DBC and numbers.	\facenter \favar \favar Section Formatti borzsect	Font alignment → Center. Font alignment → Roman (default). Font alignment → Upholding variable. Font alignment → Upholding fixed. ing Properties
	\fahang \facenter \faroman \fatixed Section Formatti borzsect	Font alignment → Hanging. Font alignment → Center. Font alignment → Upholding variable. Font alignment → Upholding fixed. ing Properties Horizontal rendering.

Vew Control Words Created by Asian Versions of Word 97

aracter grid.	/cdrid/ Ch
Properties	Character Formatting
prins	Control word Me

լաոսզճսսֈֈ\	Footnote Chinese numbering 3 (*gb3).		
քաոսգճսսֈյ	Footnote Chinese numbering 2 (*gb2).		
աոսզճսսֈյ	Footnote Chinese numbering 1 (*gb1).		
ebenspnntl/	Footnote Korean numbering 2 (*ganada).		
\ftnndbar	Footnote double-byte numbering (*dbchar).		
Jmundbnnîł∕	Footnote Kanji numbering 4 (*dbnum4).		
}tmundbnnît	Footnote Kanji numbering 3 (*dbnum3).		
pmundbnntł∕	Footnote Kanji numbering with the digit character (*dbnum2).		
mudbnntł/	Foonote Kanji numbering without the digit character (*dbnum1).		
munannt	Footnote Circle numbering (*circlenum).		
ɓunsoyɔuuɟ∖	Footnote Korean numbering 1 (*chosung).		
Endnotes and Foo	setonte		
ճսոsoyɔud∖	Korean numbering 2 (*chosung).		
epeue6ud∖	Korean numbering 1 ("ganada).		
lɔɕiboznq/	Chinese Zodiac numbering 3 (*zodiac3).		
/pnzodiacd	Chinese Zodiac numbering 2 (*zodiac2).		
/pnzodiac	Chinese Zodiac numbering 1 (*zodiac1).		
<mark>γաnuqɓud</mark> ∖	Chinese numbering 4 (*gb4).		
յաոսզɓud∖	Chinese numbering 3 (*gb3).		
pաnuqɓud∖	Chinese numbering 2 (*gb2).		
աոսզճսd∖	Chinese numbering 1 (*gb1).		
ebensega/	Korean numbering 2 (*ganada).		
אשnuqpud∖	Kanji numbering 4 (*dbnum4).		
lmudbnq/	Kanji numbering 3 (*dbnum3).		
}wnuqpud ∖	Kanji numbering 3 (*dbnum3).		
pwnuqpud∖	Kanji numbering with the digit character (*dbnum2).		
bo∋uisnq∕	46 phonetic double-byte Katakana characters (*aiueo*dbchar).		
o∍uiɕnq∕	46 phonetic Katakana characters in "aiueo" order (*aiueo).		
Bullets and Numb	ullets and Numbers		
/brdrframe	Border resembles a "Frame."		
Borders			
otusel/	"-not alignment the default setting for this is shown a super-		
/nosnaplinegrid	Disable snap line to grid.		
Paragraph Forma	tting Properties		
/nosectexpand	expand Disable character space basement.		
/gridtbl	Destination keyword related to character grids.		
/dcw	Grid column width.		
۵۱	Destination related to character grids.		

/sectspecifyIN	Specify both number of characters per line and number of lines per page.		
NIวvficspecifycIN	Specify number of characters per line only.		
Nlotlusfebtoes/	Default state of section. Indicates /sectspecifycIN and /sectspecifyIN are not emitted.		
/sectlinegrid/	Line grid.		
Nbnsqxətəs/	Character space basement.		
lɔɕiboznɐɡ/	Chinese Zodiac numbering 3 (*zodiac3).		
/pgnzodiacd	Chinese Zodiac numbering 2 (*zodiac2).		
)pgnzodiac	Chinese Zodiac numbering 1 (*zodiac1).		
ymundgngq∕	Chinese numbering 4 (*gb4).		
lmudbnpq/	Chinese numbering 3 (*gb3).		
pɯnuqɓuɓd∖	Chinese numbering 2 (*gb2).		
աnuqɓuɓd∖	Chinese numbering 1 (†dp*) f parinese numbering.		
ebensepnpq∕	Korean numbering 2 (sbanada)		
אשnndbnpylogy/	Kanji numbering 4 (4mundb*).		
ֆաոսզթսնd∖	Kanji numbering 3 (*dbnum3).		
∖bđucunu	Circle numbering (*circlenum).		
βunsoyວuɓd∖	Korean numbering 1 (* chosung).		
Section Formattin	g Properties		
losiboznntis/	Endnote numbering— Chinese Zodiac numbering 3 (* zodiac3).		
bosiboznntis/	…寅・玨・千 (Sosiboz *) S prinedmun osiboS eseninO —prinedmun etonbn∃		
)aftnnzodiac	…丙.乙.甲(haiac *) h gninedmun asiboZ esenina —gninedmun etonbn∃		
\aftnngbnuħk	Endnote Chinase numbering 4 (*gb4).		
lmundpnnf6/	Endnote Chinese numbering 3 (*gb3).		
bmundpnnfe/	Endnote Chinese numbering 2 (*gb2).		
mundpnnf6/	Endnote Chinese numbering 1 (*gb1).		
ebenegnntte/	Endnote Korean numbering 2 (*ganada).		
\aftnndbar	Endnote double-byte numbering (*dbchar).		
≯mundbnnîts ∕	Endnote Kanji numbering 4 (4mundb*).		
}tmundbnnîts	Endnote Kanji numbering 3 (*dbnum3).		
bmundbnnîts∕	Endnote Kanji numbering with the digit character (*dbnum2).		
mundbnntts/	Endnote Kanji numbering without the digit character (*dbnum1).		
munonntis/	Endnote Circle numbering (*circlenum).		
gnusodɔnnît⊾/	Endnote Korean numbering 1 (*chosung).		
lɔɕiboznntł/	Footnote numbering— Chinese Zodiac numbering 3 (* zodiac3).		
httnnzodiacd	寅 任 午 (Sosiboz *) S gninədmun osiboZ əsəninƏ —gninədmun ətontoo-T		
)ttnnzodiac	Footnote numbering 一〇hinese Zodiac numbering 1(* zodiac1) 		

/adjustrightAdjust right indent.Document Formatting Properties/dgmarginGrid to follow margins.Index Entries/yxePronunciation for index entry.

APPENDIX C: INDEX OF RTF CONTROL WORDS

The following table contains a list of each RTF control word, the name of the section where it may be found, and a brief description of the type of control word. The types are described in the following table.

Note In the following comprehensive table, the names of all control words that are new to Microsoft Word version 7.0 are followed by an asterisks (*) and the names of all control words that are new to Microsoft Word 97 are followed by two asterisks (**).

lacf	Psociated Character Properties	əulsV
sdese/	Psociated Character Properties	Toggle
wsdb/	Positioned Objects and Frames	əulsV
* Abslock	Positioned Objects and Frames	٤١٩٩
usds/	Positioned Objects and Frames	əulsV
ds/	Pssociated Character Properties	Toggle
~\	Special Characters	Symbol
{\	Special Characters	Symbol
h	Special Characters	Symbol
У	Special Characters	Symbol
٦_	Special Characters	Symbol
	Special Characters	Symbol
<i>;</i>	Special Characters	Symbol
*/	Special Characters	Symbol
-1	Special Characters	Symbol
γ	Special Characters	Symbol
Control word	Described in section	Type

** Amundbnntts/	New Control Words Created by Asian Versions of Word 97	٦
** bmundbnnfis/	New Control Words Created by Asian Versions of Word 97	Flag
** mundbrnitis/	New Control Words Created by Asian Versions of Word 97	E1ag
** \sdbnnfis/	New Control Words Created by Asian Versions of Word 97	Flag
** munɔnnfiɛ/	New Control Words Created by Asian Versions of Word 97	اب اعن ا
** ըուջօժշոտքե	New Control Words Created by Asian Versions of Word 97	
idənnəfis/	Properties	 E 90
)aftnnauc	Properties Properties	Flag
)aftnnar	Properties	Flag
olennite/	Properties	Flag
/aftncn	Properties	Destination
įdnits/	Properties	Flag
sts/	Properties	ənlaV
ts/	Properties	əulaV
/sexbuq	Associated Character Properties	ənlaV
sətonbnəs/	Pocument Formatting Properties	ЕІзд
)aenddoc	Pocument Formatting Properties	ЕІзд
upe\	Associated Character Properties	ənlaV
** thgintenjas/	New Control Words Created by Asian Versions of Word 97	Flag
əvitibbs/	Style Sheet	Flag

		-
gnsis/	Psociated Character Properties	əuls√
is/	Pssociated Character Properties	Toggle
įtntis/	Pocument Formatting Properties	٦
)aftnstart	Properties Properties	əulsV
)aftnsepc	Pocument Formatting Properties	Destination
dəsnita/	Pocument Formatting Properties	Destination
tnosterntia/	Pocument Formatting Properties	
tistseintis/	Properties	<u>-</u> : بـ اعن
** lɔsiboznnits/	New Control Words Created by Asian Versions of Word 97	<u></u> ۲-130
** bɔsiboznnfts/	New Control Words Created by Asian Versions of Word 97	Elag
** ɔsiboznnts/	Wew Control Words Created by Asian Versions of Word 97	Flag
)aftnnruc	Properties Properties	Flag
)aftnnric	Properties	Flag
** lmundgnnfte/	New Control Words Created by Asian Versions of Word 97	Flag
** Amundgnnfis/	New Control Words Created by Asian Versions of Word 97	Flag
** bmundgnnfb/	New Control Words Created by Asian Versions of Word 97	Flag
** mundჹnn카ຣ/	New Control Words Created by Asian Versions of Word 97	Flag
** sbsnsgnnfis/	New Control Words Created by Asian Versions of Word 97	
** 1mundbrn11s/	New Control Words Created by Asian Versions of Word 97	Elag

/psckground **	Word 97 RTF for Drawing Objects (Shapes)	Destination
d/	Character Formatting Properties	ι οддιε
/author	noination Group	Destination
dne\	Psociated Character Properties	
wins/	Psociated Character Properties	Toggle
əuoulus/	Properties Properties	Toggle
dblus/	Pssociated Character Properties	Toggle
pine/	Associated Character Properties	Toggle
lus/	Associated Character Properties	Toggle
/atristart	Comments (annotations)	Destination
bn91156/	Comments (annotations)	Destination
əmitnts/	Comments (annotations)	Destination
latnref	Comments (annotations)	Destination
bints/	Comments (annotations)	Destination
/atnicn	Comments (annotations)	Destination
/atnauthor	Comments (annotations)	Destination
astrike/	Properties Properties	Toggle
peyse/	Properties Properties	Toggle
sdesse/	Psociated Character Properties	Toggle
ltuos/	Associated Character Properties	Toggle
** Ngqsians/	Unicode RTF	əulsV
isns/	Character Set	Flag
/snnotprot	Properties	Flag
noitstonns/	Comments (annotations)	Destination
** Vixəimins/	New Control Words Created by Asian Versions of Word 97	əulaV
jis/	Style Sheet	Flag
/allprot	Properties	Elag

6617	Paragraph Text	/prdrdashd **
Flag	Paragraph Borders	/prdrdash
Sula	Paragraph Borders	/brdrcf
Flag	Paragraph Borders	/brdrbtw
Flag	Paragraph Borders	/brdrbar
Flag	Paragraph Borders	/brdrb
ənlaV	Properties	/brdrartN **
Flag	Paragraph Borders	xod/
Sula	Color Table	ənld/
Sula	Pictures	** Niquqild/
₽ulsV	Pictures	** biuqild/
₽ulsV	Pictures	** Nptagild/
Destination	Вооктагкя	/bkmkstart
Flag	Macintosh Edition Manager Publisher Objects	qndymyd/
Destination	Bookmarks	/pkmkend
۹ulaV	Bookmarks	/рқшқсоц
əulaV	Bookmarks	/pkmkcolf
ənlaV	Section Formatting Properties	nxenid/
əulaV	Section Formatting Properties	nxəfnid/
₽ulsV	Pictures	nid/
Flag	Paragraph Shading	/bgvert
Flag	Paragraph Shading	/bghoriz
Flag	Paragraph Shading	/bgfdiag
Flag	Paragraph Shading	/bgdkvert
Flag	Paragraph Shading	/bgdkhoriz
Flag	Paragraph Shading	/bgdkfdiag
Flag	Paragraph Shading	/pdqkqctoss
Flag	Paragraph Shading	/pdqkcross
Flag	Paragraph Shading	/bgdkbdiag
Flag	Paragraph Shading	/pdqcross
Flag	Paragraph Shading	/pdcross
Flag	Рагадгарh Shading	bgibdg/
Flag	Properties	/pqpthdr **

/csbs	Properties	Toggle
/pxe	lndex Entries	Flag
miłqud/	Intormation Group	Destination
təllud/	Special Characters	Symbol
/prsp	Paragraph Borders	
	Properties	<u> </u>
/brkfrm	Document Formatting	Е Іад
/prdrwavydb **	Paragraph Text	Flag
/prqrwsvy **	Paragraph Text	Flag
/brdrw	Paragraph Borders	ənlaV
/brdrtriple **	Paragraph Text	Flag
/brdrtnthtnsg **	Paragraph Text	Flag
/prdrtnthtnmg **	Paragraph Text	Flag
/prdrtnthtnlg **	Paragraph Text	Flag
/prdrtnthsg **	Paragraph Text	Flag
/brdrtnthmg **	Paragraph Text	—. н ізд
/brdrtnthlg **	Paragraph Text	<u></u> : ۱۹۵
/brdrthtnsg **	Paragraph Text	<u></u> н ізд
/brdrthtnmg **	Paragraph Text	<u></u> н ізд
/brdrthtnlg **	Paragraph lext	<u></u> нізд
/brdrth	Paragraph Borders	<u>г</u> ад
/brdrt	Paragraph Borders	<u>г</u> ад
/brdrsh	Paragraph Borders	 ۲۱۹۵
/brdrs		 ۲۱۹۵
/brdrr		 لـامع
/brdrl		6
	Baradraph Borders	
	by Asian Versions of Word	
brdrframe **	New Control Words Created	Flag
/brdrengrave **	Paragraph Text	Flag
/prdremboss **	Paragraph Text	Flag
/brdrdot	Paragraph Borders	Flag
/prdrdb	Paragraph Borders	Flag
/prdrdashsm **	Paragraph Text	Flag
/brdrdashdotstr **	Paragraph Text	Flag
/prdrdashdd **	Paragraph Text	Flag

bgn Special C	Special Characters	Symbol
Special C Special C	Special Characters	lodmyS
D Isioeq Special C	Special Characters	lodmyS
D Special C	Special Characters	lodmyS
Adpl Special C	Special Characters	lodmyS
D leijal C Special C	Special Characters	Symbol
hdate Special C	Special Characters	lodmyS
hctpatu ** Character	Character Text	əulsV
hcbpatN ** Character	Character Text	əulsV
hbrdr ** Charactei	Character Text	Flag
hbgvert ** Character	Character Text	Flag
hbghoriz ** Character	Character Text	Flag
hbgfdiag ** Character	Character Text	Flag
hbgdkvert ** Character	Character Text	Flag
hbgdkhoriz ** Charactei	Character Text	Flag
hbgdkfdiag ** Character	Character Text	Flag
hbgdkdcross **	Character Text	Flag
ppdqkcross **	Character Text	Flag
hbgdkbdiag **	Character Text	Flag
hbgdcross **	Character Text	Flag
ppacross **	Character Text	Flag
hbgbdiag **	Character Text	Flag
Special C	Special Characters	Symbol
harscalexN ** Character	Character Text	əulsV
9ridN ** by Asian 97	New Control Words Created by Asian Versions of Word 97	əulsV
Paragrap Paragrap	Рагадгарh Shading	əulsV
Propertie	Character Formatting Properties	əulsV
elix Table De	Table Definitions	ənlaV
Special C	Special Characters	Symbol
Character Propertie	Character Formatting Properties	əulsV
bpat Peragrap	Рагадгарh Shading	əulsV
bropertie	Character Formatting Properties	
ategory *	Information Group	Destination

umloo/	Special Characters	Symbol
/colsx	Section Formatting Properties	ənlaV
/colsr	Section Formatting Properties	əulaV
/cols	Section Formatting Properties	əulsV
/colortbl	Color Table	Destination
/colno	Section Formatting Properties	əulsV
/clvertalt **	Paragraph Text	Flag
** วไธ่างไว/	Paragraph Text	Flag
** distretial	Paragraph Text	Flag
** ltxtbri	Paragraph Text	Flag
/cltxlrtb **	Paragraph Text	Flag
նսpysiว/	Table Definitions	əulsV
/clmrg	Table Definitions	Flag
)clmgf	Table Definitions	Flag
/clcfpat	Table Definitions	əulsV
/clcbpat	Table Definitions	Sula
/clbrdrt	Table Definitions	Flag
/clbrdrr	Table Definitions	Flag
/clbrdrl	Table Definitions	Flag
/clbrdrb	Table Definitions	Flag
/clbgvert	Table Definitions	Flag
/clbghoriz	Table Definitions	Flag
bsibfdlə/	Table Definitions	Flag
/clbgdkvert	Table Definitions	Flag
/clbgdkhor	Table Definitions	Flag
/clbgdkfdiag	Table Definitions	Flag
/clbgdkdcross	Table Definitions	Flag
/clbgdkcross	Table Definitions	Flag
/clbgdkbdiag	Table Definitions	Flag
/clbgdcross	Table Definitions	Flag
/clbgcross	Table Definitions	Flag
/clbgbdiag	Table Definitions	Flag
)chtime	Special Characters	Symbol
** Ngnbhahə/	Character Text	alısV

up\	Character Formatting Properties	alie√
qsmidib/	Pictures	əulsV
** nigາamgb/	New Control Words Created by Asian Versions of Word 97	٦lag
/dfrxst **	Paragraph Text	alısV
/dfrstop **	Paragraph Text	Sule
/dfrstart **	Paragraph Text	aulsV
յգլւաքxty	Positioned Objects and Frames	əulsV
/dfrmtxtx	Positioned Objects and Frames	əulsV
/dfrdateN **	Paragraph Text	əulaV
/dfrauthV	Paragraph Text	əulsV
bətələb/	Character Formatting Properties	Τοggle
deftab	Properties	əulaV
** əזgrafiandi	Properties	əulaV
busitab/	Properties	əulsV
/defformat	Properties	٦
/deff	Font Table	əulsV
** Jaie	sbləi٦	Flag
/datafield	sbləi٦	Destination
Jcvmme	Properties	Flag
/ctrl	Style Sheet	Flag
sə/	Character Formatting Properties	əulaV
/creatim	Information Group	Destination
** Nətate/	Character Text	۹ulaV
/crauthN **	Character Text	Sule
/cbð	Code Page Support	Sulue
/combany *	Information Group	Destination
/comment	Information Group	Destination
/colw	Section Formatting Properties	əulaV

/qbcoqtob	Drawing Objects	Flag
/dpcodescent	Drawing Objects	SulısV
/dpcodcenter	Drawing Objects	Flag
/dpcodbottom	Drawing Objects	Flag
/dpcodabs	Drawing Objects	Alue
/qbcoporder	Drawing Objects	Flag
/dpcobestfit	Drawing Objects	Flag
/dpcoaccent	Drawing Objects	Flag
/dpcoa	Drawing Objects	əulsV
/dpcallout	Drawing Objects	Flag
/dpastartw	Drawing Objects	əulsV
/dpastartsol	Drawing Objects	Flag
/dpastartl	Drawing Objects	əulsV
/dpastarthol	Drawing Objects	Flag
/dparcflipy	Drawing Objects	Flag
/dparcflipx	Drawing Objects	Flag
/dparc	Drawing Objects	Flag
wbn9sdb/	Drawing Objects	əulsV
losbn9sqb/	Drawing Objects	Flag
lbn9sqb/	Drawing Objects	۹ulaV
lodbn9sqb/	Drawing Objects	Flag
/qојоск	Drawing Objects	Flag
todhot/	Drawing Objects	əulsV
/docvar *	Document Variables	Destination
** NəctypeN	Properties	əulaV
/qoctemp	Properties	Flag
ишоээор\	Information Group	Destination
/dobypara	Drawing Objects	Flag
/qop\bsge	Drawing Objects	Flag
/dobymargin	Drawing Objects	Flag
)qopxbage	Drawing Objects	Flag
/dobxmargin	Drawing Objects	Flag
/umlooxdob	Drawing Objects	Flag
op\	Drawing Objects	Destination
** dbdanldfnb/	Properties	Flag

bilosənilqb/	Drawing Objects	Flag
lsqənilqb/	Drawing Objects	Flag
wollodənilqb/	Drawing Objects	Flag
/dplinegray	Drawing Objects	Sulıs
/dplinedot	Drawing Objects	Flag
dssbanilqb/	Drawing Objects	Flag
obobsbanilqb/	Drawing Objects	Flag
obsbanilqb/	Drawing Objects	Flag
/dplinecor	Drawing Objects	Sulıs
/dplinecog	Drawing Objects	Sulıs
/dplinecob	Drawing Objects	Sulıs
ənilqb/	Drawing Objects	Flag
/qbâւonb	Drawing Objects	Flag
/dpfillpat	Drawing Objects	Alue
laqpfillfdp/	Drawing Objects	Flag
/dpfillfggray	Drawing Objects	Alue
/dpfillfgcr	Drawing Objects	Alue
/dpfillfgcg	Drawing Objects	Sula
/dpfillfgcb	Drawing Objects	Sula
/dpfillbgpal	Drawing Objects	Flag
/dpfillbggray	Drawing Objects	SulısV
/dpfillbgcr	Drawing Objects	Sulue
/dpfillbgcg	Drawing Objects	aulsV
/dpfillbgcb	Drawing Objects	Alue
/qbeuqdıonb	Drawing Objects	Flag
əsqilləqb/	Drawing Objects	Flag
/qbconut	Drawing Objects	Alue
/dpcottriple	Drawing Objects	Flag
/dpcotsingle	Drawing Objects	Flag
/dpcotright	Drawing Objects	Flag
/dpcotdouble	Drawing Objects	Flag
/dpcosmarta	Drawing Objects	Flag
/dpcooffset	Drawing Objects	
/dpcominusy	Drawing Objects	Flag
/dpcominusx	Drawing Objects	Flag
/qbcolength	Drawing Objects	ənlaV

sətonbnə/	Properties	Flag
/endnhere	Section Formatting Properties	Flag
)/suddoc	Document Formatting Properties	Flag
yspna/	Special Characters	Symbol
/emspace	Special Characters	Symbol
** qildîmə/	Pictures	Flag
ysebmə/	Special Characters	Symbol
** odmə/	Character Text	Toggle
snimbə/	Information Group	əulsV
λαγ	Information Group	əulsV
/dxfrtext	Frames Positioned Objects and	aulaV
sp\	Section Formatting Properties	ənlaV
/dropcapt	Positioned Objects and Frames	əulsV
/dropcapli	Positioned Objects and Frames	əuls√
əzisydb/	Drawing Objects	əulsV
/qbλ	Drawing Objects	Sula
əzisxqb/	Drawing Objects	əulsV
xdp\	Drawing Objects	Value
/dptxbxtext	Drawing Objects	Destination
/dptxbxmar	Drawing Objects	əulsV
/dptxbx	Drawing Objects	Flag
/dpshady	Drawing Objects	əulsV
xbshady/	Drawing Objects	ənlaV
wobshadb/	Drawing Objects	Flag
/qbronndr	Drawing Objects	Flag
/dprect	Drawing Objects	Flag
/qbbty	Drawing Objects	Sula
/qbtx	Drawing Objects	Sula
)dppolyline	Drawing Objects	Flag
uoβλjoddp\	Drawing Objects	Flag
/dppolycount	Drawing Objects	Sula
wənilqb/	Drawing Objects	alue

** Nəqyiti/	Form Fields	əulsV
** txəttetat/	Form Fields	Destination
** Nəzisti/	Form Fields	Value
** Nsəil/	Form Fields	Value
** NjfrecalcN	Form Fields	Value
/ffprot <i>N</i> **	Form Fields	Alue
** Vistar Wite	Form Fields	Value
** N qlə hnwo ff/	Form Fields	Alue
** əmɛnłł/	Form Fields	Destination
** nəlxsmî/	Form Fields	aulsV
** ++	Form Fields	Destination
** Nsqdîî/	Form Fields	aulsV
/tthelptext **	Form Fields	Destination
** Nxodtsilssdft/	Form Fields	aulsV
** 1ffformat	Form Fields	Destination
/ffexitmcr **	Form Fields	Destination
/ffentrymcr **	Form Fields	Destination
** txəftəbit/	Form Fields	Destination
** səriəbil/	Form Fields	Value
201	Properties	
/tet	Document Formatting	Sulue
	Font Table	Flag
	Font Table	Value
/tpidi	Font Table	Flag
** Useidł/	Font Table	Suls
tlet/	Font Table	Destination
/facingp	Properties	Flag
** ojusej/	New Control Words Created by Asian Versions of Word 97	əulsV
Ą	Properties	əulsV
/əxbsµıtu	Properties	E1ag
włpudxə/	Character Formatting Properties	ənlaV
pudxə(Character Formatting Properties	ənlaV
əɔɛdsuə/	Special Characters	Symbol

mnnsoł/	File Table	aulsV
/formshade	Properties	Flag
/formprot	Properties	Flag
** bləitorn/	Form Fields	Destination
/formdisp	Document Formatting Properties	Flag
9tontoot/	Footnotes	Destination
/footery	Section Formatting Properties	əulsV
/footerr	Headers and Footers	Destination
/footerl	Headers and Footers	Destination
/footerf	Headers and Footers	Destination
/footer	Headers and Footers	Destination
\fonttbl	Font Table	Destination
fontfile	Font Table	Destination
fontemb	Font Table	Destination
lint/	Font Table	Flag
/fnetwork	eldsT eliF	Flag
* əmsn1/	Font Table	Destination
n1/	Style Sheet	ənlaV
/fmodern	Font Table	Flag
\tldtype **	sbləi¬	Destination
/fldrslt	sbləi٦	Destination
/fldpriv	sbləi٦	Flag
/Įldlock	sbləi٦	Flag
tsniblt/	sbləi٦	Destination
tib9bl1/	sbləi٦	Flag
/flddirty	sbləi٦	Flag
/fidalt	Properties	Flag
ldtəlit/	File Table	Destination
)file	File Table	Destination
bləił/	sbləi٦	Destination
biì/	eldsT eliF	ənlaV
!J\	Paragraph Formatting Properties	əulsV
/fftypetxtM **	Form Fields	Value

** Amundbnn 11 /	New Control Words Created by Asian Versions of Word 97	F1ag
** bmundbnntì/	New Control Words Created by Asian Versions of Word 97	
** mundbnntì/	New Control Words Created by Asian Versions of Word 97	
/ffnndbar **	New Control Words Created by Asian Versions of Word 97	
** munənnit	New Control Words Created by Asian Versions of Word 97	E139
**	New Control Words Created by Asian Versions of Word 97	Elag
ittnnchi	Properties Properties	٤Iag
)ftnnauc	Properties	Flag
/ftnnar	Properties	Flag
)ftnnalc	Properties	Flag
lintt/	Font Table	Flag
/ttncn	Properties	Destination
įdn i l⁄	Properties Properties	Flag
)ftnalt	Properties	Flag
/ttech	Font Table	Flag
ssiwsł/	Font Table	Flag
/fscript	Font Table	Flag
۲ts	Properties	ənlaV
** txətmort/	Properties	Flag
/froman	Font Table	Flag
/frelative	File Table	Value
/fracwidth	Properties	E1ag
/tprq	Font Table	əulsV

sobbilsv}/	File Table	٦
/tttruetype	Font Table	Flag
ដ្រាវា/	Properties	Flag
/ftnstart	Properties	əulaV
)ttnsepc	Properties	Destination
dəsuti/	Properties	Destination
)ftnrstpg	Properties	Flag
/ftnrstcont	Properties	Flag
)ftnrestart	Properties	Flag
** lɔsiboznntł/	New Control Words Created by Asian Versions of Word 97	Flag
** bosiboznntł/	New Control Words Created by Asian Versions of Word 97	Flag
** seiboznntł/	New Control Words Created by Asian Versions of Word 97	Flag
)ftmruc	Properties Properties	Flag
)ftmrfic	Properties	Flag
** lmundဥnnttl	New Control Words Created by Asian Versions of Word 97	Flag
**	New Control Words Created by Asian Versions of Word 97	Flag
** bmundpnnti/	New Control Words Created by Asian Versions of Word 97	F1ag
** ៣ոոժքույ՝	New Control Words Created by Asian Versions of Word 97	Flag
** sbenegnnii/	New Control Words Created by Asian Versions of Word 97	Elag
** }mundbnniì/	New Control Words Created by Asian Versions of Word 97	Flag

/µλbµbsı	Paragraph Formatting Properties	Τοggle
zĵołłdy/	Properties	əulaV
/μλbµcouzec	Properties Properties	əulaV
yhypicaps	Properties Properties	Toggle
γλbµsnto	Properties	Toggle
אר/ ארי	Information Group	əulsV
/hisrc **	Word 97 RTF for Drawing Objects (Shapes)	əulsV
/µווסכ **	Word 97 RTF for Drawing Objects (Shapes)	alue
/hlinkbase **	Information Group	əulsV
** יזוע/	Word 97 RTF for Drawing Objects (Shapes)	əulsV
* ։կք։լվք։վ/	gnijdgildgiH	əulsV
/µesdery	Section Formatting Properties	əulaV
/µeaderr	Headers and Footers	Destination
/headerl	Headers and Footers	Destination
/headerf	Headers and Footers	Destination
/header	Headers and Footers	Destination
/guttersxn	Section Formatting Properties	əulaV
/gutter	Properties	əulaV
** ldtbirg/	New Control Words Created by Asian Versions of Word 97	Destination
/green	Color Table	ənlaV
/acw **	New Control Words Created by Asian Versions of Word 97	əulsV
,** b/	New Control Words Created by Asian Versions of Word 97	Destination
sttnbilsvt/	File Table	Flag
)îvalidmac	File Table	Flag
stqhbilsvt/	eldsT eliF	6el3

!I/	Paragraph Formatting Properties	aulaV
** JX919v9l/	eldsT tsiJ	əulaV
** Utstartatvel/	eldsT tsiJ	əulaV
** Nəɔsqələvəl/	eldsT tsiJ	əulsV
** Nəɔsqavərdiəvəl/	eldsT tsiJ	əulsV
** NvelprevN	eldsT tsiJ	aulaV
** Nbiolevel/	eldsT tsiJ	aulaV
/levelnumbers **	eldsT tsiJ	Destination
** Vt1st2e1orlevel/	eldsT tsiJ	əulsV
** Vəfnləvəl/	eldsT tsiJ	əulsV
** VievellegalN	eldsT tsiJ	əulsV
** Nɔįləvəl/	eldsT tsiJ	əulsV
** V ‡nəbniləvəl/	eldsT tsiJ	əulsV
** / wolloîləvəl/	eldsT tsiJ	əulsV
level/	Paragraph Formatting Properties	əulsV
)ldblquote	Special Characters	Symbol
նսել/	Character Formatting Properties	əulsV
ədeɔspuɐl/	Pocument Formatting Properties	LIag
/keywords	Information Group	Destination
/кеусоде	Style Sheet	Destination
/kerning	Character Formatting Properties	əulaV
/keepn	Paragraph Formatting Properties	Flag
/keep	Paragraph Formatting Properties	Flag
** qildpəqį/	Pictures	Flag
exi/	Index Entries	Flag
ld1ni/	Paragraph Formatting Properties	Flag
ołni/	Information Group	Destination
/impr **	Character Text	Тоддіє
** \ i/	Paragraph Text	əulsV
bi/	Information Group	
!\	Properties	Toggle

140	Page
170	aneq

	troogin2 lesigdooT thesersiM	
/ltrrow	Table Definitions	Flag
/ltrpar	Paragraph Formatting Properties	Elag
/ltrmark	Special Characters	Symbol
/ltrdoc	Document Formatting Properties	Flag
/itrch	Character Formatting Properties	Flag
** SI/	eldsT tzi⊥	Sulıs
/lduote	Special Characters	Symbol
uxsdɔspul/	Section Formatting Properties	Flag
** txətteil/	Paragraph Text	Destination
** Nbiətslqməttsil/	eldsT tzi⊥	əulsV
** Nəlqmistsil/	List Table	aulsV
** UnbdtrestarthdnN	List Table	aulsV
** Vtstaetartuverridestartuv	List Table	aulsV
** U tsmotetrideformatU	List Table	aulsV
** V tnuosebriteveril/	List Table	aulsV
** əmsntsil/	eldsT tsi⊥	Destination
** Nbitsil/	eldsT tsi⊥	۹ulaV
* Isvani/	Information Group	Value
səlytsini/	Properties	Flag
/linkself	Objects	Flag
xənil/	Section Formatting Properties	əulsV
/linestarts	Section Formatting Properties	ənlsV
/linestart	Properties	əulsV
/linerestart	Section Formatting Properties	ЕІад
əbsqqənil/	Section Formatting Properties	ЕІад
bomənil/	Section Formatting Properties	ənisV
linecont	Section Formatting Properties	ЕІад
loɔtədənil/	Section Formatting Properties	ЕІад
enil/	Special Characters	Symbol

/nofwords	Information Group	SulsV
səɓɛdion/	Information Group	SulsV
/nofcharsws **	Information Group	ənlaV
/nofchars	Information Group	Sula
/noextrasprl	Properties Properties	<u>ا</u> اعو
/nocolbal	Properties	Flag
)nextfile	Properties	Destination
/wswcsb _{**}	Properties	Flag
om/	Information Group	
nim/	Information Group	əulsV
/margtsxn	Section Formatting Properties	əulsV
/margt	Properties	ənlaV
/mลเgเรxn	Section Formatting Properties	əulaV
/աուց։	Properties	əulaV
/margmirror/	Properties	Flag
/marglsxn	Section Formatting Properties	alueV
/ացւցլ	Properties	əulaV
/margbsxn	Section Formatting Properties	əulsV
/margb	Properties	əulsV
/manager *	Information Group	Destination
/makebackup	Properties	Flag
toipsm/	Pictures	Flag
)mac	Character Set	Flag
/lytprtmet **	Properties	E1ag
/lytexcttp **	Properties	Flag
/ltrsect	Section Formatting Properties	Elag

CAL AREQ

	treagu2 leoiadeoT #cocreiM	
/objlock	Objects	Flag
/hilldo/	Objects	Flag
/objicemb	Objects	Flag
** lmłdo/	Objects	Flag
dįdo/	Objects	aulsV
dməįdo/	Objects	Flag
tobject	Objects	Destination
stsbįdo/	Objects	Destination
/objcropt	Objects	Alue
/objcropr	Objects	Alue
/objcropl	Objects	Alue
/objcropb	Objects	Sulue
sssloįdo/	Objects	Destination
/objautlink	Objects	Flag
* Aqttsįdo/	Objects	Flag
ngilsįdo/	Objects	Alue
ssilsįdo/	Objects	Destination
/noxlattoyen **	Properties	Flag
/nowrap	Positioned Objects and Frames	٤١٩д
/nowidctlpar	Paragraph Formatting Properties	Flag
/vonitrispc **	Properties	Flag
bnidston/	Properties	Flag
/uosupersub	Character Formatting Properties	Flag
** lu101956201/	Document Formatting Properties	Flag
** biı g ənilqsnson/	New Control Words Created by Asian Versions of Word 97	Flag
** bnsqrtexpan/	New Control Words Created by Asian Versions of Word 97	ЕІзд
///woushppict **	Pictures	Гіад
ənilon/	Paragraph Formatting Properties	ЕІад
** bsəlon/	Properties	E1ag

/bdprdrhead **	Properties	Flag
/babrarfoot **	Properties	Flag
/bdprdrb **	Properties Properties	٦
/bcs	Character Set	Flag
/bc	Character Set	Flag
/bsrd	Paragraph Formatting Properties	Flag
/bsr	Special Characters	Symbol
/baperw	Properties	əulsV
/bsperh	Properties	əulaV
** əsonsq/	Font Table	Destination
/bsgebb	Paragraph Formatting Properties	Flag
/bsge	Special Characters	Symbol
/overlay **	Paragraph Text	Flag
** Nləvələniltuo/	Paragraph Text	Sula
ltuo/	Character Formatting Properties	Toggle
otbirul	Properties	Flag
operator/	Information Group	Destination
** qsimewrap	Properties	Flag
wįdo/	Objects	əulsV
916bqu[do/	Objects	Flag
∖objtransy	Objects	əulsV
əmiłįdo/	Objects	Destination
dusįdo/	Objects	Plag
əzistəsįdo/	Objects	Flag
tobjsect/	Objects	Destination
/objscaley	Objects	۷alue
/objscalex	Objects	۷alue
duqįdo/	Objects	Flag
** xoojdo/	Objects	Flag
əmsnįdo/	Objects	Destination

/bâuµusc	Section Formatting Properties	Flag
uquɓd\	Section Formatting Properties	əulsV
** lmundbnpg/	New Control Words Created by Asian Versions of Word 97	Flag
_{**} אաոոզջոց	New Control Words Created by Asian Versions of Word 97	Flag
** bmnndbnpq/	New Control Words Created by Asian Versions of Word 97	Flag
_{**} աոսզ ɓս ɓd\	New Control Words Created by Asian Versions of Word 97	Flag
** sbsnada/	New Control Words Created by Asian Versions of Word 97	Flag
/bâuqec	Section Formatting Properties	Flag
_{**} յաոսզթսնd\	New Control Words Created by Asian Versions of Word 97	Flag
_{**} אասոնեզ/	New Control Words Created by Asian Versions of Word 97	Flag
/bâucouț	Section Formatting Properties	Flag
/bâucunu _{**} wnuɔubd	New Control Words Created by Asian Versions of Word 97	Flag
**	New Control Words Created by Asian Versions of Word 97	Flag
uxsybd\	Section Formatting Properties	ənlaV
/bdprdrt **	Properties	Flag
/bâprdrsnap **	Properties	Flag
/bցեւզււ _{**}	Properties	Flag
/pgbrdropt <i>W</i> **	Properties	əulsV
/bdprdrl **	Properties	Flag
/bicpbb	Pictures	ənlaV
----------------	--	-------
/bicpmb	Pictures	Flag
bybd/	Positioned Objects and Frames	Flag
/bµшւმ	Positioned Objects and Frames	Flag
/bµсој	Positioned Objects and Frames	Flag
uxswbd/	Section Formatting Properties	əulsV
** lɔsibozn몣q/	New Control Words Created by Asian Versions of Word 97	Elag
** bosibozngq/	New Control Words Created by Asian Versions of Word 97	Flag
** seibozngq/	New Control Words Created by Asian Versions of Word 97	Flag
/bâuλ	Section Formatting Properties	ənlaV
/bâux	Section Formatting Properties	əulaV
/bduncւա	Section Formatting Properties	Flag
/bduncitr	Section Formatting Properties	Flag
/pgnstarts	Section Formatting Properties	ənlaV
/pgnstart	Properties	əulaV
/pgnrestart	Section Formatting Properties	Flag
/bdulcrm	Section Formatting Properties	Flag
/pgnicitr	Section Formatting Properties	Flag
dsuyuɓd\	Section Formatting Properties	Flag
usuyuɓd\	Section Formatting Properties	Flag
ุ่มรากการเป็น	Section Formatting Properties	Flag
ysuyuɓd\	Section Formatting Properties	Flag

** lmundbnd/	New Control Words Created by Asian Versions of Word 97	Flag
** Amudbnd/	New Control Words Created by Asian Versions of Word 97	Flag
** bmudbnd/	New Control Words Created by Asian Versions of Word 97	٦
∗∗ ɓunsoyɔud∖	New Control Words Created by Asian Versions of Word 97	Flag
/bucţ	Bullets and Numbering	əulaV
/pncard	Bullets and Numbering	Flag
/bucsps	Bullets and Numbering	Toggle
qud\	Bullets and Numbering	Toggle
** boəuisnq/	New Control Words Created by Asian Versions of Word 97	Flag
** oəuisnq/	New Control Words Created by Asian Versions of Word 97	Flag
/buscross	Bullets and Numbering	Flag
ud\	Bullets and Numbering	Destination
hmmetafile	Pictures	əulsV
nislq/	Properties	Flag
lsogwoid/	Pictures	əulsV
wpicw	Pictures	əulsV
/pict	Pictures	Destination
γρίςscaley	Pictures	əulsV
xəlsəsələ/	Pictures	əulsV
beicscaled	Pictures	Flag
/picprop **	Pictures	Destination
/pichgoal	Pictures	əulaV
/bich	Pictures	Value
/piccropt	Pictures	Value
/piccropr	Pictures	Value
/piccropl	Pictures	Value
/biccropb	Pictures	Aalue

huunna uudi		
** Ndtusha/	Paragraph Text	Sulue
/budt	Bullets and Numbering	Flag
/budl	Bullets and Numbering	Flag
/budc	Bullets and Numbering	Flag
/bubtev	Bullets and Numbering	Flag
/buordt	Bullets and Numbering	Flag
/buord	Bullets and Numbering	Flag
Juomnance	Bullets and Numbering	Flag
/bulvicont	Bullets and Numbering	Flag
۷podiving/	Bullets and Numbering	Flag
tidiving/	Bullets and Numbering	Flag
lvind/	Bullets and Numbering	əulsV
/bulcrm	Bullets and Numbering	Flag
/pnicitr	Bullets and Numbering	Flag
tn9bnind/	Bullets and Numbering	əulsV
inq/	Bullets and Numbering	Toggle
նսբվով/	Bullets and Numbering	Flag
** lmundbnd/	New Control Words Created by Asian Versions of Word 97	Flag
_{**}	New Control Words Created by Asian Versions of Word 97	Flag
** bmudbnd/	New Control Words Created by Asian Versions of Word 97	F1ag
** mudbnd/	New Control Words Created by Asian Versions of Word 97	Flag
** qildbnq/	Pictures	Flag
** sbensgn/	New Control Words Created by Asian Versions of Word 97	Flag
** sbensgnd/	New Control Words Created by Asian Versions of Word 97	Flag
stnq/	Bullets and Numbering	Value
łnd/	Bullets and Numbering	Value
/buqec	Bullets and Numbering	Flag
** }mundbnq/	New Control Words Created by Asian Versions of Word 97	Flag

xsod/	Positioned Objects and Frames	anira
(Gaugad)	Frames	
/bosnegv	Positioned Objects and	
xɓəusod\	Positioned Objects and Frames	əulsV
** lɔsiboznq/	New Control Words Created by Asian Versions of Word 97	F1ag
** bɔsiboznq/	New Control Words Created by Asian Versions of Word 97	Flag
** ɔsiboznq/	New Control Words Created by Asian Versions of Word 97	Flag
wjnud\	Bullets and Numbering	Flag
əuoujnud\	Bullets and Numbering	Flag
qpjnud\	Bullets and Numbering	Flag
pjnud\	Bullets and Numbering	Flag
nud	Bullets and Numbering	Toggle
/bunctm	Bullets and Numbering	Flag
/buncitr	Bullets and Numbering	Flag
/butxtb	Bullets and Numbering	Destination
prixta/	Bullets and Numbering	Destination
txətnq/	Bullets and Numbering	Destination
/pnstrike	Bullets and Numbering	Toggle
/pnstart	Bullets and Numbering	əulsV
dsud\	Bullets and Numbering	əulsV
/buzecivi	Bullets and Numbering	Destination
sdessud/	Bullets and Numbering	Toggle
** NprxstN	Paragraph Text	əulsV
** NprstopN	Paragraph Text	əulsV
/pnrstartV	Paragraph Text	əulsV
/pnrrgb <i>N</i> **	Paragraph Text	۷alue
/burbuprN **	Paragraph Text	Value
/pnrnot **	Paragraph Text	Flag
** NərnfcM	Paragraph Text	Value
/pnrestart	Bullets and Numbering	Flag
** NərdateN	Paragraph Text	aulsV

ßdvq/	Positioned Objects and Frames	Flag
/рурага	Positioned Objects and Frames	Flag
խտուց	Positioned Objects and Frames	F1ag
ojusduq/	Publisher Objects	F1ag
zsd\	Pocument Formatting Properties	ənlaV
/bsover	Pocument Formatting	Elag
/broptype *	Information Group	Value
/brobusme *	Information Group	Sula
** 9trivate/	Properties Properties	Destination
/printim	Information Group	Destination
stsbtning/	Properties Properties	Flag
/prcolbl	Properties Properties	Flag
/posyt	Positioned Objects and Frames	Flag
** tuoved/	Paragraph Text	Flag
** nivsod/	Paragraph Text	Flag
liysoq/	Positioned Objects and Frames	Flag
/bosλc	Positioned Objects and Frames	Flag
/bosyb	Positioned Objects and Frames	Flag
٨sod	Positioned Objects and Frames	əulsV
/bosxi	Positioned Objects and Frames	Flag
oxsod	Positioned Objects and Frames	Flag
lxsod/	Positioned Objects and Frames	Flag
ixsod/	Positioned Objects and Frames	Flag
/bosxc	Positioned Objects and Frames	Flag

/rtich	Properties	Flag
\rt f	RTF Version	Destination
/rslttxt	Objects	Flag
\rsltrtf	Objects	Flag
/rsltpict	Objects	Flag
/rsltmerge	Objects	Flag
/rsltbmp	Objects	Flag
)rquote	Special Characters	Symbol
/row	Special Characters	Symbol
\ri	Paragraph Formatting Properties	əulsV
mitvəv/	Information Group	Destination
/revtbl	Revision Marks	Destination
/revprot	Pocument Formatting Properties	Flag
/revprop	Properties	ənlaV
snoisivər/	Properties	Flag
hevised/	Character Formatting Properties	Toggle
** NIəbmttbvəv/	Character Text	ənlaV
/revdttm	Character Formatting Properties	əulaV
/revbar	Properties	ənlaV
** NIəbdiusvəv/	Character Text	SulsV
/revauth	Character Formatting Properties	əulaV
/result	Objects	Destination
/red	Color Table	۷alue
/rdblquote	Special Characters	Symbol
/dr	Paragraph Formatting Properties	Elag
lp/	Paragraph Formatting Properties	Flag
įp/	Paragraph Formatting Properties	Elag
/dc	Paragraph Formatting Properties	

** Nbnsqxəîɔəɛ/	New Control Words Created by Asian Versions of Word 97	ənlaV
** VIɔtlustəbtɔəz/	New Control Words Created by Asian Versions of Word 97	ənlaV
btɔəɛ/	Section Formatting Properties	Flag
/sect	Special Characters	Symbol
/26C	Information Group	۹ulaV
sdeos/	Character Formatting Properties	Toggle
svjs/	Paragraph Formatting Properties	Flag
əɓɛd≯dɛ/	Section Formatting Properties	Flag
/spkodd	Section Formatting Properties	Flag
)spknone	Section Formatting Properties	LIag
/spkeven	Section Formatting Properties	Flag
/spkcol	Section Formatting Properties	Flag
nobəsɛdɛ/	Style Sheet	Value
qs/	Paragraph Formatting Properties	əulaV
** bquotus/	Style Sheet	Flag
B2/	Paragraph Formatting Properties	ənlaV
sl	Paragraph Formatting Properties	ənlaV
/rxe	Index Entries	Destination
\rtlsect	Section Formatting Properties	Flag
/rtirow	Table Definitions	Flag
/rtipar	Paragraph Formatting Properties	Flag
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/rtidoc	Properties	Flag

** toiqqAk	Pictures	Destination
/shplockanchor **	Word 97 RTF for Drawing Objects (Shapes)	Flag
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** Nzd4s/	Word 97 RTF for Drawing Objects (Shapes)	aulaV
** Niwqis/	Word 97 RTF for Drawing Objects (Shapes)	əulaV
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)template	Properties	Destination
/tcu	Table of Contents Entries	Flag
/tcl	Table of Contents Entries	ənlaV
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** blləɔ}/	New Control Words Created by Asian Versions of Word 97	Flag
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/widctlpar	Paragraph Formatting Properties	Flag
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