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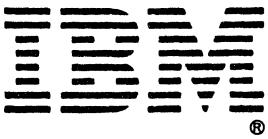
Document Content Architecture:

Revisable - Form - Text Reference

SC23-0758-0



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PREFACE

This publication describes Revisable-Form-Text Document Content Architecture. Revisable-Form-Text Document Content Architecture is intended for text-application programmers and others who need detailed information about revisable-form text in order to implement algorithms that interpret revisable-form-text documents or that produce documents conforming to Revisable-Form-Text Document Content Architecture. You should be familiar with the concepts and terminology in the prerequisite publication.

The purpose of this book is to define the architecture of revisable-form-text documents that can be interchanged. It provides a comprehensive reference to the syntax and semantics of all revisable-form-text constructs from a design viewpoint.

This book does not describe any specific equipment or programs that may implement revisable-form text, nor does it describe any implementation subsets or deviations from the architectural description that may appear within any IBM revisable-form text product.

Revisable-Form-Text Document Content Architecture is an open-ended architecture and may be altered from time to time by IBM. Extensions and modifications to Revisable-Form-Text Document Content Architecture will be described in future editions of this book.

Special Notice to Readers

The IBM Office Information Architecture described in this document has been developed and does exist. Various aspects of the architecture are implemented in our product line. It remains IBM's intent, consistent with its June 1980 statement of direction to implement these architectures in IBM Office Systems in the manner described in that statement of direction.

How to Use This Book

Each construct defined by Revisable-Form-Text Document Content Architecture is specified using the following format:

Construct name (Mnemonic)

- Introductory description
- Format specification in tabular form
- Parameter specification
- Syntax rules
- Syntax exceptions
- Syntactical meaning
- Semantics
- Semantic exceptions.

This publication has six chapters.

- Chapter 1 introduces the basic concepts of the architecture.
- Chapter 2 provides an overview of the form and meaning of a revisable-form-text document.
- Chapter 3 describes the structured fields in a revisable-form-text data stream. It includes detailed information about the formatting declarations and the structured fields containing text in a revisable-form-text data stream.
- Chapters 4 and 5 include detailed information about the controls that can be embedded in the text in a revisable-form-text data stream. Chapter 4 describes multibyte controls. Chapter 5 describes 1-byte controls.
- Chapter 6 summarizes the exception architecture in Revisable-Form-Text Document Content Architecture.

Prerequisite Publication

- Office Information Architectures: Concepts, GC23-0765.

Related Publications

Publications that contain related conceptual information or serve as reference materials are:

- Document Content Architecture: Final-Form-Text Reference, SC23-0757
- Document Interchange Architecture: Concepts and Structures, SC23-0759
- Document Interchange Architecture: Document Library Services Reference, SC23-0760

- Document Interchange Architecture: Application Processing Services Reference, SC23-0761
- Document Interchange Architecture: Document Distribution Services Reference, SC23-0762
- Document Interchange Architecture: Transaction Programmer's Guide, SC23-0763
- Document Interchange Architecture: Interchange Document Profile Reference, SC23-0764.

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FIGURES

CHAPTER 1. INTRODUCTION TO REVISABLE-FORM TEXT

Revisable-Form-Text Document Content Architecture specifies how IBM office systems interchange revisable documents. Each recipient of a revisable-form-text document can modify its content and format information.

Revisable-Form-Text Document Content Architecture does not specify the text-processing programs implemented on the systems that interchange documents.

Document Content Architecture

Document Content Architecture specifies the form and meaning of the content of a document that can be interchanged among office systems.

Revisable-Form Text

A revisable-form-text document consists of text and format information that directs the presentation of the text. Format information includes general characteristics of a document such as page width, page depth, and page numbering scheme as well as more specific information that defines individual lines and pages in the document. General format information is contained in format declarations that are separate from the text of the body of the document. These format declarations contain the information required to modify the overall format of the document without disturbing the text.

Page and line definitions are represented by control codes embedded in the text. These control codes provide the information required to establish new line and page boundaries.

Interchanging Revisable-Form Text Documents

Dissimilar office systems may offer different capabilities to answer the needs of different users. Revisable-Form-Text Document Content Architecture supports interchange among dissimilar systems. A revisable-form-text document is interpreted correctly if all functions are performed as specified, or an external indication is given if a function is not performed.

Revisable-form-text documents can be interchanged using document interchange architecture (DIA). See Document Interchange Architecture: Concepts and Structures, SC23-0759 for an introduction to DIA.

Revisable-Form-Text Document Content Architecture is specifically designed for the following environments:

- Distribution for Text Revision. This environment is characterized by revision of document content at the receiving location. Revisable-Form-Text Document Content Architecture allows the text in the document to be modified at the receiving location. For example, a draft of a letter can be prepared at a branch office and distributed to a regional office for final edit and printing.

- Distribution for Format Revision. This environment is characterized by distribution of documents for formatting and presentation. Revisable-Form-Text Document Content Architecture allows the format information in the document to be modified to fit conditions at the receiving location. For example, each branch office can send material to the home office for inclusion in an overall report that is then formatted with new page numbers and printed.

Revisable-Form-Text Document Content Architecture

Revisable-Form-Text Document Content Architecture specifies the form and interpretation of a revisable-form-text document. This architecture defines the structure of the data stream that represents a revisable-form-text document as well as the structure and meaning of each element in the data stream.

Revisable-Form-Text Document Content Architecture provides an interpretation of the revisable-form-text data stream that is constant during interchange.

CHAPTER 2. THE REVISABLE-FORM-TEXT DATA STREAM

A data stream is a continuous stream of data elements of a defined format. The elements of the revisable-form-text data stream are graphic characters, 1-byte and multibyte control codes, and structured fields. See "Format of a Revisable-Form-Text Data Stream" on page 14 for the general format of each type of data element. The format and meaning of the individual control codes are defined in "Chapter 4. Multibyte Control Descriptions" on page 127 and "Chapter 5. One-Byte Control Descriptions" on page 215. The individual structured fields are defined in "Chapter 3. Structured Field Descriptions" on page 27.

INTERPRETING A REVISABLE-FORM-TEXT DATA STREAM

A revisable-form-text data stream consists of format units, text units, and an end unit. The beginning of the document is indicated by two format units. An optional third format unit is allowed. Format units contain format declarations and include no text except top and bottom margin text. The body text of the document is contained in one or more text units. The end unit identifies the end of the document.

Major Components

Each of the major components of a revisable-form-text data stream has a consistent and repeatable interpretation.

Format Units

Format units contain general format information that can be applied to the entire document. There are three types of format units: document declaration format units, primary master format units, and alternate master format units.

The document declaration format unit contains global document information. See Figure 5 on page 20 for the structure of the document declaration format unit. Document parameters that can be specified include information that may control the interpretation of graphic characters throughout the document as well as the identifier of the dictionary that can be used to assist spelling verification of the document text. Embedded text controls can be used to override this information on a character boundary. See "Document Parameters (DP)" on page 29 for more information on these parameters.

The document declaration format unit may also contain optional punctuation formats. Punctuation formats specify how text from external files is inserted in the document. These formats are defined once at the beginning of the document and referenced at each point in the document where text is to be inserted. See "Punctuation Formats (PFA and PFC)" on page 33 for more information.

The master format units contain information that relates to page composition and formatting. See Figure 6 on page 21 and Figure 7 on page 21 for the structure of the master format units. If all pages in the document are to be composed according to the same format, the primary master format is declared at the beginning of the document and no further general format information is required. If two different formats are required in a document, an alternate master format can be declared in addition to the primary master format. The desired master format can then be selected at the beginning of a text unit. See "Master Format Structures" on page 50 for detailed information on the kinds of format information that can be included in these format units.

Text Units

The body text of the document is contained in one or more text units. Each text unit represents a page in the document. Text units may be redefined as page definitions are modified to conform to the general formatting parameters contained in the master formats.

Each text unit can contain an optional format declaration in addition to body text. The format declaration may specify new format information that overrides the information in the active master format, select a different active master format, or reestablish a master format.

The structure of a text unit is shown in Figure 8 on page 22. The body text in the text unit is contained in one or more Body Text (BT) structured fields.

Body text contains text and embedded controls that complement or override format information in the format unit declarations.

End Units

The end unit marks the end of a revisable-form-text data stream. It contains no other information about the document content. See Figure 9 on page 22 for the structure of an end unit.

Determining the Applicable Master Format

Establishment of the primary master format is implied for the first text unit of a document. Each text unit can contain an optional format declaration. If so, this format declaration is in effect until another format declaration is encountered in the data stream. See "Change Format Structured Fields/Structure" on page 116 for detailed descriptions of the structured fields that can occur in a text unit format declaration. These structured fields are:

Establish Primary Master (EPM)
Establish Alternate Master (EAM)
Text Unit Format Change (TUFC)
Return to Master Format (RTMF)

Establishing a Master Format

An Establish Primary Master (EPM) or Establish Alternate Master (EAM) activates a master format. When a master format is established, all formatting controls and parameters previously in effect are discontinued, and the parameters in the selected master format are put into effect. Establishment of master formats can only occur at the beginning of a text unit.

Overriding an Established Master Format

A Text Unit Format Change (TUFC) causes the formatting parameters from the established master format to be overridden temporarily.

Returning to an Established Master Format

A Return to Master Format (RTMF) indicates where a temporary change ends, and the current master format is reestablished.

Interpreting Text

The margin text and body text of the document are represented by sequences of graphic characters containing embedded 1-byte and multibyte control codes. These graphics and controls are interpreted sequentially considering the format declarations. Format information in the embedded controls may override the format declarations in some cases.

In order to maintain a consistent interpretation of a revisable-form-text data stream, the embedded text controls are interpreted in relation to the following text-processing objects.

Graphic Code

A graphic code is one of a set of EBCDIC code points X'40-FF' that is defined by the active Coded Graphic Character Set ID and Code Page ID to be a presentable graphic. Each set of EBCDIC code points may have undefined code points within the X'40-FF' range. A reference to an undefined code point is an exception condition.

Word

A word is any sequence of revisable-form-text graphic or control codes delimited by:

- Indent Tab (one or more)
- Horizontal Tab (one or more)
- Numeric Space
- Space
- Align Text Field
- Align Text Line (word introducer only)
- Any Syntactic Line Delimiter

A word may contain a line break point (defined below) at a syllable delimiter. The Syllable Hyphen (SHY) and Conditional Word Break (CWB) line break points are syllable delimiters. A syllable delimiter is a control which indicates that the word may be divided into parts for presentation on multiple lines. For SHY, the part preceding the delimiter is presented at the end of the current line followed by the hyphen graphic, and the remaining part of the word is presented at the beginning of the next line. For CWB, the line break occurs immediately following the CWB with no hyphen graphic.

Syntactic Line

Any sequence of revisable-form-text graphic or control codes delimited by one of the line end controls in Figure 1 on page 7. The maximum length of a syntactic line is at least 512 bytes.

Semantic Line

A sequence of revisable-form-text graphic and control codes corresponding to a composed line in the page image. See the definition of composed line in this section.

Line End

A revisable-form-text control that marks the end of a syntactic or semantic line. Most line end controls are used to establish a new active baseline and as semantic line alignment terminators. For a list of line ends, see Figure 1 on page 7.

CONTROL	PARA-GRAPH END	LINE END	ADJUST-ABLE LINE END	JUSTIF-CATION DE-LIMITER	ALIGN-MENT TERMI-NATOR	NEW ACTIVE BASE-LINE
Begin Line Format Change	X	X			X	
Carrier Return		X	X		X	X
Index		X		X		X
Index Return	X	X			X	X
Required Carrier Return	X	X			X	X
Return to Master Line Format	X	X			X	X
Required Page End	X	X			X	X(1)
Zero Index Carrier Return		X			X	

(1). Conditional (see control semantics).

Figure 1. Revisable-Form-Text Control Summary

Line Break Point

The boundary between any one of the following and a subsequent graphic, excluding SP, NSP, and Required Space.

- Align Text Field (ATF)
- Horizontal Tab (HT)
- Indent Tab (IT)
- Index (INX)
- Numeric Space (NSP)
- Syllable Hyphen (SHY)
- Space (SP)
- Boundary between any graphic and a Page End (PE).

Adjustable Line End

Line end controls that may be added at a line break point or deleted when the syntactic line definition is reestablished. For a list of adjustable line ends, see Figure 1 on page 7.

Required Line End

The following list defines a required line end:

- A Carrier Return (CRE), that is the first line end following an Align Text Line (ATL), with any amount of intervening text
- A Carrier Return (CRE), preceded by a line end
- A Carrier Return (CRE), followed by a control from set A below
- A line format change sequence consisting of a Begin Line Format Change (BLFC) , a Set Line Parameters (SLP), a Set Tabs (STAB), and a End Line Format Change (ELFC)
- A Index Return (IRT) control
- A Page End (PE), followed by a text unit whose body text starts with a control from set A below
- A Page End (PE), followed by a text unit containing at least one of the structured fields in set B below
- A Required Carrier Return (RCR) control
- A Return to Master Line Format (RMLF) control
- A Required Page End (RPE) control.

  The controls in set A are:

  - Align Text Field (ATF)
  - Align Text Line (ATL)
  - Backspace (BS)
  - Carrier Return (CRE)
  - Horizontal Tab (HT)
  - Indent Tab (IT)
  - Index (INX)
  - Numeric Backspace (NBS)
  - Numeric Space (NSP)
  - Release Left Margin (RLM)
  - Required Space
  - Space (SP)
  - Unit Backspace (UBS)
  - Zero Index Carrier Return (ZICR)

The structured fields in set B are:

- Establish Alternate Master (EAM)
- Establish Primary Master (EPM)
- End Unit Prefix (EUP)
- Return to Master Format (RTMF)
- Text Unit Format Change (TUFC)

In order for two controls to jointly cause a required line end, there must not be any intervening graphic codes. Intervening multibyte and 1-byte (below X'40') controls, not specified above, are ignored when identifying a required line end.

Justification Delimiter

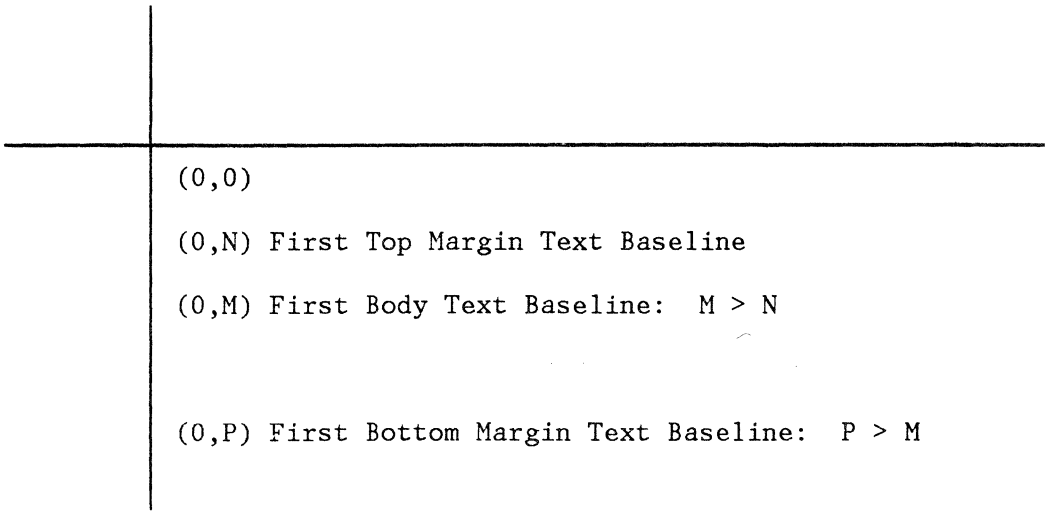
In a semantic line, a revisable-form-text control that may mark the beginning of a sequence of EBCDIC characters to be justified. Justification is performed on an entire semantic line unless it contains justification delimiters. When a semantic line contains justification delimiters, only those EBCDIC characters following the last justification delimiter are justified. For a list of justification delimiters, see Figure 1 on page 7.

Alignment Terminator

Line alignment is performed on a single indicated semantic line unless the semantic line ends with a line end control that is not a semantic line alignment terminator. When a semantic line ends with a control that is not a semantic line alignment terminator, alignment continues with the next semantic line as if there were no semantic line end control present. For a list of alignment terminators, see Figure 1 on page 7.

Baseline

A baseline is used to present and number a semantic line and to determine where underscore and overstrike characters will appear. In revisable-form-text, baselines are imaginary horizontal lines drawn between the left and right margins of a page. The page is viewed as residing in the fourth quadrant of a Cartesian coordinate system. The upper left corner of the page is placed at coordinates 0,0.



Active Baseline

The first possible y-coordinate at which the active baseline for margin text can be established is specified in a Margin Text Parameters, Top (MPT) or Margin Text Parameters, Bottom (MPB) structured field. The corresponding value for body text is specified in the Page Image Parameters (PIP) structured field. Any attempt to establish an active baseline at a lesser y-coordinate is an exception condition.

Once an active baseline is established, it remains the active baseline until a line end control establishes a new active baseline. The new active baseline is established the prescribed distance from the top of the page or from the y-coordinate of the current active baseline.

All distances are specified in 1/1440ths inch units.

Baselines are used to determine underscore, overstrike, and line numbering positions.

Offset Position

Normally a semantic line is printed on a baseline. However, some controls can cause one or more of the graphics in a line to print above or below the active baseline. If a syntactic line end control is encountered while an offset position is active, a new offset position is established the prescribed distance from the y-coordinate of the current offset position and a new active baseline is also established the prescribed distance from the y-coordinate of the current active baseline.

Paragraph

For adjustment or justification, any sequence of body text delimited by a required line end.

Page Image

A picture of a completed page of the document. An instance of a page image is represented by a set of page image elements (PIEs) that represent all the graphic symbols in the page image. Each page image element is essentially a graphic together with its location in the page image.

A page image element consists of the following:

- Code point for the graphic character or control
- Code page identifier
- Font identifier
- Location of the graphic in the page image
- Location used for overstrike and underscore
- Horizontal displacement to the location of the next graphic

The page image is used as a reference in defining the revisable-form-text constructs and prescribes the unique correct interpretation of a text unit in a revisable-form-text document. The major elements of a page image are shown in Figure 2 on page 12.

Composed Line

The set of elements in a page image including all the elements with y-coordinate equal to the y-coordinate of a given baseline as well as the elements representing any subscripts or superscripts associated with the line.

See "Appendix F. Transforms" on page 255 for a summary of the interaction of revisable-form-text constructs in producing a page image and in redefining line and page ends.

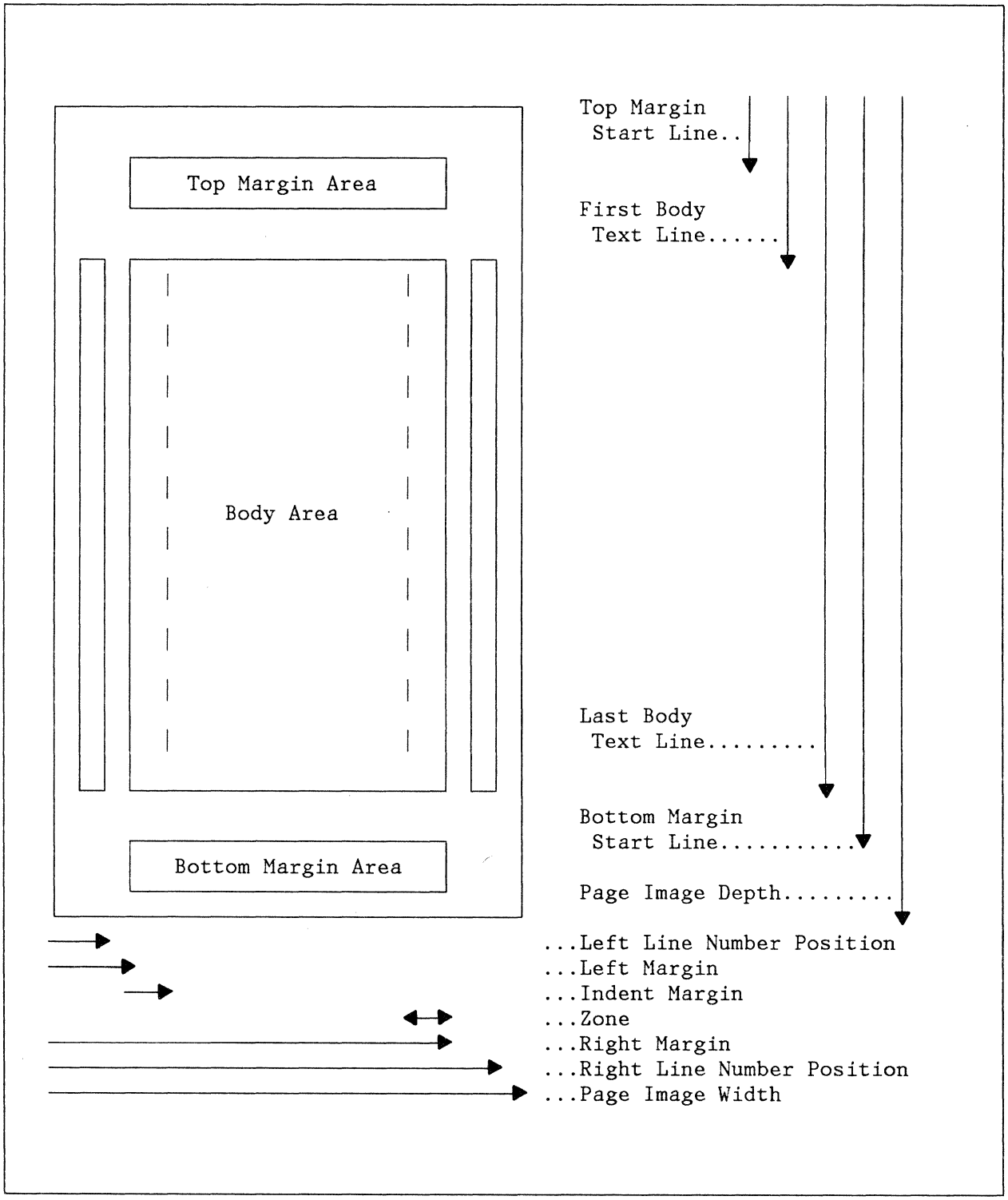


Figure 2. Page Image

Interpreting Additional Formatting Information

In addition to text-formatting information, a revisable-form-text data stream may also contain information to support the following functions:

Editing a document
Printing a document
Resolving external references

The optional format information that can be used to support editing a document is carried in the following controls:

- The Display Prompt and Stop (DPS) control acts as a stop code and contains a prompt that can be displayed to the end user.

- The Set Visual Attributes (SVA) control specifies the visual attributes to be used during display of subsequent text.

- The Begin Column Layout (BCL) and End Column Layout (ECL) controls delimit columns of text that can be moved, replaced, or deleted.

If present, these controls are embedded in text.

The following constructs can contain information that supports print functions:

- The Print Medium (PM) structured field identifies the print medium to be selected, the printer source drawer, and the number of copies to print.

- The Operator Message (OM) structured field specifies a message that can be displayed to the operator before page images are printed.

  This information can be specified at the beginning of the document in a Primary Master Format (PMF) or Alternate Master Format (AMF) or at the beginning of a text unit in a Text Unit Format Change (TUFC).

The optional format information that can be used to resolve external references is carried in the following controls:

- The Include Unit (IU) control identifies one or more text units that are to be copied into the document.

- The Insert (INS) control identifies record fields that are to be copied into the document.

If present, these controls are embedded in text.

FORMAT OF A REVISABLE-FORM-TEXT DATA STREAM

A revisable-form-text data stream consists of a sequence of structured fields. Some of these structured fields contain text. Text is represented by EBCDIC graphic characters and embedded controls. The embedded controls include multibyte controls as well as EBCDIC 1-byte controls. The graphic characters, control codes, and structured fields are the elements of the revisable-form-text data stream.

Single-Byte Elements

See "Chapter 5. One-Byte Control Descriptions" on page 215 for a description of the 1-byte controls as well as the graphic characters with formatting significance.

Syntax of Multibyte Controls

Each revisable-form-text multibyte control consists of the EBCDIC escape character (X'2B'), a 1-byte class, a 1-byte count, and a 1-byte type followed by any optional parameters.

The following table describes the format of all revisable-form-text multibyte controls. Similar tables are used to describe each individual multibyte control. See "Chapter 4. Multibyte Control Descriptions" on page 127.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D1,D2,D4,D8, D9	R
COUNT	2	1	N	min = 02 max = nn	R
TYPE	3	1	X	nn	R
CONTENT	4	nn	all	characters	O

where the columns in the table contain:

PARAMETER. Name of each parameter contained in every multibyte control.

OFF. Offset in bytes from the start of a multibyte control in the data stream.

LEN. Length of the parameter in bytes for fixed length parameters or nn for variable length parameters.

TYP. Type of value for this parameter:

N - Parameter value expressed in the table as a decimal number and in the data stream as the binary equivalent of this decimal number
X - Parameter value expressed in the table as a hexadecimal number and in the data stream as the binary equivalent of this hexadecimal number
C - Parameter value expressed in the table as EBCDIC characters and in the data stream as the binary equivalent of the EBCDIC characters
B - Parameter value expressed as a binary number
all - Types N, X, C, and B are all supported

VALUES. Values this parameter can contain in a multibyte control. All other values are invalid. A range of values is shown by value1 - value2. Commas separate the values or ranges of values that are valid.

OCC. Occurrence of the parameter. The parameter is either required (R) whenever a multibyte control occurs or the parameter is optional (O).

The parameters which occur in every multibyte control are:

CSP. The EBCDIC escape character (X'2B').

CLASS. A 1-byte hexadecimal code declaring the class of the multibyte control.

COUNT. A positive 1-byte value declaring the length of the multibyte control excluding the CSP and CLASS. The 1-byte length limits the total size of a given multibyte control to 258 bytes. The COUNT value includes the length of the COUNT field itself (1).

TYPE. A 1-byte hexadecimal code declaring the type of the multibyte control.

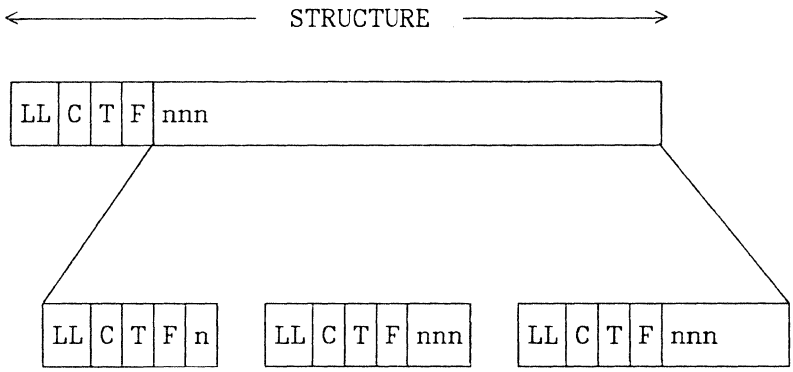
CONTENT. A variable length field containing optional parameters. Optional parameters may be self-identifying. The format of self-identifying parameters is described in "Syntax of Self-Identifying Parameters" on page 18.

Syntax of Structured Fields

The term structured field in this document refers to a construct which consists of a field introducer followed by required and optional parameters that define the scope and action of the structured field.

All revisable-form-text structured fields have the same general format:

- Every structured field has a 5-byte introducer.
- Optional parameters may be omitted only when their removal does not cause parameters which are not self-identifying to move to a new position in the structured field. The length field must be adjusted to reflect the reduced length of the structured field.
- Some structured fields appear by themselves and some are collected together in a structure. A structure has a 5-byte introducer which encapsulates and describes the collection of structured fields. This one level of nesting of structured fields is the only nesting specified in Revisable-Form-Text Document Content Architecture. See the following figure.



KEY
LL = 2 bytes of Length (encapsulates simple structured field or entire structure, including LL)
C = Class byte
T = Type byte
F = Format byte
nnn = 0-32762 bytes of content

Figure 3. Nesting of Structured Fields in a Revisable-Form-Text Structure

The structures which can contain nested structured fields are:

Primary Master Format (PMF)
Alternate Master Format (AMF)
Text Unit Format Change (TUFC)

- In a structure, optional structured fields may be omitted even though additional structured fields follow. The length field of the structure must be adjusted to reflect its reduced length.

- The maximum length of a structured field containing text can be limited by an implementation. If so, the structured field is repeated to include text which exceeds the maximum length supported by a single structured field.

The following table describes the format of all revisable-form-text structured fields. Similar tables are used to describe each individual structured field. See "Chapter 3. Structured Field Descriptions" on page 27.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	5 - 32,767	R
CLASS	2	1	X	E1 - E6,E8,E9	R
TYPE	3	1	X	01 - 0C	R
FORMAT	4	1	X	00	R
CONTENT	5	nn	all	characters	O

where the columns in the table contain:

PARAMETER. Name of each parameter contained in every structured field.

OFF. Offset in bytes from the start of a structured field in the data stream.

LEN. Length of the parameter in bytes for fixed length parameters or nn for variable length parameters.

TYP. Type of value for this parameter:

N - Parameter value expressed in the table as a decimal number and in the data stream as the binary equivalent of this decimal number
X - Parameter value expressed in the table as a hexadecimal number and in the data stream as the binary equivalent of this hexadecimal number
C - Parameter value expressed in the table as EBCDIC characters and in the data stream as the binary equivalent of the EBCDIC characters
B - Parameter value expressed as a binary number
all - Types N, X, C, and B are all supported

VALUES. Values this parameter can contain in a structured field. All other values are invalid. A range of values is shown by value1 - value2. Commas separate the values or ranges of values which are valid.

OCC. Occurrence of the parameter. The parameter is either required (R) whenever a structured field occurs or the parameter is optional (O).

The parameters in a structured field are:

LENGTH (LL). A positive 2-byte value declaring the length of the structured field including the LLCTF. The 2-byte length limits the total size of a given structured field or structure to 32,767 bytes. The LENGTH value includes the length of the LENGTH field itself (2).

CLASS (C). A 1-byte hexadecimal code declaring the class of the structured field.

TYPE (T). A 1-byte hexadecimal code declaring the type of the structured field.

FORMAT (F). A 1-byte hexadecimal code declaring the format of the parameters.

CONTENT. A variable length field containing optional parameters. Optional parameters can be self-identifying. See "Syntax of Self-Identifying Parameters."

Syntax of Self-Identifying Parameters

The parameters in some revisable-form-text controls and structured fields are self-identifying. The first two bytes of these self-identifying parameters are a parameter introducer. The introducer identifies the parameter and specifies its length.

Revisable-form-text controls and structured fields that contain self-identifying parameters have a class of X'D9' (control) or X'E9' (structured field) and do not contain any parameters that are not self-identifying.

The format of a revisable-form-text self-identifying parameter is listed in the table below.

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	2-255	R
PARAMETER TYPE	1	X	nn	R
PARAMETER VALUE	0-253	X	DATA	O

where the columns in the table are:

PARAMETER ELEMENT. Name of parameter element.

LEN. Length of the parameter element in bytes.

TYP. Type of value for the parameter element.

N - Parameter value expressed in the table as a decimal number and in the data stream as the binary equivalent of this decimal number
X - Parameter value expressed in the table as a hexadecimal number and in the data stream as the binary equivalent of this hexadecimal number
C - Parameter value expressed in the table as EBCDIC characters and in the data stream as the binary equivalent of the EBCDIC characters
B - Parameter value expressed as a binary number

VALUES. Values the parameter element can contain. All other values are invalid. A range of values is shown by value1 - value2. Commas separate the values or ranges of values that are valid.

OCC. Occurrence of the parameter element in this parameter. The parameter element is either required (R) whenever the parameter is specified or the parameter element is optional (O).

The parameter elements that occur in every self-identifying parameter are:

PARAMETER LENGTH. A 1-byte value of 2 to 255 that specifies the length of the parameter including the length of the 2-byte introducer and the parameter value.

PARAMETER TYPE. A 1-byte hexadecimal code specifying the parameter type. The parameter type code uniquely identifies the format and semantics of the parameter. The parameter type codes are unique within a revisable-form-text control or structured field.

PARAMETER VALUE. Data specifying a parameter setting.

Structure of a Revisable-Form-Text Data Stream

Each major component of a revisable-form-text data stream is represented by a sequence of structured fields. These structured fields are defined in "Chapter 3. Structured Field Descriptions" on page 27.

The major components of a revisable-form-text data stream representing a single document are shown in the following figure.

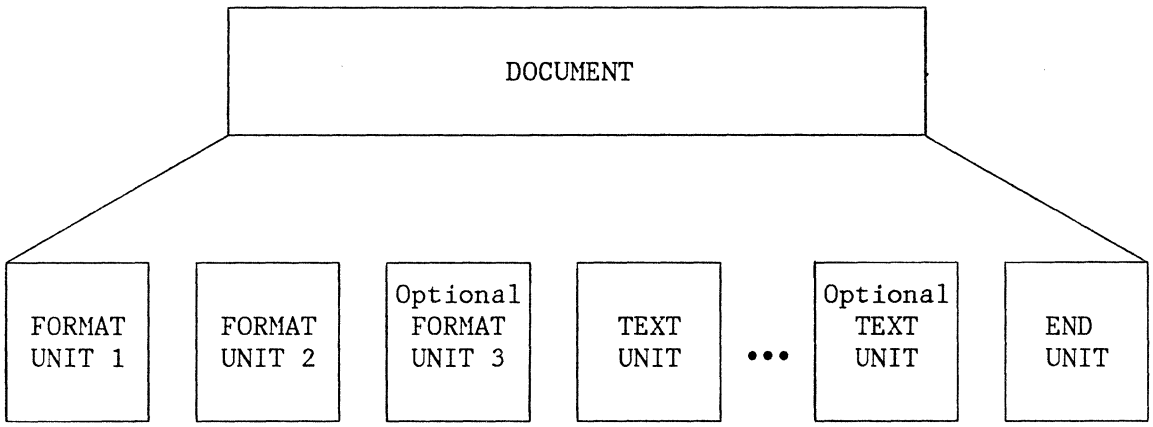


Figure 4. Major Components of a Revisable-Form-Text Data Stream

Format Unit 1

Format Unit 1, the document declaration, consists of a Format Unit Prefix (FUP) structured field, a Document Parameters (DP) structured field, and optional Punctuation Format, Arithmetic (PFA) and Punctuation Format, Character (PFC) structured fields. The punctuation formats may be repeated.

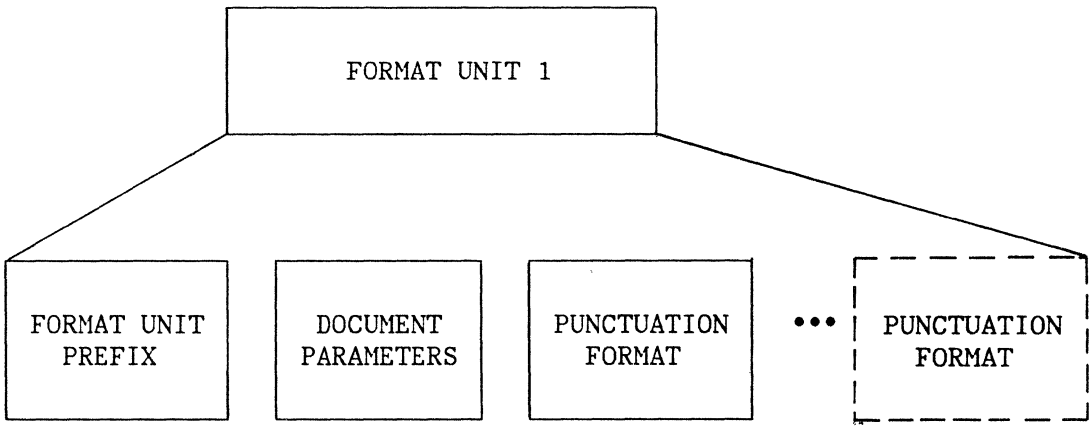


Figure 5. Format Unit 1 - Document Declaration

Format Unit 2

Format Unit 2, the primary master format unit, consists of a Format Unit Prefix (FUP) structured field, a Primary Master Format (PMF) structured field, and optional margin text declaration. See "Margin Text" on page 109 for a description of the structured fields which represent the margin text declaration.

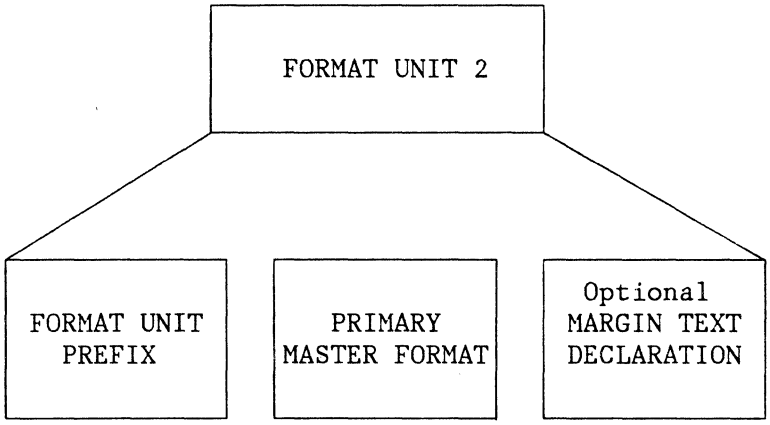


Figure 6. Format Unit 2 — Primary Master Format Unit

Format Unit 3

Format Unit 3, the alternate master format unit, is optional. It consists of a Format Unit Prefix (FUP) structured field, a Alternate Master Format (AMF) structured field, and optional margin text declaration. See "Margin Text" on page 109 for a description of the structured fields which represent the margin text declaration.

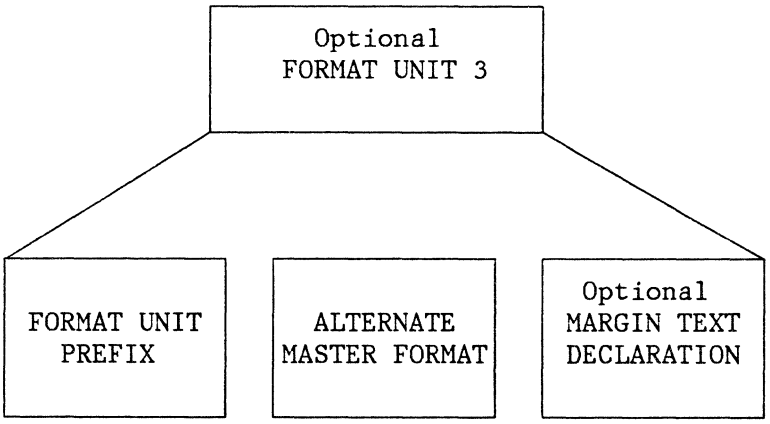


Figure 7. Format Unit 3 — Alternate Master Format Unit

Text Unit

Text units consist of a Text Unit Prefix (TUP) structured field, optional structured fields that control which format information applies to the following text, and one or more Body Text (BT) structured fields.

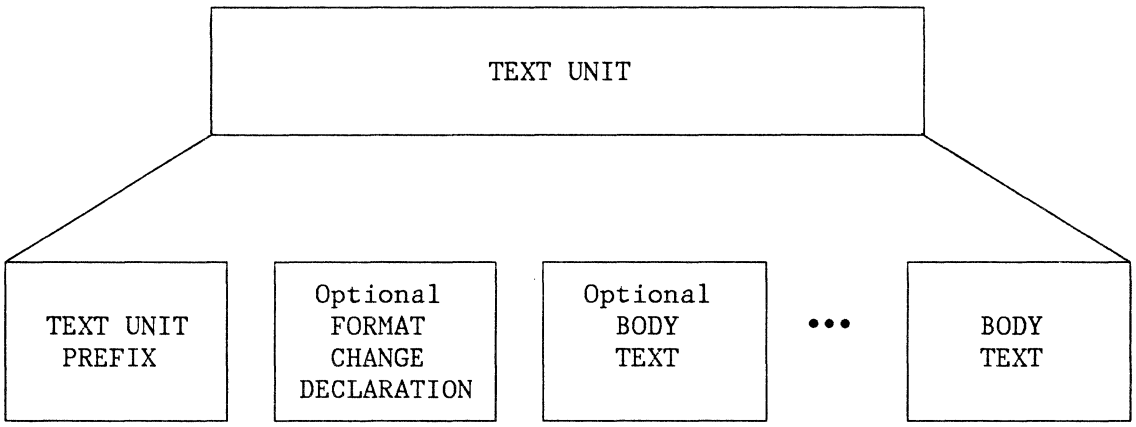


Figure 8. Text Unit

End Unit

An end unit consists of a End Unit Prefix (EUP) structured field and a Body Text (BT) structured field. There is one and only one end unit in a revisable-form-text document.

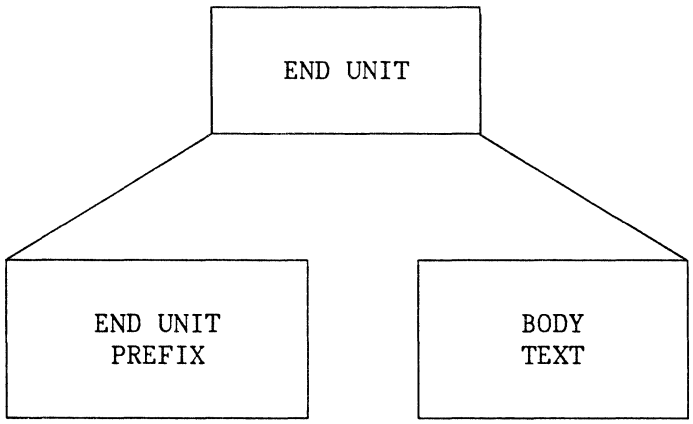


Figure 9. End Unit

Data Stream Syntax

Notation

Backus Normal Form (BNF) has the general form:

<V> ::= <S1> | <S2> | ••• | <Sn>

Where

< > denotes a metavariable.

::= separates a metavariable from its definition ('is defined as').

| separates alternative definitions ('exclusive OR').

••• denotes continued sequence.

BNF is extended for this definition. In addition to <, >, ::=, |, and •••, this definition uses the metalinguistic signs (,), [,], {, }, •••, and + with the following meanings:

() parentheses - encloses an expression.

[] brackets - encloses an optional expression.

{} braces - encloses a set of expressions which occur in any order.

••• continuation - the variable immediately preceding the symbol is repeated multiple times.

+ Inclusive OR - A dyadic operator specifying either one or both of its operands, in the order indicated.

For example:

V ::= S1 T1 S2 | S1 T2 S2 | ••• | S1 Tn S2

is equivalent to

V ::= S1 { T1 | T2 | ••• | Tn } S2

V ::= S1 S2 | S1 T1 S2 | ••• | S1 Tn S2

is equivalent to

V ::= S1 (T1 | ••• | Tn) S2

V ::= U | V U

is equivalent to

```
    V ::= U•••

V ::= S | S T | T

    is equivalent to

    V ::= S ┼ T

V ::= {S T}

    is equivalent to

    V ::= (S T) | (T S)
```

In this definition, each lowercase variable is defined by an expression. Each uppercase variable is the mnemonic of a revisable-form-text structured field or control (See "Appendix A. Structured Field Summary" on page 243, "Appendix B. Multibyte Control Summary" on page 245, or "Appendix C. One-Byte Control Summary" on page 247 for the valid mnemonics). The resulting definition shows the sequence in which revisable-form-text structured fields, controls and graphic codes occur in a valid revisable-form-text document.

External Structured Fields

```
<revisable-form-text-document> ::= (<fu1> <fu2>) [<fu3>] <tu>••• <eu>

<fu1> ::= <FUP> <DP> [<PFA>|<PFC>]•••

<fu2> ::= <FUP> <PMF> [<margintext-decl>]

<fu3> ::= <FUP> <AMF> [<margintext-decl>]

<margintext-decl> ::= <top-bottom> | <top-only> | <bottom-only>

    <top-bottom> ::= {<MPT> [<mt-te>] [<mt-to>] <MPB> [<mt-be>] [<mt-bo>]} |
    {<MPT> [<mt-te>] [<mt-to>] <MPB> <mt-ba>} | {<MPT> <mt-ta> <MPB>
    <mt-ba>} | {<MPT> <mt-ta> <MPB> [<mt-be>] [<mt-bo>]}

    <top-only> ::= {<MPT> [<mt-te>] [<mt-to>]} | {<MPT> <mt-ta>}

    <bottom-only> ::= {<MPB> [<mt-be>] [<mt-bo>]} | {<MPB> <mt-ba>}

<tu> ::= <tu-hdr> [<mid-bt>]••• <last-bt>

<tu-hdr> ::= <TUP> [<EPM>|<EAM>] [<RTMF>|<tu-fmt-chg>]

<tu-fmt-chg> ::= <TUFC> [<margintext-decl>]

<eu> ::= <EUP> <e-bt>
```

Internal Structured Fields

<pmf-contents> ::= <PIP> <LP> <TP> [<master-format-options>]

<master-format-options> ::= { [<LN>] [<PIN>] [<PM>] [<OM>] [<PFP>] [<NFP>] [<AOP>] }

<format-options> ::= { [<LN>] [<PIN>] [<PM>] [<OM>] }

<amf-contents> ::= <PIP> <LP> <TP> [<master-format-options>]

<tufc-contents> ::= <PIP> <LP> <TP> [<format-options>]

Text

<mid-bt> ::= <BT> which contains <mid-bt-contents>.

<mid-bt-contents> ::= (<bt-control>|<graphic-code>|<lfc>)•••

<bt-control> ::= Any revisable-form-text control other than <PPIN>, <PTUN>, <BLFC>, <ELFC>, <STAB>, <SLP>, <PE>.

<graphic-code> ::= a one byte EBCDIC code > X'40'.

<lfc> ::= (<BLFC> <SLP> <STAB> <ELFC>)

<last-bt> ::= <BT> which contains <last-bt-contents>.

<last-bt-contents> ::= (<bt-control>|<graphic-code>|<lfc>)••• <PE>

<e-bt> ::= <BT> which contains <e-bt-contents>.

<e-bt-contents> ::= <PE>

<mt-ba> ::= <MTBA>••• which contains <mt-contents>.

<mt-be> ::= <MTBE>••• which contains <mt-contents>.

<mt-bo> ::= <MTBO>••• which contains <mt-contents>.

<mt-ta> ::= <MTTA>••• which contains <mt-contents>.

<mt-te> ::= <MTTE>••• which contains <mt-contents>.

<mt-to> ::= <MTTO>••• which contains <mt-contents>.

<mt-contents> ::= (<mt-control>|<graphic-code>|<lfc>)•••

<mt-control> ::= Any revisable-form-text multibyte or single byte control other than <BK>, <EK>, <BLFC>, <ELFC>, <STAB>, <SLP>, <PE>, <RPE>, <NR>.

CHAPTER 3. STRUCTURED FIELD DESCRIPTIONS

This chapter includes the valid revisable-form-text structured fields. These structured fields follow the general format in "Syntax of Structured Fields" on page 16.

FORMAT UNIT DECLARATION

This section describes the structured fields used in the Document Declaration.

Format Unit Prefix (FUP)

The Format Unit Prefix identifies the beginning of a Format Unit in the data stream.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	5	R
CLASS	2	1	X	E1	R
TYPE	3	1	X	03	R
FORMAT	4	1	X	00	R

SYNTAX RULES

The Format Unit Prefix is the first structured field in each revisable-form-text document.

The Format Unit Prefix precedes each of the following:

Document Declaration

Primary Master Format Declaration

Alternate Master Format Declaration.

Each structure appears in the order shown above.

SYNTAX EXCEPTIONS

An exception condition exists if the structured field is not present in each of the above structures.

An exception condition exists if the structured field appears without one of the structures listed above.

An exception condition exists if the structured field is out of order sequentially.

An exception condition exists if the listed structures are out of order.

SYNTACTICAL MEANING

Format Units contain explicit values for base formatting attributes of the document.

The Format Unit Prefix identifies the beginning of each Format Unit in the data stream.

There is a minimum of two Format Units in the data stream, and a maximum of three.

Document Parameters (DP)

Document Parameters is a structured field which declares parameters applicable to the entire document.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	9 - 32	R
CLASS	2	1	X	E2	R
TYPE	3	1	X	05	R
FORMAT	4	1	X	00	R
GCID	5	4	N	min=65537	R
RESERVED	9	14	X	00	O
PROCESSING INFORMATION	23	1	B	xx	O
SCA DICTIONARY ID	24	2	C/X	C=00-99, X=FFFF	O
SYS TEXT UNIT NAME	26	6	C	900000	O

PARAMETERS

GCID

Global Coded Graphic Character Set ID is a concatenation of two 2-byte binary numbers -- CGCS ID and CODE PAGE ID.

CGCS ID

Identifies the Coded Graphic Character Set.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

CODE PAGE ID

Identifies the Code Page.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

PROCESSING INFORMATION

Specifies information that may affect the revisable-form-text processes that can be performed on the data in an revisable-form-text document.

0000 0000 - No processing information is specified. A zero in any bit specifies that no processing information is specified by that bit.

....1 - The Text Unit Names and Text Unit boundaries in this document should only be altered through individual operator intervention. The Text Unit Names and Text Unit boundaries in this document should not be globally reassigned.

.... ..1. - This document contains system controlled Text Units. Text Units 900000-999999 are reserved for notes. The system stores each note in a separate Text Unit.

If this parameter is not specified in a Document Parameters structured field, the value zero is assumed for all the bits in this parameter.

SCA DICTIONARY ID

The spellcheck attribute (SCA) Dictionary ID parameter specifies whether or not the text in this document is to be verified for spelling and, if spellcheck is requested, which language dictionary to use. The currently defined 2-byte values for this parameter are as follows:

C'00' - Do not spellcheck the text in this document.

Numeric characters 01-99 - Spellcheck the text in this document. This 2-byte value is the ID of the language dictionary to use. The language dictionaries that have been defined and have an ID that is associated with them are listed as follows:

01 - American English

02 - UK English

03 - German

04 - Dutch

05 - National French

06 - Canadian French

07 - Italian

08 - Spanish

09 - Swedish

10 - Finnish

11 - Danish

12 - Norwegian

All other values in this defined range are reserved for future assignment to language dictionaries.

X'FFFF' - Check the text of this document for spelling errors. Use the currently loaded language dictionary for the spellcheck process.

All other values are undefined. Undefined or reserved values encountered in this parameter are to be processed as exception conditions.

SYS TEXT UNIT NAME

Specifies the lowest value for system controlled Text Unit names. All Text Units with names equal to or greater than the value of this parameter are system controlled.

SYNTAX RULES

The Document Parameters structured field is contained in each revisable-form-text document.

This structured field appears immediately after the first Format Unit Prefix structured field in the document.

SYNTAX EXCEPTIONS

An exception condition exists if this structured field is not present.

An exception condition exists if this structured field is out of order sequentially.

SYNTACTICAL MEANING

This structured field contains the Coded Graphic Character Set ID and the Code Page ID of the graphic text characters in effect at the beginning of the revisable-form-text document. These identifiers are used to determine how coded text characters are translated to the defined graphic character to be represented.

These identifiers are in effect for the entire document. However, the Insert Escaped Graphic multibyte control is provided to enable change in the Code Page for a single character within the document. Refer to "Insert Escaped Graphic (IEG)" on page 147 for a description of this control.

SEMANTICS

The Code Page ID determines the Page Image graphic character representations. The Insert Escaped Graphic multibyte control is also applicable for Page Image translation.

SEMANTIC EXCEPTIONS

The SCA dictionary ID parameter is a numeric character 01-99, but the language dictionary specified is not supported.

The SCA dictionary ID parameter is undefined.

The SCA dictionary ID parameter = X'FFFF', but no language dictionary is currently loaded.

Punctuation Formats (PFA and PFC)

This structured field specifies a punctuation format and ties the format to an ID that can be referenced in a subsequent Insert control.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	15-n	R
CLASS	2	1	X	E9	R
TYPE	3	1	X	01,02	R
FORMAT	4	1	X	00	R
SELF-IDENTIFYING PARAMETER(S)	5	-	-	-	R

TYPE

Specifies whether arithmetic or character parameters are defined with this structured field.

01 - Punctuation Format, arithmetic parameters (PFA) structured field.

02 - Punctuation Format, character parameters (PFC) structured field.

SELF-IDENTIFYING PARAMETERS

The self-identifying parameters that can occur in this structured field are listed in the two tables below.

The table labeled Arithmetic Parameters defines the self-identifying parameters that are applicable to arithmetic data and can occur in a PF structured field if the TYPE code = 01. The characteristics of arithmetic data are:

- The field can contain from 0 to 15 numeric digits (including an optional decimal point symbol and an optional sign character).
- The decimal point symbol can be comma (X'6B'), period (X'4B'), or colon (X'7A').
- The sign character can be a leading plus sign (X'4E') or minus sign (X'60).
- A decimal point symbol is not specified unless it is either preceded or followed by a numeric digit.

- A sign character is not specified unless it is the first character in the field and is followed by a numeric digit or decimal symbol.

- Unless specified otherwise, comparison operations on arithmetic data are algebraically oriented rather than character oriented.

- Triad separators and monetary symbols are not specified in arithmetic data.

The table labeled Character Parameters defines the self-identifying parameters that are applicable to character data and can occur in a PF structured field if the TYPE code = 02. Character data is data accessed from a Document Field with a Field Type of character data. The characteristics of character data are as follows:

- The field contains 0 to 80 characters.

- The field includes only graphic characters.

The parameters in the tables can occur in any order. The only parameter that can occur more than once in this structured field is the GCID parameter. It occurs before the first parameter containing character data and may occur before each character data parameter.

ARITHMETIC PARAMETERS

PARAMETER	OCC
PUNCTUATION ID	R
GCID	R
OUTPUT FIELD SIZE	O
FILL CHARACTER	O
NULL REPLACEMENT TEXT	O
ZERO REPLACEMENT TEXT	O
ALIGNMENT TYPE	O
SUPPRESSION INDICATOR	O
DECIMAL SYMBOL	O
TRIAD SEPARATOR	O
ROUNDING ALGORITHM	O
POSITIVE PREFIX TEXT	O
NEGATIVE PREFIX TEXT	O
POSITIVE SUFFIX TEXT	O
NEGATIVE SUFFIX TEXT	O

CHARACTER PARAMETERS

PARAMETER	OCC
PUNCTUATION ID	R
GCID	R
OUTPUT FIELD SIZE	O
FILL CHARACTER	O
NULL REPLACEMENT TEXT	O
ALIGNMENT TYPE	O
SUPPRESSION INDICATOR	O
CAPITALIZATION ALGORITHM	O
CHARACTER PREFIX TEXT	O
CHARACTER SUFFIX TEXT	O

DESCRIPTION OF SELF-IDENTIFYING PARAMETERS

PUNCTUATION ID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	4	R
PARAMETER TYPE	1	X	02	R
IDENTIFIER	2	C	01-99	R

Identifier

Specifies a Punctuation ID. The Punctuation ID is assigned to the punctuation format that is defined in this Punctuation Format structured field. The punctuation format defined in this structured field can be invoked by a subsequent Insert control that specifies a matching Punctuation ID.

GCID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	6	R
PARAMETER TYPE	1	X	01	R
GCID	4	N	1-65535;1-65535	R

Global Coded Graphic Character Set ID is a concatenation of two 2-byte binary numbers: CGCS ID and CODE PAGE ID.

CGCS ID

Identifies the Coded Graphic Character Set.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

CODE PAGE ID

Identifies the Code Page.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

This GCID applies only to parameters in this structure. It remains in effect until another GCID is specified within the structure.

OUTPUT FIELD SIZE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	03	R
FIELD SIZE	1	N	0-172	R

Field Size

Specifies a number of character positions reserved for the output of an expression and its associated punctuation and fill characters. The punctuated expression is derived by:

Insertion of the field in the output expression with appropriate editing characteristics applied to the field (Decimal Symbol, Triad Separator, Rounding Algorithm, Capitalization Algorithm).

The addition of Prefix and Suffix Text to the output expression.

The addition of any applicable Null Replacement Text to the output expression.

Alignment of the output expression based on Alignment Type.

Insertion of the Fill Character in the output expression.

0 = Number of character positions in the output field. Output of the expression is suppressed. Output of Prefix Text, Suffix Text, data field information, and Null Replacement Text is suppressed.

1-172 = Number of character positions in the output field.

The absence of this parameter results in the same action as Field Size = 0.

FILL CHARACTER

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	04	R
CHARACTER	1	X	40-FE	R

Character

Specifies the character used to fill any unused space in the resulting output field. The Fill Character is applied to the resulting output expression after all Prefix, Suffix, or Null Replacement Text has been added to the expression and after alignment of the expression in the output field.

The absence of this parameter specifies that the fill character is a space (X'40').

NULL REPLACEMENT TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3-18	R
PARAMETER TYPE	1	X	05	R
REPLACEMENT TEXT	1-16	X	40-FE	R

Null Replacement Text

The Null Replacement Text is inserted in the output field in place of a data field that contains a null value. The Null Replacement Text is aligned according to the alignment type parameter and any unused space is filled by the fill character. The text can contain any EBCDIC codes X'40' - X'FE' inclusive. If the data field associated with this punctuation format contains a value other than a null value, the Null Replacement Text is not inserted.

If this parameter is not specified, it is assumed that there is no Null Replacement Text.

ZERO REPLACEMENT TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	2-18	R
PARAMETER TYPE	1	X	12	R
REPLACEMENT TEXT	0-16	X	40-FE	O

Zero Replacement Text

The zero replacement text is inserted in the output field in place of an arithmetic data field that contains a zero value. The zero replacement text is aligned according to the alignment type parameter and any unused space is filled by the fill character. The text can contain any EBCDIC codes X'40' - X'FE'. If the arithmetic data field associated with this punctuation format contains a value other than a zero value, the zero replacement text is not inserted. If this parameter is not specified, it is assumed that there is no zero replacement text. The presence of this parameter with a length of 2 (no replacement text) specifies that the replacement value is the character zero (X'F0').

ALIGNMENT TYPE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	06	R
ALIGNMENT TYPE	1	N	0-2	R

Alignment Type

Specifies the alignment to be performed on the resulting output expression. The alignment is performed after the entire expression has been resolved with the proper Suffix, Prefix, or Null Replacement Text. The expression is aligned in the output field based on the difference between the Field Size and the resulting expression.

0 = Left Alignment

1 = Center Alignment

2 = Right Alignment

The absence of this parameter results in Normal (Left) Alignment in the resulting output field.

SUPPRESSION INDICATOR

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	2	R
PARAMETER TYPE	1	X	07	R

Suppression Indicator

The occurrence of this parameter causes the output of a field of data and its associated punctuation to be suppressed. Text is only inserted in the output field if the input field contains a null value and Null Replacement Text is specified.

This parameter can be used to format character and arithmetic data. The absence of this parameter specifies that the text in the input field is punctuated according to the parameters specified in this structured field and inserted in the output field.

DECIMAL SYMBOL

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	08	R
SYMBOL	1	X	00,01,02, 40-FE	R

Decimal Symbol

Specifies the decimal symbol presented in the output field. This parameter can be used to convert a decimal symbol that conforms to one country standard to a decimal symbol for another country. For example: An input field containing the value '100.4' could be presented in the page image as '100:4', '100.4' or '100,4'.

X'00' = No decimal punctuation

X'01' = Use input decimal punctuation

X'02' = Use current local definition of decimal character

X'40'-X'FE' = Decimal symbol to be used.

This parameter is only used to format arithmetic data. The absence of this parameter causes the input decimal symbol to be presented without alteration.

TRIAD SEPARATOR

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3,4	R
PARAMETER TYPE	1	X	09	R
SEPARATOR	1	X	00,40-FF	R
ALGORITHM	1	N	0-1	O

Separator

specifies the triad separator presented in the output field. Input fields do not contain triad separators. This parameter allows a triad separator to be added to the output field. For example: An input field containing the value '1000000.' could be presented in the page image as '1,000,000.'.

X'00' = no separator to be presented

X'40'-X'FF' = triad separator character

Algorithm

Specifies the algorithm to be used for the insertion of the triad separator. If this parameter element is not specified, the value 0 is assumed for this parameter element.

0 = Standard triad separator insertion algorithm (that is, separator inserted at each 10**n position in the arithmetic field, where n = 3, 6, 9, etc.).

1 = French National Standard triad separator insertion algorithm (that is, separator inserted at each 10**n position in the arithmetic field, where n = 3, 6, 9, etc., only when there are greater than 4 digits to the left of the decimal symbol. Otherwise, triad separator insertion not performed.)

This parameter is only used to format arithmetic data. The absence of this parameter specifies that the input field is presented without a triad separator.

ROUNDING ALGORITHM

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3,4	R
PARAMETER TYPE	1	X	0A	R
DECIMAL PLACES	1	N	0-15	R
ROUNDING FORMAT	1	N	0-3	O

Decimal Places

Specifies the number of digits presented to the right of the decimal symbol in the output field. A Decimal Places value of 0 suppresses printing of the decimal symbol. If a decimal point is desired in this case, the operator may insert it via a Suffix Text parameter. For example: An input field containing the value '100.54' could be presented in the page image as '100', '100.5' or '100.5400'.

Rounding Format

Specifies the form of rounding used during output when the number of digits to the right of the decimal symbol in the output field is less than the number of digits to the right of the decimal symbol in the input field. For example: If the Decimal Places parameter element specified a value of 0, an input field containing the value '100.55' could be presented in the page image as '100' or '101'. If the Rounding Format parameter element is not specified, the value 0 is assumed for the Rounding Format parameter element.

0 = All Down. Significant digits that occur to the right of the 10**(-n) position are truncated, where n is the value of the Decimal Places parameter element.

1 = All Up. Significant digits that occur to the right of the 10**(-n) position cause the addition of 1 to the 10**(-n) position, where n is the value of the Decimal Places parameter element.

2 = Half Up. The significant digit to the right of the 10**(-n) position is inspected, where n is the value of the Decimal Places parameter element. If this digit is greater than 4, the value of the 10**(-n) position is incremented by 1, Otherwise, the significant digits that occur to the right of this position are truncated.

3 = Half Down. The significant digit to the right of the 10**(-n) position is inspected, where n is the value of the Decimal Places parameter element. If this digit is greater than 5 the 10**(-n) position is incremented by 1. Otherwise, the significant digits that occur to the right of this position are truncated.

This parameter is only used to format arithmetic data. The absence of this parameter causes the output field to contain the same digits to the right of the decimal symbol as the input field.

POSITIVE PREFIX TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	2-10	R
PARAMETER TYPE	1	X	0B	R
PREFIX TEXT	0-8	X	40-FE	O

Positive Prefix Text

A string of text that immediately precedes a field of arithmetic data in the output field. The text can contain any EBCDIC codes X'40' - X'FE' inclusive. The Prefix Text is only inserted if the arithmetic data has a value greater than zero. If the associated arithmetic field contains a null value, the Prefix Text is not inserted. The Prefix Text can be used to specify text such as monetary symbols and positive symbols. When Positive Prefix Text is specified, the optional plus sign (x'4E') in the arithmetic input field is not put into the output field.

This parameter is only used to format arithmetic data. If this parameter is not specified, it is assumed that there is no Positive Prefix Text. The absence of prefix text in this parameter (parameter length = 2) specifies that the positive prefix text is a plus sign character if the user entered a plus sign, otherwise no positive prefix text is used.

NEGATIVE PREFIX TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	2-10	R
PARAMETER TYPE	1	X	0C	R
PREFIX TEXT	0-8	X	40-FE	O

Negative Prefix Text

A string of text that immediately precedes a field of arithmetic data in the output field. The text can contain any EBCDIC codes X'40' - X'FE' inclusive. The Prefix Text is only inserted if the arithmetic data has a value less than zero. If the associated

arithmetic field contains a null value, the Prefix Text is not inserted. The Prefix Text can be used to specify text such as monetary symbols and negative symbols. When Negative Prefix Text is specified, the optional minus sign (X'60') in the arithmetic data is not put into the output field.

This parameter is only used to format arithmetic data. If this parameter is not specified, it is assumed that there is no Negative Prefix Text. The absence of prefix text in this parameter (parameter length = 2) specifies that the negative prefix text is the negative sign (required hyphen) if the user entered a negative sign, otherwise no negative prefix text is used.

POSITIVE SUFFIX TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3-10	R
PARAMETER TYPE	1	X	0D	R
SUFFIX TEXT	1-8	X	40-FE	R

Positive Suffix Text

A string of text that immediately follows a field of arithmetic data in the output field. The text can contain any EBCDIC codes X'40' - X'FE' inclusive. The Suffix Text is only inserted if the arithmetic data has a value greater than zero. If the associated arithmetic field contains a null value, the Suffix Text is not inserted. The Suffix Text can be used to specify text such as monetary symbols and positive symbols. When Positive Suffix Text is specified, the optional plus sign (X'4E') in the arithmetic data is not put into the output field.

This parameter is only used to format arithmetic data. If this parameter is not specified it is assumed that there is no Positive Suffix Text.

NEGATIVE SUFFIX TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3-10	R
PARAMETER TYPE	1	X	0E	R
SUFFIX TEXT	1-8	X	40-FE	R

Negative Suffix Text

A string of text that immediately follows a field of arithmetic data in the output field. The text can contain any EBCDIC codes X'40' - X'FE' inclusive. The Suffix Text is only inserted if the arithmetic data has a value less than zero. If the associated arithmetic field contains a null value, the Suffix Text is not inserted. The Suffix Text can be used to specify text such as monetary symbols and negative symbols. When Negative Suffix Text is specified, the optional minus sign (X'60') in the arithmetic data is not put into the output field.

This parameter is only used to format arithmetic data. If this parameter is not specified, it is assumed that there is no Negative Suffix Text.

CAPITALIZATION ALGORITHM

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	0F	R
ALGORITHM	1	N	0-3	R

Algorithm

Specifies the capitalization algorithm to be used for a field of character data in the output field.

0 = Capitalize no characters in the character field.

1 = Capitalize all characters in the character field.

2 = Capitalize the first character of all words in the character field.

3 = Capitalize the first character of the first word in the character field.

This parameter is only used to format character data. If this parameter is not specified, it is assumed that there is no Capitalization Algorithm specified and the character field is inserted as entered in the output expression.

CHARACTER PREFIX TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3-10	R
PARAMETER TYPE	1	X	10	R
PREFIX TEXT	1-8	X	40-FE	R

Character Prefix Text

A string of text that immediately precedes a field of character data in the output field. The text can contain any EBCDIC codes X'40' - X'FE' inclusive. The specified string of text is only

inserted if the output data is accessed from a data field with a field type of character data. If the field contains a null value, the Prefix Text is not inserted.

This parameter is only used to format character data. If this parameter is not specified, it is assumed that there is no Character Prefix Text.

CHARACTER SUFFIX TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3-10	R
PARAMETER TYPE	1	X	11	R
SUFFIX TEXT	1-8	X	40-FE	R

Character Suffix Text

A string of text that immediately follows a field of character data in the output field. The text can contain any EBCDIC codes X'40' - X'FE' inclusive. The specified string of text is only inserted if the output data is accessed from a data field with a field type of character data. If the field specifies a null value, the Suffix Text is not inserted.

This parameter is only used to format character data. If this parameter is not specified, it is assumed that there is no Character Suffix Text.

SYNTAX RULES

The PF structured field is optional in a revisable-form-text document.

A PF structured field may appear anywhere after the Document Parameters structured field in the Document Declaration Format Unit.

From 1 to 99 PF structured fields can be specified in a Document Declaration. Punctuation IDs must be unique within any single Document Declaration, that is, the Document Declaration must not include two PF (PFA and/or PFC) structured fields with the same Punctuation ID. If a Document Declaration contains more than one PF structured field, the Punctuation IDs specified must be in ascending order.

SEMANTICS

A PF structured field that only contains a Punctuation ID parameter (and a required GCID) specifies that associated Insert controls insert input fields without alteration or expansion. Associated Insert controls do not insert any text for input fields that contain null values.

SEMANTIC EXCEPTIONS

An exception condition exists if the data placed in the output field exceeds the output field size.

If the Document Declaration contains duplicate Punctuation IDs or the IDs are not in ascending order, then an exception condition exists and the violating Punctuation Format structured field is ignored.

MASTER FORMAT STRUCTURES

Master Format structures are contained in format units. They contain explicit values of the page image size and where the body text appears within this dimension. In addition to body text appearance, the page image may also contain margin text in its composition. If so, the Format Unit also contains the Margin Text Declaration.

Primary Master Format (PMF)

The Primary Master Format is a structure containing a set of structured fields which declares the primary set of base formatting attributes for the document.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	min=54	R
CLASS	2	1	X	E2	R
TYPE	3	1	X	01	R
FORMAT	4	1	X	00	R
CONTENT	5	V	-		R

PARAMETERS

CONTENT

Structured Field	Occurrence
"Page Image Parameters (PIP)" on page 55	Required
"Line Parameters (LP)" on page 59	Required
"Tab Parameters (TP)" on page 66	Required
"Line Numbering (LN)" on page 69	Optional
"Page Image Numbering (PIN)" on page 74	Optional
"Print Medium (PM)" on page 80	Optional
"Operator Message (OM)" on page 83	Optional
"Page Formatting Parameters (PFP)" on page 77	Optional
"Note Format Parameters (NFP)" on page 91	Optional
"Auto-Outline Parameters (AOP)" on page 85	Optional

SYNTAX RULES

This structure is contained in each revisable-form-text document.

It is in the second Format Unit.

It immediately follows a Format Unit Prefix.

The required structured fields in CONTENT appear in the order shown above.

In CONTENT, the optional structured fields can occur in any order but must follow the required structured fields.

SYNTAX EXCEPTIONS

An exception condition exists if the structure is not present.

An exception condition exists if the structure is out of order sequentially.

An exception condition exists if the required structured fields in CONTENT of the structure are not in the specified order.

An exception condition exists if, in CONTENT, any optional structured field precedes any required structured field.

An exception condition exists if an invalid structured field is in CONTENT of the structure.

SYNTACTICAL MEANING

The Primary Master Format is a declarative for subsequent formatting.

The absence of an optional structured field in CONTENT is an indicator that the function provided by the structured field is not present for the Text Units for which the Primary Master Format is established.

SEMANTICS

The formatting state declared by the Primary Master Format is activated by the Establish Primary Master structured field. Its activation is implied for the first Text Unit.

Alternate Master Format (AMF)

The Alternate Master Format is a structure containing a set of structured fields which declares a second set of base formatting attributes for the document.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	min=54	R
CLASS	2	1	X	E2	R
TYPE	3	1	X	02	R
FORMAT	4	1	X	00	R
CONTENT	5	V	-		R

PARAMETERS

CONTENT

Structured Field	Occurrence
"Page Image Parameters (PIP)" on page 55	Required
"Line Parameters (LP)" on page 59	Required
"Tab Parameters (TP)" on page 66	Required
"Line Numbering (LN)" on page 69	Optional
"Page Image Numbering (PIN)" on page 74	Optional
"Print Medium (PM)" on page 80	Optional
"Operator Message (OM)" on page 83	Optional
"Page Formatting Parameters (PFP)" on page 77	Optional
"Note Format Parameters (NFP)" on page 91	Optional
"Auto-Outline Parameters (AOP)" on page 85	Optional

SYNTAX RULES

This structure is optional in a revisable-form-text document.

If present, it is contained in the third Format Unit.

It immediately follows a Format Unit Prefix.

The required structured fields in CONTENT appear in the order shown above.

In CONTENT, the optional structured fields may occur in any order but must follow the required fields.

SYNTAX EXCEPTIONS

An exception condition exists if the structure is out of order sequentially.

An exception condition exists if the required structured fields in CONTENT of the structure are not in the specified order.

An exception condition exists if, in CONTENT, any optional structured field precedes any required structured field.

An exception condition exists if an invalid structured field is in CONTENT of the structure.

SYNTACTICAL MEANING

The Alternate Master Format is a declarative for subsequent formatting.

The absence of an optional structured field in CONTENT is an indicator that the function provided by the structured field is not present for the Text Units for which the Alternate Master Format is established.

SEMANTICS

The formatting state declared by the Alternate Master Format is activated by the Establish Alternate Master structured field.

MASTER FORMAT STRUCTURED FIELDS

These structured fields specify formatting values related to the page image.

Page Image Parameters (PIP)

Page Image Parameters is a structured field which specifies the dimensions of the page image and the location of the first and last lines on the page image.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	19, 24	R
CLASS	2	1	X	E5	R
TYPE	3	1	X	07	R
FORMAT	4	1	X	00	R
RESERVED	5	4	X	00	R
PAGE IMAGE WIDTH	9	2	N	1440 - 65535	R
PAGE IMAGE DEPTH	11	2	N	1440 - 65535	R
FIRST BTL/FIRST PAGE IMAGE	13	2	N	1 - 65535	R
FIRST BTL/SUBQ PAGE IMAGES	15	2	N	1 - 65535	R
LAST BODY TEXT LINE	17	2	N	1 - 65535	R
RESERVED	19	5	X	00	O

PARAMETERS

PAGE IMAGE WIDTH

Specifies the horizontal dimensions of the page image, in 1/1440th-inch units. (See Figure 2 on page 12.)

1440 through 65535 - Width of page image.

PAGE IMAGE DEPTH

Specifies the vertical dimensions of the page image, in 1/1440th-inch units. (See Figure 2 on page 12.)

1440 through 65535 - Depth of page image.

FIRST BODY TEXT LINE/FIRST PAGE IMAGE

Specifies the number of 1/1440th-inch units between the top of the page image and the base of the first line of body text. This parameter applies to the page image following this structured field. (See Figure 2 on page 12.)

1 through 65535 - Location.

FIRST BODY TEXT LINE/SUBSEQUENT PAGE IMAGES

Specifies the number of 1/1440th-inch units between the top of the page image and the base of the first line of body text. This parameter, if it is not overridden on the next page by a PIP First Body Text Line/First Page Image parameter, specifies the location of the first body text line on the page images following the first page image after this structured field. (See Figure 2 on page 12.)

1 through 65535 - Location.

LAST BODY TEXT LINE

Specifies the number of 1/1440th-inch units between the top of the page image and the base of the last line of body text. This parameter applies to the page images following this structured field. (See Figure 2 on page 12.)

1 through 65535 - Location.

SYNTAX RULES

This structured field is required in the:

- Primary Master Format structure (See "Primary Master Format (PMF)" on page 50.)
- Alternate Master Format structure (See "Alternate Master Format (AMF)" on page 53.)
- Text Unit Format Change structure. (See "Text Unit Format Change (TUFC)" on page 120.)

See each structure for the position of the structured field within the structure.

SYNTAX EXCEPTIONS

An exception condition exists if this structured field is not present in the above structures.

An exception condition exists if this structured field is out of order sequentially in the above structures.

SYNTACTICAL MEANING

Page Image Parameters is a declarative for subsequent formatting.

SEMANTICS

The presentation space of a page image is specified by the Page Image Width and Page Image Depth parameters.

The vertical space (top to bottom) within the presentation space where body text appears is:

The first line for the body text is specified by the First Body Text Line/First Page Image and First Body Text Line/Subsequent Page Images parameters.

The last line of a page image for body text is specified by the Last Body Text Line parameter.

Refer to "Change Format Structured Fields/Structure" on page 116 for First Page Image and Subsequent Page Image considerations on a change in format.

There is no relationship between the Page Image Parameters and the Print Medium. For example, if the Page Image Width and Page Image Depth exceed or do not evenly map to the medium specified for use for materialization of page images, the results are implementation defined.

SEMANTIC EXCEPTIONS

An exception condition exists when nonadjusted text exceeds the right edge of the presentation space as defined by the Page Image Width.

An exception condition exists if the First Body Text Line/First Page Image value is greater than the value specified for Page Image Depth.

An exception condition exists if the First Body Text Line/Subsequent Page Images value is greater than the value specified for Page Image Depth.

An exception condition exists if the Last Body Text Line value is greater than the value specified for Page Image Depth.

An exception condition exists if the Last Body Text Line is less than the value specified for the first body text line.

Line Parameters (LP)

Line Parameters is a structured field which declares the line formatting parameter values.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	30, 31	R
CLASS	2	1	X	E6	R
TYPE	3	1	X	01	R
FORMAT	4	1	X	00	R
RESERVED	5	2	X	00	R
GFID	7	2	N	1 - 65535	R
FONT WIDTH	9	2	N	1 - 1440	R
FONT ATTRIBUTE	11	1	N	1, 2	R
GCID	12	2;2	N	0;0 or 1-65535;1-65535	R
LEFT MARGIN	16	2	N	0 - 65535	R
RIGHT MARGIN	18	2	N	1 - 65535	R
LINE DENSITY	20	2	N	1 - 1440	R
LINE SPACING	22	1	N	1 - 8	R
ADJUST STATE	23	1	N	0 - 1	R
RESERVED	24	1	X	00	R
ZONE	25	1	N	1 - 30	R
RESERVED	26	1	X	00	R
JUSTIFY % VALUE	27	1	N	1 - 100	R
ALIGNMENT STATE	28	1	N	1 - 4	R
LINE NUMBERING STATE	29	1	N	1 - 4	R
RESERVED	30	1	X	00	O

PARAMETERS

GFID

Identifies the font which is the size and style of type for the graphic characters to be presented on the page image.

1 through 255 - Assigned to IBM released Fonts. Refer to "Appendix D. Font Summary" on page 249 for a list of IBM assigned font ID's.

256 through 65279 - IBM GCFID registered fonts.

65280 through 65535 - Customer assigned fonts.

FONT WIDTH

Specifies the designated width of the font in 1/1440-inch units. The GFID implies the width, but it is directly specified in the structured field to provide information for selecting a font substitute.

1 through 1440 - Width of font in 1/1440-inch units.

FONT ATTRIBUTE

Specifies the spacing attribute of the font. The GFID implies the attribute, but it is directly specified in the structured field to provide information for selecting a font substitute.

1 - Font is monospaced.

2 - Font is proportionally spaced using Type 1 PSM character increments.

GCID

The syntax and semantics of this parameter are described in "Document Parameters (DP)" on page 29. A zero value for this parameter specifies use of the GCID parameter value specified in the Document Parameters structured field.

LEFT MARGIN

Specifies the number of 1/1440th-inch units between the left edge of the page image and the Left Margin Position. (See "Release Left Margin (RLM)"

on page 164.)

0 through 65535 - Left Margin position.

RIGHT MARGIN

Specifies the number of 1/1440th-inch units between the right edge of the page image and the Right Margin Position. (See Figure 2 on page 12.)

1 through 65535 - Rightmost presentation position.

LINE DENSITY

Specifies in 1/1440th-inch units the depth of one line.

1 through 1440 - Depth of line.

LINE SPACING

Specifies the number of half-lines moved for all line terminators and an Index Control (INX).

1 through 8 - Number of half lines moved.

ADJUST STATE

Specifies whether the subsequent text is adjustable or not.

0 - Subsequent text is not adjustable.

1 - Subsequent text is adjustable.

ZONE

Specifies the width of a zone to the left of the right margin in font widths. This zone is used to effect line ending decisions.

1 through 30 - Number of font widths in the zone.

JUSTIFY % VALUE

Specifies the percent of justification. This parameter is ignored if ALIGNMENT STATE is not justify (4).

1 through 100 - Percent of alignment.

ALIGNMENT STATE

Specifies how each text line is to be aligned.

1 - Align left (observing indents).

2 - Align right.

3 - Center.

4 - Justify.

LINE NUMBERING STATE

Specifies one of the following states for automatic line numbering.

1 - On, Resume -- Indicates that line numbering is to be resumed on the following line.

2 - On, Reset -- Indicates that line numbering is to be started on the following line with the line number value specified by the Starting Number parameter of the active Line Numbering Parameters Structured Field.

3 - Off, Continue -- Indicates that line numbering is to be terminated on the following line, but the incrementing of the line number is to be continued.

4 - Off, Suspend -- Indicates that line numbering is to be terminated on the following line, and line number incrementing is also to be terminated.

SYNTAX RULES

This structured field is required in the following structures:

Primary Master Format structure

Alternate Master Format structure

Text Unit Format Change structure.

The parameters of this structured field can be present in a Set Line Parameters control, a mid-text unit change in the line formatting values. (See "Set Line Parameters (SLP)" on page 172.)

The Line Parameters structured field must immediately follow the Page Image Parameters structured field in the above structures.

SYNTAX EXCEPTIONS

An exception condition exists if the structured field is not present in the above named structures.

An exception condition exists if this structured field is out of order sequentially in the above named structures.

An exception condition exists if the right margin is less than or equal to the defined left margin.

SYNTACTICAL MEANING

Line Parameters is a declarative for subsequent formatting.

SEMANTICS

This structured field contains the values to be used for formatting a line within the page image. The values specified include definition of the font, and right and left margin placement along with line density and line spacing.

This structured field contains the indication of whether the line adjust state is in effect or not (Adjust State).

When making line end decisions in adjust mode, 1) any word which extends past the right margin terminates the line and causes that word to be placed on a new line of the page image; 2) any word which ends to the right of the zone boundary terminates the line and the next non-blank character begins a new line in the page image.

The interpretation of the alignment state parameter is described below. The value of this parameter is temporarily ignored for semantic lines that end with an active ATL or ATF control.

1 - Align left; The first character or control in each semantic line is positioned at the active indent tab level.

2 - Align right; The text in each semantic line is positioned so that the right edge of the last character (X'40'-X'FF') in each line is presented at the right margin. Each semantic line is left aligned and the distance between the last character in each semantic line and the right margin is computed to determine the amount of white space that must be inserted in each line. If a semantic line does not contain any IT, INX or HT controls, this white space is inserted before the first control or character in the line. Otherwise, the white space is inserted after the last IT, INX or HT in the line.

3 - Center; The text in each semantic line is centered. Each semantic line is left aligned and the distance between the last character in each

semantic line and the right margin is computed to determine the amount of white space that must be inserted in each line.

If a semantic line does not contain any IT, INX or HT controls, half of this white space is inserted before the first character or control in the line. Otherwise, half the white space is inserted after the last IT, INX or HT in the line. If the white space cannot be evenly divided in half, any remainder is discarded before the specified insertion.

4 - Justify; Each semantic line is left aligned and the distance between the last non-blank (non-X'40') character in each semantic line and the right margin position is computed and multiplied by the value % specified by the Justify % Value to determine the excess white space that must be distributed between the words of the line. Then the excess white space is distributed, from left to right, evenly among the spaces (X'40''s) in the line.

Spaces preceding a Horizontal Tab, an Index or the first non-blank character (EBCDIC code greater than X'40') in a line are not expanded. The value 100% would add space, evenly through the line, to position the last non-blank character of the line at the right margin. The last line of a paragraph need not be justified.

Text (other than system assigned line numbers) in the left margin may be shifted out of the left margin as a result of the center or right align process described above.

No attempt is made to right align, center or justify semantic lines that extend to the right of the right margin position.

The specification of Alignment does not affect line ending decisions.

Even if the font specified by GFID is not supported, the width and attributes are used.

The value specified by Right Margin is the position beyond which text to be adjusted will not appear.

The Line Numbering State parameter is ignored if the Line Numbering structured field is not present in the same master format. Semantics governing the initialization and incrementing of the active line number are specified in the description of the semantics for the Line Numbering structured field. (See "Line Numbering (LN)" on page 69.)

When processing text in a nonadjusted mode, a line can extend beyond the right margin.

SEMANTIC EXCEPTIONS

An exception condition exists if either specified margin is equal to or greater than the Page Image Width.

In adjust mode, an exception condition exists if the data stream contains a word which contains more characters between syllable hyphens than can fit between the margins. (A syllable is longer than the line being formed).

Tab Parameters (TP)

Tab Parameters is a structured field which declares the horizontal tab setting parameter values, and the alignment characteristics associated with each tab setting.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	min:max=5:151	R
CLASS	2	1	X	E6	R
TYPE	3	1	X	02	R
FORMAT	4	1	X	00	R
RESERVED	5	1	X	00	O
FIXED/FLOATlNG	6	1	N	0,1	O
ALIGNMENT CHARACTER**	7	1	N	0 - 5	O
POSITION**	8	2	N	1 - 32767	O

** These parameters can be repeated in pairs up to a maximum of 48 pairs.

PARAMETERS

FIXED/FLOATING

Specifies whether the specified tab stops are defined in absolute units of 1440ths of an inch (Fixed Tabs) or are defined in character units (Floating Tabs). Support of this parameter is elective.

0 - Character units (Floating Tabs); The Tab Stop locations are specified in character units (units of the active font width as specified by an SLP, LP or SFG font width parameter). The physical position of each Tab Stop is relative to the font width in effect at the time each subsequent Horizontal Tab is processed.

1 - 1440th units (Fixed Tabs); The Tab Stop locations are in absolute units of 1440ths of an inch. The physical position of the Tab Stops are not affected by subsequent changes in the font width.

ALIGNMENT CHARACTER

Specifies the type of alignment performed in positioning text at the designated tab stop on the page image.

0 - Null (left) align text field.

1 - Period align field text.

2 - Comma align field text.

3 - Center align field text.

4 - Right align field text.

5 - Colon align field text.

POSITION

Specifies the horizontal position, relative to the left margin, at which alignment occurs. The horizontal position is defined in terms of the units specified in the Fixed/Floating parameter.

1 through 32767 - Tab position (Tab position 1 = Left Margin)

SYNTAX RULES

This structured field is present in the following structures:

Primary Master Format structure

Alternate Master Format structure

Text Unit Format Change structure.

This structured field follows the Line Parameter structured field in the above named structures.

The Alignment Character and Position values are specified in pairs up to a maximum of 48 pairs.

Tab positions are specified in ascending order.

SYNTAX EXCEPTIONS

An exception condition exists if there is not a pair of parameters for each tab setting.

An exception condition exists if tab positions are not specified in ascending sequential order.

An exception condition exists if this structured field is not present in a Format Declaration structure or a Text Unit Format Change structure.

An exception condition exists if this structured field does not follow the Line Parameters structured field in the above structures.

SYNTACTICAL MEANING

Tab Parameters is a declarative for subsequent formatting.

SEMANTICS

This structured field clears all previous tab settings. The values specified in this structured field completely define the tab stop positions and alignment at each tab stop to be used in generating the page image. If the length of this structured field is 5, 6 or 7 bytes, then no tab settings are active.

See "Horizontal Tab (HT)" on page 218 for a description of text positioning on a Page Image for each Alignment Character value.

Line Numbering (LN)

Line Numbering is a structured field which declares the line numbering parameter values.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	14, 16, 18	R
CLASS	2	1	X	E6	R
TYPE	3	1	X	03	R
FORMAT	4	1	X	00	R
LEFT NUMBER LOCATION	5	1	N	0 - 2	R
RIGHT NUMBER LOCATION	6	1	N	0 - 2	R
INTERVAL	7	1	N	1 - 12	R
CYCLE	8	1	N	0 - 1	R
STARTING NUMBER	9	2	N	1 - 1000	R
INCREMENT	11	2	N	1 - 1000	R
NUMBER BLANK LINES	13	1	N	0 - 1	R
LEFT NUMBER POSITION	14	2	N	0 - 65535	O
RIGHT NUMBER POSITION	16	2	N	0 - 65535	O

PARAMETERS

LEFT NUMBER LOCATION

Indicates where line numbers can appear in the left margin of the page image.

0 - No line numbers in the left margin.

1 - Format line numbers anywhere in the left margin of the page image.

2 - Format line numbers at the location specified by the Left Number Position parameter.

RIGHT NUMBER LOCATION

Indicates where line numbers can appear in the right margin of the page image.

0 - No line numbers in the right margin.

1 - Format line numbers anywhere in the right margin of the page image.

2 - Format line numbers at the location specified by the Right Number Position parameter.

INTERVAL

Specifies the line numbering occurrence frequency.

1 through 12 - Number every nth line.

CYCLE

Specifies whether to continue line number incrementing or to reset the line number on each new page image.

0 - Continue numbering sequence from page image to page image.

1 - Reset numbering sequence to Starting Number for each new page image.

STARTING NUMBER

Specifies the starting line number to be used when resetting the line number.

1 through 1000 - Set starting line number to n.

INCREMENT

Specifies the line number increment to be added successively to the starting sequence number.

1 through 1000 - Integer line increment value.

NUMBER BLANK LINES

Indicates whether blank lines are to be numbered.

0 - Suppress numbering of blank lines. Incrementing continues.

1 - Number blank lines.

LEFT NUMBER POSITION

Specifies the number of 1/1440th inch units between the left edge of the page image and the right presentation boundary of the left number field.

0 through 65535 - Distance.

RIGHT NUMBER POSITION

Specifies the number of 1/1440th inch units between the left edge of the page image and the right presentation boundary of the right number field.

0 through 65535 - Distance.

SYNTAX RULES

This structured field is optional in the following structures:

Primary Master Format structure

Alternate Master Format structure

Text Unit Format Change structure.

Refer to the appropriate structure for placement of the structured field in the structure. (See "Primary Master Format (PMF)" on page 50,"Alternate Master Format (AMF)" on page 53, and "Text Unit Format Change (TUFC)" on page 120.)

SYNTAX EXCEPTIONS

An exception condition exists if this structured field precedes any required structured field in the above structures.

SYNTACTICAL MEANING

This structured field is a declarative for subsequent processing.

Absence of this structured field in a Master Format or Text Unit Format Change structure implies that the line numbering function is not active when that format is in effect for the document.

The Left Number Position parameter is honored if and only if the Left Number Location parameter has been specified as 2; otherwise, this parameter is ignored.

The Right Number Position parameter is honored if and only if the Right Number Location parameter has been specified as 2; otherwise, this parameter is ignored.

SEMANTICS

The line numbering parameters determine where and when the line number is to appear on the page image and how line numbering is to be managed.

Whether line numbering is in effect or not for a given base format is indicated by the Line Numbering State parameter in the Line Parameters structured field. (See "Line Parameters (LP)" on page 59.)

When the line number is presented, leading zeroes may or may not appear on the page image.

When presented, the line number is right aligned whether placed in either the left margin or the right margin.

The active line number is only initialized to the value of the Starting Number parameter when one of the following conditions is encountered:

The first time a PMF, AMF, EPM, EAM, TUFC or SLP is activated in a document with the Line Numbering State on (Value 1 or 2).

Each time a Page End control is encountered and the Cycle parameter is equal to 1.

Each time an EPM, EAM, TUFC or SLP activates a Line Format that contains a Line Numbering State parameter with a value of 2.

The active line number is incremented by the value of the Increment parameter each time a semantic line end other than ZICR is encountered in body text and the value of the Line Numbering State parameter is equal to 1, 2 or 3.

The line number is placed on the page image under the following conditions:

If the Line Parameters, Line Numbering State parameter is equal to 1 or 2.

If the line is blank (contains no printable graphics) and Number Blank Lines equals zero (0), the line number is not presented.

If the Interval parameter is specified as greater than 1, the line number will be presented only on the occurrence of the nth line specified by the Interval parameter value.

On a Return To Master Format or a Return to Master Line Format, the Line Numbering State parameter does not cause the current line number to be reset. The line number sequence is continued.

SEMANTIC EXCEPTIONS

An exception condition exists when the specified space in the margin is not adequate to contain the line number.

An exception condition exists if both Left Number Location and Right Number Location are specified as zero. Line number incrementing continues.

An exception condition exists if a Right Numbering Location value of 2 is specified and the Right Numbering Position is not located between the Right Margin and the right edge of the page image.

An exception condition exists if a Left Numbering Location value of 2 is specified and the Left Numbering Position is not located between the Left Margin and the left edge of the page image.

Page Image Numbering (PIN)

The Page Image Numbering structured field declares page image numbering parameter values. The PIN structured field is an optional structure that provides advanced page image numbering functions.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	9	R
CLASS	2	1	X	E5	R
TYPE	3	1	X	08	R
FORMAT	4	1	X	00	R
NUMBER	5	2	N	0 - 65535	R
RESERVED	7	1	X	00	R
NUMBER INCREMENT	8	1	N	0 - 10	R

PARAMETERS

NUMBER

Specifies the initial value of the page image number. See "Print Page Image Number (PPIN)" on page 160.

0 - Do not reset page image number, continue the sequence.

1 through 65535 - Initial external page image number.

NUMBER INCREMENT

Specifies the incrementing value which is added to the current page image number to form the subsequent page image number.

0 - No page image number incrementing.

1 through 10 - Increment.

SYNTAX RULES

This structured field appears in the following structures when page image numbering is in effect.

- Primary Master Format
- Alternate Master Format
- Text Unit Format Change.

Refer to the appropriate structure definition for placement of this structured field in the structure. (See "Primary Master Format (PMF)" on page 50,"Alternate Master Format (AMF)" on page 53, and "Text Unit Format Change (TUFC)" on page 120.)

Only one (1) Page Image Numbering structured field appears in a structure.

SYNTAX EXCEPTIONS

An exception condition exists if this structured field precedes any required structured field within the above structures.

An exception condition exists if more than one Page Image Numbering structured field appears in a structure.

SYNTACTICAL MEANING

Page Image Numbering is a declarative for subsequent processing.

SEMANTICS

The parameters Number and Number Increment specify how the page image number is calculated.

Number is the value used to initialize the Page Image Number.

Number Increment is the value added to the current page image number when a subsequent page image is numbered for presentation.

The active page image number is only initialized (initialization is always according to the NUMBER parameter) when one of the following conditions is encountered:

The beginning of the document.

Each time an EPM, EAM or TUFC activates a Format Declaration that contains a Number parameter with a nonzero value.

The active page image number is only incremented by the value of the Number Increment parameter following a Page End control.

In a master format, a Number value of zero (0) causes the value of one (1) to be used as the initial value for the document.

A Number Increment of zero (0), indicates that the page image number does not change from page image to page image.

On a Return To Master Format, the parameter Number does not cause the page image number to be reset. The page image number sequence is continued.

If a Format Declaration is active that does not contain a PIN structured field, the basic page image numbering function is assumed, that is, the value assumed for the Number parameter = 0 and the Number Increment parameter = 1.

SEMANTIC EXCEPTIONS

If the Number Increment applied to the Page Image Number is greater than a product can insert in the page image, an exception condition exists.

Page Formatting Parameters (PFP)

Page Formatting Parameters is a structured field which declares parameters applicable to page image formatting.

The body text area of a page containing formatted note text at the bottom of the body text area is divided into three sections: main body text, white space, and note text. The parameters defined in the structured field provide information regarding the size of each section.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	5 - 17	R
CLASS	2	1	X	E9	R
TYPE	3	1	X	05	R
FORMAT	4	1	X	00	R
SELF-IDENTIFYING PARAMETER(S)	5	-	-		0

SELF-IDENTIFYING PARAMETERS

The self-identifying parameters that can occur in this structured field are listed in the table below. The parameters in the table can occur in any order.

PARAMETER	OCC
MIN BODY TEXT LINES	0
MAX WHITE SPACE	0
MAX NOTE TEXT LINES	0

PARAMETERS

MIN BODY TEXT LINES

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	4	R
PARAMETER TYPE	1	X	01	R
MIN BODY TEXT LINES	2	N	0-65535	R

Specifies the minimum number of half-lines that may be placed in the main body text area.

If this parameter is omitted, a value of 0 is used.

MAX WHITE SPACE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	4	R
PARAMETER TYPE	1	X	02	R
MAX WHITE SPACE	2	N	0-65535	R

Specifies the maximum white space, in half-lines, that may be placed in a page between the main body text area and the note text area.

If this parameter is omitted, a value equal to the total number of half-lines available in the body text area minus MAX NOTE TEXT LINES is used.

MAX NOTE TEXT LINES

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	4	R
PARAMETER TYPE	1	X	03	R
MAX NOTE TEXT LINES	2	N	0-65535	R

Specifies the maximum number of half-lines that may be placed in the note text area. This includes RULE or NOTE GROUP PROLOGUE; NOTE GROUP EPILOGUE; INTERNOTE TEXT or SPACE; CONTINUED FROM TEXT; and CONTINUED TO TEXT as well as the formatted note text itself.

If this parameter is omitted, a value equal to the total number of half-lines available in the body text area of the page image is used.

SYNTAX EXCEPTIONS

It is an exception condition if MIN BODY TEXT LINES, MAX WHITE SPACE, or MAX NOTE TEXT LINES does not fall within the specified value range.

SEMANTICS

If a given parameter is not supported, the value should be saved, the specified default used, and the value restored.

If during pagination a conflict occurs between two or more of the parameters specified in PFP, the order of precedence is:

MAX WHITE SPACE

MIN BODY TEXT LINES

MAX NOTE TEXT LINES

Print Medium (PM)

The Print Medium structured field is a structured field containing a set of specifications for a print medium.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	6-10	R
CLASS	2	1	X	E4	R
TYPE	3	1	X	02	R
FORMAT	4	1	X	00	R
COPIES	5	1	N	1-99	R
FORM	6	1	N	0-2	O
SOURCE	7	1	N	0-2,100	O
SUBSEQUENT FORM	8	1	N	0-2	O
SUBSEQUENT SOURCE	9	1	N	0-2,100	O

PARAMETERS

COPIES

Specifies the number of copies to which the Print Medium structured field applies.

1 through 99 - Number of copies.

FORM

Specifies which form is to be selected.

0 - Unspecified.

1 - Paper.

2 - Envelope.

SOURCE

Specifies the source.

0 - Unspecified.

1 - Use source one.

2 - Use source two.

100 - Manual Feed.

SUBSEQUENT FORM

Specifies which form is to be selected for subsequent Page Images.

0 - Unspecified.

1 - Paper.

2 - Envelope.

SUBSEQUENT SOURCE

Specifies the source for subsequent Page Images.

0 - Unspecified.

1 - Use source one.

2 - Use source two.

100 - Manual Feed.

SYNTAX RULES

The Print Medium structured field is optional in a revisable-form-text document.

This structured field is included in the following structures when Print Medium is desired.

- Primary Master Format
- Alternate Master Format
- Text Unit Format Change.

Refer to the appropriate structure for placement of the structured field in the structure. (See "Primary Master Format (PMF)" on page 50,"Alternate Master Format (AMF)" on page 53, and "Text Unit Format Change (TUFC)" on page 120.)

SYNTAX EXCEPTIONS

An exception condition exists if this structured field precedes any required structured field in the above structures.

SYNTACTICAL MEANING

When the Print Medium structured field is not present, all parameters are unspecified. There are no defaults.

SEMANTICS

The Print Medium structured field provides printer device setup information; it does not contain formatting specifications.

Print Medium is specified when printer setup/control information is to be generated from a revisable-form-text document for the printer device operation before the associated Page Images can be printed.

When FORM or SOURCE are unspecified, no information is stated or implied concerning form or source drawer settings.

Operator Message (OM)

The Operator Message structured field is a structured field containing a message that is to be presented to the operator.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	6-65	R
CLASS	2	1	X	E4	R
TYPE	3	1	X	03	R
FORMAT	4	1	X	00	R
MESSAGE TEXT	5	V	C	Alpha-numeric	R

PARAMETERS

MESSAGE TEXT

Declares the message of from 1 to 60 characters in the code page specified in Document Parameters.

SYNTAX RULES

The Operator Message structured field is optional in a revisable-form-text document.

This structured field is included in the following structures when Operator Message is desired.

- Primary Master Format
- Alternate Master Format
- Text Unit Format Change.

Refer to the appropriate structure for placement of the structured field in the structure. (See "Primary Master Format (PMF)" on page 50,"Alternate Master Format (AMF)" on page 53, and "Text Unit Format Change (TUFC)" on page 120.)

SYNTAX EXCEPTIONS

An exception condition exists if this structured field precedes any required structured field in the above structures.

SYNTACTICAL MEANING

This structured field is a declarative for later processing.

SEMANTICS

The Operator Message structured field declares a message to be presented to the operator; it does not contain formatting specifications.

It is specified when a message to the operator must be generated for a revisable-form-text document before the associated Page Images can be printed.

Auto-Outline Parameters (AOP)

The Auto-Outline Parameters structured field specifies the leading and trailing text, and the type of numbering to be used in the automatic generation of outline text entries.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	15-4181	R
CLASS	2	1	X	E9	R
TYPE	3	1	X	04	R
FORMAT	4	1	X	00	R
SELF-IDENTIFYING PARAMETER(S)	5	-	-	-	R

SELF-IDENTIFYING PARAMETERS

The self-identifying parameters that can occur in this structured field are listed in the table below and can occur in any order.

PARAMETER	OCC
GCID*	R
LEADING TEXT**	R
TRAILING TEXT**	R

* May appear for a maximum of 16 times.

** Repeatable up to eight times.

DESCRIPTION OF SELF-IDENTIFYING PARAMETERS

GCID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	6	R
PARAMETER TYPE	1	X	01	R
GCID	4	N	1-65535;1-65535	R

Global Coded Graphic Character Set ID is a concatenation of two 2-byte binary numbers: CGCS ID and CODE PAGE ID.

CGCS ID

Identifies the Coded Graphic Character Set.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

CODE PAGE ID

Identifies the Code Page.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

This GCID applies only to parameters in this structure. It remains in effect until another GCID is specified within the structure.

LEADING TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	5-255	R
PARAMETER TYPE	1	X	05	R
LEVEL	1	N	1-8	R
LEVEL TYPE	1	N	0-5	R
ID MODE	1	N	0-1	R
TEXT	v	C	text	O

Specifies the type of outline numbering or letter and any leading text associated with each level of an outline entry.

LEVEL

Specifies the number of the level of the outline entry that the parameter set governs.

LEVEL TYPE

Specifies the type of numbering or lettering to be generated for the specified LEVEL.

0 - No numbering or lettering.

1 - Upper case Roman.

2 - Upper case alphabetic.

3 - Lower case Roman.

4 - Lower case alphabetic.

5 - Decimal integers.

ID MODE

Specifies the mode of identification for all levels of outline.

0 - Noncatenated level numbers. Each level of outline is identified by a single number or letter as specified in the LEVEL TYPE parameter for the level.

1 - Catenated level numbers. Each level of outline is identified by that level's identifier catenated with the identifier of the next higher level (which may in turn be catenated). All catenation uses the decimal point as separator. See AO control for semantics of catenation.

TEXT

Declares the text which is to prefix the outline identifier if this is the highest level in the outline identifier. May contain any revisable-form-text control or graphic, except another AO control.

TRAILING TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	5-255	R
PARAMETER TYPE	1	X	07	R
LEVEL	1	N	1-8	R
LEVEL TYPE	1	N	0-5	R
ID MODE	1	N	0-1	R
TEXT	v	C	text	O

Specifies the type of outline numbering or letter and any trailing text associated with each level of an outline entry.

LEVEL

Specifies the number of the level of the outline entry that the parameter set governs.

LEVEL TYPE

Specifies the type of numbering or lettering to be generated for the specified LEVEL.

0 - No numbering or lettering.

1 - Upper case Roman.

2 - Upper case alphabetic.

3 - Lower case Roman.

4 - Lower case alphabetic.

5 - Decimal integers.

ID MODE

Specifies the mode of identification for all levels of outline.

0 - Non-catenated level numbers. Each level of outline is identified by a single number or letter as specified in the LEVEL TYPE parameter for the level.

1 - Catenated level numbers. Each level of outline is identified by that level's identifier catenated with the identifier of the next higher level (which may in turn be catenated). All catenation uses the decimal point as separator. See "Auto-Outline (AO)" on page 127 for semantics of catenation.

TEXT

Declares the text which is to suffix the outline identifier, if this is the lowest level in the outline identifier. May contain any revisable-form-text control or graphic, except an AO control.

SYNTAX RULES

AOP may only appear in a Primary Master or Alternate Master Format.

SYNTAX EXCEPTIONS

An exception condition exists if there is not a leading or trailing text declaration for all levels higher than one for which there is a declaration.

SEMANTICS

If leading and/or trailing text is not specified for a level, then none is produced.

SEMANTIC EXCEPTIONS

An exception condition exists if either LEVEL TYPE or ID MODE for leading text is different than the corresponding parameter for trailing text.

Note Format Parameters (NFP)

The Note Format Parameters structured field specifies the parameters of note formatting.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	min=15	R
CLASS	2	1	X	E9	R
TYPE	3	1	X	03	R
FORMAT	4	1	X	00	R
SELF-IDENTIFYING PARAMETER(S)	5	-	-	-	R

Self-Identifying Parameters

The self-identifying parameters that can occur in this structured field are listed in the table below. The parameters in the table can occur in any order. The only parameter that can occur more than once in this structured field is the GCID parameter. It must occur before the first parameter containing character data and may occur before any such additional parameter.

PARAMETER	OCC
GCID	R
NOTE FORMAT ATTRIBUTES	R
NOTE CLASS	O
REFERENCE ID TYPE	O
RULE	O
NOTE GROUP PROLOGUE	O
NOTE GROUP EPILOGUE	O
INTERNOTE TEXT	O
REFERENCE ID PROLOGUE	O
REFERENCE ID EPILOGUE	O
ID PROLOGUE	O
ID EPILOGUE	O
CONTINUED FROM TEXT	O
CONTINUED TO TEXT	O
TYPESTYLE	O
USER SEQUENCE DEFINITION	O
CLASS COMMENT	O
LINE PARAMETERS	O
TAB PARAMETERS	O

Description of Self-Identifying Parameters

GCID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	6	R
PARAMETER TYPE	1	X	01	R
GCID	4	N	1-65535;1-65535	R

Global Coded Graphic Character Set ID is a concatenation of two 2-byte binary numbers: CGCS ID and CODE PAGE ID.

CGCS ID

Identifies the Coded Graphic Character Set.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

CODE PAGE ID

Identifies the Code Page.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

This GCID applies only to parameters in this structure. It remains in effect until another GCID is specified within the structure.

NOTE CLASS

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	15	R
NOTE CLASS ID	1	N	1-9	R

Identifies a unique set of formatting requirements for a given type of note, for example, critical comments, author's notes, or footnotes. NOTE CLASS ID is user-assigned.

If this parameter is omitted, NOTE CLASS ID = 1 is assumed.

REFERENCE ID TYPE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	16	R
REFERENCE ID TYPE	1	N	1-6	R

Identifies the type of note ID sequence to be presented both at the note reference point in body text and in the formatted note text.

1 - numeric

2 - uppercase alphabetic

3 - lowercase alphabetic

4 - none

5 - user-defined non-combinatory sequence

This refers to a sequence specified in USER SEQUENCE DEFINITION.

6 - user-defined combinatory sequence

This refers to a sequence specified in USER SEQUENCE DEFINITION.

If this parameter is omitted, REFERENCE ID TYPE = 1 (numeric) is assumed.

RULE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=5	R
PARAMETER TYPE	1	X	04	R
CHARACTER	1	X	40-FE	R
NUMBER OF CHAR REPETITIONS	2	N	0-65535	R

Specifies the character string which precedes the note presentation group.

CHARACTER

X'40-FE' - Specifies a character which is to be replicated to form the rule.

NUMBER OF CHARACTER REPETITIONS

Specifies the number of replications of the specified character which is to form the rule.

The rule is aligned on the left margin.

The rule may extend only to the right margin. If the specified rule would extend beyond the right margin, it is truncated at the right margin in the page image.

The rule is presented with a blank line preceding it and one following it. The insertion of the blank lines is independent of line spacing.

If this parameter is omitted, no rule is presented.

NOTE GROUP PROLOGUE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=3	R
PARAMETER TYPE	1	X	23	R
PRESENTATION INDICATOR	1	N	0,1	R
PROLOGUE TEXT	0-240	C	text	O

Specifies the text which precedes the note group. The note group begins on a separate line following the PROLOGUE TEXT. (A note group is defined to be all notes of a given class which are presented at a given location; a note collection is all note groups which are presented at a given location.)

PRESENTATION INDICATOR

0 - PROLOGUE is to be presented before each note group in the collection.

1 - PROLOGUE is to be presented only before the first note group in the collection.

PROLOGUE TEXT

Contains the text to be presented.

If this parameter is omitted, no prologue is presented.

NOTE GROUP EPILOGUE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=3	R
PARAMETER TYPE	1	X	20	R
PRESENTATION INDICATOR	1	N	0,1	R
EPILOGUE TEXT	0-240	C	Text	O

Specifies the character string which follows the note group. The EPILOGUE TEXT begins on a separate line immediately following the note group.

PRESENTATION INDICATOR

0 - EPILOGUE is to be presented after each note group within a note collection.

1 - EPILOGUE is to be presented only after the last note group within a note collection.

EPILOGUE TEXT

Contains the text to be presented.

If this parameter is omitted, no epilogue is presented.

NOTE FORMAT ATTRIBUTES

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=4	R
PARAMETER TYPE	1	X	07	R
RESET STATUS	1	N	1-2	R
PRESENTATION LOCATION	1	N	1-7	R
RESERVED	2	N	-	O
SPACE	2	N	0-65535	O

Specifies the format attributes for note text.

RESET STATUS

Specifies how the system is to assign IDs to notes

1 - Continues ID sequence throughout the document (unless changed by operator intervention.)

2 - Resets ID sequence of the class. The ID sequence is reset at the beginning of the group unless the note text was referenced on the previous page.

PRESENTATION LOCATION

Specifies the placement of the note text for the note class.

1 - Present notes at the bottom of the page with overflow.

2 - Present notes at the end of the physical document.

3 - Present notes at the end of the logical document (logical document is bounded by an EPM or EAM control or by the end of the physical document.)

4 - Present notes at the bottom of the page with no overflow. If a note is too long to be contained on one page, it will overflow to the next page.

5 - Present notes inline.

6 - Do not present notes.

7 - Present notes at a user-specified location.

SPACE

Specifies the number of blank half-lines to be added between formatted notes. If this parameter is omitted, there is no space added between notes.

INTERNOTE TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=2	R
PARAMETER TYPE	1	X	24	R
INTERNOTE TEXT	0-240	C	text	O

INTERNOTE TEXT

Specifies a text string to be presented between notes in a given class. INTERNOTE TEXT begins on a new line.

If this parameter is omitted or if LENGTH = 2, there is no text presented between notes in the specified class.

REFERENCE ID PROLOGUE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=2	R
PARAMETER TYPE	1	X	13	R
PROLOGUE TEXT	0-60	C	text	O

Specifies the text and controls to be placed before the note reference in the body text.

If PARAMETER LENGTH = 2 or if the parameter is omitted, no PROLOGUE TEXT is presented.

REFERENCE ID EPILOGUE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=2	R
PARAMETER TYPE	1	X	14	R
EPILOGUE TEXT	0-60	C	text	O

Specifies the text and controls to be placed after the note reference in the body text.

If PARAMETER LENGTH = 2 or if the parameter is omitted, no EPILOGUE TEXT is presented.

ID PROLOGUE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=2	R
PARAMETER TYPE	1	X	10	R
PROLOGUE TEXT	0-60	C	text	O

Specifies the text and controls to be placed before the note ID in the formatted note text.

If PARAMETER LENGTH = 2 or if the parameter is omitted, no PROLOGUE TEXT is presented.

ID EPILOGUE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=2	R
PARAMETER TYPE	1	X	11	R
EPILOGUE TEXT	0-60	C	text	O

Specifies the text and controls to be placed after the note ID in the formatted note text.

If PARAMETER LENGTH = 2 or if the parameter is omitted, no EPILOGUE TEXT is presented.

CONTINUED FROM TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=2	R
PARAMETER TYPE	1	X	09	R
CONTINUED FROM TEXT	0-240	C	Text	O

Specifies the text which is to indicate the note text has been continued from a previous page.

The CONTINUED FROM TEXT begins on a separate line preceding the continued note text.

If LENGTH = 2 or if the parameter is omitted, no CONTINUED FROM TEXT is presented.

CONTINUED TO TEXT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=2	R
PARAMETER TYPE	1	X	19	R
CONTINUED TO TEXT	0-240	C	Text	O

Specifies the text which is to indicate continuation of a note onto the next page.

The CONTINUED TO TEXT begins on a separate line immediately following the last line of formatted note text in the Text Unit.

If LENGTH = 2 or if the parameter is omitted, no CONTINUED TO TEXT is presented.

TYPESTYLE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	7	R
PARAMETER TYPE	1	X	12	R
FONT ID	2	N	1-255	R
FONT WIDTH	2	N	1-1440	R
FONT ATTRIBUTE	1	N	1-2	R

Specifies the typestyle of the formatted note text.

FONT ID

Specifies the font to be used for all note text unless overridden by a font specification in the note text.

FONT WIDTH

Specifies the designated width of the font, in 1440ths inches, of the font specified in the FONT ID parameter.

FONT ATTRIBUTE

Specifies the attribute of the font specified in the FONT ID parameter.

1 - Monospaced.

2 - Proportionally spaced.

If this parameter is omitted, the typestyle is determined according to the hierarchy stated in the SEMANTIC RULES.

USER SEQUENCE DEFINITION

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=4	R
PARAMETER TYPE	1	X	17	R
SEQUENCE DEFINITION	2-120	C	Text	R

If the REFERENCE ID TYPE is user-defined, this parameter defines the ID sequence.

The first character of the SEQUENCE DEFINITION is the delimiter for the sequence elements.

If REFERENCE ID TYPE = 6 (user-specified), the sequence is combinatory, that is, when each of the elements in the sequence has been used, the note IDs are formed by combining the elements of the set. For example, if the set contains /#/@/*, / is the delimiter and the note IDs will be assigned as # @ * ## #@ #* @# @@ @* *# *@ ** ... ****.

If REFERENCE ID TYPE = 5 (user-specified), the sequence is non-combinatory, that is, when each of the elements in the sequence has been used, the next note is assigned the first element in the sequence.

If REFERENCE ID TYPE = 5 or 6 and this parameter is omitted, a null note ID will be presented. This is the same as defining a sequence of delimiters only, for example, ///.

CLASS COMMENT

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=3	R
PARAMETER TYPE	1	X	18	R
COMMENT	1-60	C	Text	R

Contains comments regarding any special features of this note class.

COMMENT may not contain any multibyte controls.

LINE PARAMETERS

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=32	R
PARAMETER TYPE	1	X	21	R
CONTENT	v	-	-	R

CONTENT

Refer to "Line Parameters (LP)" on page 59 for the syntax and semantics of the parameters that may appear in CONTENT.

LINE NUMBERING does not apply to formatted note text.

TAB PARAMETERS

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=7	R
PARAMETER TYPE	1	X	22	R
CONTENT	v	-	-	R

CONTENT

Refer to "Tab Parameters (TP)" on page 66 for the syntax and semantics of the parameters that may appear in CONTENT.

SYNTAX RULES

Note Format Parameters occurs optionally in Primary Master Format and Alternate Master Format.

Multiple NFPs may be specified in both the Primary Master Format and Alternate Master Format. They must be in ascending order by NOTE CLASS. Each Master Format structure may contain at most one NFP for each NOTE CLASS.

SEMANTICS

Declarative only. Specifies state values for the formatting of note text. Formatting state values which are specified in the note text override the parameters in NFP for that note.

The interaction of RULE and NOTE GROUP PROLOGUE is defined as follows:

If RULE is supported and NOTE GROUP PROLOGUE is not, present RULE as defined, that is, blank line, RULE, blank line if RULE is specified or nothing if RULE is omitted.

If NOTE GROUP PROLOGUE is supported then:

If NOTE GROUP PROLOGUE is specified, present it (RULE is ignored).

If NOTE GROUP PROLOGUE is omitted and RULE is specified, create and present a NOTE GROUP PROLOGUE that corresponds to the RULE as nearly as possible, taking into account the fact that RULE is preceded and followed by blank lines. (RULE is ignored.)

If RULE is omitted and NOTE GROUP PROLOGUE is specified, create a RULE that corresponds to the NOTE GROUP PROLOGUE as nearly as possible, taking into account the fact that RULE is preceded and followed by blank lines.

If neither is present, no text will be presented preceding the note group.

The interaction of TYPESTYLE and LINE PARAMETERS is defined as follows:

If TYPESTYLE is present and LINE PARAMETERS is not supported, use the font specified in TYPESTYLE.

If LINE PARAMETERS is supported and TYPESTYLE is present, TYPESTYLE overrides the font specified in LINE PARAMETERS.

If LINE PARAMETERS is supported and TYPESTYLE is not present, create TYPESTYLE containing the font specified in LINE PARAMETERS.

If neither is present, the font specified by the master format active for the referencing Text Unit will be used.

The interaction of SPACE and INTERNOTE TEXT is defined as follows:

If SPACE is present and INTERNOTE TEXT is not supported, present SPACE as specified.

If INTERNOTE TEXT is supported then:

If INTERNOTE TEXT is specified, present it as defined and create a SPACE parameter that corresponds to the INTERNOTE TEXT as nearly as possible.

If INTERNOTE TEXT is omitted and SPACE is specified, create an INTERNOTE TEXT parameter that corresponds to SPACE as nearly as possible.

If neither is present, nothing will be inserted between the notes in the specified class.

If TAB PARAMETERS is omitted, the TAB PARAMETERS specified in the master format active for the referencing Text Unit will be used.

If PRESENTATION LOCATION = 7 (present notes at a user-specified location) and no LPO control for the class is encountered, the notes in that class will be presented at the end of the document.

Line spacing of formatted note text is controlled by the Line Parameters in the NFP if Line Parameters is present and supported. Otherwise, formatted note text is single spaced.

Non-support of a given PRESENTATION LOCATION is governed by the following rules:

End of physical document may be used instead of end of logical document.

End of logical document may be used instead of end of physical document.

Bottom of the page with overflow may be used instead of any non-supported location.

MARGIN TEXT DECLARATION

This section describes the structured fields in the margin text declaration.

Margin Text Parameters (MPB and MPT)

The Margin Text Parameters structured field declares the location of margin text on a page image.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	8-9	R
CLASS	2	1	X	E5	R
TYPE	3	1	X	01,04	R
FORMAT	4	1	X	00	R
STARTING PAGE IMAGE	5	1	N	0, 1	R
START LINE	6	2	N	1 - 65535	R
RESERVED	8	1	N	00	O

PARAMETERS

TYPE/FORMAT

Specifies which margins are being defined with this structured field.

0100 - Top margin, all pages.

0400 - Bottom margin, all pages

STARTING PAGE IMAGE

Specifies the page image on which the margin text is first to appear.

0 - First page image. See "Change Format Structured Fields/Structure" on page 116 for a description of the conditions which cause first page image presentation.

1 - Subsequent page images.

START LINE

Specifies the number of 1/1440th-inch units between the top of the page image and the base of the margin text start line. (See Figure 2 on page 12.)

1 through 65535 - Location.

SYNTAX RULES

The top and bottom Margin Text Parameters structured fields are optional in the Margin Text Declaration.

Margin Text Parameters may follow each of the below named structures:

- Primary Master Format
- Alternate Master Format
- Text Unit Format Change.

There is one Margin Text Parameters structured field for the top margin and one for the bottom margin.

SYNTACTICAL MEANING

Margin Text Parameters is a declarative for subsequent formatting.

SEMANTICS

The parameters Starting Page Image and Start Line determine the placement of the margin text on the page image.

See "Change Format Structured Fields/Structure" on page 116 of this document for the parameter Starting Page Image 'first' and 'subsequent' page image rules on format changes.

There are two margin text options which may be specified when a Text Unit Format Change structure is defined.

Reset - Specify new margin text prototype.

A new margin text prototype is associated with a Text Unit Format Change structure if the Margin Text Parameter structured field is followed by a corresponding Margin Text structured field in the Margin Text Declaration.

Delete - No margin text specified.

If the Margin Text structured field is not present, margin text will not appear on any subsequent page image until the Margin Text is 'reset'.

Starting with the page image specified in the Starting Page Image parameter, Margin Text defined for even page images is printed on each page image that has an even page number value.

Starting with the page image specified in the Starting Page Image parameter, Margin Text defined for odd page images is printed on each page image that has an odd page number value.

SEMANTIC EXCEPTIONS

An exception condition exists if the top margin text Start Line is equal to or greater than the First Body Text Line location specified in Page Image Parameters.

An exception condition exists if the bottom margin text Start Line is less than or equal to the Last Body Text Line location specified in Page Image Parameters.

An exception condition exists if either of the Start Lines (top or bottom) is equal to or greater than the Page Image Depth specified in Page Image Parameters.

An exception condition exists if the Start Line value is less than the Line Density value. (See "Line Parameters (LP)" on page 59.)

Margin Text

Margin Text is a structured field which declares text that is to be formatted into the top and/or bottom margins.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	5 - 32767	R
CLASS	2	1	X	E8	R
TYPE	3	1	X	01-06	R
FORMAT	4	1	X	00	R
MARGIN TEXT PROTOTYPE	5	V	C	text	0

PARAMETERS

TYPE

Specifies where the margin text is to be placed on the page image.

01 - Top margin, all pages (MTTA).

02 - Top margin, odd pages (MTTO).

03 - Top margin, even pages (MTTE).

04 - Bottom margin, all pages (MTBA).

05 - Bottom margin, odd pages (MTBO).

06 - Bottom margin, even pages (MTBE).

MARGIN TEXT PROTOTYPE

Declares the margin text. It contains graphic characters, single byte formatting controls, and multibyte formatting controls.

SYNTAX RULES

The top and bottom Margin Text structured fields are optional in each of the Margin Text Declarations.

If multiple Margin Text structured fields of different Type are specified, they must be grouped by Type. That is, if a Margin Text structured field of given Type is followed by a Margin Text structured field of different Type, no further Margin Text structured fields of the given Type may follow in this Margin Text Declaration.

All Margin Text structured fields for the top margins have one Margin Text Parameter structured field (Type = 01).

All Margin Text structured fields for the bottom margins have one Margin Text Parameter structured field (Type = 04).

Multibyte text controls which may appear in the margin text must begin and end in the same margin text structured field.

SYNTAX EXCEPTIONS

An exception condition exists if a multibyte text control is not wholly contained in a single margin text structured field.

An exception condition exists when the corresponding Margin Text Parameter structured field is not present for the specified Margin Text structured field.

An exception condition exists if Margin Text structured fields of different Type are not grouped by Type.

An exception condition exists if any of the following controls occur in margin text prototype.

- Page End
- Required Page End
- Begin Keep
- End Keep

An exception condition exists if an MT structured field for 'Top margin, all pages' is specified in the same Margin Text Declaration with an MT structured field for 'Top margin, odd pages' or 'Top margin, even pages'.

An exception condition exists if an MT structured field for 'Bottom margin, all pages' is specified in the same Margin Text Declaration with an MT structured field for 'Bottom margin, odd pages' or 'Bottom margin, even pages'.

SEMANTICS

If the margin text structured field is not present in Margin Text Declaration, then margin text does not appear on the page images.

If the length of the structured field is five bytes, margin text does not appear on the page image.

Margin text does not appear on the page images if there was not a Margin Text Parameter structured field in the proper order specifying placement of the margin text.

The margin text appears on the page image according to Start Page Image and Start Line parameters of Margin Text Parameters.

Margin text lines for a top margin appear between the Start Line specified and the First Body Text Line (specified in Page Image Parameters). Margin text lines for a bottom margin appear between the Start Line and the end of the page image (Page Image Depth in Page Image Parameters).

Margin text has two initial formatting attributes:

- Lines are single spaced
- Text is non-adjusted.

Additional formatting parameters for resultant margin text are derived from its related Primary or Alternate Master Format structure. Therefore, format changes in Text Unit Format Change have no affect on the appearance of the margin text on the page image. Also, format changes made via Line Format Change in Body Text structured fields have no effect on the appearance of the margin text.

Formatting requirements may be met by placing any of the other single or multibyte text processing controls within the Margin Text.

The margin text may contain Print Page Image Number multibyte controls. (See "Print Page Image Number (PPIN)" on page 160.)

The margin text may contain line format changes. (See "Begin Line Format Change (BLFC)" on page 152.) The margin text may contain Print Text Unit Name multibyte controls. (See "Print Text Unit Name (PTUN)" on page 162.)

Starting with the page image specified in the Starting Page Image parameter, Margin Text defined for even page images is printed on each page image that has an even page number value.

Starting with the page image specified in the Starting Page Image parameter, Margin Text defined for odd page images is printed on each page image that has an odd page number value.

Margin Text for a given Type appears in the page image in order of occurrence in the data stream.

SEMANTIC EXCEPTIONS

An exception condition exists if the top or bottom margin text contains more lines than what can be accommodated in its allocated space on the page image.

An exception condition exists if a line of the margin text exceeds the page image width.

TEXT UNIT DECLARATION

The Text Unit Declaration structured fields are structured fields which delimit the units of the Text Unit.

Text Unit Prefix (TUP)

The Text Unit Prefix identifies the beginning of a Text Unit in the data stream.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	11	R
CLASS	2	1	X	E1	R
TYPE	3	1	X	04	R
FORMAT	4	1	X	00	R
NAME	5	6	C	000100-999999	R

PARAMETERS

NAME

Specifies the name of the current Text Unit.

000100 through 999999 - Text Unit Name.

SYNTAX RULES

This structured field is the first structured field in each Text Unit in the data stream.

SYNTAX EXCEPTIONS

An exception condition exists if this structured field is not present in a data stream which has a body text structured field which contains text characters.

SYNTACTICAL MEANING

The Text Unit Prefix structured field indicates the beginning of a Text Unit in the data stream.

SEMANTICS

A new page image is started when a Text Unit Prefix is present in the data stream.

The Text Unit Prefix contains the Text Unit Name which appears in the page image upon encountering a Print Text Unit Name control in the margin text.

Text Unit Names are in ascending sequence.

The Text Unit Name value does not necessarily correspond to page image number of the document.

Refer to the Print Text Unit Name control description (See "Print Text Unit Name (PTUN)" on page 162.) for presentation formats of the Text Unit Name.

SEMANTIC EXCEPTIONS

An exception condition exists if Text Unit Names are not in ascending sequence.

End Unit Prefix (EUP)

The End Unit Prefix identifies the beginning of the End Unit of the document.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	5	R
CLASS	2	1	X	E1	R
TYPE	3	1	X	06	R
FORMAT	4	1	X	00	R

SYNTAX RULES

This structured field is the first structured field in the End Unit (the last unit of a document).

This structured field is followed by a Body Text structured field which contains only a Page End control.

There is one and only one End Unit in a revisable-form-text document.

SYNTAX EXCEPTIONS

An exception condition exists if the structured field is not present.

SYNTACTICAL MEANING

This structured field indicates the beginning of the End Unit of a document.

SEMANTICS

This structured field indicates page image end and document end.

A blank page image is not presented for the unit.

CHANGE FORMAT STRUCTURED FIELDS/STRUCTURE

This section describes the structured fields which can be used to invoke or specify formatting parameters at the beginning of a text unit.

Establish Primary Master Format (EPM)

The Establish Primary Master Format structured field is a structured field which establishes the Primary Master Format as the active base format.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	5	R
CLASS	2	1	X	E3	R
TYPE	3	1	X	01	R
FORMAT	4	1	X	00	R

SYNTAX RULES

This structured field is optional in a revisable-form-text document.

If present, it immediately follows the Text Unit Prefix in a Text Unit.

The structured field has no associated parameters or text.

The structured field does not appear in the same Text Unit that contains an Establish Alternate Master Format structured field.

SYNTAX EXCEPTIONS

An exception condition exists if this structured field is out of order sequentially.

An exception condition exists if this structured field appears with an Establish Alternate Master Format in the same Text Unit.

SYNTACTICAL MEANING

The Primary Master Format is implied for the first Text Unit. Therefore, the Establish Primary Master need not be specified in this Unit.

Establish Primary Master indicates that all controls/parameters from the Primary Master are to be activated for formatting the subsequent text, and that the formatting state for the text is reset to a 'first' page image condition.

The Establish Primary Master structured field is in effect until another change format structured field/structure is specified.

SEMANTICS

The following parameters are used for page image generation of the 'first/subsequent' page images, and for initializing the page and line number values that may be presented on the page images.

The parameter First BTL/First Page Image in Page Image Parameters, determines the location of the first line of body text on the 'first' page image for the text in this Text Unit.

If, however, a Text Unit Format Change is specified immediately after the Establish Primary Master structured field in the same Text Unit, then the location for first line of body text is specified by this parameter in the Text Unit Format Change structure.

The parameter First BTL/Subsequent Page Images in Page Image Parameters, determines the location of the first line of body text on all 'subsequent' page images in all Text Units until another change format is specified.

If, however, a Text Unit Format Change is specified immediately after the Establish Primary Master structured field in the same Text Unit, then the location for first line of body text is specified by this parameter in the Text Unit Format Change structure.

The parameter Number in the Page Image Numbering structured field is used to initialize or continue the page image number each time the Establish Primary Master is specified.

The parameter Starting Number in the Line Numbering structured field is used to initialize or continue the line number each time the Establish Primary Master is specified.

The parameter Starting Page Image in the Margin Text Parameters structured field is used to determine whether margin text presentation is started on the 'first' or 'subsequent' page image. The page image to be presented is a 'first' page image.

Establish Alternate Master Format (EAM)

The Establish Alternate Master Format structured field is a structured field which establishes the Alternate Master Format as the active base format.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	5	R
CLASS	2	1	X	E3	R
TYPE	3	1	X	02	R
FORMAT	4	1	X	00	R

SYNTAX RULES

This structured field is optional in a revisable-form-text document.

If present, it immediately follows the Text Unit Prefix in a Text Unit.

The structured field has no associated parameters or text.

The structured field does not appear in the same Text Unit that contains an Establish Primary Master Format structured field.

SYNTAX EXCEPTIONS

An exception condition exists if this structured field is out of order sequentially.

An exception condition exists if this structured field appears with an Establish Primary Master Format in the same Text Unit.

SYNTACTICAL MEANING

Establish Alternate Master indicates that all controls/parameters from the Alternate Master are to be activated for formatting the subsequent text, and that the formatting state for the text is reset to a 'first' page image condition.

The Establish Alternate Master structured field is in effect until another change format structured field/structure is specified.

SEMANTICS

The following parameters are used for page image generation of the 'first/subsequent' page images, and for initializing the page and line number values that may be presented on the page images.

The parameter First BTL/First Page Image in Page Image Parameters, determines the location of the first line of body text on the 'first' page image for the text in this Text Unit.

If, however, a Text Unit Format Change is specified immediately after the Establish Alternate Master structured field in the same Text Unit, then the location for first line of body text is specified by this parameter in the Text Unit Format Change structure.

The parameter First BTL/Subsequent Page Images in Page Image Parameters, determines the location of the first line of body text on all 'subsequent' page images in all Text Units until another change format is specified.

If, however, a Text Unit Format Change is specified immediately after the Establish Alternate Master structured field in the same Text Unit, then the location for first line of body text is specified by this parameter in the Text Unit Format Change structure.

The parameter Number in the Page Image Numbering structured field is used to initialize or continue the page image number each time the Establish Alternate Master is specified.

The parameter Starting Number in the Line Numbering structured field is used to initialize or continue the line number each time the Establish Alternate Master is specified.

The parameter Starting Page Image in the Margin Text Parameters structured field is used to determine whether margin text presentation is started on the 'first' or 'subsequent' page image. The page image to be presented is a 'first' page image.

Text Unit Format Change (TUFC)

The Text Unit Format Change is a structure containing a set of structured fields which temporarily declares a different set of formatting parameters for the document than those specified in the currently active Master Format.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	min:max=64:314	R
CLASS	2	1	X	E2	R
TYPE	3	1	X	04	R
FORMAT	4	1	X	00	R
CONTENT	5	V	-		R

PARAMETERS

CONTENT (CONT)

Structured Field	Occurrence
"Page Image Parameters (PIP)" on page 55	Required
"Line Parameters (LP)" on page 59	Required
"Tab Parameters (TP)" on page 66	Required
"Line Numbering (LN)" on page 69	Optional
"Page Image Numbering (PIN)" on page 74	Optional
"Print Medium (PM)" on page 80	Optional
"Operator Message (OM)" on page 83	Optional

SYNTAX RULES

This structure is optional in a revisable-form-text document.

The structure appears immediately after the Text Unit Prefix if it is the only change format in the Text Unit.

If present with an Establish Primary/Alternate Master, the structure appears immediately after the Establish Master structured field.

The structure does not appear in the same Text Unit that contains a Return to Master Format structured field.

The required structured fields in CONTENT appear in the order shown above.

In CONTENT, the optional structured fields appear in any order but must follow the required structured fields.

SYNTAX EXCEPTIONS

An exception condition exists if this structured field is out of order sequentially.

An exception condition exists if this structured field appears with a Return to Master Format in the same Text Unit.

An exception condition exists if the required structured fields in the CONTENT of the structure are not in the specified order.

An exception condition exists if, in CONTENT, any optional structured field precedes any required structured field.

SYNTACTICAL MEANING

The Text Unit Format Change is a declarative for subsequent formatting.

The controls/parameters of the current Master are modified according to the values contained in this structure for formatting the subsequent text, and the formatting state for the text is reset to a 'first' page image condition.

The Text Unit Format Change structure is in effect until another change format structured field/structure is specified.

The absence of an optional structured field in CONTENT is an indicator that the function provided by the structured field is not present for the Text Units for which the Text Unit Format Change is in effect.

SEMANTICS

The following parameters are used for page image generation of the 'first/subsequent' page images, and for initializing the page and line number values that may be presented on the page images.

The parameter First BTL/First Page Image in Page Image Parameters, determines the location of the first line of body text on the 'first' page image for the text in this Text Unit.

The parameter First BTL/Subsequent Page Images in Page Image Parameters, determines the location of the first line of body text on all 'subsequent' page images in all Text Units until another change format is specified.

The parameter Number in the Page Image Numbering structured field is used to initialize or continue the page image number. If the value is =0 (meaning to continue the sequence) the page image number sequence is continued. If the value is not equal to zero, the page image number is set to the parameter value.

The parameter Starting Number in the Line Numbering structured field is used to initialize or continue the line number. If the value is specified =0 (meaning to continue the sequence) the line number sequence is continued. If the value is specified is not equal to zero, the line number value is set to the parameter value.

The parameter Starting Page Image in the Margin Text Parameters structured field is used to determine whether margin text presentation is started on the 'first' or 'subsequent' page image. The page image to be presented is a 'first' page image.

Return To Master Format (RTMF)

The Return to Master Format structured field is a structured field indicating that the formatting controls of the last established Master are to be activated.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	5	R
CLASS	2	1	X	E3	R
TYPE	3	1	X	03	R
FORMAT	4	1	X	00	R

SYNTAX RULES

This structure is optional in an revisable-form-text document.

The structure appears immediately after the Text Unit Prefix if it is the only change format in the Text Unit.

If present with an Establish Primary/Alternate Master, the structure appears immediately after the Establish Master structured field. (Note that the result of such a sequence is the same as having only the Establish Master specified.)

The structure does not appear in the same Text Unit that contains a Text Unit Format Change structure.

SYNTAX EXCEPTIONS

An exception condition exists if this structured field is out of order sequentially.

An exception condition exists if this structured field appears with a Text Unit Format Change structure in the same Text Unit.

SYNTACTICAL MEANING

Return to Master Format indicates where a temporary change ends and the current Master is reactivated.

The controls/parameters of the current Master is continued. Some differences to the Master may result due to the last change that was in effect. Parameter values and formatting state are both continued.

The Return to Master Format structured field is in effect until another change format structured field/structure is specified.

SEMANTICS

The following parameters, in the master format returned to, are used for page image generation of the 'first/subsequent' page images, and for initializing the page and line number values that may be presented on the page images.

The parameter First BTL/First Page Image in Page Image Parameters, determines the location of the first line of body text on the 'first' page image for the text in this Text Unit.

The condition for 'first' page image only exists when the Return to Master Format structured field is specified with an Establish Master in the same Text Unit.

The parameter First BTL/Subsequent Page Images in Page Image Parameters, determines the location of the first line of body text on all 'subsequent' page images in all Text Units until another change format is specified. Except for the case noted above, all page images for Return to Master Format Text Units are 'subsequent' page images.

The parameter Number in the Page Image Numbering structured field does not cause the page image number to be reset. Therefore, if the change of the Master by a Text Unit Format Change specified a different page number, that sequence is continued, not the Master sequence.

The parameter Starting Number in the Line Numbering structured field does not cause the line number to be reset. Therefore, if the change of the Master by a Text Unit Format Change specified a different line number, that sequence is continued, not the Master sequence.

The parameter Starting Page Image in the Margin Text Parameters structured field is used to determine whether margin text presentation is started on the 'first' or 'subsequent' page image. The page image to be presented is a 'subsequent' page image, except when there is an Establish Master specified in the same Text Unit.

BODY TEXT

This section describes the structured field which is used to contain the body text of the document.

Body Text (BT)

The Body Text structured field is a structured field which contains the text and text processing controls of the page images in the Text Unit.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
LENGTH	0	2	N	6 - 32767	R
CLASS	2	1	X	E8	R
TYPE	3	1	X	07	R
FORMAT	4	1	X	00	R
BODY TEXT	5	V	C	text	R

PARAMETERS

BODY TEXT

Declares the body text. It contains graphic characters, single and multibyte text processing controls.

SYNTAX RULES

One or more Body Text structured fields are contained in each Text Unit or End Unit.

If multiple Body Text structured fields are in a Text Unit, the structured fields appear in a contiguous sequence. Other structured fields are not included in the sequence.

The last byte of body text of a Text Unit is the text processing control, Page End.

One and only one Page End control is present in the entire Text Unit.

In the End Unit Body Text structured field, the only byte contained is a Page End Control.

Multibyte text controls which may appear in the body text must begin and end in the same body text structured field.

SYNTAX EXCEPTIONS

An exception condition exists if the last Body Text structured field of a Text Unit does not end with a Page End control (X'0C').

An exception condition exists if more than one Page End control is contained in a Text Unit.

An exception condition exists if a multibyte text control is not wholly contained in a single body text structured field.

SYNTACTICAL MEANING

The Body Text structured field contains the body text of the Text Unit.

CHAPTER 4. MULTIBYTE CONTROL DESCRIPTIONS

Revisable-form text may contain embedded 1-byte word processing controls and embedded multibyte text processing control sequences. The embedded multibyte text processing control sequences are identified in the text by the EBCDIC escape character code hex '2B'. See "Syntax of Multibyte Controls" on page 14. This chapter describes all multibyte controls which are valid in a revisable-form-text document.

TEXT FORMATTING CONTROLS

This section describes the embedded multibyte controls which affect the positioning of text in the page image.

Auto-Outline (AO)

The Auto-Outline control specifies the position in body text and the parameters for the generation of outline text. During pagination, the AO control is resolved, that is, the outline text is generated and its placement determined. The generated text appears on the page image. It is not part of the revisable-form-text data stream.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D9	R
COUNT	2	1	N	5-23	R
TYPE	3	1	X	6A	R
SELF-IDENTIFYING PARAMETER(S)	4	-	-	-	R

SELF-IDENTIFYING PARAMETERS

The self-identifying parameters that can occur in this control are listed in the table below and can occur in any order.

PARAMETER	OCC
LEVEL	R
OUTLINE VALUE	O

DESCRIPTION OF SELF-IDENTIFYING PARAMETERS

LEVEL

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	05	R
LEVEL	1	N	1-8	R

Specifies the level of the outline entry.

OUTLINE VALUE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	4-18	R
PARAMETER TYPE	1	X	07	R
VALUE	v	X	-	R

VALUE is a collection of up to eight 2-byte binary values. Each value specifies an operator supplied override to the system-generated value for the numbering or lettering of the outline entry of a level. The use of this parameter is described in the Semantics.

SYNTAX RULES

An AO control can be specified on a character boundary.

An AO control may only appear in Body Text in Text Units with names less than Document Parameters SYSTEM TEXT UNIT NAME.

SEMANTICS

As the AO is interpreted, the outline entry is generated according to the parameters in the active master format and the AO control. During the transformation to a final-form-text data stream, the AO control is replaced by the corresponding generated outline text surrounded by leading and trailing text.

The outline identifier may be one or more levels depending on catenation.

The leading text is obtained from the AOP declaration for the level of this outline entry as specified by the LEVEL parameter of this control.

The trailing text is obtained from the AOP declaration for the level of this outline entry as specified by the LEVEL parameter of this control.

This control specifies a single LEVEL, but OUTLINE VALUEs for every level. The values specified for the levels which are higher and lower than the LEVEL produce changes to the numbering scheme according to the following algorithm.

As the outline identifiers are produced, the process establishes numbers or letters for each level according to the following:

Alphabetic ranges A, B, ... Z, AA, BB, ... ZZ.

Decimal numbers range from 1 to 999.

Roman numbers range from I to M.

The first number or letter of a given level is its initial value.

The number or letter is incremented by 'one' for each occurrence of the given level, until a higher level is encountered, at which point the given level is reset to its initial value.

There is a system counter for each level which is set and incremented as follows.

The sixteen bytes of VALUE are considered as eight 2-byte 'level number values'. The leftmost 'level number value' is for the highest level and the rightmost for the lowest. 'Level number values' may be specified as zero or non-zero, or not specified.

If any level has a non-zero 'level number value' associated with it, the system counter for that level is reset to that 'level number value'.

If the specified level has a zero (or unspecified) 'level number value' associated with it, the system counter for that level is incremented by one.

If any lower level (higher number) has a zero (or unspecified) 'level number value' associated with it, the system counter for that level is reset to one.

If any higher level (lower number) has a zero (or unspecified) 'level number value' associated with it, the system counter for that level is not changed.

With the system counters having been determined, the outline entry of specified level is constructed according to the active outline parameters.

EAM and EPM reset the system counters to their initial values. TUFC does not.

This control is ignored by the process which translates revisable-form text to print.

This control is honored only by processes which resolve outline controls.

SEMANTIC EXCEPTIONS

An exception condition exists if the limit of a level counter is exceeded.

An exception condition exists if AO appears in text, and there is no AOP specifying the same level (and all higher levels) in the active Master Format.

Align Text Field (ATF)

Align Text Field is a formatting control which moves the active presentation position to the Alignment Position on the Page Image line and aligns the field of text at this position according to the Alignment Type.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	3,5	R
TYPE	3	1	X	0B	R
ALIGNMENT TYPE	4	1	N	0 - 5	R
ALIGNMENT POSITION	5	2	N	0-65535	O

PARAMETERS

ALIGNMENT TYPE

Specifies the type of alignment performed when positioning text at the designated Alignment Position on the Page Image line.

0 - Null (Start-side) Align, resume normal line formatting.

1 - Period Align Text Field.

2 - Comma Align Text Field.

3 - Center Align Text Field.

4 - End-side Align Text Field.

5 - Colon Align Text Field.

ALIGNMENT POSITION

Specifies the character position, relative to the left margin (Alignment Position 1 = Left Margin Position), at which alignment occurs. Character position is defined in terms of the font width declared for the line.

0 - Use current line presentation position for alignment.

1 through 65535 - Alignment position.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may appear on a character boundary.

It has an optional text field immediately following it which is delimited by:

- Horizontal Tab
- Indent Tab
- Align Text Field
- Syntactic line end.

SYNTACTICAL MEANING

This control is a word delimiter.

When in adjusted text, this control preceded by a Carrier Return is a paragraph boundary.

SEMANTICS

The Align Text Field control is specified to cause placement of the text following the control to be located at the Alignment Position on that page image line and aligned according to the Alignment Type.

The Alignment Position may be at any Character Position not = 0 on or to the right of the current position on the Page Image line.

If Character Position indicates current position (=0), the position may also be to the left of the left margin.

For line presentation on the Page Image, the optional text field is delimited by:

- Horizontal Tab
- Indent Tab
- Align Text Field

- Align Text Line
- Syntactic line end.

Note that when the control appears in nonadjusted text, the right margin boundary is ignored when its text field exceeds this boundary.

Alignment of the text field for each Alignment Type is:

Alignment Character = 0 - Null (left) align field text

The first character of the text field immediately following the control is presented at the Alignment Position on the line. Subsequent text characters in the text field appear in sequence to its right.

```
    V
    abcd
```

Alignment Character = 1 - Period align field text

The first occurrence of a period in the text field following the control is presented at the Alignment Position. Characters to the left of the first period are presented to the left of the position and characters to the right of the first period are presented to the right of the position.

```
    V
  ab.cd
```

If the period is not contained in the text field, the text is right aligned on the position.

Alignment Character = 2 - Comma align field text

The first occurrence of a comma in the text field following the control is presented at the position. Characters to the left of the first comma are presented to the left of the position and characters to the right of the first comma are presented to the right of the position.

```
    V
  ab,cd
```

If the text field does not contain a comma the text is right aligned on the position.

Alignment Character = 3 - Center align text field

The center position of the text field following the ATF control is computed. This center point is positioned at the alignment position. If this center point cannot be positioned exactly at the

alignment position, the center point is positioned on the left of the alignment position, as close as possible to the alignment position.

```
     V
   abcde
  abcdef
```

Alignment Type = 4 - Right align text field

The characters of the subsequent word or field following the control are presented to the left of the position with the last character of the word presented at the position minus 1.

```
     V
  abcd
```

Alignment Character = 5 - Colon align field text

The first occurrence of a colon in the text field following the control is presented at the position. Characters to the left of the first colon are presented to the left of the position and characters to the right of the first colon are presented to the right of the position.

```
     V
  ab:cd
```

If the text field does not contain a colon the text is right aligned on the position.

This control establishes a Line Break Point boundary with a subsequent graphic excluding a subsequent Space, Numeric Space, or Required Space graphic.

SEMANTIC EXCEPTIONS

An exception condition exists if the Alignment position is to the left of the current position on the Page Image line.

An exception condition exists if the text field following the control cannot be represented on the Page Image without overstriking text already present on the Page Image line. This exception condition results if:

The position specified is left of current Page Image position.

Alignment for a text field requires positioning left of current position for more characters than there is available blank presentation space.

An exception condition exists if text field exceeds the boundaries, the left or right edges of the Page Image.

Align Text Line (ATL)

Align Text Line is a formatting control which aligns the subsequent line of text according to the specification of the Alignment Characteristic parameter.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	03	R
TYPE	3	1	X	0F	R
ALIGNMENT CHARACTERISTIC	4	1	N	0 - 2	R

PARAMETERS

ALIGNMENT CHARACTERISTIC

- Specifies the type of alignment.
  - 0 - Normal Alignment (Observe indents).
  - 1 - Center Alignment.
  - 2 - Right Alignment (on Right Margin).

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control appears on a syntactic line boundary.

SYNTACTICAL MEANING

When in adjusted text, this control preceded by a Carrier Return is a paragraph boundary.

SEMANTICS

The ATL control overrides the active Line Parameters Alignment State specification. However, the ATL center and right alignment functions are ignored if an ATF control is active at the end of the semantic line containing the ATL control.

The interpretation of the alignment characteristic parameter is described below.

- 0 - Align left. The character or control following the ATL control is positioned at the left margin modified by the active indent tab level.

- 1 - Center. The text in the semantic line following the ATL control is centered. The line is left aligned and the distance between the last character (X'40'-X'FF') in the line and the right margin is computed to determine the amount of white space that must be inserted in the line.

  If the line does not contain any IT, INX or HT controls, half of this white space is inserted after the ATL control. Otherwise, half the white space is inserted after the last IT, INX or HT in the line. If the white space cannot be evenly divided in half, any remainder is discarded before the specified insertion.

- 2 - Align right. The text in the semantic line following the ATL control is positioned so that the right edge of the last character in the line is presented at the right margin. The line is left aligned and the distance between the last character and the right margin is computed to determine the amount of white space that must be inserted in the line. If the line does not contain any IT, INX, or HT controls, this white space is inserted after the ATL control. Otherwise, the white space is inserted after the last IT, INX, or HT in the line.

Text (other than system-assigned line numbers) in the left margin may be shifted out of the left margin as a result of the center or right align process described above.

Adjust does not insert a Carrier Return between ATL and its line delimiter.

Adjust does not remove a Carrier Return which is an ATL line delimiter.

ATL is no-op if not preceded immediately by a Line End. (There is no exception condition.)

SEMANTIC EXCEPTIONS

An exception condition exists if the semantic line following the ATL control extends to the right of the right margin location and center or right alignment is specified.

Conditional Word Break (CWB)

Conditional Word Break identifies a point within a word that has been specified as an allowable line break point during adjust.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D8	R
COUNT	2	1	N	02	R
TYPE	3	1	X	94	R

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may occur on a character boundary.

SYNTACTICAL MEANING

This control is a potential line break point.

SEMANTICS

The CWB delimits a position that may be used by the adjust algorithm as a line break point. (See semantic line definition in "Interpreting Text" on page 5.) If the position is used as a line break point, a CRE is inserted immediately following the CWB.

CWB does not imply any graphic representation.

If the line is subsequently re-adjusted and the CWB is not used as a line break point, any CRE immediately preceding or following the CWB is removed and is not replaced by a space.

Include Unit (IU)

The Include Unit control copies one or more Text Units into an revisable-form-text document. The Include Unit control is replaced by the included Text Units.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D9	R
COUNT	2	1	N	min=11	R
TYPE	3	1	X	81	R
SELF-IDENTIFYING PARAMETER(S)	4	-	-	-	R

SELF-IDENTIFYING PARAMETERS

The self-identifying parameters that can occur in this control are listed in the table below and can occur in any order. The only parameters that can occur more than once in an Include Unit control are the Unit Reference parameters and the GCID parameter. The only limit on the number of Unit Reference parameters that can be specified in a single IU control is the LENGTH parameter of the control introducer. The Text Units referenced by this control are included in the order that they are referenced in the control. The GCID occurs before the first parameter containing character data and may occur before any additional character data parameter.

PARAMETER	OCC
GCID	R
VOLUME ID	O
DOCUMENT NAME	R
UNIT REFERENCE	O

DESCRIPTION OF SELF-IDENTIFYING PARAMETERS

GCID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	6	R
PARAMETER TYPE	1	X	01	R
GCID	4	N	1-65535;1-65535	R

Global Coded Graphic Character Set ID is a concatenation of two 2-byte binary numbers: CGCS ID and CODE PAGE ID.

CGCS ID

Identifies the Coded Graphic Character Set.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

CODE PAGE ID

Identifies the Code Page.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

This GCID applies only to parameters in this control. It remains in effect until another GCID is specified within the control.

VOLUME ID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3-8	R
PARAMETER TYPE	1	X	02	R
IDENTIFIER	6	C	-	R

Specifies the Volume ID of the media containing the included Text Unit(s). During a compare operation, trailing blanks are ignored. If a Volume ID parameter is not specified in this control, the Volume ID is provided by the application that causes execution of the control.

DOCUMENT NAME

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3-46	R
PARAMETER TYPE	1	X	03	R
DOCUMENT NAME	1-44	C	-	R

Specifies the name of the revisable-form-text document that contains the included Text Unit(s). During a compare operation, trailing blanks are ignored. The format of a valid Document Name is specified in the Interchange Document Profile. If a Unit Reference parameter is not specified in an IU control, all the Text Units in the referenced document are included.

UNIT REFERENCE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3-10	R
PARAMETER TYPE	1	X	04	R
TEXT UNIT NAME	6	C	-	R

Specifies the name of a Text Unit in a revisable-form-text document. This Text Unit is included by the IU control.

The format of a valid Text Unit Name is the same as the format of the Name parameter in Print Text Unit Name, that is, 'xxxx.y.z'. Leading zeroes in xxxx are optional. Z or .z are optional if z is zero. If both y and z are zero, characters may be omitted from the right. The Text Unit Name is translated into a six byte search argument of the form xxxxyz, where omitted x's result in padding with zeroes on the left, and omitted y or z result in zero substitution.

SYNTAX RULES

An IU control can include Text Units from the document containing the IU control.

An IU control can be specified on a character boundary.

An IU control can specify inclusion of the same Text Unit multiple times.

SEMANTIC EXCEPTIONS

An exception condition exists if the document referenced by the IU control does not exist, does not have a document type of revisable-form-text or does not contain the referenced units.

An exception exists if an IU control references the Text Unit containing the IU control.

Insert (INS)

The Insert control copies data into an revisable-form-text document. The Insert control is replaced by the inserted data.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D9	R
COUNT	2	1	N	min=11	R
TYPE	3	1	X	82	R
SELF-IDENTIFYING PARAMETER(S)	4	-	-	-	R

SELF-IDENTIFYING PARAMETERS

The self-identifying parameters that can occur in this control are listed in the table below. The parameters in the table can occur in any order. The only parameter that can occur more than once in this structured field is the GCID parameter. It occurs before the first parameter containing character data and may occur before any additional character data parameter.

PARAMETER	OCC
GCID	R
VOLUME ID	O
DOCUMENT NAME	O
INSERT FIELD ID	R
PUNCTUATION ID	O

DESCRIPTION OF SELF-IDENTIFYING PARAMETERS

GCID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	6	R
PARAMETER TYPE	1	X	01	R
GCID	4	N	1-65535;1-65535	R

Global Coded Graphic Character Set ID is a concatenation of two 2-byte binary numbers: CGCS ID and CODE PAGE ID.

CGCS ID

Identifies the Coded Graphic Character Set.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

CODE PAGE ID

Identifies the Code Page.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

This GCID applies only to parameters in this control. It remains in effect until another GCID is specified within the control.

VOLUME ID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3-8	R
PARAMETER TYPE	1	X	02	R
IDENTIFIER	6	C	-	R

Specifies the Volume ID of the media containing the data to be inserted. During a compare operation, trailing blanks are ignored. If a Volume ID parameter is not specified in this control, the Volume ID is provided by the application that causes execution of the control.

DOCUMENT NAME

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3-46	R
PARAMETER TYPE	1	X	03	R
DOCUMENT NAME	1-44	C	-	R

Specifies the name of the file or document that contains the data to be inserted. During a compare operation, trailing blanks are ignored. The format of a valid Document Name is specified in the Interchange Document Profile. The format of the file or document is application dependent. If a Document Name parameter is not specified in this control, the Document Name is provided by the application that causes execution of the control.

INSERT FIELD ID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3-18	R
PARAMETER TYPE	1	X	07	R
IF ID	1-16	C	-	R

Specifies the ID of the data field from which a value is to be retrieved for insertion.

A nonzero numeric ID specifies the location of a data field relative to the first data field in each data record. The data record selected is application dependent.

An ID of zero specifies that a value representing the relative number of the data record referenced by the Insert control is to be inserted. The inserted data is a positive integer with no leading zeroes. The value used to represent the first data record in the document from which data is being retrieved is application dependent. The value is punctuated according to the punctuation format specified by the Punctuation ID parameter and copied into the revisable-form-text document. The Insert control is replaced by the punctuated data.

PUNCTUATION ID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	4	R
PARAMETER TYPE	1	X	09	R
IDENTIFIER	2	C	00-99	R

Specifies the form of punctuation (number of decimal places, monetary symbols, and other parameters described in "Punctuation Formats (PFA and PFC)" on page 33) that is used to punctuate the data inserted by the Insert control. This parameter specifies a punctuation ID (X'F0F0'-X'F9F9') that references a punctuation format in a Punctuation Format structured field. If this parameter is not specified, the value 00 (X'F0F0') is assumed for this parameter.

00 - Insert the data field specified by the Insert control without alteration or punctuation.

01 through 99 - Insert the data specified by the Insert control using the punctuation format specified by an active PF structured field with a Punctuation ID of 01-99.

SYNTAX RULES

An Insert control can be specified on a character boundary.

SEMANTIC EXCEPTIONS

An exception condition exists if the specified document and record do not contain the field referred to by the Insert Field ID in the Insert control.

An exception condition exists if a Punctuation ID greater than zero is specified and the specified Punctuation Format structured field is not active.

Insert Escaped Graphic (IEG)

Insert Escaped Graphic is a control which indicates that a different Code Page is specified for its Character.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D1	R
COUNT	2	1	N	05	R
TYPE	3	1	X	15	R
CODE PAGE ID	4	2	N	1-65535	R
CHARACTER	6	1	X	40-FF	R

PARAMETERS

CODE PAGE ID

Specifies the Code Page ID. Refer to "Document Parameters (DP)" on page 29 for a complete description.

CHARACTER

Specifies the hex code of the graphic character which is to be inserted.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

The control occurs on a character boundary.

SEMANTICS

The Code Page ID defines for Character what its Page Image graphic representation is.

The graphic is presented on the Page Image in the active position.

SEMANTIC EXCEPTIONS

An exception condition exists if the specified Code Page is not supported.

Begin Keep (BK)

Begin Keep is the starting control of a pair of controls which identifies text that is intended to be kept together on a single page.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	02	R
TYPE	3	1	X	62	R

SYNTAX RULES

This control is optional in Body Text structured fields.

It occurs on a character boundary.

SYNTAX EXCEPTIONS

An exception condition exists if the control appears in a Margin Text structured field.

SYNTACTICAL MEANING

The Keep controls define a keep block.

SEMANTICS

Begin Keep identifies the start of a keep block.

The end of a keep block is identified by the first terminator appearing after the Begin Keep. The terminators are End Keep, Begin Keep, Begin Column Layout, End Column Layout, Required Page End, and when there is more text between a Begin Keep and a Keep terminator than fits on a complete page image.

If the text bounded by the Begin Keep and its first terminator fits in the remaining space on the current page image, the text is presented on the current page image.

If the current page image is not void of text and the 'keep' text does not fit in the remaining space, the current page is terminated immediately prior to the Begin Keep control.

End Keep (EK)

End Keep is an ending control for a keep block.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	X	02	R
TYPE	3	1	X	66	R

SYNTAX RULES

This control is optional in Body Text structured fields.

It occurs on a character boundary.

SYNTAX EXCEPTIONS

An exception condition exists if the control appears in a Margin Text structured field.

SYNTACTICAL MEANING

This control terminates a keep block.

See "Begin Keep (BK)" on page 149 for the Syntactical Meaning of the Begin/End Keep pair.

SEMANTICS

An End Keep is treated as a Null control (See "Null (NUL)" on page 225.) if there is not a keep block in effect.

See "Begin Keep (BK)" on page 149 for the Semantics of the Begin/End Keep pair.

Begin Line Format Change (BLFC)

Begin Line Format Change is the starting control of a pair of controls which indicates Line Format Change controls are contained between them. The ending control of the pair is End Line Format Change.

These controls are provided to enable performance improvements when handling line format changes.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	02	R
TYPE	3	1	X	02	R

SYNTAX RULES

This control terminates a Syntactic Line.

This control is a Line End.

This control is optional in Body Text structured fields and Margin Text structured fields.

A Line Format Change occurs on a line boundary; therefore, both controls of the pair are on the same line boundary.

Begin Line Format Change control is terminated by End Line Format Change control.

The pair of controls does not span Text Units.

Text does not appear between the pair.

The controls of a Line Format Change in a Text Unit appear as follows:

Control	Occurrence
"Begin Line Format Change (BLFC)"	Required
"Set Line Parameters (SLP)" on page 172	Required
"Set Tabs (STAB)" on page 174	Required
"End Line Format Change (ELFC)" on page 155	Required

SYNTAX EXCEPTIONS

An exception condition exists when each Begin Line Format Change control within a Text Unit does not have a corresponding ending control.

This condition is present at the end of a Text Unit if there is not an End Line Format Change for the Begin Line Format Change contained in the Text Unit.

This condition exists if two Begin Line Format Change controls exist without an End Line Format Change control being between them.

An exception condition exists if other controls appear between this pair of controls.

An exception condition exists if text appears between this pair of controls.

An exception condition exists if more than one Set Line Parameter or Set Tabs control is present between a single pair of controls.

An exception condition exists if the controls are not in the order shown above.

SYNTACTICAL MEANING

This pair of controls delimits a syntactical line.

A Line Format Change is declared by the controls embedded between the pair; the change in format is for subsequent text.

SEMANTICS

This control terminates a semantic line.

Positioning for the next text is to the new left margin on the next line of text on a Page Image.

The indent level is cancelled by the pair of controls.

Formatting of subsequent text is performed according to the changes specified by the line format change.

The line format change remains in effect for all page image lines until the change is cancelled. The change is cancelled by:

- One of the following multibyte controls:
  - Begin/End Line Format Change
  - Return to Master Line Format
- One of the following structured fields or structures:
  - Establish Primary Master
  - Establish Alternate Master
  - Text Unit Format Change
  - Return to Master Format

This control is a line Alignment Terminator.

End Line Format Change (ELFC)

End Line Format Change is the ending control of the paired controls, Begin/End Line Format Change.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	X	02	R
TYPE	3	1	X	06	R

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

The control occurs on the same line boundary as its preceding Begin Line Format Change control.

See "Begin Line Format Change (BLFC)" on page 152 for Syntax Rules of the pair.

SYNTAX EXCEPTIONS

An exception condition exists if an End Line Format Change is not preceded by a Begin Line Format Change in the Text Unit.

See "Begin Line Format Change (BLFC)" on page 152 for Syntax Exceptions of the pair.

SYNTACTICAL MEANING

The control terminates the Begin Line Format Change control.

See "Begin Line Format Change (BLFC)" on page 152 for Syntactical Meaning of the pair.

SEMANTICS

This control implies a Required Carrier Return except when it is immediately preceded by a line ender or when it precedes the first character on a page image, in which case this control implies a Zero Index Carrier Return and the indent level is reset to zero.

Begin Overstrike (BOS)

Begin Overstrike is the starting control of a pair of controls which identifies text that is to be overstruck with a specified character.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	08	R
TYPE	3	1	X	72	R
GCID	4	4	N	1-65535;1-65535	R
CHARACTER	8	1	X	40-FF	R
BYPASS	9	1	B	....	R

PARAMETERS

GCID

Global Coded Graphic Character Set ID is a concatenation of two 2-byte binary numbers -- CGCS ID and CODE PAGE ID.

CGCS ID

Identifies the Coded Graphic Character Set.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

CODE PAGE ID

Identifies the Code Page.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

CHARACTER

Specifies the character to be used for overstriking.

BYPASS

Specifies what is not to be overstruck.

0000 0000 - Overstrike everything.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

The control occurs on a character boundary.

The pair of controls may span Text Units.

SYNTACTICAL MEANING

These paired controls are a declarative for presentation of subsequent text characters.

SEMANTICS

Begin Overstrike identifies the start of text to be overstruck.

A Begin Overstrike control is terminated by an End Overstrike or another Begin Overstrike.

Overstriking is done over all characters (X'40' - X'FF') and over all control white space except that which follows the last printable graphic on the line and the overstrike characters always appear at the Active Baseline position.

Overstriking is done after justification. Expanded spaces are overstruck if and only if spaces are overstruck.

Control white space is white space resulting from 2B or one byte controls (X'00'-X'40') between the Begin and End controls in the data stream.

For proportionally spaced fonts, correlating the width of the overstriking character with the width of the overstruck character is the responsibility of the application.

If characters appear at offset positions, they may be overstruck or be at variable distances above and below their overstriking characters.

End Overstrike (EOS)

End Overstrike is an ending control of the paired controls, Begin/End Overstrike.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	X	02	R
TYPE	3	1	X	76	R

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

The control occurs on a character boundary.

See "Begin Overstrike (BOS)" on page 157 for Syntax Rules.

SYNTAX EXCEPTIONS

SYNTACTICAL MEANING

The control terminates the Begin Overstrike control.

See "Begin Overstrike (BOS)" on page 157 for Syntactical Meaning.

SEMANTICS

An End Overstrike control is treated as a Null (See "Null (NUL)" on page 225.) if there is not a Begin Overstrike in effect.

See "Begin Overstrike (BOS)" on page 157 for Semantics.

Print Page Image Number (PPIN)

Print Page Image Number is a control which holds a place in a margin text for the Page Image number. When the formatted margin text is presented on the Page Image, the current Page Image number is placed in this reserved position.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	02	R
TYPE	3	1	X	47	R

SYNTAX RULES

This control may be present only in Margin Text structured fields.

It occurs on a character boundary.

SYNTAX EXCEPTIONS

An exception condition exists if this control is present in a Body Text structured field.

SYNTACTICAL MEANING

This control represents the Page Image number in a margin text line.

SEMANTICS

The Print Page Image Number control is replaced during formatting with the current Page Image Number.

The maximum value of a Page Image number is 65535. The number wraps back to zero if this maximum value is exceeded when the page number is incremented.

The format of the number for Page Image presentation is defined by the product.

SEMANTIC EXCEPTIONS

An exception condition exists if this control is present in body text.

An exception condition exists if the Page Image number is a negative value when it is to be presented.

Print Text Unit Name (PTUN)

Print Text Unit Name is a control which holds a place in a margin text for the name of the Text Unit. When the formatted margin text is presented on the Page Image, the Text Unit name is placed in this reserved position.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	02	R
TYPE	3	1	X	63	R

SYNTAX RULES

This control may be present only in Margin Text structured fields.

It occurs on a character boundary.

SYNTAX EXCEPTIONS

An exception condition exists if this control is present in a Body Text structured field.

SYNTACTICAL MEANING

This control represents the Text Unit Name in a margin text line.

SEMANTICS

The Print Text Unit Name control is replaced during formatting with the name of the current Text Unit.

The name is composed of six numeric characters with values being from 000100 through 999999.

The format of a 6 character Text Unit name for Page Image presentation is a numeric character field of the form xxxx.y.z, with leading zeros (x) optionally suppressed. Z, or z and the preceding decimal point, may be suppressed if z = 0. Y, or y and the preceding decimal point, may be suppressed if y = 0 and the following decimal point (between y and z) is

suppressed. The leftmost character is positioned at the location of the control.

SEMANTIC EXCEPTIONS

An exception condition exists if this control is present in body text.

An exception condition exists if the Text Unit name contains non-numeric characters when it is to be presented.

Release Left Margin (RLM)

Release Left Margin is a control which specifies that any backspace is permitted to move the output pointer to the left of the left margin, but never to the left of the left edge of the page image.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D2	R
COUNT	2	1	N	02	R
TYPE	3	1	X	0B	R

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

The control appears on a character boundary.

SYNTACTICAL MEANING

This control is a formatting declarative only for the current line.

SEMANTICS

This control indicates that the left margin is no longer in effect as the left position boundary for backspace controls: Backspace, Numeric Backspace, and Unit Backspace. The left edge of the Page Image becomes the boundary limit for these controls for the current line on the Page Image.

The left margin remains released until the appearance of a syntactic line end.

A Release Left Margin, Backspace sequence may cause positioning horizontally to the right for a subsequent line ender.

Return to Master Font (RMF)

Return To Master Font is a control which specifies that the font to be used for subsequent text is the font specified in the established master format.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	02	R
TYPE	3	1	X	13	R

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

The control occurs on a character boundary.

SYNTACTICAL MEANING

The control is a declarative for subsequent text formatting.

SEMANTICS

The control indicates that the font to be used for subsequent text is the font specified in the established Master Format.

The control affects the font parameters set by the Set CFID Thru GFID control (See "Set CFID thru GFID (SFG)" on page 169.) and the Text Unit Format Change structure. (See "Text Unit Format Change (TUFC)" on page 120.)

The control remains in effect for all characters until the control is cancelled. The control is cancelled by:

- One of the following multibyte controls:
  - Set CFID thru GFID (SFG)
  - Return to Master Font (font remains the same)

  - Line Format Change
  - Return to Master Line Format (font remains the same)

- One of the following structured fields or structures:
  - Establish Primary Master
  - Establish Alternate Master
  - Text Unit Format Change
  - Return to Master Format (font remains the same)

Return to Master Line Format (RMLF)

The Return To Master Line Format control is used to return the line formatting states for subsequent lines of text to the states specified by the Line Parameters and Tab Parameters structured fields in the master format currently in effect.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	02	R
TYPE	3	1	X	04	R

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control appears on a line boundary.

SYNTACTICAL MEANING

This control terminates a Syntactic Line when not immediately preceded by a line end control other than itself.

The Master Line Format is declared by the control which becomes effective for subsequent text.

This control is a Line End.

SEMANTICS

This control terminates a Semantic Line when not immediately preceded by a line end control other than itself.

This control implies a Required Carrier Return except when it is immediately preceded by a line ender or when it precedes the first character on a page image, in which case this control implies a Zero Index Carrier Return and the indent level is reset to zero.

Formatting of subsequent text is performed according to the Master Line Format set by its Line Parameters and Tab Parameters structured fields.

The Return to Master Line Format remains in effect for all Page Image lines until the control is cancelled. The control is cancelled by:

- One of the following multibyte controls:
  - Begin/End Line Format Change
  - Return To Master Line Format
- One of the following structured fields or structures:
  - Establish Primary Master
  - Establish Alternate Master
  - Text Unit Format Change
  - Return to Master Format

This control establishes a new Active Baseline when it implies a Required Carrier Return.

This control is a line Alignment Terminator.

Set CFID thru GFID (SFG)

Set CFID Thru GFID is a control which specifies the font identification (for example, Elite or Courier), font width, and font attributes.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D1	R
COUNT	2	1	N	07	R
TYPE	3	1	X	05	R
GFID	4	2	N	1-65535	R
FONT WIDTH	6	2	N	1-1440	R
FONT ATTRIBUTE	8	1	N	1-2	R

PARAMETERS

GFID

Identifies the font. Refer to "Line Parameters (LP)" on page 59 for a complete description.

FONT WIDTH

Specifies the width of the font. Refer to "Line Parameters (LP)" on page 59 for a complete description.

FONT ATTRIBUTE

Specifies the spacing attribute of the font. Refer to "Line Parameters (LP)" on page 59 for a complete description.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

The control occurs on a character boundary.

SYNTACTICAL MEANING

SFG control is a declarative for subsequent text formatting.

SEMANTICS

The control defines the font, font width and font attributes to be used for subsequent text.

If the specified font is not supported, the specified width and attribute are used.

The control remains in effect for all characters until the control is cancelled. The control is cancelled by:

- One of the following multibyte controls:
  - Set CFID thru GFID
  - Return to Master Font
  - Line Format Change
  - Return to Master Line Format
- One of the following structured fields or structures:
  - Establish Primary Master
  - Establish Alternate Master
  - Text Unit Format Change
  - Return to Master Format

Set GCGID thru GCID (SCG)

The SCG control specifies the Coded Graphic Character Set identification that will be used to map subsequent text into printable graphics.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D1	R
COUNT	2	1	N	06	R
TYPE	3	1	X	01	R
GCID	4	4	N	1-65535;1-65535	R

PARAMETERS

GCID

The syntax and semantics of the GCID parameter are specified in "Document Parameters (DP)" on page 29.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control appears on a character boundary.

SEMANTICS

This control is active until an LP structured field, SLP control or SCG control is encountered.

This control can be temporarily overridden by an IEG control.

Set Line Parameters (SLP)

The Set Line Parameters is a control which declares the line formatting parameter values.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	27-28	R
TYPE	3	1	X	05	R
RESERVED	4	2	X	00	R
GFID	6	2	N	1 - 65535	R
FONT WIDTH	8	2	N	1 - 1440	R
FONT ATTRIBUTE	10	1	N	1, 2	R
GCID	11	4	N	0;0 or 1-65535;1-65535	R
LEFT MARGIN	15	2	N	0 - 65535	R
RIGHT MARGIN	17	2	N	1 - 65535	R
LINE DENSITY	19	2	N	1 - 1440	R
LINE SPACING	21	1	N	1 - 8	R
ADJUST STATE	22	1	N	0 - 1	R
RESERVED	23	1	X	00	R
ZONE	24	1	N	1 - 30	R
RESERVED	25	1	X	00	R
JUSTIFY % VALUE	26	1	N	1 - 100	R
ALIGNMENT STATE	27	1	N	1 - 4	R
LINE NUMBERING STATE	28	1	N	1 - 4	R
RESERVED	29	1	X	00	O

PARAMETERS

The parameters for SLP are identical to the parameters specified for the Line Parameters structured field starting with byte 6 and continuing through the end of the structured field. See "Line Parameters (LP)" on page 59 for a complete specification.

SYNTAX RULES

The Set Line Parameters control appears between the pair of controls, Begin Line Format Change and End Line Format Change. Refer to "Begin Line Format Change (BLFC)" on page 152 for ordering.

SYNTAX EXCEPTIONS

An exception condition exists if this control is not preceded by a Begin Line Format Change control.

SYNTACTICAL MEANING

Set Line Parameters is a declarative for subsequent text formatting.

SEMANTICS

All of the semantics in the Line Parameters structured field apply to this control. The following also applies:

The Set Line Parameters control remains in effect for all page image lines until the control is cancelled. See "Begin Line Format Change (BLFC)" on page 152.

SEMANTIC EXCEPTIONS

The semantic exceptions stated in the Line Parameters structured field apply to this control. See "Line Parameters (LP)" on page 59.

Set Tabs (STAB)

Set Tabs is a Line Format Change control which declares the horizontal tab setting parameter values. Two values, alignment characteristic and position, are associated with each tab setting.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D2	R
COUNT	2	1	N	min:max=02:147	R
TYPE	3	1	X	01	R
FIXED/FLOATING	4	1	N	0-1	O
ALIGNMENT CHARACTER**	5	1	N	0-5	O
POSITION**	6	2	N	0-32767	O

** These parameters may be repeated in pairs up to a maximum of 48 pairs.

PARAMETERS

The format, semantics, syntax rules and exceptions for the Fixed/Floating, Alignment Character and Position parameters are identical to the format, semantics, syntax rules and exceptions for these parameters in the Tab Parameters structured field. See "Tab Parameters (TP)" on page 66 for a description.

SYNTAX RULES

The Set Tabs control appears between the pair of controls, Begin Line Format Change and End Line Format Change. Refer to "Begin Line Format Change (BLFC)" on page 152 for ordering.

SYNTAX EXCEPTIONS

An exception condition exists if this control does not follow a Set Line Parameters control.

SYNTACTICAL MEANING

Set Tabs is a declarative for subsequent text formatting.

SEMANTICS

The control defines the tab settings which are horizontal positioning elements on Page Image lines for text presentation.

The Set Tabs control remains in effect for all page image lines until the control is cancelled. See "Begin Line Format Change (BLFC)" on page 152.

If the COUNT parameter is 02, then the current tab settings are cleared.

Begin Underscore (BUS)

Begin Underscore is the starting control of a pair of controls which identifies text that is to be underscored.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	04	R
TYPE	3	1	X	0A	R
MODE	4	1	N	1,2	R
BYPASS	5	1	B	....	R

PARAMETERS

MODE

- Specifies the mode of underscore.
  - 1 - Single underscore.
  - 2 - Double Underscore.

BYPASS

- Specifies the graphic characters and white space which are not to be underscored.
  - 0000 0000 - Underscore everything.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

The control occurs on a character boundary.

The pair of controls may span Text Units.

SYNTACTICAL MEANING

These paired controls are a declarative for presentation of subsequent text characters.

SEMANTICS

A Begin Underscore control begins a block of underscored text.

A Begin Underscore control is terminated by an End Underscore or by another Begin Underscore.

Underscoring is done for all characters (X'40' - X'FF') and for all control white space except that which follows the last printable graphic on the line and the underscore characters always appear at the active Baseline position.

Underscoring is done after justification. Expanded spaces are underscored if and only if spaces are underscored.

Control white space is white space resulting from multibyte or 1-byte controls (in the range X'00'-X'3F') between the Begin and End controls in the data stream.

Superscripts and Subscripts are underscored in the baseline position.

For proportionally spaced fonts, correlating the width of the Underscore graphic character with the width of the text character is the responsibility of the application.

If characters appear at Offset Positions, they may be overstruck or be at variable distances above and below their underscore characters.

End Underscore (EUS)

The End Underscore control is an ending control of the paired controls, Begin/End Underscore.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	X	02	R
TYPE	3	1	X	0E	R

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

The control occurs on a character boundary.

See "Begin Overstrike (BOS)" on page 157 for Syntax Rules of the pair.

SYNTACTICAL MEANING

The control terminates the Begin Underscore control.

See "Begin Overstrike (BOS)" on page 157 for Syntactical Meaning of the pair.

SEMANTICS

An End Underscore is treated as a Null control (See "Null (NUL)" on page 225.) if there is not a Begin Underscore in effect.

See "Begin Overstrike (BOS)" on page 157 for Semantics of underscoring.

Note Reference (NR)

The Note Reference control marks the location in body text where the reference is to be placed. The control points to the Text Unit that contains the note text being referenced.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D9	R
COUNT	2	1	N	min=27	R
TYPE	3	1	X	85	R
SELF IDENTIFYING PARAMETER(S)	4	-	-	-	R

Self-Identifying Parameters

The self-identifying parameters that can occur in this control are listed in the table below. The parameters in the table can occur in any order. The only parameter that can occur more than once in this structured field is the GCID parameter. It must occur before the first parameter containing character data and may occur before any such additional parameter.

PARAMETER	OCC
GCID	R
NOTE ID MODE	R
REFERENCE MANAGEMENT MODE	R
PRIMARY INCLUDE	R
NOTE CLASS	O
COMPLETION STATUS	O
SECONDARY INCLUDE	O

Description of Self-Identifying Parameters

GCID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	6	R
PARAMETER TYPE	1	X	01	R
GCID	4	N	1-65535;1-65535	R

Global Coded Graphic Character Set ID is a concatenation of two 2-byte binary numbers: CGCS ID and CODE PAGE ID.

CGCS ID

Identifies the Coded Graphic Character Set.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

CODE PAGE ID

Identifies the Code Page.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

This GCID applies only to parameters in this control. It remains in effect until another GCID is specified within the control.

NOTE ID MODE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=3	R
PARAMETER TYPE	1	X	05	R
MODE	1	N	1-3	R
VALUE	v	X	X'40-FE', IEG controls	O

Specifies the note referencing mode.

MODE

Specifies the note referencing mode active for this note reference.

1 - System-generated note ID. The ID for this particular reference is generated and may be stored in the VALUE parameter.

2 - Operator-generated note ID. Resets ID sequence according to REFERENCE ID TYPE after this instance. (VALUE contains the position to which the sequence is to be reset.)

3 - Operator-assigned note ID value, does not reset the ID sequence. VALUE contains the note ID to be used for this reference.

VALUE

If MODE = 1 or 3, VALUE specifies the characters to be formatted as the note ID. This may be 1-4 alphabetic characters, numbers, or symbols. (Symbols may be specified in terms of IEG controls.)

If MODE = 2, VALUE specifies the position to which the sequence is to be reset.

REFERENCE MANAGEMENT MODE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	11	R
MODE	1	N	0-1	R

MODE

Specifies the note referencing mode active for this note reference. The text associated with a note reference may be managed in either of two ways.

- By the operator, in which case the text may be in any valid revisable-form-text document (including the one containing the reference) and is managed by the operator.
- By the system, in which case the text is in a Text Unit which is created and managed by the system. The system-controlled Text Units are always in the same document as the reference. System-controlled Text Units are created with unique names at or above 900000.

  0 - Note text is not system-controlled.

  1 - Note text is in a system-controlled Text Unit in this document.

PRIMARY INCLUDE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=13	R
PARAMETER TYPE	1	X	08	R
CONTENT	v	X	-	R

Specifies the Text Unit containing the note text which is associated with the note reference.

The only valid content of this parameter is the Include Unit multibyte control, which may reference any document or Text Unit. (Refer to "Include Unit (IU)" on page 138.)

The PRIMARY INCLUDE references the Text Units which contain the textual content of the note. No other text is in the referenced Text Unit. All of the contained text is formatted according to the active master format of the referencing Text Unit as modified by the Note Format Parameters and other additional explicitly stated note formatting definitions. The scope of the formatting parameters is confined to the referenced Text Units. That is, if the NR control references one Text Unit, then the formatting directives and parameters set in and for that Text Unit are used in place of current state values for that Text Unit only.

The referenced Text Unit may be part of the same document as the Note Reference control or it may be a part of a different revisable-form-text document.

The referenced Text Unit may contain any valid body text. If an NR, BK, PE, RPE, TUFC, NPD, RTMF, EAM, or EPM is encountered, it is treated as a NULL (see "Null (NUL)" on page 225).

The PRIMARY INCLUDE functions strictly as a pointer; the Include Unit control is not replaced by the included text.

SECONDARY INCLUDE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=13	R
PARAMETER TYPE	1	X	09	R
CONTENT	v	X	-	R

Specifies a Text Unit to be used as a secondary source for locating note text which is associated with the note reference. This will only be used if the Text Unit referenced in the PRIMARY INCLUDE cannot be located. If a range of text units is specified, only the first text unit in the range is used.

The only valid content of this parameter is the Include Unit multibyte control, which may reference any document or Text Unit. (Refer to "Include Unit (IU)" on page 138.)

The SECONDARY INCLUDE functions strictly as a pointer; the Include Unit control is not replaced by the included text.

If this parameter is omitted, there is no secondary source.

NOTE CLASS

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	12	R
NOTE CLASS	1	N	1-9	R

Defines the note class with which this note is associated. This parameter links the NR with the proper NFP structured field.

If this parameter is omitted, NOTE CLASS = 1 is assumed.

COMPLETION STATUS

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	13	R
STATUS	1	N	1-2	R

Defines the status of the note at create time.

1 = Complete

2 = Incomplete; the note may be completed later.

If this parameter is omitted, STATUS = 1 is assumed.

SYNTAX RULES

An NR control can be specified on a character boundary.

SEMANTICS

When the NR control is resolved, the formatted text for the note reference and the note occurrence is generated and the positions of the reference and occurrence are determined.

An NR control may only appear in Body Text.

The note reference ID is determined and formatted according to the specified parameters. During the transformation to a final-form-text data stream, the NR control is replaced by the corresponding formatted note reference ID surrounded by the reference ID prologue and epilogue.

The included note text is formatted and placed on the page image according to the Presentation Location specified in the NFP associated with the NR's Note Class. If the NFP for the specified Note Class is omitted, the included note text is formatted using the parameters specified in the NFP for the next lower Note Class that is present. For example, if NFPs exist for Note Classes 1, 3, and 4 and an NR is encountered with Note Class 6, the formatting information from the NFP for Note Class 4 is used.

The formatting rules for each PRESENTATION LOCATION are defined as follows.

PRESENTATION LOCATION = 1 (bottom of the body text area with overflow)

Honor all normal body text pagination functions such as keep.

At most one note may overflow to the next page and it must always be the last one in its note group.

The note collection is positioned so that the last line in the collection is at the LAST BODY TEXT LINE specified in the Page Image Parameters active for the referencing text unit.

The formatted note text must start on the same page as the reference.

The Page Formatting Parameters are honored if this can be done without violating the above rules.

PRESENTATION LOCATION = 2 (end of physical document)

Formatted note text follows regular body text.

Formatted note text may overflow to the next page; overflowed text begins at the top of the next page.

PRESENTATION LOCATION = 3 (end of logical document)

Same as PRESENTATION LOCATION = 7 (user-specified) except that accumulated notes are presented at the end of the logical document.

PRESENTATION LOCATION = 4 (bottom of the body text area with no overflow)

Same as PRESENTATION LOCATION = 1 except that note text will normally not be allowed to overflow. If a note cannot be fully contained on the current page, then the line containing the NR is moved to the next page.

PRESENTATION LOCATION = 5 (inline)

All notes referenced in a line are presented directly after that line.

PRESENTATION LOCATION = 6 (do not present notes)

Formatted note text is not presented.

The note reference in the body text is always presented. (The REFERENCE ID PROLOGUE, NOTE ID VALUE, and REFERENCE ID EPILOGUE may be specified as null to preclude presentation.)

PRESENTATION LOCATION = 7 (user-specified location)

Formatted note text is presented at the location specified by the Locate Process Output control (refer to "Locate Process Output (LPO)" on page 195).

If the formatted note text overflows to the next page, CONTINUED TO and CONTINUED FROM text is always presented if specified.

Note groups appear in ascending class order within a note collection unless explicitly specified otherwise via the Locate Process Output control (refer to "Locate Process Output (LPO)" on page 195).

Notes appear in reference order within a note group.

The following table describes the primary source of formatting information for each element of a note.

NOTE ELEMENT	PRIMARY FORMAT SOURCE
Reference ID Prologue	Format active for current text unit
Reference ID Epilogue	Format active for current text unit modified by formatting information contained in previous note elements
Reference ID (in body text)	Format active for current text unit modified by formatting information contained in previous note elements
Note Group Prologue	NFP
ID Prologue	NFP
Reference ID (in note text)	NFP modified by formatting information contained in previous note elements
ID Epilogue	NFP modified by formatting information contained in previous note elements
Internote Text	NFP
Continued From Text	NFP
Continued To Text	NFP
Note Group Epilogue	NFP
Note Text	NFP modified by formatting information contained in previous note elements including preceding note text

- Formatting information included within note elements overrides the primary source and remains in effect until subsequently overridden or until the end of the note group. (TUFC, EAM, EPM, and RTMF controls encountered within note elements are ignored.)

- If specific formatting information is not available within the note element or the NFP, the master format active for the referencing Text Unit is used.

SEMANTIC EXCEPTIONS

It is a semantic exception if the NR control references text that cannot be located.

Note Text Reference (NTR)

This control allows indirect reference to note text at the location where the note text occurs.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D9	R
COUNT	2	1	N	min=25	R
TYPE	3	1	X	86	R
SELF-IDENTIFYING PARAMETER(S)	4	-	-	-	R

SELF-IDENTIFYING PARAMETERS

The self-identifying parameters that can occur in this control are listed in the table below. The parameters in the table can occur in any order.

GCID	R
NOTE GROUP INDICATORS	R
FORMATTED TEXT POINTER	O
ID DEFINITION	O
NOTE CLASS	O
PARTITION NUMBER	O
NOTE START LINE	O

GCID

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	6	R
PARAMETER TYPE	1	X	01	R
GCID	4	N	1-65535;1-65535	R

Global Coded Graphic Character Set ID is a concatenation of two 2-byte binary numbers: CGCS ID and CODE PAGE ID.

CGCS ID

Identifies the Coded Graphic Character Set.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

CODE PAGE ID

Identifies the Code Page.

1 through 65279 - IBM assigned.

65280 through 65535 - Customer assigned.

This GCID applies only to parameters in this control.

NOTE CLASS

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	01	R
NOTE CLASS ID	1	N	1-9	R

NOTE CLASS ID

This parameter defines the note class to which the NTR refers, thus linking it to a specific NFP structured field.

If this parameter is omitted, NOTE CLASS ID = 1 is assumed.

FORMATTED TEXT POINTER

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=13	R
PARAMETER TYPE	1	X	02	R
CONTENT	v	X	-	R

This points to the text unit containing formatted text. If a range of text units is specified, only the first text unit in the range is used.

Refer to PRIMARY INCLUDE in "Note Reference (NR)" on page 179 for complete definition of usage.

PARTITION

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	03	R
PARTITION NUMBER	1	N	0-99	R

PARTITION NUMBER

Indicates which sub-section of the Text Unit referenced in the Primary Include contains the note text. Corresponds to the Partition Number set in Note Partition Delimiter (refer to "Note Partition Delimiter (NPD)" on page 194). The TU will contain:

NPD (Partition = 00)
First note segment
NPD (Partition = 01)

Second note segment
NPD (Partition = 02)
Third note segment

A partition is bounded by the next Note Partition Delimiter control or the end of the Text Unit, whichever is encountered first.

If this parameter is omitted, PARTITION NUMBER = 0 is used.

PARTITION NUMBER = 0 is optional; the sub-section is understood to begin with the first Body Text Line.

NOTE START LINE

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	04	R
START LINE	2	N	0-65535	R

START LINE

Specifies the number of 1/1440th inch units between the top of the page image and the base of the first line of note text.

If START LINE = 0, start the note text at the next available line.

NOTE GROUP INDICATORS

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	3	R
PARAMETER TYPE	1	X	05	R
NOTE GROUP INDICATORS	2	B	Bit settings	R

NOTE GROUP INDICATORS

Contains the settings of various presentation flags.

Note Group Prologue Flag

....0 Note Group Prologue is not formatted.

....1 Note Group Prologue is formatted.

Note Group Epilogue Flag

.... ..0. Note Group Epilogue is not formatted.

.... ..1. Note Group Epilogue is formatted.

Reference ID Flag

.... .0.. Reference ID Prologue, ID, and Epilogue are not formatted.

.... .1.. Reference ID Prologue, ID, and Epilogue are formatted.

Continued From Flag

.... 0... Continued From text is not formatted.

.... 1... Continued From text is formatted.

Continued To Flag

...0 .... Continued To text is not formatted.

...1 .... Continued To text is formatted.

Internote Text Flag

..0. .... Internote text is not formatted.

..1. .... Internote text is formatted.

ID DEFINITION

PARAMETER ELEMENT	LEN	TYP	VALUES	OCC
PARAMETER LENGTH	1	N	min=3	R
PARAMETER TYPE	1	X	06	R
ID DEFINITION	v	C	X'40-FE', IEG controls	R

This parameter contains the actual note ID to be presented.

It may consist of 1-4 alphabetic characters, numbers, or symbols. (Symbols may be contained within IEG controls.)

ID DEFINITION may contain a maximum of 28 bytes.

SYNTAX RULES

This control is optional in Body Text structured fields.

The control occurs on a character boundary.

SEMANTICS

This control has semantics for image only.

This control can be removed and created when the NR is resolved.

Note Partition Delimiter (NPD)

Note Partition Delimiter allows the user to define sub-sections of a Text Unit containing a note.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D8	R
COUNT	2	1	N	03	R
TYPE	3	1	X	95	R
PARTITION NUMBER	4	1	N	00-99	R

PARAMETERS

PARTITION NUMBER

This parameter marks the beginning of a sub-section within a Text Unit. It is used to delimit note segments within a TU. It is referred to in "Note Text Reference (NTR)" on page 188.

SYNTAX RULES

This control is optional in Body Text structured fields.

The control occurs on a character boundary.

SYNTAX EXCEPTIONS

SEMANTICS

This control is used to delimit note segments (that is, split points for overflow) within a Text Unit.

Partition numbers must be specified in ascending order with no duplicates. Numbering need not be consecutive. For example, 2, 6, 20 is acceptable.

Locate Process Output (LPO)

Locate Process Output allows the user to define where specified process output is to appear in a document.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D8	R
COUNT	2	1	N	min=2	R
TYPE	3	1	X	96	R
PROCESS ID	4	1	N	0-255	R
NOTE CLASS**	5	1	N	1-9	O

** May be repeated up to 8 times.

PARAMETERS

PROCESS ID

This parameter identifies the type of process output to be placed at this location.

0 - No process output is to be placed at this location

1 - Notes

2-255 - Reserved

If this parameter is omitted, PROCESS ID = 0 is assumed.

NOTE CLASS

If PROCESS ID = 1, this parameter denotes which note class is to be placed at this location. It may be repeated up to 8 more times to allow specification of all classes in the order desired for a given Note Collection. Class specifications must be unique.

SYNTAX RULES

This control is optional in Body Text structured fields.

The control occurs on a character boundary.

SEMANTICS

The Locate Process Output control defines the placement for all accumulated notes of the NOTE CLASS specified in the control if the NFP for the class contained PRESENTATION LOCATION = 7 (user-specified).

If several Locate Process Output with PROCESS ID = 1 follow in succession with each of them containing only one class (as opposed to one Locate Process Output with all classes specified) each one constitutes a Note Collection independently of the others.

If PROCESS ID = 1 and NOTE CLASS is omitted, the Locate Process Output control applies to all note classes.

A Locate Process Output with PROCESS ID = 1 applies only to note references encountered since the last Locate Process Output with PROCESS ID = 1.

If the PRESENTATION LOCATION specified in the NFP for a given NOTE CLASS indicates that notes are to be formatted at a user-specified location and no Locate Process Output for the same NOTE CLASS is encountered, accumulated notes of that class will be formatted at the end of the document.

If multiple note classes are specified by one LPO, the notes are formatted in the same order as the classes are specified within the LPO.

If an LPO control is encountered for a note class with PRESENTATION LOCATION other than 7 (user-specified), the LPO is treated as a null (see "Null (NUL)" on page 225).

Begin Formatted Text (BFT)

Begin Formatted Text is the starting control of a pair of controls which identifies resolved and formatted text. The text, being a result of a process, is not revisable in that any modifications are subject to being lost with a subsequent reprocess.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D8	R
COUNT	2	1	N	04	R
TYPE	3	1	X	6A	R
PROCESSING INFORMATION	4	1	B	x	O
PROCESS ID	5	1	N	0-255	O

PARAMETERS

PROCESSING INFORMATION

Defines special formatting information needed to process the text preceding the BFT.

....0 - The BFT did not occur at a paragraph boundary.

....1 - The BFT did occur at a paragraph boundary.

PROCESS ID

This parameter indicates type of text contained within BFT/EFT.

0 - Undefined process

1 - Note Text

2 - Auto-outline

3-255 - Reserved

SYNTAX RULES

This control is optional in Body Text structured fields.

It occurs on a character boundary.

The following controls and structured fields cannot appear in text bracketed by a Begin Formatted Text/End Formatted Text control pair:

Page End
Text Unit Prefix
Establish Primary Master
Establish Alternate Master
Text Unit Format Change
Return to Master Format

SYNTAX EXCEPTIONS

An exception condition exists if the control appears in a Margin Text structured field.

SEMANTICS

Begin Formatted Text identifies the start of formatted text.

A Begin Formatted Text control is terminated by an End Formatted Text with the same PROCESS ID.

If a Begin Formatted Text/End Formatted Text control pair is removed by the same type of resolve process that created it, all text between the two controls is also removed.

End Formatted Text (EFT)

End Formatted Text is the ending control of the paired controls, Begin/End Formatted Text.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D8	R
COUNT	2	1	X	03	R
TYPE	3	1	X	6E	R
PROCESS ID	4	1	N	0-255	O

PARAMETERS

PROCESS ID

This parameter indicates type of text contained within BFT/EFT.

0 - Undefined process

1 - Note Text

2 - Auto-outline

3-255 - Reserved

SYNTAX RULES

This control is optional in Body Text structured fields.

It occurs on a character boundary.

See "Begin Formatted Text (BFT)" on page 197 for Syntax Rules of the pair.

The control terminates the last Begin Formatted Control with the same PROCESS ID.

SYNTAX EXCEPTIONS

An exception condition exists if the control appears in a Margin Text structured field.

SEMANTICS

An unpaired End Formatted Text is treated as a Null control, X'00' ("Null (NUL)" on page 225).

See "Begin Formatted Text (BFT)" on page 197 for Semantics of the pair.

TEXT PROCESSING CONTROLS

This section describes special text processing controls for column layout, spelling check, and edit support.

Begin Column Layout (BCL)

The Begin Column Layout control defines the start of one or more columns of text that can be moved, replaced or deleted using edit controls. A user might typically display an image of a page and then specify boundaries around sections of the page for subsequent reference by a product specific edit function (move, copy or delete). This control does not affect the formatting of text, except that it functions as a Begin Keep.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D8	R
COUNT	2	1	N	5-205	R
TYPE	3	1	X	62	R
NUMBER OF COLUMNS	4	1	N	0-50	R
FIXED/FLOATING	5	1	N	0,1	R
NUMBER OF TOP DISPLAY LINES	6	1	N	0-50	R
NUMBER L/R DISPLAY COLUMNS	7	1	N	0-50, 128-178	R
COLUMN EDIT ATTRIBUTE**	8	1	B	x	O
COLUMN GUTTER WIDTH**	9	2	N	0-65535	R
COLUMN TEXT WIDTH**	11	2	N	0-65535	R

**These parameters are repeated for each set of columns.

PARAMETERS

NUMBER OF COLUMNS

Specifies the number of column parameter sets specified in this control. These parameter sets specify an edit attribute of the column and the column boundaries. The column parameter sets are specified in order starting at the left margin and extending to the right. Each parameter set contains the width of a column that can be referenced by an edit operation. The bottom edge of each column is specified by the next subsequent End Column Layout (ECL) control or Begin Column Layout control.

FIXED/FLOATING

Specifies whether the Gutter Width and Text Width parameters are defined in absolute units of 1440ths of an inch or are defined in character units .

0 - Character units; The Gutter Widths and Text Widths are specified in character units (units of the active font width as specified by an SLP, LP or SFG font width parameter). The font width in effect at the time the BCL control is encountered specifies the width of a character unit for the BCL control. The physical widths of the BCL columns are not effected by subsequent changes in the font width.

1 - 1440th units; The Gutter Widths and Text Widths are in absolute units of 1440ths of an inch. The physical widths of the BCL columns are not affected by preceding or subsequent changes in the font width.

NUMBER OF TOP DISPLAY LINES

Specifies the number of Semantic Lines immediately preceding the BCL control which are always to be displayed at the top of the screen during column create/revise functions.

0 - 50 lines

NUMBER OF LEFT/RIGHT DISPLAY COLUMNS

Specifies the number of columns which are always displayed on the left/right side of the screen during column create/revise functions.

0 - 50 columns displayed on left side

128 - 178 for 0 - 50(mod 128) columns displayed on right side

COLUMN EDIT ATTRIBUTE

Specifies functions in effect when entering/revising this column's data.

....0 - Line endings are not adjusted during create/revise of data in the column.

....1 - Line endings are adjusted during create/revise of data in the column.

GUTTER WIDTH

Specifies the amount of white space that exists prior to the start of text in a column. The first gutter width parameter specifies the width of the gutter between the left margin and the start of text in the first column. Subsequent gutter width parameters specify the width of the gutter between the right edge of the previous column and the start of text in the next column. This parameter is defined in terms of the units specified in the Fixed/Floating parameter.

TEXT WIDTH

Specifies the width of the text in a column. This parameter is defined in terms of the units specified in the Fixed/Floating parameter.

SYNTAX RULES

BCL controls are only specified on line boundaries.

SYNTAX EXCEPTIONS

An exception condition exists if a BCL control is not specified on a line boundary.

SEMANTICS

The column layout of a BCL control can be terminated by an ECL control or another BCL control.

A Syntactic Line contains zero or more columns and a line end.

This control defines column boundaries in terms of a page image. A column is composed of a gutter area and a text area. The left boundary of the first column is the left margin and its right boundary is defined as that position determined by the sum of its gutter and text width. The left boundary of each middle column is the right boundary of its preceding column and its right boundary is its left boundary plus its gutter width and text width. The left boundary of the last column is the right boundary of its preceding column and its right boundary is its left boundary plus its gutter width and text width or the position immediately following the last

character in the column if there are characters beyond the limit defined as its column width.

Edit operations such as insert, move, copy, and delete may be performed on these defined column units.

When a column is moved, copied or deleted, all the characters and controls (except line end) in each line that fall into that column are moved, copied or deleted.

If a column does not have a column entry, during a move or copy operation, the null column entries that are moved are replaced by controls that generate enough white space (for example, space/tab) to fill the column if there are subsequent columns containing text.

A line end is not a part of a column. It is not moved or removed in Move, Copy, or Delete column operations. It remains at the end of each line. If the last column is moved or deleted, the line end follows the new last column containing text. If a line only contains a line end, the line end remains as the only content of that line.

The content of a column in the data stream starts with and includes the first character or control in each line that satisfies one of the following requirements:

character requirement - the left edge of the character coincides with the left boundary of the column or (for PSM) it may be a character immediately following a character whose left edge was preceding this left boundary but whose graphic width caused it to overflow the boundary.

control requirement - the control leaves the active horizontal position right of the left boundary of the column and at or to the left of its right boundary.

control requirement - a character, Word Underscore, word delimiter, or ending control of a Begin/End control pair preceding one or more non-escaping controls followed by a control or character that satisfied one of the two requirements listed above.

The content of a column in the data stream ends at but does not include the first character or control in each line that satisfies one of the following requirements:

character requirement - the left edge of the character is positioned to the right of the right boundary of the column.

control requirement - the control leaves the active horizontal position right of the right boundary of the column.

control requirement - a character, Word Underscore, word delimiter, or ending control of a Begin/End control pair preceding one or more

non-escaping controls followed by a control or character that satisfied one of the two requirements listed above.

If a control positions exactly at a column boundary (for example, Tab or ATF), the control belongs to the column whose right boundary is this position. If the TAB or ATF control positions to the right of a left column boundary, the TAB of ATF belongs to this column.

In addition to specifying a column layout, this control functions as a Begin Keep for the specified columns.

A BCL control may specify the number of columns as zero. In this case, the control acts as a placeholder for later user completion.

SEMANTIC EXCEPTIONS

An exception condition exists if a line format change (BLFC, RMLF, TUFC, EPM, EAM, or RTMF) is specified while a BCL control is active.

An exception condition exists if the line adjust state is on while a BCL control is active.

An exception condition exists if the line alignment state is other than left align while a BCL control is active.

EXAMPLE

REVISABLE-FORM-TEXT DOCUMENT (INPUT)

```
 BCL 3 0 5,18 0,18 0,18

Officer            Position         Years of Service
 A. C. Smith        Chairman                37
 H. M. Carlton      President               25
 B. J. Nickerson    Vice President          21
 A. L. Vance        Vice President          17
 K. L. Albert       Secretary               15

 ECL
```

In this example, a BCL control is used to logically segment a page image into 3 columns. An edit operation can than be used to move, copy or delete one or more of the columns. The document listed below shows the result of deleting the second column.

REVISABLE-FORM-TEXT DOCUMENT (INPUT)

```
Officer          Years of Service
 A. C. Smith              37
 H. M. Carlton            25
 B. J. Nickerson          21
 A. L. Vance              17
 K. L. Albert             15
```

End Column Layout (ECL)

The End Column Layout control defines the bottom boundary of the columns defined in the next preceding Begin Column Layout control.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D8	R
COUNT	2	1	N	02	R
TYPE	3	1	X	66	R

SYNTAX RULES

ECL controls are only specified on line boundaries.

SEMANTICS

An ECL control terminates a column layout if one is in effect.

An ECL control terminates a Keep Block if one is in effect.

An End Column Layout control is treated as a Null, X'00', if there is not a Keep Block in effect.

See "Begin Column Layout (BCL)" on page 201 for Semantics of column layout.

Display Prompt and Stop (DPS)

The Display Prompt and Stop control specifies an operator prompt to be displayed. The control is contained in text of the document. It acts as a stop code and enables the operator to enter text at an identified location in the revisable-form-text data stream for page image presentation.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	03 - 18	R
TYPE	3	1	X	90	R
PROMPT	4	1	C	Alphanumeric	R

PARAMETERS

PROMPT (PROMPT)

Declares a text field identifier for operator entry of text.

SYNTAX RULES

The control appears on a character boundary.

SYNTACTICAL MEANING

Indicates position in text where additional text is required.

SEMANTICS

The complete control is bypassed when page images are to be printed.

When the PROMPT and its marker are displayed, the operator may enter the requested text into the specified location of the revisable-form-text data stream.

Begin Linguistic Mark (BLM)

Begin Linguistic Mark is the starting control of a pair of controls that identifies a word/syllable with special linguistic characteristics.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	N	02-03	R
TYPE	3	1	X	7A	R
LINGUISTIC MARK ID	4	1	N	0-255	O

PARAMETERS

LINGUISTIC MARK ID (LINGUISTIC MARK ID)

Identifies the type of special linguistic case.

0 - Indicates a spelling error, that is, the word/syllable was not found in the system dictionary.

1-255 - Reserved

The absence of this parameter indicates a spelling error.

SYNTAX RULES

The control occurs on a character boundary.

SEMANTICS

Begin Linguistic Mark control identifies a word or syllable with special linguistic characteristics, for example, a misspelled word.

Begin Linguistic Mark control is terminated by an End Linguistic Mark or by another Begin Linguistic Mark.

These paired controls indicate that the surrounded sequence of characters possess special linguistic characteristics.

End Linguistic Mark (ELM)

End Linguistic Mark is an ending control of the paired controls, Begin/End Linguistic Mark.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D4	R
COUNT	2	1	X	02	R
TYPE	3	1	X	7E	R

SYNTAX RULES

The control occurs on a character boundary.

End Linguistic Mark control terminates the Begin Linguistic Mark control.

SYNTACTICAL MEANING

The control terminates the Begin Linguistic Mark control.

It is ignored if there is not a Begin Linguistic Mark in effect.

See "Begin Linguistic Mark (BLM)" on page 209 for Syntactical Meaning of the pair.

Set Spelling Check Attributes (SSCA)

The Set Spelling Check Attributes control specifies that subsequent text is either checked for spelling or ignored during processing by a system program that checks for spelling errors. This control also allows specification of the dictionary that is used in checking for spelling errors.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D8	R
COUNT	2	1	N	04	R
TYPE	3	1	X	82	R
DICTIONARY ID	4	2	C/X	C=00-99, X=FFFF	R

PARAMETERS

DICTIONARY ID

The dictionary ID field specifies whether or not the text following this control is to be verified for spelling and, if spell check is requested, which language dictionary to use. The defined 2-byte values for this parameter are as follows:

C'00' - Do not check subsequent text for spelling errors.

Numeric characters 01-99 - Check the subsequent text for spelling errors. The 2-byte value in this field is the ID of the language dictionary to use for spelling verification. (See the description of the SCA Dictionary ID parameter in the Document Parameters Structured Field for a listing of IDs that have been assigned to language dictionaries and the particular dictionary they represent.)

X'FFFF' - Check the subsequent text for spelling errors. Use the currently loaded language dictionary for the spell check process.

All other values are undefined. Undefined or reserved values encountered in this field are to be processed as exception conditions.

SYNTAX RULES

An SSCA control can be specified on a character boundary.

SEMANTIC EXCEPTIONS

An exception condition exists if the Dictionary ID references a nonexistent or unsupported dictionary.

The ID value specified is undefined.

ID value = X'FFFF', but no language dictionary is currently loaded.

Set Visual Attributes (SVA)

SVA specifies the visual attributes used during the display of subsequent text. This control is not relevant to the formatting and printing processes. It may optionally be used by display processes to record original display attributes and to replicate these on subsequent display.

PARAMETER	OFF	LEN	TYP	VALUES	OCC
CSP	0	1	X	2B	R
CLASS	1	1	X	D2	R
COUNT	2	1	N	03	R
TYPE	3	1	X	35	R
VISUAL ATTRIBUTES	4	1	B	....	R

PARAMETERS

VISUAL ATTRIBUTES

```
0000 0000 -  Normal display, no highlight.
1... .... -  Blink.
.1.. .... -  Underline.
..1. .... -  High Intensity.
...1 .... -  Reverse Image.
.... 1... -  Non-Display.
.... .xxx -  Reserved.
```

SYNTAX RULES

An SVA control can be specified on a character boundary.

CHAPTER 5. ONE-BYTE CONTROL DESCRIPTIONS

This chapter describes the embedded 1-byte controls that are defined in Revisable-Form-Text Document Content Architecture. Other 1-byte controls (that is, any other 1-byte entities with value less than X'40') have no meaning in a revisable-form-text data stream.

BACKSPACE (BS)

EBCDIC Code X'16'

The Backspace is a formatting control that moves the active position in the reverse direction horizontally one position. The distance moved (width of a position) is equal to the width of a space (X'40') in the active font.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SEMANTICS

If a Backspace is present in the data stream and the presentation is to the right of the left margin, the presentation position is moved back to the left the width of a space.

When the left margin is not in effect, the left page image edge becomes the left margin boundary and a backspace beyond the edge of the page image is ignored. A Release Left Margin control causes the left margin boundary on the page image to be temporarily removed. (Refer to "Release Left Margin (RLM)" on page 164 for details..)

If a Backspace is present in the data stream and the presentation position is at an active indent level, the Backspace is effective across the indent level.

Backspace is a word separator for WUS only.

CARRIER RETURN (CRE)

EBCDIC Code X'15'

Carrier Return is a formatting control that functions as a syntactic line end and a conditional semantic line end.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SYNTACTICAL MEANING

This control terminates a Syntactic Line.

This control is a Line End when it is the first Syntactic Line end following an Align Text Line control, or when it precedes a Syntactic Line end control, or when it succeeds a graphic or control from the following list:

- Align Text Field (ATF)
- Align Text Line (ATL)
- Backspace (BS)
- Carrier Return (CRE)
- Horizontal Tab (HT)
- Indent Tab (IT)
- Index (INX)
- Numeric Backspace (NBS)
- Numeric Space (NSP)
- Release Left Margin (RLM)
- Required Space (RSP: X'41' in Code Page 256)
- Space (SP)
- Unit Backspace (UBS).

Otherwise, this control is an Adjustable Line End. In order for two controls to jointly cause a Line End, there must not be any intervening graphic codes. Intervening multibyte and one byte (below X'40') controls not specified in the above list are ignored when identifying a Required Line End.

SEMANTICS

A Carrier Return that occurs in a non-adjust process or when the adjust state is off or a Carrier Return that is interpreted as a paragraph boundary moves the active position to the left margin on the next line modified by the active Indent Tab Level.

In the adjust process, a Carrier Return that is not interpreted as a paragraph boundary and is not preceded by a Syllable Hyphen or a Space functions as a Space (X'40') in all respects except that the Carrier Return is still a syntactic line boundary.

In the adjust process, a Carrier Return that is not interpreted as a paragraph boundary and is immediately preceded by a Syllable Hyphen or a Space functions as a Null control in all respects except that the Carrier Return is still a syntactic line boundary.

This control terminates a Semantic Line.

This control establishes a new Active Baseline.

This control is a line Alignment Terminator.

HORIZONTAL TAB (HT)

EBCDIC Code X'05'

The Horizontal Tab control is a formatting control character which moves the active presentation position horizontally to the next tab stop setting.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

It has an optional text field immediately following it delimited by:

Horizontal Tab

Indent Tab

Align Text Field

Syntactical line end.

SEMANTICS

The Horizontal Tab control is specified to cause placement of the text following the control to be located at the next tab setting to the right of the current line position on that page image line. The tab setting has been specified by a Tab Parameters structured field or a Set Tabs control. The text field is aligned according to the alignment character for that tab setting. See "Tab Parameters (TP)" on page 66 or"Set Tabs (STAB)" on page 174 for more information.

If the active tab settings are specified in character units, the position of the next tab setting to the right can be determined by multiplying the TP or STAB Position parameter values with the active font width (the active font width is specified by an SLP, LP or SFG font width parameter).

For line presentation on the Page Image, the optional text field is delimited by:

Horizontal Tab

Indent Tab

Align Text Field

Semantic line end.

Alignment of the text field for each Character Alignment type is:

Alignment Character = 0 - Null (left) align field text

The first character of the text field immediately following the TAB control is presented at the Position on the line specified by the tab setting. Subsequent text characters in the text field appear in sequence to its right.

```
V
abcd
```

Alignment Character = 1 - Period align field text

The first occurrence of a period in the text field following the tab control is presented at the tab setting Position. Characters to the left of the first period are presented to the left of the Position and characters to the right of the first period are presented to the right of the Position.

```
   V
ab.cd
```

If the period is not contained in the text field, the text is right aligned on the Position.

Alignment Character = 2 - Comma align field text

The first occurrence of a comma in the text field following the tab control is presented at the tab setting Position. Characters to the left of the first comma are presented to the left of the Position and characters to the right of the first comma are presented to the right of the Position.

```
   V
ab,cd
```

If the text field does not contain a comma the text is right aligned on the Position.

Alignment Character = 3 - Center align text field

The center position of the text field following the tab control is computed. This center point is positioned at the next tab setting to the right of the current horizontal position. If this center point cannot be positioned exactly at the tab setting, the center point is positioned on the left of the tab setting, as close as possible to the tab setting.

```
   V
 abcde
abcdef
```

With the Alignment Character equal to four (4) - Right Align

The characters of the subsequent word or field following the tab control are presented to the left of the tab setting Position with the last character of the word presented at the Position minus one.

```
    V
abcd
```

Alignment Character = 5 - Colon align field text

The first occurrence of a colon in the text field following the tab control is presented at the tab setting Position. Characters to the left of the first colon are presented to the left of the Position and characters to the right of the first colon are presented to the right of the Position.

```
    V
ab:cd
```

If the text field does not contain a colon the text is right aligned on the Position.

The alignment characteristic of a tabsetting set at the active indent tab level is ignored when a syntactic line end or a semantic line end moves the current position to a non-zero active indent tab level.

The alignment characteristic of the last tab in a semantic line is ignored if an active ATL control or LP alignment state specifies center or right alignment.

This control establishes a Semantic Line Break Point boundary with a subsequent graphic excluding a subsequent Space, Numeric Space, or Required Space Graphic.

This control is a Justification Delimiter.

SEMANTIC EXCEPTIONS

An exception condition exists if the text field following the tab cannot be represented on the Page Image without

Overstriking text already present on the Page Image line

Violating the left margin boundary

Violating the left page image boundary (if Release Left Margin is in effect). This exception condition results if alignment for a text field requires positioning left of current position for more characters than there is available blank presentation space.

Regardless of the adjust state, if no tab stop exists to the right of an HT control, an exception condition exists.

INDENT TAB (IT)

EBCDIC Code X'39'

Indent Tab performs the function of a Horizontal Tab and, in addition, causes an automatic Horizontal Tab to be executed at the beginning of every semantic line until the Indent Tab control is cancelled. This control causes the active Indent Tab Level (the number of automatic tabs executed at the beginning of every semantic line) to be incremented by one.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SEMANTICS

The Indent Tab control remains in effect for all page image lines until the control is cancelled. All active Indent Tab controls are cancelled (the Indent Tab Level is set to 0) by one of the following:

One-byte controls:

- Required Carrier Return
- Index Return
- Required Page End

Multibyte controls:

- End Line Format Change
- Return to Master Line Format

Structured fields:

- Establish Primary Master
- Establish Alternate Master
- Text Unit Format Change
- Return To Master Format

Space to the left of the temporary left margin set by Indent Tab may be backspaced into without the use of the Release Left Margin control.

If line numbers are being positioned in the Left Margin area of the page image, they continue to be positioned in this same page image area.

This control establishes a Semantic Line Break Point boundary with a subsequent graphic excluding a subsequent Space, Numeric Space, or Required space graphic.

This control is a Justification Delimiter.

INDEX (INX)

EBCDIC Code X'25'

The Index control causes the active vertical position to move to the current horizontal position of the next semantic line.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

This control terminates a Syntactic Line.

This control is a Line End.

SEMANTICS

If justification of text is active, only text which occurs to the right of the last INX in a semantic line is justified (See the description of the Line Parameters structured field for a description of the Justify function). Text which occurs to the left of an INX in a semantic line is not justified.

In adjust mode, on a semantic line containing INX controls, the adjust function starts at the beginning of the semantic line (not at the INX) and adjusts text through any INX controls to the end of the semantic line.

The Index control is a word delimiter and, if the Index control follows a Carrier Return, a paragraph delimiter.

This control terminates a Semantic Line.

This control establishes a new Active Baseline.

This control is a Justification Delimiter.

This control establishes a Semantic Line Break Point boundary with a subsequent graphic excluding a subsequent space, Numeric Space, or Required Space graphic.

This control does not affect the active horizontal location.

INDEX RETURN (IRT)

EBCDIC Code X'33'

The Index Return is a formatting control which is identical in function to the Required Carrier Return. (See "Required Carrier Return (RCR)" on page 229.)

NULL (NUL)

EBCDIC Code X'00'

The Null control is a fill character in the data stream; it is not presented on the page image.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SYNTACTICAL MEANING

This control is a fill character in the data stream.

SEMANTICS

This control is not presented on the page image.

NUMERIC BACKSPACE (NBS)

EBCDIC Code X'36'

The Numeric Backspace is a formatting control that moves the active position in the reverse direction horizontally by one position. The distance moved (width of a position) is equal to the width of a numeric digit in an active font.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SEMANTICS

If a Numeric Backspace is present in the data stream and the presentation is to the right of the left margin, the presentation position is moved back to the left the width of a digit

When the left margin is not in effect, the left page image edge becomes the left margin boundary and a backspace beyond the edge of the page image is ignored. A Release Left Margin control causes the left margin boundary on the page image to be temporarily removed. (Refer to "Release Left Margin (RLM)" on page 164 for details.)

If a numeric backspace is present in the data stream and the presentation position is at an active indent level, the numeric backspace is effective across the indent level.

NUMERIC SPACE (NSP)

EBCDIC Code X'E1'

The Numeric Space is a formatting control which causes the active position to advance horizontally one numeric digit font width.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SYNTACTICAL MEANING

Numeric space is a word delimiter.

SEMANTICS

This control advances the active position horizontally one numeric digit font width.

This control is not expanded by justification.

This control establishes a Semantic Line Break Point boundary with a subsequent graphic excluding a subsequent Space, Numeric Space, or Required Space graphic.

PAGE END (PE)

EBCDIC Code X'0C'

The Page End is a formatting control which indicates Text Unit end; it has no formatting semantic.

SYNTAX RULES

This control appears in every Text Unit and End Unit.

It may not appear anywhere except as the last byte of the Text Unit, and its appearance there is required.

SYNTAX EXCEPTIONS

An exception condition exists if more than one of these controls appears in a Text Unit.

An exception condition exists if this control does not appear as the last byte in a Text Unit.

SYNTACTICAL MEANING

This control indicates the end of a Text Unit.

REQUIRED CARRIER RETURN (RCR)

EBCDIC Code X'06'

The Required Carrier Return control is a formatting control which causes a horizontal move of the presentation position to the left margin and a vertical move of the baseline down one line spacing increment. RCR resets the indent level to zero.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

This control terminates a Syntactic Line.

This control is a Line End.

SEMANTICS

This control terminates a Semantic Line and a paragraph on the page image.

This control resets the indent tab level to zero; the Left Margin is then the left alignment position for semantic lines.

This control establishes a new Active Baseline.

This control is a line Alignment Terminator.

REQUIRED HYPHEN (HYP)

EBCDIC Code X'60'

The Required Hyphen is a graphic and carries no further semantics.

REQUIRED PAGE END (RPE)

EBCDIC Code X'3A'

The Required Page End is a formatting control which unconditionally terminates a page image.

SYNTAX RULES

This control is optional in Body Text structured fields.

This control may be present anywhere in Body Text except as the last byte of a Text Unit.

SYNTACTICAL MEANING

This control terminates a syntactic page.

This control terminates a Syntactic Line.

This control is a Line End.

This control terminates a Keep Block if one is in effect.

SEMANTICS

This control delimits the body text which is to be formatted onto the current page image.

The presentation position for the subsequent body text is on the subsequent page image at the location specified for First Body Text Line in the Page Image Parameters structured field, and at the Left Margin location specified in the Line Parameters structured field or in the Set Line Parameters control, whichever is current.

The Indent Level is set to zero.

Bottom margin text, if specified, is placed on the delimited page image in its formatted form at its specified location.

Top margin text, if specified, is placed on the next page image for the subsequent body text in its formatted form at its specified location.

This control terminates a Semantic Line.

This control establishes a new Active Baseline on the next page.

This control is a line Alignment Terminator.

REQUIRED SPACE (RSP)

EBCDIC Code X'41'

The Required Space is a formatting control that causes the active position to advance horizontally one font width.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SYNTACTICAL MEANING

This control appearing between graphic characters does not separate the characters into words.

SEMANTICS

This control is specified to move the presentation position to the right by the width defined for a space of that specified font.

It is not a word separator for the adjust process.

SPACE (SP)

EBCDIC Code X'40'

The Space is a formatting control which causes the active position to advance horizontally one font width.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SYNTACTICAL MEANING

This control appearing between graphic characters separates the characters into words.

SEMANTICS

Space is a word separator.

This control causes the text presentation position to be moved a font width to the right of the present position.

This control establishes a Line Break Point boundary with a subsequent graphic excluding a subsequent Space, Numeric Space, or Required Space graphic.

SUBSCRIPT (SBS)

EBCDIC Code X'38'

The Subscript is a formatting control which causes the active position to be moved down approximately one half a single line increment.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SEMANTICS

This control establishes an Offset Position or results in a return to the Active Baseline.

The distance moved down by this control is equal to the distance moved up by the Superscript control.

This control causes positioning an approximate half line distance down at the current horizontal position for the next character presentation.

If the line is terminated from the subscripted position, the next base line is positioned down from that position the number of half lines specified by the Line Spacing parameter (See "Line Parameters (LP)" on page 59.) if the next line appears on the same page image.

If there are no more lines available on the page image, the positioning for first line of text is determined by the First Body Text line parameter in the Page Image Parameters structured field.

SUBSTITUTE (SUB)

EBCDIC Code X'3F'

The Substitute control is used in place of a character that is invalid or in error. It is intended to be introduced by automatic means. The recommended graphic representation of Substitute is graphic underscore (_). Substitute may be used when machine input operations result in an unrecoverable error or character ambiguity.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SYNTACTICAL MEANING

This control appearing between graphic characters does not separate the characters into words; it is a part of the complete word.

SEMANTICS

This control can optionally cause presentation of a graphic on the line presented on the page image. It has no other semantics.

It is not a word separator.

The recommended print representation for Substitute is the underscore graphic.

The print representation for Substitute must be non-blank (visible).

SUPERSCRIPT (SPS)

EBCDIC Code X'09'

The Superscript control is a formatting control which causes the active position to be moved up approximately one half a single line increment.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SEMANTICS

This control establishes an Offset Position or results in a return to the Active Baseline.

The distance moved up by this control is equal to the distance moved down by the Subscript control.

This control causes positioning an approximate half line distance up at the current horizontal position for the next character presentation.

If the line is terminated from the superscripted position, the next base line is positioned down from that position the number of half lines specified by the Line Spacing parameter (See "Line Parameters (LP)" on page 59.) if the next line appears on the same page image.

If there are no more lines available on the page image, the positioning for first line of text is determined by the First Body Text line parameter in the Page Image Parameters structured field.

SYLLABLE HYPHEN (SHY)

EBCDIC Code X'CA'

The Syllable Hyphen is a formatting control that causes the hyphen graphic, '-', to be conditionally presented.

The control has the same effect in both adjustable and nonadjustable text.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SYNTACTICAL MEANING

This control is a line break point.

SEMANTICS

The hyphen graphic is presented if and only if it is the last graphic on the line.

This control may be the line break point that ends the semantic line by the adjust algorithm. (See semantic line definition in "Interpreting Text" on page 5.)

This control establishes a Line Break Point boundary with a subsequent graphic excluding a subsequent Space, Numeric Space, or Required Space graphic.

UNIT BACKSPACE (UBS)

EBCDIC Code X'1A'

The Unit Backspace is a formatting control which in PSM fonts moves the active position in the reverse direction horizontally one PSM unit. In fixed pitch fonts, UBS does not move the active position.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SYNTACTICAL MEANING

UBS delimits a word for WUS in both PSM and non-PSM fonts.

WORD UNDERSCORE (WUS)

EBCDIC Code X'23'

Word Underscore is a formatting control which underscores everything between itself and the preceding WUS delimiter.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SEMANTICS

A Word Underscore is delimited by a word delimiter (see "Interpreting Text" on page 5), a backspace control (UBS, NBS, or BS), a Word Underscore control or an underscore character (X'6D').

Word Underscore controls always underscore at the Offset Position.

If characters appear at offset positions, characters appearing on the Active Baseline or at offset positions may be overstruck or be at variable distances above and below their underscore characters. This situation can be avoided by inserting a Word Underscore control just prior to any control that establishes an offset even if the net effect is a return to the Active Baseline.

ZERO INDEX CARRIER RETURN (ZICR)

EBCDIC Code X'0D'

The Zero Index Carrier Return is a formatting control which moves the active position to the left margin (or active indent level) on that same line.

SYNTAX RULES

This control is optional in Body Text structured fields and Margin Text structured fields.

This control may be present anywhere in these structured fields except as the last byte in a Text Unit.

SYNTACTICAL MEANING

This control terminates a Syntactic Line.

This control is a Line End.

SEMANTICS

This control causes positioning for text presentation to be at the left margin (or active indent level) on that same Offset, or if there is no Offset, on that same Active Baseline.

This control terminates a Semantic Line.

This control is a Semantic Line Alignment Terminator.

CHAPTER 6. EXCEPTION ARCHITECTURE

A revisable-form-text document is interpreted correctly if all functions are performed as specified in the architecture, or an external exception report is given if a function is not performed.

An exception condition report is a message available to the reader of the document, that indicates the exception condition exists and describes the nature of the exception condition. One report may apply to multiple occurrences of a given exception condition.

APPENDIX A. STRUCTURED FIELD SUMMARY

The following list of structured fields is a summary of all the valid structured fields that may occur in a revisable-form-text document.

Name	Acronym	Class	Type
Format Unit Prefix	FUP	E1	03
Text Unit Prefix	TUP	E1	04
End Unit Prefix	EUP	E1	06
Body Text	BT	E8	07
Establish Primary Master Format	EPM	E3	01
Establish Alternate Master Format	EAM	E3	02
Return to Master Format	RTMF	E3	03
Primary Master Format	PMF	E2	01
Alternate Master Format	AMF	E2	02
Document Parameters	DP	E2	05
Text Unit Format Change	TUFC	E2	04
Print Medium	PM	E4	02
Operator Message	OM	E4	03
Page Image Parameters	PIP	E5	07
Page Image Numbering	PIN	E5	08
Margin Text Parameters, top	MPT	E5	01
Margin Text Parameters, bottom	MPB	E5	04
Margin Text, top, all.	MTTA	E8	01
Margin Text, bottom, all.	MTBA	E8	04
Line Parameters	LP	E6	01
Tab Parameters	TP	E6	02
Line Numbering	LN	E6	03
Punctuation Format, arithmetic parms	PFA	E9	01
Punctuation Format, character parms	PFC	E9	02
Margin Text, top, odd.	MTTO	E8	02
Margin Text, top, even.	MTTE	E8	03
Margin Text, bottom, odd.	MTBO	E8	05
Margin Text, bottom, even.	MTBE	E8	06
Auto-Outline Parameters	AOP	E9	04
Note Format Parameters	NFP	E9	03
Page Formatting Parameters	PFP	E9	05

APPENDIX B. MULTIBYTE CONTROL SUMMARY

The following list of controls is a summary of all the valid multibyte controls that may occur in a revisable-form-text document. Other multibyte controls may appear but have no meaning in interchange.

	ACRONYM	CLASS	TYPE	OCCUR
Set CFID through GFID	SFG	D1	05	CB
Set GCGID through GCID	SCG	D1	01	CB
Release Left Margin	RLM	D2	0B	CB
Return to Master Font	RMF	D4	13	CB
Insert Escaped Graphic	IEG	D1	15	CB
Set Tabs (horizontal)	STAB	D2	01	LFC
Align Text Field	ATF	D4	0B	CB
Align Text Line	ATL	D4	0F	LB
Begin Keep	BK	D4	62	CB
End Keep	EK	D4	66	CB
Begin Overstrike	BOS	D4	72	CB
End Overstrike	EOS	D4	76	CB
Begin Underscore	BUS	D4	0A	CB
End Underscore	EUS	D4	0E	CB
Print Page Image Number	PPIN	D4	47	CB
Print Text Unit Name	PTUN	D4	63	CB
Display Prompt and Stop	DPS	D4	90	CB
Begin Linguistic Mark	BLM	D4	7A	CB
End Linguistic Mark	ELM	D4	7E	CB
Begin Line Format Change	BLFC	D4	02	LB
End Line Format Change	ELFC	D4	06	LB
Set Line Parameters	SLP	D4	05	LFC
Return to Master Line Format	RMLF	D4	04	LB
Begin Column Layout	BCL	D8	62	LB
End Column Layout	ECL	D8	66	LB
Set Spelling Check Attributes	SSCA	D8	82	CB
Set Visual Attributes	SVA	D2	35	CB
Include Unit	IU	D9	81	CB
Insert	INS	D9	82	CB
Auto-Outline	AO	D9	6A	CB
Note Reference	NR	D9	85	CB
Note Text Reference	NTR	D9	86	CB
Note Partition Delimiter	NPD	D8	95	CB
Locate Process Output	LPO	D8	96	CB
Begin Formatted Text	BFT	D8	6A	CB
End Formatted Text	EFT	D8	6E	CB
Conditional Word Break	CWB	D8	94	CB

Occurrence Legend:

CB: The control sequence may be specified on character boundaries within the text.

LB: The control sequence may be specified only on line boundaries within the text.

LFC: The control sequence may be specified only with a line format change sequence within the text.

The semantics of some controls vary depending upon the text adjustment state setting - see individual control descriptions.

APPENDIX C. ONE-BYTE CONTROL SUMMARY

The one byte controls defined in Revisable-Form-Text Document Content Architecture are listed below. Other 1-byte controls have no meaning in interchange.

FUNCTION	NAME	CODE POINT
BS	Backspace	16
CRE	Carrier Return	15
HT	Horizontal Tab	05
IT	Indent Tab	39
INX	Index	25
IRT	Index Return	33
NUL	Null	00
NBS	Numeric Backspace	36
NSP	Numeric Space	E1
PE	Page End	0C
RCR	Required Carrier Return	06
HYP	Required Hyphen	60
RPE	Required Page End	3A
RSP	Required Space	41
SP	Space	40
SBS	Subscript	38
SUB	Substitute	3F
SPS	Superscript	09
SHY	Syllable Hyphen	CA
UBS	Unit Backspace	1A
WUS	Word Underscore	23
ZICR	Zero Index Carrier Return	0D

APPENDIX D. FONT SUMMARY

IDENTIFIERS FOR SFG PARAMETERS

A listing of fonts can be found in product publications. The following table lists the fonts that have been assigned font identifiers and the corresponding SFG parameter values.

Font style	GFID	FWD	FA
Advocate	01	144	1
Delegate	02	144	1
OCR-B	03	144	1
Polygo Pica	04	144	1
Orator (alias Rhetoric)	05	144	1
Light Italic 10	06	144	1
OCR-M	07	144	1
Scribe 10	08	144	1
Large Pica	09	144	1
Cyrillic 22	10	144	1
Courier 10 (alias Courier 72)	11	144	1
Prestige Pica	12	144	1
Artisan 10	13	144	1
Manifold (alias Artisan All Caps)	14	144	1
Bookface Academic	15	144	1
Latin 10 High Speed	16	144	1
1403 OCR	17	144	1
Courier Italic 10	18	144	1
OCR-A	19	144	1
PICA	20	144	1
Katakana Light	21	144	1
Printing & Publishing, 12 Number 3	22	144	1
Light Italic 10 Mod	23	144	1
OCR-CD	24	144	1
Presentor	25	144	1
Reserved	26-79		

Font style	GFID	FWD	FA
Scribe	80	120	1
Artisan 12 (alias Artisan 72)	81	120	1
Auto Elite	82	120	1
Elite	83	120	1
Script	84	120	1
Courier 12	85	120	1
Prestige Elite	86	120	1
Letter Gothic	87	120	1
High Speed Latin 12	88	120	1
Large Elite	89	120	1
Dual Gothic	90	120	1
Light Italic 12	91	120	1
Courier 12 Italic	92	120	1
Polygo Elite	93	120	1
Diplomat	94	120	1
Adjutant	95	120	1
Olde World	96	120	1
Light Italic 12 Mod	97	120	1
Reserved	98-154		
Boldface Italic	155	120	2
Thesis	156	120	2
Title	157	120	2
Modern	158	120	2
Boldface	159	120	2
Essay	160	120	2
Arcadia	161	120	2
Essay Italic	162	120	2
Essay Bold	163	120	2
Reserved	164		
High Speed Latin PSM	165	120	2
Reserved	166-220		
Prestige 15	221	96	1
Gothic 15	222	96	1
Courier 15	223	96	1
Rotated Data 1 15	224	96	1
Scribe 15	225	96	1
Reserved	226-255		

APPENDIX E. PSM CHARACTER WIDTHS

The following table lists the character width of each PSM character when the SFG font attribute parameter value equals 2. The character widths are expressed in units of 1/60 of an inch. The characters listed with their corresponding hexadecimal values represent the graphic character set known as GCSGID 337 and CPGID 256. The characters indicated by an asterisk (*) adjacent to the hexadecimal value represent the graphic character set known as GCSGID 110 and CPGID 256.

HEX	UNITS	NAME	HEX	UNITS	NAME
16	5	Backspace			
1A	1	Unit Backspace			
36	5	Numeric Backspace			
40*	5	Space	60*	5	Minus Sign, Hyphen
41*	5	Required Space	61*	5	Slash
42	5	a circumflex	62	7	A circumflex
43	5	a diaeresis	63	7	A diaeresis
44	5	a grave	64	7	A grave
45	5	a acute	65	7	A acute
46	5	a tilde	66	7	A tilde
47	5	a angstrom	67	7	A angstrom
48	5	c cedilla	68	7	C cedilla
49	6	n tilde	69	7	N tilde
4A	5	Open Sq.Bracket	6A	5	Vertical Broken Line
4B*	5	Period	6B*	5	Comma
4C	5	Less Than Sign	6C*	5	Percent Sign
4D*	5	Left Parenthesis	6D*	5	Underscore
4E*	5	Plus Sign	6E	5	Greater Than Sign
4F	5	Exclamation Point	6F*	5	Question Mark
50	6	Ampersand	70	5	0 slash
51	5	e acute	71	6	E acute
52	5	e circumflex	72	6	E circumflex
53	5	e diaeresis	73	6	E diaeresis
54	5	e grave	74	6	E grave
55	3	i acute	75	4	I acute
56	3	i circumflex	76	4	I circumflex
57	3	i diaeresis	77	4	I diaeresis
58	3	i grave	78	4	I grave
59	6	German Sharp S	79	5	Grave
5A	5	Close Sq.Bracket	7A*	5	Colon
5B	5	Dollar Sign	7B	5	Number Sign
5C	5	Asterisk	7C	5	At Sign
5D*	5	Right Parenthesis	7D	3	Apostrophe
5E*	5	Semicolon	7E*	5	Equal Sign
5F	5	Circumflex	7F	5	Quotation Mark

HEX	UNITS	NAME	HEX	UNITS	NAME
80	7	0 Slash	A0	6	Micro
81*	5	a	A1	5	Tilde
82*	6	b	A2*	5	s
83*	5	c	A3*	4	t
84*	6	d	A4*	6	u
85*	5	e	A5*	6	v
86*	4	f	A6*	7	w
87*	6	g	A7*	6	x
88*	6	h	A8*	6	y
89*	3	i	A9*	5	z
8A	7	European Open Quote	AA	5	Spanish Open Exclam.Point
8B	7	European Close Quote	AB	5	Spanish Open Question Mark
8C	6	d stroke	AC	7	D stroke
8D	6	y acute	AD	7	Y acute
8E	6	Small letter thorn	AE	7	Capital Thorn
8F	5	Plus Minus Sign	AF	5	Circle R
90	5	Degree, Angstrom	B0	5	Cent Sign
91*	3	j	B1	5	Pound Sign, Lira
92*	6	k	B2	5	Yen
93*	3	l	B3	7	Peseta
94*	7	m	B4	5	Florin, Guilder
95*	6	n	B5	5	Section Sign
96*	5	o	B6	5	Paragraph Sign
97*	6	p	B7	5	One Fourth
98*	6	q	B8	5	One half
99*	5	r	B9	5	Three Fourths
9A	5	a underscore	BA	5	Logical NOT
9B	5	o underscore	BB	5	Logical OR
9C	7	ae diphthong	BC	5	Overbar
9D	5	Cedilla	BD	5	Diaeresis
9E	7	AE diphthong	BE	5	Acute
9F	5	International currency symbol	BF	5	Double underscore

HEX	UNITS	NAME	HEX	UNITS	NAME
C0	5	Open brace	E0	5	Reverse slash
C1*	7	A	E1*	5	Numeric Space
C2*	7	B	E2*	6	S
C3*	7	C	E3*	7	T
C4*	7	D	E4*	7	U
C5*	6	E	E5*	7	V
C6*	6	F	E6*	7	W
C7*	7	G	E7*	7	X
C8*	7	H	E8*	7	Y
C9*	4	I	E9*	6	Z
CA*	5	Syllable Hyphen	EA	5	Square (superscript 2)
CB	5	o circumflex	EB	7	O circumflex
CC	5	o diaeresis	EC	7	O diaeresis
CD	5	o grave	ED	7	O grave
CE	5	o acute	EE	7	O acute
CF	5	o tilde	EF	7	O tilde
D0	5	Close brace	F0*	5	0
D1*	5	J	F1*	5	1
D2*	7	K	F2*	5	2
D3*	6	L	F3*	5	3
D4*	7	M	F4*	5	4
D5*	7	N	F5*	5	5
D6*	7	O	F6*	5	6
D7*	6	P	F7*	5	7
D8*	7	Q	F8*	5	8
D9*	7	R	F9*	5	9
DA	3	Dotless i	FA	5	Cube (superscript 3)
DB	6	u circumflex	FB	7	U circumflex
DC	6	u diaeresis	FC	7	U diaeresis
DD	6	u grave	FD	7	U grave
DE	6	u acute	FE	7	U acute
DF	6	y diaeresis	FF		Eight Ones

APPENDIX F. TRANSFORMS

The following transforms can be used to interpret revisable-form-text constructs in a consistent way:

- The image transform that specifies how a revisable-form-text text unit is interpreted to produce a page image. The page images produced from a revisable-form-text document contain all the information (except device-specific control codes) required to present the document on the receiving system. The image transform is described in "Image" on page 256.

- The adjust transform that specifies how line definitions are changed to conform to formatting parameters. The adjust transform is described in "Adjust" on page 260.

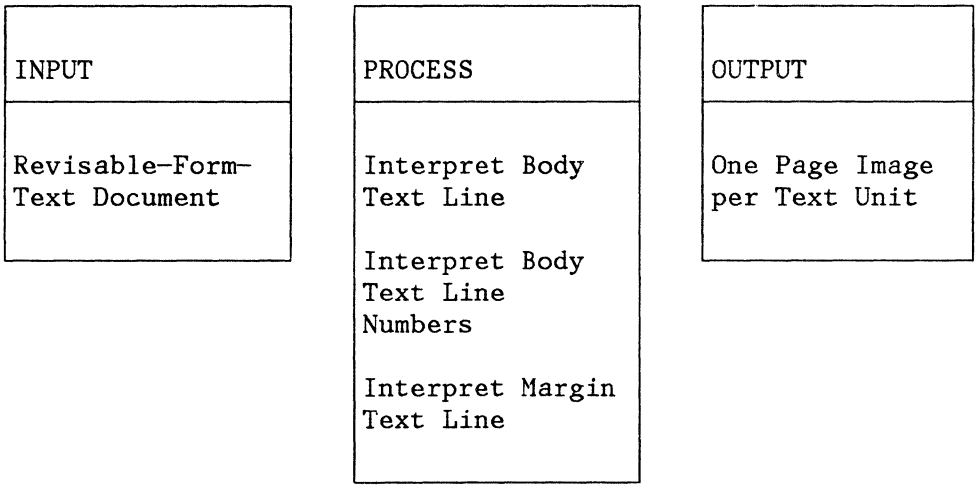
- The portion of the paginate transform that is concerned with how page definitions are reconstructed to conform to formatting parameters. This part of the paginate transform is described in "Page End Decisions" on page 262.

- The line composition subtransform that is used by the other transforms to interpret text.

These transforms are defined for convenience in interpreting revisable-form-text constructs and do not specify text-processing programs on actual products. The charts shown for each transform list the input and output as well as the major processing steps and possible exception conditions.

IMAGE

The image transform specifies how each text unit in a revisable-form-text document is interpreted to produce a page image.



EXCEPTION CONDITIONS

1. Composed body text or margin text exceeds page image depth.
2. Composed body text or margin text exceeds page image width.
3. Composed top margin text overlaps the first line of body text in the page image.
4. Composed bottom margin text overlaps the last line of body text in the page image.
5. A composed line number exceeds the space allocated.

WHAT IS IMAGED

All of the text appearing on a page image is the result of the image transform. The three types of text on the page image are body text, margin text, and line numbers. See "Determining the Applicable Master Format" on page 4 for a discussion of how the parameters affecting imaging are determined.

IMAGING A REVISABLE-FORM-TEXT DOCUMENT

A revisable-form-text document is imaged sequentially one text unit at a time, producing one page image for each text unit in the revisable-form-text document. The page image is produced as follows:

Imaging the Body Text

The parameters in effect at the beginning of processing of each body text structured field and the body text declaration of each text unit are interpreted to produce page image body text.

The parameters in effect are determined.

The page image number counter and the line number counter are initialized. The page image number counter is initialized to one when any of the following is true:

- This is the first page image in the document and the page image number initial value parameter is null.
- This is the first page image in the document and the page image number initial value parameter is reset to one.
- This is the first page image in the document and the page image number initial value parameter is continue.

The page image number counter is initialized to another value only if this is the first page image in the document and the page image number initial value parameter is reset to N where N is not equal to one.

Line composition is performed repetitively to interpret each text line in body text.

Overstriking and underscoring are done after justification. All white space resulting from revisable-form-text controls and all graphics between Begin Overstrike (BOS) and End Overstrike (EOS) (or between Begin Underscore (BUS) and End Underscore (EUS)) are overstruck (or underscored). Blank space after the last graphic in a composed line is not overstruck (or underscored).

The line number counter value is associated with the composed line.

If the maximum y-coordinate of the last composed line of body text is equal to or greater than the bottom margin start line parameter, then the bottom margin start line is reset to this maximum y-coordinate plus the difference between the bottom margin start line and the last body text line.

Page image elements for body text are produced.

Imaging the Margin Text

The margin text beginning parameters and the margin text declaration are interpreted to produce page image margin text.

Margin text beginning parameters are determined.

The page image number counter determines whether the even or odd margin text declaration is used.

PPIN is replaced by the page image number counter in top and bottom margin text as required.

The page image number counter is incremented by the page image number increment for every PE[1].

Line composition is performed repetitively to interpret each text line in the top and bottom margin text.

Overstriking and underscoring are done after justification. All white space resulting from revisable-form-text controls and all graphics between BOS and EOS (or between BUS and EUS) are overstruck (or underscored). Blank space after the last graphic in a composed line is not overstruck (or underscored).

Page image elements for margin text are produced.

---

[1] All instances of PPIN in a page image are replaced by the same value from the page image number counter even though PE seems to precede margin text.

Imaging the Line Numbers

The body text beginning parameters are interpreted to produce composed line numbers if and only if line numbering is active.

The line number counter is set to initial line number value if and only if one of the following conditions is encountered:

- A EAM, EPM, TUFC, or SLP sets the line number state to reset.
- A PE is encountered while the line numbering reset point indicates reset on new page image.
- The line number state is resume or reset during interpretation of the first text unit in the document.

RTMF and RMLF do not cause the line number counter to be modified.

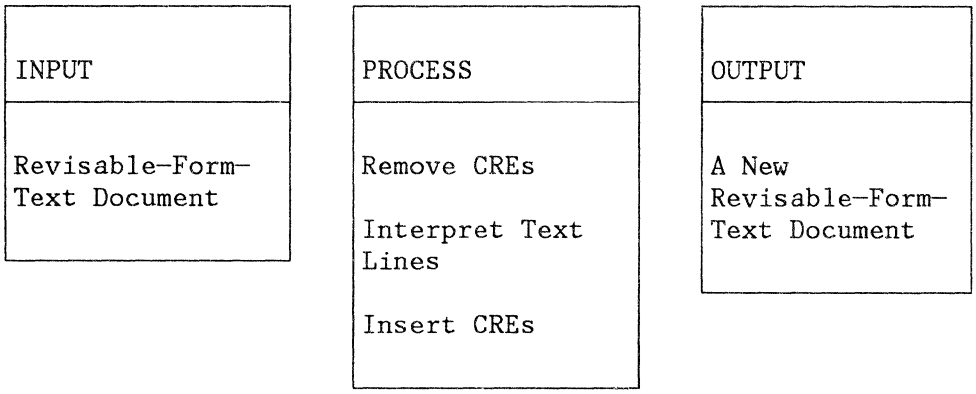
The line number counter is incremented by the line numbering increment when and only when any line end, except Zero Index Carrier Return (ZICR), is encountered in body text, and the line numbering state equals resume, reset, or continue.

The line numbers associated with each composed line are converted to graphic codes and page image elements produced if and only if:

- The line numbering state is resume or reset, and
- The page image line is nonblank, or the blank line numbering flag is on, and
- It is the Nth page image line, where N is the line numbering interval.

ADJUST

Adjust transforms a revisable-form-text document to a new revisable-form-text document containing text in which the text lines have been redefined to conform to current parameter settings.



EXCEPTION CONDITIONS
1. In nonadjustable text, the first line break point of a composed line has an x-coordinate greater that the page image width. 2. In adjustable text, the first line break point of a composed line has an x-coordinate greater than the right margin.

WHAT IS ADJUSTED

All adjustable text participates in the transform. Nonadjustable text is passed through to the new text unit unmodified, but all parameter changes contained in the non-adjustable text are accepted.

Adjust transforms either the body text of a revisable-form-text document, or the margin text of either a format unit or a text unit containing a TUFC.

The text that adjust modifies is that text for which the adjust state is on.

ADJUSTING TEXT

Adjust transforms all adjustable text in the revisable-form-text document to contain page image lines of maximal length not exceeding the right margin. Text is adjusted as follows:

Remove all CREs that are both

- Preceded by a SP or SHY, and
- Not part of a required line end.

Replace all other CREs, that are not part of a required line end, with SP.

Text is composed horizontally (See Line Composition) as a set of long composed lines (there are now fewer CREs).

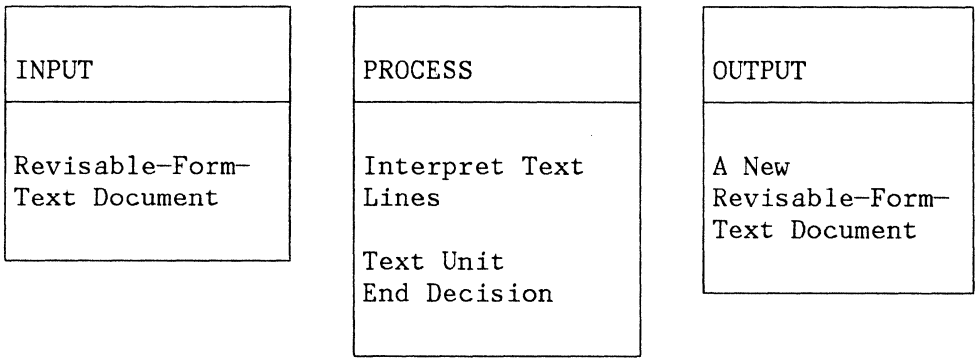
New composed lines are formed by iteratively scanning each long composed line in turn, inserting a CRE at the appropriate point and recalculating the x-coordinates of the remainder of the long composed line, until the largest x-coordinate in the long composed line is less than or equal to right margin minus the width of the last graphic.

- The appropriate point is any line break point that has an x-coordinate larger than the location of adjust zone and smaller than the right margin.
- Recalculation reflects insertion of CRE.
- An x-coordinate is never smaller than the left margin unless there is a RLM preceding it in the long composed line.

Any text unit boundary (Page End (PE) followed immediately by a Text Unit Prefix (TUP) structured field) that is not immediately preceded by a CRE is replaced by a SP and reinserted just following the closest line end (not a PE) with a larger x-coordinate.

PAGE END DECISIONS

Paginate transforms a revisable-form-text document to a new revisable-form-text document in which the page formatting parameters specified in the data stream have been applied. This section is concerned only with the portion of the paginate transform that reestablishes text unit boundaries (a Page End (PE) followed immediately by a Text Unit Prefix (TUP) structured field).



EXCEPTION CONDITIONS
1. The line density is greater than the last body text line minus the first body text line.

PAGE END DECISIONS IN A REVISABLE-FORM-TEXT DOCUMENT

Page ends are determined as follows:

All text unit boundaries are removed if not preceded by a graphic code, otherwise the sequence is replaced with a CRE.

Following every RPE, a PE/TUP sequence is inserted.

Preceding every structured field sequence containing a EPM structured field, a EAM, a TUFC, or a RTMF, a PE/TUP sequence is inserted, unless there is already one there because of a RPE.

The resulting long text units are paginated one at a time as follows:

The text of the long text units is composed vertically (See Line Composition).

New text units are formed by iteratively scanning the composed lines of the long text unit, inserting a PE/TUP sequence at the appropriate point and recalculating the y-coordinates of the remainder of the composed lines of the long text unit, until no page image element y-coordinate is greater than the last body text line.

- The appropriate point is just preceding the first composed line containing a graphic and having a page image element y-coordinate greater than last body text line.

- If the appropriate point is in a keep block that does not begin with the first composed line of the page image, then the appropriate point is moved to just following a line end and just preceding the first composed line containing the BK.

- If the appropriate point is in a keep block that does begin with the first composed line of the page image, then the BK is ignored.

- Recalculation of y-coordinates is for the purpose of reflecting the insertion of each PE/TUP sequence.

- page image element y-coordinates are never negative.

Text unit names are generated by an implementation determined algorithm.

LINE COMPOSITION (SUBTRANSFORM)

Image, adjust, and paginate all interpret text. The interpretation is similar in each case and is contained in this subtransform.

Line composition interprets text and produces a composed line that is a set of page image elements containing either x-coordinates or y-coordinates, or both.

INPUT	PROCESS	OUTPUT
Current Parameters String of Text Terminated with a Line End	Horizontal Layout Vertical Layout Horizontal Alignment	Current Parameters Composed Line

EXCEPTION CONDITIONS
1. A page image element x-coordinate is negative. 2. In non-adjustable text, page image line is longer than the page image width minus the left margin. 3. In adjustable text, page image line is longer than right margin minus left margin. 4. The maximum x-coordinate is greater than right margin and line alignment is center or right.

Line composition as a subtransform is used in three different ways.

- In image all of line composition is performed, producing composed lines that are made up of page image elements.

- In adjust only horizontal layout and horizontal alignment are performed, producing composed lines that are made up of horizontal page image elements.

- In paginate only vertical layout is performed, producing composed lines that are made up of vertical page image elements.

WHAT IS COMPOSED

Line composition interprets a string of text and text fields, that is terminated with a line end.

COMPOSING A LINE

The complete composition of a line is done in two steps. First, the string of text and controls is interpreted as though the line were to be aligned left and a composed line produced. Then, if the line is to be aligned other than left, the composed line is modified to accomplish alignment.

Basic Layout

Horizontal

All of the horizontal components of the text line, including field alignment, are interpreted, and page image elements produced for each control and graphic.

Vertical

All of the vertical components of the text line are interpreted, and page image elements produced (or updated) for each control and graphic.

Horizontal Alignment

The page image elements resulting from horizontal and vertical layout are modified to align the text, if the maximum x-coordinate is less than or equal to the right margin. If the maximum x-coordinate is greater than the right margin, no page image element is modified. A page image element x-coordinate is never smaller than the left margin unless there is a Release Left Margin preceding it in the composed line.

The page image element x-coordinates are modified according to the line alignment which can be left, right, center or justify. For right and center alignment, if the line contains alignment terminators, only those page image elements with x-coordinate greater than or equal to the maximum x-coordinate of an alignment terminator page image element are modified. If there is no alignment terminator, then all page image elements are modified.

Left

No modification.

Right

If the line end delimits an Align Text Field, page image elements are modified.

The following correction is added to the x-coordinate for each page image element:

(right margin - maximum PIE x-coordinate)

Page image element minimum and maximum x-coordinates are updated.

Center

If the line end delimits an Align Text Field, no page image elements are modified.

The integer portion of the following correction is added to the x-coordinate for each page image element:

(right margin - maximum PIE x-coordinate) / 2

Page image element minimum and maximum x-coordinates are updated.

Justify

Select page image element with the greatest x-coordinate, ignoring any page image elements that generate white space.

Total correction =

(Justification percentage / 100) times

(right margin - maximum PIE x-coordinate)

The Spaces, that do not precede an Index, Horizontal Tab or Indent Tab, or the first non-Space in the text line, are expansion points. The following correction is add to the displacement to the next page image element for each expansion point:

(Total correction) / (number of expansion points)

The x-coordinates are recalculated accordingly.

If the text line is terminated by a required line end, the justification percentage may be interpreted as zero.

GLOSSARY

Glossary terms are defined as they are used in this book. The 1-byte controls, multibyte controls, and structured fields, are not included in the glossary. Descriptions of them can be found in the body of this manual. If you cannot find the term you are looking for, refer to the index or to the IBM Vocabulary for Data Processing, Telecommunications, and Office Systems, GC20-1699.

adjust (line end). A feature that automatically adjusts the line endings of text to comply, within the line-end zone, with the original margin setting or to changed settings, with or without editing.

alignment delimiter. Any control that delimits the alignment of a single line. Alignment of a line normally alters the location of the entire line of text, but if there is an alignment delimiter, line alignment only alters the location of text to the right of the delimiter.

alternate master declaration. The format unit that contains the Alternate Master Format with all its margin text declarations.

baseline. The horizontal line connecting the bottoms of capital letters. Graphics may be placed on the baseline so that descenders are below the line and the remainder is above.

character. A symbol used in presentation for a video display or printing. For example, a letter of the alphabet, a numeral, a punctuation mark, or any other symbol that represents information.

character box. The rectangular area that can be occupied by a character on the printed page or in the page image. The size of the rectangular area varies with the pitch of the character and the number of lines per inch.

code. A system of bit-patterns to which specific graphic or control meanings have been assigned.

coded graphic character. A graphic character, with its assigned code point.

coded graphic character set. A set of graphic characters, with their assigned code points.

coded graphic character set global identifier (CGCSGID). A 10-digit decimal identifier consisting of the concatenation of a graphic character set global identifier (GCSGID) and a code page global identifier (CPGID).

code page. A specification of code points for each graphic character in a set, or in a collection of graphic character sets. Within a given code page, a code point can have one and only one specific meaning.

code page global identifier (CPGID). A 5-digit decimal identifier assigned to a code page.

code point. One of the bit-patterns specified by a code.

construct. A structured field, multibyte control, 1-byte control, or a graphic code.

default value. A default value is that value assigned to a parameter when no explicit assignment of a value has been made in the document.

DIA. Document interchange architecture.

document. (1) A data medium and data recorded on it, that generally has permanence, and that can be read by man or machine. (2) A unified collection of information pertaining to a specific subject or related subjects.

document content architecture. A family of data stream architectures that define and specify the form of the information by describing the syntax and semantics of allowable elements in the data stream.

document interchange architecture (DIA). The specification of rules, and a data structure that are a discipline for predictable coherent information interchange between application processes.

document type. A data stream classification that indicates the structure and format of a document.

end user. The ultimate source or recipient of information flowing through a distribution system. Synonymous with user.

final-form text. Text that has already been formatted and is ready for presentation.

first page image. A condition of a page image resulting from various format changes in the text unit, and causing variable composition. Also, the page image resulting from the first text unit in the document.

font. An assortment of type, all of one size and style.

format. A declaration of composition state values. For example, PMF.

formatter. A computer program that prepares a document for presentation. For example, the presentation may on paper or a display screen.

graphic. The character image assigned to a graphic code.

graphic character. A graphic symbol, such as a numeric, alphabetic, or special character.

graphic character set. A set of graphic characters, treated as an entity.

graphic character set global identifier (GCSGID). A 5-digit decimal identifier assigned to a graphic character set.

graphic code. An EBCDIC code point X'40' to X'FE'.

graphic location. The coordinates of the graphic's reference point.

hexadecimal. Pertaining to a number system based on 16, using the sixteen digits 0, 1, . . . 9, A, B, C, D, E, and F. For example, hexadecimal 1B equals decimal 27.

indent. To set typographical material to the right of the left margin.

indent margin. A mobile second left margin that is set, used, and reset by various revisable-form-text constructs, independent from the specifying of left margin. The indent margin is always on or to the right of the left margin. For example, it is set by IT, used by CRE, and reset by RCR.

IDP. Interchange document profile

interchange document profile (IDP). Document-related information that identifies and describes the document for the document user; for example, author, document name, and subject.

justification. The process of distributing and inserting extra blank space between the words in an output line to cause the right-hand edge of the last word in the line to reach the right margin. As a result, the right-hand edge of each output line is aligned with the preceding and following output lines.

keep block. One or more text lines intended to be kept within a single text unit, the first of that contains a BK or BCL; the last of that (1) contains an EK, ECL, BK, or BCL or (2) is terminated by RPE; and there is no intervening EK, ECL, BK, BCL, or RPE. The maximum size of a keep block is one page image.

line break point. A point in text where a line end may be placed by the adjust transform. A line break point is a syntactic notion, dependent only on the string of text being considered, and independent of margins, font width, zone, etc. See "Adjust" on page 260 for a list of line break points.

line end. One or more controls or graphics, that in combination reset the horizontal pointer to the active left margin. See "Interpreting a Revisable-Form-Text Data Stream" on page 3 for a list of line ends.

line location. The y-coordinate of the line's baseline.

location. A point addressed by an x,y coordinate pair relative to the page image origin (x=0,y=0). X and y express the number of units between the respective axes and the point.

output device. A machine used to print, display, or store the result of processing.

output line. A line of text produced by a text processor.

page image element (PIE). Declares all of the state values necessary to correctly position and represent a graphic (or control) in the page image.

pagination. The automatic arrangement of text according to a preset number of page layout parameters.

paragraph. See required line end.

primary master declaration. The format unit that contains the Primary Master Format with all its margin text declarations.

position. A rectangular space addressed by a single cardinal number relative to some boundary, usually left margin or first body text line. There is never a position zero. The rectangular space could be a graphic box, a 1/1440th inch box, or a box of any other unit.

process. A systematic sequence of operations to produce a specified result.

profile parameter. A component of a subprofile that identifies and describes the document, and contain information which enables proper interpretation of the document by a recipient.

proportional spacing. The spacing of characters in a printed line so that each character is allotted a space proportional to the character's width.

reference point. The point that is the intersection of the left edge of the graphic box with the base of the graphic, ignoring descenders. The location of a graphic is the location of its reference point.

required line end. One or more controls or graphics, that in combination reset the horizontal pointer to left margin. See "Interpreting a Revisable-Form-Text Data Stream" on page 3 for a list of required line ends.

right margin position. A position whose right edge is coincident with the right margin.

self-identifying parameter. A parameter whose first two bytes consist of an introducer that identifies the parameter and specifies its length.

structure. A collection of structured fields.

structured field. A construct whose first five bytes consist of a 2-byte length, and three 1-byte identifier fields (Class, Type, Format).

subsequent page image. Any page image that is not a first page image.

terminal. A device, usually equipped with a keyboard and some kind of display, capable of sending and receiving information over a communication channel.

type. The indicator within an introducer that identifies the specific operation to be performed.

text. Any sequence of graphic codes, 1-byte controls, and multibyte controls.

text field. Part of a text line that is aligned as a unit. See "Line Composition (Subtransform)" on page 264 for text field specification.

text line. Any sequence of graphics and controls not containing a line end, followed by one or more contiguous line ends.

word processing. Pertaining to machines, systems, or processes, that provide: (a) efficient text entry techniques, (b) serial processing of text and control character strings, (c) final-form-text presentation (printed or displayed) for business communications.

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