Print Services Facility

IBM

AFP Conversion and Indexing Facility User's Guide

S550-0436-04

Note:

Before using this information and the product it supports, read the information in "Notices" on page 237.

This edition applies to AFP Conversion and Indexing Facility, which is included with Print Services Facility 4.5.0 for z/OS (Program Number 5655-M32); Print Services Facility/VM 2.1.1 (Program Number 5684-141); Print Services Facility/VSE 2.2.1 (Program Number 5686-040); InfoPrint Manager for AIX 4.3.0 (Program Number 5648-F35); InfoPrint Manager for Windows 2.3.0 (Program Number 5648-F36); and InfoPrint Manager for AIX, Linux, and Windows 4.4.0 (Program Number 5648-F40). This edition applies to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces S550-0436-03.

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About this publication

This publication describes Advanced Function Presentation Conversion and Indexing Facility (ACIF), which is available for use with Print Services Facility™ (PSF) and InfoPrint Manager. PSF uses ACIF in the z/OS®, VM, and VSE environments; InfoPrint Manager uses ACIF in the AIX®, Linux, and Windows environments.

Note: ACIF is also used by Infoprint Server on IBM® i ; however, this publication only describes how to use ACIF with PSF and InfoPrint Manager. For information about using ACIF with Infoprint Server on IBM i, see *Infoprint Server for iSeries: User's Guide*, G544-5775.

This publication assumes that you are familiar with Advanced Function Presentation (AFP) concepts and the parameters that you specify when printing with PSF and InfoPrint Manager. If you are not familiar with AFP concepts, see *Guide to Advanced Function Presentation*. If you are not familiar with the PSF print parameters, see one of these:
- *InfoPrint Manager for AIX: Getting Started*
- *InfoPrint Manager for Linux: Getting Started*
- *InfoPrint Manager for Windows: Getting Started*
- *InfoPrint Manager: Reference*
- *PSF for z/OS: User's Guide*

This publication also assumes that you are familiar with Mixed Object Document Content Architecture for Presentation (MO:DCA-P) and structured fields. You can see *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* to read about these topics.

Who should read this publication

This publication contains information that application programmers can use to develop ACIF applications that do these functions:
- Convert line data and XML data print files to MO:DCA-P documents.
- Add indexing tags to documents.
- Create a separate index object file from the indexing tags in a MO:DCA-P document.
- Retrieve and package AFP resources that are needed for printing or viewing a MO:DCA-P document.

Note: This publication provides ACIF messages that contain instructions for the system programmers responsible for maintaining the operating system and the PSF or InfoPrint Manager program that is running on it. You might need to show these messages to your system programmer for assistance from time to time.

How this publication is organized

This publication contains information that pertains to ACIF support for AIX, Linux, Windows, z/OS, VM, and VSE operating environments that are used by PSF and InfoPrint Manager:

- Chapter 1, “Understanding ACIF” presents an overview of tasks you can do with the ACIF product, describes several related products, and describes system considerations for using ACIF.
- Chapter 2, “Using ACIF” provides sample code for running ACIF.
- Chapter 3, “ACIF parameters” describes the parameters that are used for ACIF processing, including syntax rules and parameter values.
- Chapter 4, “Enhanced indexing parameters” describes the parameters that are used for ACIF enhanced indexing with PSF for z/OS.
- Chapter 5, “Examples of using ACIF” shows examples of an ACIF application.
- Chapter 6, “User exits and input print file attributes” describes the exits available for customizing ACIF.
- Chapter 7, “ACIF messages” provides the ACIF messages, with suggestions for responding to the errors.
- The appendixes contain more information about ACIF:
  - Appendix A, “Helpful hints for using ACIF” describes some considerations of using ACIF as a front-end preprocessor for viewing, archiving, and retrieving information.
  - Appendix B, “Processing resources installed with resource access tables” describes what resources are installed with a resource access table (RAT).
  - Appendix C, “Structured fields that ACIF uses” describes the structured-field information for indexing.
  - Appendix D, “Format of the index object file” describes the file that enables applications to determine the location of a page group or page within the MO:DCA-P print file, which is based on the indexing tags.
  - Appendix E, “Format of the output document file” shows the three separate output files that ACIF can produce.
  - Appendix F, “Accessibility” describes the accessibility features available in z/OS.

A notices section, glossary, bibliography, and index are included. The bibliography lists the publications that contain additional information about AFP, PSF, InfoPrint Manager, and related products.

What terms are used in this publication

The terms document, file, and library are used throughout this publication. In all systems, document is a file that contains AFP structured fields in MO:DCA-P format. The terms *file* and *library* have different meanings in different operating | systems. Table 1 lists the meanings of *file* and *library* in AIX, Linux, Windows, z/OS, VM, and VSE operating systems.

Table 1. Term definitions

Operating System	File	Library
AIX or Linux	A collection of related data	A directory in which AFP resources are stored
Windows	A collection of related data	• A directory • A list of files that are stored on a disk or diskette
z/OS	• A sequential data set • A member of a partitioned data set • The name of a DD card	• A partitioned data set • A series of concatenated data sets

Table 1. Term definitions (continued)

Operating System	File	Library
VM	A CMS file (*filename filetype filemode*)	A collection of CMS files, generally with the same file type
VSE	A sequential (SAM) file	A library.sublibrary

Understanding the notational conventions used in this publication

This publication uses consistent conventions for these notational conventions:
- Highlighting
- Syntax notation

Highlighting

This publication uses the following highlighting conventions:

Bold Identifies commands, keywords, files, directories, and other items, whose names are predefined by the system or must be entered as is, such as **acif**.

Italic Identifies parameters whose actual names or values you supply. Italics also identify the names of publications.

`Monospace`
Identifies examples of specific data values, examples of text similar to what you might see displayed, examples of portions of program code similar to what you might write as a programmer, messages from the system, or information you should actually type.

Syntax notation

This publication uses the following syntax notation:

- Italics within a command represent variables for which you must supply a value. For example:

  CPGID=*codepageid*

  means that you enter **CPGID=** as shown and then replace the variable *codepageid* with a value that represents any valid code page, which is 3-character decimal value (for example, 395) that defines an IBM-registered code page.
- Do not enter the following symbols as part of the command:

Vertical bar	|
Braces	{ }
Brackets	[ ]
Underscore	_

These symbols have the following meanings:

- A vertical bar, |, between values indicates that you can enter only one of the values with the command. For example:

  CC={**YES** | **NO**}

  means that when you enter **CC=**, you can specify either **YES** or **NO** as the value, but not both.

| **Note:** In AIX, Linux, and Windows operating systems, sometimes the vertical bar, |, acts as a pipe. When the pipe symbol appears between commands, it indicates that the output from the first command becomes the input to the second command. For example:

```
acif inputdd=myfile | enq -P3825A
```

means that the output generated by the **acif** command is the input to the **enq** command, which prints the file.

- Braces, { }, around values indicate a required value. For example:

  CC={**YES** | **NO**}

  means that when you enter **CC=**, you must also enter **YES** or **NO**.
- Brackets, [ ], around parameters indicate that they are optional. For example:

  [**CC=***value*] [**CCTYPE=***value*]

  means that you do not have to enter either **CC=***value* or **CCTYPE=***value*.
- An underscore, _, indicates the default value, which ACIF uses if you do not specify the parameter with a non-default value. For example:

  CC={<u>**YES**</u> | **NO**}

  means that if the **CC=** parameter is not entered, ACIF uses the default value of **YES** for the **CC** parameter.

Related information

Publications that are referred to in this document or that contain more information about AFP, InfoPrint Manager, and related products are listed in the "Bibliography" on page 249. For information about all z/OS product publications, see *z/OS Information Roadmap*.

For more information about z/OS, InfoPrint Manager, and PSF for z/OS go to these web pages:

- z/OS website at `http://www.ibm.com/systems/z/os/zos/`
- z/OS output management software at `http://www.ibm.com/systems/z/zos/printsoftware/`
- IBM Print Services Facility (PSF) for z/OS at `http://www.ibm.com/systems/z/zos/printsoftware/psfhome_z_ww.html`
- Ricoh Production Print Software at `http://rpp.ricoh-usa.com/products/software/`

To obtain the latest documentation updates for z/OS base elements and optional features that result from DOC APARs and PTFs, go to the DOC APARs and ++HOLD DOC web page at:

```
http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/Shelves/ZDOCAPAR
```

To obtain the latest documentation updates for PSF for z/OS, see the appropriate SYS1.SAMPLIB members in Table 2.

Table 2. SYS1.SAMPLIB Members for PSF Documentation Updates

Member	**Publication**
APSGADP5	*PSF for z/OS: AFP Download Plus*, S550-0433
APSGCUS5	*PSF for z/OS: Customization*, S550-0427
APSGDGN5	*PSF for z/OS: Diagnosis*, G550-0428

Table 2. SYS1.SAMPLIB Members for PSF Documentation Updates (continued)

Member	Publication
APSGDLG5	*PSF for z/OS: Download for z/OS*, S550-0429
APSGMAC5	*PSF for z/OS: Messages and Codes*, G550-0432
APSGSEC5	*PSF for z/OS: Security Guide*, S550-0434
APSGUSR5	*PSF for z/OS: User's Guide*, S550-0435

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- The publication title and order number:

  PSF V4R5 for z/OS: ACIF User's Guide
  S550-0436-04
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Summary of changes

AFP Conversion and Indexing Facility User's Guide, S550-0436-04:

This publication contains additions and changes to information previously presented in *AFP Conversion and Indexing Facility User's Guide*, S550-0436-03. The technical additions and changes are marked with a revision bar (|) in the left margin.

General changes:

- ACIF now supports InfoPrint Manager for Linux.

New information:

- A description of Mixed Object Document Content Architecture Presentation Interchange Set 3 (MO:DCA IS/3) has been added to "Mixed Object Document Content Architecture data" on page 4.
- "Linux prerequisites" on page 16 has been added to system considerations.
- The PASSPF value has been added to the EXTENSIONS parameter. See Table 5 on page 29 and "EXTENSIONS" on page 38.
- This message has been added:
  - "APK2121I" on page 205
- "Begin Print File (BPF) and End Print File (EPF) structured fields" on page 222 has been added. Also, a reference to the section has been added to "Output MO:DCA-P data stream" on page 232.

Changed information:

- References for fonts have been updated in Table 3 on page 17.
- Table 5 on page 29 and "FORMDEF" on page 48 have been updated to indicated that DUMMY is the default for the FORMDEF parameter and to include a note that the DUMMY value is case-sensitive.
- The EXTENSIONS=ALL parameter description has been updated with a reminder that many options apply only to specific data. See "EXTENSIONS" on page 38.
- EXTENSIONS=MVSICNV is required if a page definition uses the VARIABLE option when it is specifying resource objects. See "Enabling ICONV translation services" on page 22 and the MVSICNV value in "EXTENSIONS" on page 38.
- Information about not using a : or ; delimiter after a path name has been added to "Syntax rules for AIX and Windows" on page 28.
- The number of bytes allowed for the FIELD*n* hexadecimal literal value has been clarified. See "FIELDn" on page 42.
- "PAGEDEF" on page 63 has been updated to include a note that the DUMMY value is case-sensitive.
- The web page for downloading ACIF sample code has been updated in "User programming exits" on page 121.
- "Input record exit" on page 122 has been updated with information about the EXTENSION=PASSPF parameter.
- AIX and Windows message identifiers do not contain an error condition. The AIX and Windows format in "Message identifiers" on page 137 has been corrected to remove the error condition.

- These messages have been updated:
  - “APK104S” on page 138
  - “APK106I” on page 139
  - “APK159S” on page 146
  - “APK299I” on page 157
  - “APK436S” on page 178
  - “APK441I” on page 178
  - “APK448S” on page 179
  - “APK472S” on page 182
- “Glossary” on page 241 and “Bibliography” on page 249 have been updated.

Deleted information:

- Enabling conversion services for PSF has been removed from “Enabling ICONV translation services” on page 22.

Chapter 1. Understanding ACIF

AFP Conversion and Indexing Facility (ACIF) is a batch application development utility. You can use ACIF to create documents by formatting line data (record format and traditional), XML data, MO:DCA-P print files, and unformatted ASCII files, and then print them with InfoPrint Manager or IBM Print Services Facility (PSF). ACIF also provides indexing and resource retrieval capabilities so you can view, distribute, archive, and retrieve document files across systems and operating systems.

InfoPrint Manager uses ACIF in the AIX, Linux, and Windows environments. ACIF is also used in the z/OS, VM, and VSE environments.

This chapter gives an overview of ACIF, explains the functions that ACIF can do, describes different scenarios for processing your files, describes the IBM products that you can use with ACIF, and lists the system limitations and prerequisites you must consider for ACIF.

Note: "InfoPrint Manager" refers to InfoPrint Manager for AIX, Linux, and Windows, unless otherwise specified.

Overview of ACIF

With ACIF you can do these tasks:

- Convert line data, XML data, or mixed data into Mixed Object Document Content Architecture for Presentation (MO:DCA-P) data, which is data that is composed into pages and includes data placement and presentation information (such as which font to use).
- Index a document to enhance your ability to view, archive, or retrieve individual pages or groups of pages from large documents; create a separate *index object file* from the indexing tags.
- Retrieve and package AFP resources that are needed for printing or viewing a document and place them in a separate file, so that you can print and view the exact document, possibly years after its creation.

ACIF accepts data from your application in these formats:

- AFP data
- MO:DCA-P data
- Record format or traditional line data
- Mixed-mode data
- XML data
- Unformatted ASCII data (AIX and Windows operating systems only)

ACIF can process application print data and AFP resources to produce these AFP files:

- Document file
- Resource file
- Index object file

With the files that ACIF creates, you can do these tasks:

- Use PSF or InfoPrint Manager to print the AFP document file. If you specified resources in the AFP document file, PSF or InfoPrint Manager references the AFP resource file for the names and locations of the resources. The AFP document file must be concatenated to the end of the resource file before the file is printed.
- Use the AFP Workbench Viewer application to view the AFP document file. AFP Workbench Viewer takes MO:DCA-P data and resources as input to produce output that can be viewed.
- Store report files and the index file entries that are created by ACIF in a document archival system, such as IBM Content Manager OnDemand. OnDemand operates in a client/server environment and supports small office environments and large enterprise installations with hundreds of system users. OnDemand provides a server to store report files and other types of business documents. Users can search for and retrieve files from the server with client programs that run under Microsoft Windows and z/OS CICS/ESA operating systems. OnDemand supports viewing with full fidelity and reprinting of report files on local and remote printers.
- Use your own archive system to store the ACIF-created files.
- Use your own retrieval system to access information in the ACIF files by using retrieval information in the index object file.

Figure 1 on page 3 shows a high-level overview of how ACIF fits into an installation's AFP process for creating, indexing, viewing, and printing documents. This figure shows the resources and text data that can feed into ACIF for processing. The resources and text data can be provided and used by various AFP and AFP-compatible products. The files that ACIF produces can then be sent to a customer-supplied archival and retrieval system, to the spool, or to the AFP Workbench Viewer for viewing.

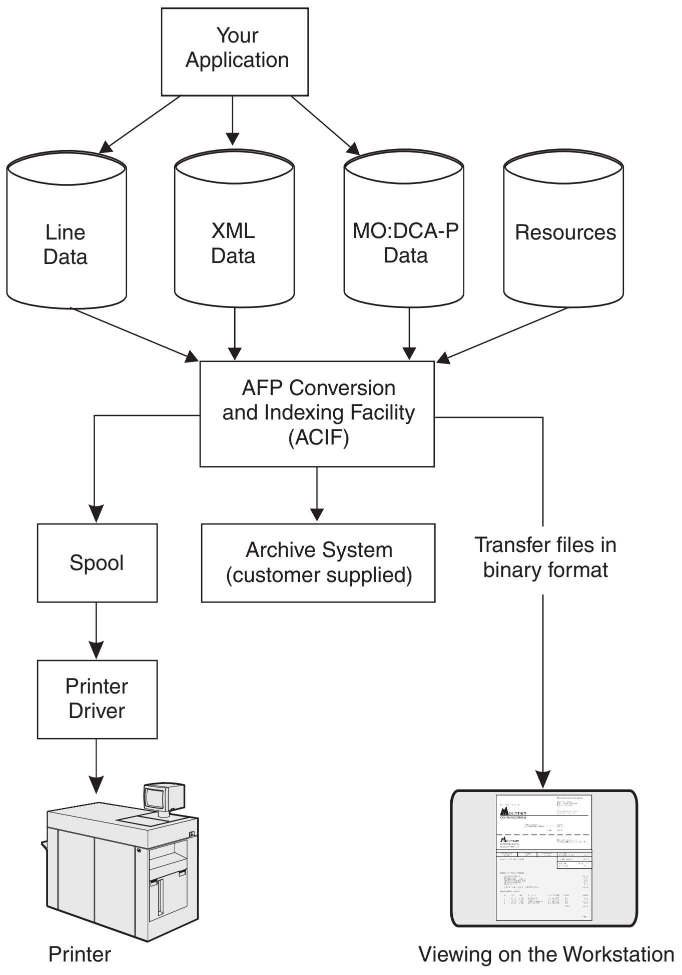

Your Application
Line Data
XML Data
MO:DCA-P Data
Resources
AFP Conversion and Indexing Facility (ACIF)
Spool
Archive System (customer supplied)
Transfer files in binary format
Printer Driver
Printer
Viewing on the Workstation

Figure 1. How ACIF fits into Advanced Function Presentation

ACIF functions

You can use ACIF to do these functions:

- Convert data streams
- Index documents
- Retrieve resources

Converting data streams

ACIF processes these input data streams to create a MO:DCA-P document:

- AFP data
- MO:DCA-P data
- Record format or traditional line data
- Mixed-mode data
- XML data
- Unformatted ASCII (AIX and Windows operating systems only)

AFP data

The AFP data stream is a superset of the MO:DCA-P data stream and supports these objects:

- Graphics (GOCA)
- Presentation text (PTOCA)
- Image (IOCA and IM)
- Bar code (BCOCA)

The AFP data stream also supports print resources such as fonts, overlays, page segments, form definitions, and page definitions. Fonts are either Font Object Content Architecture (FOCA) fonts or TrueType and OpenType fonts, which are not defined by FOCA.

For more information about this data stream format, see *Mixed Object Document Content Architecture Reference*, which points to publications that describe the other types of data objects.

Mixed Object Document Content Architecture data

Mixed Object Document Content Architecture (MO:DCA) is an architected, device-independent data stream that is used for interchanging documents between different systems. ACIF accepts MO:DCA Presentation Interchange Set (IS) data streams, including MO:DCA IS/3, which is the newest interchange set. MO:DCA IS/3 provides interoperability among AFP products that are MO:DCA IS/3 compliant. It also provides enhanced functions, including support for color and the latest fonts, images, and graphics.

ACIF supports MO:DCA-P data with these restrictions:

- Every structured field must be in one record and cannot span multiple records.
- Each record (structured field) must contain a X'5A' character before the first byte of the structured field introducer.

ACIF does not change most of the MO:DCA-P structured fields it processes because they are already in the correct format. However, although the MO:DCA-P input data stream might contain multiple Begin Document (BDT) and End Document (EDT) structured fields, the ACIF output normally contains only one BDT/EDT structured-field pair. To pass all of the BDT/EDT pairs to the output data stream, the INDEXOBJ=BDTLY parameter is specified. See “Output MO:DCA-P data stream” on page 232 for information about the changes ACIF makes to support MO:DCA-P output format.

For more information about the MO:DCA-P data stream, see *Mixed Object Document Content Architecture Reference*.

Line data

Line data is application data that is prepared for printing without any data placement or presentation information. Line data can be either traditional line data or record format line data. Traditional line data is data that is prepared for printing on a line printer. Record format line data is a form of line data where each record is preceded by a variable length identifier.

ACIF formats line data into pages by using a page definition (PAGEDEF) resource, in the same manner as PSF. For more information about line data, see *Advanced Function Presentation: Programming Guide and Line Data Reference*.

Mixed-mode data

Mixed-mode data is a mixture of line data (with the inclusion of some AFP structured fields), composed-text pages, and resource objects such as image, graphics, bar code, and text. For more information about this data stream, see *Advanced Function Presentation: Programming Guide and Line Data Reference*.

XML data

Data that is identified by using Extensible Markup Language (XML) standards from the World Wide Web Consortium is called XML data. XML does not describe data placement or presentation information. For printing on page printers, a page definition is required to provide the data placement and presentation information. The XML data that is processed by ACIF can be encoded in EBCDIC, ASCII, UTF-8 or UTF-16. For more information about XML data, see *Advanced Function Presentation: Programming Guide and Line Data Reference* and *Extensible Markup Language (XML) 1.0 Specification* at the World Wide Web Consortium: `http://www.w3.org`.

Unformatted ASCII data

Unformatted ASCII data is generated in AIX and Windows environments and is a type of line data that does not contain escape sequences. Unformatted ASCII data can have these characteristics:

- No embedded control characters except for newlines
- American National Standards Institute (ANSI) carriage control characters, table reference characters, or both
- Carriage returns and form feed controls

ACIF formats unformatted ASCII data by using a page definition resource. ASCII data that contains control characters (or escape sequences) for the IBM Proprinter and Quietwriter does not need to be formatted by ACIF. Unformatted ASCII data can also be submitted for printing with InfoPrint Manager without being converted by ACIF, but the output format is predetermined (for example, by using a Proprinter emulation font and 60 lines per page).

A page definition can be created for use with an unformatted ASCII file to allow the use of AFP functions, such as varied print directions, multiple-up printing, and different fonts in the output format. You can use IBM Page Printer Formatting Aid (PPFA) to create your own page definitions. PPFA is a separately orderable feature of InfoPrint Manager. For information about how to create page definitions by using PPFA, see *Page Printer Formatting Aid: User's Guide*.

Indexing documents

One of the principal tasks you can do with ACIF is indexing print files, which are also known as documents. When indexing with ACIF, you can divide a large print file into smaller, uniquely identifiable units, called *groups*, as defined by the MO:DCA-named group structured fields. For example, you can use ACIF to divide a large bank-statement application into individual groups by inserting structured fields that define group boundaries into the file. A group is a named collection of sequential pages, which, in this example, consists of the pages that describe a single customer's account. For example, a bank-statement application probably produces a large printout that consists of thousands of individual customer statements. You can think of each of these statements as smaller, separate units, each uniquely identifying an account number, date, Social Security number, or other attributes.

You can also use ACIF to create an index object file to do these tasks:

- Retrieve individual statements from storage, which is based on an account number or any other attribute.
- More rapidly access the statements for viewing by, for example, the AFP Workbench Viewer.
- Archive individual statements or the entire indexed print file for long-term storage and subsequent data management and reprinting, even years after its creation.

In addition to building an index-information file containing structured fields (the *index object file*), ACIF also inserts strings of character data, called *tags*, in the print file in structured-field format. ACIF inserts these same structured fields in the index object file. (The tags are contained in Tag Logical Element [TLE] structured fields, which are described in Appendix A, "Helpful hints for using ACIF" and Appendix C, "Structured fields that ACIF uses.") You can use the indexing-tag structured fields to identify a group of pages.[1] Figure 2 shows the relationship between the group-level tags and the entries in the index object file.

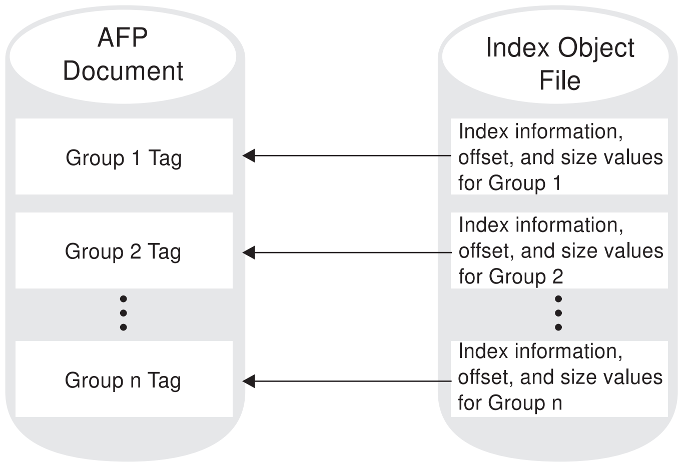

AFP Document
Group 1 Tag
Group 2 Tag
Group n Tag
Index Object File
Index information, offset, and size values for Group 1
Index information, offset, and size values for Group 2
Index information, offset, and size values for Group n

Figure 2. AFP document with index tags and the index object file

ACIF can create an index object file for these types of input files:

- Line data, XML data, or mixed-mode data
- Unformatted ASCII data
- AFP data that is produced by the AFP Application Programming Interface (API), DCF, or by AFP Toolbox, with or without indexing tags

  Note: In this instance, you are producing an index object file from an input file that contains index tags. You are not adding new indexing tags to an existing file.
- AFP data that is produced by any other application

ACIF provides these ways for you to generate the indexing tags placed in the print file:

1. With ACIF, you can generate group-level tags and also page-level tags with enhanced indexing; with Document Composition Facility (DCF) and AFP Toolbox, you can generate both group-level tags and page-level tags. For more information about these products, see "IBM products used with ACIF" on page 13.

- Use literal values that you specify to ACIF, which is useful when the values you want to use in the indexing tags are not consistently present in the data. This kind of indexing is called *indexing with literal values.*
- When the data is formatted, use values present in the input data itself so that ACIF can reliably locate the values. This kind of indexing is called *indexing with data values.*

Indexing with literal values

Some print files, such as technical documents and memos, cannot be divided easily into groups of pages by using values in the data because no data value is consistently present in the same location. Likewise, the output of an application might not contain the data that you would like to use for an indexing tag. In these cases, you can specify one or more literal values for ACIF to use in the indexing tags for a single group of pages. The ACIF parameter that you use in this case is the **FIELDn** parameter.

Notes:

1. If you are using ACIF to add indexing tags to a file, and the input file already contains indexing tags, ACIF issues an error message and stops processing. If the input file already contains indexing tags, you can create the index object file by running ACIF *without* specifying any indexing parameters.
2. ACIF includes the name of the output document in the index object file and includes the name of the index object file in the output document, which provides a method of correlating the index object file with the appropriate output document.

Indexing with data values

Some applications such as payroll or accounting statements contain data that might be appropriate to use for indexing tags. In the bank statement example, the account number is a type of data value that you might want to tag. You can then archive a single customer's account statement by account number, and you can retrieve and view the same statement with the account number. If the data value you want to use in an indexing tag is consistently in the same place for each statement, you can specify ACIF parameters that create a separate group of pages for each statement. The ACIF parameters that you use in this case are the **TRIGGERn**, **FIELDn**, and **INDEXn** parameters.

Example of indexing with data values: This example shows how to use the ACIF parameters described in Chapter 3, “ACIF parameters,” on page 27. Figure 3 shows the print file for a typical bank statement.

```
1ACCOUNT NUMBER: 445-66-3821-5       PAGE 1
 CUSTOMER NAME: HENRY WALES
 DATE: 09/30/09
 CHECK# 001 - 455.00
 CHECK# 002 - 337.85
 ...
1ACCOUNT NUMBER: 333-56-4378-5       PAGE 1
 CUSTOMER NAME: KATHERINE CHARLES
 DATE: 09/30/09
 CHECK# 221 - 5.00
 CHECK# 222 - 1567.35
 ...
```

Figure 3. Example bank statement input file

In Figure 3 on page 7, the print file contains bank statements dated September 30, 2009 (09/30/09). Each statement has the same general format, although statements might vary in size or number of pages. Assume you want to index the bank statements with the account number and the date. Although the account number identifies each customer's account, the date is important to differentiate one month's statement from another. For ACIF to extract the account number and date, it must first locate the records that contain the required information.

Because ACIF can process different data streams with various file formats (for example, carriage control characters, no carriage control characters, and table-reference characters), it requires *triggers* to determine an *anchor point* from which it can locate the necessary index values. You can require multiple triggers to uniquely identify the start of a new statement. To index the bank statements with the account number and the date, first define the trigger values and the fields as shown in Figure 4.

```
TRIGGER1=*,1,'1'
TRIGGER2=0,39,'PAGE 1'
FIELD1=0,18,3
FIELD2=0,22,2
FIELD3=0,25,4
FIELD4=0,30,1
FIELD5=2,8,2
FIELD6=2,11,2
FIELD7=2,14,2
INDEX1='Account Number',FIELD1,FIELD2,FIELD3,FIELD4
INDEX2='Date',FIELD5,FIELD6,FIELD7
```

Figure 4. ACIF processing parameters to index a bank statement

The information in Figure 4 defines two trigger values:

- The first trigger instructs ACIF to examine the first byte of every input record until it finds the occurrence of an ANSI skip-to-channel 1 carriage control character ('1'). Because each page created by this particular application can contain this carriage control character, this trigger alone does not identify the start of a new bank statement.
- The second trigger accomplishes this task. When ACIF locates a record that contains a '1' in the first byte, it looks for the string 'PAGE 1' in that same record, starting at byte (column) 39. If this condition is found, a new statement exists, and ACIF uses the record that contains TRIGGER1 as the anchor point. The FIELD*n* definitions are relative to this anchor point.

In Figure 4, the account number has four fields. These fields can be defined as one field if the dashes are included as part of the index information. The date has three fields to remove the forward slashes. After ACIF extracts all of the necessary indexing information for this statement, it begins looking for TRIGGER1 again. This process is repeated until the entire print file is processed.

In summary, when ACIF indexes an input file, it first scans the input file to find matches for its parameters. When ACIF finds matches in the input file, it inserts structured fields immediately before the corresponding pages of the output file. Also, ACIF places structured fields in the index object file that point to matches in the output file.

Indexing limitations

For a line data or XML application that does not contain the appropriate data values in the application output and for which literal values are not suitable, the application program cannot insert tagging structured fields in the print data because tagging structured fields are not allowed in mixed-mode data. In the case where the application data does not contain the necessary appropriate data values for indexing, the application can add the index triggers. One possible location is the record that contains the new-page carriage control character (for example, a skip-to-channel 1). The application must add the indexing trigger and attribute value to this record at a specified location on each statement in the print file. This addition lets ACIF retrieve this information at processing time. (For information about different types of carriage control characters, see “CCTYPE” on page 32 for a description of the parameter.)

Retrieving resources

ACIF can determine the list of required AFP resources that are needed to view or print the document and retrieve these resources from the specified libraries. You can then view or print the document with fidelity. This ACIF function is especially valuable if the resources are not present on the designated system in a distributed print environment.

When you archive a document with ACIF, you can also archive the retrieved resources (such as fonts and page segments) in the form in which they existed when the file was printed. By archiving the original resources, you can reproduce the document with fidelity in the future, even if the resources are different. For example, suppose that a page segment contains a company officer's signature and is included in the print data. When someone else replaces the officer, current print files must reference the new officer's signature, but archived files must reference the former officer's signature.

The type of resources ACIF retrieves from specified libraries is based on the value of the **RESTYPE** parameter. When ACIF processes a print file, it:

- Identifies the resources that the print file requests:

  While ACIF converts the input file into an AFP document, it builds a list of all the resources necessary to successfully print the document, including all the resources referenced inside other resources. For example, a page can include an overlay, and an overlay can reference other resources such as fonts and page segments.
- Creates a resource file:

  ACIF creates a logical resource library in the form of an AFP resource group and stores this resource group in a resource file. If you specify **RESTYPE=ALL**, this resource file contains all the resources necessary to view or print the document with fidelity. Each time ACIF processes a print file, it can create a resource file in one of two different formats:
  - A partitioned data set (PDS). The PDS format is supported only on z/OS and lets the resource file be referenced as a user library (USERLIB) when printing with PSF.
  - An AFP data stream resource group. The AFP resource-group format is useful when you are routing print output to remote AFP systems (for example, InfoPrint Manager for Windows) or when you are storing a print file in an archive system (for example, Content Manager OnDemand).

  See Appendix B, “Processing resources installed with resource access tables,” on page 217 for information about how ACIF retrieves resources from the resource access table (RAT).
- Calls the specified resource exit for each resource it retrieves:

Before ACIF retrieves a resource from a library, it first calls the resource exit program as specified in the **RESEXIT** parameter. You can write an exit program to filter out any resources you do not want included in the resource file. For example, the exit program can specify that all referenced fonts, except for a specific typeface, be included in the resource file. The only way to accomplish this action is by using the resource exit.

- Includes the name of the output document in the resource file and the name of the resource file in the output document, which provides a method of correlating resource files with the appropriate output document.

Examples of specifying ACIF processing parameters for resource retrieval can be found in Chapter 5, "Examples of using ACIF," on page 97.

Scenarios for processing ACIF files

ACIF can process your files for:

- Viewing with AFP Workbench Viewer
- Printing locally and on other systems
- Archiving and retrieving selectively

The following sections show scenarios for preparing files for viewing, printing, and archiving.

Preparing files for viewing

Figure 5 on page 11 shows the steps that you can take to prepare files for viewing with the AFP Workbench Viewer:

1. The process begins with your application (1), which is the program that processes your print data.
2. Your application creates your print data (2a) and optionally creates ACIF processing parameters (2b). Resources are stored in the PSF or InfoPrint Manager resource libraries (2c).
3. You run ACIF (3), specifying that it create the index object file (3a), the AFP document (3b), and the resource file (3c).
4. For optimal performance in locating pages in a file, you concatenate (4) the index object file to the AFP document. If the resources used by the document are not present on the workstation where the AFP Workbench Viewer is installed, you concatenate the resource file to the AFP document file. The order of concatenation must be shown as in Figure 5 on page 11, with the document file concatenated last.
5. Transfer (5) the needed files in binary format to the workstation.
6. Using the AFP Workbench Viewer, view (6) your indexed document. You can also print the document from the AFP Workbench Viewer.

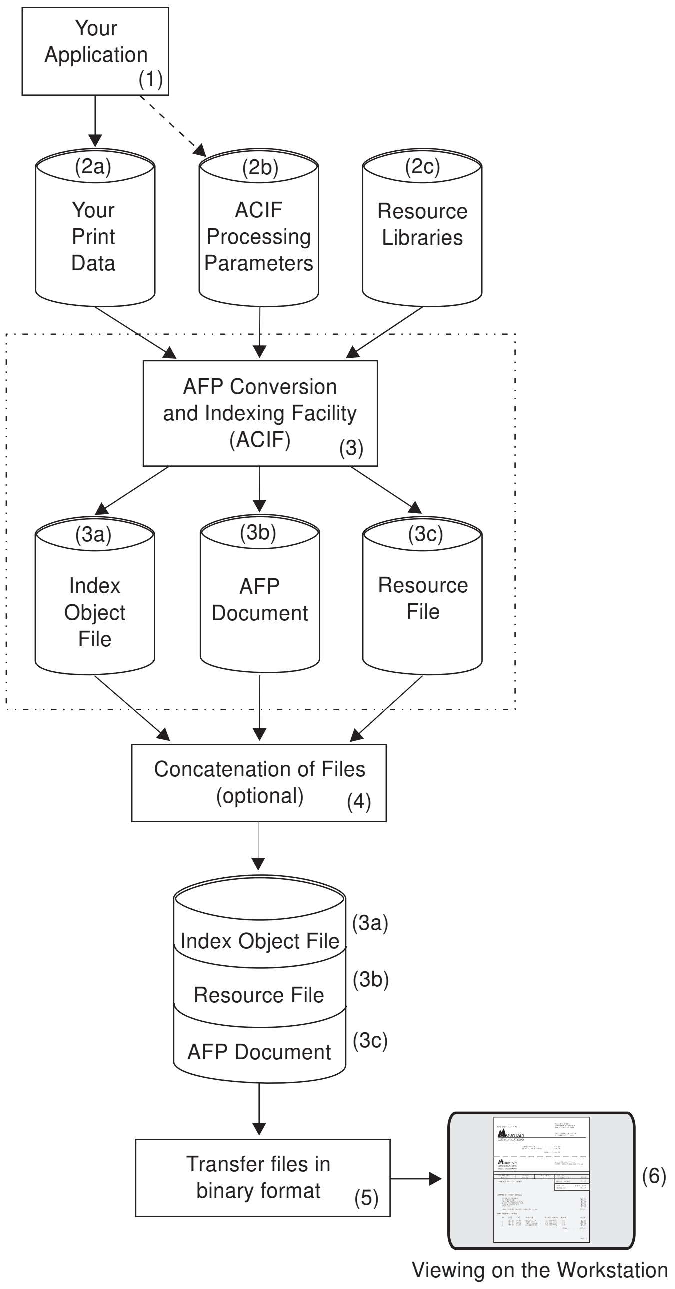


Figure 5. Using ACIF to prepare files for viewing

Preparing files for printing

Figure 6 on page 12 shows the steps that you can take to prepare your files for printing:

1. Run ACIF (1), specifying that it create the AFP document file (1a) and the resource file (1b).

   If you are using ACIF on an AIX or Windows operating system, and your resources are on another operating system, you can use the Network File System (NFS) to mount them to the AIX or Windows system where you are running ACIF.

2. If the print driver program (PSF or InfoPrint Manager) that manages jobs for your target printer runs on a different operating system than the one on which you run ACIF, transfer the files in binary format (2) to the system where PSF or InfoPrint Manager runs.

   If your resources are not present on the remote PSF or InfoPrint Manager system, concatenate the AFP document file to the end of the resource file before you submit the file to PSF or InfoPrint Manager. If your resources are already present on the remote PSF or InfoPrint Manager system, you do not have to concatenate or transmit them.
3. Submit (3) your MO:DCA-P print job to PSF or InfoPrint Manager.

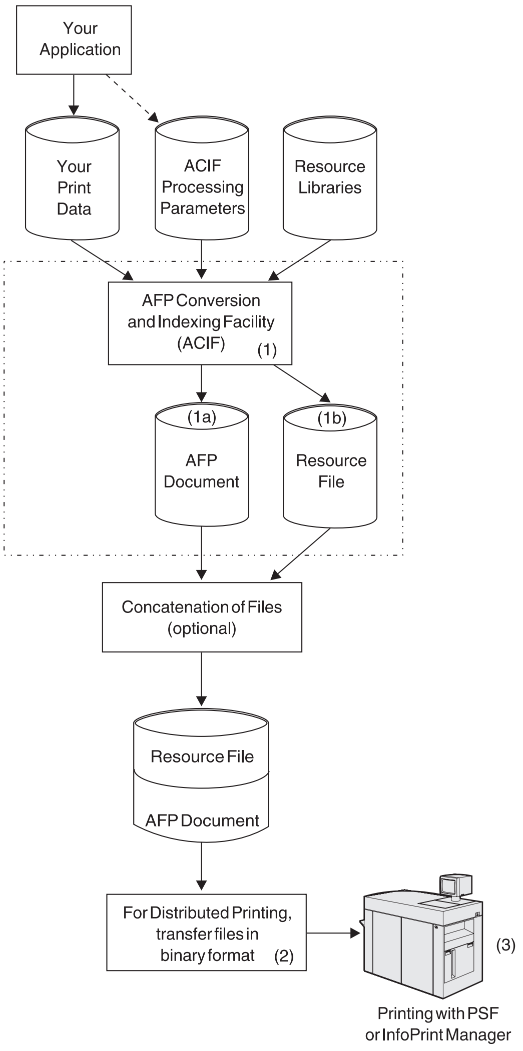

Your Application
Your Print Data
ACIF Processing Parameters
Resource Libraries
AFP Conversion and Indexing Facility (ACIF) (1)
(1a) AFP Document
(1b) Resource File
Concatenation of Files (optional)
Resource File
AFP Document
For Distributed Printing, transfer files in binary format (2)
(3)
Printing with PSF or InfoPrint Manager

Figure 6. Using ACIF to prepare files for distributed printing

Preparing files for archiving and retrieval

Figure 7 on page 13 shows the steps that you can use to archive your files:
1. Run ACIF (1), specifying that it create the index object file (1a), the AFP document file (1b), and the resource file (1c).
2. Run your archival application (2) to archive (3) all three files (1a, 1b, 1c) so that the document can later be retrieved (4) and viewed or printed with fidelity.

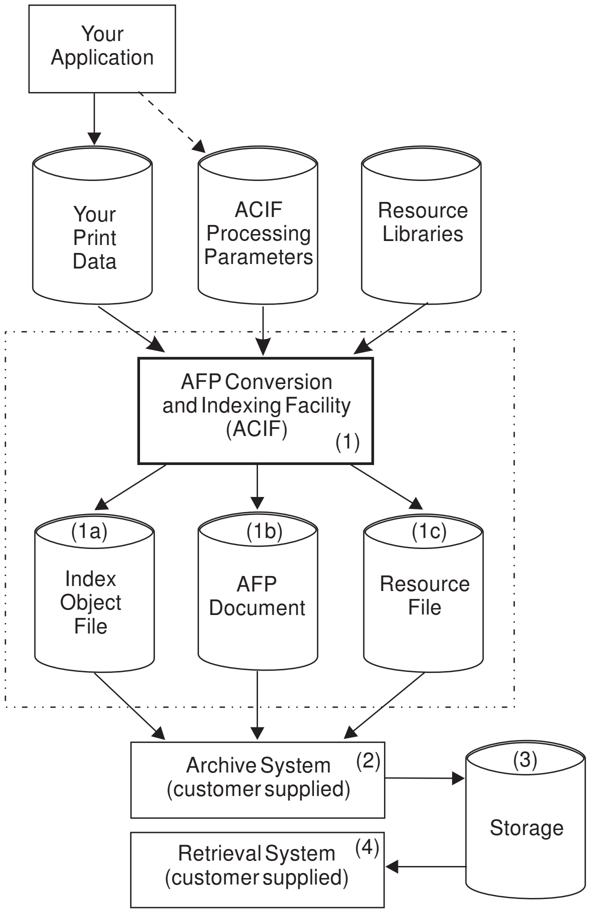

Your Application
Your Print Data
ACIF Processing Parameters
Resource Libraries
AFP Conversion and Indexing Facility (ACIF) (1)
(1a) Index Object File
(1b) AFP Document
(1c) Resource File
Archive System (customer supplied) (2)
(3) Storage
Retrieval System (customer supplied) (4)

Figure 7. Using ACIF to prepare files for archiving and retrieving

IBM products used with ACIF

Although ACIF is a stand-alone utility, it was designed for use with these IBM products:

- AFP Workbench Viewer
- AFP Toolbox
- Document Composition Facility (DCF)

AFP Workbench Viewer

Figure 8 on page 14 shows how AFP Workbench Viewer can display documents on a workstation that is running Microsoft Windows operating systems. These documents can contain an index object file and a resource group.

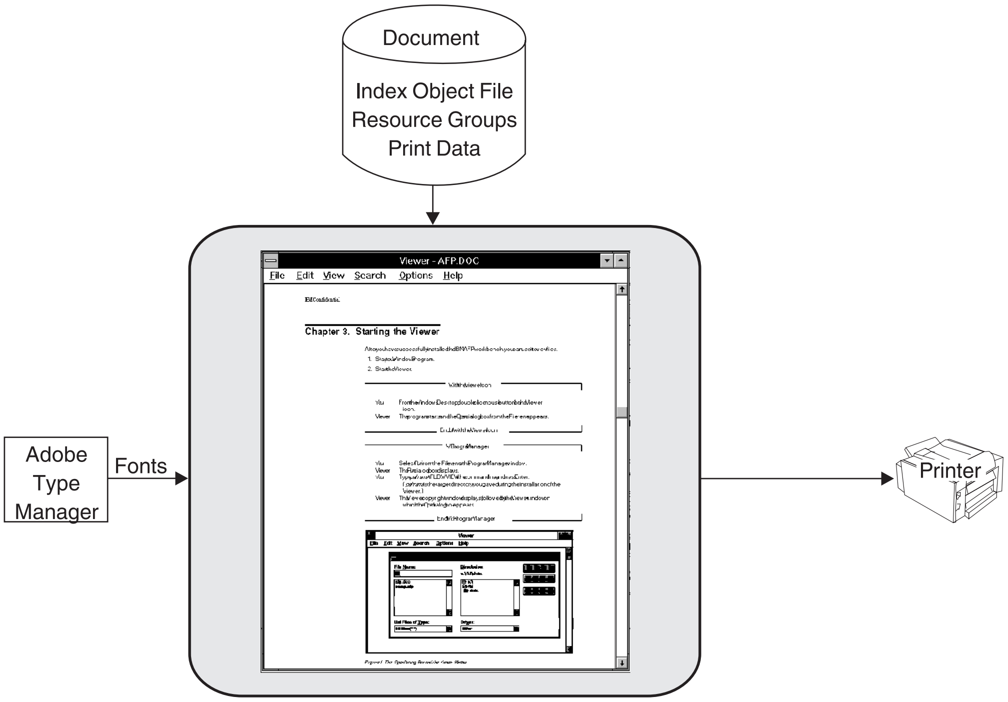


Figure 8. AFP Workbench Viewer

AFP Workbench Viewer uses Adobe Type 1 or TrueType and OpenType outline fonts when it displays documents. If the document references an AFP font for which no Type 1 font is available at the workstation, AFP Workbench Viewer can substitute an outline font for the requested font. AFP Workbench Viewer matches the requested point size and attempts to match the typeface as closely as possible. Font definition files are available with AFP Workbench Viewer so you can define which Type 1 fonts are to be substituted for your FOCA fonts.

Because AFP Workbench Viewer uses font substitution for AFP font resources instead of retrieving fonts from a resource file, you do not need to specify the **RESTYPE=FONT** or **RESTYPE=ALL** ACIF parameter when you are preparing a document to use with AFP Workbench Viewer. However, if you include AFP fonts in your document, the current version of AFP Workbench Viewer uses the font metrics to control character spacing. If you use AFP outline fonts, AFP Workbench Viewer also uses the font characters and substitutes font characters for raster fonts. If you do not want to use font substitution, use TrueType and OpenType fonts when you are creating the AFP document, keeping in mind that not all Intelligent Printer Data Stream (IPDS) printers support TrueType and OpenType fonts.

When you are using ACIF to index a file for viewing, specify **INDEXOBJ=ALL**. This setting provides AFP Workbench Viewer with the most complete indexing information for accessing groups of pages in a file. Also, concatenate the index object file to the document for optimal performance of AFP Workbench Viewer. (The document file must come last, at the end of the resulting concatenated file; otherwise, an error occurs.)

AFP Workbench Viewer supports a subset of MO:DCA-P data and might not display everything that PSF or InfoPrint Manager can print.

AFP Toolbox

AFP Toolbox (Program Number 5655-A25) assists application programmers in formatting printed output. Without requiring knowledge of the AFP data stream, AFP Toolbox provides access to sophisticated AFP functions through a callable C, C++, or COBOL interface. With AFP Toolbox you can do these tasks:

- Combine variable data with electronic forms, electronic signatures, and images.
- Define variable length paragraphs.
- Draw fixed or variable depth and width boxes.
- Generate bar code objects.
- Draw horizontal and vertical fixed or variable length lines.
- Include indexing tags for use in efficient viewing, archival, and retrieval.
- Accent printed output with color and shading.
- Dynamically control fonts, including user-defined fonts.
- Precisely position and align text anywhere on a page with a wide variety of fonts.
- Create graphical data objects such as pie charts and bar charts.

AFP Toolbox is available on the z/OS operating system.

Document Composition Facility (DCF)

Document Composition Facility (DCF) is a program that is used primarily to prepare and format documents for printing. It is another product that can be used with ACIF to index your data in the z/OS, VM, or VSE environments. Along with its many other features, DCF can add both group-level and page-level indexing tags; whereas, with ACIF, you can add only group-level indexing tags. Only ACIF generates the index object file.

In DCF, the indexing function is known as "navigation". DCF also provides a different function already called "indexing". In DCF terminology, you "navigate" through a document with the viewing application, and its indexing function is used to build an alphabetical listing of page references (a "back-of-the-book index").

Support for navigation (indexing) is provided with DCF Version 4.0. APAR PN36437 is required to enable the support. For more information about DCF, see *Document Composition Facility SCRIPT/VS Language Reference*.

Note: DCF is not applicable to the AIX or Windows environment.

System considerations for ACIF

You must consider these items when you are using ACIF:

- System limitations
- System prerequisites

System limitations

ACIF is used with PSF and InfoPrint Manager products on various operating systems. However, not all ACIF functions are available in all environments. For example, PSF/VM and PSF/VSE are no longer functionally enhanced.

For specific information about the level of MO:DCA-P function that is supported, see the documentation for the PSF or InfoPrint Manager product you are using.

System prerequisites

This section describes system prerequisites necessary to use ACIF in the AIX, Linux, Windows, z/OS, VM, and VSE environments.

AIX prerequisites

To see the AIX software requirements for using ACIF, see *InfoPrint Manager for AIX: Introduction and Planning Guide*.

Linux prerequisites

To see the Linux software requirements for using ACIF, see *InfoPrint Manager for Linux: Introduction and Planning Guide*.

Windows prerequisites

To see the Windows software requirements for using ACIF, see *InfoPrint Manager for Windows: Introduction and Planning Guide*.

z/OS prerequisites

To see the z/OS software requirements for using ACIF, see *PSF for z/OS: Introduction*.

VM prerequisites

One of these VM software products is required to use ACIF:

- VM/SP 5 or later
- VM/SP HPO 5 or later
- VM/XA 1.2.1 or later
- VM/ESA 1.1.0 or later

PSF/VM 2.1.0 (with PTF UN37799 for printing files that contain indexing tags) or PSF/VM 2.1.1

VSE prerequisites

One of these VSE software products is required to use ACIF:

- VSE/SP 4.1.2 or later
- VSE/ESA 1.1.0 or later

PSF/VSE 2.2.0 (with APAR DY42845 for printing files that contain indexing tags) or PSF/VSE 2.2.1 or later

Note: You can use later versions or releases of these products. Each of these products might require additional software products. See their respective publications for the current list of system requirements.

Chapter 2. Using ACIF

This chapter describes how to run ACIF in AIX, Linux, Windows, z/OS, VM, and VSE environments. Hereafter, “AIX” refers to both AIX and Linux operating systems.

Using ACIF in AIX and Windows

In AIX and Windows, ACIF transforms line data, XML data, mixed-mode data, and unformatted ASCII files into the Mixed Object Document Content Architecture for Presentation (MO:DCA-P) data stream. With this data stream, you can do these tasks:

- Print the file on a printer that is defined to InfoPrint Manager or other PSF products.
- View the file by using a viewer product such as AFP Workbench Viewer.
- Archive and retrieve the file by using your own archival management system.

Selecting resources

Table 3 lists the order ACIF searches for AFP resources in AIX and Windows.

Note: This table does not apply to resources that are installed with a resource access table (RAT), including TrueType and OpenType fonts, color management resources (CMRs), and data object resources. For more information about those resources, see Appendix B, “Processing resources installed with resource access tables,” on page 217.

Table 3. Search order for AFP resources

Search Order		
Windows	**AIX**	**Location**
1	1	Paths that are specified by the USERLIB parameter
2	2	Paths that are specified by the FDEFLIB, FONTLIB, PDEFLIB, PSEGLIB, OBJCONLIB, and OVLYLIB parameters for specific types of resources
	3	Paths that are specified by the RESLIB parameter
	4	Paths that are specified by the PSFPATH environment variable
	5	The directory **/usr/lpp/psf/reslib**
	6	The directory **/usr/lpp/ipfonts** In InfoPrint Manager, AFP outline fonts are included in IBM Infoprint Fonts for z/OS (PN 5648-E76), and InfoPrint Font Collection (PN 5639-AFP). For more information, see *IBM Infoprint Fonts: Font Summary* and *InfoPrint Font Collection: Font Summary*.
	7	The directory **/usr/lpp/afpfonts** In InfoPrint Manager, AFP outline and raster fonts are included in IBM AFP Font Collection (PN 5648-B33) and InfoPrint Font Collection. For more information, see *IBM AFP Fonts: Font Summary for AFP Font Collection* and *InfoPrint Font Collection: Font Summary*.

Table 3. Search order for AFP resources (continued)

Search Order		Location
Windows	**AIX**	
	8	The directory **/usr/lpp/psf/fontlib**
3		Windows registry that is used to locate: 1. Default **RESLIB** (\install_directory\reslib) 2. Default **FONTLIB** (\install_directory\fontlib) 3. AFP Font Collection, InfoPrint Fonts, or InfoPrint Font Collection

Note: AFP resource files that ACIF processes in all environments must contain a X'5A' carriage control character at the start of each structured field.

When ACIF finds more than one resource with the same name in the same directory, it selects the resource to be used depending on the file extension. Table 4 shows the order in which resources with the same name but different file extensions are used by ACIF.

Note: If a file name includes a period (.), the file extension is that part of the file name that follows the period. For example, the file extension of the file name `ARTWORK.PSEG3820` is `PSEG3820`.

Table 4. Search order of resource file extensions

Type of Resource	File Extensions Search Order (see Note)
AFP font objects: Coded fonts Code pages Outline fonts 240-pel resolution fonts 300-pel resolution fonts	1. ECP 2. No file extension 3. 240 4. 300 5. FONT300 6. FONT3820 7. FONT38PP 8. CDP 9. CFT 10. OLN 11. FONTOLN 12. FIL
Color mapping table	1. No file extension 2. SETUP 3. SET
Data objects that are not installed with a RAT (such as BCOCA, GOCA, IOCA, and PTOCA)	1. No file extension 2. OBJ 3. OBJECT
Form definitions	1. No file extension 2. FDEF3820 3. FDEF38PP 4. FDE 5. FIL
MO:DCA objects	1. No File extension 2. OBJ 3. OBJECT

Table 4. Search order of resource file extensions (continued)

Type of Resource	File Extensions Search Order (see Note)
Overlays	1. No file extension 2. OVLY3820 3. OVLY38PP 4. OVL 5. OLY 6. OVR
Page definitions	1. No file extension 2. PDEF3820 3. PDEF38PP 4. PDE
Page segments	1. No file extension 2. PSEG3820 3. PSEG38PP 4. PSG 5. PSE
Setup data	1. No file extension 2. SETUP 3. SET 4. COMSETUP
TrueType and OpenType fonts, CMRs, and data object resources	See Appendix B, "Processing resources installed with resource access tables," on page 217.
Note: All AIX file extensions must be in uppercase.	

Running ACIF

The **acif** command and the **line2afp** and **pdpr** commands of InfoPrint Manager are used to run ACIF.

To use ACIF to prepare line data, XML data, mixed-mode data, or unformatted ASCII files for printing with InfoPrint Manager, you can *automatically* run the **acif** command at print submission time by doing one of these:

- Use the **-odatatype=line** flag and keyword-value pair with one of the AIX print commands (**enq**, **lp**, or **qprt**).
- Use the **psfin** command to specify a job script with a setting of **-JsFiletype=line**.

The **line2afp** command is the same as the **acif** command and uses the **acif** command conversion parameters to produce output for printing. The **line2afp** command uses a page definition to define how the data is to be formatted on the printed page. If you use the **line2afp** command, you can transform, print, view, archive, and retrieve files as in ACIF.

The **pdpr** command calls **line2afp** to run ACIF. Parameters that are not allowed on the **pdpr** command can be passed to ACIF with the **-x "other-transform-options"** attribute.

The **line2afp** command and the **pdpr** command are described in *InfoPrint Manager: Reference*.

Files provided with InfoPrint Manager

The executable program (acif command)

- AIX: **/usr/lpp/psf/bin/acif**

Note: AIX maps the **line2afp** command to the **acif** command.

- Windows: \install_directory\bin\\acif.exe

  Windows also includes the executable file, **line2afp.exe**, which is identical to **acif.exe**.

Sample ACIF user exits

- AIX: **/usr/lpp/psf/acif/apkinp.c, apkind.c, apkres.c, apkout.c, apka2e.c, asciinp.c, asciinpe.c**
- Windows: \install_directory\**exits\\acif\\apkinp.c, apkind.c, apkres.c, apkout.c, apka2e.c, asciinp.c, asciinpe.c**

Sample user exit executable files

- AIX: **/usr/lpp/psf/bin/apka2e, apkinp, apkind, apkres, apkout, asciinp, asciinpe**
- Windows: use *.dsw files to build

Build rules for ACIF user exits: apkinp, apkind, apkres, apkout, apka2e, asciinp, asciinpe

- AIX: **/usr/lpp/psf/bin/Makefile**
- Windows: use *.dsw files to build

C language header file for ACIF user exits

- AIX: **/usr/lpp/psf/acif/apkexits.h**
- Windows: \install_directory\exits\\acif\\apkexits.h

Note: InfoPrint Manager for AIX or Linux must be installed if you want to use the examples from this publication that contain path names with **/psf/**; for example:

```
inpexit=/usr/lpp/psf/bin/asciinpe
```

InfoPrint Manager for Windows must be installed if you want to use the examples from this publication that contain path names with **\\exits\\acif\**; for example:

```
inpexit=\install_directory\exits\acif\asciinpe.dll
```

NLS messages

ACIF messages on AIX can be written in any one of these languages: Simplified Chinese, Traditional Chinese, English, French, French-Canadian, German, or Japanese. ACIF messages on Windows can be written in any one of these languages: French, German, Italian, Spanish, or Japanese.

In AIX, consult the description of the NLSPATH and LANG environment variables for information about setting these variables in an appropriate manner.

Suggested reading

See these publications for more information about printing with InfoPrint Manager and for information about form definitions and page definitions:

- *InfoPrint Manager: Reference* for information about transforming line data for printing with InfoPrint Manager and for information about form definitions and page definitions.
- *InfoPrint Manager for AIX: Getting Started* and *InfoPrint Manager for AIX: Procedures*.

- *InfoPrint Manager for Linux: Getting Started* and *InfoPrint Manager for Linux: Procedures*.
- *InfoPrint Manager for Windows: Getting Started* and *InfoPrint Manager for Windows: Procedures*.
- *Page Printer Formatting Aid: User's Guide* for information about how to create your own form definitions and page definitions.

Using ACIF in z/OS

Figure 9 contains sample JCL that runs ACIF to process print output from an application.

```
//USERAPPL EXEC PGM=user application
//PRINTOUT DD DSN=print file,DISP=(NEW,CATLG)
//*
//ACIF     EXEC=APKACIF,PARM=[['PARMDD=ddname][,MSGDD=ddname']],REGION=3M
//INPUT  DD DSN=print file
//OUTPUT DD DSN=output file,DISP=(NEW,CATLG),
//           DCB=(LRECL=32756,BLKSIZE=32760,RECFM=VBA,DSORG=PS),
//           SPACE=(32760,(nn,nn)),UNIT=SYSDA
//RESOBJ DD DSN=resource file,DISP=(NEW,CATLG),
//           DCB=(LRECL=32756,BLKSIZE=32760,RECFM=VBA,DSORG=PS),
//           SPACE=(32760,(nn,nn)),UNIT=SYSDA
//INDEX  DD DSN=index file,DISP=(NEW,CATLG),
//           DCB=(LRECL=32756,BLKSIZE=32760,RECFM=VBA,DSORG=PS),
//           SPACE=(32760,(nn,nn)),UNIT=SYSDA
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
ACIF parameters go here
```

Figure 9. Sample z/OS JCL to run ACIF

z/OS JCL statements for running ACIF

The JCL statements in Figure 9 are explained in this section. For more information about programming JCL, see *z/OS MVS JCL Reference*.

USERAPPL
Represents the job step to run the application that produces the actual print output. *USERAPPL* or *user application* is the name of the program that produces the print data set.

PRINTOUT
Specifies the DD statement that defines the output data set produced from the application. The application output cannot be spooled to the Job Entry Subsystem (JES) because ACIF does not read data from the spool. The *print file* is the name of the print data set created by the *user application*.

ACIF
Represents the job step that runs ACIF to process the print data set. You can specify two optional input parameters to ACIF:

PARMDD
Defines the DD name for the data set containing the ACIF processing parameters. If **PARMDD** is not specified, ACIF uses **SYSIN** as the default DD name and stops processing if **SYSIN** is not defined.

MSGDD
Defines the DD name for the message data set. When ACIF processes a print data set, it can issue various informational or error messages. If

MSGDD is not specified as an invocation parameter, ACIF uses **SYSPRINT** as the default DD name and stops processing if **SYSPRINT** is not defined.

Although Figure 9 on page 21 shows a specified **REGION** size of 3 MB, this value can vary, depending on the complexity of the input data and the conversion and indexing options requested.

INPUT
Specifies the DD statement that defines the print data set to be processed by ACIF. In Figure 9 on page 21, this is the same data set as defined in the **PRINTOUT** DD statement.

OUTPUT
Specifies the DD statement that defines the name of the print data set that ACIF creates as a result of processing the application's print data set. Figure 9 on page 21 shows the DCB requirements.

RESOBJ
Specifies the DD statement that defines the name of the resource data set that ACIF creates as a result of processing the print data set. The RESOBJ file must be allocated with variable blocked records. This statement is not required if **RESTYPE=NONE** is specified in the processing parameter data set. For more information about the **RESTYPE** parameter, see “RESTYPE” on page 72.

INDEX
Specifies the DD statement that defines the name of the index object file that ACIF creates as a result of processing the application's print data set.

This parameter is not required:

- Unless indexing is requested or unless the input print data set contains indexing structured fields. If you are not sure whether the print data set contains indexing structured fields, and you do not want an index object file to be created, specify **DD DUMMY**; no index object file is created.
- If **INDEXOBJ=NONE** is specified in the processing parameter data set and no indexing keywords are specified (**FIELD**, **INDEX**, or **TRIGGER**).

SYSPRINT
Specifies the DD statement that defines the system output data set. If you are not writing messages to spool, the data set must have these attributes: **LRECL=137,BLKSIZE=multiple of LRECL + 4 RECFM=VBA,DSORG=PS**.

SYSIN
Specifies the DD statement that defines the data set containing the ACIF processing parameters. This is the default DD name if **PARMDD** is not specified as an invocation parameter.

Note: Files that are named by the **FDEFLIB**, **PDEFLIB**, **PSEGLIB**, and **OVLYLIB** parameters are allocated to system-generated DD names.

Enabling ICONV translation services

The **EXTENSIONS=MVSICNV** parameter in ACIF initializes the CEEPIPI environment to enable the ICONV translation services on z/OS. The parameter is required if:

- The page definition specifies Quick Response (QR) Code bar codes and the line data contains DBCS characters.
- The page definition uses the VARIABLE option when it is specifying resource objects.

- The data contains PTOCA objects.

To enable ICONV translation services:

1. Set up an OMVS segment in RACF® for the user ID of the job that runs APKACIF.
2. Specify **EXTENSIONS=MVSICNV** in ACIF.

   Note: When you specify the USERPATH, FONTPATH, or OBJCPATH parameter to request color management or TrueType and OpenType font support, MVSICNV is the default.

   For more information, see "EXTENSIONS" on page 38.

Using ACIF in VM

Figure 10 contains sample VM/CMS commands that run ACIF to process print output from an application.

```
USERAPPL
FILEDEF INPUT DISK filename filetype filemode
FILEDEF OUTPUT DISK filename filetype filemode (LRECL 32756 BLKSIZE 32760
FILEDEF RESOBJ DISK filename filetype filemode (LRECL 32756 BLKSIZE 32760
FILEDEF INDEX DISK filename filetype filemode (LRECL 32756 BLKSIZE 32760
FILEDEF SYSIN DISK filename filetype filemode
FILEDEF SYSPRINT DISK filename filetype filemode
APKACIF (PARMDD ddname MSGDD ddname
```

Figure 10. Sample VM/CMS commands to run ACIF

VM/CMS commands for running ACIF

The CMS commands in Figure 10 are explained as follows.

USERAPPL
Runs the application that produces the actual print output.

INPUT
Defines the DD name for the print file to be processed by ACIF. In Figure 10, this is the same print file that is created by **USERAPPL**.

OUTPUT
Defines the DD name for the file that ACIF creates as a result of processing the application's print file.

RESOBJ
Defines the DD name for the resource file that ACIF creates as a result of processing the application's print file. This command is not required if **RESTYPE=NONE** is specified in the processing parameter file.

INDEX
Defines the DD name for the index object file that ACIF creates as a result of processing the application's print file.

This parameter is not required:

- Unless indexing is requested or unless the print file contains indexing structured fields. If you are not sure whether the print file contains indexing structured fields, and you do not want an index object file to be created, specify **FILEDEF INDEXDD DUMMY**; no index object file is created.
- If **INDEXOBJ=NONE** is specified in the processing parameter data set and no indexing keywords are specified (**FIELD**, **INDEX**, or **TRIGGER**).

APKACIF
Starts the ACIF program to process the application's print file. You can specify two optional input parameters to ACIF: **PARMDD** and **MSGDD**.

PARMDD
Defines the DD name for the file that contains the ACIF processing parameters. If **PARMDD** is not specified, ACIF uses **SYSIN** as the default DD name and stops processing if **SYSIN** is not defined.

MSGDD
Defines the DD name type for the message file. When ACIF processes a print file, it can issue various informational or error messages. If **MSGDD** is not specified as an invocation parameter, ACIF uses **SYSPRINT** as the default DD name and stops processing if **SYSPRINT** is not defined. **MSGDD** requires an LRECL of 137 and a block size that is a multiple of 137 plus 4 (for example, (137*10)+4 =1374).

Note: The ACIF naming convention for the DD name is the same as the one that is used in z/OS.

ACIF requires about 3 MB of virtual memory to convert and index files. The amount of memory can vary, depending on the complexity of the input data and the conversion and indexing options requested.

Using ACIF in VSE

Figure 11 contains sample JCL that runs ACIF to process print output from an application.

```
// DLBL   PRNTOUT,'user print file'
// EXTENT ....
// ASSGN  ...
// EXEC   USERAPPL
// DLBL   PRD2,'VSE'PRD2.LIBRARY'
// EXTENT ,volser
// LIBDEF PHASE,SEARCH=(PRD2.AFP)
// ASSGN  SYSLST,X'FEE'
// ASSGN  SYS006,xxx
// DLBL   INPUT,'your input file',0,SD
// EXTENT SYS006,volser...
// ASSGN  SYS007,xxx
// DLBL   OUTPUT,'your output file',0,SD
// EXTENT SYS007,volser...
// ASSGN  SYS008,xxx
// DLBL   RESOBJ,'your resource output file',0,SD
// EXTENT SYS008,volser...
// ASSGN  SYS009,xxx
// DLBL   INDEX'your index output file',0,SD
// EXTENT SYS009,volser...
// EXEC   PGM=APKACIF
 ACIF parms go here
/*
/&
```

Figure 11. Sample VSE JCL to run ACIF

VSE JCL statements for running ACIF

The statements in Figure 11 are explained in this section. For more information about programming JCL for VSE, see *Print Services Facility/VSE: Application Programming Guide*, S544-3666.

`PRNTOUT`
Defines the output file that is produced from the application. The application output cannot be spooled to POWER®, because ACIF does not read data from the spool. The *user print file* is the name of the print data set created by your application.

`USERAPPL`
Represents the job step that runs the application that produces the actual print output. The *user application* refers to the program that produces the print file.

`// DLBL PRD2,... // EXTENT ,volser // LIBDEF PHASE,SEARCH=...`
Defines the library or libraries to be searched for the ACIF program and for all the AFP resources (form definitions, page definition, fonts, overlays, and page segments).

`// ASSGN SYSLST,...`
Defines the control statement and error message listing file. The control statement is required or processing stops.

`// ASSGN SYS006,... // DLBL INPUT,... // EXTENT SYS006,...`
Defines the file to be processed by ACIF. In Figure 11 on page 24, this is the same data set as defined by the **PRNTOUT** file.

`// ASSGN SYS007,... // DLBL OUTPUT,... // EXTENT SYS007,...`
Defines the document file that ACIF creates as a result of processing the application's print file. See “VSE” on page 62 for the characteristics of this file.

`// ASSGN SYS008,... // DLBL RESOBJ,... // EXTENT SYS008,...`
Defines the optional file in which ACIF places print resources that are used in processing the application's print file. This file is not required if **RESTYPE=NONE** is specified in the processing parameter file. For more information about the **RESTYPE** parameter, see “RESTYPE” on page 72.

`// ASSGN SYS009,... // DLBL INDEX,... // EXTENT SYS009,...`
Defines the optional file in which ACIF places the index object file, if indexing is requested.

This statement is not required:

- Unless indexing is requested or unless the input print file contains indexing structured fields. If you are not sure whether the input print file contains indexing structured fields, and you do not want an index object file that is created, specify **// ASSGN SYS009,IGN**; no index object file is created.
- If **INDEXOBJ=NONE** is specified in the processing parameter data set and no indexing keywords are specified (**FIELD**, **INDEX**, or **TRIGGER**).

`//EXEC PGM=APKACIF`
Starts the ACIF program. This statement must be followed immediately by ACIF processing parameters.

Chapter 3. ACIF parameters

This chapter describes the ACIF parameters, including the syntax rules and values for parameters in AIX, Windows, z/OS, VM, and VSE operating systems.

Some of the parameters that are specified to ACIF, such as **OBJCONLIB**, **FONTLIB**, and **PSEGLIB**, specify the directory paths where resources are stored. Be sure that those parameters are specified with the same directory paths when you print the job.

Notes:

1. For AIX or Windows, you might need to consult with your system support group for information about resource directories and other printing defaults that are contained in the InfoPrint Manager printer profiles that are used in your installation.
2. For z/OS and VSE, you might need to consult with your system programmer for information about resource library names and other printing defaults that are contained in the PSF startup procedures that are used in your installation.
3. For VM/CMS, you might need to link to the appropriate disks that contain the resource files used to convert and print your job.

Syntax rules for ACIF

These general syntax rules are used for ACIF parameter files:

- Blank characters that are inserted between parameters, values, and symbols are allowed, but ignored. For example, specifying:

  ```
    FORMDEF  =  F1TEMP
        PAGEDEF =   P1PROD
  INDEX1  = FIELD1 , FIELD2 ,   FIELD3
  ```

  is equivalent to specifying:

  ```
  FORMDEF=F1TEMP
  PAGEDEF=P1PROD
  INDEX1=FIELD1,FIELD2,FIELD3
  ```

- When ACIF processes any unrecognized or unsupported parameter, it issues a message, ignores the parameter, and continues processing any remaining parameters until the end of the file, at which time it ends processing.
- If the same parameter is specified more than one time, ACIF uses the last value specified. For example, if these parameters are specified:

  ```
  CPGID=037
  CPGID=395
  ```

  ACIF uses code page 395.
- Comments must be specified by using "/*" as the beginning delimiter. For example:

  ```
  FORMDEF=F1TEMP  /* Temporary FORMDEF
  FORMDEF=F1PROD  /* Production-level FORMDEF
  ```

  Comments can appear anywhere, but ACIF ignores all information in the record that follows the "/*" character string.
- Although ACIF supports parameter values that span multiple records, it does not support multiple parameters in a single record. For example:

  ```
  CHARS=X0GT10 CCTYPE=A  /* This is not allowed.
  ```

Syntax rules for AIX and Windows

In AIX and Windows, you can enter ACIF parameters with the **acif** command, in a parameter file, or both. If both are used, the value that is specified in the parameter file overrides the value that is specified with the **acif** command.

Note: The **line2afp** command is the same as the **acif** command and uses the **acif** command conversion parameters to produce output for printing. Hereafter, "**acif**" refers to both **acif** and **line2afp** commands.

To use a parameter file in AIX or Windows, specify the parameter file name with the **acif** command and the **PARMDD** parameter. For example, to use a parameter file that is named `PARMFILE`, specify:

```
acif parmdd=PARMFILE
```

The **acif** command expects to receive the syntax exactly as shown in Table 5 on page 29. For example, **acif** expects to receive literal single quotation mark characters for the **field**, **index**, and **trigger** parameters. In order for ACIF to receive these single quotation mark characters, you must "escape" the quotation mark characters so that your shell does not parse them. The way that you "escape" quotation mark characters depends on the shell you are using. If you need guidance in passing the **acif** command parameter syntax through the shell, see the documentation in *AIX Commands Reference* for the shell you are using.

Though the parameters themselves are not case-sensitive, associated values, such as file names, attribute names, and directory names in AIX, *are* case-sensitive. Be sure to specify these values in the case in which they exist in the file system (for external resources) or in the print file (for inline resources). For example,

```
formdef=F1MINE
```

is *not* the same as

```
formdef=f1mine
```

In Windows, ACIF can process path names that are specified in a PARMDD file with either forward "/" or backward "\" slashes. This allows parameter files to be interchanged among AIX and Windows operating systems. For example,

```
fontlib=/my/afp/fonts
```

or

```
fontlib=\my\afp\fonts
```

However, in AIX, ACIF can *only* process path names that are specified with forward "/" slashes.

| Also, be sure that you do not end the path name with a : or ; delimiter. For
| example, ACIF cannot process:

```
fontlib=/my/afp/fonts:
```

| or

```
fontlib=/my/afp/fonts;
```

Syntax rules for z/OS, VM, and VSE

In z/OS, VM, and VSE, you enter ACIF parameters in a parameter file. Each parameter with its associated values can span multiple records, but the parameter and the first value must be specified in the same record. If more values need to be specified in the following record, a comma (,) must be specified, following the last value in the previous record. The comma indicates that additional values are specified in one or more of the following records. For example:

z/OS

```
FDEFLIB=TEMP.USERLIB,PROD.LIBRARY,
OLD.PROD.LIBRARY    /* These are the FORMDEF libraries.
```

VM

```
FDEFLIB=FDEF38PP,
TEMPFDEF             /* These are the FORMDEF libraries.
```

VSE

```
INPUTDD=INPUT|filename(LRECL=nnnn,BLKSIZE=nnnn,RECFM=F|FB|V|VB,DEVT=TAPE|DISK)
```

Parameter values for ACIF

Table 5 lists the ACIF parameters and values for the AIX, Windows, z/OS, VM, and VSE operating systems. "WIN" refers to the Windows operating system. Underscored values are the default and are used by ACIF if no other value is specified. Not all parameters are valid in every environment; parameter values are only listed for those operating systems to which they apply.

Table 5. ACIF parameters and operating systems

ACIF Parameters	Operating System	See Page...
CC={**YES** | **NO**}	AIX, WIN, z/OS, VM, VSE	31
CCTYPE={**Z** | **A** | **M**}	AIX, WIN	32
CCTYPE={**Z** | **A** | **M**}	z/OS, VM, VSE	32
CHARS=*fontname1*[,*fontname2*][,*fontname3*][,*fontname4*]	AIX, WIN, z/OS, VM, VSE	33
COLORMAP=*name*	AIX, WIN, z/OS	34
COMSETUP=*name*	AIX, WIN, z/OS, VM	35
CPGID={**850** | *codepageid*}	AIX, WIN	37
CPGID={**500** | *codepageid*}	z/OS, VM, VSE	37
DCFPAGENAMES={**YES** | **NO**}	AIX, WIN, z/OS, VM, VSE	37
EXTENSIONS={**NONE** | **ALL** | [**BOX**][,**CELLED**][,**EMPTYOK**] [,**FRACLINE**][,**IDXCPGID**][,**PASSOID**][,**PASSPF**][,**PRCOLOR**] [,**RESORDER**][,**SPCMPRS**]}	AIX, WIN, VM, VSE	38
EXTENSIONS={**NONE** | **ALL** | [**BOX**][,**CELLED**][,**EMPTYOK**] [,**FRACLINE**][,**IDXCPGID**][,**MVSICNV**][,**NOICNV**][,**PASSOID**] [,**PASSPF**][,**PRCOLOR**][,**RESORDER**][,**SPCMPRS**]}	z/OS	38
FDEFLIB=*pathlist*	AIX, WIN	41
FDEFLIB=*dsname1*[,*dsname2*][,*dsname3...*]	z/OS	41
FDEFLIB=*filetype1*[,*filetype2*][,*filetype3...*]	VM	41
FIELD*n*={*record,column,length*} | {'*literalvalue*' | **X**'*literalvalue*'}	AIX, WIN, z/OS, VM, VSE	42
FILEFORMAT={RECORD | RECORD,*n* | STREAM[,(NEWLINE={*value* | X'*nnnn*'}[,*encoding*])]}	AIX, WIN	44
FONTECH=**UNBOUNDED**	z/OS, VM, VSE	45
FONTLIB=*pathlist*	AIX, WIN	46
FONTLIB=*dsname1*[,*dsname2*][,*dsname3...*]	z/OS	46
FONTLIB=*filetype1*[,*filetype2*][,*filetype3...*]	VM	47
FONTPATH=*pathlist*	AIX, WIN, z/OS	48
FORMDEF={*fdefname* | **DUMMY**}	AIX, WIN, z/OS, VM, VSE	48

Table 5. ACIF parameters and operating systems (continued)

ACIF Parameters	Operating System	See Page...
GROUPNAME={**INDEX1** | **INDEX***n*}	AIX, WIN, z/OS, VM, VSE	50
IMAGEOUT={**ASIS** | **IOCA**}	AIX, WIN, z/OS, VM, VSE	51
INDEX*n*={'*attributename*' | **X**'*attributename*'},{**FIELD***n*[**,FIELD***n*...]}	AIX, WIN, z/OS, VM, VSE	51
INDEXDD={**INDEX** | *filename*}	AIX, WIN	53
INDEXDD={**INDEX** | *ddname*}	z/OS, VM	53
INDEXDD={**INDEX** | *filename* **(DEVT**=**TAPE** | **DISK)**}	VSE	53
INDEXOBJ={**GROUP** | **ALL** | **NONE** | **BDTLY**}	AIX, WIN, z/OS, VM, VSE	53
INDEXSTARTBY={**1** | *nn*}	AIX, WIN, z/OS, VM, VSE	54
INDXEXIT=*programname*	AIX, WIN	55
INDXEXIT=*modulename*	z/OS, VM, VSE	55
INPCCSID=*ccsid*	AIX, WIN	55
INPEXIT=*programname*	AIX, WIN	55
INPEXIT=*modulename*	z/OS, VM, VSE	56
INPUTDD={**STDIN** | *filename*}	AIX, WIN	56
INPUTDD={**INPUT** | *ddname*}	z/OS, VM	56
INPUTDD={**INPUT** | *filename* **(LRECL**=*nnnn*,**BLKSIZE**=*nnnn*, **RECFM**=**F**|**FB**| **V**|**VB**,**DEVT**=**TAPE**|**DISK)**}	VSE	57
INSERTIMM={**YES** | **NO**}	AIX, WIN, z/OS, VM, VSE	57
MCF2REF={**CPCS** | **CF**}	AIX, WIN, z/OS, VM, VSE	58
MSGDD={**STDERR** | *filename*}	AIX, WIN	58
MSGDD={**SYSPRINT** | *ddname*}	z/OS, VM	58
OBJCONLIB=*pathlist*	AIX, WIN	59
OBJCONLIB=*dsname1*[,*dsname2*][,*dsname3*...]	z/OS	59
OBJCONLIB=*filetype1*[,*filetype2*][,*filetype3*...]	VM	59
OBJCPATH=*pathlist*	AIX, WIN, z/OS	60
OUTCCSID=*ccsid*	AIX, WIN	60
OUTEXIT=*programname*	AIX, WIN	61
OUTEXIT=*modulename*	z/OS, VM, VSE	61
OUTPUTDD={STDOUT | *filename*}	AIX, WIN	61
OUTPUTDD={**OUTPUT** | *ddname*}	z/OS, VM	61
OUTPUTDD={**OUTPUT** | *filename* **(DEVT**=**TAPE** | **DISK)**}	VSE	62
OVLYLIB=*pathname*	AIX, WIN	62
OVLYLIB=*dsname1*[,*dsname2*][,*dsname3*...]	z/OS	62
OVLYLIB=*filetype1*[,*filetype2*][,*filetype3*...]	VM	63
PAGEDEF=*pdefname*	AIX, WIN, z/OS, VM, VSE	63
PARMDD=*filename*	AIX, WIN	66
PARMDD={**SYSIN** | *ddname*}	z/OS, VM	66
PDEFLIB=*pathlist*	AIX, WIN	66
PDEFLIB=*dsname1*[,*dsname2*][,*dsname3*...]	z/OS	66
PDEFLIB=*filetype1*[,*filetype2*][,*filetype3*...]	VM	67

Table 5. ACIF parameters and operating systems (continued)

ACIF Parameters	Operating System	See Page...
PRMODE={**SOSI1** | **SOSI2** | **SOSI3** | **SOSI4** | *aaaaaaaa*}	AIX, WIN, z/OS, VM, VSE	67
PSEGLIB=*pathlist*	AIX, WIN	68
PSEGLIB=*dsname1*[,*dsname2*][,*dsname3...*]	z/OS	69
PSEGLIB=*filetype1*[,*filetype2*][,*filetype3...*]	VM	69
RESEXIT=*programname*	AIX, WIN	70
RESEXIT=*modulename*	z/OS, VM, VSE	70
RESFILE={**SEQ** | **PDS**}	z/OS	70
RESLIB=*pathlist*	AIX, WIN	71
RESOBJDD={**RESOBJ** | *filename*}	AIX, WIN	71
RESOBJDD={**RESOBJ** | *ddname*}	z/OS, VM	72
RESOBJDD={**RESOBJ** | *filename* **(DEVT=TAPE** | **DISK)**}	VSE	72
RESTYPE={**NONE** | **ALL** | **[FDEF][,PSEG][,OVLY][,FONT][,OBJCON][,BCOCA][,GOCA][,IOCA][,PTOCA][,CMRALL][,CMRGEN][,INLINE][,INLONLY]**}	AIX, WIN, z/OS, VM, VSE	73
TRACE={YES | **NO**}	AIX, WIN	76
TRACE={YES | **NO** | **PDS**}	z/OS	76
TRACEDD={**TRACE** | *filename*}	AIX, WIN	76
TRACEDD={**TRACE** | *ddname*}	z/OS	76
TRC={YES | **NO**}	AIX, WIN, z/OS, VM, VSE	76
TRIGGERn={*record* | *},{*column* | *},{*'triggervalue'* | **X***'triggervalue'*}	AIX, WIN, z/OS, VM, VSE	77
UNIQUEBNGS={**YES** | **NO**}	z/OS, VM, VSE	79
USERLIB=*pathlist*	AIX, WIN	79
USERLIB=*dsname1*[,*dsname2*][,*dsname3...*]	z/OS	80
USERLIB=*filetype1*[,*filetype2*][,*filetype3...*]	VM	80
USERPATH=*pathlist*	AIX, WIN, z/OS	81

The following sections describe the ACIF parameters. The format and usage is the same in all environments (AIX Windows, z/OS, VM, and VSE) unless otherwise specified.

CC

Specifies whether the input file has carriage control characters. Carriage control characters, if present, are located in the first byte (column) of each line in a document. They are used to control how the line is formatted (single space, double space, triple space, and so forth). In addition, other carriage control characters can be used to position the line anywhere on the page. If there are no carriage control characters, single spacing is assumed.

CC={YES | NO}
The values are:

YES
The file contains carriage control characters.

NO The file does not contain carriage control characters.

If this parameter is not specified, ACIF assumes that the file contains carriage control characters.

CCTYPE

Specifies the type of carriage control characters in the input file. ACIF supports ANSI carriage control characters in either ASCII or EBCDIC encoding, and machine carriage control characters. ACIF does not allow a mixture of ANSI and machine carriage control characters within a file.

The values are:

Z The file contains ANSI carriage control characters that are encoded in ASCII.

The carriage control characters are the ASCII hexadecimal values that directly relate to ANSI carriage controls, which cause the action of the carriage control character to occur *before* the line is printed. For example, if the carriage control character is zero (X'30'), which represents double spacing, double spacing occurs *before* the line is printed.

A The file contains ANSI carriage control characters that are encoded in EBCDIC.

The use of ANSI carriage control characters cause the action of the carriage control character to occur *before* the line of data is printed. For example, if the carriage control character is a zero (X'F0'), which represents double spacing, the double spacing occurs *before* the line is printed.

M The file contains machine code carriage control characters that are encoded in hexadecimal format.

The use of machine code carriage control characters cause the action of the carriage control character to occur *after* the line of data is printed. For example, if the carriage control character is a X'11', which represents double spacing, the line is printed and the double spacing occurs *after* the line is printed. In addition, machine code carriage control has a set of carriage control characters that perform the action, but do not print the associated line. For example, if the carriage control character is a X'13', which also represents double spacing, the print position is moved down two lines but the line that contains the X'13' carriage control character is not printed. The next line in the data is printed at the current print position and the action for the associated carriage control character is performed *after* the line is printed.

If you are not sure which type of carriage control characters are in your input file, consult your system support group. For more information, see "Understanding how ANSI and machine carriage controls are used" on page 208.

AIX and Windows

CCTYPE={$\underline{\text{Z}}$ | A | M}

If you specify **CC=YES** but you do not specify **CCTYPE**, ACIF assumes that the file contains ANSI carriage control characters that are encoded in ASCII.

Specify the value of the carriage control encoding ***after*** it is converted with a user exit. For example, if you are calling the **apka2e** user exit to convert ASCII encoded carriage controls to EBCDIC, specify the encoding value as EBCDIC.

z/OS, VM, and VSE

CCTYPE=Z | $\underline{\text{A}}$ | M

If you specify **CC=YES** but you do not specify **CCTYPE**, ACIF assumes that the file contains ANSI carriage control characters that are encoded in EBCDIC.

CHARS

Specifies the file name (in AIX, Windows, or VM) or the member name (in z/OS or VSE) of from one to four coded fonts that you want ACIF to use to process a file. A coded font specifies a character set and code page pair.

Note: The **CHARS** parameter is ignored if you specify the **FONTPATH** or **USERPATH** parameter for TrueType and OpenType fonts.

CHARS=*fontname1***[,***fontname2***][,***fontname3***][,***fontname4***]**

The value is:

fontname

The name of the coded font. The name is limited to four characters, consisting of any combination of alphanumeric characters (a-z, A-Z, 0–9) and special characters (# $ @). It does not include the 2-character prefix of the coded-font name (X0 through XG). In AIX and Windows, the font name is case-sensitive.

Use **CHARS** to specify coded fonts in a font library that has names of six or fewer characters (including the prefix). You can rename any fonts that have more than six characters or use a text editor to create new coded fonts for use with the **CHARS** parameter.

When ACIF is used to convert traditional line data, mixed-mode data, or unformatted ASCII data, you must specify a page definition with the **PAGEDEF** parameter. You can then specify the fonts either in the page definition or with the **CHARS** parameter, but not both. You cannot mix fonts that are specified in a page definition with fonts specified with **CHARS** for a single file. If you use **CHARS** to specify fonts, but you also use the **PAGEDEF** parameter to specify a page definition that names fonts, the **CHARS** parameter is ignored. Therefore, if your page definition names fonts, you should not use the **CHARS** parameter.

Select fonts with table-reference characters (TRCs), with AFP structured fields, or in a page definition. If the page definition does not name any fonts, and you want to specify more than one font with the **CHARS** parameter, you must specify table reference characters (TRCs) in the input file to select the fonts. For example, if you want the file to print with these two fonts, X0GT10 (Gothic 10 pitch) and X0GT12 (Gothic 12 pitch), do these tasks:

1. Specify **TRC=YES**.
2. Use **CHARS** to associate the fonts with each TRC:
   ```
   CHARS=GT10,GT12
   ```
   where, **GT10** is associated with TRC 0 and **GT12** is associated with TRC 1.

If the page definition does not name any fonts, and you want the whole file to print with only one font, you must do these tasks:

1. Specify **TRC=NO**.
2. Use **CHARS** to indicate the single font in which the file must be printed. For example:
   ```
   CHARS=GT10
   ```

You can specify fonts in the **CHARS** parameter only if you want the entire file printed in a single printing direction. ACIF uses the fonts that have 0° character rotation for the specified direction. When a file requires fonts with more than one printing direction or character rotation, you must specify the fonts in the page definition.

If you do not specify a **CHARS** parameter, and if no fonts are contained in the page definition you specified, ACIF uses the printer default font.

AIX and Windows

If you use the ASCII fonts that are supplied with InfoPrint Manager, use the 4-character short names (see Table 8 on page 99 for examples). In AIX, if you use your own coded font that has a file name with more than six characters (including the X*n* prefix), then do one of these tasks:

- Rename the font file to a shorter name. For example:
  ```
  mv X0423002 X04202
  ```
- Copy the font file to a file that has a shorter name. For example:
  ```
  cp X0423002 X04202
  ```
- Link the original font file to a shorter name. For example:
  ```
  ln -s X0423002 X04202
  ```

If the input file is unformatted ASCII, you can do one of these tasks:

- Specify a font that has the appropriate ASCII code points. To specify a font search path, either use the **FONTLIB** parameter to specify it explicitly or set the **PSFPATH** environment variable to search the appropriate directories.
- Use the **apka2e** or **asciinpe** input record exit programs to convert the ASCII code points in the input file into EBCDIC, and use EBCDIC fonts. To use an input record program, specify the **INPEXIT** parameter.

  In AIX , use one of these examples:
  - `inpexit=/usr/lpp/psf/bin/apka2e`
  - `inpexit=/usr/lpp/psf/bin/asciinpe`

  In Windows, use one of these examples:
  - inpexit=\install_directory\exits\acif\apka2e.dll
  - inpexit=\install_directory\exits\acif\asciinpe.dll

  See "INPEXIT" on page 55 for a description of **apka2e** and **asciinpe** functions.

  You can also convert encoded data to another coded character set identifier (CCSID). See "INPCCSID" on page 55 and "OUTCCSID" on page 60.

z/OS and VM

In z/OS and VM, fonts you specify must be in a library that is specified with the **FONTLIB** parameter or be in a user library specified with the **USERLIB** parameter.

VSE

In VSE, you must specify fonts in the **// LIBDEF PHASE, SEARCH=(...)** JCL statement.

COLORMAP

Specifies the name of a color mapping table resource in AIX, Windows, and z/OS. A color mapping table is an AFP resource that is used to map color values that are specified in a source color space to color values specified in a target color space.

COLORMAP=*name*

The value is:

name

Any valid color mapping table name (in AIX or Windows) or member name (in z/OS). The name can be 1 - 8 alphanumeric characters (a-z, A-Z, 0–9) and special characters (# $ @), including the 2-character prefix, if there is one. In AIX, *name* is case-sensitive.

Note: Do not use a file extension when you are specifying the color mapping table.

You can create your own color mapping table by using the Color Mapping Tool that is included with PSF for z/OS (see *PSF for z/OS: User's Guide*) or InfoPrint Manager (see the *Procedures* document for your InfoPrint Manager operating system), or you can use an existing resource that is created by your system programmer.

The color mapping table that is specified on the COLORMAP parameter can be found in these locations:

- In a z/OS library or an AIX or Windows directory that is referenced by the **USERLIB** or **OBJCONLIB** parameter.
- Inline in the file or print data set.

A color mapping table can be an inline resource in all data formats except XML. If the color mapping table is an inline resource, you must specify one of these parameters:

COLORMAP=*name*

name is the name of the inline color mapping table. If the name specified in the **COLORMAP** parameter does not match the name of an inline color mapping table, ACIF looks for the color mapping table in the OBJCONLIB or USERLIB library.

COLORMAP=DUMMY

If you specify **COLORMAP=DUMMY** but the file does not include an inline color mapping table, ACIF looks for a color mapping table that is named **DUMMY** in the OBJCONLIB or USERLIB library.

An input file can contain multiple color mapping tables, but only one can be used for printing. If a file contains more than one color mapping table and you specify **COLORMAP=***name*, ACIF uses the first inline color mapping table named *name*. If a file contains more than one inline color mapping table and you specify **COLORMAP=DUMMY**, ACIF uses the first inline color mapping table in the input file.

COMSETUP

Specifies the name of a COM setup file in AIX, Windows, z/OS, and VM. A COM setup file is an AFP resource that contains instructions that are required when printing on a microfilm device (*microfilm* can mean either microfiche or 16 mm film).

COMSETUP=*name*

The value is:

name

Any valid COM setup file name (in AIX, Windows, or VM) or member name (in z/OS). The *name* can be 1 - 8 alphanumeric characters (a-z, A-Z, 0–9) and special characters (# $ @), including the 2-character prefix, if there is one. In AIX, *name* is case-sensitive.

Note: If the name of the COM setup file includes a file extension, do not use the file extension when you are specifying the setup file. For example, to use a setup file that is named **MYSETUP.SET**, specify **COMSETUP=MYSETUP**.

The COM setup file you use can be located:
- In a z/OS or VM library.
- In an AIX or Windows directory.
- Inline in the file (that is, within the file itself).

If the COM setup file is in an AIX or Windows directory or a z/OS or VM library, use the **USERLIB** or **OBJCONLIB** parameter to specify the path to the file or the data set.

In AIX , use one of these examples:

-
  ```
  comsetup=mysetup
  userlib=/usr/afp/resources
  ```

-
  ```
  comsetup=mysetup
  objconlib=/usr/lib/setups
  ```

In Windows, use this example:
```
comsetup=mysetup
userlib=\install_directory\resources
```

In z/OS or VM, use one of these examples:

-
  ```
  COMSETUP=MYSETUP
  USERLIB=USER.RESOURCES
  ```

-
  ```
  COMSETUP=MYSETUP
  OBJCONLIB=USER.SETUPS
  ```

A COM setup file can be an inline resource in all data formats except XML. (XML data cannot have carriage control characters, which are used to identify inline resources.) If the COM setup file is an inline resource, you must specify one of these parameters:

COMSETUP=*name*
: *name* is the name of the inline COM setup file. If the name specified in the **COMSETUP** parameter does not match the name of an inline COM setup file, ACIF looks for the COM setup file in the **COMSETUP** search path.

COMSETUP=DUMMY
: If you specify **COMSETUP=DUMMY** but the file does not include an inline COM setup file, ACIF looks for the COM setup file named **DUMMY**.

An input file can contain multiple COM setup files, but only one COM setup file can be used for printing. If a file contains more than one COM setup file, and you specify **COMSETUP=***name*, ACIF uses the first inline COM setup file named *name*. If a file contains more than one inline COM setup file, and you specify **COMSETUP=DUMMY**, ACIF uses the first inline COM setup file in the input file.

CPGID

Specifies the 3- or 4-digit identifier that defines an IBM-registered code page that is used when the index values and attribute names are specified on the **INDEX***n* and **FIELD***n* parameters.

ACIF uses the code page identifier value when it creates a Coded Graphic Character Set Global Identifier Triplet X'01' in the Begin Document (BDT) structured field for the output file. For more information about this triplet, see *Mixed Object Document Content Architecture Reference*.

The code page identifier is used by programs, such as AFP Workbench Viewer, that must display indexing information. These programs use this identifier with code page translation tables to represent the index attribute and value data. For code page numbers less than 100, add leading zeros (for example, 037). If a non-decimal value is specified, ACIF reports an error condition and ends processing. For more information about code pages, see *IBM AFP Fonts: Technical Reference for Code Pages*, S544-3802.

If your input file contains Unicode data and you specify **EXTENSIONS=IDXCPGID** to process the code page identifiers, see “Indexing considerations” on page 212 for more information about using the **CPGID** parameter.

AIX and Windows

CPGID={850 | *codepageid*}

The values are:

850
IBM code page 850

codepageid
Any valid code page, which is a 3- or 4-character decimal value (for example, 395) that defines an IBM-registered code page

If this parameter is not specified, ACIF uses code page 850 as the default.

z/OS, VM, and VSE

CPGID={500 | *codepageid*}

The values are:

500
IBM code page 500

codepageid
Any valid code page, which is a 3- or 4-character decimal value (for example, 395) that defines an IBM-registered code page

If this parameter is not specified, ACIF uses code page 500 as the default.

DCFPAGENAMES

Specifies whether ACIF generates page names by using either an 8-byte counter or structured field tokens that are found in the input data stream. If the input data contains Begin Page (BPG) structured fields with fully qualified names (FQNs), ACIF does not generate page names.

DCFPAGENAMES={YES | NO}

The values are:

YES
ACIF uses structured field tokens in the input data stream to generate page names.

NO ACIF generates page names by using an 8-byte counter.

If this parameter is not specified, ACIF generates page names by using an 8-byte counter.

EXTENSIONS

Specifies the extended options that ACIF uses. Extensions are MO:DCA-P data stream advanced features that might not be supported for all presentation devices. You must use care when you are choosing these options to ensure that they are supported by your print server, viewer, or printer. In PSF for z/OS, you can use the display printer information function to see the supported functions for your printer. For more information, see *PSF for z/OS: Customization*.

EXTENSIONS={NONE | ALL | [BOX][,CELLED][,EMPTYOK][,FRACLINE][,IDXCPGID][,MVSICNV][,NOICNV][,PASSOID][,PASSPF][,PRCOLOR][,RESORDER][,SPCMPRS]}
The values are:

NONE
ACIF does not use any extended options.

ALL
ACIF uses all extended options.

Be careful:

1. Many options apply only to specific data; for example IDXCPGID applies only to line data. Therefore, when you specify ALL, make sure that all of the options apply to your data. For best results, specify only the extended options that apply to the specific type of data you are using.
2. More options might be added in the future that might not be supported by your presentation device.

BOX
Specifies that GOCA box drawing orders are supported. This option is required when you are using the DRAWGRAPHIC command in a record formatting page definition. See "Drawing graphics with record format page definitions" on page 101 for an example of using this option.

CELLED
Specifies the IOCA Replicate and Trim function when you are converting IM1 celled images. This option might reduce the number of bytes needed for a raster image, and it might display or print faster. It requires that **IMAGEOUT=IOCA** is specified (the default).

EMPTYOK

When a job requests indexing, indicates that if the input file specified with the INPUTDD parameter is empty, ACIF ignores the indexing request, issues message APK422S with return code 64, and ends processing with RC=0. ACIF does not issue message APK448S when the indexing request is not successful and does not produce a resource file.

FRACLINE
Specifies that GOCA fractional line width drawing orders are supported. This option is required when you are using the DRAWGRAPHIC

command in a record formatting page definition. See "Drawing graphics with record format page definitions" on page 101 for an example of using this option.

IDXCPGID

Specifies that ACIF processes code page identifiers for these Unicode code pages:

1200	UTF-16 BE
1208	UTF-8
13488	UTF-16 BE
17584	UTF-16 BE

Notes:

1. This value is used only with line data, not MO:DCA-P or mixed-mode data.
2. ACIF issues an error message if IDXCPGID is specified with the PASSPF parameter. If **EXTENSIONS=ALL** is specified, PASSPF is ignored and IDXCPGID is used.

See "Indexing considerations" on page 212 for information about using the CPGID parameter when you are processing code page identifiers for Unicode data.

MVSICNV

Specifies that ACIF initializes the CEEPIPI environment to enable the ICONV translation services on MVS™. This parameter is only valid in z/OS and is required if:

- The page definition specifies Quick Response (QR) Code bar codes and the line data contains DBCS characters.
- The page definition uses the VARIABLE option when resource objects are specified.
- The data contains PTOCA objects.

See "Enabling ICONV translation services" on page 22 for the steps you must do before you specify MVSICNV.

When you specify the USERPATH, FONTPATH, or OBJCPATH parameter to request color management or TrueType and OpenType font support, MVSICNV is the default.

NOICNV

Specifies that ACIF does not initialize the CEEPIPI environment to enable the ICONV translation services on MVS. This parameter is only valid in z/OS.

NOICNV is the default unless you specify the USERPATH, FONTPATH, or OBJCPATH parameter to request color management or TrueType and OpenType font support.

PASSOID

Specifies that ACIF passes OID information from the resource access table (RAT) to the Begin Resource (BRS or BR) structured field when it is saving TrueType and OpenType fonts. For more information about the RAT, see *Using OpenType Fonts in an AFP System*.

PASSPF

Specifies that ACIF passes the Begin Print File (BPF) and End Print File (EPF) structured fields, which define the boundaries of the print data, to the output file when they are found in the input file. If this value is not specified, ACIF discards the BPF/EPF pair.

This parameter also controls whether a BPF/EPF structured field pair that the input record exit tries to insert is inserted. If this value is not specified, and the input record tries to insert a BPF/EPF pair, the attempt fails, and the pair is discarded.

Notes:

1. Be careful when you are using PASSPF. If the output file contains BPF and EPF structured fields and it is concatenated with the resource file, the resulting MO:DCA-P data stream is not valid.
2. This value is not used when the input file is line data because line data does not contain BPF and EPF structured fields.
3. When PASSPF is specified and there is a BPF and EPF structured field pair in the input file, ACIF passes all Begin Document (BDT) and End Document (EDT) structured field pairs from the MO:DCA-P input file to the output data stream without adding the normal comment and time stamp triplets.
4. ACIF issues an error message if PASSPF is specified with the IDXCPGID parameter. If **EXTENSIONS=ALL** is specified, PASSPF is ignored and IDXCPGID is used.
5. ACIF does not verify whether the input file is MO:DCA IS/3 compliant.

For more information about BPF and EPF structured fields, see “Begin Print File (BPF) and End Print File (EPF) structured fields” on page 222.

PRCOLOR
Specifies that GOCA process color drawing orders are supported. This option is required when you are using the DRAWGRAPHIC command in a record format page definition. See “Drawing graphics with record format page definitions” on page 101 for an example of using this option.

RESORDER
Specifies that inline resources do not need to appear in any particular order in the input file; only before the Begin Document (BDT) structured field. When RESORDER is not specified, inline resources must appear in the input file in the order in which they are used. For example, if a coded font is inline, the character set and code page that the coded font points to must occur inline first. When RESORDER is specified, ACIF reads into memory only the inline resources that are actually needed to print the job and uses them when they are requested; inline resources that are not needed are not saved in the resource library.

Keep in mind:

1. When RESORDER is specified, TrueType and OpenType fonts that were originally inline in the input file are not saved in the resource library.
2. Specifying RESORDER impacts performance and storage use.

SPCMPRS
Specifies the repeat string PTOCA order to compress embedded blanks.

FDEFLIB

Specifies the location of form definitions. This parameter is not used for VSE.

AIX or Windows

FDEFLIB=*pathlist*

Specifies the directories in which form definitions are stored. The value is:

pathlist

Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows to separate multiple paths. ACIF searches the paths in the order in which they are specified. For example, `\acif\resources` is searched first in the following path list:

```
FDEFLIB=\acif\resources;\download\resources;\my\secret\resources\
```

Keep in mind: The total number of all characters in the string of path names cannot exceed 4095 bytes.

For information about how InfoPrint Manager selects resources, see "Using ACIF in AIX and Windows" on page 17 or *InfoPrint Manager: Reference*.

z/OS

FDEFLIB=*dsname1***[,***dsname2***][,***dsname3...***]**

Specifies the data sets that compose the form definition library. You can specify a maximum of 16 data sets. For example:

```
FDEFLIB=SYS1.FDEFLIB,USER.FDEFLIB
```

This parameter also specifies the concatenation sequence when ACIF searches for a particular form definition. ACIF first looks for the resource in *dsname1*. If it cannot find the resource in *dsname1*, it continues the search with *dsname2*, and so on, until it locates the requested resource or exhausts the list of specified data sets.

If **USERLIB** is also specified, ACIF searches for the resource in the data sets specified in **USERLIB** before it searches the data sets identified in **FDEFLIB**.

Notes:

1. Data sets must be specified as fully qualified names without quotation marks.
2. If the libraries specified for **FORMDEF** are not specified in the same order that is used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, see *PSF for z/OS: Customization*.
3. For systems before MVS/DFP Version 2.3, data sets must be concatenated with the largest block size first.
4. **FDEFLIB** is a required parameter if **USERLIB** is not specified. If **FDEFLIB** is not specified, ACIF reports an error condition and ends processing.

VM

FDEFLIB=*filetype1***[,***filetype2* **][,***filetype3...***]**

Specifies the file types that define the form definition libraries. You can specify a maximum of eight file types. For example:

```
FDEFLIB=FDEF38PP,TEMPFDEF
```

This parameter also specifies the search order in which ACIF searches for a particular form definition. ACIF first looks for the resource with a file type of *filetype1*. If it cannot find the resource with a file type of *filetype1*, it continues the search with *filetype2*, and so on, until it locates the requested resource or exhausts the list of specified file types.

Notes:

1. File type values must conform to CMS naming conventions.
2. **FDEFLIB** is a required parameter if **USERLIB** is not specified. If **FDEFLIB** is not specified, ACIF reports an error condition and ends processing.

VSE

This parameter is not used for VSE. Form-definition resources are in the library that is defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, see *Print Services Facility/VSE: System Programming Guide*, S544-3665.

FIELDn

Specifies the data fields to be used to construct the indexing information. These data fields can be specified as literal values (constants) or ACIF can retrieve the data from the input records of the file. You can define a maximum of 16 fields (**FIELD1** through **FIELD16**).

FIELD*n*=**{***record*,*column*,*length***}** | **{***'literal value'* | **X***'literal value'***}**

The values are:

record

Specifies the relative record number from the indexing anchor record. When ACIF is indexing the file, it uses the information that is specified in the **TRIGGER***n* parameter to determine a page-group boundary. When all of the specified **TRIGGER***n* values are true, ACIF defines the indexing anchor record as the record where **TRIGGER1** is located. **TRIGGER1** becomes the reference point from which all indexing information is located. The supported range of values for *record* are ±0 to 255.

column

Specifies the byte offset from the beginning of the record. A value of “1” refers to the first byte in the record. For files that contain carriage control characters, column 1 refers to the carriage control. For those applications that use a specific carriage control character to define page boundaries (for example, skip to channel 1), consider defining the value of the carriage control character as one of the **TRIGGER***n* parameters. The supported range of values for *column* are 1 - 32756. If the specified value exceeds the physical length of the record, ACIF reports an error condition and ends processing.

length

Specifies the number of contiguous bytes (characters), starting at *column*, that composes this field. The supported range of values for *length* are 1 - 250.

The field can extend outside the record length, if the column where it begins lies within the record length. In this case, ACIF adds padding blanks (X'40') to complete the record. If the field begins outside the maximum length of the record, ACIF reports an error condition and ends processing.

literal value | **X***'literal value'*

Specifies the literal (constant) value of the **FIELD***n* parameter. The literal value can be 1 - 250 bytes in length (one hexadecimal literal value equals 2 bytes). ACIF does not do any validity checking on the actual content of the supplied data.

Note: The literal value can be specified as ASCII character data in AIX or Windows, EBCDIC character data in z/OS, VM or VSE, or hexadecimal data. However, if the input data file is *anything other than* ASCII in AIX or Windows or EBCDIC in z/OS, VM, or VSE, the value *must* be specified as hexadecimal data (otherwise, the comparisons between the input data file and what is coded in the **FIELD***n* parameter do not yield a match).

For example, to specify five fields in your print job, you can enter:
- `FIELD1=0,2,20`
- `FIELD2=5,5,10`
- `FIELD3=−15,30,5`
- `FIELD4='444663821'`
- `FIELD5=X'0001'`

In the example, the fields have these values:
- The first field is located in the indexing anchor record (**TRIGGER1**). The field is 20 bytes in length, starting at the second byte of the record.
- The second field is located five records down from the indexing anchor record. The field is 10 bytes in length, starting at the fifth byte of the record.
- The third field is located 15 records before the indexing anchor record. It is 5 bytes in length, starting at byte 30.
- The fourth and fifth fields are literal (constant) values. The fourth field is specified as character data; the fifth field is specified as hexadecimal data.

For more information about using literal values or data values for indexing, see “Indexing with literal values” on page 7 and “Indexing with data values” on page 7.

Notes:
1. ACIF allows fields to be defined but never referenced as part of an index. Because ACIF requires either a field or **TRIGGER** to appear on the first page of a logical document, unless the **INDEXSTARTBY** parameter is used, you can satisfy this requirement by defining a “DUMMY” field. This DUMMY field lets ACIF determine the beginning page of a logical document, but it is not used as part of an index. If you specify the **INDEXSTARTBY** parameter, start counting on the first page on which you have a valid field, not a DUMMY field.
2. ACIF requires that at least one **TRIGGER***n* or **FIELD***n* value appear within the page range that is specified by the **INDEXSTARTBY** parameter (unless **INDEXSTARTBY=0** is specified). If no **TRIGGER***n* or **FIELD***n* parameter is satisfied within the **INDEXSTARTBY** page range, ACIF stops processing and issues an error message. If you do not want ACIF to stop processing when it cannot find a group indexing field or when a file is empty, you must set the parameter to **INDEXSTARTBY=0** or specify **EXTENSIONS=EMPTYOK**.
3. At least one **TRIGGER***n* or **FIELD***n* value must exist on the first page of every unique page group. ACIF cannot detect an error condition if **TRIGGER***n* or **FIELD***n* is missing, but the output might be incorrectly indexed.

See Chapter 4, “Enhanced indexing parameters,” on page 83 for information about using the **FIELD***n* parameter with enhanced ACIF indexing.

FILEFORMAT

Specifies the format of the input file in AIX and Windows. If you do not specify the **FILEFORMAT** parameter, ACIF uses **STREAM** as the default.

The **FILEFORMAT** parameter does not apply to resources. Resource files are in MO:DCA-P or AFP data stream format, and ACIF automatically determines that the file is a resource.

FILEFORMAT={RECORD | RECORD,*n* | STREAM[,(NEWLINE={CR | LF | CRLF | X'*nnnn*'}[,*encoding*])]}

The values are:

RECORD
The input file is formatted in S/390® or System z® record format, where the first 2 bytes of each line, called the record descriptor word (RDW), specify the length of the line. Files with RECORD format typically are z/OS or VM files with a variable record format. These files are either NFS-mounted to AIX or Windows or sent by using Download for z/OS.

RECORD,*n*
The input file is formatted in such a way that each record (including AFP data stream and MO:DCA-P records) is a fixed length, *n* bytes long. The value of *n* is a number 1 - 32760, and specifies the fixed length of the record, including all control characters. The encapsulated size of the AFP structured field must be less than the size of *n*. Files with RECORD,*n* format typically come with fixed-length file attributes from a S/390 or System z host system, such as z/OS or VM.

STREAM
The input file has no length information; it is a stream of data that is separated by a newline character. The AFP portion of the input file has its length information encapsulated in the structured field. Files with STREAM format typically come from a workstation operating system, such as AIX, Windows, or DOS.

ACIF examines the first 6 bytes of the first line data record of the input file to determine whether the input file is ASCII or EBCDIC. If ACIF determines that the input file is ASCII, ACIF looks for the ASCII newline character (X'0A') to delimit the end of a record. If ACIF determines that the input file is EBCDIC, ACIF looks for the EBCDIC newline character (X'25') to delimit the end of a record. If the input record is MO:DCA-P, no newline character is required. ACIF does not include newline characters in the MO:DCA-P data stream that it produces.

Note: The default newline characters might be incorrect; therefore, to ensure correct formatting results, specify NEWLINE with the STREAM parameter.

NEWLINE={CR | LF | CRLF | X'*nnnn*'}[,*encoding*])
NEWLINE is an optional value of **FILEFORMAT** that is used only if STREAM is specified. You use NEWLINE to specify the characters and optional encoding for determining line breaks in the input data file. The newline character values are:

CR Carriage returns determine line breaks.

LF Line feeds determine line breaks.

CRLF Carriage returns followed by line feeds determine line breaks.

X'*nnnn*'
One-, 2-, or 4-byte hexadecimal characters determine line breaks.

encoding
One of these values, **ASCII**, **EBCDIC**, **UTF8**, or **UTF16**, indicates which hexadecimal strings ACIF uses to determine line breaks when CR, LF, or CRLF are specified (see Table 6). If the encoding value is UTF8 or UTF16 and the UDTYPE parameter is specified as UTF16 with the PPFA PAGEDEF command, ACIF checks for a Byte Order Mark (BOM) character and, if present, reverses the bytes in the delimiter characters for UTF-16 little endian data.

Note: Specify the value of the data ***before*** it is converted with a user exit. For example, if you are calling the **apka2e** user exit to convert ASCII data to EBCDIC, specify the encoding value as ASCII.

Table 6. Hexadecimal strings for encoding values

Encoding Value	CR	LF	CRLF
ASCII	X'0D'	X'0A'	X'0D0A'
EBCDIC	X'0D'	X'25'	X'0D25'
UTF8	X'0D'	X'0A'	X'0D0A'
UTF16 (big endian data)	X'000D'	X'000A'	X'000D 000A'
UTF16 (little endian data)	X'0D00'	X'0A00'	X'0D00 0A00'

You can use NEWLINE when ACIF's algorithm cannot determine the correct newline character (if blanks are at the beginning of the file, for instance), or you can use NEWLINE if you want to specify a newline character that is not the standard default. If NEWLINE is not specified, ACIF uses the algorithm that is specified under **FILEFORMAT=STREAM**. However, specifying NEWLINE is always preferable to having ACIF determine the correct default.

These examples show how to use NEWLINE:

```
FILEFORMAT=STREAM,(NEWLINE=X'0D0A')
FILEFORMAT=STREAM,(NEWLINE=X'000D000A')
FILEFORMAT=STREAM,(NEWLINE=CRLF,UTF16)
```

FONTECH

Indicates that ACIF processes 3800 (unbounded box) fonts in z/OS, VM, and VSE.

Note: The **FONTECH** parameter must be used with caution. Unbounded fonts are supported only by the IBM 3800 printer. They are not supported by any other printer or the AFP Workbench Viewer. Any resource object file that is archived has limited use. Unbounded box fonts cannot be used by InfoPrint Manager.

FONTECH=UNBOUNDED

Indicates that ACIF processes 3800 (unbounded box) fonts. Any value other than UNBOUNDED causes ACIF to issue an error message and end processing.

If you specify **FONTECH=UNBOUNDED** and **RESTYPE=FONT** or **RESTYPE=ALL**, ACIF reads unbounded box fonts and saves them in the resource object data set. However, the syntax of the unbounded box fonts is not checked. If there are errors in the AFP data stream that makes up the font, ACIF does not issue an error message.

You cannot mix unbounded box fonts and TrueType or OpenType fonts in the same document. Therefore, if you specify **FONTPATH** and **USERPATH**, ACIF ignores them when **FONTECH=UNBOUNDED** is specified.

FONTLIB

Specifies the location of FOCA fonts, including AFP extended code page fonts. AFP extended code page fonts contain EBCDIC or ASCII encodings and can contain the Unicode equivalent value. **FONTLIB** is not used to specify directories for TrueType and OpenType fonts. Instead, use the **FONTPATH** or **USERPATH** parameter.

Note: ACIF assumes that FOCA fonts are named according to the suggested IBM naming conventions in Table 10 on page 233. If the naming conventions are not followed, you might get unexpected results, such as a character rotation that you do not expect.

AIX and Windows

FONTLIB=*pathlist*

Specifies the paths where FOCA fonts are installed. AFP extended code page fonts have a .ECP file extension.

The value is:

pathlist

Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows to separate multiple paths. ACIF searches the paths in the order in which they are specified. For example, `\acif\resources` is searched first in the following path list:

```
FONTLIB=\acif\resources;\download\resources;\my\secret\resources\
```

Keep in mind: The total number of all characters in the string of path names cannot exceed 4095 bytes.

For information about how InfoPrint Manager selects resources, see "Using ACIF in AIX and Windows" on page 17 or *InfoPrint Manager: Reference*.

z/OS

FONTLIB=*dsname1* **[,***dsname2***][,***dsname3...***]**

Specifies the data sets that contain the FOCA fonts. You can specify a maximum of 16 data sets. For example:

```
FONTLIB=SYS1.FONTLIB,USER.FONTLIB
```

This parameter also specifies the concatenation sequence when ACIF searches for a particular font resource. ACIF first looks for the resource in *dsname1*. If it cannot find the resource in *dsname1*, it continues the search with *dsname2*, and so on, until it either locates the requested resource or exhausts the list of specified data sets.

If **USERLIB** is also specified, ACIF searches for the resource in the data sets specified in **USERLIB** before it searches the data sets identified in **FONTLIB**.

Notes:

1. Data sets must be specified as fully qualified names without quotation marks.
2. If the libraries specified for **FONTLIB** are not specified in the same order that is used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, see *PSF for z/OS: Customization*.
3. For systems before MVS/DFP Version 2.3, data sets must be concatenated with the largest block size first.
4. This parameter is required if font retrieval is requested and **USERLIB** is not specified, or if **MCF2REF=CPCS** and any coded fonts are referenced in the input file or in an overlay. The **RESTYPE** parameter determines whether fonts are to be retrieved for inclusion in the resource data set. If this parameter is not specified, and font retrieval is requested or a coded font is referenced, ACIF reports an error condition and ends processing.

VM

FONTLIB=*filetype1***[,***filetype2***][,***filetype3...***]**

Specifies the file types that define the FOCA raster or outline font libraries. If your page definition or AFP input file refers to outline fonts on the Map Coded Font (MCF) structured fields, include an outline font library in the search order.

You can specify a maximum of eight file types. For example:

```
FONTLIB=FONT3820,TESTFONT
```

This parameter also specifies the search order when ACIF searches for a particular font resource. ACIF first looks for the resource in *filetype1*. If ACIF cannot find the resource with a file type of *filetype1*, it continues the search with *filetype2*, and so on, until it either locates the requested resource or exhausts the list of specified file types.

Notes:

1. File type values must conform to CMS naming conventions.
2. This parameter is required if font retrieval is requested and **USERLIB** is not specified, or if **MCF2REF=CPCS** and any coded fonts are referenced in the print file or in an overlay. The **RESTYPE** parameter determines whether fonts are to be retrieved for inclusion in the resource file. If this parameter is not specified, and font retrieval is requested or a coded font is referenced, ACIF reports an error condition and ends processing.

VSE

This parameter is not used for VSE. Font resources are in the library that is defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, see *Print Services Facility/VSE: System Programming Guide*, S544-3665.

FONTPATH

Specifies the system font path library directories in which TrueType and OpenType fonts and AFP extended code page fonts are stored. TrueType and OpenType fonts are Unicode-enabled AFP fonts that are not defined by FOCA. AFP extended code page fonts are FOCA fonts that contain EBCDIC or ASCII encodings and can contain the Unicode equivalent value. AFP extended code page fonts have a .ECP file extension. This parameter is not supported for VM and VSE; if specified, you see an error message.

FONTPATH=*pathlist*

The value is:

pathlist

Any valid search path. You must use a colon (:) in AIX and z/OS or a semicolon (;) in Windows to separate multiple paths. For example:

AIX or Windows

```
acif inputdd=INFILE outputdd=OUTFILE pagedef=PAGTRUE formdef=F1A10110 \
fontpath=/u/fonts/truetype:/u/fonts/truetype/local
```

Note: The backslash (\) tells AIX to continue reading the command from the next line. In Windows, the backslash is not valid; therefore, the command parameters must be on one continuous line.

z/OS

```
INPUTDD=INFILE
OUTPUTDD=OUTFILE
PAGEDEF=PAGTRUE
FORMDEF=F1A10110
FONTPATH='/u/fonts/truetype:/u/fonts/truetype/local/'
```

Note: To continue a *pathlist* on multiple lines in a parameter file, type the *pathlist* to the last character of the first line and then continue typing in the first column of the next line.

ACIF searches the paths in the order in which they are specified.

Keep in mind: The total number of all characters in the string of path names cannot exceed 4095 bytes.

For more information about how ACIF processes resources such as TrueType and OpenType fonts, see Appendix B, "Processing resources installed with resource access tables," on page 217.

FORMDEF

Specifies the file name (in AIX, Windows, or VM) or the member name (in z/OS or VSE) of the form definition. A form definition defines how a page of data is placed on a form, the number of copies of a page, any modifications to that group of copies, the paper source, and duplexing. ACIF uses a form definition only at print time to retrieve resources; it does not use a form definition at transform time to convert data streams.

| **FORMDEF={***fdefname* **|** **DUMMY}**

The values are:

fdefname

Any valid form definition name. The *fdefname* can be 1 - 8 alphanumeric characters (a-z, A-Z, 0–9) and special characters (# $ @), including the

2-character prefix, if there is one. Unlike PSF for z/OS, PSF/VM, and PSF/VSE, ACIF does **not** require the name to begin with an F1 prefix; however, if the name does begin with F1, you cannot omit it. For example:

```
FORMDEF=F1USER10
```

Notes:

1. In AIX, the *fdefname* is case-sensitive.
2. If the file name of the form definition includes a file extension, do not use the file extension when you are specifying the form definition. For example, to use a form definition that is named **MEMO.FDEF38PP**, specify **FORMDEF=MEMO**.

DUMMY

ACIF requires a form definition to process the input file (even though the form definition is only used at print time). If you do not specify **FORMDEF**, the default is **DUMMY**, which indicates that ACIF uses the first inline form definition. If ACIF cannot find an inline form definition, it reports an error and ends processing.

If you specify **FORMDEF=DUMMY** but the file does not include an inline form definition, ACIF looks for a form definition named **DUMMY**. If ACIF cannot find a form definition that is named **DUMMY**, it reports an error and ends processing.

Note: **DUMMY** must be specified in all uppercase letters.

The form definition that you use can be found in one of these locations:

Inline in the file

A form definition can be an inline resource in all data formats except XML. (XML data cannot have carriage control characters, which are used to identify inline resources.) If the form definition is an inline resource, you must do these tasks:

1. Include an inline form definition in the file.
2. Specify **CC=YES** to indicate that the file contains carriage control characters. If the length of the records in the form definition is less than or equal to the logical-record length defined for the file, you can specify fixed-length records for the record format. If the length of the records in the form definition is greater than the logical-record length defined for the file, you must specify:
   - Variable length records in z/OS or VSE for the record format (variable blocked with ANSI carriage control characters [VBA] or variable blocked with machine carriage control characters [VBM])
   - Variable length records in VM for the record format
3. Specify **FORMDEF** with one of these values:

   fdefname

   The name of an inline form definition. If the name specified in the **FORMDEF** parameter does not match the name of an inline form definition, ACIF looks for the form definition in a **USERLIB** or **FDEFLIB** path, or a VSE library.

   DUMMY

   If the file does not include an inline form definition, ACIF looks for the form definition named **DUMMY**. If ACIF cannot find a form definition that is named **DUMMY**, it reports an error and ends processing.

| **Note:** **DUMMY** must be specified in all uppercase letters.

An input file can contain multiple form definitions, but only one form definition can be used for printing. If a file contains more than one inline form definition, and you specify **FORMDEF=***fdefname*, ACIF uses the first inline form definition named *fdefname*. If a file contains more than one inline form definition and you specify **FORMDEF=DUMMY**, ACIF uses the first inline form definition in the input file. By changing the form definition name in the **FORMDEF** parameter on different printing jobs, you can test different form definitions.

AIX or Windows directory, or z/OS or VM library

Use the **USERLIB** or **FDEFLIB** parameter to specify the path to the file or the data sets.

In AIX, use one of these examples:

-
  ```
  formdef=memo
  userlib=/usr/afp/resources
  ```

-
  ```
  formdef=memo
  fdeflib=/usr/lib/formdefns
  ```

In Windows, use this example:

```
formdef=memo
userlib=\install_directory\resources
```

In z/OS or VM, use one of these examples:

-
  ```
  FORMDEF=MEMO
  USERLIB=USER.RESOURCES
  ```

-
  ```
  FORMDEF=MEMO
  FDEFLIB=USER.FORMDEFNS
  ```

VSE library

The **// LIBDEF PHASE,SEARCH=(...) DLBL** JCL statement references the VSE library.

GROUPNAME

Specifies which of the eight possible **INDEX** values are used as the group name for each index group. Using a unique index value for the group name is suggested. The intent is to have a unique group name for every group ACIF produces in the output file. The value includes the FIELD definitions from the **INDEX** parameter but not the attribute name. ACIF uses this parameter only when the file is indexed. The AFP Workbench Viewer displays this value along with the attribute name and index value. You can use the group name to select a group of pages to be viewed.

GROUPNAME={INDEX1 | INDEX*n*}

The values are:

INDEX1

ACIF uses the value of **INDEX1** for the group name.

INDEX*n*

ACIF uses the value of the specified **INDEX** (**INDEX1**, **INDEX2**, **INDEX3**,...**INDEX8**) for the group name.

If **GROUPNAME** is not specified, ACIF uses **INDEX1** as the default.

See Chapter 4, "Enhanced indexing parameters," on page 83 for information about using group indexes and triggers with enhanced ACIF indexing.

IMAGEOUT

Specifies the format in which ACIF saves IM1 image data in the output document. IM1 images can be saved as they are in the input file or converted to uncompressed Image Object Content Architecture (IOCA) images.

Most printers support both IM1 and IOCA image formats, but IM1 images cannot be rotated or rescaled correctly at different printer resolutions. Print servers, such as PSF, convert IM1 images to uncompressed IOCA when the IM1 image resolution differs from the actual printer resolution. Because ACIF does not know what printer the output might be printed on, by default it converts IM1 images to uncompressed IOCA.

Because uncompressed IOCA images are often greater in size than the original IM1 images, printer performance can be slower. If you have problems with printer performance, specify **IMAGEOUT=ASIS** so the IM1 images are not converted to IOCA. Also, if you are using the VSE operating system, specify **IMAGEOUT=ASIS** to avoid out-of-storage conditions.

IMAGEOUT={ASIS | IOCA}

The values are:

ASIS

Specifies that ACIF produce all IM1 image data in the same format as in the input file. Use this value when you are archiving or viewing images, for better printer performance, or when you are using VSE.

IOCA

Specifies that ACIF produce all IM1 image data in uncompressed IOCA format.

If **IMAGEOUT** is not specified, ACIF uses **IOCA** as the default.

INDEXn

Specifies the content of the indexing tags for the entire file. A maximum of eight indexes can be defined (**INDEX1**, **INDEX2**,... **INDEX8**) and each index can be made up of one or more **FIELD** definitions.

INDEX*n*={'*attributename*' | X'*attributename*'}{,FIELD*n*[,FIELD*n*...]}

Valid components of the **INDEX*n*** parameter are:

'attributename' **|** **X***'attributename'*

Specifies a user-defined attribute name to be associated with the actual index value. The attribute name is a label for the actual index value. For example, assume that **INDEX1** is a person's bank account number. The string 'Account Number' would be a meaningful attribute name. The value of **INDEX1** would be the account number (for example, 1234567). The attribute name is a string 1 - 250 bytes in length. ACIF does not do any validity checking on the contents of the attribute name.

Note: The attribute name can be specified as ASCII character data in AIX or Windows, EBCDIC character data in z/OS, VM or VSE, or hexadecimal data. However, if the input data file is *anything other than* ASCII in AIX or Windows or EBCDIC in z/OS, VM, or VSE, the value *must* be specified as hexadecimal data.

FIELD*n*[,FIELD*n*...]

Specifies one or more **FIELD*n*** parameters that compose the index value. A maximum of 16 **FIELD***n* parameters can be specified. If more than one **FIELD***n* parameter is specified, ACIF concatenates them into one physical string of data. No delimiters are used between the concatenated fields. Because an index value has a maximum length of 250 bytes, the total of all specified **FIELD***n* parameters for a single index cannot exceed this length. ACIF reports an error condition and ends processing if this error occurs.

If literal values (constants) are specified for every index, ACIF treats the entire file as one page group and uses this information to index the document. ACIF reports an error condition and ends processing if literal values are specified for all **INDEX***n* parameters and if any **TRIGGER***n* parameters are also specified.

For **FIELD***n* parameters that specify data values within the file, ACIF determines the actual location of the indexing information that is based on the indexing anchor record, set by the **TRIGGER***n* parameters.

A valid set of index parameters comprises either of these:
- FIELD definitions that contain only literal values (constant data).
- FIELD definitions that contain both literal values and application data (data fields in the print file).

You can also specify the same **FIELD***n* parameters in more than one **INDEX***n* parameter.

Note: If one or more **TRIGGER***n* parameters are specified (that is, ACIF indexes the file), at least one **INDEX***n* parameter must be specified, and that index must comprise at least one **FIELD***n* parameter value that is not a literal. ACIF reports an error condition and ends processing if this rule is not satisfied.

The following example specifies that the first index tag for the patent number is made up of the literal character string '1234567' and the second index tag for the employee name is made up of fields within the file records:

```
FIELD1='1234567'
FIELD2=0,10,20
FIELD3=0,25,20
INDEX1='Patent Number',FIELD1
INDEX2='Employee Name',FIELD2,FIELD3
```

The next example specifies both index tags as literal values. The entire file is indexed by using these two values. The resulting index object file contains only one record in this case.

```
FIELD1='123456'
FIELD2='444556677'
INDEX1='Account Number',FIELD1
INDEX2='Social Security Number',FIELD2
```

Note: The preceding examples are based on character input data. If the input data was *not* ASCII in AIX or Windows or EBCDIC in z/OS, VM, or VSE, the literal values that are used in these examples would be expressed in hexadecimal strings. For an AIX example that uses hexadecimal strings, see Figure 15 on page 106.

See Chapter 4, “Enhanced indexing parameters,” on page 83 for information about using the **INDEX***n* parameter with enhanced ACIF indexing.

INDEXDD

Specifies the name for the index object file.

AIX and Windows

INDEXDD={INDEX | *filename*}
Specifies the name or the full path name for the index object file. When ACIF is indexing the file, it writes indexing information in the file with this name. The values are:

INDEX
ACIF uses **INDEX** as the name for the index object file.

filename
A character string that contains only those alphanumeric characters that are supported in AIX and Windows file names.

If you specify the file name without a path, ACIF puts the index object file into your current directory. If **INDEXDD** is not specified, ACIF uses **INDEX** as the default file name.

z/OS and VM

INDEXDD={INDEX | *ddname*}
Specifies the DD name for the index object file. The DD name is a 1- to 8-byte character string that contains only those alphanumeric characters that are supported in the operating environment. When ACIF is indexing the file, it writes indexing information to this DD name. These DCB characteristics are suggested for the file:

- A block size of 32760
- A maximum record length of 32756

  If a record length other than 32756 is specified, ACIF might produce a record of length greater than what is allowed by the INDEX DD statement. If that happens, ACIF ends processing abnormally.
- Variable blocked format
- Physical sequential format

If **INDEXDD** is not specified, ACIF uses **INDEX** as the default DD name.

VSE

INDEXDD={INDEX | *filename* (DEVT=TAPE | DISK)}
Specifies the file name and device type that appears on the DLBL or TLBL JCL statement. The file name is a 1- to 7-byte character string that contains only those alphanumeric characters that are supported in VSE. The device type is either **TAPE** or **DISK**. These are the DTF characteristics for the file:

- A block size of 32760
- A maximum record length of 32756

  If a record length other than 32756 is specified, ACIF might produce a record of length greater than what is allowed by the DLBL or TLBL JCL statement. If that happens, ACIF ends processing abnormally.
- Variable blocked format
- Assigned to programmer logical unit 009

If **INDEXDD** is not specified, ACIF uses **INDEX** as the default file name and **DISK** as the default device type.

INDEXOBJ

Specifies the type of information ACIF puts in the index object file.

INDEXOBJ={GROUP | ALL | NONE | BDTLY}

The values are:

GROUP
: ACIF places only group-level entries into the index object file, which saves space.

ALL
: ACIF places both page-level and group-level entries into the index object file. Select **ALL** if you are indexing a file for use with the AFP Workbench Viewer application.

NONE
: ACIF suppresses the collection of all index-level information. Select **NONE** if you do not require an external index file. Selecting NONE also reduces ACIF storage requirements.

BDTLY
: ACIF passes all Begin Document (BDT) and End Document (EDT) structured field pairs from the MO:DCA-P input file to the output data stream in the same order they are found without creating any additional BDT/EDT pairs. After the ACIF output goes to PSF for printing, the printer uses the BDT/EDT pairs to indicate document boundaries for finishing (such as stapling). If **BDTLY** is not specified, ACIF normally removes multiple BDT and EDT structured fields from the input file and generates a single BDT/EDT structured field pair for the entire output. This situation is because MO:DCA-P indexes are relative to the BDT structured field.

Notes:

1. This value is not valid when the input file is line data because line data does not contain BDT and EDT structured fields.
2. The index object file that is created is suitable for printing, but must not be used with indexing because the resulting index is not MO:DCA-P compliant and might not be processed correctly by programs that use the index.

If this parameter is not specified, ACIF uses **GROUP** as the default.

INDEXSTARTBY

Specifies the output page number by which ACIF must find a group indexing field, if ACIF is indexing the file.

Keep in mind: GROUP, RECORDRANGE, and FLOAT triggers apply only if you are using enhanced indexing. A group indexing field is based on a GROUP or RECORDRANGE trigger, not on a FLOAT trigger.

INDEXSTARTBY={1 | *nn*}

The values are:

1 Specifies that ACIF must find a group index on the first page.

nn Specifies the output page number (0–99) by which ACIF must find the group index criteria specified. **0** indicates that there is no limit to the page where ACIF must find a group indexing field.

This parameter is helpful if, for example, your file contains header pages. If your file contains two header pages, you can specify a page number that is one greater than the number of header pages (**INDEXSTARTBY=3**).

If ACIF does not find a group indexing field before the page number specified in the **INDEXSTARTBY** parameter, it issues a message and stops processing. If you do not want ACIF to stop processing when it cannot find a group indexing field or when a file is empty, you must set the parameter to **INDEXSTARTBY=0** or specify **EXTENSIONS=EMPTYOK**.

INDXEXIT

Specifies the 1- to 8-byte character name of the index record exit program.

AIX and Windows

`INDXEXIT=`*`programname`*

ACIF calls this program for every record (structured field) it writes in the index object file (specified with the **INDEXDD** parameter). If you specify the program file name without a path, ACIF searches for the exit program in the paths that are specified by the **PATH** environment variable. If this parameter is not specified, ACIF does not use an index record exit program. The value is:

`programname`

Any valid index record exit program name. The exit program name is case-sensitive.

z/OS, VM, and VSE

`INDXEXIT=`*`modulename`*

ACIF loads this module name during initialization and then calls for every record (structured field) it writes to the index object file (specified with the **INDEXDD** parameter). If this parameter is not specified, no index record exit is used. For more detailed information, see “Index record exit” on page 126.

INPCCSID

Specifies a valid coded character set identifier (CCSID) for the input code page you want to convert to another CCSID. This parameter can be used by an input record exit program, such as **apka2e** or **asciinpe**, to translate input data streams (see “Using ACIF user input record exits in AIX and Windows” on page 125 for more information).

`INPCCSID=`*`ccsid`*

The value is:

`ccsid`

Any valid CCSID, which is a 3- to 5-character decimal value in the range 00000 - 65535 that is registered by the Character Data Representation Architecture (CDRA). You can replace leading zeros with spaces.

For information about CCSIDs, see *CDRA Reference and Registry*, SC09-2190.

INPEXIT

Specifies the 1- to 8-byte character name of the input record exit program.

AIX and Windows

`INPEXIT=`*`programname`*

ACIF calls this program for every record (every line) it reads from the input file (specified with the **INPUTDD** parameter). If you specify the file name without a path, ACIF searches for the exit program in the paths that are specified by the **PATH** environment variable. If you do not specify this parameter, ACIF does not use an input record exit program. The value is:

programname
: Any valid input record exit program name. The exit program name is case-sensitive.

If the input file is unformatted ASCII, but the fonts you are using contain EBCDIC, not ASCII, code points (for example, you specify **CHARS=GT15**), you can specify one of these exit programs that are supplied with InfoPrint Manager:

/usr/lpp/psf/bin/apka2e (AIX) or \*install_directory*\\exits\\acif\\apka2e.dll (Windows)
: Converts ASCII stream data to EBCDIC stream data. You can also convert encoded data to another coded character set identifier (CCSID) if you specify the **INPCCSID** and **OUTCCSID** parameters.

/usr/lpp/psf/bin/asciinp (AIX) or \*install_directory*\\exits\\acif\\asciinp.dll (Windows)
: Converts unformatted ASCII data that contains carriage returns and form feeds into a record format that contains an ANSI carriage control character. This exit encodes the ANSI carriage control character in byte 0 of every record.

/usr/lpp/psf/bin/asciinpe (AIX) or \*install_directory*\\exits\\acif\\asciinpe.dll (Windows)
: Converts unformatted ASCII data into a record format in the same way as **asciinp**, and then converts the ASCII stream data to EBCDIC stream data. You can also convert encoded data to another coded character set identifier (CCSID) if you specify the **INPCCSID** and **OUTCCSID** parameters.

If your input file uses fonts that have ASCII code points (such as **CHARS=H292**), you should *not* use the **apka2e** or **asciinpe** exit programs. However, if your unformatted ASCII file contains carriage returns and form feeds, you might want to specify the **asciinp** exit program that is supplied with InfoPrint Manager.

z/OS, VM, and VSE

INPEXIT=*modulename*
: ACIF loads this module name during initialization and then calls for every input record it reads from the input file (specified with the **INPUTDD** parameter). If this parameter is not specified, no input record exit is used. See "Input record exit" on page 122 for more detailed information.

INPUTDD

Specifies the name of the input file.

AIX and Windows

INPUTDD={STDIN | *filename*}
: Specifies the full path name of the input file that ACIF processes. If you do not specify **INPUTDD**, ACIF uses **STDIN** as the default.

z/OS and VM

INPUTDD={INPUT | *ddname*}
: Specifies the DD name for the file ACIF processes. The DD name is a 1- to 8-byte character string that contains only those alphanumeric characters that are supported in the operating environment. When ACIF processes a file, it reads from this DD name.

If **INPUTDD** is not specified, ACIF uses **INPUT** as the default DD name.

VSE

INPUTDD={INPUT | *filename* (LRECL=*nnnn*,BLKSIZE =*nnnn*,RECFM=F|FB|V|VB,DEVT=TAPE | DISK)}

Specifies the file name and file characteristics that appear on the DLBL or TLBL JCL statement. The file name is a 1- to 7-byte character string that contains only those alphanumeric characters that are supported in the operating environment.

The values are:

INPUT
: ACIF uses **INPUT** as the name for the input file.

filename
: A character string that contains only those alphanumeric characters that are supported in VSE file names.

LRECL=*nnnn*
: Specifies the record length of the input data set.

BLKSIZE=*nnnn*
: Specifies the block size of the input data set.

RECFM=F|FB|V|VB
: Specifies the record format of the input data set.

F	Fixed
FB	Fixed Block
V	Variable
VB	Variable Block

DEVT=TAPE | DISK
: Specifies the device type, either **TAPE** or **DISK**.

Note: ACIF supports SAM or VSAM-managed SAM. It does not support VSAM ISDS, ESDS, or RRDS.

If **INPUTDD** is not specified, ACIF uses these default values:
- **INDEX** for the file name
- 133 bytes for the record length
- Unblocked records
- **F** for the record format
- **DISK** as the default device type
- Assigned to programmer logical unit 006

INSERTIMM

Specifies whether ACIF is to insert an Invoke Medium Map (IMM) structured field before the first Begin Page (BPG) structured field of every named page group.

INSERTIMM={YES | NO}

The values are:

YES
Specifies that ACIF inserts an IMM before the first BPG structured field in the named page group if no IMM was encountered within the named page group.

NO Specifies that an IMM is not inserted before the first BPG structured field.

If this parameter is not specified, ACIF uses **NO** as the default.

MCF2REF

Specifies the way ACIF builds the Map Coded Font Format 2 (MCF-2) structured field in the OUTPUT file and the RESOBJ file.

MCF2REF={CPCS | CF}
The values are:

CPCS
ACIF uses the names of the code page and character set to build the MCF-2 structured field. ACIF opens and reads the contents of all coded fonts that are specified in MCFs in the input file or input resources.

CF ACIF uses the name of the coded font to build the MCF-2 structured field. This value is recommended when you are processing DBCS fonts. Specifying **CF** improves ACIF performance because, if **RESTYPE=FONT** or **RESTYPE=ALL** is not specified, ACIF does not have to read the coded fonts from the font library.

If this parameter is not specified, ACIF uses **CPCS** as the default.

MSGDD

Specifies the name of the error message file.

AIX and Windows

MSGDD={STDERR | *filename***}**
Specifies the name or the full path name of the file where ACIF writes error messages. If you specify the file name without a path, ACIF puts the error file into your current directory.

If **MSGDD** is not specified, ACIF uses **STDERR** as the default for its message output.

z/OS and VM

MSGDD={SYSPRINT | *ddname***}**
Specifies the DD name for the file where ACIF writes error messages. The DD name is a 1- to 8-byte character string that contains only those alphanumeric characters that are supported in the operating environment. When ACIF processes a file, it writes to the DD name.

If **MSGDD** is not specified, ACIF uses **SYSPRINT** as the default DD name.

OBJCONLIB

Specifies the location where object container setup files and resources are stored. Object container resources contain non-OCA data objects, such as color mapping tables (CMT), Encapsulated PostScript (EPS), microfilm setup files, Portable Document Format (PDF) objects, and TIFF images.

AIX and Windows

OBJCONLIB=*pathlist*

Specifies the directories in which object container files are stored.

The value is:

pathlist

Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows to separate multiple paths. ACIF searches the paths in the order in which they are specified. For example, `\acif\resources` is searched first in the following path list:

```
OBJCONLIB=\acif\resources;\download\resources;\my\secret\resources\
```

Keep in mind: The total number of all characters in the string of path names cannot exceed 4095 bytes.

For information about how InfoPrint Manager selects resources, see "Using ACIF in AIX and Windows" on page 17 or *InfoPrint Manager: Reference*.

z/OS

OBJCONLIB=*dsname1***[,***dsname2***][,***dsname3...***]**

Specifies the data sets that compose the object container library. You can specify a maximum of 16 data sets. For example:

```
OBJCONLIB=SYS1.OBJCONLIB,USER.OBJCONLIB
```

This parameter also specifies the concatenation sequence when ACIF searches for a particular file. ACIF first looks for a file in *dsname1*. If it cannot find the file in *dsname1*, it continues the search with *dsname2*, and so on, until it locates the requested file or exhausts the list of specified data sets.

If **USERLIB** is also specified, ACIF searches for the resource in the data sets specified in the **USERLIB** before it searches the data sets identified in **OBJCONLIB**.

Notes:

1. Data sets must be specified as fully qualified names without quotation marks.
2. If the libraries specified for **FONTLIB** are not specified in the same order that is used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, see *PSF for z/OS: Customization*.
3. For systems before MVS/DFP Version 2.3, data sets must be concatenated with the largest block size first.

VM

OBJCONLIB=*filetype1***[,***filetype2* **][,***filetype3...***]**

Specifies the file types that define the object container file library. You can specify a maximum of eight file types. For example:

```
OBJCONLIB=OBJ3820,TEMPOBJ
```

This parameter also specifies the search order in which ACIF searches for a particular file. ACIF first looks for the resource with a file type of *filetype1*. If it cannot find the resource with a file type of *filetype1*, it continues the search with *filetype2*, and so on, until it locates the requested resource or exhausts the list of specified file types.

Note: File type values must conform to CMS naming conventions.

VSE

This parameter is not used for VSE. Object container resources are in the library that is defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, see *Print Services Facility/VSE: System Programming Guide*, S544-3665.

OBJCPATH

Specifies the names of UNIX file system directories for object container files that contain data objects and color management resources (CMRs).

Note: This parameter applies only to objects that are installed with a resource access table (RAT). For more information about resources that are installed with RATs, see Appendix B, "Processing resources installed with resource access tables," on page 217.

OBJCPATH=*pathlist*

The value is:

pathlist

Any valid search path. You must use a colon (:) in AIX and z/OS or a semicolon (;) in Windows to separate multiple paths. For example:

AIX or Windows

```
acif inputdd=INFILE outputdd=OUTFILE pagedef=PAGTRUE formdef=F1A10110 \
objcpath=/jdoe/objects/color:/jdoe/objects/color/myobjects/
```

Note: The backslash (\) tells AIX to continue reading the command from the next line. In Windows, the backslash is not valid; therefore, the command parameters must be on one continuous line.

z/OS

```
INPUTDD=INFILE
OUTPUTDD=OUTFILE
PAGEDEF=PAGTRUE
FORMDEF=F1A10110
OBJCPATH='/jdoe/objects/color:/jdoe/objects/color/myobjects/'
```

Note: To continue a *pathlist* on multiple lines in a parameter file, type the *pathlist* to the last character of the first line and then continue typing in the first column of the next line.

ACIF searches the paths in the order in which they are specified.

Keep in mind: The total number of all characters in the string of path names cannot exceed 4095 bytes.

OUTCCSID

Specifies a valid coded character set identifier (CCSID) for the output code page that you want converted. This parameter can be used by an input record exit program, such as **apka2e** or **asciinpe**, to specify the encoding of the output data (see "Using ACIF user input record exits in AIX and Windows" on page 125 for more information).

OUTCCSID=*ccsid*

The value is:

ccsid
: Any valid CCSID, which is a 3- to 5-character decimal value in the range 00000 - 65535 that is registered by the Character Data Representation Architecture (CDRA). You can replace leading zeros with spaces.

For information about CCSIDs, see *CDRA Reference and Registry*, SC09-2190.

OUTEXIT

Specifies the name of the output record exit program.

AIX and Windows

OUTEXIT=*programname*

Specifies the name or the full path name of the output record exit program. ACIF calls this program for every output record (every line) it writes to the output document file (specified with the **OUTPUTDD** parameter). If you specify the file name without a path, ACIF searches for the file name in the paths that are specified by the **PATH** environment variable. If you do not specify this parameter, ACIF does not use an output record exit program. The value is:

programname
: Any valid output record exit program name. The exit program name is case-sensitive.

z/OS, VM, and VSE

OUTEXIT=*modulename*

Specifies the name of the output record exit program. This value is a 1- to 8-byte character name of the module ACIF loads during initialization and then calls for every output record it writes to the output document file (specified with the **OUTPUTDD** parameter). If this parameter is not specified, no output record exit is used. For more detailed information, see "Output record exit" on page 128.

OUTPUTDD

Specifies the name of the output document file.

AIX and Windows

OUTPUTDD={STDOUT | ***filename*}**

Specifies the name or the full path name of the output document file. If you specify the file name without a path, ACIF puts the output file into your current directory.

If **OUTPUTDD** is not specified, ACIF uses **STDOUT** as the default.

z/OS and VM

OUTPUTDD={OUTPUT | ***ddname*}**

Specifies the DD name for the output document file ACIF produces when it processes a file. The DD name is a 1- to 8-byte character string that contains only those alphanumeric characters that are supported in the operating environment. When ACIF processes a print file, it writes the resultant converted print data to this DD name. These DCB characteristics are suggested for the file:

- Variable blocked format
- A maximum record length of 32756

If a record length other than 32756 is specified, ACIF might produce a record of length greater than that which is allowed by the OUTPUT DD statement. If this happens, ACIF ends processing abnormally.

- A block size of 32760
- Physical sequential format

If **OUTPUTDD** is not specified, ACIF uses **OUTPUT** as the default DD name.

VSE

OUTPUTDD={OUTPUT| *filename* (DEVT=TAPE | DISK)}

Specifies the file name and file characteristics that appears on the DLBL or TLBL JCL statement. The file name is a 1- to 7-byte character string that contains only those alphanumeric characters that are supported in the operating environment. Characteristics of the file are:

- A block size of 32760
- A maximum record length of 32756

  If a record length other than 32756 is specified, ACIF might produce a record of length greater than what is allowed by the DLBL or TLBL JCL statement. If that happens, ACIF ends processing abnormally.
- Variable blocked format
- Assigned to programmer logical unit 007

If **OUTPUTDD** is not specified, ACIF uses **OUTPUT** as the default file name and **DISK** as the default device type.

OVLYLIB

Specifies the location of overlays.

AIX and Windows

OVLYLIB=*pathlist*

Specifies the directories in which overlays are stored. The value is:

pathlist

Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows to separate multiple paths. ACIF searches the paths in the order in which they are specified. For example, `\acif\resources` is searched first in the following path list:

```
OVLYLIB=\acif\resources;\download\resources;\my\secret\resources\
```

Keep in mind: The total number of all characters in the string of path names cannot exceed 4095 bytes.

You can specify the same value for the **OVLYLIB** parameter to ACIF as you specify to InfoPrint Manager. In this way, the search paths and resources that are used at transform time are identical to the search paths and resources that are used at print time.

For information about how InfoPrint Manager selects resources, see “Using ACIF in AIX and Windows” on page 17 or *InfoPrint Manager: Reference*.

z/OS

OVLYLIB=*dsname1***[,***dsname2***][,***dsname3...***]**

Specifies the data sets that compose the overlay library. You can specify a maximum of 16 data sets. For example:

```
OVLYLIB=SYS1.OVLYLIB,USER.OVLYLIB
```

The parameter also specifies the concatenation sequence when ACIF searches for a particular overlay resource. ACIF first looks for the resource in *dsname1.* If ACIF cannot find the resource in *dsname1*, it continues the search with *dsname2*, and so on, until it either locates the requested resource or exhausts the list of specified data sets.

If **USERLIB** is also specified, ACIF searches for the resource in the data sets specified in **USERLIB** before it searches the data sets identified in **OVLYLIB**.

Notes:

1. Data sets must be specified as fully qualified names without quotation marks.
2. If the libraries specified for **OVLYLIB** are not specified in the same order that is used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, see *PSF for z/OS: Customization*.
3. For systems before MVS/DFP Version 2.3, data sets must be concatenated with the largest block size first.
4. This parameter is required if overlay retrieval is requested and **USERLIB** is not specified. The **RESTYPE** value determines whether overlays are to be retrieved for inclusion in the resource data set. If this parameter is not specified, and overlay retrieval is requested, ACIF reports an error condition and ends processing.

VM

OVLYLIB=*filetype1***[,***filetype2***][,***filetype3...***]**

Specifies the file types that define the overlay libraries. You can specify a maximum of eight file types. For example:

```
OVLYLIB=OVLY38PP,TEMPOVLY
```

This parameter also specifies the search order when ACIF searches for a particular overlay resource. ACIF first looks for the resource with a file type of *filetype1*. If ACIF cannot find the resource with a file type of *filetype1*, it continues the search with *filetype2*, and so on, until it either locates the requested resource or exhausts the list of specified files.

Notes:

1. File types must conform to CMS naming conventions.
2. This parameter is required if overlay retrieval is requested and **USERLIB** is not specified. The **RESTYPE** parameter determines whether overlays are to be retrieved for inclusion in the resource file. If **OVLYLIB** is not specified, and overlay retrieval is requested, ACIF reports an error condition and ends processing.

VSE

This parameter is not used for VSE. Overlay resources are in the library that is defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, see *Print Services Facility/VSE: System Programming Guide*, S544-3665.

PAGEDEF

Specifies the file name (in AIX, Windows, or VM) or the member name (in z/OS or VSE) of the page definition. A page definition defines the page format that ACIF uses to compose line data, XML data, mixed-mode data, and unformatted ASCII data into pages; it is not used with MO:DCA-P data. Page definitions are only used by ACIF at transform time to convert data streams; they are not used by PSF and InfoPrint Manager to print the output that is produced by ACIF.

Note: Inline page definitions are removed from the output data, even if **RESTYPE=INLINE** or **RESTYPE=INLONLY**. Page definitions are not saved in the output resource library.

PAGEDEF=*pdefname*

The value is:

pdefname

Any valid page definition name. The *pdefname* can be 1 - 8 alphanumeric characters (a-z, A-Z, 0–9) and special characters (# $ @), including the 2-character prefix, if there is one. Unlike PSF for z/OS, PSF/VM, and PSF/VSE, ACIF does **not** require the name to begin with a P1 prefix; however, if the name does begin with P1, you cannot omit it. For example:

```
PAGEDEF=P1USER10
```

Notes:

1. In AIX, the *pdefname* is case-sensitive.
2. If the file name of the page definition includes a file extension, do not use the file extension when you are specifying the page definition. For example, to use a page definition that is named **MEMO.PDEF38PP**, specify **PAGEDEF=MEMO**.
3. ACIF does not require a page definition when it is indexing an AFP data stream file. However, ACIF does require a page definition to transform an input file that contains line data, XML data, mixed-mode data, or unformatted ASCII data into MO:DCA-P. If you are transforming such an input file and you do not specify the **PAGEDEF** parameter, or you specify **PAGEDEF** without a page definition file name, ACIF reports an error condition and ends processing.
4. If you use the **PAGEDEF** parameter to specify a page definition that names fonts, but you also use the **CHARS** parameter to specify fonts, the **CHARS** parameter is ignored. Therefore, if your page definition names fonts, do not use the **CHARS** parameter.
5. ACIF does not support a parameter equivalent to the **LINECT** parameter on the /*JOBPARM, /*OUTPUT, and OUTPUT JCL statements. The maximum number of lines that are processed on a page is defined in the page definition.

The page definition that you use can be found in one of these locations:

Inline in the file

A page definition can be an inline resource in all data formats except XML. (XML data cannot have carriage control characters, which are used to identify inline resources.) If the page definition is an inline resource, you must do these tasks:

1. Include an inline form definition in the file.
2. Specify **CC=YES** to indicate that the file contains carriage control characters. If the length of the records in the page definition is less than or equal to the logical-record length defined for the file, you can specify fixed-length records for the record format. If the length of the records in the page definition is greater than the logical-record length defined for the file, you must specify:

- Variable length records in z/OS or VSE for the record format (variable blocked with ANSI carriage control characters [VBA] or variable blocked with machine carriage control characters [VBM])
- Variable length records in VM for the record format

3. Specify **PAGEDEF** with one of these values:

   pdefname
   Indicates the name of the inline page definition. If the name specified in the **PAGEDEF** parameter does not match the name of an inline page definition, ACIF looks for the page definition in the **PAGEDEF** search path or uses the page definition from the resource library.

   DUMMY
   If the file does not include an inline page definition, ACIF looks for the page definition named **DUMMY**. If ACIF cannot find a page definition that is named **DUMMY**, it reports an error and ends processing.

   | **Note: DUMMY** must be specified in all uppercase letters.

An input file can contain multiple page definitions, but only one page definition can be used by ACIF. If a file contains more than one inline page definition, and you specify **PAGEDEF=***pdefname*, ACIF uses the first inline page definition named *pdefname*. If a file contains more than one inline page definition and you specify **PAGEDEF=DUMMY**, ACIF uses the first inline page definition in the input file. By changing the page definition name in the **PAGEDEF** parameter on different printing jobs, you can test different page definitions.

AIX or Windows directory, or a z/OS or VM library
Use the **USERLIB** or **PDEFLIB** parameter to specify the path to the file or the data sets.

In AIX, use one of these examples:

-
  ```
  pagedef=memo
  userlib=/usr/afp/resources
  ```

-
  ```
  pagedef=memo
  pdeflib=/usr/lib/pagedefns
  ```

In Windows, use this example:

```
pagedef=memo
userlib=\install_directory\resources
```

In z/OS or VM, use one of these examples:

-
  ```
  PAGEDEF=MEMO
  USERLIB=USER.RESOURCES
  ```

-
  ```
  PAGEDEF=MEMO
  PDEFLIB=USER.PAGEDEFNS
  ```

VSE library
The **// LIBDEF PHASE,SEARCH=(...) DLBL** JCL statement references the VSE library.

PARMDD

Specifies the name of the parameter file.

AIX and Windows

PARMDD=*filename*

Specifies the name or the full path name of the parameter file that contains ACIF parameters and values. This parameter is specified with the **acif** command. For example, to use a parameter file that is named PARMFILE, specify:

```
acif parmdd=PARMFILE
```

If you specify the file name without a path, ACIF searches for the file name in your current directory.

z/OS and VM

PARMDD={SYSIN | *ddname*}

Specifies the DD name for the parameter file that contains ACIF parameters and values. The DD name is a 1- to 8-byte character string that contains only those alphanumeric characters that are supported in the operating environment. This parameter is specified in an EXEC statement or on the command line.

If **PARMDD** is not specified, ACIF uses **SYSIN** as the default DD name.

The parameter file can contain a maximum of 100 records. If the file contains more than 100 records, ACIF issues an error message.

PDEFLIB

Specifies the location of page definitions.

AIX and Windows

PDEFLIB=*pathlist*

Specifies the directories in which page definitions are stored. The value is:

pathlist

Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows to separate multiple paths. ACIF searches the paths in the order in which they are specified. For example, \acif\resources is searched first in the following path list:

```
PDEFLIB=\acif\resources;\download\resources;\my\secret\resources\
```

Keep in mind: The total number of all characters in the string of path names cannot exceed 4095 bytes.

For information about how InfoPrint Manager selects resources, see “Using ACIF in AIX and Windows” on page 17 or *InfoPrint Manager: Reference*.

z/OS

PDEFLIB=*dsname1***[,***dsname2***][,***dsname3...***]**

Specifies the data sets that compose the page-definition library. You can specify a maximum of 16 data sets. For example:

```
PDEFLIB=SYS1.PDEFLIB,USER.PDEFLIB
```

This parameter also specifies the concatenation sequence when ACIF searches for a particular page definition. ACIF first looks for the resource in *dsname1*. If ACIF cannot find the resource in *dsname1*, it continues the search with *dsname2*, and so on, until it either locates the requested resource or exhausts the list of specified data sets.

If **USERLIB** is also specified, ACIF searches for the resource in the data sets specified in **USERLIB** before it searches the data sets identified in **PDEFLIB**.

Notes:

1. Data sets must be specified as fully qualified names without quotation marks.
2. If the libraries specified for **PDEFLIB** are not specified in the same order that is used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, see *PSF for z/OS: Customization*.
3. For systems before MVS/DFP Version 2.3, files must be concatenated with the largest block size first.
4. This parameter is required if the input file contains any line data and **USERLIB** is not specified. If this parameter is not specified and the input file contains line data, ACIF reports an error condition and ends processing.

VM

PDEFLIB=*filetype1***[,***filetype2* **][,***filetype3...***]**

Specifies the file types that define the page-definition libraries. You can specify a maximum of eight file types. For example:

```
PDEFLIB=PDEF38PP,TESTPDEF
```

This parameter also specifies the search order when ACIF searches for a particular **PAGEDEF** resource. ACIF first looks for the resource with a file type of *filetype1*. If ACIF cannot find the resource with a file type of *filetype1*, it continues the search with *filetype2*, and so on, until it either locates the requested resource or exhausts the list of specified files.

Notes:

1. The file types must conform to CMS naming conventions.
2. This parameter is required if the print file contains any line data and **USERLIB** is not specified. If this parameter is not specified, and the print file contains any line data, ACIF reports an error condition and ends processing.

VSE

This parameter is not used for VSE. Page-definition resources are in the library that is defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, see *Print Services Facility/VSE: System Programming Guide*, S544-3665.

PRMODE

Specifies the type of data in the input file and whether ACIF must do optional processing of that data.

PRMODE={SOSI1 | SOSI2 | SOSI3 | SOSI4 | *aaaaaaaa***}**

The values are:

SOSI1

Specifies that each shift-out, shift-in code is converted to a blank and a Set Coded Font Local text control. This SOSI1 data conversion is the same as the one done by PSF for z/OS, PSF/VM, and PSF/VSE.

SOSI2

Specifies that each shift-out, shift-in code is converted to a Set Coded Font

Local text control. This SOSI2 data conversion is the same as the one done by PSF for z/OS, PSF/VM, and PSF/VSE.

SOSI3
: Specifies that each shift-out character is converted to a Set Coded Font Local text control. Each shift-in is converted to a Set Coded Font Local Text control and two blanks. This SOSI3 data conversion is the same as the one done by PSF for z/OS.

SOSI4
: Specifies that each shift-out, shift-in code is skipped and not counted when offsets are calculated for the input file. SOSI4 is used when DBCS text is converted from ASCII to EBCDIC. When SOSI4 is specified, the page definition offsets are correct after conversion; therefore, the user does not need to account for SOSI characters when FIELD offsets are computed. The processing of shift-out and shift-in codes for SOSI4 is the same as for SOSI2.

aaaaaaaa
: Any 8-byte alphanumeric string. This value is supplied to all of the ACIF user exits. Using the **AFPDS** value indicates that the data contains MO:DCA-P structured fields.

Notes:

1. Do not specify a SOSI value if the line data contains UTF8 or UTF16 data.
2. For the SOSI processing to work correctly, the first font that is specified in the **CHARS** parameter (or in a font list in a page definition) must be a single-byte font, and the second font must be a double-byte font.

For more information about processing line data with SOSI controls, see *Advanced Function Presentation: Programming Guide and Line Data Reference*.

PSEGLIB

Specifies the location where page segments and BCOCA, GOCA, IOCA, and PTOCA objects are stored.

AIX and Windows

PSEGLIB=*pathlist*
: Specifies the directories in which page segment library files are stored. The value is:

pathlist
: Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows to separate multiple paths. ACIF searches the paths in the order in which they are specified. For example, `\acif\resources` is searched first in the following path list:

```
PSEGLIB=\acif\resources;\download\resources;\my\secret\resources\
```

Keep in mind: The total number of all characters in the string of path names cannot exceed 4095 bytes.

You can specify the same value for the **PSEGLIB** parameter to ACIF as you specify to InfoPrint Manager. In this way, the search paths and resources that are used at transform time are identical to the search paths and resources that are used at print time.

For information about how InfoPrint Manager selects resources, see "Using ACIF in AIX and Windows" on page 17 or *InfoPrint Manager: Reference*.

z/OS

PSEGLIB=*dsname1***[,***dsname2***][,***dsname3...***]**

Specifies the data sets that compose the page segment library. You can specify a maximum of 16 data sets. For example:

```
PSEGLIB=SYS1.PSEGLIB,USER.PSEGLIB
```

This parameter also specifies the concatenation sequence when ACIF searches for a particular page segment or BCOCA, GOCA, IOCA, or PTOCA object. ACIF first looks for the resource in *dsname1*. If it cannot find the resource in *dsname1*, it continues the search with *dsname2*, and so on, until it either locates the requested resource or exhausts the list of specified data sets.

If **USERLIB** is also specified, ACIF searches for the resource in the files that are specified in **USERLIB** before it searches the files identified in **PSEGLIB**.

Notes:

1. Data sets must be specified as fully qualified names without quotation marks.
2. If the libraries specified for **PSEGLIB** are not specified in the same order that is used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, see *PSF for z/OS: Customization*.
3. For systems before MVS/DFP Version 2.3, data sets must be concatenated with the largest block size first.
4. This parameter is required if page segment retrieval is requested and **USERLIB** is not specified. The **RESTYPE** value determines whether page segments are to be retrieved for inclusion in the resource data set. If this parameter is not specified, and page segment retrieval is requested, ACIF reports an error condition and ends processing.

VM

PSEGLIB=*filetype1***[,***filetype2***][,***filetype3...***]**

Specifies the file types that define the page segment libraries. You can specify a maximum of eight file types. For example:

```
PSEGLIB=PSEG38PP,PSEGTEST
```

This parameter also specifies the search order when ACIF searches for a particular page segment resource. ACIF first looks for the resource with a file type of *filetype1*. If it cannot find the resource with a file type of *filetype1*, it continues the search with *filetype2*, and so on, until it either locates the requested resource or exhausts the list of specified files.

Notes:

1. The file types must conform to CMS naming conventions.
2. This parameter is required if page segment retrieval is requested and **USERLIB** is not specified. The **RESTYPE** value determines whether page segments are to be retrieved for inclusion in the resource file. If this parameter is not specified, and page segment retrieval is requested, ACIF reports an error condition and ends processing.

VSE

This parameter is not used for VSE. Page-segment resources are in the library that is defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, see *Print Services Facility/VSE: System Programming Guide*, S544-3665.

RESEXIT

Specifies the name of the resource exit program.

AIX and Windows

RESEXIT=*programname*

Specifies the name or the full path name of the resource exit program, which ACIF calls each time that it attempts to retrieve a requested resource from a directory. If you specify the file name without a path, ACIF searches for the file name in the paths that are specified by the **PATH** environment variable. If you do not specify this parameter, ACIF does not use a resource exit program. The value is:

programname

Any valid resource exit program name. The exit program name is case-sensitive.

z/OS, VM, and VSE

RESEXIT=*modulename*

Specifies the name of the resource exit program. This value is a 1- to 8-byte character name of the module ACIF loads during initialization and then calls each time that it attempts to retrieve a requested resource from a library. If this parameter is not specified, no resource exit is used. For more detailed information, see "Resource exit" on page 130.

RESFILE

Specifies the format of the resource file that is created by ACIF in z/OS. This parameter is only used for z/OS. ACIF can create either a sequential data set or a partitioned data set (PDS) from the resources it retrieves from the PSF for z/OS resource libraries.

RESFILE={SEQ | PDS}

The values are:

SEQ

Creates a resource group that can be concatenated to the document file as inline resources.

The format of the resource file that is specified for TrueType and OpenType fonts must be **SEQ**.

PDS

Creates a member that can be placed in a user library or in a system library for use by PSF. The file that is created by selecting **PDS** cannot be concatenated to the document file and used as inline resources.

If this parameter is not specified, ACIF writes to the DD name specified in the **RESOBJDD** parameter, assuming a sequential format. For more information about the contents of the resource data set, see "Format of the resources file" on page 223.

The parameters that you use to allocate the **RESOBJDD** data set must be compatible with the value of the **RESFILE** parameter. For example, if **RESFILE=PDS**, then **DSORG=PO** must be specified in the DD statement of the data set named by the **RESOBJDD** parameter. In addition, the **SPACE** parameter must include a value for directory blocks, such as **SPACE=(12288,(150,15,15))**, in the DD statement of the data set named by the **RESOBJDD** parameter.

If **RESFILE=SEQ** is specified, then **DSORG=PS** must be specified in the DD statement of the data set named by the **RESOBJDD** parameter. In addition, the **SPACE** parameter must not include a directory value, as in **SPACE=(12288,(150,15))**, in the DD statement of the data set named by the **RESOBJDD** parameter. Failure to allocate the data set named by the **RESOBJDD** parameter in a manner compatible with the specification of the **RESFILE** parameter might result in a **RESOBJDD** data set that is unusable.

If **RESFILE** is not specified, ACIF uses **SEQ** as the default.

RESLIB

Specifies the paths for the system resource directories in InfoPrint Manager.

RESLIB=*pathlist*
The value is:

pathlist
Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows to separate multiple paths.

Keep in mind: The total number of all characters in the string of path names cannot exceed 4095 bytes.

System resource directories typically contain resources that are shared by many users. The directories can contain any AFP resources (fonts, page segments, overlays, page definitions, or form definitions). The directories can also contain objects that are installed with a resource access table (RAT), such as color management resources (CMRs) and data object resources. However, **RESLIB** is not used to specify directories for TrueType and OpenType fonts. Instead, use the **FONTPATH** or **USERPATH** parameter.

In most cases, you want ACIF to find the same resources that InfoPrint Manager uses when it prints the file. If so, the **RESLIB** paths must be the same as the paths specified with the **RESPATH** parameter to InfoPrint Manager.

For information about how InfoPrint Manager selects resources, see "Using ACIF in AIX and Windows" on page 17 or *InfoPrint Manager: Reference*.

RESOBJDD

Specifies the name of the resource file.

Note: If the input file specified with the INPUTDD parameter is empty and **EXTENSIONS=EMPTYOK**, ACIF does not produce a resource file.

AIX and Windows

RESOBJDD={RESOBJ | *filename*}
Specifies the name or the full path name for the resource file that ACIF writes data to. When ACIF processes a print file, it can optionally create a file that contains all or some of the resources that are required to print or view the file. The values are:

RESOBJ
ACIF writes the resource data in a file with this name.

filename
A character string that contains only those alphanumeric characters that are supported in AIX and Windows file names.

If you specify the file name without a path, ACIF puts the resource file into your current directory. If **RESOBJDD** is not specified, ACIF uses **RESOBJ** as the default file name.

z/OS and VM

RESOBJDD={RESOBJ | *ddname*}
Specifies the DD name for the resource file. When ACIF processes a print file, it can optionally create a file that contains all or some of the resources that are required to print or view the file. It then writes the resource data to this DD name. The DD name is a 1- to 8-byte character string that contains only those alphanumeric characters that are supported in the operating environment. These DCB characteristics are required for the file:

- Variable blocked format
- A maximum record length of 32756

  If a record length other than 32756 is specified, ACIF might produce a record of length greater than what is allowed by the **RESOBJDD** statement. If this situation happens, ACIF ends processing abnormally.
- A block size of 32760
- Physical, sequential format

If **RESOBJDD** is not specified, ACIF uses **RESOBJ** as the default DD name.

VSE

RESOBJDD={RESOBJ | *filename* (DEVT=TAPE | DISK)}
Specifies the file name and file characteristics that appears on the DLBL or TLBL JCL statement. The file name is a 1- to 7-byte character string that contains only those alphanumeric characters that are supported in the operating environment. The characteristics of the file are:

- A variable blocked file
- A maximum record length of 32756

  If a record length other than 32756 is specified, ACIF might produce a record of length greater than what is allowed by the DLBL or TLBL JCL statement. If this situation happens, ACIF ends processing abnormally.
- A block size of 32760
- Assigned to programmer logical unit 008

If **RESOBJDD** is not specified, ACIF uses **RESOBJ** as the default file name and **DISK** as the default device type.

RESTYPE

Specifies the type of AFP print resources ACIF retrieves from the resource directories or libraries for inclusion in the resource file (specified with the **RESOBJDD** parameter). (See Table 3 on page 17 for the order that ACIF searches for AFP resources.)

Note: All inline resources that match the type that is specified with **RESTYPE** are included in the resource file, regardless of whether they are used in the document. However, if you specify **EXTENSIONS=RESORDER**, only those resources that are used are written to the resource file.

RESTYPE={NONE | ALL | [FDEF][,PSEG][,OVLY][,FONT][,OBJCON][,BCOCA][,GOCA][,IOCA][,PTOCA][,CMRALL][,CMRGEN][,INLINE][,INLONLY]}

The values are:

NONE
Specifies that no resource file is created.

ALL
Specifies that all resources that are required to print or view the output document file (specified with the **OUTPUTDD** parameter) are included in the resource file.

Attention: Specifying this value can create large resource files, particularly when color management resources (CMRs) are included.

FDEF
Specifies that the form definition (specified with the **FORMDEF** parameter) that is used in processing the file is included in the resource file.

PSEG
Specifies that all page segments that are required to print or view the output document file are included in the resource file.

OVLY
Specifies that all overlays that are required to print or view the output document file are included in the resource file.

FONT
Specifies that all font character sets and code pages that are required to print or view the output file are included in the resource file. Also used for TrueType and OpenType fonts and specifies that all base fonts, linked fonts, and font collections that are required to print the output file be included in the resource file. If **MCF2REF=CF** is specified, ACIF also includes coded fonts in the resource file; otherwise, coded fonts are not included in the resource file.

Notes:

1. Specifying **RESTYPE=FONT** is not recommended with double-byte raster fonts because of the size and large number of library members that are needed to process double-byte raster fonts. If **RESTYPE=FONT** is specified, you might want to specify **MCF2REF=CF**, which can improve ACIF performance by reducing the number of font members ACIF processes.
2. When you specify **RESTYPE=FONT** with TrueType and OpenType fonts, the embed flag must be set "on" to save the font in the resource file. For more information, see *Using OpenType Fonts in an AFP System*.
3. ACIF wraps TrueType and OpenType fonts in MO:DCA-P structured fields when it saves them in the resource file.
4. When **EXTENSIONS=RESORDER** is specified with **RESTYPE=FONT**, TrueType and OpenType fonts that were originally inline in the input file are not saved in the resource library.
5. When **RESTYPE=FONT** is specified, ACIF checks to see whether a Map Data Resource (MDR) structured field setting requires that a requested data object font is inline in the input file resource group.

OBJCON
Specifies that all object container files requested by the input data stream be included in the resource file. These object container files include objects such as color mapping tables specified by the **COLORMAP** parameter, the COM setup file that is specified by the **COMSETUP** parameter, color management resources (CMRs), Encapsulated PostScript (EPS), Portable Document Format (PDF) objects, and TIFF images.

Note: When printing only one page from a multiple page object container file, all pages in the object container are still saved in the resource file.

BCOCA
Specifies that all BCOCA objects included by an IOB structured field that is required to print or view the output document file is included in the resource file.

GOCA
Specifies that all GOCA objects included by an IOB structured field that is required to print or view the output document file is included in the resource file.

IOCA
Specifies that all IOCA objects included by an IOB structured field that is required to print or view the output document file is included in the resource file.

PTOCA
Specifies that all PTOCA objects included by an IOB structured field that is required to print or view the output document file is included in the resource file.

CMRALL
Specifies that all CMRs required to print or view the output document file (except link CMRs) are included in the resource file. These CMRs include all CMRs referenced in the data stream, all CMRs referenced through a data object or color management resource access table (RAT), and all generic halftone and tone transfer curve CMRs. For more information about the RAT, see Appendix B, "Processing resources installed with resource access tables," on page 217.

CMRGEN
Specifies that all CMRs referenced in the data stream plus any non-device specific CMRs referenced through a data object or color management RAT (except link CMRs) are included in the resource file. With CMRGEN, the output that is generated by ACIF is not device-specific, unless the data stream explicitly references a device-specific CMR.

INLINE
When one or more resource object types are specified with **RESTYPE**, specifies that all inline resources that match the types are written to the output file in addition to the resource file. For example, **RESTYPE=FONT,PSEG,INLINE** causes any inline fonts and page segments to be written to the output file, in addition to writing all inline and library fonts and page segments to the resource file. The inline resources precede the document in the output file. For more information, see "Processing inline resources" on page 214.

INLONLY
Specifies that all inline resources contained in the input file are written to

the output file, regardless of resource type. ACIF searches only for resources that are inline, even if other **RESTYPE** values are specified. Also, no resource file is created, even if the **RESOBJDD** parameter is specified.

Note: If no form definition is found inline and because a form definition is always required to process the document, ACIF searches for the requested form definition in the libraries.

Because multiple resource types are contained in the font, object container, and page segment libraries, and ACIF does not enforce a prefix for the 8-character resource name, define a naming convention that identifies each type of resource in the library. IBM suggests that you use a 2-character prefix naming convention for 8-character resource names. Other resource types (coded fonts, form definitions, and page definitions) use required prefixes for identification. See *PSF for z/OS: User's Guide* for the required and IBM-recommended prefixes for resources.

ACIF supports the specification of BCOCA, CMRALL, CMRGEN, FDEF, FONT, GOCA, IOCA, INLINE, OBJCON, OVLY, PSEG, and PTOCA in any combination. For example, if you want to specify form definitions, page segments, and overlays as the resource types, you can enter **RESTYPE=FDEF,PSEG,OVLY** or **RESTYPE=OVLY,FDEF,PSEG**.

However, ALL, INLONLY, and NONE are order-dependent and override any individual resource types specified. If more than one is specified, the last one is used. For example, if you specify **RESTYPE=FDEF,INLONLY,PSEG,NONE,OVLY,ALL**, all resources are included.

Notes:

1. Not all **RESTYPE** values are supported in VM or VSE.
2. When you are creating AFP files to view on the AFP Workbench Viewer, do not specify **RESTYPE=FONT** or **RESTYPE=ALL**. The AFP Workbench Viewer uses font definition files for font substitution instead of retrieving fonts from a resource file when it displays documents. Therefore, you do not need to download fonts to the resource file, which is time-consuming and increases the number of bytes transmitted when the file is transferred to the workstation or archived.
3. If you have a resource type that you want saved in a resource file, and it is included in another resource type, you must specify both resource types. For example, if you request that only page segments be saved in a resource file, and the page segments are included in overlays, the page segments are not saved in the resource file because the overlays are not searched. In this case, you must request that both page segments and overlays be saved.
4. ACIF saves specified inline resources in the resource file, even if they are not needed to print the job. However, if you specify **EXTENSIONS=RESORDER**, ACIF saves only the inline resources that are actually needed to print the job. You can also use a resource exit to filter out any resources that you do not want included in the resource file (see "Resource exit" on page 130 for more information).

TRACE

Specifies that ACIF provides diagnostic trace information while it is processing the file.

Note: Tracing increases processor usage and can be turned off unless you need to do problem determination.

AIX and Windows

TRACE={YES | NO}
The values are:

YES
ACIF writes trace information to the file that is specified by the TRACEDD parameter.

NO ACIF does not produce diagnostic trace records.

z/OS

TRACE={YES | NO | PDS}
The values are:

YES
ACIF uses the facilities of the Generalized Trace Facility (GTF) to produce diagnostic trace records. ACIF writes GTF trace records with a user event ID of X'314'. To capture ACIF GTF records, GTF needs to be started with the option **TRACE=USRP**, and then modified with **USR=(314)**.

NO ACIF does not produce diagnostic trace records

PDS
ACIF writes trace information to the file specified by the TRACEDD parameter rather than producing a GTF trace.

TRACEDD

Specifies the name of the file where all ACIF trace information is written.

AIX and Windows

TRACEDD={TRACE | ***filename*****}**
Specifies the name or the full path name of the file where ACIF writes trace information when **TRACE=YES** is specified. If you specify the file name without a path, ACIF puts the trace file into your current directory.

If **TRACEDD** is not specified, ACIF uses **TRACE** as the default file name.

z/OS

TRACEDD={TRACE | ***ddname*****}**
Specifies the DD name of the file where ACIF trace information is written when **TRACE=PDS** is specified. The DD name is a 1- to 8-byte character string that contains only those alphanumeric characters that are supported in z/OS. The file that is specified must have these characteristics:
`DCB=(LRECL=121,RECFM=FB,DSORG=PS)`

If **TRACEDD** is not specified, ACIF uses **TRACE** as the default DD name.

TRC

Specifies whether the input file contains table reference characters (TRCs). In line data, you can use different fonts on different lines of a file by specifying a TRC at the beginning of each line after the carriage control character, if one is present.

Note: TRC characters can be used to map fonts in documents that reference either TrueType and OpenType fonts or FOCA fonts, but not a combination of the two.

For more information about TRCs, see *Advanced Function Presentation: Programming Guide and Line Data Reference*.

TRC={YES | NO}
The values are:

YES
The input file contains table reference characters.

NO The input file does not contain table reference characters.

Notes:

1. The order in which the fonts are specified in the **CHARS** parameter establishes which number is assigned to each associated TRC. For example, the first font specified is assigned “0”, the second font “1”, and so on.
2. If you specify **TRC=YES** but TRCs are not contained in the file, ACIF interprets the first character of each line (or second, if carriage control characters are used) as the font identifier. Consequently, the font that is used to process each line of the file might not be the one you expect and 1 byte of data is lost from each record.
3. If you specify **TRC=NO** or you do not specify **TRC** at all, but your line data contains a TRC as the first character of each line (or second if carriage control characters are used), ACIF processes the TRC as a text character in the output rather than using it as a font identifier.

TRIGGERn

Specifies the locations and values of data fields within the input file that are to be used to define indexing groups in the file. These data fields are referred to as “triggers” because their presence in the file triggers a processing action. A maximum of four **TRIGGER***n* parameters can be specified. The number of **TRIGGER***n* parameters that are required to uniquely identify the beginning of a group of pages within the file is a function of the complexity of the application output. **TRIGGER1** is special and each record in the file that contains this value is referred to as an indexing anchor record. The presence of a **TRIGGER***n* parameter causes ACIF to index the input file.

TRIGGER*n***={***record* **| *}{,***column* **| *}{,'***triggervalue***' | X'***triggervalue***'}**
Each **TRIGGER***n* parameter has three values:

record **| ***
Specifies the relative record number from the indexing anchor record (**TRIGGER1**). A value of * *must* be specified for **TRIGGER1** and cannot be specified for any other **TRIGGER***n* parameter; * indicates that every record is checked for the presence of the **TRIGGER1** value. After the **TRIGGER1** value is found, all other **TRIGGER***n* parameter values are specified as a relative offset from **TRIGGER1**. ACIF reports an error condition and ends processing if an * is specified with any **TRIGGER***n* parameter other than **TRIGGER1**. The supported range of values for record is 0 - 255.

column **| ***
Specifies the byte offset from the beginning of the record where the trigger value is located. This value can be specified in absolute terms (for example, 10), as 0, or as *. Specifying 0 or * results in ACIF scanning the record from left to right looking for the trigger value. A value of 1 refers to the first

byte in the record. For files that contain carriage control characters, column 1 refers to the carriage control character. The supported range of values for column is 1 - 32756. ACIF compares the trigger value to the input data. If the specified value exceeds the physical length of the record, ACIF considers the comparison “false” and continues processing.

'triggervalue' | **X***'triggervalue'*
Specifies the actual alphanumeric or hexadecimal value of the trigger. ACIF does not do any validity checking on this value, but uses it in doing a byte-for-byte comparison with the records in the file. The trigger value can be 1 - 250 bytes in length. If the combined values of column and the trigger length exceed the physical length of the record, ACIF considers the comparison “false” and continues processing.

Note: The trigger value can be specified as ASCII character data in AIX or Windows, EBCDIC character data in z/OS, VM or VSE, or hexadecimal data. However, if the input data file is *anything other than* ASCII in AIX or Windows or EBCDIC in z/OS, VM, or VSE, the value *must* be specified as hexadecimal data.

The following example shows how to use a carriage control character as a trigger:

```
TRIGGER1=*,1,'1'            /* Look for Skip-to-Channel 1
TRIGGER2=0,50,'ACCOUNT:'    /* Find account number
TRIGGER3=3,75,'Page 1'      /* Find page
```

In this example, **TRIGGER1** instructs ACIF to scan every record, looking for the occurrence of '1' in the first byte. After ACIF locates a record that contains '1', it looks in the same record, starting at byte 50, for the occurrence of 'ACCOUNT:'. If 'ACCOUNT:' is found, ACIF looks at the third record for a value of 'Page 1', starting at byte 75. If 'Page 1' is found, ACIF defines the record that contains **TRIGGER1** as the indexing anchor record and all indexing information is specified as relative locations relative from this point.

If ACIF finds either 'ACCOUNT:' or 'Page 1', it begins scanning the first record after the farthest field specified. If neither 'ACCOUNT:' nor 'Page 1' is found at its specified location relative to **TRIGGER1**, ACIF begins looking for **TRIGGER1** again, starting with the next record (that is, the current record that contains **TRIGGER1** + 1).

Notes:

1. ACIF requires that at least one **TRIGGER***n* or **FIELD***n* value appear within the page range that is specified by the **INDEXSTARTBY** parameter (unless **INDEXSTARTBY=0** is specified). If no **TRIGGER***n* or **FIELD***n* parameter is satisfied within the **INDEXSTARTBY** page range, ACIF stops processing and issues an error message. If you do not want ACIF to stop processing when it cannot find a group indexing field or when a file is empty, you must set the parameter to **INDEXSTARTBY=0** or specify **EXTENSIONS=EMPTYOK**.
2. At least one **TRIGGER***n* or **FIELD***n* value must exist on the first page of every unique page group. ACIF cannot detect an error condition if **TRIGGER***n* or **FIELD***n* is missing, but the output might be incorrectly indexed.
3. **TRIGGER1** must be specified when ACIF is requested to index the file.
4. An error condition occurs if you specify any **TRIGGER***n* parameters when the input file contains indexing tags.

See Chapter 4, “Enhanced indexing parameters,” on page 83 for information about using the **TRIGGER***n* parameter with enhanced ACIF indexing.

UNIQUEBNGS

Specifies whether ACIF creates a unique group name by generating an 8-character numeric string and appending the string to the group name. The group name that is defined in the Begin Named Page Group (BNG) structured field consists of an index value and a sequence number. **UNIQUEBNGS** is only valid on z/OS, VM, and VSE.

UNIQUEBNGS={YES | NO}
The values are:

YES
Specifies that ACIF generate an 8-character numeric string and append the string to the group name.

NO ACIF does not generate the string. Specify **NO** if you use an application such as AFP Toolbox, AFP API, or DCF to generate your own group names.

If **UNIQUEBNGS** is not specified, ACIF uses **YES** as the default unless you specify **DCFPAGENAMES=YES**, in which case ACIF uses **NO** as the default.

USERLIB

Specifies the location of AFP resources for processing the input file.

AIX and Windows

USERLIB=*pathlist*
Specifies the names of user directories that contain AFP resources for processing the input file. The directories can contain any AFP resources (fonts, page segments, overlays, page definitions, form definitions, object container resources, or COM setup files).

By convention, these resources are typically used by one user, as opposed to the system resources (specified with the **RESLIB** parameter) that are shared by many users. Therefore, you can use the **USERLIB** parameter to specify resources that are not retrieved with the **FDEFLIB**, **FONTLIB**, **OBJCONLIB**, **OVLYLIB**, **PDEFLIB**, or **PSEGLIB** parameters. **USERLIB** is not used to specify directories for TrueType and OpenType fonts, or data object resources that are installed with a resource access table (RAT), such as color management resources (CMRs). Instead, use the **USERPATH** parameter.

Note: The directories that **USERLIB** specifies can contain AFP extended code page fonts, which are FOCA fonts that contain EBCDIC or ASCII encodings and can contain the Unicode equivalent value. AFP extended code page fonts have a .ECP file extension.

The value is:

pathlist
Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows to separate multiple paths.

Keep in mind: The total number of all characters in the string of path names cannot exceed 4095 bytes.

For information about how InfoPrint Manager selects resources, see "Using ACIF in AIX and Windows" on page 17 or *InfoPrint Manager: Reference*.

z/OS

USERLIB=*dsname1***[,***dsname2***][,***dsname3...***]**

Specifies data sets containing AFP resources for processing the input data set. You can specify a maximum of 16 data sets. For example:

```
USERLIB=USER.IMAGES,USER.AFP.RESOURCES
```

ACIF dynamically allocates these data sets and searches for AFP resources in them in the order that is specified in the **USERLIB** parameter. If a resource is not found, ACIF searches the appropriate resource libraries that are defined for that resource type (for example, **PDEFLIB** for page definitions). The libraries that you specify can contain any AFP resources (fonts, page segments, overlays, page definitions, or form definitions). If Resource Access Control Facility (RACF) is installed on your system, RACF checks the authority of the user ID requesting access to a user library (data set). If ACIF is not authorized to allocate the data set, it reports an error condition and ends processing.

Notes:

1. The data sets that **USERLIB** specifies can contain AFP extended code page fonts, which are FOCA fonts that contain EBCDIC or ASCII encodings and can contain the Unicode equivalent value.
2. Because AFP resources (except page segments) have reserved prefixes, naming conflicts should not occur.
3. An inline resource overrides a resource of the same name that is contained in a **USERLIB** parameter.
4. Data sets must be specified as fully qualified names without quotation marks.
5. For systems before MVS/DFP Version 2.3, data sets must be concatenated with the largest block size first.

VM

USERLIB=*filetype1***[,***filetype2***][,***filetype3...***]**

Specifies the file types that define the libraries that contain AFP resources for processing the input file. You can specify a maximum of eight file types. For example:

```
USERLIB=USER3820,TEMPUSER
```

ACIF searches for AFP resources in these file types in the order that is specified in the **USERLIB** parameter. If a resource is not found, ACIF searches the appropriate resource libraries that are defined for that resource type (for example, **PDEFLIB** for page definitions). The libraries that you specify can contain any AFP resources (fonts, page segments, overlays, page definitions, or form definitions). If Resource Access Control Facility (RACF) is installed on your system, RACF checks the authority of the user ID requesting access to a user library (data set). If ACIF is not authorized to allocate the data set, it reports an error condition and ends processing.

Note: File types must conform to CMS naming conventions.

VSE

This parameter is not used for VSE. AFP resources are in the library that is defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, see *Print Services Facility/VSE: System Programming Guide*, S544-3665.

USERPATH

Specifies the names of user directories that contain TrueType and OpenType fonts, AFP extended code page fonts, or data object resources that are installed with a resource access table (RAT), such as color management resources (CMRs). TrueType and OpenType fonts are Unicode-enabled AFP fonts that are not defined by FOCA. AFP extended code page fonts are FOCA fonts that contain EBCDIC or ASCII encodings and can contain the Unicode equivalent value. AFP extended code page fonts have a .ECP file extension. For more information about resources that are installed with RATs, see Appendix B, "Processing resources installed with resource access tables," on page 217.

By convention, resources that are specified with the **USERPATH** parameter are typically used by one user, as opposed to the system resources that are shared by many users (for example, those resources specified with the **FONTPATH** or **OBJCPATH** parameters).

This parameter is not supported for VM or VSE; if specified, you see an error message.

USERPATH=*pathlist*

The value is:

pathlist

Any valid search path. You must use a colon (:) in AIX and z/OS or a semicolon (;) in Windows to separate multiple paths. For example:

AIX or Windows

```
acif inputdd=INFILE outputdd=OUTFILE pagedef=PAGTRUE formdef=F1A10110 \
userpath=/jdoe/fonts/truetype:/jdoe/fonts/truetype/myfonts/
```

Note: The backslash (\) tells AIX to continue reading the command from the next line. In Windows, the backslash is not valid; therefore, the command parameters must be on one continuous line.

z/OS

```
INPUTDD=INFILE
OUTPUTDD=OUTFILE
PAGEDEF=PAGTRUE
FORMDEF=F1A10110
USERPATH='/jdoe/fonts/truetype:/jdoe/fonts/truetype/myfonts/'
```

Note: To continue a *pathlist* on multiple lines in a parameter file, type the *pathlist* to the last character of the first line and then continue typing in the first column of the next line.

ACIF searches the paths in the order in which they are specified.

Keep in mind: The total number of all characters in the string of path names cannot exceed 4095 bytes.

Chapter 4. Enhanced indexing parameters

You can use enhanced indexing to do these tasks:

- Generate page-level information so you can move to specific pages in a document.
- Define a transaction field and create indexes where ACIF extracts the first and last value from a group or page.
- Define a field that is based on where the trigger is found.
- Define a default value for a field, which is used if the record is not long enough to hold the field.
- Change to a new group when the maximum number of pages is reached.
- Define a floating trigger, which can appear multiple times in a group or not at all, or define a trigger that is found within a range of records.
- Match specific characters that might appear in a field column or match a field mask symbol.

Enhanced ACIF indexing is not supported for ACIF in the VM and VSE environments.

This chapter describes the ACIF parameters that are used for enhanced indexing functions. To use enhanced indexing in ACIF, you specify the parameters in this chapter, in addition to those parameters found in Chapter 3, “ACIF parameters,” on page 27. The syntax rules for the enhanced indexing parameters are the same as those rules for z/OS in “Syntax rules for ACIF” on page 27.

Parameter values for enhanced indexing

Table 7 lists the ACIF enhanced indexing parameters and values for PSF for z/OS. Underscored values are the default and are used by ACIF if no other value is specified.

Table 7. ACIF enhanced indexing parameters

Enhanced Indexing Parameters	**See Page...**
FIELD*n*={*record,column,length,*([**TRIGGER=1** | *n*,]**BASE=0** | **TRIGGER**[,**DEFAULT**=*value* | **X**'*value*'])}	84
FIELD*n*={*literalvalue* | **X**'*literalvalue*'}	86
FIELD*n*={*****,*****,*length*,(**OFFSET**=(*start1:end1*[,*start2:end2*][,*start3:end3...*]),**MASK**='@ # = ¬ ^ %'[,**ORDER**=**BYROW** | **BYCOL**])}	86
FIELD*n*={*record,column,length,*(**TRIGGER**=*n*,**BASE=0** | **TRIGGER,MASK**='@ # = ¬ ^ %'[,**DEFAULT**=*value* | **X**'*value*'])}	88
GROUPMAXPAGES=*nnnn*	90
INDEX*n*={'*attributename*' | **X**'*attributename*'}{,**FIELD***nn*[,**FIELD***nn*...]}[,(**TYPE**={**GROUP**[,**BREAK**={**YES** | **NO**}] | **GROUPRANGE** | **PAGE** | **PAGERANGE**})]	90
TRIGGER*n*={*record* | *}{,*column* | *}{,'*triggervalue*' | **X**'*triggervalue*'}[,(**TYPE**={**GROUP** | **GROUP,RECORDRANGE**=(*start,end*) | **FLOAT**})]	93
USERMASK{*n* ,'*symbolvalue*'}{,'*stringvalue*' | **X**'*stringvalue*'}	96

The following sections describe the enhanced indexing parameters.

FIELDn

Specifies the field that identifies the location of index data and provides default and literal (constant) index values. ACIF supports these types of fields for enhanced indexing:

Trigger field
: This field is based on the location of a trigger string value.

Constant field
: This field provides the actual index value that is stored in the database.

Transaction field
: This field indexes input data that contains one or more columns of sorted data when it is not practical to store every value in the database. (ACIF extracts the beginning and ending sorted values in each group.)

Mask field
: This field is based on a floating trigger and uses a mask to match data that is in the field columns.

You must define at least one field and you can define a maximum of 32 fields (**FIELD1** through **FIELD32**). When you are adding a field parameter, use the next available number, beginning with "1".

Trigger field

A trigger field is a field that is based on the location of a trigger string value.

FIELD*n***={***record***,***column***,***length***,([TRIGGER=**<u>**1**</u> **|** *n***,]BASE=0 |**
TRIGGER[,DEFAULT=*value* **| X'***value***'])}**

The values are:

n Specifies the field parameter identifier.

record
: Specifies the relative record number from the trigger on which the field is based. This value is the record number where ACIF begins to search for the field. The supported range of values are ±0 to 255.

column
: Specifies the relative column number from the BASE value. This value is the column number where ACIF begins to search for the field. A value of "1" refers to the first byte in the record. For files that contain carriage control characters, column one refers to the carriage control. For those applications that use a specific carriage control character to define page boundaries (for example, skip-to-channel 1), consider defining the value of the carriage control character as one of the **TRIGGER***n* parameters. If you specify **BASE=0**, the *column* value can be 1 - 32756. If you specify **BASE=TRIGGER**, *column* value can be -32756 to 32756.

  Note: If the specified value exceeds the physical length of the record and you do not specify a DEFAULT value, ACIF reports an error condition and ends processing.

length
: Specifies the number of contiguous bytes (characters) that compose this field. The supported range of values are 1 - 250. The field can extend

outside the record length, if the column where it begins lies within the record length. In this case, ACIF adds padding blanks to complete the record.

Note: If the field begins outside the maximum length of the record and you do not specify a DEFAULT value, ACIF reports an error condition and ends processing.

`TRIGGER=1 | n`

Specifies the **TRIGGER*n*** parameter ACIF uses to locate the field. This paramter is optional. Replace *n* with the number of a defined parameter, such as **TRIGGER2**.

`BASE=0 | TRIGGER`

Specifies whether ACIF uses the starting column number of the trigger string value to locate the field data. The values are:

`0` ACIF adds zero to the field column offset. You can use **0** if the field data always starts in a specific column.

`TRIGGER`
ACIF adds the starting column number of the trigger string value to the field column offset. Use **TRIGGER** if the field data does not always start in a specific column, but is always offset a specific number of columns from the trigger string value. The trigger string value can begin in any column in the record. A field that is based on this trigger occurs in the trigger record.

The field parameter in the following example causes ACIF to locate field values that begin in column 83 of the same record that contains the **TRIGGER1** string value. The field length is 8 bytes. **BASE=0** is specified because the field data always starts in the same column.

```
TRIGGER1=*,1,'1',(TYPE=GROUP)
FIELD1=0,83,8,(TRIGGER=1,BASE=0)
```

The field parameter in the following example causes ACIF to locate field values that begin 10 columns offset from the trigger string value. By basing the field on **TRIGGER2** and specifying **BASE=TRIGGER**, ACIF can locate the field by adding 10 to the starting column offset of the trigger string value.

```
TRIGGER2=*,*,'ACCOUNT:',(TYPE=FLOAT)
FIELD2=0,10,12,(TRIGGER=2,BASE=TRIGGER)
```

`DEFAULT=`*`value`* `| X'`*`value`*`'`

Specifies the default value for the index when a record is not long enough to contain the field data because the JES spool has removed trailing blanks from the end of the record. The default value can be 1 - 250 bytes in length.

Note: The value can be specified as an EBCDIC character string or hexadecimal data. However, if the input data file is *anything other than* EBCDIC, the value *must* be specified as hexadecimal data (otherwise, the comparisons between the input data file and what is coded in the **FIELD*n*** parameter do not yield a match).

DEFAULT is used with Download for z/OS, which can transmit data from the JES spool. JES, by default, truncates trailing blanks at the end of records. When ACIF is processing the records that were truncated, it ends with an error unless you specify DEFAULT.

Constant field

A constant field is a field for which you specify the actual index value that is stored in the database. It is possible to generate an index value by concatenating or combining the literal value that you specify for a constant field with the value that ACIF extracts from a document by using a trigger field. However, the trigger field cannot be based on a floating trigger.

FIELD*n*=**{***literalvalue* **|** **X'***literalvalue***'}**

The values are:

n Specifies the field parameter identifier.

literalvalue **|** **X'***literalvalue***'**
: The actual index value of the field that is stored in the database. The literal value can be 1 - 250 bytes in length. ACIF does not check the validity of the actual content of the supplied data.

  Note: The value can be specified as an EBCDIC character string or hexadecimal data. However, if the input data file is *anything other than* single-byte EBCDIC, the value *must* be specified as hexadecimal data (otherwise, the comparisons between the input data file and what is coded in the **FIELD***n* parameter do not yield a match).

The field parameter in the following example causes ACIF to store the same string of characters in each INDEX3 it creates.

```
FIELD3='251658240'
INDEX3='Account Number',FIELD3,(TYPE=GROUP,BREAK=NO)
```

The field parameters in the following example cause ACIF to concatenate a literal value with the index value extracted from the data. ACIF concatenates the literal value that is specified in the **FIELD3** parameter to each index value located by using the **FIELD4** parameter. In this example, the application stores the concatenated string value in an OnDemand database. The account number field in the data is 14 bytes in length. However, the account number in the database is 19 bytes in length. Use a constant field to concatenate a constant 5-byte prefix (0000–) to all account numbers extracted from the data. The input data is encoded in EBCDIC.

```
FIELD3='00006'
FIELD4=0,66,14
INDEX3='Account Number',FIELD3,FIELD4,(TYPE=GROUP,BREAK=YES)
```

Transaction field

When you cannot store every value in the OnDemand database, you can use a transaction field to index input data that contains one or more columns of sorted data.

FIELD*n*=**{*,*,***length***,(OFFSET=(***start1:end1***[,***start2:end2***][,***start3:end3...***]), MASK='@ # = ¬ ^ %'[,ORDER=BYROW | BYCOL])}**

The values are:

n Specifies the field parameter identifier.

* Specifies the record number where ACIF begins searching for the field. A transaction field must specify an asterisk (*), meaning ACIF searches every record in the group.

* Specifies the column number where ACIF begins searching for the field. A transaction field must specify an asterisk (*). The OFFSET specification determines the column or columns where ACIF locates the field.

Note: If you enter a value other than an asterisk, ACIF ignores the value. When you specify OFFSET, ACIF always uses the starting column numbers from OFFSET to determine the location of the field values.

length

Specifies the number of contiguous bytes (characters) that compose this field. The supported range of values are 1 - 250. The field can extend outside the record length, if the column where it begins lies within the record length. In this case, ACIF adds padding blanks to complete the record.

Note: If the field begins outside the maximum length of the record, ACIF reports an error condition and ends processing.

OFFSET=(*start1:end1***[,***start2:end2***][,***start3:end3...***])**

Specifies the location of the field value from the beginning of the record. The start is the column where the field begins. The end is the last column of field data. A maximum of eight pairs of beginning and ending offset values are allowed. Separate the pairs with a comma. When you specify OFFSET, you must also specify MASK. The implied length of OFFSET must be the same as the number of characters in MASK or ACIF cannot detect a match.

MASK='*@ # = ¬ ^ %'

Specifies the pattern of symbols that ACIF matches with data in the field columns. When you specify MASK, you must also specify OFFSET. When you define a field that includes a mask, an **INDEX** parameter that is based on the field cannot reference any other fields. An **INDEX** parameter that is based on a field that includes a mask must create GROUPRANGE or PAGERANGE type indexes.

Note: You cannot specify MASK with a double-byte or Unicode code page (EXTENSIONS=IDXCPGID), unless you are using code page 1208 and only indexing single-byte characters. MASK does not support the multiple-byte characters of code page 1208 (UTF-8).

These mask symbols are valid:

*	Matches a user-defined mask; not a literal asterisk. See "USERMASK" on page 96.
@	Matches an alphabetic character.
#	Matches a numeric character.
=	Matches any character.
¬	Matches any non-blank character.
^	Matches any non-blank character.
%	Matches a blank character or numeric character.

The default code page for the symbols in MASK is 500 for z/OS and 850 for other operating systems. If you specify a different code page (with the **CPGID** parameter), ACIF translates all characters in the MASK value, except the MASK symbols. ACIF then matches the input characters against the MASK value. In the following example, ACIF searches columns 10 - 17 for a hexadecimal C1 followed by four numeric characters (hexadecimal F0 - F9), a hexadecimal 60, and two numeric characters (hexadecimal F0 - F9):

```
CPGID=500
FIELD3=*,*,8,(OFFSET=(10:17),MASK='A####-##',ORDER=BYROW)
```

ORDER=BYROW | BYCOL

Specifies where ACIF can locate the smallest value and the largest value of a group of sorted values that are arranged in either rows or columns on the page. For **ORDER=BYROW**, ACIF extracts the first value in the first row and the last value in the last row that match the MASK. Data with a row orientation might appear as:

```
1 2 3
4 5 6
7 8
```

For **ORDER=BYCOL**, ACIF extracts the first value in the first column and the last value in the last column that match the MASK. Data with a column orientation might appear as:

```
1 4 7
2 5 8
3 6
```

The field parameter in the following example causes ACIF to locate a 10-character numeric string that begins in column three of any record in the group. This format of the **FIELD** parameter is used to create indexes for the beginning and ending sorted values of each group.

```
FIELD4=*,*,10,(OFFSET=(3:12),MASK='##########',ORDER=BYROW)
```

Mask field

A *mask field* is a field with a mask that is based on a floating trigger. An **INDEX** parameter that is based on the mask field cannot include any other fields and must not create GROUPRANGE or PAGERANGE type indexes.

FIELD*n*=**{***record*,*column*,*length*,**(TRIGGER=***n*,**BASE=0 | TRIGGER,MASK='@ # = ¬ ^ %'[,DEFAULT=***value* **| X'***value***'])}**

The values are:

n Specifies the field parameter identifier.

record
Specifies the relative record number from the trigger on which the field is based. This value is the record number where ACIF begins to search for the field. The supported range of values are ±0 to 255.

column
Specifies the relative column number from the BASE value. This value is the column number where ACIF begins to search for the field. A value of "1" refers to the first byte in the record. For files that contain carriage control characters, column one refers to the carriage control. For those applications that use a specific carriage control character to define page boundaries (for example, skip-to-channel 1), consider defining the value of the carriage control character as one of the **TRIGGER***n* parameters. If you specify **BASE=0**, the *column* value can be 1 - 32756. If you specify **BASE=TRIGGER**, *column* value can be -32756 to 32756.

Note: If the specified value exceeds the physical length of the record and you do not specify a DEFAULT value, ACIF reports an error condition and ends processing.

length
Specifies the number of contiguous bytes (characters) that compose this field. The supported range of values are 1 - 250. The field can extend

outside the record length, if the column where it begins lies within the record length. In this case, ACIF adds padding blanks to complete the record.

Note: If the field begins outside the maximum length of the record and you do not specify a DEFAULT value, ACIF reports an error condition and ends processing.

`TRIGGER=1 | n`
Specifies the **TRIGGER*n*** parameter ACIF uses to locate the field. When you are using MASK, you must specify a trigger that is defined with **TYPE=FLOAT**.

`BASE=0 | TRIGGER`
Specifies whether ACIF uses the starting column number of the trigger string value to locate the field data. The values are:

`0` ACIF adds zero to the field column offset. You can use **0** if the field data always starts in a specific column.

`TRIGGER`
ACIF adds the starting column number of the trigger string value to the field column offset. Use **TRIGGER** if the field data does not always start in a specific column, but is always offset a specific number of columns from the trigger string value. The trigger string value can begin in any column in the record. A field that is based on this trigger occurs in the trigger record.

The field parameter in the following example causes ACIF to locate field values that begin in column 83 of the same record that contains the **TRIGGER1** string value. The field length is 8 bytes. **BASE=0** is specified because the field data always starts in the same column.

```
TRIGGER1=*,1,'1',(TYPE=GROUP)
FIELD1=0,83,8,(TRIGGER=1,BASE=0)
```

The field parameter in the following example causes ACIF to locate field values that begin 10 columns offset from the trigger string value. By basing the field on **TRIGGER2** and specifying **BASE=TRIGGER**, ACIF can locate the field by adding 10 to the starting column offset of the trigger string value.

```
TRIGGER2=*,*,'ACCOUNT:',(TYPE=FLOAT)
FIELD2=0,10,12,(TRIGGER=2,BASE=TRIGGER)
```

`MASK='@ # = ¬ ^ %'`
Specifies the pattern of symbols that ACIF matches with data in the field columns. If the data matches the MASK, ACIF selects the field.

Note: You cannot specify MASK with a double-byte or Unicode code page (EXTENSIONS=IDXCPGID), unless you are using code page 1208 and only indexing single-byte characters. MASK does not support the multiple-byte characters of code page 1208 (UTF-8).

These mask symbols are valid:

@	Matches an alphabetic character.
#	Matches a numeric character.
=	Matches any character.
¬	Matches any non-blank character.

^ Matches any non-blank character.

% Matches a blank character or numeric character.

In the following example. ACIF selects the field only if the data in the field columns contain numeric characters:

```
TRIGGER2=*,25,'SOURCE',(TYPE=FLOAT)
FIELD2=0,38,4,(TRIGGER=2,BASE=0,MASK='####',DEFAULT='4059099376')
```

DEFAULT=*value* **|** **X***'value'*

Specifies the default value for the index when a record is not long enough to contain the field data. The default value can be 1 - 250 characters in length.

Note: The value can be specified as an EBCDIC character string or hexadecimal data. However, if the input data file is *anything other than* single-byte EBCDIC, the value *must* be specified as hexadecimal data (otherwise, the comparisons between the input data file and what is coded in the **FIELD***n* parameter do not yield a match).

DEFAULT is used with Download for z/OS, which can transmit data from the JES spool. JES, by default, truncates trailing blanks at the end of records. When ACIF processes the records that were truncated, it ends with an error unless you specify DEFAULT.

Note: The MASK is not applied to the default value.

GROUPMAXPAGES

Specifies the maximum number of pages that ACIF can put into a group.

GROUPMAXPAGES=*nnnn*

The value is:

nnnn

A 1- to 4-digit number (1 - 9999).

If the maximum number of pages is reached before a group index value is changed, ACIF forces a new group. If you do not specify **GROUPMAXPAGES**, ACIF does not end the current group and begin a new group until the value of one of the fields that is specified with the **BREAK=YES** option on the **INDEX** parameter changes.

When indexing transaction data with a GROUPRANGE index, you typically set the **GROUPMAXPAGES** parameter to control the maximum number of pages in a group. For more information about the TYPE and BREAK options, see the **INDEX** parameter in *IBM DB2 Content Manager OnDemand for Multiplatforms: Indexing Reference*.

INDEXn

Specifies the index name, the field or fields on which the index is based, and the type of index ACIF generates. You can define group indexes for AFP and line data. You can define page indexes for AFP data and line data that you convert to AFP. When you define a group index, IBM suggests that you name the index the same as the application group database field name.

Keep in mind: Group indexes are stored in the index object file and used to search for documents. Page indexes are stored with the document, not in the index object file. This situation means that you cannot use page indexes to search for documents.

To generate page-level information in the output file so you can go to specific pages in a document, you must specify **INDEXOBJ=ALL**. You must also create an index field by specifying **TYPE=PAGE** on the **INDEX** parameter.

You must define at least one index and you can define a maximum of 32 indexes (**INDEX1** through **INDEX32**). Each index can be made up of one or more FIELD definitions. When you are adding an index parameter, use the next available number, beginning with "1".

INDEX*n*=**{***'attributename'* **|** **X***'attributename'***}{,FIELD***nn***[,FIELD***nn***...]}[,(TYPE={GROUP [,BREAK={YES | NO}] | GROUPRANGE | PAGE | PAGERANGE})]**

The values are:

n Specifies the index parameter identifier.

'attributename' **|** **X***'attributename'*

Specifies a user-defined label to be associated with the actual index value. For example, assume that **INDEX1** is a person's bank account number. The string "Account Number" would be a meaningful attribute name. The value of **INDEX1** would be the actual account number (for example, 0001234567). The attribute name can be 1 - 250 bytes in length.

Note: The value can be specified as an EBCDIC character string or hexadecimal data. However, if the input data file is *anything other than* single-byte EBCDIC, the value *must* be specified as hexadecimal data (otherwise, the comparisons between the input data file and what is coded in the **INDEX***n* parameter do not yield a match).

FIELD*nn***[,FIELD***nn***...]**

Specifies one or more **FIELD***n* parameters that ACIF uses to locate the index. A maximum of 32 **FIELD***n* parameters can be specified for each index. If more than one **FIELD***n* parameter is specified, ACIF concatenates them into one physical string of data. No delimiters are used between the concatenated fields. Because an index value has a maximum length of 250 bytes, the total of all specified **FIELD***n* parameters for a single index cannot exceed this length. ACIF reports an error condition and ends processing if the length is greater than 250 bytes.

GROUPRANGE and PAGERANGE indexes must name only one transaction field. PAGE indexes must name fields that are based on floating triggers. An index that names a field that is based on a floating trigger must be **TYPE=GROUP,BREAK=NO** or **TYPE=PAGE**.

TYPE={GROUP[,BREAK={YES | NO}] | GROUPRANGE | PAGE | PAGERANGE}

The type of index ACIF generates. You can define either group or page indexes for AFP and line data. The types are:

GROUP[,BREAK={YES | NO}]

The values are:

GROUP

Specifies a group index value. ACIF creates one index value for each group. A group index that names a field parameter that is based on a floating trigger must specify **BREAK=NO**.

BREAK={YES | NO}
Specifies whether ACIF includes the index when it is calculating a group break. The values are:

YES
ACIF breaks the group when the index value changes.

NO ACIF does not break the group.

The following example indicates that ACIF generates group indexes for date index values. The input data is encoded in EBCDIC.

```
INDEX1='Date Due',FIELD1,(TYPE=GROUP,BREAK=YES)
```

The next example indicates that ACIF generates group indexes for customer name and account number index values. The input data is encoded in EBCDIC. ACIF closes the current group and begins a new group only when the customer name index value changes (the data is sorted by customer name). In this example, a customer might have one or more statements with different account numbers. The page numbers in each statement begin with the number one, giving the appearance of unique statements. The goal is to collect all of a customer's statements in a single group.

```
INDEX1='Customer Name',FIELD1,(TYPE=GROUP,BREAK=YES)
INDEX2='Account Number',FIELD2,(TYPE=GROUP,BREAK=NO)
```

GROUPRANGE
Specifies a GROUPRANGE index, which does not break the group. ACIF creates index values for the first and last sorted values in each group. ACIF creates indexes for the group by extracting the first and last values that match the MASK of the transaction field on which the index is based. ACIF assumes that the input values are sorted. You can define one GROUPRANGE index per report.

A GROUPRANGE index must name only one transaction field, cannot name a field parameter that is based on a floating trigger, and cannot break a group.

For a GROUPRANGE index, ACIF can use the value of the **GROUPMAXPAGES** parameter to determine the number of pages in a group and when to break a group. For example, you need to index a line data report that consists of thousands of pages of sorted transaction data. You define a GROUP index to hold the report date index values and a GROUPRANGE index to hold the transaction numbers for each group. Because every page in the report contains the same date, the GROUP index cannot be used to break the report into groups. (And a GROUPRANGE index cannot be used to break a group.) To break the report into groups, set the GROUPMAXPAGES parameter to the maximum number of pages you want in a group (for example, 100). When ACIF calculates group breaks, it uses the value of the **GROUPMAXPAGES** parameter to determine when to close the current group and begin a new group.

The following example indicates that ACIF generates GROUPRANGE indexes for loan number index values. ACIF extracts the beginning and ending loan numbers in each group of pages. The input data is encoded in EBCDIC. Because a GROUPRANGE index cannot be used to break a report into groups of page, the **GROUPMAXPAGES** parameter can be used to determine the number of pages in a group.

ACIF closes the current group and begins a new group when the number of pages in the group is equal to the value of the **GROUPMAXPAGES** parameter.

```
INDEX2='Loan Number',FIELD2,(TYPE=GROUPRANGE)
GROUPMAXPAGES=100
```

PAGE

Specifies a page index, which does not break a group. You can create more than one page index per page. Page indexes must name fields that are based on floating triggers, and cannot break a group.

Page indexes are stored with the document, not in the index object file, and cannot be used to search for documents.

To generate page-level information in the output file so you can go to specific pages in a document, you must create an index field by specifying a page index with **INDEXOBJ=ALL**; otherwise, ACIF does not write the page index data to the index object file.

The following example indicates that ACIF generates PAGE indexes for subtotal values (the attribute name that appears in the Go To dialog box is Subtotal). The input data is encoded in EBCDIC. ACIF extracts the index values from each page.

```
INDEX3='Subtotal',FIELD3,(TYPE=PAGE)
```

PAGERANGE

Specifies a PAGERANGE index, which does not break a group. ACIF creates index values for the first and last sorted values on each page. ACIF creates indexes for the page by extracting the first and last values that match the MASK of the transaction field on which the index is based. ACIF assumes that the input values are sorted. You can define one PAGERANGE index per report.

A PAGERANGE index must name only one transaction field, cannot name a field parameter that is based on a floating trigger, and cannot break a group.

PAGERANGE indexes are stored with the document, not in the database, and cannot be used to search for documents. After you retrieve a document, you can use the page indexes to move to a specific page in the document with the Go To command in the client.

To generate page-level information in the output file so you can go to specific pages in a document, you must create an index field by specifying a PAGERANGE index with **INDEXOBJ=ALL**; otherwise, ACIF does not write the PAGERANGE index data to the index object file.

TRIGGERn

Specifies locations and values that are required to uniquely identify the beginning of a group and the locations and values of data fields that are used to define indexes. These data fields are referred to as “triggers” because their presence in the file triggers a processing action. You must specify at least one **TRIGGER***n* parameter and you can specify a maximum of eight parameters. When you are adding a trigger parameter, use the next available number, beginning with “1”.

TRIGGER*n***={***record* **|** ***}{,***column* **|** ***}{,'***triggervalue***'** **|** **X'***triggervalue***'}[,(TYPE={GROUP** **|** **GROUP,RECORDRANGE=(***start***,***end***)** **|** **FLOAT})]**

The values are:

n Specifies the trigger parameter identifier.

record **|** *****
Specifies the input record where ACIF locates the trigger value. You *must* specify an asterisk value (*) for **TRIGGER1**, record range triggers, and float triggers so that ACIF searches every input record for the trigger value. For other group triggers, the input record is relative to the record that contains the **TRIGGER1** value. The supported range of record numbers is 0 - 255.

column **|** *****
Specifies the byte offset from the beginning of the record where the trigger value is located. The supported range of column values is 0 - 32756. You can specify an asterisk * or zero (0) so that ACIF scans the record from left to right looking for the trigger value. A value of “1” refers to the first byte in the record.

Alternatively, you can specify a column range that is separated by a colon. For example, “2:5” means the trigger can begin in columns 2, 3, 4, or 5.

Keep in mind: The column values cannot be zero and the ending column must be greater than the beginning column.

The following example indicates that ACIF matches the “Account Number” value beginning in column 50, 51, or 52 of the sixth input record that follows the TRIGGER1 record. The input data is encoded in EBCDIC.

```
TRIGGER2=6,50:52,X'C1838396A495A340D5A494828599',(TYPE=GROUP)
```

'triggervalue' **|** **X***'triggervalue'*
Specifies the actual alphanumeric or hexadecimal value of the trigger that ACIF uses to match the input data. The trigger value can be 1 - 250 bytes in length and is case-sensitive.

Note: The trigger value can be specified as EBCDIC character data or hexadecimal data. However, if the input data file is *anything other than* EBCDIC, the value *must* be specified as hexadecimal data.

TYPE={GROUP | GROUP,RECORDRANGE=(*start*,*end*) | FLOAT
The trigger type. **TRIGGER1** must be a GROUP trigger. The types are:

GROUP
Specifies the beginning of a group. In ACIF, a group is a named collection of sequential pages that form a logical subset of an input file. You define only as many group triggers as needed to identify the beginning of a group. In many cases, you need only one group trigger.

A group must contain at least one page, and it can contain all of the pages in an input file. However, most customers define their group triggers so that ACIF can logically divide an input file into smaller parts, such as by statement, policy, bill, or, for transaction data, number of pages.

A group is determined when the value of an index changes (for example, account number) or when the maximum number of pages for a group is reached. ACIF generates indexes for each group in the input file. Because a group cannot be smaller than one page, a group trigger must not appear more than once on a page. See the “BREAK option” on page 91 on the **INDEX** parameter for more information about breaking groups.

The following example indicates that ACIF searches column one of every input record for the occurrence of a skip-to-channel 1 carriage control character. The record value for **TRIGGER1** must be an asterisk (*) and **TRIGGER1** must be a GROUP trigger. The input data is encoded in EBCDIC.

```
TRIGGER1=*,1,'1',(TYPE=GROUP)
```

The next example indicates that ACIF matches the PAGE 1 value beginning in column two of every input record. The record value for **TRIGGER1** must be an asterisk (*) and **TRIGGER1** must be a GROUP trigger. The input data is encoded in EBCDIC. .

```
TRIGGER1=*,2,'PAGE 1',(TYPE=GROUP)
```

The final example indicates that ACIF matches the “Account Number” value beginning in column fifty of the sixth input record following the **TRIGGER1** record. The input data is encoded in EBCDIC.

```
TRIGGER2=6,50,'Account Number',(TYPE=GROUP)
```

GROUP,RECORDRANGE=(*start*,*end*)

Specifies field data that is not always in the same record relative to **TRIGGER1**. ACIF determines the location of the field by searching the specified range of records. The range can be 0 - 255. ACIF stops searching after the first match in the specified range of records. For example, if the range is **5,7** and records six and seven contain the trigger value, ACIF stops searching after it matches the value in record six.

The following example indicates that ACIF locates the “Account Number” value beginning in column 50 within a range of records (the trigger value can occur in records six, seven, or eight following **TRIGGER1**) in each group. You must specify an asterisk (*) for record number because ACIF uses the record range to determine which records to search for the trigger value. The input data is encoded in EBCDIC.

```
TRIGGER2=*,50,'Account Number',(TYPE=GROUP,RECORDRANGE=(6,8))
```

FLOAT

Specifies field data that does not necessarily occur in the same location on each page, the same page in each group, or in each group. ACIF determines the location of the field by searching every input record for the trigger value that starts in the specified column (or every column, if an asterisk is specified). For example, you need to index statements by type of account. Possible types of accounts include savings, checking, loan, and IRA. Because not all statements contain all types of accounts, the number of pages in a statement can vary and the page number where a specific type of account occurs can vary. However, each type of account is preceded by the string “Account Type”. Define a float trigger with a trigger string value of “Account Type”. The same float trigger can be used to locate all of the accounts that occur in a statement.

The following example indicates that ACIF matches the “Type of Income” value, beginning in column five of every record in the group. You must specify an asterisk (*) for the record number. The input data is encoded in EBCDIC.

```
TRIGGER3=*,5,'Type of Income',(TYPE=FLOAT)
```

Notes:

1. ACIF requires that at least one **TRIGGER*n*** or **FIELD*n*** value appear within the page range that is specified by the **INDEXSTARTBY** parameter (unless **INDEXSTARTBY=0** is specified). If no **TRIGGER*n*** or **FIELD*n*** parameter is satisfied within the **INDEXSTARTBY** page range, ACIF stops processing and issues an error message. If you do not want ACIF to stop processing when it cannot find a group indexing field or when a file is empty, you must set the parameter to **INDEXSTARTBY=0** or specify **EXTENSIONS=EMPTYOK**.
2. At least one **TRIGGER*n*** or **FIELD*n*** value must exist on the first page of every unique page group. ACIF cannot detect an error condition if **TRIGGER*n*** or **FIELD*n*** is missing, but the output might be incorrectly indexed.
3. **TRIGGER1** must be specified when ACIF is requested to index the file.
4. An error condition occurs if you specify any **TRIGGER*n*** parameters when the input file contains indexing tags.

USERMASK

Specifies a user mask that identifies a symbol and string for matching field data.

USERMASK={*n***,***'symbolvalue'***}{,***'stringvalue'*** | X***'stringvalue'***}**

The values are:

n
Indicates the number of the user mask. Valid values are 1 - 4.

'symbolvalue'
Indicates a character that represents the characters in the *stringvalue* or the field mask. All printable characters except # @ = ¬ ^ % are valid. The *symbolvalue* does not match its literal value in the field data. For example, ACIF does not match an asterisk (*) symbol with an * in the field data.

'stringvalue' | **X***'stringvalue'*
Indicates one or more characters you want to match to field data. When the input data file is *anything other than* single-byte EBCDIC, the character string must be specified in hexadecimal.

The following example shows how to use **USERMASK** to match specific characters that might appear in the field column:

```
USERMASK=1,'*','AaBbCc'
FIELD3=*,*,15,(OFFSET=(10:24),MASK='*@@@@@@@@@@@@@@',ORDER=BYROW)
```

In this example, **USERMASK** causes ACIF to match an uppercase or lowercase A, B, or C in the first position of a 15-character string, such as a name.

A user mask can also match one of the field mask symbols. ACIF reserves the symbols # @ = ¬ ^ % for the field mask. If the field data contains one of the mask symbols, you must define a user mask so that ACIF can find a match. For example,

```
USERMASK=2,'*','%'
FIELD4=*,*,3,(OFFSET=(10:12),MASK='##*',ORDER=BYROW)
```

In this example, ACIF matches a 3-character string that contains two numerics and the percent sign (%), such as 85%.

Chapter 5. Examples of using ACIF

This chapter shows examples of how to use ACIF processing parameters for transforming data, retrieving resources, specifying fonts, identifying the location of resource libraries, and drawing graphics with record format page definitions. Detailed examples of how to use ACIF for viewing and indexing a document are described. An example of using enhanced indexing and indexing UTF-16 data are is also described.

Note: The **line2afp** command is the same as the **acif** command and uses the **acif** command conversion parameters to produce output for printing. Hereafter, "**acif**" refers to both **acif** and **line2afp** commands.

Examples of using ACIF processing parameters

This section shows how you can use ACIF processing parameters to do these tasks:

- Transform line data or XML data into a MO:DCA-P document.
- Retrieve resources.
- Specify AFP coded fonts.
- Specify TrueType and OpenType fonts.
- Identify the location of resource libraries.
- Draw graphics with record format page definitions.

Note: In the AIX and Windows examples in this section, ACIF is run by entering the **acif** command, parameters, and values on the command line. In AIX, when all of the parameters do not fit on a single line across the screen, the backslash (\) tells AIX to continue reading the command from the next line. In Windows, the backslash is not valid; therefore, the command parameters must be on one continuous line.

Transforming line data or XML data into a MO:DCA-P document

You have an EBCDIC line data file named `OLDFILE.1403` or an XML data file named `OLDFILE.xmp` that you want to transform into a MO:DCA-P document named `NEWFILE.afp`. To transform line data or XML data, enter these parameters for your operating system:

AIX or Windows

```
acif inputdd=OLDFILE.1403 outputdd=NEWFILE.afp cctype=a \
fileformat=record pagedef=P1A06462 formdef=F1A10110
```

Notes:

1. For XML data, use `OLDFILE.xmp` for **inputdd**.
2. The backslash (\) tells AIX to continue reading the command from the next line. In Windows, the backslash is not valid; therefore, the command parameters must be on one continuous line.

z/OS, VM, or VSE

```
INPUTDD=OLDFILE
OUTPUTDD=NEWFILE
CCTYPE=A
PAGEDEF=P1A06462
FORMDEF=F1A10110
```

Note: For XML data, **CCTYPE** is not used.

ACIF converts the line data or XML data file, pointed to by the **INPUTDD** parameter, into a document file pointed to by the **OUTPUTDD** parameter.

For line data, you specify **CCTYPE=A** to indicate that the file contains EBCDIC ANSI carriage control characters. This particular input file is in variable length record format, so in AIX and Windows you specify **FILEFORMAT=RECORD**. The **PAGEDEF** and **FORMDEF** parameters are required with your line-data input file, so you specify the file names of the page definition and form definition you want ACIF to use in processing this file.

Retrieving resources

You have an AFP file (**MYFILE**) that contains page segments and overlays. You would like to retrieve the page segments and overlays from the file and create both a data file and a resource file. To retrieve resources, enter these parameters for your operating system:

AIX or Windows

```
acif inputdd=MYFILE outputdd=MYDATA resobjdd=MYRES \
restype=pseg,ovly,fdef formdef=F1H10110
```

Note: The backslash (\) tells AIX to continue reading the command from the next line. In Windows, the backslash is not valid; therefore, the command parameters must be on one continuous line.

z/OS, VM, or VSE

```
INPUTDD=MYFILE
OUTPUTDD=MYDATA
RESOBJDD=MYRES
RESTYPE=PSEG,OVLY,FDEF
FORMDEF=F1H10110
```

From this job, ACIF produces an AFP document file and a resource file. The AFP document file (**MYDATA**) contains the AFP data from **MYFILE**. The resource file (**MYRES**) contains the resource data from **MYFILE**.

You specify **RESTYPE=PSEG,OVLY,FDEF** so that the page segments and overlays are included in the resource file, along with the form definition (specified with the **FORMDEF** parameter) that you want ACIF to use when it is processing the file.

For more information about using ACIF's resource retrieval functions, see "Retrieving resources" on page 9.

Specifying AFP coded fonts

You have an input file (**MYFILE.asc**) that contains unformatted ASCII data, and you want these three AFP coded fonts to be used in processing the file: Helvetica 10-point, Times New Roman 10-point, and Courier 10-point. (To use any other ASCII coded fonts, you must first create them.) You are using a page definition that is supplied with PSF or InfoPrint Manager (`P1A06462`), and the page definition does not name any fonts.

You specify the font names with the **CHARS** parameter. To use fonts with the appropriate ASCII code points for your unformatted ASCII input, see Table 8, which shows the IBM Core Interchange Font names and their corresponding short names for each of the fonts you want to use: Helvetica 10-point, Times New Roman 10-point, and Courier 10-point. Because the **CHARS** parameter limits the specification of a font name to four characters, you use the corresponding short name from the table for each of the three fonts.

Table 8. Font short names to use with CHARS parameter

Font Type	Coded Font Name	Short Name
Helvetica 10-point	X0H23002	H350
Times New Roman 10-point	X0N23002	N350
Courier 10-point	X0423002	4350

Because table reference characters are required in the input file when you want the file to print with more than one font, you specify **TRC=YES**.

You specify your input and output file names with the **INPUTDD** and **OUTPUTDD** parameters. You specify the page definition and form definition you want ACIF to use when it is processing the file with the **PAGEDEF** and **FORMDEF** parameters.

To use the three fonts, enter these parameters for your operating system:

AIX or Windows

```
acif inputdd=MYFILE.asc outputdd=MYFILE.afp chars=H350,N350,4350 \
trc=yes pagedef=P1A06462 formdef=F1A10110
```

Note: The backslash (\) tells AIX to continue reading the command from the next line. In Windows, the backslash is not valid; therefore, the command parameters must be on one continuous line.

z/OS, VM, or VSE

```
INPUTDD=MYFILE
OUTPUTDD=MYFILE
CHARS=H350,N350,4350
TRC=YES
PAGEDEF=P1A06462
FORMDEF=F1A10110
```

Specifying TrueType and OpenType fonts

You have an input file (**INFILE**) that contains EBCDIC line data. You also have Unicode-enabled TrueType and OpenType fonts that are in user path libraries, such as **/jdoe/fonts/truetype**, or system path libraries, such as **/u/fonts/truetype**. TrueType and OpenType fonts are those fonts that are not defined by the Font Object Content Architecture (FOCA).

You want these TrueType and OpenType fonts to be used in processing the file: Arial Black, Century Gothic, and Times New Roman. The page definition (**PAGTRUE**) you are using references the fonts in Map Data Resource (MDR) structured fields. See *Page Printer Formatting Aid: User's Guide* for information about creating page definitions that use TrueType and OpenType fonts.

You specify your input and output file names with the **INPUTDD** and **OUTPUTDD** parameters. You specify the page definition and form definition you want ACIF to use when it is processing the file with the **PAGEDEF** and **FORMDEF** parameters. You specify font path libraries with either the **USERPATH** parameter or the **FONTPATH** parameter.

To specify the fonts, enter these parameters for your operating system:

AIX or Windows

```
acif inputdd=INFILE outputdd=OUTFILE pagedef=PAGTRUE formdef=F1A10110 \
userpath=/jdoe/fonts/truetype:/jdoe/fonts/truetype/myfonts/ \
fontpath=/u/fonts/truetype:/u/fonts/truetype/local
```

Note: The backslash (\) tells AIX to continue reading the command from the next line. In Windows, the backslash is not valid; therefore, the command parameters must be on one continuous line. You must use a colon (:) in AIX or a semicolon (;) in Windows to separate multiple paths.

z/OS

```
INPUTDD=INFILE
OUTPUTDD=OUTFILE
PAGEDEF=PAGTRUE
FORMDEF=F1A10110
USERPATH='/jdoe/fonts/truetype:/jdoe/fonts/truetype/myfonts/'
FONTPATH='/u/fonts/truetype:/u/fonts/truetype/local/'
```

Identifying the location of resource libraries

You have an input file and you want to use specific resources during processing. You want to use a form definition (**FORMD1A**) and an overlay that are stored in the general resource library at your location (**SYS1.PSEGLIB**, **/usr/site/resdir**, or **\***directory***\site\resdir**, where *directory* is the installation directory). To be sure that ACIF finds the resources you want to use, enter these parameters for your operating system:

AIX

```
acif inputdd=INFILE outputdd=OUTFILE \
pagedef=PAGED6B formdef=FORMD1A \
userlib=/usr/mystuff/art1:/usr/mystuff/art2 \
pdeflib=/usr/dept/pdefdir3 reslib=/usr/site/resdir
```

Notes:

1. The backslash (\) tells AIX to continue reading the command from the next line.
2. You must use a colon (:) to separate multiple paths.

Windows

```
acif inputdd=INFILE outputdd=OUTFILE pagedef=PAGED6B formdef=FORMD1A
userlib=\directory\mystuff\art1;\directory\mystuff\art2
pdeflib=\directory\dept\pdefdir3 reslib=\directory\site\resdir
```

Notes:

1. The command parameters must be on one continuous line.
2. You must use a semicolon (;) to separate multiple paths.

z/OS or VM

```
INPUTDD=INFILE
OUTPUTDD=OUTFILE
PAGEDEF=PAGED6B
FORMDEF=FORMD1A
USERLIB=USER.ART1,USER.ART2
PDEFLIB=USER.PDEFDIR3
```

VSE

```
INPUTDD=INFILE
OUTPUTDD=OUTFILE
PAGEDEF=PAGED6B
FORMDEF=FORMD1A
```

Note: VSE resources are in the library that is defined by the **// LIBDEF PHASE, SEARCH=(...)** JCL statement.

The page definition that you want to use (**PAGED6B**) is stored in one of the several page definition libraries that are used by your department (**USER.PDEFDIR3**, **/usr/dept/pdefdir3**, or *install_directory***dept****pdefdir3**). The page definition is a copy of one with the same file name that is stored in the site's general resource library, with some modifications made for use by your department.

Your page segments are stored in two other libraries that you set up for your own use (**USER.ART1**, **/usr/mystuff/art1**, or *install_directory***mystuff****art1** and **USER.ART2**, **/usr/mystuff/art2**, or *install_directory***mystuff****art2**).

Because ACIF always searches the path that is specified by the **USERLIB** parameter first, your page segments are found in your personal libraries. ACIF next searches the paths that are specified by the parameters for specific resource libraries (**PDEFLIB**, **FDEFLIB**, and so forth), so ACIF then finds the page definition that you want to use from the department's library. In AIX or Windows, ACIF then searches the path that is specified with the **RESLIB** parameter, finding your form definition and your overlay. See "Selecting resources" on page 17 for a complete list of the search order for AFP resources.

ACIF does *not* use the page definition that is named **PAGED6B** that is stored in **USER.RESDIR**, **/usr/site/resdir**, or *install_directory***site****resdir**, because it already finds the modified **PAGED6B** in the department library that is specified with the **PDEFLIB** parameter.

Drawing graphics with record format page definitions

You have a page definition that you are using to format record format line data. The page definition contains these DRAWGRAPHIC commands to draw colored lines and boxes:

```
DRAWGRAPHIC BOX BOXSIZE 2.6 IN .25 IN ROUNDED LARGE
   LINETYPE SOLID COLOR Green
   FILL ALL SOLID COLOR Blue
DRAWGRAPHIC LINE ACROSS 7.5 IN
   LINEWT BOLD
   LINETYPE SOLID COLOR Red
```

To draw the graphics, enter these options on the EXTENSIONS parameter for your operating system:

AIX or Windows

```
acif inputdd=INFILE outputdd=OUTFILE fileformat=record \
extensions=prcolor,box,fracline pagedef=PAGERFLD formdef=FORMRFLD
```

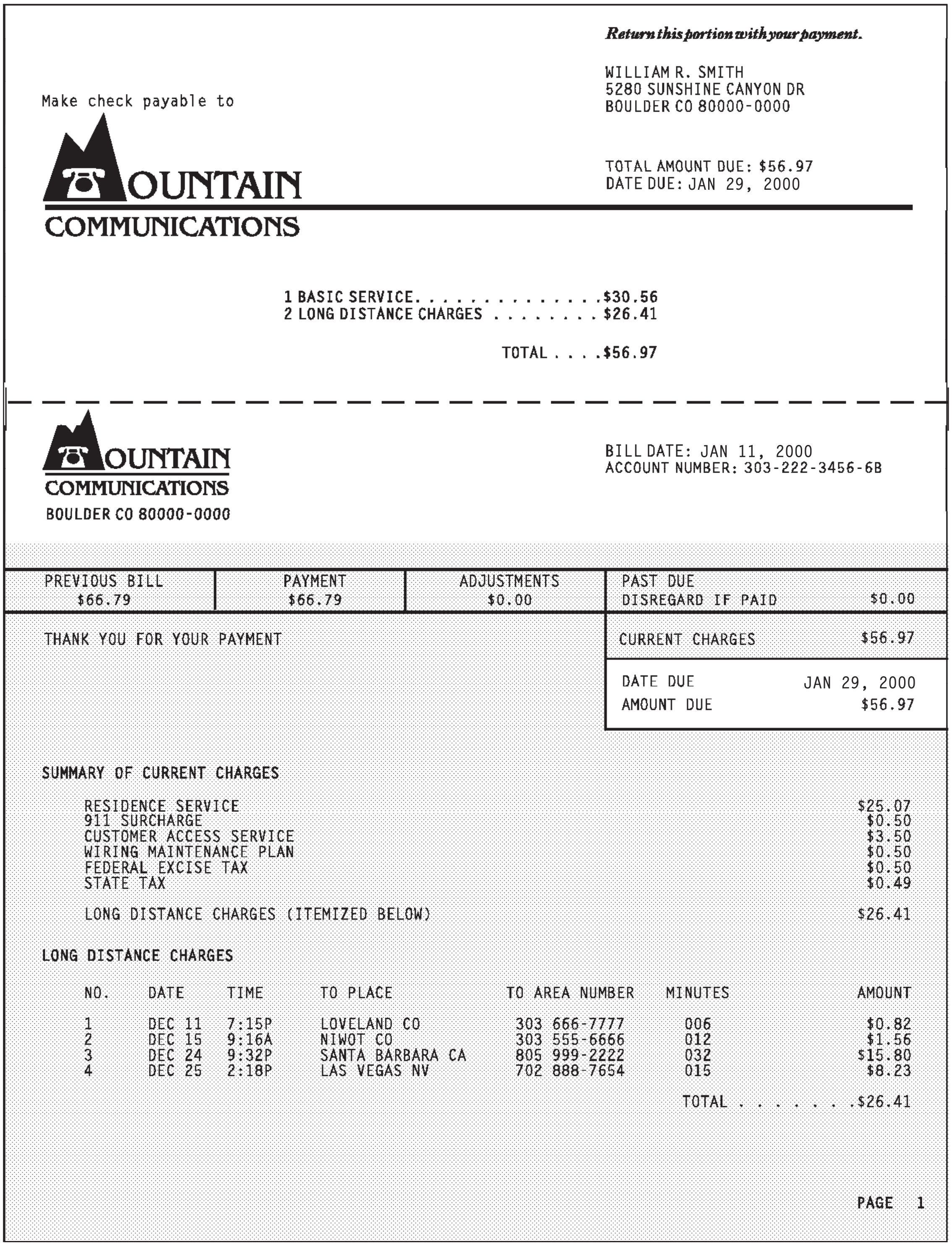
Note: The backslash (\) tells AIX to continue reading the command from the next line. In Windows, the backslash is not valid; therefore, the command parameters must be on one continuous line.

z/OS, VM, or VSE

```
INPUTDD=INFILE
OUTPUTDD=OUTFILE
EXTENSIONS=PRCOLOR,BOX,FRACLINE
PAGEDEF=PAGERFLD
FORMDEF=FORMRFLD
```

Example of using ACIF to view and index documents

A communications company produces monthly telephone bills with a line data application. The company wants to make the billing application output available so that when a customer calls with a billing inquiry, the customer service representatives can view the bill in the same format on their workstations as the customer's printed copy. An example of the customer's printed telephone bill is shown in Figure 12 on page 103.



Return this portion with your payment.

WILLIAM R. SMITH
5280 SUNSHINE CANYON DR
BOULDER CO 80000-0000

Make check payable to

MOUNTAIN
COMMUNICATIONS

TOTAL AMOUNT DUE: $56.97
DATE DUE: JAN 29, 2000

```
1 BASIC SERVICE. . . . . . . . . . . . . . .$30.56
2 LONG DISTANCE CHARGES . . . . . . . . . $26.41

                      TOTAL . . . .$56.97
```

MOUNTAIN
COMMUNICATIONS
BOULDER CO 80000-0000

BILL DATE: JAN 11, 2000
ACCOUNT NUMBER: 303-222-3456-6B

PREVIOUS BILL	PAYMENT	ADJUSTMENTS	PAST DUE	
$66.79	$66.79	$0.00	DISREGARD IF PAID	$0.00

THANK YOU FOR YOUR PAYMENT

CURRENT CHARGES	$56.97
DATE DUE	JAN 29, 2000
AMOUNT DUE	$56.97

```
SUMMARY OF CURRENT CHARGES

    RESIDENCE SERVICE                                            $25.07
    911 SURCHARGE                                                 $0.50
    CUSTOMER ACCESS SERVICE                                       $3.50
    WIRING MAINTENANCE PLAN                                       $0.50
    FEDERAL EXCISE TAX                                            $0.50
    STATE TAX                                                     $0.49

    LONG DISTANCE CHARGES (ITEMIZED BELOW)                       $26.41

LONG DISTANCE CHARGES

    NO.   DATE    TIME    TO PLACE          TO AREA NUMBER  MINUTES      AMOUNT

    1     DEC 11  7:15P   LOVELAND CO        303 666-7777    006          $0.82
    2     DEC 15  9:16A   NIWOT CO           303 555-6666    012          $1.56
    3     DEC 24  9:32P   SANTA BARBARA CA   805 999-2222    032         $15.80
    4     DEC 25  2:18P   LAS VEGAS NV       702 888-7654    015          $8.23
                                                        TOTAL . . . . . . .$26.41


                                                                      PAGE  1
```

Figure 12. Example of a customer's printed telephone bill

To meet the communications company's needs, you can use ACIF to do these tasks:

- Convert the output from the line data application into a document format that can be used with the AFP Workbench Viewer.
- Index the file to facilitate searching the file with AFP Workbench Viewer.
- Retrieve resources so that all resources used in the bills are available at the workstation.

You do these tasks to view and index a telephone bill with ACIF:

1. Examine the input file to determine what ACIF parameters are needed to view the telephone bill and whether literal values are expressed as character data strings or hexadecimal strings. See “Examining the input file.”
2. Specify ACIF parameters in AIX, Windows, z/OS, VM, or VSE. See “Specifying ACIF processing parameters” on page 107.
3. Index the input data file for data retrieval. See “Indexing data in the input file” on page 111.
4. Identify the locations of the resources that are used when the bill is printed. See “Identifying the locations of the resources” on page 113.
5. Determine the form definition and page definition that is needed to format and print the bill. See “Determining the form definition and the page definition” on page 113.
6. Run the ACIF job to create the output files. See “Running the ACIF job” on page 114.
7. Concatenate the output files. See “Concatenating ACIF output files” on page 115.
8. Access the document file from a workstation for viewing with AFP Workbench Viewer. See “Accessing the document file for viewing” on page 116.

Examining the input file

Figure 13 on page 105 shows the line data file currently used to print the telephone bill that is shown in Figure 12 on page 103.

Note: The line-data input file that is provided is hypothetical; it is intended only to help you understand how ACIF can be used for an actual application and to assist you when you use ACIF for your own application. For practical use, you must provide your own input file, and specify paths, directories, and so forth, as they apply to your particular installation and application.

```
    Carriage
    Control
      |
Line ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8
 0    1                                               WILLIAM R. SMITH
                                                     5280 SUNSHINE CANYON DR
                                                     BOULDER CO 80000-0000
      -                                              TOTAL AMOUNT DUE: $56.97
                                                     DATE DUE: JAN 29, 2000
 5
      -
      -
      0      1 BASIC SERVICE. . . . . . . . . . . . .$30.56
             2 LONG DISTANCE CHARGES  . . . . . . . .$26.41
10    0                                 TOTAL . . . .$56.97
      -
      0                                              BILL DATE: JAN 11, 2000
                                                     ACCOUNT NUMBER: 303-222-3456-6B
      -
15    -   $66.79          $66.79       $0.00                               $0.00
                                                                          $56.97
                                                                    JAN 29, 2000
                                                                          $56.97
      -
20    0 SUMMARY OF CURRENT CHARGES
      0     RESIDENCE SERVICE                                             $25.07
            911 SURCHARGE                                                  $0.50
            CUSTOMER ACCESS SERVICE                                        $3.50
            WIRING MAINTENANCE PLAN                                        $0.50
25          FEDERAL EXCISE TAX                                             $0.50
            STATE TAX                                                      $0.49
            LONG DISTANCE CHARGES (ITEMIZED BELOW)                        $30.56
      0 LONG DISTANCE CHARGES
      0  NO.    DATE     TIME       TO PLACE          TO AREA NUMBER  MINUTES  AMOUNT
30    0  1      DEC 11   7:15P      LOVELAND CO       303 666-7777      006     $0.82
         2      DEC 15   9:16A      NIWOT CO          303 555-6666      012     $1.56
         3      DEC 24   9:32P      SANTA BARBARA CA  805 999-6666      032    $15.80
         4      DEC 25   2:18P      LAS VEGAS NV      702 888-7654      015     $8.23
      -                                                  TOTAL . . . . . . .$26.41
35    -
      -
      0                                                                     PAGE  1
```

Figure 13. Example of the line data telephone bill

Determining how literal values are expressed

The way literal values in the input file are defined in ACIF parameters depends on whether the input file contains ASCII or EBCDIC data. If the input file is in ASCII for AIX or Windows or in EBCDIC for z/OS, VM, or VSE, the literal values in the **FIELD***n*, **INDEX***n*, and **TRIGGER***n* parameters can be expressed in character data strings. For example, Figure 14 on page 106 shows part of an AIX parameter file for ASCII input data. The **CCTYPE** parameter value matches the type of data in the input file, in this case ASCII. The **CPGID** parameter indicates a code page for the type of data in the input file. The **FIELD***n*, **INDEX***n*, and **TRIGGER***n* parameters are expressed in character data strings because the input file is ASCII and the operating system is AIX.

```
                                                       /* Example phone bill */
                            /* DATA CHARACTERISTICS*/
CC=yes                                                 /* Carriage control used */
CCTYPE=z                                               /* ASCII ANSI carriage controls */
CHARS=42B2                                             /* Coded font */
CPGID=850                                              /* Code page identifier */
                            /* FIELD AND INDEX DEFINITION*/
FIELD1=13,66,15                                        /* Account Number data field */
FIELD2=0,50,30                                         /* Name data field */
FIELD3=1,50,30                                         /* Address data field */
FIELD4=2,50,30                                         /* City, State, ZIP data field */
FIELD5='1'                                             /* Date Due data field */
INDEX1='Account Number',FIELD1                         /* 1st index attribute */
INDEX2='Name',FIELD2                                   /* 2nd index attribute */
INDEX3='Address',FIELD3                                /* 3rd index attribute */
INDEX4='City, State, ZIP',FIELD4                       /* 4th index attribute */
INDEX5='Date Due',FIELD5                                /* 5th index attribute */
                            /* EXIT AND TRIGGER INFORMATION*/
TRIGGER1=*,1,'1'                                       /* 1st trigger */
TRIGGER2=13,50,'ACCOUNT NUMBER'                         /* 2nd trigger */
```

Figure 14. Example of an AIX parameter file for ASCII input data

If the input data file is *not* ASCII in AIX or Windows or *not* EBCDIC in z/OS, VM, or VSE, the literal values in the **FIELD***n*, **INDEX***n*, and **TRIGGER***n* parameters must be expressed in hexadecimal strings. For example, Figure 15 shows part of an AIX parameter file for EBCDIC input data. The **CCTYPE** parameter value matches the type of data in the input file, in this case EBCDIC. The **CPGID** parameter indicates a code page for the type of data in the input file. The **FIELD***n*, **INDEX***n*, and **TRIGGER***n* parameters are expressed in hexadecimal strings because the input file is EBCDIC and the operating system is AIX.

```
                                                        /* Example phone bill */
                            /* DATA CHARACTERISTICS*/
CC=yes                                                  /* Carriage control used */
CCTYPE=a                                                /* EBCDIC ANSI carriage controls */
CHARS=GT15                                              /* Coded font */
CPGID=037                                               /* Code page identifier */
                            /* FIELD AND INDEX DEFINITION*/
FIELD1=13,66,15                                         /* Account Number data field */
FIELD2=0,50,30                                          /* Name data field */
FIELD3=1,50,30                                          /* Address data field */
FIELD4=2,50,30                                          /* City, State, ZIP data field */
FIELD5=X'0001'                                          /* Date Due data field */
INDEX1=X'C1838396A495A340D5A494828599',FIELD1           /* 1st index attr (Account Number) */
INDEX2=X'D5819485',FIELD2                               /* 2nd index attr (Name) */
INDEX3=X'C184849985A2A2',FIELD3                         /* 3rd index attr (Address) */
INDEX4=X'C389A3A86B40E2A381A3856B40E98997',FIELD4      /* 4th index attr (City, State, ZIP) */
INDEX5=X'C481A38540C4A485',FIELD5                       /* 5th index attr (Date Due) */
                            /* EXIT AND TRIGGER INFORMATION*/
TRIGGER1=*,1,X'F1'                                     /* 1st trigger (1) */
TRIGGER2=13,50,X'C1C3C3D6E4D5E340D5E4D4C2C5D9'          /* 2nd trigger (ACCOUNT NUMBER) */
```

Figure 15. Example of an AIX parameter file for EBCDIC input data

Using the shell with EBCDIC literal values

In AIX and Windows, literal values used in the **FIELD***n*, **INDEX***n*, and **TRIGGER***n* parameters must be expressed in hexadecimal strings when the input data is anything other than ASCII. Because the input data in Figure 15 is EBCDIC, hexadecimal strings are required, and *must* be entered if you specify your parameters within a parameter file. If the parameters are *not* specified in a parameter file, you can use AIX or Windows commands (such as **axeb** or **iconv**) to convert ASCII literal values into EBCDIC literal values. For example, to convert the ASCII literal “Name” for the second index attribute (**INDEX2**), do these tasks:

1. Create a shell environment variable to hold the EBCDIC literal:
   - With the **axeb** command, enter:
     - `attr2=$(echo -n "Name" | axeb)`
   - With the **iconv** command, enter:
     - `attr2=$(echo -n "Name" | iconv -fIBM-850 -tIBM-037)`
2. On the command line or in a shell script, specify the second index attribute by entering:

   ```
   INDEX2="'$attr2'",field2
   ```

Note: This example is for use with the Korn Shell (ksh). If you are using a different shell, see the documentation for the shell you are using in *AIX Commands Reference*.

By using this method to convert the ASCII literals to the EBCDIC literals, no mistakes are made when the literals are converted to a hexadecimal string.

Specifying ACIF processing parameters

You can process the ACIF parameters that are needed to produce the telephone bill by using one of these methods:

- Create and specify a parameter file.
- In AIX and Windows, enter the **acif** command, parameters, and values on the command line or in a shell script.

The following sections show examples of AIX, Windows, z/OS, VM, and VSE parameter files for the telephone bill.

AIX and Windows parameter file

An AIX parameter file is shown in Figure 16 on page 108. A Windows parameter file is the same as the AIX parameter file except for these directories:

```
FDEFLIB=\d:\res\fdeflib1;\d:\res\fdeflib2
FONTLIB=\d:\res\fontlib1;\d:\res\fontlib2
OBJCONLIB=\d:\res\objconlib1;\d:\res\objconlib2
OVLYLIB=\d:\res\ovlylib1;\d:\res\ovlylib2
PDEFLIB=\d:\res\pdeflib1;\d:\res\pdeflib2
PSEGLIB=\d:\res\pseglib1;\d:\res\pseglib2
INPUTDD=\d:\data\INFILE
```

Also note that in Windows you use a semicolon (;) instead of a colon (:) to separate libraries.

```
                                                    /* Example phone bill */
                            /* DATA CHARACTERISTICS                       */
CC=yes                                              /* Carriage control used */
CCTYPE=z                                            /* ASCII ANSI carriage controls */
CHARS=42B2                                          /* Coded font */
CPGID=850                                           /* Code page identifier */
                            /* FIELD AND INDEX DEFINITION                 */
FIELD1=13,66,15                                     /* Account Number data field */
FIELD2=0,50,30                                      /* Name data field */
FIELD3=1,50,30                                      /* Address data field */
FIELD4=2,50,30                                      /* City, State, ZIP data field */
FIELD5=4,60,12                                      /* Date Due data field */
INDEX1='Account Number',FIELD1                      /* 1st index attribute */
INDEX2='Name',FIELD2                                /* 2nd index attribute */
INDEX3='Address',FIELD3                             /* 3rd index attribute */
INDEX4='City, State, ZIP',FIELD4                    /* 4th index attribute */
INDEX5='Date Due',FIELD5                            /* 5th index attribute */
                            /* INDEXING INFORMATION                       */
INDEXOBJ=all                                        /* Index object file entries */
                            /* RESOURCE INFORMATION                       */
FORMDEF=F1A10110                                    /* Formdef name */
PAGEDEF=P1A08682                                    /* Pagedef name */
FDEFLIB=/usr/res/fdeflib1:/usr/res/fdeflib2         /* Formdef directories */
FONTLIB=/usr/res/fontlib1:/usr/res/fontlib2         /* Font directories */
OBJCONLIB=/usr/res/objconlib1:/usr/res/objconlib2   /* Objcon directories */
OVLYLIB=/usr/res/ovlylib1:/usr/res/ovlylib2         /* Overlay directories */
PDEFLIB=/usr/res/pdeflib1:/usr/res/pdeflib2         /* Pagedef directories */
PSEGLIB=/usr/res/pseglib1:/usr/res/pseglib2         /* Pseg directories */
RESOBJDD=RESDATA                                    /* Resource file name */
RESTYPE=fdef,pseg,ovly                              /* Resource type selection */
                            /* FILE INFORMATION                           */
INDEXDD=INDXOBJ                                     /* Index file name */
INPUTDD=/usr/data/INFILE                            /* Input path & file name */
OUTPUTDD=OUTDOC                                     /* Output file name */
MSGDD=acif.msg                                      /* Error message file name */
                            /* EXIT AND TRIGGER INFORMATION               */
TRIGGER1=*,1,'1'                                    /* 1st trigger */
TRIGGER2=13,50,'ACCOUNT NUMBER'                     /* 2nd trigger */
```

Figure 16. Example of an AIX Parameter File

z/OS parameter file

The JCL for a z/OS parameter file is shown in Figure 17 on page 109. This example creates a sequential data set; however, if you need a partitioned data set, change the parameters as follows:

- Set **RESFILE=PDS**
- Set the **SPACE** and **DSORG** parameters in the DD statement of the data set named by the **RESOBJDD** parameter to **SPACE=(12288,(150,15,15)),DSORG=PO**.

Failure to set these parameters as described might produce a **RESOBJDD** data set that is unusable.

```
//job...   JOB ...
//APKSMAIN EXEC PGM=APKACIF,REGION=8M,TIME=(,30)
//*==========================================================*
//* RUN APK, CREATING OUTPUT AND A RESOURCE LIBRARY          *
//*==========================================================*
//STEPLIB  DD  DSN=APKACIF.LOAD,DISP=SHR
//INPUT DD  DSN=USER.ACIFEX2.DATA,DISP=SHR
//SYSIN DD *
                                       /* Example phone bill      */
                     /* DATA CHARACTERISTICS                      */
CC = YES                               /* Carriage control used   */
CCTYPE = A                             /* Carriage control type   */
CHARS = GT15
CPGID = 500                            /* Code page identifier    */
                     /* FIELD AND INDEX DEFINITION                */
FIELD1 = 13,66,15                      /* Account Number          */
FIELD2 = 0,50,30                       /* Name                    */
FIELD3 = 1,50,30                       /* Address                 */
FIELD4 = 2,50,30                       /* City, State, ZIP        */
FIELD5 = 4,60,12                       /* Date Due                */
INDEX1 = 'Account Number',FIELD1       /* 1st INDEX attribute     */
INDEX2 = 'Name',FIELD2                 /* 2nd INDEX attribute     */
INDEX3 = 'Address',FIELD3              /* 3rd INDEX attribute     */
INDEX4 = 'City, State, ZIP',FIELD4     /* 4th INDEX attribute     */
INDEX5 = 'Date Due',FIELD5             /* 5th INDEX attribute     */
                     /* INDEXING INFORMATION                      */
INDEXOBJ = ALL
                     /* RESOURCE INFORMATION                      */
FORMDEF = F1A10110                     /* Formdef name            */
PAGEDEF = P1A08682                     /* Pagedef name            */
FDEFLIB = SYS1.FDEFLIB
FONTLIB = SYS1.FONTLIBB,SYS1.FONTLIBB.EXTRA
OBJCONLIB = USER.PSEGLIB
OVLYLIB = SYS1.OVERLIB
PDEFLIB = SYS1.PDEFLIB
PSEGLIB = SYS1.PSEGLIB
RESFILE = SEQ                          /* Resource file type      */
RESTYPE = FDEF,PSEG,OVLY               /* Resource type selection */
                     /* FILE INFORMATION                          */
INDEXDD = INDEX                        /* Index file ddname       */
INPUTDD = INPUT                        /* Input file ddname       */
OUTPUTDD = OUTPUT                      /* Output file ddname      */
RESOBJDD = RESLIB                      /* Resource file ddname    */
                     /* EXIT AND TRIGGER INFORMATION              */
TRIGGER1 = *,1,'1'                     /* 1st TRIGGER             */
TRIGGER2 = 13,50,'ACCOUNT NUMBER:'     /* 2nd TRIGGER             */
/*
//OUTPUT DD DSN=APKACIF.OUTPUT,DISP=(NEW,CATLG),
//         SPACE=(32760,(150,150),RLSE),UNIT=SYSDA,
//         DCB=(LRECL=32756,BLKSIZE=32760,RECFM=VBM,DSORG=PS)
//INDEX DD DSN=APKACIF.INDEX,DISP=(NEW,CATLG),
//         SPACE=(32760,(15,15),RLSE),UNIT=SYSDA,
//         DCB=(LRECL=32756,BLKSIZE=32760,RECFM=VBM,DSORG=PS)
//RESLIB DD DSN=APKACIF.RESLIB,DISP=(NEW,CATLG),
//         SPACE=(32760,(150,150),RLSE),UNIT=SYSDA,
//         DCB=(LRECL=32756,BLKSIZE=32760,RECFM=VBM,DSORG=PS)
//SYSPRINT DD DSN=APKACIF.SYSPRINT,DISP=(NEW,CATLG),
//         SPACE=(9044,(15,15),RLSE),UNIT=SYSDA,
//         DCB=(LRECL=137,BLKSIZE=1374,RECFM=VBA,DSORG=PS)
```

Figure 17. Example of a z/OS parameter file

VM parameter file

The CMS commands for a VM parameter file are shown in Figure 18.

```
FILEDEF INPUT DISK ACIFEX2 SYSIN A
FILEDEF OUTPUT DISK APKACIF OUTPUT A (LRECL 32756 BLKSIZE 32760 RECFM VB
FILEDEF INDEX DISK APKACIF INDEX A (LRECL 32756 BLKSIZE 32760 RECFM VB
FILEDEF RESLIB DISK APKACIF RESLIB A (LRECL 32756 BLKSIZE 32760 RECFM VB
FILEDEF SYSPRINT DISK APKACIF SYSPRINT A
APKACIF

Where file ACIFEX2 SYSIN A contains the following:
                                   /* Example phone bill        */
                     /* DATA CHARACTERISTICS                    */
 CC = YES                          /* Carriage control used     */
 CCTYPE = A                        /* Carriage control type     */
 CHARS = GT15
 CPGID = 500                       /* Code page identifier      */
 FDEFLIB = FDEF3820,FDEF38PP
                     /* INDEXING INFORMATION                    */
 FIELD1 = 13,66,15                 /* Account Number            */
 FIELD2 = 0,50,30                  /* Name                      */
 FIELD3 = 1,50,30                  /* Address                   */
 FIELD4 = 2,50,30                  /* City, State, ZIP          */
 FIELD5 = 4,60,12                  /* Date Due                  */
 INDEX1 = 'Account Number',FIELD1  /* 1st INDEX                 */
 INDEX2 = 'Name',FIELD2            /* 2nd INDEX                 */
 INDEX3 = 'Address',FIELD3         /* 3rd INDEX                 */
 INDEX4 = 'City, State, ZIP',FIELD4   /* 4th INDEX              */
 INDEX5 = 'Date Due',FIELD5        /* 5th INDEX                 */
                     /* FILE INFORMATION                        */
 INDEXDD = INDEX                   /* Index file ddname         */
 INPUTDD = INPUT                   /* Input file ddname         */
 OUTPUTDD = OUTPUT                 /* Output file ddname        */
 RESOBJDD = RESLIB                 /* Resource file ddname      */
                     /* RESOURCE INFORMATION                    */
 FORMDEF = F1A10110                /* Formdef name              */
 PAGEDEF = P1A08682                /* Pagedef name              */
 FONTLIB = FONT3820,FONT38PP
 OBJCONLIB = OBJC3820
 OVLYLIB = OVLY3820,OVLY38PP
 PDEFLIB = PDEF3820,PDEF38PP
 PSEGLIB = PSEG3820,PSEG38PP
 RESFILE = SEQ                     /* Resource file type        */
 RESTYPE = FDEF,PSEG,OVLY          /* Resource type selection   */
                     /* EXIT AND TRIGGER INFORMATION            */
 TRIGGER1 = *,1,'1'                /* 1st TRIGGER               */
 TRIGGER2 = 13,50,'ACCOUNT NUMBER:'   /* 2nd TRIGGER            */
```

Figure 18. Example of a VM parameter file

VSE parameter file

The JCL for a VSE parameter file is shown in Figure 19 on page 111.

```
// JOB
// LIBDEF PHASE,SEARCH=(PRD2.AFP)
// ASSGN  SYSLST,X'FEE'
// ASSGN  SYS006,201
// DLBL   INPUT,'APKACIF.INPUT',0,SD
// EXTENT SYS006,SYSWK1,1,1,9200,13
// ASSGN  SYS007,201
// DLBL   OUTPUT,'APKACIF.OUTPUT',0,SD
// EXTENT SYS007,SYSWK1,1,1,9213,45
// ASSGN  SYS008,201
// DLBL   RESOBJ,'APKACIF.RESLIB',0,SD
// EXTENT SYS008,SYSWK1,1,1,9258,15
// ASSGN  SYS009,201
// DLBL   INDEX,'APKACIF.INDEX',0,SD
// EXTENT SYS009,SYSWK1,1,1,9273,15
// EXEC   PGM=APKACIF,SIZE=548K

                    /* DATA CHARACTERISTICS                    */
 CC = YES                          /* Carriage control used     */
 CCTYPE = A                        /* Carriage control type     */
 CHARS = GT15
 CPGID = 500                       /* Code page identifier      */
                    /* FIELD AND INDEX DEFINITION              */
 FIELD1 = 13,66,15                 /* Account Number            */
 FIELD2 = 0,50,30                  /* Name                      */
 FIELD3 = 1,50,30                  /* Address                   */
 FIELD4 = 2,50,30                  /* City, State, ZIP          */
 FIELD5 = 4,60,12                  /* Date Due                  */
 INDEX1 = 'Account Number',FIELD1  /* 1st INDEX                 */
 INDEX2 = 'Name',FIELD2            /* 2nd INDEX                 */
 INDEX3 = 'Address',FIELD3         /* 3rd INDEX                 */
 INDEX4 ='City, State, ZIP',FIELD4 /* 4th INDEX                 */
 INDEX5 = 'Date Due',FIELD5        /* 5th INDEX                 */
                    /* FILE INFORMATION                        */
 INDEXDD = INDEX                   /* Index file ddname         */
 INPUTDD = INPUT                   /* Input file ddname         */
 OUTPUTDD = OUTPUT                 /* Output file ddname        */
 RESOBJDD = RESOBJ                 /* Resource file ddname      */
                    /* RESOURCE INFORMATION                    */
 FORMDEF  = F1A10110               /* Formdef name              */
 PAGEDEF  = P1A08682               /* Pagedef name              */
 RESFILE = SEQ                     /* Resource file type        */
 RESTYPE  = FDEF,PSEG,OVLY         /* Resource type selection   */
                    /* EXIT AND TRIGGER INFORMATION            */
 TRIGGER1 = *,1,'1'                /* 1st TRIGGER               */
 TRIGGER2 = 13,50,'ACCOUNT NUMBER:'/* 2nd TRIGGER               */
/*
/&
```

Figure 19. Example of a VSE parameter file

Indexing data in the input file

The parameter file that you create runs the ACIF program to index the input file.

Note: ACIF does not look for indexing information in PTOCA objects or Unicode complex text, and does not use PTOCA text controls to index the file.

The example in Figure 14 on page 106 uses these data values as the indexing attributes:

- Account Number

- Name
- Address
- City, State, ZIP
- Date Due

You must specify the ACIF indexing parameters so that the first page of each bill includes group-level indexing tags that contain the values of all five of these attributes.

To generate the indexing attributes:

1. Specify the **TRIGGER1** parameter because ACIF always scans for the data that is specified in **TRIGGER1** first. Because the data contains carriage control characters, include a carriage control character of '1' to indicate a new page. ACIF locates the start of a page by searching every record in the file for a trigger value of '1' in column 1 of the data. Specify this parameter:
   ```
   TRIGGER1 = *,1,'1'
   ```
   When ACIF finds a record that contains a '1' in column 1, that record becomes the indexing anchor record.
2. Define subsequent **TRIGGER***n* parameters relative to the indexing anchor record. In this example, you want to ensure that the page that is indexed is the first page of the bill, which is the only page in the bill that has the text 'ACCOUNT NUMBER' starting at byte 50 in the 13th record that follows the anchor record. To specify this additional trigger for locating the correct page to index, enter:
   ```
   TRIGGER2 = 13,50,'ACCOUNT NUMBER'
   ```
   ACIF uses both trigger values to locate a place in the file to begin searching for the data that is supplied in the **INDEX***n* parameters.
3. Specify the attribute name of the first indexing parameter as `'Account Number'`, and define the location of the attribute value in the data relative to the index anchor record set by **TRIGGER1**. Because the data value for the Account Number attribute is in the 13th record from the index anchor record that starts in byte 66 and extends for 15 bytes, specify:
   ```
   FIELD1=13,66,15
   INDEX1='Account Number',FIELD1
   ```
4. Define `'Name'` as the indexing attribute to create the indexing tag for the Name attribute. Locate the value for 'Name' in the anchor record in the data that starts at byte 50 and extends for 30 bytes. These are the ACIF parameters to specify:
   ```
   FIELD2=0,50,30
   INDEX2='Name',FIELD2
   ```
5. Repeat this process to specify the other three indexing tags so that the index attributes and values are defined as follows:
   - `INDEX1='Account Number',FIELD1`
     - `'Account Number'` is the first index attribute
     - `FIELD1` maps to the **FIELD1** index value, which is:
       - 13 lines down from the indexing anchor record, 66 columns across, 15 bytes in length
   - `INDEX2='Name',FIELD2`
     - `'Name'` is the second index attribute
     - `FIELD2` maps to the **FIELD2** index value, which is:

    - 0 lines down (in the indexing anchor record), 50 columns across, 30 bytes in length
- `INDEX3='Address',FIELD3`
  - `'Address'` is the third index attribute
  - `FIELD3` maps to the **FIELD3** index value, which is:
    - 1 line down from the indexing anchor record, 50 columns across, 30 bytes in length
- `INDEX4='City, State, ZIP',FIELD4`
  - `'City, State, ZIP'` is the fourth index attribute
  - `FIELD4` maps to the **FIELD4** index value, which is:
    - 2 lines down from the indexing anchor record, 50 columns across, 30 bytes in length
- `INDEX5='Date Due',FIELD5`
  - `'Date Due'` is the fifth index attribute
  - `FIELD5` maps to the **FIELD5** index value, which is:
    - 4 lines down from the indexing anchor record, 60 columns across, 12 bytes in length

The result of using these indexing parameters is that the first page of each bill in the ACIF output file contains indexing tags for each of the five indexing attributes. Using AFP Workbench Viewer, customer service representatives can locate a single customer bill in the ACIF document by using any combination of the indexing attributes.

Identifying the locations of the resources

To build the resource file, you must specify the resource libraries in the parameter file so ACIF knows where to find the resources that are specified in the job. The parameter file examples for the telephone bill (Figure 16 on page 108, Figure 17 on page 109, Figure 18 on page 110, and Figure 19 on page 111) define these resource libraries:

FDEFLIB	Form definition library
FONTLIB	Font library
OBJCONLIB	Object container library
OVLYLIB	Overlay library
PDEFLIB	Page definition library
PSEGLIB	Page segment and BOCA, GOCA, IOCA , and PTOCA object library

Notes:

1. Resource files that are processed by ACIF must contain a X'5A' carriage control character at the start of each structured field.
2. See “Selecting resources” on page 17 for a complete list of the search order for AFP resources in AIX or Windows.

Determining the form definition and the page definition

To format and print the job, specify form definition and page definition resources in the parameter file. The parameter file examples for the telephone bill (Figure 16 on page 108, Figure 17 on page 109, Figure 18 on page 110, and Figure 19 on page 111) define these resources:

FORMDEF
F1A10110, a standard form definition that is provided with PSF or InfoPrint Manager.

PAGEDEF
P1A08682, a standard page definition that is provided with PSF or InfoPrint Manager.

Running the ACIF job

Run the ACIF job, depending on your operating system:

AIX and Windows
Use one of these methods:

- Use a parameter file that contains the parameters and values that are needed for the application (see Figure 16 on page 108). To use a parameter file, enter the **acif** command, the **PARMDD** parameter, and the parameter file name. For example, to use a parameter file that is named `PARMFILE`, specify this command on the command line:

  ```
  acif parmdd=PARMFILE
  ```
- Enter the **acif** command, parameters, and values on the command line or in a shell script. For the telephone bill example, enter:

  ```
  acif cc=yes cctype=z chars=42B2 cpgid=850...
  ```

  (continue entering all of the remaining parameters and values).

  See “Examples of using ACIF processing parameters” on page 97 for examples of running ACIF from the command line. For information about creating and running shell scripts, see *InfoPrint Manager: Reference*.

z/OS and VSE
Run a batch job by using the JCL you created for the parameter file (see Figure 17 on page 109 and Figure 19 on page 111).

VM Run the CMS command for the parameter file you created (see Figure 18 on page 110).

ACIF processes the parameters that you specified in the parameter file, on the command line, or in the shell script and creates output files. Table 9 shows the output files that ACIF creates for AIX, Windows, z/OS, VM, and VSE. The Windows operating system is referred to as “WIN” in the table.

Table 9. Output files ACIF creates

Type of File	AIX and WIN	z/OS	VM	VSE
Document file, including indexing structured fields	OUTDOC	APKACIF.OUTPUT	APKACIF OUTPUT	APKACIF.OUTPUT
Index object file	INDXOBJ	APKACIF.INDEX	APKACIF INDEX	APKACIF.INDEX
Resource file	RESDATA	APKACIF.RESLIB	APKACIF RESLIB	APKACIF.RESLIB
Message file listing: • ACIF parameters used • Resources used • Return code	acif.msg	APKACIF.SYSPRINT	APKACIF SYSPRINT	APKACIF.SYSPRINT

Concatenating ACIF output files

To use AFP Workbench Viewer to view the document file on a workstation, you must first concatenate the resource file, the index object file, and the document file to create a MO:DCA print file. The order of the files in the concatenated file must be:

1. Resource file
2. Index object file
3. Document file

Note: The concatenated file can contain only a single resource file, but multiple index and document files. For example, one resource file (RESDATA), two index object files (INDXOBJ1 and INDXOBJ2), and two document files (OUTDOC1 and OUTDOC2) can be concatenated in this order:

```
RESDATA INDXOBJ1 OUTDOC1 INDXOBJ2 OUTDOC2
```

See *Mixed Object Document Content Architecture Reference*, for information about the print file structure.

AIX files

Use one of the methods that are described in these shell command examples to concatenate the AIX output files:

- `cat RESDATA INDXOBJ OUTDOC > NEWFILE`

  The resource file, the index object file, and the document file are combined to create a new file that contains all three files.
- `cat INDXOBJ OUTDOC >> RESDATA`

  The index object file and the document file are added on to the end of the existing resource file.

Windows files

Use one of the methods that are described in these shell command examples to concatenate the Windows output files:

- `copy /b RESDATA + INDXOBJ + OUTDOC NEWFILE`

  The resource file, the index object file, and the document file are combined to create a new file that contains all three files.
- `copy /b RESDATA + INDXOBJ + OUTDOC`

  The index object file and the document file are added on to the end of the existing resource file.

z/OS files

This example shows the z/OS JCL that you can use to concatenate files:

```
//PRINT EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DUMMY
//SYSUT1   DD DSN=APKACIF.RESLIB,DISP=SHR
//         DD DSN=APKACIF.INDEX,DISP=SHR
//         DD DSN=APKACIF.OUTPUT,DISP=SHR
//SYSUT2   DD DSN=NEW.PRINT.OBJECT,DISP=(NEW,CATLG),
//         UNIT=SYSDA,SPACE=(32760,nnn),
//         DCB=(LRECL=32756,BLKSIZE=32760,RECFM=VBM)
```

Where *nnn* is equal to the size of the resource file, plus the size of the index object file, plus the size of the document file.

Note: The resource file must be created by specifying **RESFILE=SEQ**.

VM files

This example shows the VM CMS commands that you can use to concatenate files:

```
COPY APKACIF RESLIB A APKACIF INDEX A APKACIF OUTPUT A APKACIF LIST3820 A (APPEND
```

VSE files

VSE does not supply a utility for concatenating ACIF output files; you must write your own program.

Accessing the document file for viewing

To view the concatenated document file with AFP Workbench Viewer, you must access the file from a workstation that is running Microsoft Windows. You can use one of these methods to access the file:

- *Transfer* the document file, in binary format, to the workstation where AFP Workbench Viewer is installed.
- *Mount* your AIX or Windows directory on the workstation where AFP Workbench Viewer is installed.

Notes:

1. You must have TCP/IP installed on both the AIX, Windows, z/OS, VM, or VSE system and the workstation system where AFP Workbench Viewer is installed.
2. To *mount* your AIX or Windows directory on the workstation where AFP Workbench Viewer is installed, you must have TCP/IP with Network File System (NFS) installed on both the AIX or Windows system and on the workstation system where AFP Workbench Viewer is installed.

   For more information about TCP/IP and NFS, see your TCP/IP documentation.

Transferring the document file to the workstation

You can use the File Transfer Protocol (FTP) program to *transfer* the concatenated document file to the workstation where Microsoft Windows and AFP Workbench Viewer are installed:

1. From the drive and directory of the workstation where you want to save the document file, enter the FTP command and the name of your AIX, Windows, z/OS, VM, or VSE system:

   `ftp` *systemname*
2. Enter your system user name.
3. Enter the password for your system user name.
4. To access the directory where the concatenated document file is currently located, enter:

   `cd` *directoryname*
5. To transfer the file in binary format, enter:

   ```
   bin
   ```
6. To transfer a concatenated document file that is named NEWFILE, enter:

   ```
   get NEWFILE
   ```

   The file is copied to the workstation, where you can open it for viewing with AFP Workbench Viewer.
7. To exit the FTP program, enter:

   ```
   ftp bye
   ```

Mounting the AIX or Windows directory on the workstation

You can *mount* your AIX or Windows directory on the workstation where Microsoft Windows and AFP Workbench Viewer are installed by using the NFS **mount** command and the procedures that are documented in the NFS manuals or your own installation file mounting procedures.

Example of using enhanced indexing with ACIF

You can use enhanced indexing in ACIF to view and index a report, such as a telephone bill. The tasks that you do are the same as those tasks described in “Example of using ACIF to view and index documents” on page 102. This section shows a telephone bill and the ACIF enhanced indexing parameter file that is needed to view and index the bill.

Enhanced indexing telephone bill

Figure 20 on page 118 shows an example of a customer's telephone bill.

```
1DETAIL REPORT                    TELECOMMUNICATIONS STATEMENT FOR PERIOD OF JUNE 2005                       PAGE  0001
                         FOR:     APPLE, ANNIE

 SUBGROUP SEQ     4020                                                                           DIVISION    SALES
 ACCOUNT                                                                                         GROUP SEQ   006
                                                                                                 DEPARTMENT  3517
 APPLE, ANNIE

                                             CALLS VIA PHONE NETWORK
                            -----------------------------------------------------------------------
                            DATE  TIME  ORIGINATION  DESTINATION  DAC    NUMBER      MIN      CHARGES
                            06-02 08:03 DXSD PLT5    WILLOW GRV PA    215 555-4100     1         .28
                            06-02 08:24 DXSD PLT5    MEMPHIS    TN    901 555-3293     2         .55
                            06-02 08:46 DXSD PLT5    NASHVILLE  TN    615 555-2000     3         .82
                            06-02 09:23 DXSD PLT5    PHILA      PA    215 555-3573    12        3.22
                            06-02 09:35 DXSD PLT5    COLUMBIA   SC    803 555-6781     4        1.08
                            06-02 09:46 DXSD PLT5    COLUMBIA   SC    803 555-6781     2         .55
                            06-02 09:48 DXSD PLT5    BOUNDBROOK NJ    201 555-2939    13        3.49
                            06-02 10:01 DXSD PLT5    NEW YORK   NY    212 555-2470     6        1.62
                            06-02 10:06 DXSD PLT5    NEW YORK   NY    212 555-2470     5        1.35
                            06-02 10:12 DXSD PLT5    INDIANAPLS IN    317 555-2533     5        1.35
                            06-02 10:40 DXSD PLT5    CHARLESTON WV    204 555-7000     8        2.15
                            06-02 10:47 DXSD PLT5    CLEVELAND  OH    216 555-1744     4        1.08
                            06-02 11:01 DXSD PLT5    CLEVELAND  OH    216 555-1744     2         .55
                            06-02 13:09 DXSD PLT5    DETROIT    MI    313 555-8889     5        1.35
                            06-02 13:28 DXSD PLT5    COLUMBIA   SC    803 555-3580     5        1.35
                            06-02 14:51 DXSD PLT5    COLUMBIA   SC    803 555-3743     2         .55
                            06-02 14:57 DXSD PLT5    COLUMBIA   SC    803 555-3580    17        4.56
                            06-02 18:47 DXSD PLT5    BIRMINGHAM MI    313 555-9143     1         .21
                            06-03 10:00 DXSD PLT5    COLUMBIA   SC    803 555-3580     5        1.35
                            06-03 10:10 DXSD PLT5    COLUMBIA   SC    803 555-3580     5        1.35
                            06-03 10:33 DXSD PLT5    PICORIVERA CA    213 555-7426     1         .29
                            06-03 14:48 DXSD PLT5    PICORIVERA CA    213 555-7426     6        1.43
                            06-03 15:22 DXSD PLT5    PITTSBURGH PA    412 555-2536     2         .55
                            06-03 16:10 DXSD PLT5    IRVINE     CA    714 555-4933     1         .27
                            06-03 16:15 DXSD PLT5    HNTNGTNBCH CA    714 555-6488    14        3.05
                            06-03 16:29 DXSD PLT5    IRVINE     CA    714 555-4933     4         .92
                            06-03 16:34 DXSD PLT5    KALAMAZOO  MI    616 555-0478     3         .82
                            06-03 16:36 DXSD PLT5    IRVINE     CA    714 555-4933     3         .70
                            06-03 16:39 DXSD PLT5    PICORIVERA CA    213 555-7426     3         .75
                            06-03 16:41 DXSD PLT5    WLOSANGELS CA    213 555-5000     7        1.76
                            06-03 16:47 DXSD PLT5    IRVINE     CA    714 555-0170     3         .70
                            06-04 08:03 DXSD PLT5    WILLOW GRV PA    215 555-4133     1         .28
                            06-04 08:24 DXSD PLT5    MEMPHIS    TN    901 555-3293     2         .55
                            06-04 08:46 DXSD PLT5    NASHVILLE  TN    615 555-2000     3         .82
                            06-04 09:23 DXSD PLT5    PHILA      PA    215 555-3573    12        3.22
                            06-04 09:35 DXSD PLT5    COLUMBIA   SC    803 555-6781     4        1.08
                            06-04 09:46 DXSD PLT5    COLUMBIA   SC    803 555-6781     2         .55
                            06-04 09:48 DXSD PLT5    BOUNDBROOK NJ    201 555-2939    13        3.49
                            06-04 10:01 DXSD PLT5    NEW YORK   NY    212 555-2470     6        1.62
                            06-04 10:06 DXSD PLT5    NEW YORK   NY    212 555-2470     5        1.35
                            06-04 10:12 DXSD PLT5    INDIANAPLS IN    317 555-2533     5        1.35

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                         FOR:     APPLE, ANNIE

 SUBGROUP SEQ     4020                                                                           DIVISION    SALES
 ACCOUNT                                                                                         GROUP SEQ   006
                                                                                                 DEPARTMENT  3517
 APPLE, ANNIE                                      (CONTINUED)
                                             CALLS VIA PHONE NETWORK
                            -----------------------------------------------------------------------
                            DATE  TIME  ORIGINATION  DESTINATION  DAC    NUMBER      MIN      CHARGES
                            06-04 10:22 DXSD PLT5    LOMBARD    IL    312 555-1717     9        2.42
                            06-04 11:08 DXSD PLT5    LOSANGELES CA    213 555-4732    21        5.12
                            06-04 11:53 DXSD PLT5    KANSASCITY KS    913 555-1400     4        1.08
                            06-04 12:18 DXSD PLT5    PICORIVERA CA    213 555-7426    15        4.09
                            06-04 14:38 DXSD PLT5    INDIANAPLS IN    317 555-2533    15        4.15
                            06-04 15:12 DXSD PLT5    SAN DIEGO  CA    619 555-3133     5         .17
                            06-04 15:35 DXSD PLT5    BOULDER    CO    303 555-1442     8        2.15
                            06-05 10:42 DXSD PLT5    PITTSBURGH PA    412 555-2536    11        2.95
                            06-05 12:04 DXSD PLT5    PONTIAC    MI    313 555-5184    17        4.56
                            06-05 13:06 DXSD PLT5    BIRMINGHAM MI    313 555-9143    13        3.49
                            06-06 08:46 DXSD PLT5    MINNEAPOLS MN    612 555-2984     4        1.08
                            06-06 12:51 DXSD PLT5    PITTSBURGH PA    412 555-3090     3         .82
                            06-06 12:57 DXSD PLT5    MINNEAPOLS MN    612 555-2984     1         .28
                            06-06 13:13 DXSD PLT5    MINNEAPOLS MN    612 555-2984     5        1.35
                            06-06 13:19 DXSD PLT5    PITTSBURGH PA    412 555-3090    10        2.69
                            06-06 13:28 DXSD PLT5    PITTSBURGH PA    412 555-3090     7        1.88
                            06-06 14:28 DXSD PLT5    PITTSBURGH PA    412 555-2536     8        2.15
                            06-06 10:12 DXSD PLT5    INDIANAPLS IN    317 555-2533     5        1.35
                            06-09 08:03 DXSD PLT5    WILLOW GRV PA    215 555-4133     1         .28
                            06-09 08:24 DXSD PLT5    MEMPHIS    TN    901 555-3293     2         .55
                            06-09 08:46 DXSD PLT5    NASHVILLE  TN    615 555-2000     3         .82
                            06-09 09:23 DXSD PLT5    PHILA      PA    215 555-3573    12        3.22
                            06-09 09:35 DXSD PLT5    COLUMBIA   SC    803 555-6781     4        1.08
                            06-09 09:46 DXSD PLT5    COLUMBIA   SC    803 555-6781     2         .55
                            06-09 09:48 DXSD PLT5    BOUNDBROOK NJ    201 555-2939    13        3.49
                            06-09 10:01 DXSD PLT5    NEW YORK   NY    212 555-2470     6        1.62
                            06-09 10:06 DXSD PLT5    NEW YORK   NY    212 555-2470     5        1.35
                            06-09 10:12 DXSD PLT5    INDIANAPLS IN    317 555-2533     5        1.35
                            06-09 10:40 DXSD PLT5    CHARLESTON WV    204 555-7000     8        2.15
                            06-09 10:47 DXSD PLT5    CLEVELAND  OH    216 555-1744     4        1.08
                            06-09 11:01 DXSD PLT5    CLEVELAND  OH    216 555-1744     2         .55
                            06-09 13:09 DXSD PLT5    DETROIT    MI    313 555-8889     5        1.35
                            06-09 13:28 DXSD PLT5    COLUMBIA   SC    803 555-3580     5        1.35
                            06-09 14:51 DXSD PLT5    COLUMBIA   SC    803 555-3743     2         .55
                            06-09 14:57 DXSD PLT5    COLUMBIA   SC    803 555-3580    17        4.56
                            06-09 18:47 DXSD PLT5    BIRMINGHAM MI    313 555-9143     1         .21
```

Figure 20. Example of the enhanced indexing telephone bill

Enhanced indexing parameter file

The JCL for a z/OS enhanced indexing parameter file is shown in Figure 21. This example creates a sequential data set; however, set these parameters if you need a partitioned data set:

- **RESFILE=PDS**
- **SPACE** and **DSORG** parameters in the DD statement of the data set named by the **RESOBJDD** parameter to **SPACE=(12288,(150,15,15)),DSORG=PO**

Failure to set these parameters as described might produce a **RESOBJDD** data set that is unusable.

```
CC=YES
CCTYPE=A
  CPGID=500
  INPUTDD  = INPUT
   INDEXDD  = INDEX
   MSGDD    = SYSPRINT
   OUTPUTDD = OUTPUT
   /*TRACE    = YES
   RESOBJDD = RESOURCE
INDEXSTARTBY=7
INDEXOBJ=ALL
 FORMDEF  = F1IBM
TRIGGER1=*,1,X'F1'
TRIGGER2=0,125,X'F0F0F0F1'                /* Anchor point top-of-page
TRIGGER3=0,2,X'C4C5E3'                    /* Anchor point for DET
TRIGGER4=*,60,X'C6D6C9',(TYPE=FLOAT)
TRIGGER5=*,60,X'C6D6D9',(TYPE=FLOAT)
FIELD1=6,2,20                             /* Pick up name
FIELD2=5,116,4                            /* Pick up department number
FIELD3=4,116,3                            /* Pick up group name
FIELD4=3,19,4                             /* Pick subgroup number
FIELD5=0,92,10,(TRIGGER=4)                /* Pick up total using trigger2
FIELD6=0,92,10,(TRIGGER=5)                /* Pick up total using trigger2
/* INDEX1='NAME',  FIELD1                 /* Put literal in index
INDEX1=X'D5C1D4C5',  FIELD1               /* Put literal in index
/* INDEX2='Dept',  FIELD2                 /* Put literal in index
INDEX2=X'C4C5D7E3',  FIELD2               /* Put literal in index
/*INDEX3='SubGroup',FIELD3                /* Put literal in index
INDEX3=X'E2E4C2C7D9D6E4D7',FIELD3         /* Put literal in index
/* INDEX4='GROUP',FIELD4                  /* Put literal in index
INDEX4=X'C7D9D6E4D7',FIELD4               /* Put literal in index
/* INDEX5='TOTAL',FIELD5                  /* Put literal in index
INDEX5=X'E3D6E3C1D3',FIELD5               /* Put literal in index
INDEX6=X'E3D6E3C1D3F6',FIELD6,(TYPE=PAGE)    /* Put literal in index
PAGEDEF  = P1C09182
TRC=NO
RESFILE=SEQ
RESTYPE=ALL
/* PAGEDEF  = P1STD1
 FDEFLIB = SYS1.FDEFLIB,ACIF.REGRESS.RESLIB
 FONTLIB = FONTS.FONTLIB,FONTS.FONTLIBB,FONTS.FONTLIBB.EXTRA,
           ACIF.REGRESS.RESLIB
 OVLYLIB = SYS1.OVERLIB
 PDEFLIB = SYS1.PDEFLIB,ACIF.REGRESS.RESLIB
 PSEGLIB = SYS1.PSEGLIB
```

Figure 21. Example of an enhanced indexing parameter file

Example of using ACIF with UTF-16 data

Figure 22 shows an example of a report that you need to index. The data in the report is encoded in 16-bit little endian Unicode Transformation Format (UTF-16LE).

```
1REPORT 540                      THE BAXTER BAY BANK            PRODUCED 08/14/90
LABOR COST CURRENT ANALYSIS                                              PAGE   1
ACTUAL COMPARED TO LAST YEAR ACTUAL
MONTH - 07/31/90                                                             YEAR-TO-DATE
LAST YEAR      VARIANCE                                                      LAST YEAR       VARIANCE
ACTUAL      ACTUAL      DOLLARS     PCT.          ACCOUNT TITLES              ACTUAL       ACTUAL      DOLLARS     PCT.
4,365,566   3,860,315   505,252     13.1      701003 REGULAR SALARIES          29,906,680   26,723,014  3,183,666   11.9
   89,005      79,868     9,137     11.4      702004 SALARY EXPENSE               608,986      601,361      7,625    1.3
  138,524     106,241    32,282     30.4      703108 PART TIME SALARIES         1,053,898      801,605    252,293   31.5
  133,030      77,688    55,342     71.2      703207 TREFOIL TEMPS                662,699      403,588    259,111   64.2
   99,033      38,306    60,727    158.5      705004 OVERTIME                     647,830      258,896    388,934  150.2
      667       1,133       467CR   41.2-     705007 OVERTIME SALARIES              9,026        8,958         68    0.8
   51,123      51,356       233CR    0.5-     707802 SALARIES-FOREIGN OFFICE      364,460      342,014     22,447    6.6
  101,158      20,775    80,383    386.9      921007 CONTRACT EMPLOYMENT          283,050      132,783    150,267  113.2
4,978,106   4,235,682   742,424     17.5      TOTAL LABOR                      33,536,629   29,272,219  4,264,411   14.6
```

Figure 22. Example of report with UTF-16 data

Figure 23 shows an example of a parameter file that you can use to index UTF-16 data. Although the data is little endian UTF-16, the index names and extracted values must be big endian UTF-16. Also, you must specify the **EXTENSIONS=IDXCPGID** parameter.

```
CC=YES
CCTYPE=Z
CPGID=1200
MCF2REF=CPCS
TRC=NO
FILEFORMAT=RECORD,400
TRIGGER1=*,1,X'31',(TYPE=GROUP)                          /* 1           */
TRIGGER2=0,3,X'5200450050004F0052005400',(TYPE=GROUP)   /* R E P O R T  */
FIELD1=0,16,6,(TRIGGER=1,BASE=0)
FIELD2=1,106,54,(TRIGGER=1,BASE=0)
FIELD3=3,44,16,(TRIGGER=1,BASE=0)
FIELD4=X'0031'
INDEX1=X'004E0075006D006200650072',FIELD1,(TYPE=GROUP,BREAK=YES) /* Number */
INDEX2=X'005400690074006C0065',FIELD2,(TYPE=GROUP,BREAK=YES)     /* Title  */
INDEX3=X'00720064006100740065',FIELD3,(TYPE=GROUP,BREAK=YES)     /* rdate  */
INDEX4=X'00530065006300740069006F006E',FIELD4,(TYPE=GROUP,BREAK=NO)/*section*/
DCFPAGENAMES=NO
UNIQUEBNGS=YES
IMAGEOUT=ASIS
INDEXOBJ=GROUP
INDEXSTARTBY=1
INSERTIMM=NO
EXTENSIONS=IDXCPGID
RESTYPE=NONE
inputdd=apkivp.utf16.txt
outputdd=apkivp.utf16.out
indexdd=apkivp.utf16.ind
```

Figure 23. Example of a parameter file for UTF-16 input data

Chapter 6. User exits and input print file attributes

During ACIF processing, you can use a user exit to run a user-written program and then, after the user-written program ends, return control of processing to ACIF. ACIF provides data at each exit that can serve as input to the user-written program.

This chapter contains programming interface information and describes the four user programming exits provided with ACIF. It also describes the information ACIF provides to the exits about the input print file attributes.

User programming exits

ACIF provides these sample programming exits so you can customize the program:

- Input record
- Index record
- Output record
- Resource

The exits are described in the following sections. Sample AIX or Windows C language headers and z/OS, VM, or VSE DSECTs are shown for each programming exit. The C exits are intended for use on AIX and Windows only.

Using the programming exits is optional. You specify the names of the exit programs with the **INPEXIT**, **INDXEXIT**, **OUTEXIT**, and **RESEXIT** parameters. (These parameters are lowercase in AIX and Windows.) Each of these parameters is described in Chapter 3, "ACIF parameters."

Note: If ACIF receives a nonzero return code from any exit program, ACIF issues message APK412I and stops processing.

| ACIF sample code for z/OS, VM, and VSE exits is available from the ACIF sample
| code web page at `http://www.infoprint.com/internet/dcfdata.nsf/vwWeb/`
| `P4000198`.

ACIF provides the sample code for AIX or Windows exits in the AIX directory **/usr/lpp/psf/acif/** or the Windows directory \install_directory\exits\acif\\. Microsoft Visual C++ project (*.dsp) and workspace (*.dsw) files are also provided in the Windows directory. The sample exits are:

apkinp.c
Input record exit that removes No Operation (NOP) structured fields

apkind.c
Index record exit

apkout.c
Output record exit

apkres.c
Resource exit

In addition, ACIF provides these AIX or Windows user input record exits to translate input data streams:

`apka2e.c`
: Converts ASCII stream data to EBCDIC stream data. You can also convert encoded data to another coded character set identifier (CCSID) if you specify the **INPCCSID** and **OUTCCSID** parameters.

`asciinp.c`
: Converts unformatted ASCII data that contains carriage returns and form feeds into a record format that contains an ANSI carriage control character. This exit encodes an ANSI carriage control character in byte 0 of every record.

`asciinpe.c`
: Converts unformatted ASCII data into a record format as does **asciinp.c**; then, converts the ASCII stream data to EBCDIC stream data. You can also convert encoded data to another coded character set identifier (CCSID) if you specify the **INPCCSID** and **OUTCCSID** parameters.

`dbblank.c`
: Processes EBCDIC double-byte line data that is downloaded from the z/OS spool. Adds an extra blank to the end of the input record if all of these specifications are true:

1. The last byte in the record is a blank (X'40' in EBCIDIC).
2. The second to the last byte is not a blank.
3. The input record is line data rather than a structured field.

The record length is updated by one when the blank is added to the end of the input record.

Notes:

1. The exit does not determine whether the data is DBCS, so the blank is added to all input records that meet the criteria. However, this exit must be used only if the spool file consists of double-byte data or mixed single-byte or double-byte data that has blank truncation. Adding a blank to other types of data files can cause formatting errors, depending on how the page definition is coded.
2. The exit only checks for a single trailing blank. If the data contains a different number of odd blanks, the user must ensure that the data is formatted with the correct font.
3. The exit assumes that the input and output data is EBCIDIC and, therefore, does not do any code page translation.

The C language header file for all AIX or Windows exit programs, **apkexits.h**, is also provided along with the build rules for the AIX user exits, **Makefile**.

For more information about compiling AIX or Windows user exit programs, see *InfoPrint Manager for AIX: Procedures*, *InfoPrint Manager for Linux: Procedures*, or *InfoPrint Manager for Windows: Procedures*.

Input record exit

ACIF provides an exit that you can use to add, delete, or modify records in the input file. You can also use the exit to insert indexing information. The program that is run by this exit is defined in the **INPEXIT** parameter.

This exit is called after each record is read from the input file and before any further processing is done on the input record. The exit can request that the record is discarded, processed, or processed and that control is returned to the exit for the next input record. The largest record that can be processed is 32756 bytes. This exit is not called when ACIF is processing resources from libraries.

Note: ACIF issues message APK419S with Return Code 999 (RC=999) and stops processing if the input exit returns a zero length record.

The **EXTENSION=PASSPF** parameter controls whether a Begin Print File (BPF) and End Print File (EPF) structured field pair that the input record exit tries to insert is actually inserted. If PASSPF is not specified and the input record tries to insert a BPF/EPF pair, the attempt fails and the pair is discarded.

In a MO:DCA-P document, indexing information can be passed in the form of a Tag Logical Element (TLE) structured field (see “Tag Logical Element (TLE) structured field” on page 219 for more information). The exit program can create these structured fields while ACIF is processing the print file. You can insert No Operation (NOP) structured fields into the input file in place of TLEs and use ACIF's indexing parameters (**FIELD***n*, **INDEX***n*, and **TRIGGER***n*) to index the NOPs. You can use this alternative instead of modifying the application in cases where the indexing information is not consistently present in the application output.

Note: TLEs are not supported in line data, XML data, or mixed-mode data.

Figure 24 contains a sample C language header that describes the control block that is passed to the AIX or Windows exit program.

```
typedef struct _INPEXIT_PARMS /* Parameters for the input record exit       */
{
   char           *work;      /* Address of 16-byte static work area         */
   PFATTR         *pfattr;    /* Address of print file attribute information */
   char           *record;    /* Address of the input record                 */
   unsigned short in_CCSID;   /* Input CCSID for translating                 */
   unsigned short out_CCSID;  /* Output CCSID for translating                */
   unsigned short recordln;   /* Length of the input record                  */
   unsigned short reserved2;  /* Reserved for future use                     */
   char           request;    /* Add, delete, or process the record          */
   char           eof;        /* EOF indicator                               */
} INPEXIT_PARMS;
```

Figure 24. AIX or Windows sample input record exit C language header

Figure 25 contains a sample DSECT that describes the control block for z/OS, VM, or VSE exit programs.

```
PARMLIST DSECT          Parameters for the input record exit
WORK@    DS    A        Address of 16-byte static work area
PFATTR@  DS    A        Address of print-file-attribute information
RECORD@  DS    A        Address of the input record
         DS    A        Reserved for future use
RECORDLN DS    H        Length of the input record
         DS    H        Reserved for future use
REQUEST  DS    X        Add, delete, or process the record
EOF      DS    C        EOF indicator
```

Figure 25. z/OS, VM, or VSE sample input record exit DSECT

The address of the control block that contains the following parameters is passed to the input record exit. For z/OS, VM, and VSE, the address is passed in a standard parameter list pointed to by register 1; for AIX and Windows, the address is passed by the first parameter.

Note: AIX and Windows parameters are specified in lowercase if they differ from the uppercase parameters listed. For example, **WORK@ | work** means that the parameter for z/OS, VM, or VSE is **WORK@** and the parameter for AIX and Windows is **work**. Otherwise, unless specified, all uppercase parameters are assumed to be lowercase for AIX and Windows.

WORK@ | work (Bytes 1–4)
A pointer to a static, 16-byte memory block. The exit program can use this parameter to save information across calls (for example, pointers to work areas). The 16-byte work area is aligned on a fullword boundary and is initialized to binary zeros before the first call. The user-written exit program must provide the code that is required to manage this work area.

PFATTR@ | pfattr (Bytes 5–8)
A pointer to the print file attribute data structure. For more information about the format of this data structure and the information it contains, see "Attributes of the input print file" on page 134.

RECORD@ | record (Bytes 9–12)
A pointer to the first byte of the input record that includes the carriage control character. The record is in buffer storage that is allocated by ACIF, but the exit program is allowed to modify the input record.

in_CCSID (Bytes 13-14)
The value from the **INPCCSID** parameter in AIX or Windows.

out_CCSID (Bytes 15-16)
The value from the **OUTCCSID** parameter in AIX or Windows.

RESERVED1 (Bytes 13-16)
These bytes are reserved for future use in z/OS, VM, or VSE.

RECORDLN (Bytes 17–18)
The number of bytes (length) of the input record. If the input record is modified, this parameter must also be updated to reflect the actual length of the record.

When you are using the **INPCCSID** and **OUTCCSID** parameters, the actual length of the field might differ from the input record length if you are converting to or from UTF-16 data.

Note: ACIF issues message APK419S with Return Code 999 (RC=999) and stops processing if the input exit returns a zero length record.

RESERVED2 (Bytes 19–20)
These bytes are reserved for future use.

REQUEST (Byte 21)
An indication of how the record is to be processed by ACIF. On entry to the exit program, this parameter is X'00'. When the exit program returns control to ACIF, this parameter must have the value X'00', X'01', or X'02', where:

X'00' Specifies that the record is to be processed by ACIF.

X'01' Specifies that the record is not to be processed by ACIF.

X'02' Specifies that the record is to be processed by ACIF and that control is returned to the exit program so it can insert the next record. The exit program can set this value to save the current record, insert a record, and then supply the saved record at the next call. After the exit inserts the last record, the exit program must reset the **REQUEST** byte to X'00'.

A value of X'00' on entry to the exit program specifies that the record is to be processed. If you want to ignore the record, change the **REQUEST** byte value to X'01'. If you want the record to be processed, and you want to insert an extra record, change the **REQUEST** byte value to X'02'. Any value greater than X'02' is interpreted as X'00', and the exit processes the record.

Note: Only one record can be in the buffer at any time.

EOF (Byte 22)

An end-of-file (EOF) indicator. This indicator is a 1-byte character code that specifies whether an EOF condition is encountered. When **EOF** is signaled (**EOF=Y**), the last record is already presented to the input exit, and the input file is closed. The pointer **RECORD@ | record** is no longer valid. Records cannot be inserted when **EOF** is signaled. These values are the only valid values for this parameter:

Y Specifies that **EOF** is encountered.

N Specifies that **EOF** is not encountered.

The exit program uses the end-of-file indicator to do some additional processing at the end of the print file. The exit program cannot change this parameter.

Using ACIF user input record exits in AIX and Windows

ACIF provides these AIX or Windows user input record exits to translate input data streams:

apka2e

The **apka2e** input record exit program uses the **uconv** command to convert ASCII stream data to EBCDIC stream data. You can also convert encoded data to another coded character set identifier (CCSID) if you specify the **INPCCSID** and **OUTCCSID** parameters. You use this exit when your print job requires fonts with code points that are different from your data file. For example, GT12 has only EBCDIC code points defined. If the **INPCCSID** and **OUTCCSID** parameters are not specified, the default translation is from ASCII (code set IBM-850) to EBCDIC (code set IBM-037). Otherwise, **INPCCSID** specifies the input code page and **OUTCCSID** specifies the output code page.

asciinp

You can use **asciinp** if your unformatted ASCII file contains carriage returns and form feeds. The **asciinp** input record exit program translates an unformatted ASCII data stream into a record format that contains an ANSI carriage control character in byte 0 of every record. If byte 0 of the input record is an ASCII carriage return (X'0D'), byte 0 is transformed into an ASCII space (X'20') that causes a data stream to return and advance one line; no character is inserted. If byte 0 of the input record is an ASCII form feed character (X'0C'), byte 0 is transformed into an ANSI skip to channel 1 command (X'31') that serves as a form feed in the carriage control byte.

asciinpe

You use **asciinpe** if your unformatted ASCII file contains carriage returns and form feeds, and your print job requires fonts with code points that are different from your data file. The **asciinpe** input record exit program translates an unformatted ASCII data stream into a record format just as **asciinp** does. Then, **asciinpe** uses the **uconv** command to convert the ASCII stream data to EBCDIC stream data. You can also convert encoded data to another coded character set identifier (CCSID) just as **apka2e** does if you specify the **INPCCSID** and **OUTCCSID** parameters.

To use an input record exit program to translate input data streams:

1. Specify `inpexit=`*`exitprogram`* in ACIF, where *exitprogram* is **apka2e**, **asciinp**, or **asciinpe**. Ensure that the directory where the input record exit program is located is included in the **PATH** environment variable; otherwise, you must specify the *exitprogram* with the full path name, such as `inpexit=/usr/lpp/psf/bin/apka2e` for AIX or `inpexit=\c:\exits\acif\apka2e.dll` for Windows. For more information about this parameter, see "INPEXIT" on page 55.
2. Optionally, if you want to convert encoded data other than ASCII to EBCDIC, specify these parameters:
   - `inpccsid=`*`ccsid`*, where *ccsid* is a valid CCSID for the input code page
   - `outccsid=`*`ccsid`*, where *ccsid* is a valid CCSID for the output code page

   For more information about these parameters, see "INPCCSID" on page 55 and "OUTCCSID" on page 60.

Notes:

1. If **asciinp** is to be used with ACIF to produce an index file, consideration must be made for the carriage control character that is inserted by **asciinp** into byte 0 when offsets for indexing parameters are determined.
2. Although the **asciinp** and **asciinpe** input record exits do not recognize other ASCII printer commands, you can modify these exits to account for:
   - Backspacing (X'08')
   - Horizontal tabs (X'09')
   - Vertical tabs (X'0B')
3. For more information about using and modifying these programs, see the prolog of the **asciinp.c** source file that is provided with InfoPrint Manager for AIX in the **/usr/lpp/psf/acif** directory or with InfoPrint Manager for Windows in the \install_directory\exits\acif directory.

Index record exit

You can use an index record exit in ACIF to modify or ignore the records that ACIF writes in the index object file. The program that is run by this exit is defined by the **INDXEXIT** parameter.

This exit receives control before a record (structured field) is written to the index object file. The exit program can request that the record is ignored or processed. The largest record that can be processed is 32752 bytes (this number does not include the record descriptor word).

Figure 26 on page 127 contains a sample C language header that describes the control block that is passed to the AIX or Windows exit program.

```
typedef struct _INDXEXIT_PARMS /* Parameters for the index record exit       */
{
   char           *work;      /* Address of 16-byte static work area         */
   PFATTR         *pfattr;    /* Address of print file attribute information */
   char           *record;    /* Address of the record to be written         */
   unsigned short recordln;   /* Length of the output index record           */
   char           request;    /* Delete or process the record                */
   char           eof;        /* Last call indicator to ACIF                 */
} INDXEXIT_PARMS;
```

Figure 26. AIX or Windows sample index record exit C language header

Figure 27 contains a sample DSECT that describes the control block that is passed to the z/OS, VM, or VSE exit program.

```
PARMLIST DSECT          Parameters for the output record exit
WORK@    DS    A        Address of 16-byte static work area
PFATTR@  DS    A        Address of print-file-attribute information
RECORD@  DS    A        Address of the record to be written
RECORDLN DS    H        Length of the output record
REQUEST  DS    X        Delete or process the record
EOF      DS    C        Last call indicator to ACIF
```

Figure 27. z/OS, VM, or VSE sample index record exit DSECT

The address of the control block that contains the following parameters is passed to the index record exit. For z/OS, VM, and VSE, the address is passed in a standard parameter list pointed to by register 1; for AIX and Windows, the address is passed by the first parameter.

Note: AIX and Windows parameters are specified in lowercase if they differ from the uppercase parameters listed. For example, **WORK@** | **work** means that the parameter for z/OS, VM, or VSE is **WORK@** and the parameter for AIX or Windows is **work**. Otherwise, all uppercase parameters are assumed to be lowercase for AIX or Windows.

WORK@ | work (Bytes 1–4)
A pointer to a static, 16-byte memory block. The exit program can use this parameter to save information across calls (for example, pointers to work areas). The 16-byte work area is aligned on a fullword boundary and is initialized to binary zeros before to the first call. The user-written exit program must provide the code that is required to manage this work area.

PFATTR@ | pfattr (Bytes 5–8)
A pointer to the print file attribute data structure. For more information about the format of this data structure and the information it contains, see "Attributes of the input print file" on page 134.

RECORD@ | record (Bytes 9–12)
A pointer to the first byte of the index record that includes the carriage control character. The record is in a 32 KB buffer (where KB equals 1024 bytes). The buffer is in storage that is allocated by ACIF, but the exit program is allowed to modify the index record.

RECORDLN (Bytes 13–14)
The length, in bytes, of the index record. If the index record is modified, this parameter must also be updated to reflect the actual length of the record.

REQUEST (Byte 15)
An indication of how the record is to be processed by ACIF. On entry to the

exit program, this parameter is X'00'. When the exit program returns control to ACIF, this parameter must have the value X'00' or X'01' where:

X'00' Specifies that the record is to be processed by ACIF.

X'01' Specifies that the record is not to be processed by ACIF.

A value of X'00' on entry to the exit program specifies that the record is to be processed. If you want to ignore the record, change the **REQUEST** byte value to X'01'. Any value greater than X'01' is interpreted as X'00' and the exit processes the record.

Note: Only one record can be in the buffer at any time.

EOF (Byte 16)
An end-of-file (EOF) indicator. This indicator is a 1-byte character code that signals when ACIF is finished processing the index object file.

When **EOF** is signaled (**EOF=Y**), the last record is already presented to the index exit. The pointer **RECORD@ | record** is no longer valid. Records cannot be inserted when **EOF** is signaled. These values are the only valid values for this parameter:

Y Specifies that the last record is written.

N Specifies that the last record is not written.

This end-of-file flag, which is used as a last call indicator, returns control to ACIF. The exit program cannot change this parameter.

Output record exit

Using the output record exit, you can modify or ignore the records ACIF writes into the output document file. The program that is run by this exit is defined by the **OUTEXIT** parameter.

The exit receives control before a record (structured field) is written to the output document file. The exit can request that the record is ignored or processed. If the record is ignored, ACIF does not write it to the output document file. The largest record that the exit can process is 32752 bytes, not including the record descriptor word. The exit is not called when ACIF is processing resources.

Figure 28 contains a sample C language header that describes the control block that is passed to the AIX or Windows exit program.

```
typedef struct _OUTEXIT_PARMS /* Parameters for the output record exit      */
{
   char           *work;      /* Address of 16-byte static work area        */
   PFATTR         *pfattr;    /* Address of print file attribute information */
   char           *record;    /* Address of the record to be written        */
   unsigned short recordln;   /* Length of the output record                */
   char           request;    /* Delete or process the record               */
   char           eof;        /* Last call indicator                        */
} OUTEXIT_PARMS;
```

Figure 28. AIX or Windows sample output record exit C language header

Figure 29 on page 129 contains a sample DSECT that describes the control block that is passed to the z/OS, VM, or VSE exit program.

```
PARMLIST DSECT          Parameters for the output record exit
WORK@    DS    A        Address of 16-byte static work area
PFATTR@  DS    A        Address of print-file-attribute information
RECORD@  DS    A        Address of the record to be written
RECORDLN DS    H        Length of the output record
REQUEST  DS    X        Delete or process the record
EOF      DS    C        Last call indicator
```

Figure 29. z/OS, VM, or VSE sample output record exit DSECT

The address of the control block that contains the following parameters is passed to the output record exit. For z/OS, VM, and VSE, the address is passed in a standard parameter list pointed to by register 1; for AIX and Windows, the address is passed by the first parameter.

Note: AIX and Windows parameters are specified in lowercase if they differ from the uppercase parameters listed. For example, **WORK@ | work** means that the parameter for z/OS, VM, or VSE is **WORK@** and the parameter for AIX or Windows is **work**. Otherwise, all uppercase parameters are assumed to be lowercase for AIX or Windows.

WORK@ | work (Bytes 1–4)
A pointer to a static, 16-byte memory block. The exit program can use this parameter to save information across calls (for example, pointers to work areas). The 16-byte work area is aligned on a fullword boundary and is initialized to binary zeros before to the first call. The user-written exit program must provide the code that is required to manage this work area.

PFATTR@ | pfattr (Bytes 5–8)
A pointer to the print file attribute data structure. For more information about the format of this data structure and the information that is contained in it, see "Attributes of the input print file" on page 134.

RECORD@ | record (Bytes 9–12)
A pointer to the first byte of the output record. The record is in a 32 KB buffer (where KB equals 1024 bytes). The buffer is in storage that is allocated by ACIF, but the exit program is allowed to modify the output record.

RECORDLN (Bytes 13–14)
The length, in bytes, of the output record. If the output record is modified, this parameter must also be updated to reflect the actual length of the record.

REQUEST (Byte 15)
An indication of how the record is to be processed by ACIF. On entry to the exit program, this parameter is X'00'. When the exit program returns control to ACIF, this parameter must have the value X'00' or X'01', where:

X'00' Specifies that the record is to be processed by ACIF.

X'01' Specifies that the record is not to be processed by ACIF.

A value of X'00' on entry to the exit program specifies that the record is to be processed. If you want to ignore the record, change the **REQUEST** byte value to X'01'. Any value greater than X'01' is interpreted as X'00' and the exit processes the record.

Keep in mind: When the record is ignored, ACIF does not write it to the output document file, which means that if any Index Element (IEL) structured fields in the index have byte offsets defined for the ignored record, the index file is no longer valid.

Therefore, if the output document file and the index file from ACIF are stored in Content Manager OnDemand, do not use the exit to ignore records. If you do, the indexing information is not valid.

Note: Only one record can be in the buffer at any time.

EOF (Byte 16)

An end-of-file (EOF) indicator. This indicator is a 1-byte character code that signals when ACIF is finished writing the output file.

When **EOF** is signaled (**EOF=Y**), the last record is already presented to the output exit. The pointer **RECORD@** | **record** is no longer valid. Records cannot be inserted when **EOF** is signaled. These values are the only valid values for this parameter:

Y	Specifies that the last record is written.
N	Specifies that the last record is not written.

This end-of-file flag, which is used as a last-call indicator, returns control to ACIF. The exit program cannot change this parameter.

Resource exit

You can use a resource exit in ACIF to "filter" resources so they are not included in the resource file. If you want to exclude a specific type of resource (for example, an overlay), you can control it with the **RESTYPE** parameter. This exit is useful in controlling resources at the file name level. For example, assume that you are going to send ACIF output to PSF and you only wanted to send those fonts that were not included with the PSF product. You can code this exit program to contain a table of all fonts included with PSF and filter those fonts from the resource file. Security is another consideration for using this exit because you can prevent certain named resources from being included. The program that is run by this exit is defined by the **RESEXIT** parameter.

This exit receives control before a resource is read from a library. The exit program can request that the resource is processed or ignored (skipped), but it cannot substitute another resource name in place of the requested one. If the exit requests that any overlay to be ignored, ACIF automatically ignores any resources the overlay references (that is, fonts and page segments).

Figure 30 contains a sample C language header that describes the control block that is passed to the AIX or Windows exit program.

```
typedef struct _RESEXIT_PARMS   /* Parameters for the resource record exit     */
{
   char           *work;        /* Address of 16-byte static work area         */
   PFATTR         *pfattr;      /* Address of print file attribute information */
   char           resname[8];   /* Name of requested resource (8 byte)         */
   char           restype;      /* Type of resource                            */
   char           request;      /* Ignore or process the resource              */
   char           eof;          /* Last call indicator                         */
   unsigned short resnamel;     /* Length of resource name                     */
   char           pad1[3];      /* Padding byte                                */
   char           resnamf[250]; /* Resource name if more than 8 bytes          */
   } RESEXIT_PARMS;
```

Figure 30. AIX or Windows sample resource exit C language header

Figure 31 contains a sample DSECT that describes the control block that is passed to the z/OS, VM, or VSE exit program.

```
PARMLIST DSECT          Parameters for the output record exit
WORK@    DS    A        Address of 16-byte work area
PFATTR@  DS    A        Address of print file attributes
RESNAME  DS    CL8      Resource object name (long)
RESTYPE  DS    X        Resource type indicator
REQUEST  DS    X        Use or ignore action code
EOF      DS    X        Last call flag
RESNAMEL DS    H        Length of resource name
RESERVED DS    CL3      Reserved
RESNAMF  DS    CL250    Resource name if more than 8 bytes
```

Figure 31. z/OS, VM, or VSE sample resource exit DSECT

The address of the control block that contains the following parameters is passed to the resource exit. For z/OS, VM, and VSE, the address is passed in a standard parameter list pointed to by register 1; for AIX and Windows, the address is passed by the first parameter.

Note: AIX and Windows parameters are specified in lowercase if they differ from the uppercase parameters listed. For example, **WORK@ | work** means that the parameter for z/OS, VM, or VSE is **WORK@** and the parameter for AIX or Windows is **work**. Otherwise, unless specified, all uppercase parameters are assumed to be lowercase for AIX or Windows.

WORK@ | work (Bytes 1–4)
A pointer to a static, 16-byte memory block. The exit program can use this parameter to save information across calls (for example, pointers to work areas). The 16-byte work area is aligned on a fullword boundary and is initialized to binary zeros before to the first call. The user-written exit program must provide the code that is required to manage this work area.

PFATTR@ | pfattr (Bytes 5–8)
A pointer to the print file attribute data structure. For more information about the format of this data structure and the information that is presented, see "Attributes of the input print file" on page 134.

RESNAME (Bytes 9–16)
The name of the resource to be included. This name can be a file or member name for AFP resources up to 8 characters. For resources names of more than 8 characters, use **RESNAMF**. The resource type field defines how the **RESNAME** is interpreted.

RESTYPE (Byte 17)
The type of resource the name refers to. This value is a 1-byte hexadecimal where:

X'03'	Specifies a GOCA (graphics) object
X'05'	Specifies a BCOCA (bar code) object
X'06'	Specifies an IOCA (IO image) object
X'40'	Specifies a font character set
X'41'	Specifies a code page
X'42'	Specifies a coded font

X'92' Specifies an object container (also applies to color management resources (CMRs) and TrueType and OpenType font objects)

X'9B' Specifies a PTOCA (presentation text) object

X'FB' Specifies a page segment

X'FC' Specifies an overlay

ACIF does **not** call this exit for these resource types:

Page definition
The page definition (**PAGEDEF**) is a required resource for processing line data, XML data, mixed-mode data, and unformatted ASCII data. The page definition is never included in the resource file.

Form definition
The form definition (**FORMDEF**) is a required resource for processing print files. If you do not want the form definition included in the resource file, specify **RESTYPE=NONE** or explicitly exclude it from the **RESTYPE** list.

Coded fonts
If **MCF2REF=CF** is specified, coded fonts are included in the resource file. Otherwise, ACIF does not include any referenced coded fonts in the resource file; therefore, resource filtering is not applicable. ACIF needs to process coded fonts to determine the names of the code pages and font character sets they reference, which is necessary to create MCF-2 structured fields.

COM setup files
A COM setup file is a required resource for processing microfilm files (*microfilm* can mean either microfiche or 16 mm film). If you do not want a setup file that is included in the resource file, specify **RESTYPE=NONE** or explicitly exclude **OBJCON** from the **RESTYPE** list.

Color mapping tables
A color mapping table (**COLORMAP**) is used to map color values from a source color space to a target color space. If you do not want a color mapping table included in the resource file, specify **RESTYPE=NONE** or explicitly exclude **OBJCON** from the **RESTYPE** list.

`REQUEST (Byte 18)`
An indication of how the resource is to be processed by ACIF. On entry to the exit program, this parameter is X'00'. When the exit program returns control to ACIF, this parameter must have the value X'00' or X'01' where:

X'00' Specifies that the resource is to be processed by ACIF.

X'01' Specifies that the resource is not to be processed by ACIF.

A value of X'00' on entry to the exit program specifies that ACIF processes the resource. If you want to ignore the resource, change the **REQUEST** byte value to X'01'. Any value greater than X'01' is interpreted as X'00' and the exit processes the resource.

`EOF (Byte 19)`
An end-of-file (EOF) indicator. This indicator is a 1-byte character code that signals when ACIF is finished writing the resource file.

When **EOF** is signaled (**EOF=Y**), the last record is already presented to the resource exit. The pointer **RECORD@ | record** is no longer valid. Records cannot be inserted when **EOF** is signaled. These values are the only valid values for this parameter:

Y Specifies that the last record is written.

N Specifies that the last record is not written.

This end-of-file flag, which is used as a last-call indicator, returns control to ACIF. The exit program cannot change this parameter.

RESNAMEL (Bytes 20–21)
The actual length of the meaningful characters in **RESNAME** and **RESNAMF**.

RESERVED | pad1 (Bytes 22-24)
Reserved bytes used for padding or future use.

RESNAMF (Bytes 25–274)
The name of the resource to be included if more than 8 characters. This name can be a full font name for TrueType or OpenType fonts (up to 250 Unicode characters), color management resources (CMRs), or any resources that are installed in the system by using resource access table (RAT) entries (see Appendix B, "Processing resources installed with resource access tables," on page 217 for more information about RATs.). The resource type field defines how the **RESNAMF** is interpreted.

User exit search order

When ACIF loads a specified user exit program during initialization, the operating system determines the search order and method that is used to locate these load modules.

AIX and Windows

ACIF searches for the exit program in the paths that are specified by the **PATH** environment variable or in the paths you specify with the exit program parameters. For more information, see "INDXEXIT" on page 55, "INPEXIT" on page 55, "OUTEXIT" on page 61, and "RESEXIT" on page 70.

If the **INPCCSID** and **OUTCCSID** parameters are used with an exit, the **PATH** environment variable must include the directory that contains the ICU libraries that are included with InfoPrint Manager.

z/OS

Exit load modules can be in a load library that is used as STEPLIB, JOBLIB, or in a system library. ACIF uses the standard z/OS search order to locate the exit load module; that is, it looks first in the STEPLIB, then in the JOBLIB, and finally in the system libraries.

VM

ACIF uses standard CMS search order to locate the specified user exit load module; that is, *name***.TEXT** or *name***.TEXTLIB**.

VSE

Exit load modules are in the library that is defined by the // LIBDEF PHASE,SEARCH=(...) JCL statement.

Attributes of the input print file

ACIF provides information about the attributes of the input print file in a data structure available to ACIF's user exits.

Figure 32 shows a sample C language header that describes the format of the AIX or Windows data structure.

```
typedef struct _PFATTR      /* Print File Attributes                               */
{
   char         cc[3];      /* Carriage controls? - "YES" or "NO "                 */
   char         cctype[1];  /* Carriage control type - A(ANSI), M(Machine), Z(ASCII) */
   char         chars[20];  /* CHARS values, including commas (eg. GT12,GT15)       */
   char         formdef[8]; /* Form Definition (FORMDEF)                            */
   char         pagedef[8]; /* Page Definition (PAGEDEF)                            */
   char         prmode[8];  /* Processing mode                                      */
   char         trc[3];     /* Table Reference Characters - "YES" or "NO "          */
} PFATTR;
```

Figure 32. AIX or Windows sample print file attributes C language header

Figure 33 shows a sample DSECT that describes the format of the z/OS, VM, or VSE data structure.

```
PFATTR   DSECT          Print File Attributes
CC       DS    CL3      Carriage controls? - 'YES' or 'NO '
CCTYPE   DS    CL1      Carriage control type - A (ANSI) or M (Machine)
CHARS    DS    CL20     CHARS values, including commas (eg. GT12, GT15)
FORMDEF  DS    CL8      Form Definition (FORMDEF)
PAGEDEF  DS    CL8      Page Definition (PAGEDEF)
PRMODE   DS    CL8      Processing mode
TRC      DS    CL3      Table Reference Characters - 'YES' or 'NO '
```

Figure 33. z/OS, VM, or VSE sample print file attributes DSECT

The address of the control block that contains the following parameters is passed to the input record exit. For z/OS, VM, and VSE, the address is passed in a standard parameter list pointed to by register 1; for AIX and Windows, the address is passed by the first parameter.

Note: All uppercase parameters are assumed to be lowercase for AIX and Windows.

`CC (Bytes 1–3)`
The value of the **CC** parameter as specified on the **acif** command or in the ACIF processing parameter file. ACIF uses the default value if this parameter is not explicitly specified.

`CCTYPE (Byte 4)`
The value of the **CCTYPE** parameter as specified on the **acif** command or in the ACIF processing parameter file. ACIF uses the default value if this parameter is not explicitly specified.

`CHARS (Bytes 5–24)`
The value of the **CHARS** parameter as specified on the **acif** command or in the ACIF processing parameter file, including any commas that separate multiple font specifications. Because the **CHARS** parameter has no default value, this field contains blanks if no values are specified.

`FORMDEF (Bytes 25–32)`
: The value of the **FORMDEF** parameter as specified on the **acif** command or in the ACIF processing parameter file. Because the **FORMDEF** parameter has no default value, this field contains blanks if no value is specified.

`PAGEDEF (Bytes 33–40)`
: The value of the **PAGEDEF** parameter as specified on the **acif** command or in the ACIF processing parameter file. Because the **PAGEDEF** parameter has no default value, this field contains blanks if no value is specified.

`PRMODE (Bytes 41–48)`
: The value of the **PRMODE** parameter as specified on the **acif** command or in the ACIF processing parameter file. Because the **PRMODE** parameter has no default value, this field contains blanks if no value is specified.

`TRC (Bytes 49–51)`
: The value of the **TRC** parameter as specified on the **acif** command or in the ACIF processing parameter file. ACIF uses the default value if this parameter is not explicitly specified.

Notes:

1. Each of the previous character values is left-aligned, with padding blanks added to the right-end of the string. For example, if **PAGEDEF=P1TEST** is specified on the **acif** command or in the ACIF processing parameter file, the page definition value in the data structure is 'P1TESTbb'.
2. Exit programs cannot change the values that are supplied in this data structure. For example, if 'P1TEST' is the page definition value, and an exit program changes the value to 'P1PROD', ACIF still uses 'P1TEST'.
3. This data structure is provided for informational purposes only.

Chapter 7. ACIF messages

ACIF prints a message list at the end of each compilation. A return code of 0 means that ACIF completed processing without any errors.

Notes:

1. ACIF messages contain instructions for the PSF or InfoPrint Manager system programmer. Show your system programmer these messages because they might not be contained in the PSF or InfoPrint Manager messages publications.
2. AIX and Windows users can run the PSF MSG command to view or print messages online.

Message identifiers

ACIF issues the same messages for AIX, Windows, z/OS, VM, and VSE users. However, the message identifiers in AIX and Windows differ from those identifiers in z/OS, VM, and VSE. In AIX and Windows, the format of the message identifier is **0425-***nnnn*; in z/OS, VM, and VSE, the format of the message identifier is **APK***nnnnt*. The description of the message identifier format is:

0425- Identifies an ACIF message in AIX or Windows.

APK Identifies an ACIF message in z/OS, VM, or VSE.

nnnn Specifies the 3-digit or 4-digit message number.

t Specifies an error condition:

Error Type	Description
S	Severe error that causes ACIF to stop processing the current print file. The exact method of stopping can vary. For certain severe errors, an abend occurs with a return code and reason code. This error is generally the case when some system service fails. In other cases, ACIF ends processing with the appropriate error messages written to the message file specified when you started ACIF. Most error conditions that are detected by ACIF fall into the severe category.
W	Warning error that ACIF issues when the fidelity of the document (assuming it is reprinted) might be in question.
I	Informational error that ACIF issues when it processes a print file to let the operator or application programmer determine whether the correct processing parameters are specified. These messages can help provide an audit trail.

The message number, *nnnn*, is the same in all environments (for example, 0425-**031** in AIX or Windows or APK**031**I in z/OS, VM, or VSE). In this publication, the ACIF messages and explanations are listed according to the z/OS, VM, and VSE message identifiers (for example, APK031I) because AIX and Windows users are more likely to use the PSF MSG command to view the messages online.

The terms in the messages and explanations are used for the z/OS operating system, even though the messages and explanations also apply to AIX and

Windows. This list shows some of the terms that are used in the messages in this publication and what those terms refer to in AIX and Windows:

Term	AIX, Windows
print data set	input file
data set	input file
data stream	file
record	data set

Multiple message scenarios

ACIF can issue more than one error message as a result of a single error condition. These situations are limited to the area of parsing the structured field (for example, determining the length and type of the structured field). Some possible scenarios include these message numbers:

- 105, 108, 109, 103
- 105, 108, 110, 103
- 106, 108, 109, 103
- 106, 108, 110, 103

Any subset of the listed message numbers is also possible, provided that you start with the first one (for example, 105, 108, 109 or 105, 108, or 105, 110). The first message accurately describes the error condition; any subsequent messages provide more information. Additional error messages might not always be accurate.

Message number 101 can occur after many error conditions because ACIF attempts to locate the end of the resource that contains the error as part of its recovery procedure.

General messages

General error messages are not limited to a particular resource, which is why they are considered general error conditions. Although some general errors are limited to a few resources, others can occur in any resource.

APK104S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: *structuredfield* **STRUCTURED FIELD IS NOT ALLOWED OR FORMS AN INVALID SEQUENCE.**

Explanation: The structured field identified in this message is either out of sequence or not valid in an
| object. For example, if an End Print File (EPF)
| structured field is found, a Begin Print File (BPF)
| structured field must precede it. The record might be line data. If inline resources are used with data-set header pages, multiple resource groups might be present.

This message can be is issued if your AFP input file contains IM1 image with no Image Raster Data (IRD) structured field. This type of AFP file might be built by DCF when creating shaded text with a shading percentage of zero.

If this message is preceded by message APK420S, the error is caused by a missing resource object.

System action: ACIF stops processing the print data set.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information on the correct format of the referenced structured field. If the structured fields are in the correct order, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK105I THE ERROR REPORTED ABOVE OCCURRED IN LOGICAL RECORD NUMBER *recordnumber***, WHOSE SEQUENCE NUMBER IS** *sequencenumber***, AND RESOURCE NAME IS** *resourcename***.**

Explanation: This message is given in addition to the message that describes the error. It identifies the specific input record that is not valid. The object (if any) that contains the not valid record is identified in either message APK108I or message APK109I.

The record number specified is relative to the user data stream and is different for multiple transmissions of the data set. However, the record number might be inaccurate if the data set is using a page definition that performs conditional processing.

The sequence number might print as NOT AVAILABLE in the message. For example, a line-data record does not have a sequence number.

System action: The disposition of the file depends upon the error described in the accompanying messages.

User response: See the specific error conditions are described in the accompanying messages to determine an appropriate response.

System programmer response: See the specific error conditions described in the accompanying messages to determine an appropriate response.

APK106I DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: NAME "*tokenname***" IN** *begintypestructuredfield* **DOES NOT MATCH NAME "***tokenname***" IN** *endtypestructuredfield***.**

Explanation: The TOKEN NAME parameters in the Begin-type and End-type structured fields identified in this message do not match. Structured fields might be out of sequence in the input data stream.

When token names are specified, the TOKEN NAME parameters in the associated Begin-type and End-type structured fields must match. For example, if the token name on a Begin Print File (BPF) structured field is
| specified, either the entire eight-character token name
| on a End Print File (EPF) structured field must match
| the BPF token or the first two bytes of the token name
| must be X'FFFF'.

System action: Processing continues, and ACIF issues a message identifying the position of the structured field in the input data stream or resource. ACIF issues additional messages identifying the processing environment when the error was found.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK108I THE ERROR REPORTED ABOVE WAS DETECTED WITHIN OBJECT TYPE *objecttype* **WITH TOKEN NAME** *tokenname***.**

Explanation: This message is issued in addition to the message that describes the error. The objects that were being processed are listed to identify the location of the error in the input data stream or in a resource.

System action: The disposition of the file depends on the error described in the accompanying messages.

User response: See the specific error conditions described in the accompanying messages to determine an appropriate response.

System programmer response: See the specific error conditions described in the accompanying messages to determine an appropriate response.

APK109I THE ERROR REPORTED ABOVE WAS CAUSED BY THE RESOURCE *resourcename* **IN AN EXTERNAL LIBRARY OR AN INLINE RESOURCE.**

Explanation: This message is issued in addition to the message that describes the error. The object identified in the accompanying message was either a resource being processed from an external library or an inline resource. Error message APK108I identifies the member as a page definition, form definition, font, code page, font character set, page segment, or an overlay. The combined information from these two messages can be used to identify the library defined to ACIF on the *type*LIB parameter, where *type* is the type of resource, such as OVLY for overlay. In the case of an inline form definition or page definition, the resource is not a member of an external library but is included at the beginning of the user's data set.

System action: The disposition of the file depends on the error described in the accompanying messages.

User response: See the specific error conditions described in the accompanying messages to determine an appropriate response.

System programmer response: See the specific error conditions described in the accompanying messages to determine an appropriate response.

APK110S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: THE LENGTH SPECIFIED IN THE SELF-DEFINING PARAMETER OR TRIPLET *identifier* **OF THE** *structuredfield* **STRUCTURED FIELD IS INCORRECT.**

Explanation: Insufficient data was present in the structured field for the length given in the self-defining parameter or triplet. If the self-defining parameter or triplet ID is 0, the length of the self-defining parameter or triplet might have been 0 or 1, which means that no ID was available for use in this message. This message can also be issued if a font resource is referenced by a Map Coded Font (MCF) structured field with a code page or character set name that is less than 8 bytes long. If your font resource names are shorter than 8 bytes, make sure that the references are padded with EBCDIC X'40' blanks.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the object, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the object, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the object with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK112S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: RECORD CONTAINS NO DATA, EVEN THOUGH AT LEAST A CONTROL CHARACTER IS EXPECTED.

Explanation: ACIF read an input record without a control character following the record descriptor word (RDW). A minimum of 1 byte of control-character data is needed to make the record valid.

System action: ACIF stops processing the print data set.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK113S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: STRUCTURED FIELD LENGTH IS LESS THAN THE INTRODUCER LENGTH.

Explanation: A structured field must have at least 8 bytes of data, the minimum length necessary for a structured-field introducer. The Extension Indicator flag in the structured-field introducer indicates whether the minimum length of the structured field can be greater than 8 bytes.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK114S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: RECORD LENGTH DOES NOT AGREE WITH LENGTH IN STRUCTURED FIELD INTRODUCER.

Explanation: All structured fields are preceded by a record length that specifies the entire length of the record, including four bytes in the record length and a one byte control character. However, the record length specified does not match the sum of the LENGTH parameter in the structured field introducer and the five other bytes.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, ensure that the record length specified is valid for the structured field , and resubmit the print request. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK116S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: PADDING LENGTH OR EXTENSION LENGTH IS INCORRECT FOR STRUCTURED FIELD.

Explanation: The length of padding or extension specified in the LENGTH or EXTENSION parameter in the structured-field introducer indicates more data than was found in the structured field.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, ensure that the Extension Indicator flag is set correctly and that the LENGTH parameter in the structured-field introducer specifies the actual length of padding for the structured field that is not valid. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured-field introducer. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK117S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: LENGTH INDICATED IN THE STRUCTURED FIELD INTRODUCER IS INCORRECT FOR *structuredfield* STRUCTURED FIELD.

Explanation: The length indicated by the structured-field introducer specifies an incorrect number of bytes for the structured field identified in this message. This error is caused by one of these :

- The Extension or Padding Indicator flags in the structured-field introducer are set incorrectly.
- One or more of the parameters in the structured fieldthat is not valid contain too many bytes of data.

In some cases, the length of a structured field is specified in a parameter located in another structured field. For example, the length of Fixed Data Text (FDX) structured field is specified in the SIZE parameter of the Fixed Data Size (FDS) structured field.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, ensure that the LENGTH parameter in the structured-field introducer specifies a valid length for the structured field. Also ensure that the number of bytes in the structured-field parameter matches the length specified in the structured-field introducer. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured-field introducer.

If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK118W UNSUPPORTED STRUCTURED FIELD *code* WAS IGNORED, AND, IF IT BEGAN AN OBJECT, THE OBJECT WAS IGNORED.

Explanation: The IDENTIFIER parameter in the structured-field introducer for the incorrect structured field specified a structured-field code that was not recognized as a valid structured-field code.

System action: If the structured field began an object, the object was ignored. Otherwise, only the structured field was ignored, and processing of the rest of the data set continues as usual.

ACIF issues a message identifying the position of the structured field in the input data stream or containing resource. ACIF issues additional messages identifying the processing environment when the error was found.

User response: If the printed output was unacceptable, and you created the structured fields for the print data set or resource, give the incorrect structured field a valid code for its structured-field type. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for a list of valid structured-field types.

If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured field for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK120S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: ***structuredfield1*** **STRUCTURED FIELD CONTAINS AN INCORRECT VALUE FOR THE SIZE OF THE** ***structuredfield2*** **REPEATING GROUP.**

Explanation: *Structuredfield1* specifies the length of each repeating group found in *structuredfield2*. Either the value specified in *structuredfield1* for the size of the repeating group is too small, or the actual length of the repeating-group data is not a multiple of the size specified.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: Use the accompanying messages to determine if the structured field causing the error is in the print data set or in a resource. Correct the process used to create the print data set or resource. If you used an IBM licensed program to create the data stream with the error, use local problem-reporting procedures to report this message.

System programmer response: None.

APK130S DATA IN AN INPUT RECORD IS INVALID: ***structuredfield*** **STRUCTURED FIELD IS NOT ACCEPTABLE AT THE START OF A DATA STREAM.**

Explanation: The structured-field type identified in this message is not valid at the start of the data stream. Subsequent error messages give additional information about the processing environment when the error occurred.

System action: ACIF stops processing the print data set.

User response: If you created the structured fields for the print data set, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK135I DATA IN A FORMDEF RESOURCE IS INVALID: DUPLICATE OVERLAY LOCAL IDENTIFIER WAS FOUND IN THE ***structuredfield*** **STRUCTURED FIELD.**

Explanation: The same local identifier was found assigned to more than one OVERLAY LOCAL IDENTIFIER parameter in the Map Medium Overlay (MMO) or Map Page Overlay (MPO) structured field repeating groups. The MMO structured field is contained in the form definition. The MPO is contained in the page definition or the print data set.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK138S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: OVERLAY LOCAL IDENTIFIER VALUE IS NOT ACCEPTABLE IN THE ***structuredfield*** **STRUCTURED FIELD.**

Explanation: An incorrect OVERLAY LOCAL IDENTIFIER was encountered in the Map Medium Overlay (MMO), Map Page Overlay (MPO), or Medium Modification Control (MMC) structured field repeating groups. The MMO and MMC structured fields are contained in the form definition. The MPO is contained in the page definition or the print data set.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK139S DATA IN A FORMDEF RESOURCE IS INVALID: SUPPRESSION LOCAL IDENTIFIER VALUE IS NOT ACCEPTABLE IN THE MSU STRUCTURED FIELD.

Explanation: The SUPPRESSION LOCAL IDENTIFIER parameter in the Map Suppression (MSU) structured field is not valid. The MSU structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK140S DATA IN A FORMDEF RESOURCE IS INVALID: TWO MMC STRUCTURED FIELDS ARE DEFINED WITH THE SAME IDENTIFIER, *identifier*.

Explanation: Two Medium Modification Control (MMC) structured fields in a single form environment group have the same value in their MEDIUM MODIFICATION CONTROL IDENTIFIER parameters. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MMC structured field and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MMC has no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK141S DATA IN A FORMDEF RESOURCE IS INVALID: MEDIUM SUPPRESSION TOKEN NAME IS REPEATED IN MSU STRUCTURED FIELD.

Explanation: The TOKEN NAME parameters in two repeating groups in a Map Suppression (MSU) structured field have the same value. The MSU structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK143S DATA IN A FORMDEF RESOURCE IS INVALID: COPY SPECIFICATIONS IN THE MCC STRUCTURED FIELD ARE NOT ACCEPTABLE.

Explanation: Either a gap or an overlap exists in the Starting and Stopping Copy Numbers, or the maximum number of copies for one set of modifications has been exceeded. The COPY NUMBER parameters are specified in the Medium Copy Count (MCC) structured field. The MCC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, ensure that the Starting Copy Number and Stopping Copy Number parameters in a repeating group in an MCC structured field have valid values that correlate. Also, verify that fewer than 255 copies have been requested. If 255 or more copies with the same modifications are needed, define two or more MCC structured fields. See *Mixed Object Document Content Architecture Reference* for more information on the MCC structured field. If the MCC has no errors, the error might be an ACIF logic error.

If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK145S DATA IN A FORMDEF RESOURCE IS INVALID: THE FORMS-FLASH VALUE IN MMC STRUCTURED FIELD, ID *identifier*, IS NOT ACCEPTABLE.

Explanation: The Medium Modification Control (MMC) structured field contains an incorrect value for the repeating group that contains forms-flash modification. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MMC structured field and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MMC has no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK146S DATA IN A FORMDEF RESOURCE IS INVALID: MORE THAN 8 OVERLAYS ARE SPECIFIED IN MMC STRUCTURED FIELD, ID *identifier*.

Explanation: In a Medium Modification Control (MMC) structured field, the maximum number of overlays allowed in one set of modifications has been exceeded. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MMC structured field and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MMC has no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK147S DATA IN A FORMDEF RESOURCE IS INVALID: MORE THAN 8 SUPPRESSIONS ARE SPECIFIED IN MMC STRUCTURED FIELD, ID *identifier*.

Explanation: In a Medium Modification Control (MMC) structured field, the maximum number of suppressions allowed in one set of modifications has been exceeded. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MMC structured field and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MMC has no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK152S DATA IN A FORMDEF RESOURCE IS INVALID: MMC STRUCTURED FIELD WAS NOT FOUND TO COMPARE WITH IDENTIFIER *identifier* IN MCC STRUCTURED FIELD.

Explanation: The MEDIUM MODIFICATION CONTROL IDENTIFIER parameter in the Medium Copy Count (MCC) structured field contains a value that did not match the MEDIUM MODIFICATION CONTROL IDENTIFIER parameter in any Medium Modification Control (MMC) structured field in the Form Environment Group. The MCC and MMC structured fields are contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MCC or MMC structured field. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MCC and MMC have no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK154S DATA IN A FORMDEF RESOURCE IS INVALID: OVERLAY LOCAL IDENTIFIER IN MMC STRUCTURED FIELD, ID *identifier*, WAS NOT FOUND IN MMO STRUCTURED FIELD.

Explanation: The overlay modification in the Medium Modification Control (MMC) structured field was not present in the Map Medium Overlay (MMO) structured field. The MMC and MMO structured fields are contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK155S DATA IN A FORMDEF RESOURCE IS INVALID: TOO MANY COPY CONTROLS WERE SPECIFIED FOR THE CURRENT FORM ENVIRONMENT GROUP.

Explanation: For a given physical page, up to 256 bytes of data can be specified for the printer command that describes the copies and modifications to be made. The current Form Environment Group causes the data for the command to exceed 256 bytes. ACIF builds the printer command from data contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, either reduce the number of copy groups in the Medium Copy Count (MCC) structured field or reduce the number of modifications specified in the Medium Modification Control (MMC) structured field. Otherwise, split these functions between two or more form environment groups in two or more medium maps. Then, include in your input two or more identical copies of the same page that each select an appropriate copy group by use of the Invoke Medium Map (IMM) structured field. See *Mixed Object Document Content Architecture Reference* for more information about the MMC and MMO structured fields.

If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK156S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: NULL NAME IS NOT ACCEPTABLE IN *structuredfield* STRUCTURED FIELD.

Explanation: All Begin-type and End-type structured fields can include an 8-byte token name. A null token name is not allowed for the listed structured field.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK157S MISMATCH BETWEEN PRINT DATA SET AND FORMDEF RESOURCE: MEDIUM MAP "*mediummap*" SPECIFIED IN IMM STRUCTURED FIELD WAS NOT FOUND IN FORMDEF "*formdefinition*".

Explanation: The TOKEN NAME parameter in the Invoke Medium Map (IMM) structured field specifies the token name used to locate a medium map in the form definition. This parameter must match the TOKEN NAME parameter specified in bytes 0–7 in one of the Begin Medium Map (BMM) structured fields in the current form definition. The IMM structured field is contained in the print data set.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: Ensure that the correct form definition was specified. If it was, and if you added the Invoke Medium Map structured field to the print data set, change the TOKEN NAME in the IMM structured field and run ACIF. See *Mixed Object Document Content Architecture Reference* for more information about the BMM and IMM structured fields. If the correct form definition was specified, and if you used a program to embed the IMM structured field in the print data set, verify that the copy group name that you gave the program is valid for the form definition you have specified.

System programmer response: No response is necessary.

APK158I PAGEDEF PARAMETER MUST BE SPECIFIED IN ORDER TO PRINT THIS DATA SET. DETERMINE THE PERMISSIBLE VALUES USED IN YOUR INSTALLATION FOR THE PAGEDEF PARAMETER.

Explanation: The current data set contains line data, XML data, or structured fields that do not form a MO:DCA-P page. This kind of data set cannot be printed without an active page definition. No PAGEDEF keyword was provided for this job.

This error can also occur if MO:DCA-P data in the print data set contains a record without the required X'5A' control character preceding the structured-field introducer. The missing control character makes the record appear to be line data. A page definition is necessary to process line data. Therefore, ACIF detects an error.

System action: ACIF stops processing the print data set.

User response: If you intended to print line data or XML data, you must specify the PAGEDEF keyword when starting ACIF.

If you did not intend to print line data or XML data, and you used a program to create the structured fields for the print data set, ensure that all MO:DCA-P data records begin with the X'5A' control character and then contact your system programmer.

System programmer response: No response is necessary.

APK159S THE END OF THE DATA STREAM WAS ENCOUNTERED BEFORE THE LOGICAL END OF AN OBJECT WITHIN THE DATA STREAM.

Explanation: ACIF was processing an object that began with a Begin-type structured field. However, the input data stream ended before a corresponding
| End-type structured field was found. For example, if a
| Begin Print File (BPF) structured field is found, an End
| Print File (EPF) structured field must follow it. The message can also occur if the system operator prematurely interrupts or ends a print request by issuing an INTERRUPT, RESTART, or CANCEL Job Entry Subsystem (JES) command.

System action: ACIF stops processing the print data set.

User response: If you created the structured fields for the print data set, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK162S MISMATCH BETWEEN PRINT DATA SET AND PAGEDEF RESOURCE: DATA MAP "*datamap*" SPECIFIED IN IDM STRUCTURED FIELD WAS NOT FOUND IN PAGEDEF "*pagedefinition*".

Explanation: The TOKEN NAME parameter in the Invoke Data Map (IDM) structured field specifies the token name used to locate a data map in the page definition. The name must match the value specified in the TOKEN NAME parameter in the Begin Data Map (BDM) structured field in the current page definition.

The IDM structured field is contained in the print data set.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: Ensure that the correct page definition was specified. If it was, and if you added the Invoke Data Map structured field to the print data set, change the TOKEN NAME in the IDM structured field and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the BDM and IDM structured fields. If the correct page definition was specified, and if you used a program to embed the IDM structured field in the print data set, verify that the data map name that you supplied the program is one that is valid for the page definition you have specified.

System programmer response: No response is necessary.

APK163I DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: THE SCALE FACTOR VALUE IN THE IOC STRUCTURED FIELD IS NOT ACCEPTABLE.

Explanation: The IMAGE BLOCK SCALE FACTOR parameter in the Image Output Control (IOC) structured field is not valid. The image block or image cell might be contained in an overlay, a page segment, or a composed-text print data set. It might also be embedded in a data set containing line data by using a Begin Image (BIM) structured field.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the resource or print data set containing the image, correct the error in the referenced structured field and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the resource or print data set containing the image, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK166S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: AN ENTRY IN A MCF STRUCTURED FIELD CONTAINS AMBIGUOUS IDENTIFICATION.

Explanation: A font in the Map Coded Font (MCF) structured field can be identified with a CODED FONT NAME parameter, with a combination of the FONT CHARACTER SET NAME parameter and the CODE PAGE NAME parameter, or with a CODED FONT parameter (also known as a GRID parameter). One of the repeating groups in an MCF structured field specified more than one of these ways to specify a font or specified a CODED FONT (GRID) and a section number other than 0. The MCF structured field is in the MO:DCA-P data, an overlay, or a page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK167S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: AN ENTRY IN AN MCF STRUCTURED FIELD CONTAINS INCOMPLETE IDENTIFICATION.

Explanation: One of the repeating groups in a Map Coded Font (MCF) structured field does not contain enough information to identify a coded font. Two ways to identify a font in the Map Coded Font (MCF) structured field are either with a CODED FONT NAME parameter or with a combination of the FONT CHARACTER SET NAME parameter and the CODE PAGE NAME parameter. An entry contains only a FONT CHARACTER SET NAME parameter or a CODE PAGE NAME parameter. The MCF structured field is contained in a composed-text print data set, an overlay, or a page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK169S INSUFFICIENT VIRTUAL STORAGE PREVENTED FURTHER PROCESSING. INCREASE REGION SIZE, AND RESUBMIT THE PRINT REQUEST.

Explanation: Insufficient storage is available in the ACIF address space to contain the internal control block needed to read an object.

System action: ACIF stops processing the print data set.

User response: Inform your system programmer that this error occurred.

System programmer response: The value of the REGION parameter used for the ACIF job should be increased.

APK170S DATA IN A FORMDEF RESOURCE IS INVALID: THE SIMPLEX/DUPLEX VALUE IN MMC STRUCTURED FIELD, ID *identifier***, IS NOT ACCEPTABLE.**

Explanation: In the Medium Modification Control (MMC) structured field with the specified identifier, either the simplex or the duplex keyword-parameter value is not valid. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MMC structured field and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MMC has no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK171S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: FONT LOCAL IDENTIFIER VALUE IS NOT ACCEPTABLE IN THE *structuredfield* **STRUCTURED FIELD.**

Explanation: The Map Coded Font (MCF) structured field consists of repeating groups. In one of the groups, the value of the CODED FONT LOCAL IDENTIFIER parameter for the font (section) being mapped is not valid. The MCF structured field is contained in a composed-text print data set, an overlay, or a page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK172S DATA IN A FORMDEF RESOURCE IS INVALID: THE SET OF MODIFICATIONS SPECIFIED IN THE MCC STRUCTURED FIELD INCLUDES BOTH NORMAL AND TUMBLE DUPLEX.

Explanation: The Medium Copy Count (MCC) structured field refers to one or more Medium Modification Control (MMC) structured fields , which include requests for both normal duplex and tumble duplex. You cannot request both normal duplex and tumble duplex within the same medium map. The MCC and MMC structured fields are contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MCC or MMC structured field. See *Mixed Object Document Content*

Architecture Reference for more information about the structured field. If the MCC and MMC have no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK178S DATA IN A FORMDEF RESOURCE IS INVALID: THE MCC STRUCTURED FIELD HAS AN ODD NUMBER OF COPY GROUPS, BUT SPECIFIES DUPLEX.

Explanation: The Medium Copy Count (MCC) structured field specifies an odd number of copy groups, but the copy group modifications specified in the Medium Modification Control (MMC) structured field include duplex, which requires an even number of copy groups. The MCC and MMC structured fields are contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MCC or MMC structured field. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MCC and MMC have no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK179S DATA IN A FORMDEF RESOURCE IS INVALID: THE SET OF MODIFICATIONS SPECIFIED IN THE MCC STRUCTURED FIELD INCLUDES BOTH SIMPLEX AND DUPLEX.

Explanation: The Medium Copy Count (MCC) structured field refers to two or more Medium Modification Control (MMC) structured fields, which include requests for both simplex and duplex printing. You cannot specify both simplex and duplex printing within the same medium map. The MCC and MMC structured fields are contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MCC or MMC structured field. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MCC and MMC have no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK181S DATA IN A FORMDEF RESOURCE IS INVALID: UNEQUAL COPY COUNTS FOR DUPLEX SHEETS ARE SPECIFIED IN THE MCC STRUCTURED FIELD.

Explanation: The set of modifications referred to by the Medium Copy Count (MCC) structured field includes duplexing, but the numbers of copies in two corresponding repeating groups are not equal. The repeating groups are defined in the Medium Map Control structured field (MMC). The MCC and MMC structured fields are contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MCC or MMC structured field. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MCC and MMC have no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK190S DATA IN A FORMDEF RESOURCE IS INVALID: THE BIN-SELECTION VALUE IN MMC STRUCTURED FIELD, ID *identifier*, IS NOT ACCEPTABLE.

Explanation: In the Medium Modification Control (MMC) structured field with the identifier specified in the message text, the bin-selection parameter value was not valid. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MMC structured field and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MMC has no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK191S DATA IN A FORMDEF RESOURCE IS INVALID: THE SUPPRESSION LOCAL IDENTIFIER VALUE IN MMC STRUCTURED FIELD, ID *identifier*, IS NOT ACCEPTABLE.

Explanation: The MEDIUM MODIFICATION CONTROL IDENTIFIER parameter in a Medium Modification Control (MMC) structured field is not valid. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MMC structured field and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MMC has no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK210S DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A REQUIRED TRIPLET OR SELF-DEFINING PARAMETER WITH ID *identifier* WAS MISSING FROM A *structuredfield* STRUCTURED FIELD.

Explanation: The triplet or self-defining parameter specified in the message was not found in the structured field indicated. This is a required triplet or self-defining parameter.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured field with the error, verify that the input to that program is valid.

APK212S DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE UNIT BASE PARAMETER IN THE *structuredfield* STRUCTURED FIELD IS NOT VALID.

Explanation: An incorrect Unit Base value was encountered in the structured field identified in this message.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: Correct the process used to create the image object. If you used an IBM licensed program to create the image object with the error, use local problem-reporting procedures to report this message.

System programmer response: None.

APK217S DATA IN AN INPUT RECORD IS INVALID: PARAMETER IN A BR STRUCTURED FIELD CONTAINS UNACCEPTABLE DATA.

Explanation: One of the parameters in the Begin Resource (BRS or BR) structured field is not valid. The BRS structured field is contained in the print data set.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you placed the BRS structured field in the print data set, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If you used a program to place the BRS structured field in the print data set, contact your system programmer.

System programmer response: If an IBM licensed program was used to place the BRS structured field in the print data set, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK221S DATA IN A FORMDEF RESOURCE IS INVALID: THE ORIENTATION VALUE *value* IN THE MDD STRUCTURED FIELD IS UNACCEPTABLE.

Explanation: The Medium Descriptor (MDD) structured field has an incorrect orientation value. The MDD structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK223I A FORMDEF RESOURCE REQUIRED ENHANCED N_UP AND A CONFLICTING VALUE FOR THE DUPLEX PARAMETER WAS SPECIFIED.

Explanation: When enhanced N_UP is requested, the DUPLEX parameter cannot be used to change from duplex (specified in the form definition) to simplex or vice versa. The reason is that with enhanced N_UP, the Page Position (PGP) Format 2 structured field specified the partition number and sheet side for each page placed on a sheet. If the duplex value is changed from duplex to simplex or vice versa, ACIF does not have the information it needs to place the pages.

The only valid options for the DUPLEX parameter when enhanced N_UP is specified in the form definition are:

- If the form definition requests normal or tumble duplex, you can specify either NORMAL or TUMBLE on the DUPLEX parameter.
- If the form definition requests simplex, you can specify NO on the DUPLEX parameter.

System action: ACIF stops processing the input file and issues a message identifying the position of the structured field in the file or resource.

User response: Resubmit the job without specifying the DUPLEX parameter.

System programmer response: No response is necessary.

APK244I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE *structuredfield* STRUCTURED FIELD CONTAINS TOO MANY REPEATING GROUPS.

Explanation: The structured field contains more repeating groups than are allowed. The structured field in which the error appears can be in a Resource Environment Group, a composed text page, an overlay, or a page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK245I A COMPLEX IM IMAGE OBJECT CONTAINS INVALID OR INCORRECT DATA. THE COMPLEX IM IMAGE OBJECT CANNOT BE CONVERTED TO AN IO IMAGE OBJECT.

Explanation: This message is issued when ACIF converts a complex IM image object to an IO image object and the image size is not large enough to contain the image raster data from the IRD structured fields. This message is issued when the default IMAGEOUT=IOCA parameter is specified. This message is issued if either of these are true:

- The XCSize or YCSize parameter value of the ICP structured field is larger than the calculated image X size or Y size, respectively.
- The XCOset plus XFilSize parameter values or the YCOset plus YFilSize parameter values of the ICP structured field are larger than the calculated image X size or Y size, respectively.

When ACIF converts a complex IM image object to an IO image object, ACIF calculates the image size by subtracting the X and Y image origins from the X and Y page sizes. The X and Y image origins are from the Xoa0set and Yoa0set parameter values of the IOC structured field. The X and Y page sizes are from the XpgSize and YpgSize parameter values of the PGD structured field, if the image object is contained in a

MO:DCA-P file or overlay, or is embedded in a file containing line data. For an image object in a page segment, the X and Y page sizes used by ACIF are 2040 and 2640 respectively. The IOC and ICP structured fields are contained in a MO:DCA-P file, overlay, or page segment, or are embedded in a file containing line data. The PGD structured field is contained in a MO:DCA-P file, overlay, or page definition.

System action: ACIF stops.

User response: Specify EXTENSIONS=CELLED and IMAGEOUT=ASIS to see if the error is corrected. Otherwise, if you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK250S DATA IN A PAGE OR RESOURCE IS MISSING: THE REQUIRED STRUCTURED FIELD *structuredfield* COULD NOT BE FOUND TO COMPLETE THE PROCESSING OF A PAGE OR RESOURCE.

Explanation: The structured field identified in this message is required to complete the processing of a page or resource. This structured field was not found before the end of the page or resource was encountered.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK251S DATA IN A FORMDEF RESOURCE IS MISSING: THE FORMDEF DOES NOT CONTAIN ANY MEDIUM MAPS.

Explanation: The form definition did not specify any medium maps; however, a medium map is required to print a page.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK253S DATA IN A FORMDEF RESOURCE IS INVALID: THE PRINT QUALITY VALUE IN MMC STRUCTURED FIELD, ID *identifier*, IS NOT ACCEPTABLE.

Explanation: The Medium Modification Control (MMC) structured field specified a print quality value of 0, which is outside the valid range. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MMC structured field and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MMC has no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK254S DATA IN A FORMDEF RESOURCE IS INVALID: THE OFFSET STACKING VALUE IN MMC STRUCTURED FIELD, ID *identifier*, IS NOT ACCEPTABLE.

Explanation: The Medium Modification Control (MMC) structured field specified an offset stacking value other than 0 or 1. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the MMC structured field and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MMC has no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK258I DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: *structuredfield* STRUCTURED FIELD IS NOT ALLOWED BETWEEN OBJECTS.

Explanation: The structured field identified in this message is not allowed at the point in the input data stream or resource at which it was found.

Note: If the structured field is “EOF”, ACIF read the entire print data set without finding an expected structured field.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured fields are in the correct order, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK259I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE X-DIRECTION AND Y-DIRECTION L-UNITS PER UNIT BASE VALUES SPECIFIED IN THE *structuredfield* STRUCTURED FIELD DO NOT MATCH.

Explanation: The X-direction and Y-direction L-Units per Unit Base values in the structured field identified in the message are not identical.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: Use the accompanying messages to determine if the structured field causing the error is in the print data set or in a resource. Correct the process used to create the print data set or resource. If you used an IBM licensed program to create the data stream with the error, use local problem-reporting procedures to report this message.

System programmer response: None.

APK261S DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: STRUCTURED FIELD *structuredfield* CONTAINED A FONT LOCAL IDENTIFIER VALUE THAT WAS USED IN A PREVIOUS FONT MAPPING STRUCTURED FIELD.

Explanation: One or more font mapping structured fields in the same Active Environment Group or Object Environment Group used the same font local identifier for different fonts. Fonts can be mapped in a Map Coded Font (MCF) and a Map Data Resource (MDR) structured field. Each font mapped must have a unique font local identifier. The MCF and MDR structured fields can be in the MO:DCA print data set, an overlay, a graphics object, a bar code object, or a page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields in the object containing the error, check the font local identifiers in the MCF and MDR structured field for duplicates. If the MCF and MDR structured fields have no error, the error might be an ACIF logic error. If you used a program to create the structured fields in the object containing the error, contact your system programmer.

System programmer response: None.

APK262S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: STRUCTURED FIELD *structuredfield* **CONTAINS AN INVALID ROTATION VALUE.**

Explanation: The rotation value specified in the named structured field was not valid.

System action: ACIF stops processing the print data set. ACIF issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK263S OVERLAY *overlayname* **NAMED IN AN IPO STRUCTURED FIELD IS NOT NAMED IN AN MPO STRUCTURED FIELD.**

Explanation: An Include Page Overlay (IPO) structured field names a page overlay, but the overlay was not previously defined in the Map Page Overlay (MPO) structured field in the Active Environment Group (AEG) of the page, which contains the IPO. The MPO might be contained in the AEG of a composed-text page or a page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If the MPO indicates that this overlay is for annotation only, create another MPO structured field in the AEG that defines the page overlay. If you are using the input data to define the name of your page overlay and your input data is ASCII, this error can occur because the resource name in the MPO is EBCDIC. If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you use a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK264S DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A RESOURCE MAPPED BY A *structuredfield* **STRUCTURED FIELD IN AN OBJECT ENVIRONMENT GROUP IS NOT NAMED IN THE ACTIVE ENVIRONMENT GROUP OF THE PAGE OR RESOURCE.**

Explanation: A structured field in an Object Environment Group names a resource. However, that resource is not defined in the structured field in the Active Environment Group of the page or resource containing the Object Environment Group.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: Make sure that any resources that are mapped in an included object are also mapped in the Page Environment Group. If there is an MCF structured field inside the object, it also needs to be in the Page Environment Group with the identical characteristics it has in the object, such as point size for an outline font. If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK267S EITHER NO ENVIRONMENT GROUP WAS SPECIFIED FOR THE PAGE OR AN ERROR OCCURRED IN THE ENVIRONMENT GROUP.

Explanation: Either no environment group was specified, or an error occurred in one of the structured fields in the environment group. If an environment group was present but contained an error, a previous ACIF message identifies the error. The environment group causing this error might be contained in an overlay, a page definition, or a composed-text print data set.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK268S WARNING: AN ENTRY IN AN MCF STRUCTURED FIELD DOES NOT CONTAIN CODE PAGE INFORMATION.

Explanation: One of the repeating groups in a Map Coded Font Format 2 (MCF-2) structured field specifies a font character set but no code page information. This error was detected while processing a graphics object within a page or overlay.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the object, correct the error and resubmit the print request. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the object, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the object with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK269S A VALUE OF ZERO WAS SPECIFIED AS THE L-UNITS PER UNIT BASE IN THE *structuredfield* STRUCTURED FIELD.

Explanation: Several structured fields specify an L-Units per Unit Base value: Medium Descriptor (MDD), Page Descriptor (PGD), Presentation Text Descriptor (PTD-2), Object Area Descriptor (OBD), Graphics Data Descriptor (GDD), Image Data Descriptor (IDD), Barcode Data Descriptor (BDD), Image Input Descriptor (IID), Include Object (IOB), and Preprocess Presentation Object (PPO). The ACIF arithmetic equation and a value of zero can result in an abend (divide by zero error). The value of zero is not valid.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: Use the accompanying messages to determine if the structured field causing the error is in the print data set or in a resource. Correct the process used to create the print data set or resource. If you used an IBM licensed program to create the data stream with the error, use local problem-reporting procedures to report this message.

System programmer response: None.

APK270S DATA IN A PAGEDEF RESOURCE IS MISSING: THE PAGEDEF DOES NOT CONTAIN ANY DATA MAPS.

Explanation: The page definition did not specify any data maps and a data map is required to print a data set containing line data.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK271S DATA IN A FORMDEF RESOURCE IS INVALID: THE DUPLEX SPECIFICATION IN THE PGP STRUCTURED FIELD IS NOT ACCEPTABLE.

Explanation: The duplex specification value in the Page Position (PGP) structured field is not acceptable. The PGP structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK272S DATA IN A FORMDEF RESOURCE IS INVALID: THE PGP STRUCTURED FIELD DOES NOT CONTAIN A PAGE ORIGIN POSITION FOR THE FRONT SIDE OF A SHEET.

Explanation: The Page Position format-2 (PGP) structured field must contain a repeating group that defines the Page Origin Position for the front side. This value will also be used for the back side of a duplex sheet unless the PGP structured field contains a repeating group that specifies the Page Origin Position for the back side of the sheet. The PGP structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK273S DATA IN A FORMDEF RESOURCE IS INVALID: THE CONSTANT FORMS CONTROL VALUE IN THE MMC STRUCTURED FIELD ID *identifier* IS NOT ACCEPTABLE.

Explanation: The Constant Forms Control modification in the Medium Modification Control (MMC) structured field contained an unsupported value. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK274S DATA IN A FORMDEF RESOURCE IS INVALID: THE MODIFICATIONS SPECIFIED IN THE MCC STRUCTURED FIELD INCLUDE CONFLICTING CONSTANT FORMS CONTROL VALUES FOR THE SAME SIDE OF THE SHEET.

Explanation: All Medium Modification Control (MMC) structured fields referenced by the Medium Copy Count (MCC) structured field must use the same Constant Forms Control value for the same side of a sheet. The MMC and MCC structured fields are contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK275S DATA IN A FORMDEF RESOURCE IS INVALID: A MEDIUM MAP SPECIFIES ONLY CONSTANT DATA FOR A PAGE.

Explanation: An attempt was made to process a page using a medium map specifying Constant Forms Control for both the front and back sides of a duplexed page or for the front side of a simplexed page. Another medium map must be invoked to allow processing of the remaining line or page data. The Constant Forms Control is contained in a Medium Modification Control (MMC) structured field. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK278S DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE MAPPING OPTION SPECIFIED IN THE *structuredfield* STRUCTURED FIELD IS INCORRECT OR UNSUPPORTED.

Explanation: The structured field in error contained an incorrect Mapping Option value. The structured field could be contained in a bar code object, graphics object, image object, presentation text object with OEG, or object container object. Alternatively, it could be an Include Object (IOB) structured field or a Preprocess Presentation Object (PPO) structured field with an incorrect mapping option triplet.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: Correct the process used to create the object. If you used an IBM licensed program to create the object with the error, use the local problem-reporting procedures to report this message.

System programmer response: If an IBM licensed program was used to create the structured fields for the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK289I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE FONT SCALING SIZE VALUE SPECIFIED IN AN MCF STRUCTURED FIELD IS NOT ACCEPTABLE.

Explanation: The value specified for either the font vertical scale factor, the horizontal scale factor, or the font width is not within the acceptable range of 0 to 32767.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK299I AN IM IMAGE OBJECT CONTAINS INVALID OR INCORRECT DATA. THE IM IMAGE OBJECT CANNOT BE CONVERTED TO AN IO IMAGE OBJECT.

Explanation: This message is issued when ACIF converts an IM image object to an IO image object and one of the image size values is zero. For a simple IM image object, this message is issued if either the XSize or YSize parameter value of the Image Input Descriptor (IID) structured field is zero. For a complex IM image object, this message is issued if one of the XCSize, YCSize, XFilSize, or YFilSize parameter values of the Image Cell Position (ICP) structured field is zero.

When ACIF processes a page segment in an inline resource group, the resource is converted from an IM1 image to an IOCA image unless the IMAGEOUT=ASIS parameter is specified. This message is issued if the application later includes the page segment in a page or overlay with a non-zero orientation or with L-units other than 1440 per inch.

System action: ACIF stops processing the print data set.

User response: Correct the error and resubmit the request. You might need to do one of these to correct the error:

| • Specify IMAGEOUT=ASIS to avoid the IM1 conversion.
| • Specify EXTENSIONS=RESORDER so the image is not converted until it is used in the document.
| • Do not put the page segments inline.

System programmer response: If an IBM licensed program was used to create the structured fields for the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK300I DATA IN A PAGEDEF RESOURCE IS INVALID: THE NEXT LINE DESCRIPTOR IF SKIPPING PARAMETER VALUE IN LND STRUCTURED FIELD NUMBER *number* **IS 0.**

Explanation: The current record contains a control character that indicates a skip to a Line Descriptor (LND) structured field with a specific channel control. However, the LND structured field identified in this message had a value of 0 in its NEXT LINE DESCRIPTOR IF SKIPPING parameter. The LND structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK301S DATA IN A PAGEDEF RESOURCE IS INVALID: THE NEXT LINE DESCRIPTOR IF SKIPPING PARAMETER VALUE IN LND STRUCTURED FIELD NUMBER *number* **IS** *parametervalue***. THIS EXCEEDS THE LNC STRUCTURED FIELD COUNT VALUE OF** *parametervalue***.**

Explanation: In the Line Descriptor (LND) structured field identified in this message, the value of the next LND IF SKIPPING parameter is greater than the total number of LND structured fields in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK307S DATA IN A PAGEDEF RESOURCE IS INVALID: IN LND STRUCTURED FIELD NUMBER *number***, THE REUSE RECORD FLAG WAS SET BUT THE NEXT LINE DESCRIPTOR IF REUSING DATA PARAMETER WAS 0.**

Explanation: In the Line Descriptor (LND) structured field identified in this message, the Reuse Record flag had a value of B'1', indicating that the data being processed in this LND structured field should be reused and processed. The NEXT LINE DESCRIPTOR IF REUSING DATA parameter should point to the LND structured field used to continue processing. However, the value for the REUSING DATA parameter was X'0000', indicating the end of the chain. The LND structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK309S DATA IN A PAGEDEF RESOURCE IS INVALID: THE REPEATING GROUP LENGTH PARAMETER VALUE IN CCP STRUCTURED FIELD *ccpidentifier* IS INVALID.

Explanation: The Conditional Processing Control (CCP) structured field has an incorrect value. Either the LENGTH OF REPEATING GROUPS parameter is zero, or the length of the repeating group data is not a multiple of the size specified in that parameter. The CCP structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK310S DATA IN A PAGEDEF RESOURCE IS INVALID: THE COUNT PARAMETER VALUE IN THE LNC STRUCTURED FIELD WAS 0.

Explanation: The COUNT parameter in the Line Descriptor Count (LNC) structured field had a value of zero. The LNC structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK312S DATA IN A PAGEDEF RESOURCE IS INVALID: THE SIZE PARAMETER VALUE IN THE FDS STRUCTURED FIELD WAS 0.

Explanation: The SIZE parameter in the Fixed Data Size (FDS) structured field has a value of 0. The FDS structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK314S DATA IN A PAGEDEF RESOURCE IS INVALID: THE NUMBER OF REPEATING GROUPS PARAMETER VALUE IN CCP STRUCTURED FIELD *ccpidentifier* IS INVALID.

Explanation: The Conditional Processing Control (CCP) structured field has an incorrect value. Either the NUMBER OF REPEATING GROUPS parameter contained in the CCP structured field is zero, or the number of repeating groups does not match the number specified in the parameter. The CCP structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK315S DATA IN A PAGEDEF RESOURCE IS INVALID: THE NEXT LINE DESCRIPTOR IF SPACING PARAMETER VALUE IN LND STRUCTURED FIELD NUMBER *number* **IS 0.**

Explanation: The logical-record control character indicates that the NEXT LINE DESCRIPTOR IF SPACING parameter should be followed. However, in the Line Descriptor (LND) structured field identified in this message, the NEXT LINE DESCRIPTOR IF SPACING parameter value was zero. The LND structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK316S DATA IN A PAGEDEF RESOURCE IS INVALID: THE NEXT LINE DESCRIPTOR IF SPACING PARAMETER IN LND STRUCTURED FIELD NUMBER *number* **IS** *parametervalue***. THIS VALUE IS TOO LARGE.**

Explanation: The logical record control character indicates that the NEXT LINE DESCRIPTOR IF SPACING parameter in the Line Descriptor (LND) structured field should be followed. However, in the Line Descriptor (LND) structured field identified in this message, the NEXT LINE DESCRIPTOR IF SPACING parameter value was greater than the total number of line descriptors in the data map. The LND structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK317S DATA IN A PAGEDEF RESOURCE IS INVALID: THE LENGTH OF COMPARISON STRING PARAMETER VALUE IN CCP STRUCTURED FIELD *ccpidentifier* **IS INVALID.**

Explanation: The Conditional Processing Control (CCP) structured field has an incorrect value. Either the LENGTH OF COMPARISON STRING parameter is zero, or the length of the comparison string data does not match the length of a repeating group minus the fixed lengths of the remaining fields of the repeating group. The CCP structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK319I DATA IN A PAGEDEF RESOURCE IS NOT VALID: LND, RCD, OR XMD STRUCTURED FIELD NUMBER *number* **HAS A NULL VALUE SPECIFIED IN THE SUPPRESSION TOKEN NAME PARAMETER. A NULL VALUE IS NOT VALID.**

Explanation: The SUPPRESSION TOKEN NAME parameter in the Line Descriptor (LND), Record Descriptor (RCD), or XML Descriptor (XMD) structured field in the page definition has a null value. A null value is any value that contains X'FFFF' in the first two bytes.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK320S DATA IN A PAGEDEF RESOURCE IS INVALID: THE IDENTIFIER *identifier1* SPECIFIED IN THE NEXT CCP IDENTIFIER PARAMETER IN CCP STRUCTURED FIELD *identifier2* WAS NOT FOUND.

Explanation: The Conditional Processing Control (CCP) structured field has an incorrect value. The NEXT CONDITIONAL PROCESSING CONTROL IDENTIFIER parameter in the CCP structured field specifies the identifier used to locate a CCP, if the CCP structured fields are chained. The identifier must match a value specified in the CCP IDENTIFIER parameter of another CCP within the same page definition. The identifier specified in the NEXT CCP IDENTIFIER parameter did not match the CCP IDENTIFIER of any CCPs in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK321S DATA IN A PAGEDEF RESOURCE IS INVALID: THE TIMING OF ACTION PARAMETER VALUE *value* IN CCP STRUCTURED FIELD *ccpidentifier* IS INVALID.

Explanation: The Conditional Processing Control (CCP) structured field has an incorrect value. The TIMING OF ACTION parameter in one of the repeating groups of the CCP structured field contains an incorrect value. The CCP structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK322S DATA IN A PAGEDEF RESOURCE IS INVALID: THE MEDIUM MAP ACTION PARAMETER VALUE *value* IN CCP STRUCTURED FIELD *ccpidentifier* IS INVALID.

Explanation: The Conditional Processing Control (CCP) structured field has an incorrect value. The MEDIUM MAP ACTION parameter in one of the repeating groups of the CCP structured field contains an incorrect value. The CCP structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK323S DATA IN A PAGEDEF RESOURCE IS INVALID: THE DATA MAP ACTION PARAMETER VALUE *value* IN CCP STRUCTURED FIELD *ccpidentifier* IS INVALID.

Explanation: The Conditional Processing Control (CCP) structured field has an incorrect value. The DATA MAP ACTION parameter in one of the repeating groups of the CCP structured field contains an incorrect value. The CCP structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK324S DATA IN A PAGEDEF RESOURCE IS INVALID: THE COMPARISON PARAMETER VALUE *value* IN CCP STRUCTURED FIELD *ccpidentifier* IS INVALID.

Explanation: The Conditional Processing Control (CCP) structured field has an incorrect value. The COMPARISON parameter in one of the repeating groups of the CCP structured field contains an incorrect value. The CCP structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK326S DATA IN A PAGEDEF RESOURCE IS INVALID: THE DATA MAP "*datamapname*" SPECIFIED IN THE DATA MAP NAME PARAMETER OF CCP STRUCTURED FIELD *ccpidentifier* WAS NOT FOUND.

Explanation: The Conditional Processing Control (CCP) structured field has an incorrect value. The DATA MAP NAME parameter in one of the repeating groups of the CCP structured field specifies the token name of a data map used to locate a data map in the page definition. The name must match the value specified in the TOKEN NAME parameter in one of the Begin Data Map (BDM) structured fields in the current page definition. No data map with name *datamapname* was found in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK327S DATA IN A PAGEDEF RESOURCE IS INVALID: THE NEXT LINE DESCRIPTOR IF REUSING DATA PARAMETER VALUE IN LND STRUCTURED FIELD NUMBER *number* WILL CAUSE AN INFINITE LOOP.

Explanation: The NEXT LINE DESCRIPTOR IF REUSING DATA parameter in the Line Descriptor (LND) structured field identified in this message caused an infinite-loop condition. The LND structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK329S DATA IN A PAGEDEF RESOURCE IS INVALID: THE NEXT LINE DESCRIPTOR IF REUSING DATA PARAMETER VALUE IN LND STRUCTURED FIELD NUMBER *number* IS *parametervalue1*. THIS EXCEEDS THE LNC STRUCTURED FIELD COUNT VALUE OF *parametervalue2*.

Explanation: The NEXT LINE DESCRIPTOR IF REUSING DATA parameter in the Line Descriptor (LND) structured field identified in this message has an incorrect value. The value is greater than the COUNT parameter in the Line Descriptor Count (LNC) structured field in the current data map. The LNC and LND structured fields are contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK330I DATA IN A PAGEDEF RESOURCE IS NOT VALID: WHEN THE DATA START POSITION VALUE IS ADDED TO THE DATA LENGTH VALUE IN LND, RCD, OR XMD STRUCTURED FIELD NUMBER *number*, IT EXCEEDS THE FDS STRUCTURED FIELD SIZE VALUE OF *parametervalue*.

Explanation: The Use Fixed Data flag in byte 0 in the Line Descriptor (LND) structured field, in byte 11 in the Record Descriptor (RCD) structured field, or in byte 1 in the XML Descriptor (XMD) structured field was set to B'1'. This indicates that data from Fixed Data Text (FDX) structured fields is to be added to the data placed within the page by the LND, RCD, or XMD structured field. The FDX, XMD, RCD, and LND structured fields are in the page definition.

The DATA START POSITION parameter in the LND, RCD, or XMD structured field indicates the offset of the first byte of data. The DATA LENGTH parameter specifies how many bytes of FDX are to be placed within the page. This error was caused when these two parameters specified more data than the FDX structured fields contain. The number of bytes of data in the FDX structured fields can be found in the SIZE parameter of the Fixed Data Size (FDS) structured field.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK334S DATA IN A PAGEDEF RESOURCE IS INVALID: THE AMOUNT OF FIXED DATA RECEIVED DID NOT AGREE WITH THE VALUE SPECIFIED IN THE FDS STRUCTURED FIELD SIZE PARAMETER.

Explanation: The Fixed Data Text (FDX) structured field contained more bytes of data than what was indicated in the SIZE parameter of the Fixed Data Size (FDS) structured field. The FDS and FDX structured fields are contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK335S DATA IN A PAGEDEF RESOURCE IS INVALID: THE MEDIUM MAP "*mediummapname*" SPECIFIED IN THE MEDIUM MAP NAME PARAMETER OF CCP STRUCTURED FIELD *ccpidentifier* WAS NOT FOUND.

Explanation: The Conditional Processing Control (CCP) structured field has an incorrect value. The MEDIUM MAP NAME parameter in one of the repeating groups of the CCP structured field specifies the token name of a medium map used to locate a medium map in the form definition. The name must match the value specified in the TOKEN NAME parameter in one of the Begin Medium Map (BMM) structured fields in the current form definition. No medium map with name *mediummapname* was found in the form definition. The CCP structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK337I DATA IN A PAGEDEF RESOURCE IS NOT VALID: IN LND, RCD, OR XMD STRUCTURED FIELD NUMBER *number*, THE CONDITIONAL PROCESSING FLAG WAS SET BUT THE CONDITIONAL PROCESSING CONTROL IDENTIFIER WAS ZERO.

Explanation: In the Line Descriptor (LND), Record Descriptor (RCD), or XML Descriptor (XMD) structured field, the Conditional Processing flag had a value of B'1', indicating that the line data to be processed by this LND, RCD, or XMD structured field is to be compared with a value specified in a Conditional Processing Control (CCP) structured field. The CCP IDENTIFIER parameter in the LND, RCD, or XMD structured field is used to find one of the CCP structured fields in the current page definition. This parameter was set to 0, which is not a valid value if the Conditional Processing flag is on. The LND, RCD, XMD, and CCP structured fields are in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK339I DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE IDENTIFIER *identifier* SPECIFIED IN THE CONDITIONAL PROCESSING CONTROL IDENTIFIER PARAMETER IN LND, RCD OR XMD STRUCTURED FIELD NUMBER *number* WAS NOT FOUND.

Explanation: In the Line Descriptor (LND), Record Descriptor (RCD), or XML Descriptor (XMD) structured field, the Conditional Processing flag had a value of B'1', indicating that the line data to be processed by this LND, RCD, or XMD structured field is to be compared with a value specified in a Conditional Processing Control (CCP) structured field. The CCP IDENTIFIER parameter in the LND, RCD, or XMD structured field is used to find one of the CCP structured fields in the current page definition. However, the identifier specified in the LND, RCD, or XMD structured field identified in this message does not match the value specified in the CCP IDENTIFIER parameter in any of the CCP structured fields in the current page definition. The LND, RCD, XMD, and CCP structured fields are in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK340I DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE NEXT LINE DESCRIPTOR IF CONDITIONAL PROCESSING PARAMETER VALUE IN LND, RCD OR XMD STRUCTURED FIELD NUMBER *number* **IS** *value1***. THIS EXCEEDS THE LNC STRUCTURED FIELD COUNT VALUE OF** *value2***.**

Explanation: The NEXT LINE DESCRIPTOR IF CONDITIONAL PROCESSING parameter in the Line Descriptor (LND), Record Format Descriptor (RCD), or XML Descriptor (XMD) structured field has an incorrect value. The value is greater than the COUNT parameter in the Line Descriptor Count (LNC) structured field in the current data map. The LNC, LND, RCD, and XMD structured fields are contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK342I DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE NEXT LINE DESCRIPTOR IF CONDITIONAL PROCESSING PARAMETER VALUE IN LND, RCD OR XMD STRUCTURED FIELD NUMBER *number* **WILL CAUSE AN INFINITE LOOP.**

Explanation: The NEXT LINE DESCRIPTOR IF CONDITIONAL PROCESSING parameter in the Line Descriptor (LND), Record Format Descriptor (RCD), or XML Descriptor (XMD) structured field caused an infinite-loop condition. The LND, RCD, and XMD structured fields are in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK343I DATA IN AN INPUT RECORD OR PAGEDEF RESOURCE IS NOT VALID: RELATIVE POSITIONING PLACED DATA OUTSIDE THE LOGICAL PAGE IN THE NEGATIVE Y DIRECTION. THE PRIOR AND CURRENT LND, RCD OR XMD STRUCTURED FIELD NUMBERS ARE *priornumber* **AND** *currentnumber***.**

Explanation: When relative positioning is being used on a Line Descriptor (LND), Record Descriptor (RCD), or XML Descriptor (XMD) structured field, the relative position specified for the Y direction can be a negative value. The current LND, RCD, or XMD position (*priornumber*) defines the baseline position from which the relative offset of the current LND, RCD, or XMD is measured.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK344S DATA IN A PAGEDEF RESOURCE IS INVALID: THE NUMBER OF LND OR RCD STRUCTURED FIELDS DOES NOT MATCH THE VALUE SPECIFIED IN THE LNC STRUCTURED FIELD.

Explanation: The number of Line Descriptor (LND) or Record Descriptor (RCD) structured fields found in a page definition is either greater than or less than the value specified in the Line Descriptor Count (LNC) structured field. The LND, RDC, and LNC structured fields are in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK346W DATA IN AN INPUT RECORD OR PAGEDEF RESOURCE IS INVALID: A SKIP TO A NONEXISTENT CHANNEL = *channel* **ON RECORD NUMBER =** *recordnumber* **WAS DETECTED WITHIN THE LND STRUCTURED FIELDS. OUTPUT WAS FORCED TO SINGLE SPACING, WHICH MAY CAUSE BLANK PAGES.**

Explanation: An attempt was made to skip to a channel not defined in the current data map. The Line Descriptor (LND) structured fields in the page definition are incorrect. During scanning, the entire NEXT LINE DESCRIPTOR IF SKIPPING parameter could not be followed because an LND had the End Page If Skipping flag set. This created an infinite loop on the same input record. The LND structured field is contained in the page definition.

System action: The record containing the error was forced to single spacing. When forced single spacing occurs, the carriage control character on the record is ignored. The record is treated as if a X'09' machine control character or a X'40' ANSI control character was specified in the record that caused the error.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid.

APK350S DATA IN A PAGEDEF RESOURCE IS INVALID: IN LND STRUCTURED FIELD NUMBER *number***, THE SHIFT-OUT CODED FONT LOCAL IDENTIFIER WAS NON-ZERO BUT THE GENERATE FONT CHANGE FLAG WAS NOT SET.**

Explanation: In the Line Descriptor (LND) or Record Descriptor (RCD) structured field identified in this message, the Shift-Out Coded Font Identifier was non-zero. The Generate Font Change flag should be set to indicate that the Primary Coded Font Local Identifier should be used whenever a shift-in code is processed. However, the Generate Font Change flag had a value of B'0'. The LND or RCD structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK353S DATA IN A PAGEDEF RESOURCE IS INVALID: THE DATA LENGTH PARAMETER VALUE IN LND STRUCTURED FIELD NUMBER *number* **DOES NOT MATCH THE LENGTH OF COMPARISON STRING PARAMETER VALUE IN CCP STRUCTURED FIELD** *ccpidentifier***.**

Explanation: In the Line Descriptor (LND) structured field, the value of the DATA LENGTH parameter is used in identifying the field of the current input record for which conditional processing is to be performed. This field is to be compared with the Comparison String specified in the Conditional Processing Control (CCP) structured field. The length specified in the DATA LENGTH parameter in the LND structured field does not match the length specified in the LENGTH OF COMPARISON STRING parameter of the CCP structured field. The LND and CCP structured fields are contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK356S DATA IN A PAGEDEF RESOURCE IS INVALID: A PAGE SEGMENT OR OVERLAY WAS REQUESTED IN THE LND OR RCD STRUCTURED FIELD *structuredfield***, BUT THE INLINE OR BASELINE POSITION VALUES WERE SPECIFIED FOR THE LND OR RCD.**

Explanation: If any resource object-include triplets are specified in the LND structured field, bits 2 and 3 of bytes 0–1 in the LND structured field must both be set. If any resource object-include triplets are specified in the RCD structured field, bits 2 and 3 of bytes 11–13 in the RCD structured field must both be set.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: None.

APK359I AN INLINE MEDIUM MAP WAS ENCOUNTERED IN THE DATA SET, BUT INLINE MEDIUM MAPS ARE NOT SUPPORTED.

Explanation: A Begin Medium Map (BMM) structured field was encountered in the data stream after resources for the data set had been processed. ACIF does not support inline medium maps between pages. The data set might have been created by a program that creates inline medium maps, but a data set that contains inline medium maps cannot be printed.

System action: ACIF stops processing the print data set.

User response: Correct the error and resubmit the request.

System programmer response: See the I/O error message to determine an appropriate action.

APK364I THE SET OF MODIFICATIONS SPECIFIED IN THE MCC STRUCTURED FIELD INDICATES DIFFERENT SELECT INPUT SOURCE VALUES FOR THE FRONT AND BACK SIDES OF A DUPLEX SHEET.

Explanation: The Medium Modification Control (MMC) structured field referenced by the Medium Copy Count (MCC) structured field repeating groups specify different input source or media type local ID values, along with either tumble or normal duplex. This is an attempt to print the front and back sides of a sheet from different input bins.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: None.

APK366I DATA IN AN INPUT RECORD OR PAGEDEF RESOURCE IS NOT VALID: THE ORIENTATION USED WITH RELATIVE POSITIONING IS DIFFERENT THAN THE LAST ORIENTATION USED FOR PRINTING. THE PRIOR AND CURRENT LND, RCD OR XMD STRUCTURED FIELD NUMBERS ARE *priornumber* **AND** *currentnumber***.**

Explanation: When relative positioning is being used on a Line Descriptor (LND), Record Descriptor (RCD), or XML Descriptor (XMD) structured field, the text orientation field of the current LND, RCD, or XMD (*currentnumber*) must match the text orientation field of the LND, RCD, or XMD (*priornumber*) that was last used for positioning data. The prior LND, RCD, or XMD position defines the baseline position from which the relative offset of the current LND, RCD, or XMD is measured.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK367I DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE MAPPING OPTION SPECIFIED IN AN IOB STRUCTURED FIELD WITH LOCAL ID *identifier* **IS NOT VALID OR UNSUPPORTED. THE IOB IS INCLUDED WITH LND, RCD, OR XMD STRUCTURED FIELD NUMBER** *number***.**

Explanation: The Include Object (IOB) structured field in error contained an Output Option value that is not valid, or the printer does not support the Output Option value. The IOB is included by using the Line Descriptor (LND), Record Descriptor (RCD), or XML Descriptor (XMD) structured field identified in this message. The IOB, LND, RCD, and XMD structured fields are contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK368S DATA IN A PAGEDEF RESOURCE IS INVALID: THE RESOURCE LOCAL ID *identifier* **SPECIFIED IN THE EXTENDED RESOURCE LOCAL ID TRIPLET ON LND OR RCD STRUCTURED FIELD NUMBER** *number* **WAS NOT FOUND.**

Explanation: In the Line Descriptor (LND) or Record Descriptor (RCD) structured field, and Extended Resource Local Identifier triplet specifies a local ID (*identifier*) of an Include Object (IOB) structured field that is to be used to include an object when this LND or RCD is used for printing. The identifier specified on the LND or RCD does not match any of the IOB structured fields in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK369S STRUCTURED FIELD *structuredfield* HAS AN INCORRECT OBJECT CLASS VALUE IN AN OBJECT CLASSIFICATION TRIPLET.

Explanation: The Object Classification (X'10') triplet in the structured field specified in the message has an incorrect object class value. Possible incorrect class values for each structured field are:

- Map Data Resource (MDR)
  - Non-presentation object container is included in a repeating group.
  - Object container or IOCA embedded in a page or overlay has a data object font mapped in the Object Environment Group.
- Include Object (IOB) or Preprocess Presentation Object (PPO)

  Non-presentation object container, data object font (DOF), or non-DOF secondary resource is specified.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK380S THE REGISTRATION ID (*identifier*) OF AN OBJECT CONTAINER RESOURCE, NAME *resourcename*, DOES NOT MATCH THE CORRESPONDING REGISTRATION ID FOR THE INVOKING JCL KEYWORD OR STRUCTURED FIELD.

Explanation: An object container resource was requested through a JCL keyword, or an Include Object (IOB) or Map Data Resource (MDR) structured field, but the Object Classification triplet in the Begin Object Container (BOC) structured field did not match the corresponding registration ID. For a list of registration IDs and their assumed functions, see *Mixed Object Document Content Architecture Reference*.

System action: ACIF stops processing the input file and issues a message identifying the position of the structured field in the file or resource.

User response: If you created the structured fields for the object container resource, ensure that the registration ID corresponds either to the keyword used to call the resource or to the registration ID specified in the Object Classification triplet specified on the IOB or MDR structured field.

System programmer response: If a licensed program was used to create the structured fields for the object container that contains the error, verify that the input to that program is valid.

APK381S DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE REGISTERED OBJECT ID IN THE OBJECT CLASSIFICATION TRIPLET ON A *structuredfield* STRUCTURED FIELD IS NOT SPECIFIED.

Explanation: The registered object ID is 0 in the Object Classification triplet. Object containers require a registered ID to be specified.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured field with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK384S DATA IN A FORMDEF RESOURCE IS INVALID: THE SET OF MODIFICATIONS SPECIFIED IN THE MCC STRUCTURED FIELD INCLUDES CONFLICTING PRESENTATION SYSTEM SETUP ID VALUES.

Explanation: Multiple MMC structured fields referenced by the MCC structured field do not use the exact same set of Presentation System Setup ID values.

System action: ACIF stops processing the print data set.

User response: If you created the structured fields for the form definition, correct the MCC structured field. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MCC has no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK385S DATA IN A FORMDEF RESOURCE IS INVALID: THE MODIFICATIONS SPECIFIED IN THE MMC STRUCTURED FIELD *structuredfield* INCLUDE UNPAIRED *keyword1* AND *keyword2* KEYWORDS.

Explanation: The keywords must be paired in the Medium Modification Control (MMC) structured field. This form definition has one or the other keyword but not both, or the keyword pairs are not adjacent. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK386I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A REQUIRED TRIPLET WITH ID *identifier* WAS MISSING FROM AN *structuredfield* STRUCTURED FIELD.

Explanation: When the structured field is an Include Object (IOB) or Preprocess Presentation Object (PPO) and the identifier is X'4B', the X- or Y-axis origin for object content or an object area size (X'4C') triplet was specified on the IOB or PPO, but no measurement unit (X'4B') triplet was specified. The structured field is contained in a print data set if it is a PPO. The structured field is contained in a print data set, overlay, or page definition if it is an IOB. When the structured field is an IOB and the identifier is X'22', the Extended Resource Local Identifier (X'22') triplet is required when the IOB structured field is contained in a page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you placed the IOB structured field in the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If you used a program to place the IOB structured field in the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to place the IOB or PPO structured field in the print data set or resource, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK387S DATA IN AN INPUT RECORD IS NOT VALID: A PARAMETER IN AN *structuredfield* STRUCTURED FIELD CONTAINS UNACCEPTABLE DATA.

Explanation: One of the parameters in the structured field is not valid. If the structured field is an Include Object (IOB), one of these caused the problem:

- The object type specified is not valid.
- The x or y offset of the object area or the rotation value are not explicitly specified when the reference coordinate system is set to X'00'.

If the structured field is a Preprocess Presentation Object (PPO), one of these caused the problem:

- The object type specified is not valid.
- The x or y offset of the object area is not valid.

If the structured field is a Presentation Text Data Descriptor (PTD), the x or y text presentation extent is not valid.

System action: ACIF stops processing the input data set.

User response: If you placed the IOB structured field in the input data set or overlay, correct the error and resubmit the ACIF job. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If you used a program to place the IOB structured field in the print data set or overlay, contact your system programmer.

System programmer response: No response is necessary.

APK388S DATA IN A PAGE SEGMENT IS INVALID: ***structuredfield*** **STRUCTURED FIELD IS NOT ALLOWED IN A PAGE SEGMENT INCLUDED WITH AN IOB.**

Explanation: Only MO:DCA-P page segments are allowed to be included with an Include Object (IOB) structured field. MO:DCA-P page segments cannot contain IM1 image or PTOCA data.

System action: ACIF stops processing the input data set.

User response: If you placed the IOB structured field in the input data set or overlay, correct the error and resubmit the ACIF job. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If you used a program to place the IOB structured field in the print data set or overlay, contact your system programmer.

System programmer response: No response is necessary.

APK389S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: THE FONT RESOLUTION AND METRIC TECHNOLOGY TRIPLET SPECIFIES AN INCORRECT VALUE.

Explanation: There is an incorrect value specified for the metric technology, the unit base, or the units per unit base field in the Font Resolution and Metric Technology triplet (X'84'). The triplet is specified on a Map Coded Font (MCF) structured field, which can be in a print data set or overlay.

System action: ACIF stops processing the print data set.

User response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the job to ACIF. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK390S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: THE ***structuredfield*** **STRUCTURED FIELD CONTAINS A** ***triplet*** **TRIPLET THAT HAS AN INVALID VALUE. THE INVALID VALUE STARTS IN BYTE** ***byte*** **OF THE TRIPLET.**

Explanation: An incorrect value was specified for a field that starts in byte offset of the triplet identified in this message. The triplet is specified on the structured field identified in this message.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the object, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the object, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK392I DATA IN A FORMDEF RESOURCE IS NOT VALID: THE SCOPE VALUE IN THE MFC IS NOT VALID. EITHER DOCUMENT LEVEL OR PRINT FILE LEVEL FINISHING WAS SPECIFIED IN THE MEDIUM MAP OR MEDIUM LEVEL FINISHING WAS SPECIFIED IN THE DEG.

Explanation: Either a Document Environment Group (DEG) or a medium map in the current form definition contains a Medium Finishing Control (MFC) structured field with an incorrect value specified for the scope.

System action: The MFC is ignored and processing continues. ACIF might issue additional messages identifying the processing environment in which the error occurred.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the problem might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, report the problem to your service representative.

APK395I A FORMDEF RESOURCE REQUESTED A MEDIA EJECT CONTROL TO THE NEXT BACK-SIDE AND DUPLEX=NO WAS SPECIFIED ON THE OUTPUT STATEMENT.

Explanation: When a media eject control to the next back-side is specified in a form definition, the DUPLEX=NO keyword on the OUTPUT statement cannot be used to change from duplex (specified in the form definition) to simplex. The reason is that an incompatible request is being made; you cannot eject to the next back-side when simplexing.

When a media eject control to the next back-side is specified in the form definition and the form definition requests normal or tumble duplex, the only valid option for the duplex keyword is to specify either DUPLEX=NORMAL or DUPLEX=TUMBLE on the OUTPUT statement.

System action: ACIF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User response: Resubmit the job without requesting the duplex keyword on the OUTPUT statement.

System programmer response: None.

APK396I DATA IN A FORMDEF RESOURCE IS INVALID: THE OUTPUT BIN SELECTION VALUE IN MMC STRUCTURED FIELD, ID *identifier*, IS NOT ACCEPTABLE.

Explanation: In the Medium Modification Control (MMC) structured field whose identifier is specified in the message text, the output bin selection parameter value was not valid. The MMC structured field is contained in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK397I THE SET OF MODIFICATIONS SPECIFIED IN THE MCC STRUCTURED FIELD INDICATES DIFFERENT OUTPUT BIN VALUES FOR THE FRONT AND BACK SIDES OF A DUPLEX SHEET.

Explanation: The Medium Modification Control (MMC) structured fields referenced by the Medium Copy Count (MCC) structured field repeating groups specify different output bin values along with either tumble or normal duplex. This is an attempt to place the front and back sides of a sheet into different output bins.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error.

APK398I DATA IN A FORMDEF RESOURCE IS INVALID: THE SET OF MODIFICATIONS SPECIFIED IN THE MMC STRUCTURED FIELD, ID *identifier*, INCLUDES DUPLICATE CONFLICTING VALUES FOR THE *keyword* KEYWORD.

Explanation: The Medium Modification Control (MMC) structured field contains duplicate conflicting values for the keyword identified in the message text. The MMC structured field is in the form definition.

System action: ACIF issues this message and continues processing, ignoring the duplicate keyword.

User response: If you created the structured fields for the form definition, correct the MMC structured field and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the MMC has no errors, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the object with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK400S THE *parameter* NUMBER VALUE IS NOT NUMERIC.

Explanation: A numeric value must be specified after the parameter.

System action: ACIF stops.

User response: Use a numeric value after the parameter and resubmit the job.

System programmer response: No response is necessary.

APK401S THE *parameter* NAME MUST BE DELIMITED WITH QUOTES.

Explanation: The attribute name of the parameter must begin and end with single quotation marks.

System action: ACIF stops.

User response: Use single quotation marks before and after the attribute name in the parameter.

System programmer response: No response is necessary.

APK402S THE PARAMETER "*parameter*" IS INVALID.

Explanation: A parameter that is not valid for ACIF was specified.

System action: ACIF stops.

User response: Correct the parameter and resubmit the job.

System programmer response: No response is necessary.

APK403S THE REQUESTED RESOURCE *number* IS UNKNOWN.

Explanation: A resource I/O has been requested, but the resource type is unknown to ACIF. This condition is caused by an ACIF logic error. The resource type codes are:

Type	Resource
1	Print input file
2	FORMDEF file
3	PAGEDEF file
4	OVERLAY file
5	SEGMENT file
6	Coded FONT file
7	Coded PAGE file
8	FONT Character Set file
9	FONT Metric file
10	FONT Shape file
20	Print output file
21	Messages output file
22	SPOOL file
23	Dummy input file
24	Dummy output file
25	Parameter file
26	Resource Object file

System action: ACIF stops.

User response: Contact your service representative.

System programmer response: No response is necessary.

APK404S THE ATTRIBUTE NAME USED IN *indexn* HAS AN IMPROPER USE OF QUOTES.

Explanation: An unpaired set of quotation marks was found in the attribute name for an **INDEX*n*** parameter.

System action: ACIF stops.

User response: Correct the **INDEX*n*** parameter and resubmit the job.

System programmer response: No response is necessary.

APK405S A VALUE OF "*value*" IS INVALID FOR PARAMETER "*parameter*".

Explanation: The value supplied for a parameter is not valid.

System action: ACIF stops.

User response: Correct the parameter value and resubmit the job.

System programmer response: No response is necessary.

APK406S PARAMETER "*parameter*" HAS TOO MANY DATA SETS SPECIFIED.

Explanation: More than eight data sets have been supplied for the parameter.

System action: ACIF stops.

User response: Correct the number of data sets and resubmit the job.

System programmer response: No response is necessary.

APK407S A RESTYPE PARAMETER OF "*value*" IS NOT VALID.

Explanation: A resource type of NONE was found with another value in the RESTYPE parameter. Examples of other values are **FONT**, **OVLY**, **FDEF**, or **PSEG**. A resource type of **NONE** cannot be specified with another value.

System action: ACIF stops.

User response: Correct the RESTYPE parameter and resubmit the job.

System programmer response: No response is necessary.

APK408S A VIRTUAL STORAGE REQUEST WAS UNSUCCESSFUL - REQUEST SIZE *storagerequestsize*, **RETURN CODE** *returncode*.

Explanation: ACIF made an unsuccessful attempt to obtain virtual storage. This message indicates the storage size and the return code from the system macro.

System action: ACIF stops.

User response: On z/OS operating systems, increase the REGION size and resubmit the job. On InfoPrint Manager for AIX, make a backup of the limits file and then set these parameter values:

```
fsize = -1
core = 2097151
cpu = -1
data = -1
rss = -1
stack = -1
nofiles = 2000
```

System programmer response: To interpret the return code, see the documents about application development macros for your operating system.

APK409I A DDNAME FOR *parameter* **WAS NOT SUPPLIED. "*default*" WAS USED.**

Explanation: No DD name was specified for either the **MSGDD** or the **PARMDD** parameter.

System action: If the missing DD name was **MSGDD**, the DD name assigned to **SYSPRINT** was used. If the missing DD name was **PARMDD**, the DD name assigned to **SYSIN** was used.

User response: If the DD name used was not acceptable, specify a DD name for the parameter and submit the job again.

System programmer response: No response is necessary.

APK410S AN ACIF STORAGE REQUEST WAS UNSUCCESSFUL - REQUEST SIZE *storagerequestsize*, *requesttype* **RETURN CODE** *returncode*.

Explanation: An unsuccessful attempt has been made to obtain or free ACIF subpool storage. If you requested indexing on values that do not occur in the data, ACIF often runs out of storage trying to find the second page. For example, if you specify TRIGGER1=*,1,X'F1' but your data does not contain any X'F1' carriage controls, ACIF can run out of storage. This error message returns the following information:
- Storage request size
- Request type
- Return code

System action: ACIF stops.

User response: If you requested indexing, verify that your data matches the values you specified on the TRIGGER parameter. On InfoPrint Manager for AIX, make a backup of the limits file and then set these parameter values:

```
fsize = -1
core = 2097151
cpu = -1
data = -1
rss = -1
stack = -1
nofiles = 2000
```

System programmer response: Use the information provided in the message to correct the error and resubmit the job.

APK411S AN ERROR OCCURRED WHILE ATTEMPTING TO *action* **THE DDNAME** *ddname*, **RETURN CODE** *returncode*.

Explanation: The file I/O macro made an unsuccessful attempt to read from, write to, or close the named DD. The return codes are:

Code	**Description**
0	Successful.
8	Data record longer than LRECL or buffer.
10	Storage allocation/deallocation failed.
12	End of file detected.
13	Disk or PDS directory is full.
28	File not found.
310	File format not valid. See “Understanding error return code 310” on page 215.

System action: ACIF stops.

User response: Use the information provided in the return code to correct the problem. If the message displays a return code that is not listed in the explanation, contact your service representative.

System programmer response: No response is necessary.

APK412I MODULE ***modulename*** **HAS RETURNED WITH RETURN CODE** ***returncode.***

Explanation: A non-zero return code has been returned from the called module. This message indicates that an abnormal occurrence has taken place in the called module. This message is informational and further action takes place in higher-level modules if required.

Note: A return code of 999 indicates that the user's input exit returned a zero length record.

System action: None; this message is for information only.

User response: See the accompanying message to determine a response.

System programmer response: No response is necessary.

APK413S ATTEMPTED ***action*** **RESOURCE FILE "*ddname*", RESOURCE MEMBER NAME "*membername*" FAILED, RETURN CODE** ***returncode*.**

Explanation: An attempt to open, close, read, or write a resource failed. This message indicates that an abnormal occurrence has taken place in the called module. This message is informational and further action takes place in higher-level modules if required. If you received this message for a Data Object Font (DOF) Descriptor triplet, the resource name is not a typical member name and the name is translated to ASCII or EBCDIC for display purposes. If the resource name cannot be translated, it is presented as a hexadecimal value. The return codes are:

Code	**Description**
0	Successful.
8	Data record longer than LRECL or buffer.
10	Storage allocation/deallocation failed.
12	End of file detected.
13	Disk or PDS directory is full.
28	File not found.
310	File format not valid. See “Understanding error return code 310” on page 215.

System action: None; this message is for information only.

User response: See the accompanying message to determine a response. If the message displays a return code that is not listed in the explanation, contact your service representative.

System programmer response: No response is necessary.

APK414I THE FOLLOWING PARAMETERS WILL BE USED FOR THIS RUN:

Explanation: This message is issued before APK415I to begin the listing of the parameters to be used for this run.

System action: None.

User response: No response is necessary.

System programmer response: No response is necessary.

APK415I *parameter value*

Explanation: For this run, the parameter listed has been used with the associated value.

System action: None.

User response: No response is necessary.

System programmer response: No response is necessary.

APK417I REQUEST FOR UNKNOWN MESSAGE ***number*.**

Explanation: ACIF tried to display an undefined message.

System action: ACIF stops.

User response: Report the problem to your service representative.

System programmer response: No response is necessary.

APK418S THE MAXIMUM RECORD ID WAS EXCEEDED.

Explanation: The current job contains more than 999999999 documents.

System action: ACIF stops.

User response: Break the job up into a smaller number of documents.

System programmer response: No response is necessary.

APK419S USER ***exittype*** **EXIT** ***programname*** **RETURNED CODE** ***returncode*.**

Explanation: An input, output, or resource user exit program has returned a non-zero return code.

Note: A return code of 999 indicates that the user's input exit returned a zero length record.

System action: ACIF stops.

User response: Correct the error in the exit program and resubmit the job.

System programmer response: No response is necessary.

APK420S AN ERROR OCCURRED WHILE ATTEMPTING TO OPEN "*dataset*". RETURN CODE *returncode*.

Explanation: An attempt to open a data set failed. This message is informational and further action takes place in higher-level modules if required. If you received this message for a Data Object Font (DOF) Descriptor triplet, the resource name is not a typical member name and the name is translated to ASCII or EBCDIC for display purposes. If the resource name cannot be translated, it is presented as a hexadecimal value. The return codes are:

Code	Description
0	Successful.
8	Data record longer than LRECL or buffer.
10	Storage allocation/deallocation failed.
12	End of file detected.
13	Disk or PDS directory is full.
28	File not found.
32	ACIF message catalog not found in paths specified by NLSPATH environment variable. ACIF uses default message catalog file **/usr/lib/nls/msg/en_US/acif.cat**.
36	Default message catalog not accessible. Check permissions.
200	Resource access table (RAT) not valid. For example, RAT uploaded as a text file instead of a binary file.
310	File format not valid. See "Understanding error return code 310" on page 215.

System action: ACIF stops.

User response: Use the information provided in the return code to correct the problem. If the message displays a return code that is not listed in the explanation, contact your service representative.

System programmer response: No response is necessary.

APK421S AN ERROR OCCURRED WHILE ATTEMPTING TO CLOSE "*dataset*". RETURN CODE *returncode*.

Explanation: An attempt to close a data set failed. This message is informational and further action takes place in higher-level modules if required. The return codes are:

Code	Description
0	Successful.
8	Data record longer than LRECL or buffer.
10	Storage allocation/deallocation failed.
12	End of file detected.
13	Disk or PDS directory is full.
28	File not found.
32	ACIF message catalog not found in paths specified by NLSPATH environment variable. ACIF uses default message catalog file **/usr/lib/nls/msg/en_US/acif.cat**.
36	Default message catalog not accessible. Check permissions.
310	File format not valid. See "Understanding error return code 310" on page 215.

System action: ACIF stops.

User response: Use the information provided in the return code to correct the problem. If the message displays a return code that is not listed in the explanation, contact your service representative.

System programmer response: No response is necessary.

APK422S AN ERROR OCCURRED WHILE ATTEMPTING TO READ "*dataset*". RETURN CODE *returncode*.

Explanation: An attempt to read a data set failed. This message is informational and further action takes place in higher-level modules if required. The return codes are:

Code	Description
0	Successful.
8	Data record longer than LRECL or buffer.
10	Storage allocation/deallocation failed.
12	End of file detected.
13	Disk or PDS directory is full.
28	File not found.
32	ACIF message catalog not found in paths specified by NLSPATH environment variable. ACIF uses default message catalog file **/usr/lib/nls/msg/en_US/acif.cat**.
36	Default message catalog not accessible. Check permissions.
64	Empty input file (specified with INPUTDD).
310	File format not valid. See "Understanding error return code 310" on page 215.

System action: ACIF stops.

User response: Use the information provided in the return code to correct the problem. If the message displays a return code that is not listed in the explanation, contact your service representative.

System programmer response: No response is necessary.

APK423S AN ERROR OCCURRED WHILE ATTEMPTING TO WRITE "*dataset*". RETURN CODE *returncode*.

Explanation: An attempt to write a data set failed. This message is informational and further action takes place in higher-level modules if required. The return codes are:

Code	Description
0	Successful.

8	Data record longer than LRECL or buffer.
10	Storage allocation/deallocation failed.
12	End of file detected.
13	Disk or PDS directory is full.
28	File not found.
32	ACIF message catalog not found in paths specified by NLSPATH environment variable. ACIF uses default message catalog file **/usr/lib/nls/msg/en_US/acif.cat**.
36	Default message catalog not accessible. Check permissions.
310	File format not valid. See "Understanding error return code 310" on page 215.

System action: ACIF stops.

User response: Use the information provided in the return code to correct the problem. If the message displays a return code that is not listed in the explanation, contact your service representative.

System programmer response: No response is necessary.

APK424I PARAMETER "RESFILE=PDS" IS ONLY VALID UNDER MVS, DEFAULTING TO "RESFILE=SEQ".

Explanation: The supplied value for the **RESFILE** parameter is valid only for z/OS; it is incorrect for other operating systems.

System action: ACIF produces a sequential resource file.

User response: No response is necessary.

System programmer response: No response is necessary.

APK425S USER *type* EXIT "*program*" WAS NOT LOADED.

Explanation: The user exit program named on the exit's DD parameter could not be loaded. Either it does not exist or system API calls in the exit could not be resolved at run time.

System action: ACIF stops.

User response: Correct your exit program and rerun ACIF.

System programmer response: No response is necessary.

APK426S PARAMETER MISMATCH: RESTYPE *type* SPECIFIED = YES, BUT NO SUPPORTING LIBRARY DEFINITIONS WERE SUPPLIED.

Explanation: The resource type *type* was specified on the RESTYPE parameter, but no DD parameter for that resource type was supplied in the ACIF parameter file.

System action: ACIF stops.

User response: Correct the parameters and resubmit the job.

System programmer response: No response is necessary.

APK427I AN ERROR OCCURRED WITH FILEDEF "*filename*", RETURN CODE= *rc*, THE DEFAULT OF "*filename*" "*filetype*" "*filemode*" FOR "*ddname*" WILL BE USED.

Explanation: An incorrect *filename* was supplied. The defaults listed are used instead.

System action: ACIF continues.

User response: No response is necessary.

System programmer response: No response is necessary.

APK428S A "*resource*" HAS BEEN REQUESTED, BUT NO NAME WAS GIVEN.

Explanation: The resource listed in the message was requested to be handled by ACIF, but the name to get was not passed to ACIF. This condition is caused by an ACIF logic error. If you received this message for a Data Object Font (DOF) Descriptor triplet, the resource name is not a typical member name and the name is translated to ASCII or EBCDIC for display purposes. If the resource name cannot be translated, it is presented as a hexadecimal value.

System action: ACIF stops.

User response: Contact your service representative.

System programmer response: No response is necessary.

APK431I INDEXING WITH MASK PARAMETER IS NOT SUPPORTED WITH UNICODE CODE PAGE *codepage*.

Explanation: The user specified the MASK parameter for indexing and also specified Unicode code page *codepage* with the CPGID parameter. However, indexing with a MASK and Unicode data is not supported.

System action: ACIF stops processing.

User response: Specify indexing without the MASK parameter or use an ASCII or EBCDIC code page instead of a double-byte code page. These Unicode code pages cannot be specified on the CPGID parameter when masking data:

- 1200
- 1232
- 13488
- 17584

Note: This might also require a change to your application data.

System programmer response: No response is necessary.

APK432I INCORRECT VALUE SPECIFIED FOR TRIGGER COLUMN RANGE.

Explanation: When specifying a column range in the TRIGGER parameter, the column values must be in the range 1 to 32756. The columns cannot be zero, and the ending column must be greater than the beginning column.

System action: ACIF stops processing.

User response: Correct the parameter and run ACIF again.

System programmer response: No response is necessary.

APK435W THE *ddname* DD STATEMENT SPECIFIED FOR *parameter* IS MISSING.

Explanation: An ACIF DD parameter specified a DD name that was not specified in the JCL (z/OS or VSE) or FILEDEF statement (VM).

System action: ACIF stops.

User response: Ensure that the ACIF parameter specifies a DD name that is defined in the job commands.

System programmer response: No response is necessary.

APK436S THE GROUPNAME VALUE "*value*" IS NOT WITHIN THE ALLOWABLE RANGE.

| **Explanation:** ACIF processing has encountered the
| GROUPNAME parameter with a specified INDEX
| number that is not valid. The INDEX range is 1 - 128.

System action: ACIF stops.

User response: Correct the resource and resubmit the job.

System programmer response: No response is necessary.

APK437S (TYPE=FLOAT) MAY NOT BE SPECIFIED FOR TRIGGER1.

Explanation: The 'TYPE=FLOAT' subparameter is not valid for TRIGGER1.

System action: ACIF stops.

User response: Correct the parameter and rerun ACIF.

System programmer response: No response is necessary.

APK438S THE VALUE SPECIFIED FOR *parameter1* CONFLICTS WITH THE VALUE SPECIFIED FOR *parameter2*.

Explanation: The value specified for the first parameter conflicts with the value specified for the second parameter.

System action: ACIF stops.

User response: Correct the parameters and rerun ACIF.

System programmer response: No response is necessary.

APK440I ACIF AT *aparnumber* HAS COMPLETED NORMALLY WITH RETURN CODE *returncode*.

Explanation: ACIF at the maintenance level indicated by the APAR number has completed with the return code shown.

System action: This message is for information only.

User response: See any accompanying messages to determine a response.

System programmer response: No response is necessary.

APK441I ACIF AT *aparnumber* HAS COMPLETED ABNORMALLY WITH RETURN CODE *returncode*.

Explanation: ACIF at the maintenance level indicated by the APAR number has completed with one of these return codes:

Code	Description
4	Warning; processing continues.
8	| Error; processing stops. Data might be missing from the output.
12	Severe error; processing stops.
16	Unrecoverable error; processing stops.

System action: This message is for information only.

User response: See any preceding messages to determine a response. If TRACE=YES is specified on z/OS and Generalized Trace Facility (GTF) is running, you might receive a return code 4 with no other messages, which you can ignore.

System programmer response: No response is necessary.

APK442S ACIF HAS BEEN INVOKED WITHOUT ANY PARAMETERS.

Explanation: ACIF needs a minimum number of parameters in order to function.

System action: ACIF stops.

User response: Specify the INPUTDD, FORMDEF, CC, and PAGEDEF parameters.

System programmer response: No response is necessary.

APK443S A BEGIN COLUMN SPECIFICATION FOR FIELD*n* IS <= 0. SUCH A SPECIFICATION IS ONLY VALID WHEN (BASE=TRIGGER) IS ALSO SPECIFIED.

Explanation: FIELD*n* was specified with a column offset less than or equal to zero, but (BASE=TRIGGER) was not also specified. Negative column offsets in a FIELD specification are only valid when (BASE=TRIGGER) is also specified.

System action: ACIF stops.

User response: Correct the the ACIF FIELD*n* parameter specification and resubmit the job.

System programmer response: No response is necessary.

APK444S MULTIPLE COLUMNS WERE SPECIFIED FOR FIELD*n* WHICH IS DEFINED WITH (BASE=TRIGGER). ONLY ONE COLUMN MAY BE SPECIFIED WHEN A FIELD IS DEFINED WITH (BASE=TRIGGER).

Explanation: FIELD*n* was specified with multiple columns and (BASE=TRIGGER). Only one column can be specified for a field that is also specified with (BASE=TRIGGER).

System action: ACIF stops.

User response: Correct the ACIF FIELD*n* parameter specification and resubmit the job.

System programmer response: No response is necessary.

APK445S INDEX*n* WHICH IS DEFINED AS EITHER (TYPE=PAGERANGE) OR (TYPE=GROUPRANGE) INCLUDES FIELD*n* WHICH IS DEFINED AS (BASE=TRIGGER). THIS COMBINATION IS INVALID.

Explanation: INDEX*n* was specified as (TYPE=PAGERANGE) or (TYPE=GROUPRANGE) and with a FIELD*n* that was defined as (BASE=TRIGGER). This combination is not supported.

System action: ACIF stops.

User response: Correct the ACIF parameters and resubmit the job.

System programmer response: No response is necessary.

APK446S USE OF FIELD*n* BY INDEX*n* IS INVALID. ONLY ONE FIELD IS ALLOWED IN AN INDEX DEFINED AS (TYPE=PAGERANGE) OR (TYPE=GROUPRANGE).

Explanation: More than one field was specified for INDEX*n*, which is defined as either (TYPE=PAGERANGE) or (TYPE=GROUPRANGE). This is not valid.

System action: ACIF stops.

User response: Correct the ACIF parameters and resubmit the job.

System programmer response: No response is necessary.

APK447S THE LENGTH, *length1*, OF OFFSET PAIR *pair* FOR FIELD*n* DOES NOT EQUAL THE LENGTH, *length2*, SPECIFIED FOR FIELD*n*.

Explanation: The length of a begin-end pair, specified by the offset keyword of a field, does not match the length of the field. This is not valid; the lengths must be equal.

System action: ACIF stops.

User response: Correct the ACIF parameters and resubmit the job.

System programmer response: No response is necessary.

APK448S INDEXING WAS REQUESTED, BUT NO "TRIGGERn" NOR ANY "FIELD" BASED ON IT WAS SATISFIED WITHIN THE PAGE RANGE SPECIFIED BY THE INDEXSTARTBY PARAMETER.

Explanation: Indexing was requested, but the INDEX*n* satisfier was outside the range of pages specified in the **INDEXSTARTBY** parameter, which has a default value of **1**. The **INDEXSTARTBY** condition is only satisfied by group triggers, not floating triggers.

Note: This message can also be issued if:

- The input file is empty and the **INDEXSTARTBY** value is greater than zero.
- The FIELD*n* parameter specifies a negative number but the trigger is found on the first record of the line data.
- | An asterisk (*) is specified for the row value with any group TRIGGER*n* parameter other than TRIGGER1.

System action: ACIF stops processing.

User response: Correct the **INDEXSTARTBY** parameter and resubmit the job. If you do not want

ACIF to stop processing when it cannot find a group indexing field or when the input file is empty, you must set the parameter to **INDEXSTARTBY=0** or specify **EXTENSIONS=EMPTYOK**.

System programmer response: No response is necessary.

APK449S INDEX FIELDS REFERENCE OUTSIDE OF THE RECORD, FIELD# *number* **INPUT RECORD#** *number***.**

Explanation: The FIELD*n* value specified on the INDEX*n* parameter references an area that is outside the length of the requested record.

System action: ACIF stops.

User response: Correct the parameters and resubmit the job.

System programmer response: No response is necessary.

APK450S A REQUIRED ACIF PARAMETER *parametername* **WAS NOT FOUND IN THE PARAMETER FILE.**

Explanation: A required ACIF parameter was not found in the parameter file.

System action: ACIF stops.

User response: Add the missing parameter to the parameter file and resubmit.

System programmer response: No response is necessary.

APK451S FILE *action* **ERROR DURING** *ddname* **PROCESSING. SVC 99 ERROR** *error* **INFORMATION CODE** *code***.**

Explanation: An error occurred during the allocation, concatenation, or outadd of AFP resource libraries.

System action: ACIF stops.

User response: Inform your system programmer that this error occurred.

System programmer response: Use the return code and reason code to determine the cause of the error and information code; then, determine the appropriate response. See your operating system's authorized assembly language programs document for information about the SVC 99.

APK452S A *trigger* **NUMBER OF** *number* **IS INVALID FOR** *parameternumber***.**

Explanation: The trigger or record number specified in the FIELD*n* or INDEX*n* parameter is not valid.

System action: ACIF stops.

User response: Triggers used in field definitions must be defined. Make sure that you have specified a TRIGGER parameter before using that trigger number on a FIELD parameter. After you correct the parameter, run ACIF again.

System programmer response: No response is necessary.

APK453S THE *parameternumber* **LENGTH OF** *length* **IS GREATER THAN THE ALLOWED MAXIMUM OF** *maxlength***.**

Explanation: The combined length of all of the FIELD*n* values on an INDEX*n* parameter is too long.

System action: ACIF stops.

User response: Check the FIELD*n* and INDEX*n* parameters to find where this happens. Correct the parameter and resubmit the job.

System programmer response: No response is necessary.

APK454S A VALUE OF *value* **IS INVALID FOR** *parameternumber***.**

Explanation: A FIELD*n* parameter value contains incorrect characters.

System action: ACIF stops.

User response: Correct the parameter value and resubmit the job.

System programmer response: No response is necessary.

APK455S FIELD*n* USED BY INDEX*n* WAS NOT DEFINED.

Explanation: An INDEX*n* parameter referred to a FIELD*n* that was not defined in the parameter file.

System action: ACIF stops.

User response: Correct the parameters and resubmit the job.

System programmer response: No response is necessary.

APK456S THE TRIGGER1 RELATIVE RECORD NUMBER IS NOT EQUAL TO ASTERISK.

Explanation: The record number associated with the TRIGGER1 parameter was not an asterisk.

System action: ACIF stops.

User response: Correct the parameter and resubmit the job.

System programmer response: No response is necessary.

APK457S TRIGGER1 WAS NOT DEFINED, BUT SECONDARY TRIGGERS ARE PRESENT.

Explanation: TRIGGER1 must be specified if secondary TRIGGER*n* parameters are present.

System action: ACIF stops.

User response: If no indexing is required, delete all TRIGGER*n* parameters from the parameter file; otherwise, supply a TRIGGER1 parameter for this run of ACIF.

System programmer response: No response is necessary.

APK458S A NON-LITERAL VALUE OF *value* HAS BEEN SUPPLIED FOR *parameternumber*.

Explanation: The supplied TRIGGER*n* value was not a literal.

System action: ACIF stops.

User response: Correct the parameters and resubmit the job.

System programmer response: No response is necessary.

APK459S INDEX NEEDED FOR THE GROUPNAME WAS NOT FOUND.

Explanation: The index used for the GROUPNAME contained a field that was based on a floating trigger; however, the trigger was not found. Therefore, there is no value for the GROUPNAME. INDEX1 is used for the GROUPNAME by default.

System action: ACIF stops.

User response: Use the GROUPNAME parameter to specify an index that does not contain a field based on a floating trigger.

System programmer response: No response is necessary.

APK460S TRIGGERS SATISFIED, BUT INDEXES WERE INCOMPLETE AT END-OF-FILE.

Explanation: The TRIGGER*n* parameters specified in the parameter file were met, but the end of the file was reached before the INDEX*n* parameters were located.

System action: ACIF stops.

User response: Correct the parameters and resubmit the job.

System programmer response: No response is necessary.

APK461S TRIGGER SUPPLIED, BUT ALL INDEX VALUES WERE LITERALS.

Explanation: A value for TRIGGER*n* has been supplied, but all INDEX*n* values were literals.

System action: ACIF stops.

User response: Correct the parameters and resubmit the job.

System programmer response: No response is necessary.

APK462S A TRIGGER PARAMETER WAS SPECIFIED, BUT THE INPUT FILE IS ALREADY INDEXED.

Explanation: The parameter file included a TRIGGER*n* parameter, but the input file contains indexing structured fields. ACIF cannot index a file that is already indexed.

System action: ACIF stops.

User response: If you want to create an index object file for the input file, remove all TRIGGER*n* parameters from the ACIF parameter file and resubmit the job.

System programmer response: No response is necessary.

APK463S INDEX*n* USED BY THE GROUPNAME PARAMETER WAS NOT DEFINED OR WAS INVALID.

Explanation: The INDEX*n* specified by the GROUPNAME parameter was not defined or the index contained a field that was based on a floating trigger. When the GROUPNAME parameter is not used, INDEX1 is used by default.

System action: ACIF stops.

User response: Correct the parameters and resubmit the job.

System programmer response: No response is necessary.

APK464S "*token1*" WAS SPECIFIED WHEN "*token2*" EXPECTED.

Explanation: The syntax of the parameter printed above this message was incorrect.

System action: ACIF continues processing the parameter file, but does not process the report file.

User response: Correct the value of the parameter and rerun ACIF.

System programmer response: None.

APK465S INVALID TOKEN "*token*" RECEIVED.

Explanation: The token identified in the message was not expected in the parameter listed above the message.

System action: ACIF continues processing the parameter file, but does not process the report file.

User response: Correct the value of the parameter and rerun ACIF.

System programmer response: None.

APK466S A SUB-PARAMETER OF "*subparameter*" IS INVALID FOR PARAMETER "*parameter*".

Explanation: The named subparameter is not supported on the parameter listed above the message.

System action: ACIF continues processing the parameter file, but does not process the report file.

User response: Correct the value of the parameter and rerun ACIF.

System programmer response: None.

APK467S THE NUMBER "*number*" IS NOT SUPPORTED FOR *parameter*.

Explanation: An incorrect number was specified on a FIELD*n*, INDEX*n*, or TRIGGER*n* parameter keyword.

System action: ACIF continues processing the parameter file, but does not process the report file.

User response: Correct the parameter keyword so that the number is within the allowed range for that parameter and rerun ACIF.

System programmer response: None.

APK468S THE INPUT BUFFER IS TOO SMALL FOR THE PARAMETER VALUE "*value*".

Explanation: The named value was too long for the ACIF internal input buffer.

System action: ACIF stops.

User response: Use your local problem reporting system to report the error.

System programmer response: None.

APK469S THE LENGTH OF THE VALUE "*value*" EXCEEDS THE MAXIMUM ALLOWED LENGTH FOR THE *parameter* PARAMETER.

Explanation: The length of the named value exceeds the maximum length.

System action: ACIF continues processing the parameter file, but does not process the report file.

User response: Correct the value so that its length is within the maximum for that parameter and rerun ACIF.

System programmer response: None.

APK470S WHICH BEGINS AT OFFSET *offset* FOR A LENGTH OF *length*.

Explanation: This message is issued following a message that contains the cause of the error.

System action: ACIF continues processing the parameter file, but does not process the report file.

User response: Correct the value so that its length is within the maximum for that parameter and rerun ACIF.

System programmer response: None.

APK471S THE NUMBER OF FIELD VALUES ON THE INDEX PARAMETER EXCEEDED THE MAXIMUM ALLOWED.

Explanation: There were too many FIELD*n* values specified for the INDEX*n* parameter printed above this message.

System action: ACIF continues processing the parameter file, but does not process the report file.

User response: Remove the extra FIELD*n* values from the INDEX*n* parameter and rerun ACIF.

System programmer response: None.

APK472S THE NUMBER OF VALUES SPECIFIED FOR THE *parameter* PARAMETER EXCEEDED THE MAXIMUM ALLOWED.

| **Explanation:** Too many values were specified for the
| named parameter.

System action: ACIF continues processing the parameter file, but does not process the report file.

User response: Consult the ACIF User's Guide for the maximum number of values for this parameter, correct the parameter, and rerun ACIF.

System programmer response: None.

APK473S RECORDRANGE SUB-PARAMETER ALLOWED ONLY IF RECORD VALUE IS '*'.

Explanation: The RECORDRANGE subparameter is only valid on a TRIGGER*n* parameter if the record value was specified as '*'.

System action: ACIF stops.

User response: Either specify an '*' for the record value or remove the RECORDRANGE from the TRIGGER parameter.

System programmer response: None.

APK474S END-OF-FILE ENCOUNTERED BEFORE CLOSING QUOTE FOUND FOR "*value*".

Explanation: The end of the parameter file was found before the closing quotation mark for a literal value.

System action: ACIF stops.

User response: Ensure the literal value is enclosed in quotation marks and rerun ACIF.

System programmer response: None.

APK475S THE HEX STRING "*hexstring*" IS NOT VALID.

Explanation: The value specified was not a valid hex string.

System action: ACIF continues processing the parameter file, but does not process the report file.

User response: Correct the hex string and rerun ACIF.

System programmer response: None.

APK476S THE LENGTH OF THE NUMERIC VALUE "*value*" IS INVALID.

Explanation: ACIF attempted to write a message that is not defined in the message catalog.

System action: ACIF processing continues depending upon the significance of undefined message.

User response: Inform your service representative that ACIF attempted to write an undefined message, which needs to be corrected.

System programmer response: None.

APK478I UNABLE TO SAVE DATA OBJECT *filename* TO RESOURCE FILE.

Explanation: Data objects resources, such as color management resources (CMRs), or font resources are being saved, but the object shown in the message has the embed flag set “off” in the resource access table (RAT). Objects with an embed flag set “off” cannot be placed inline or saved in the output resource library.

System action: ACIF skips the specified data object and continues processing the page.

User response: This message is informational and is based on the embed flag setting in the RAT that is created when the data object is installed. If you need to save this object in the resource file, contact your system programmer to set the embed flag “on”.

System programmer response: In the resource installer product, such as InfoPrint AFP Resource Installer, find the specified object in its library. Select “embed” for the object, and then rerun the resource installer to update the RAT. If embed was already selected for the object, make sure that the RAT has been updated in the directory where ACIF is searching for fonts or objects. If the data object is still not saved to the resource file, contact your service representative for assistance.

APK479S REQUESTED DATA OBJECT *filename* NOT FOUND, RETURN CODE *nn*.

Explanation: A data object was requested with a Map Data Resource (MDR) structured field in the input file or page definition, but the object could not be accessed by the resource access table (RAT).

System action: ACIF stops processing.

User response: The requested data object needs to be installed on the system in one of the directories specified with the USERPATH, FONTPATH, or OBJCPATH parameter. The return code indicates why the object was not found and gives the action the user should perform:

Code	**Description and Action**
10	Attempt to assign storage failed.
20	No RAT was found in the paths specified with the USERPATH, FONTPATH, or OBJCPATH parameter. Make sure a correct set of paths is specified for these parameters. Contact your system programmer to verify that the object is installed on your system.
30	RAU handle is null. Contact your service representative.
40	Font is not found. There was no entry for the requested font in the RAT. Make sure you have specified the correct set of paths to search. If the correct paths are specified, contact your system programmer to install the font in the correct directory and update the RAT.
50	Conversion information is missing. The object might not be found if the MDR structured field specifies the object encoding by CPGID/GCSGID names that cannot be mapped to a CCSID, or if the object file name cannot be converted to ASCII or EBCDIC for access on your system. If the object name cannot be converted or mapped, the name is presented as a hexadecimal string. Contact your system programmer for assistance in analyzing this return code.
70	Unable to convert code page or character set to CCSID. Same action as return code 50.
90	RAU handle is missing. Contact your service representative.

100	Path name is missing on AddPath. Contact your service representative.
110	RAT contains incorrect entries. Contact your service representative.
120	ICONV open request has an error. Same action as return code 50.
130	ICONV conversion has an error. Same action as return code 50.
140	RAT type does not match the Find call. Contact your service representative.
150	RAT type is incorrect. Contact your service representative.
160	Requested color management resource (CMR) is not found in the RAT. Make sure you have specified the correct set of paths to search. If the correct paths are specified, contact your system programmer to install the CMR into the correct directory and update the RAT.
170	Requested data object is not found in the RAT. Make sure you have specified the correct set of paths to search. If the correct paths are specified, contact your system programmer to install the object into the correct directory and update the RAT.
180	CMR name is incorrect. Contact your service representative.
190	RAT contains incorrect entries. Contact your service representative.
200	Resource access table (RAT) not valid. For example, RAT uploaded as a text file instead of a binary file.
210	Font not found inline. An MDR setting requires that the requested data object font is inline in the input file resource group (RESTYPE=ALL or RESTYPE=FONTS). The MDR repeating group flag does not apply to any code page named on a Fully Qualified Name (FQN) triplet with an FQNType of X'85' that is used with the data object font (such as T1V10500). ACIF does not search external libraries when the MDR repeating group flag requires that the data object font is inline.

System programmer response: Make sure that both the object and the RAT are installed in the correct directory. If not, use a resource installer product, such as InfoPrint AFP Resource Installer, to install the data object in the correct directory and build the RAT entry. If the data object files and the RAT have been installed correctly, contact your service representative for assistance.

APK499I INTERNAL ERROR IN MODULE *module* **AT FUNCTION** *function***.**

Explanation: An internal error has occurred.

System action: ACIF stops.

User response: Contact your service representative for assistance.

System programmer response: None.

APK532S A *resource* **WITH A MEMBER NAME (***membername***) WAS NOT FOUND OR WAS INVALID - RETURN CODE** *returncode***.**

Explanation: The requested form definition, page definition, page segment, medium overlay, or setup file does not exist in any of the available paths. If the form definition member name is blank, the default is DUMMY.

Return Code	**Description**
0	Successful
1	Permanent I/O error
2	Specified number of bytes is zero
3	Incorrect data buffer address
4	Address not word aligned
6	Incorrect FILE_CB@
7	Incorrect MODE parameter
8	Data record longer than LRECL or buffer
9	File is not supported type
10	Storage allocation/deallocation failed
11	Incorrect record number
12	End of file detected
13	Disk or PDS directory is full
14	RECFM not valid
15	Incorrect or unparseable data in a resource or data object file
20	Incorrect file ID
28	File not found
51	Length exceeds maximum
310	File format not valid

Reason Code	**Description**
1	Resource name missing
2	File system open error
3	File system close error
4	File system read error
6	Resource type error
7	File system write error
8	Indexer error
9	Message write error

System action: ACIF stops.

User response: Correct the parameters and run ACIF again.

System programmer response: None.

APK900S MISSING DAT POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK901S MISSING FORMDEF POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK902S MISSING PAGEDEF POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK903S MISSING OBJECT STACK POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK904S MISSING CODE PAGE POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK905S MISSING FONT METRIC POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK906S UNEXPECTED OTHERWISE STATEMENT ENCOUNTERED.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK907S CCM CANNOT FIND REQUESTED MEDIUM MAP.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK908S CCM CANNOT FIND REQUESTED DATA MAP.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK909S CCM CANNOT FIND REQUESTED MEG.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK910S INPUT BIN LIST CHANGED DURING PROCESSING.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK911S DAT DID NOT SPECIFY ANY INPUT BIN INFORMATION.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK912S OVERLAY LOCAL ID HAS BEEN CHANGED IN LIST.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK913S STARTING COPY COUNT EXCEEDS TOTAL COPIES IN MM.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK914S CONDITIONAL PROCESSING INFORMATION PASSED TO CCM AT DOCUMENT INTERFACE, BUT PAGEDEF DOES NOT REQUEST CONDITIONAL PROCESSING.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK915S ACIF REQUESTED CODE PAGE DEALLOCATION AS WELL AS CODE PAGE PROCESSING.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK916S ACIF REQUESTED ACTIVATION OF AN OUTLINE FONT CHARACTER SET, BUT DOES NOT SUPPORT OUTLINE FONTS.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK917S ACIF REQUESTED ACTIVATION OF A FONT RESOURCE, BUT THE GLOBAL NAME WAS NOT PROVIDED OR HAD AN INCORRECT LENGTH.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK918S NO FREQUENT FONT TABLE OR FGID LOOK ASIDE TABLE WAS PROVIDED TO *modulename*.

Explanation: An internal error has occurred in ACIF.

System action: ACIF stops.

User response: Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK919S THE CCM COMPONENT OF ACIF HAS USED UP ITS OBJECT STACK AREA IN *modulename*.

Explanation: The common conversion machine (CCM) component of ACIF has run out of its object stack area. This could be a data stream error or a logic error. A begin structured field must have a matching end structured field following it in the data stream. If this requirement is not met, the CCM can run out of its object stack area.

System action: ACIF stops.

User response: Check the data stream to make sure each begin structured field has a matching end structured field following it. If this is not true, correct the data stream and resubmit the job to ACIF. If the data stream meets the begin structured field requirement, this message indicates an internal logic error. Inform your service representative that you have received this message indicating an internal error.

System programmer response: None.

APK921S NO RECORD LENGTH WAS PASSED TO CCM WHEN PROCESSING AN OBJECT CONTAINER RESOURCE.

Explanation: This abend is issued by module APRMSGEX. No record length was passed to common conversion maching (CCM) when processing an object container resource. This is a logic error.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: None.

System programmer response: This ACIF abend reason code indicates a logic error. Contact your service representative for assistance regarding this error code.

APK2003S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: STRUCTURED FIELD *structuredfield* CONTAINED AN EXTENDED RESOURCE LOCAL IDENTIFIER VALUE THAT WAS USED IN A PREVIOUS STRUCTURED FIELD OF THE SAME TYPE.

Explanation: More than one structured field used the same Extended Resource Local Identifier value for different resources of the same type. The Extended Resource Local Identifier is specified by using the Extended Resource Local Identifier (X'22') triplet on the structured field. The structured field that attempted to use the same Extended Resource Local Identifier value is identified in the message.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2004S DATA IN A FORMDEF RESOURCE IS INVALID: MEDIA TYPE LOCAL IDENTIFIER IN MMC STRUCTURED FIELD, ID *identifier* WAS NOT FOUND IN THE STRUCTURED FIELD.

Explanation: The Media Type local ID in the Medium Modification Control (MMC) structured field was not present in the Map Media Type (MMT) structured field. The MMC and MMT structured fields are in the form definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2005S DATA IN AN INPUT RECORD OR PAGEDEF RESOURCE IS NOT VALID: RECORD IDENTIFIER *identifier* COULD NOT BE FOUND WITHIN THE RCD STRUCTURED FIELDS.

Explanation: The record identifier specified in an input record could not be matched to a Record Descriptor (RCD) structured field in the current data map. The RCD structured field is in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2007S DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE FIELD RCD POINTER VALUE IN RCD STRUCTURED FIELD NUMBER *number* WILL CAUSE AN INFINITE LOOP.

Explanation: The FIELD RECORD DESCRIPTOR POINTER parameter in the Record Descriptor (RCD) structured field identified in this message caused an infinite-loop condition. The RCD structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2008I DATA IN A PAGEDEF RESOURCE IS NOT VALID: RCD OR XMD STRUCTURED FIELD NUMBER *number* SPECIFIES A VALUE THAT IS NOT VALID AS A POINTER TO A FIELD RCD OR XMD. THE VALUE *rcdvalue* EXCEEDS THE LNC STRUCTURED FIELD COUNT VALUE OF *lncvalue*.

Explanation: The Record Descriptor (RCD) or XML Descriptor (XMD) structured field identified in this message specifies a value as a pointer to a Field RCD or XMD. The value specified is not valid. The value is greater than the COUNT value in the Line Descriptor Count (LNC) structured field in the current data map. The LNC, RCD, and XMD structured fields are in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2010S RECORD FORMATTING WAS REQUESTED BY THE PAGE DEFINITION BUT THAT FUNCTION IS NOT SUPPORTED BY THIS RELEASE OF ACIF.

Explanation: The record formatting function is not supported by this release of ACIF.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: To use the record formatting function, submit this job to a version of ACIF that supports record formatting.

System programmer response: Select a page definition that does not use the record formatting function.

APK2011I DATA IN A PAGEDEF RESOURCE IS NOT VALID: DATA MAP *datamap1* AND DATA MAP *datamap2* ARE FOR PROCESSING DIFFERENT TYPES OF DATA. ALL DATA MAPS IN THE PAGE DEFINITION MUST SPECIFY THE SAME DATA FORMATTING.

Explanation: A page definition can only be used for one type of data. A single page definition cannot be used to mix the processing of traditional line data, record-format line data, and XML data.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2012S DATA IN A PAGEDEF RESOURCE IS NOT VALID: A NON-ZERO RECORD IDENTIFIER PARAMETER VALUE *value* **WAS SPECIFIED IN RCD STRUCTURED FIELD NUMBER** *number***.**

Explanation: For Record Descriptor (RCD) structured fields that are marked as either a field or a conditional processing RCD, the RECORD IDENTIFIER parameter value must be all zeros. The RCD structured fields are in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2013S DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE SAME RECORD IDENTIFIER *identifier* **WAS SPECIFIED IN RCD STRUCTURED FIELD NUMBERS** *number1* **AND** *number2***. ALL RECORD IDENTIFIERS MUST BE UNIQUE IN THE SAME DATA MAP.**

Explanation: With the exception of the default Page Header Record Descriptor (RCD) structured field, the default Page Trailer RCD structured field, Field RCD structured fields, and Conditional Processing RCD structured fields, all other RCD structured fields in a data map must have a unique record identifier parameter value specified.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2014I DATA IN AN INPUT RECORD OR PAGEDEF RESOURCE IS NOT VALID: THE PAGE SIZE IS NOT LARGE ENOUGH TO PLACE THE FIRST RECORD OF THE PAGE BY USING RCD OR XMD STRUCTURED FIELD NUMBER *number* **AND ITS ASSOCIATED FIELD RCD OR XMD STRUCTURED FIELDS.**

Explanation: The Body Record Descriptor (RCD) or XML Descriptor (XMD) structured field selected for placing the first body record of the page does not fit within the area of the page defined by the bottom margin. If Field RCD or XMD structured fields are being used, one of the Field RCD or XMD structured fields might be positioning data beyond the bottom margin. This error prevents PSF from being able to place the record and continuing.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2015S DATA IN A PAGEDEF RESOURCE IS NOT VALID: AN RCD STRUCTURED FIELD SPECIFIED A GRAPHICS DESCRIPTOR TRIPLET TO END ALL STARTED GRAPHICS DESCRIPTOR TRIPLETS THAT HAVE A MATCHING GRAPHIC PARAMETER VALUE *value*, BUT A MATCH COULD NOT BE FOUND.

Explanation: A graphics object can be started by one Record Descriptor (RCD) structured field and ended with another RCD structured field. When this is done, the Graphics Descriptor triplets that start and end a graphics object must have matching GRAPHID parameter values specified and the RCD structured fields must have matching orientations. ACIF could not find a match between the start and end Graphics Descriptor triplets by using the GRAPHID parameter from the end Graphics Descriptor triplet and the TEXT ORIENTATION parameter value from the RCD structured field.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2016S DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE USE RECORD IDENTIFIER FLAG WAS SET BUT THE SUM OF THE DATA START POSITION AND THE DATA LENGTH PARAMETER VALUES IN RCD STRUCTURED FIELD NUMBER *number* SELECTS DATA BEYOND THE RECORD IDENTIFIER FIELD.

Explanation: For Record Descriptor (RCD) structured fields that are marked to use only the record identifier portion of an input record, only the record identifier can be accessed by the RCD. The DATA START parameter plus the DATA LENGTH parameter of this RCD accesses data beyond the 10-byte record identifier area of the input record.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2017S DATA IN A PAGEDEF RESOURCE IS NOT VALID: A FONT IS NEEDED FOR THE *structuredfield* STRUCTURED FIELD IN DATA MAP *datamap* BUT NO FONTS WERE MAPPED IN THE DATA MAP.

Explanation: Fonts needed for printing record-format line data or XML data must be selected in the data map. The CHARS JCL parameter cannot be used to select fonts. The data map identified in this message contained a Record Descriptor (RCD) or an XML Descriptor (XMD) structured field that requires a font, but no fonts were specified in the data map.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2018S DATA IN A PAGEDEF RESOURCE IS NOT VALID: RCD STRUCTURED FIELD *structuredfield* REQUESTED THAT THE PAGE NUMBER BE RESET, BUT THE PAGE NUMBER PARAMETER CONTAINS ZERO.

Explanation: The PAGE NUMBER parameter in a Record Descriptor (RCD) structured field cannot be zero when the RCD requests that ACIF reset the page number.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2019I ADATA IN A PAGEDEF RESOURCE IS NOT VALID: THE FONT SELECTED FOR PRINTING THE PAGE NUMBER ON RCD OR XMD STRUCTURED FIELD NUMBER *number* CANNOT BE A DOUBLE-BYTE FONT WHEN USING THE ASCII ENCODING SCHEME.

Explanation: ACIF cannot determine the correct code points to generate when a double-byte font is used to print the page number by using the ASCII encoding scheme. The structured field identified in this message selected a double-byte ASCII font for printing the page number. This is not allowed.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2020I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE OBJECT OID SPECIFIED IN A FULLY QUALIFIED NAME TRIPLET ON AN *structuredfield* STRUCTURED FIELD IS INCORRECT.

Explanation: An object OID being specified in a Fully Qualified Name triplet must not contain all zeros and must be less than 130 bytes in length.

System action: ACIF stops processing the input file and issues a message identifying the position of the structured field in the file or resource.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If a licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid.

APK2021I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE *structuredfield* STRUCTURED FIELD CONTAINS UNPAIRED FQN X'BE' AND FQN X'DE' TRIPLETS.

Explanation: If this is an Include Object (IOB) or Preprocess Presentation Object (PPO) structured field, the Fully Qualified Name (FQN) triplet with an FQNType of Data Object Internal Resource Reference (X'BE') must immediately follow an FQN triplet with an FQNType of Data Object External Resource Reference (X'DE'). If this is a Map Data Resource (MDR) structured field, a repeating group with an FQN triplet type X'BE' must also include an FQN triplet type X'DE'.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2022I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A SECONDARY RESOURCE IDENTIFIED ON STRUCTURED FIELD *structuredfield* IS NOT NAMED IN THE ACTIVE ENVIRONMENT GROUP.

Explanation: An Include Object (IOB), Line Descriptor (LND), Record Descriptor (RCD), or XML Descriptor (XMD) structured field calls for a secondary resource. This secondary resource must be named in a Map Data Resource (MDR) in the Active Environment Group (AEG) of the page, overlay, or data map containing the structured field. A color management resource (CMR) is a secondary resource that must be mapped in the AEG. If the CMR name is mapped but the scope or processing mode on the MDR does not match the IOB, LND, RCD, or XMD structured field, this message is issued.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields, contact your system programmer.

System programmer response: If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error. If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2023I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE FORMAT SPECIFIED IN AN FQN TRIPLET IS NOT VALID. The STRUCTURED FIELD *structuredfield* is in error.

Explanation: The FQNFmt specified in a Fully Qualified Name (FQN) triplet on the structured field specified in the message is not valid.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2024I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A FULLY QUALIFIED NAME TRIPLET MAPPED AN OBJECT THAT IS NOT ALLOWED IN AN MDR STRUCTURED FIELD IN AN OBJECT ENVIRONMENT GROUP.

Explanation: A Fully Qualified Name (FQN) triplet with an FQNType of Begin Resource Object Reference (X'84') or Other Object Data Reference (X'CE') is not allowed on a Map Data Resource (MDR) structured field in an Object Environment Group (OEG).

In addition, an FQN triplet with an FQNType of Data Object External Resource Reference (X'DE') can only map a data object font or a color management resource (CMR) in a bar code object, a graphics object, or a presentation text object with OEG.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2025I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: AN ERROR WAS FOUND IN A FULLY QUALIFIED NAME TRIPLET SPECIFIED IN A REPEATING GROUP ON AN *structuredfield* STRUCTURED FIELD.

Explanation: One of these errors was found:

- More than one Fully Qualified Name (FQN) triplet with one of these FQNTypes was found in a repeating group on a Map Data Resource (MDR) structured field:
  - Begin Resource Object Reference (X'84')
  - Other Object Data Reference (X'CE')
  - Data Object External Resource Reference (X'DE')
  - Code Page Name Reference (X'85')
- More than one FQN triplet with one of these FQNTypes was found in a repeating group on a Preprocess Presentation Object (PPO) structured field:
  - Begin Resource Object Reference (X'84')
  - Other Object Data Reference (X'CE')
- An FQNType that is not valid was specified on an FQN triplet on an MDR.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2026I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE OBJECT CLASS SPECIFIED IN AN OBJECT CLASSIFICATION TRIPLET ON AN MDR STRUCTURED FIELD IS NOT VALID.

Explanation: The ObjClass specified in an Object Classification triplet on a Map Data Resource (MDR) structured field must be X'40' or X'41' if the Fully Qualified Name (FQN) triplet type in the repeating group is a Data Object External Resource Reference (X'DE'). The ObjClass specified must be X'01' if the FQN triplet type in the repeating group is an Other Object Data Reference (X'CE').

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2027I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: AN MDR STRUCTURED FIELD SPECIFIES THE SAME RESOURCE REFERENCE MORE THAN ONCE IN AN ENVIRONMENT GROUP.

Explanation: The same resource reference cannot be made in a Map Data Resource (MDR) structured field in an environment group.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2029I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: OBJECT OID *objectoid1* DOES NOT MATCH THE OBJECT OID *objectoid2* SPECIFIED ON THE *structuredfield* STRUCTURED FIELD.

Explanation: The object OID specified on a structured field must match the object OID specified on the Map

Data Resource (MDR) or Include Object (IOB) structured field that referenced it. A value of *** indicates an OID was not specified.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2030I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A SECONDARY RESOURCE THAT IS NOT A CMR IS SPECIFIED ON AN IOB STRUCTURED FIELD THAT INCLUDES A BAR CODE, GRAPHICS, OR PRESENTATION TEXT WITH OEG OBJECT.

Explanation: A Fully Qualified Name (FQN) triplet of type Data Object External Resource Reference (X'DE') is specified in an Include Object (IOB) structured field that has a bar code, graphics, or presentation text with OEG object. Only color management resources (CMRs) are allowed as secondary resources for these objects.

System action: The secondary resource reference that is not a CMR is ignored and processing continues.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2033I THE BAR CODE DATA OR BAR CODE DATA PLUS THE ADDITIONAL 2D BAR CODE PARAMETERS EXCEED THE OUTPUT COMMAND BUFFER.

Explanation: Either the bar code data itself or the bar code data plus the macro control block data specified for a 2D bar code exceeds the size of the output command buffer. The macro control block data is specified in your page definition as part of the BCXPARMS (additional bar code parameters).

System action: ACIF issues this message and continues processing.

User response: Change the amount of data specified for your bar code or reduce the amount of data in the macro control block.

System programmer response: None.

APK2039I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A DUPLICATE FINISHING OPERATION WAS FOUND IN THE *mapname* MEDIUM MAP.

Explanation: The same finishing operation was specified more than once in a medium map. This nesting of the same finishing operation is not allowed. The Media Finishing Control (MFC) structured field is in a form definition or an internal medium map in the print data set.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the form definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: None.

APK2040I THE NUMBER OF MEDIA COLLECTION FINISHING NESTING LEVELS IS MORE THAN 4.

Explanation: A maximum of four levels of nesting is allowed for media collection finishing. The Medium Finishing Control (MFC) structured field can be contained in a form definition or internal medium map in a page.

System action: ACIF stops processing the data set.

User response: If you created the form definition or internal medium map, you must remove one or more levels of media collection finishing operations. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. Resubmit the print request. If the total number of nesting levels is less than or equal to four, the error might be an ACIF logic error.

System programmer response: None.

APK2041I DATA IN AN INPUT RECORD OR PAGEDEF IS NOT VALID: INPUT DATA BEING USED FOR A VARIABLE RESOURCE NAME IN LND OR RCD STRUCTURED *number* IS DOUBLE BYTE DATA.

Explanation: A Resource Object Include triplet or an Extended Resource Local ID triplet on a Line Descriptor (LND) or Record Descriptor (RCD) structured field requests that the input data for the resource name is included. This input data cannot be double-byte data.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* and *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2042I DATA IN A PAGEDEF RESOURCE IS NOT VALID: AN XML PAGE DEFINITION REQUESTED THAT THE INPUT DATA BE USED FOR A RESOURCE NAME ON XMD STRUCTURED FIELD NUMBER *number*.

Explanation: An Object Reference Qualifier (ORQ) triplet has been specified on an XML Descriptor (XMD) structured field. This function is not supported when using an XML page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the resource, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* and *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2044I DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE FIELD XMD POINTER VALUE IN XMD STRUCTURED FIELD NUMBER *number* WILL CAUSE AN INFINITE LOOP.

Explanation: The Field XML Descriptor Pointer value in the XML Descriptor (XMD) structured field identified in this message caused an infinite loop condition. The XMD structured field is contained in the page definition.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* and *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2045I THE ENCODING SCHEME SPECIFIED IN A PAGE DEFINITION USED TO PROCESS XML DATA IS NOT SUPPORTED BY ACIF.

Explanation: The encoding scheme specified is not supported by ACIF.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: You must use an encoding scheme that is supported by ACIF for XML data processing. See

Advanced Function Presentation: Programming Guide and Line Data Reference and *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2046I XML DATA FORMATTING WAS REQUESTED BY THE PAGE DEFINITION BUT THAT FUNCTION IS NOT SUPPORTED BY THIS RELEASE OF ACIF.

Explanation: The XML data formatting function is not supported by this release of ACIF.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: To use the XML data formatting function, submit this job to a version of ACIF that supports XML data formatting.

System programmer response: None.

APK2047I DATA IN A PAGEDEF RESOURCE IS NOT VALID: DATA MAP *datamapname1* **AND DATA MAP** *datamapname2* **HAVE DIFFERENT ENCODING SCHEMES SPECIFIED FOR THE USER DATA. ALL DATA MAPS IN THE PAGE DEFINITION MUST SPECIFY THE SAME ENCODING SCHEME.**

Explanation: All the data maps in a page definition used to process XML data must use the same encoding scheme for the user data.

System action: ACIF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* and *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2048I DATA IN AN INPUT RECORD IS NOT VALID: A DTD DECLARATION AT CHARACTER COUNT NUMBER *number* **IS SPECIFIED OUTSIDE OF A DTD.**

Explanation: A document type definition (DTD) declaration is only allowed inside a DTD. The character count number specified in this message is relative to the start of the record.

System action: ACIF stops processing the current data set and issues a message identifying the position of the error in the data stream.

User response: If you created the XML data, correct the error and resubmit the print request. See the XML specification, Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium website. If the XML data does not have an error, the error might be an ACIF logic error. If you used a program to create the XML data, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the XML data with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2049I DATA IN AN INPUT RECORD IS NOT VALID: THE XML COMMENT SYNTAX AT CHARACTER COUNT NUMBER *number* **IS NOT VALID.**

Explanation: After an XML comment has been started, you can only use two dashes in a row when ending a comment. The character count number specified in the message is relative to the start of the record.

System action: ACIF stops processing the current data set and issues a message identifying the position of the error in the data stream.

User response: If you created the XML data, correct the error and resubmit the print request. See the XML specification, Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium website. If the XML data does not have an error, the error might be an ACIF logic error. If you used a program to create the XML data, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the XML data with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2050I DATA IN AN INPUT RECORD IS NOT VALID: THE XML END TAG AT CHARACTER COUNT NUMBER *number* DOES NOT MATCH THE LAST START TAG.

Explanation: An XML end tag must exactly match its start tag. The character count number specified in this message is relative to the start of the record.

System action: ACIF stops processing the current data set and issues a message identifying the position of the error in the data stream.

User response: If you created the XML data, correct the error and resubmit the print request. See the XML specification, Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium website. If the XML data does not have an error, the error might be an ACIF logic error. If you used a program to create the XML data, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the XML data with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2051I DATA IN AN INPUT RECORD IS NOT VALID: THE END OF A DOCUMENT TYPE DECLARATION AT CHARACTER COUNT NUMBER *number* IS NOT THE CORRECT SYNTAX.

Explanation: The end of a document type declaration (DTD) did not have the correct syntax. The character count number specified in this message is relative to the start of the record.

System action: ACIF stops processing the current data set and issues a message identifying the position of the error in the data stream.

User response: If you created the XML data, correct the error and resubmit the print request. See the XML specification, Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium website. If the XML data does not have an error, the error might be an ACIF logic error. If you used a program to create the XML data, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the XML data with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2052I DATA IN AN INPUT RECORD IS NOT VALID: THE CHARACTER CODE AT CHARACTER COUNT NUMBER *number* IS NOT A VALID VALUE FOR A CHARACTER REFERENCE.

Explanation: A character code inside a character reference is not one of the allowed values. The character count number specified in this message is relative to the start of the record.

System action: ACIF stops processing the current data set and issues a message identifying the position of the error in the data stream.

User response: If you created the XML data, correct the error and resubmit the print request. See the XML specification, Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium website. If the XML data does not have an error, the error might be an ACIF logic error. If you used a program to create the XML data, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the XML data with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2053I DATA IN AN INPUT RECORD IS NOT VALID: THE ENTITY AT CHARACTER COUNT NUMBER *number* IS NOT DEFINED IN THE DOCUMENT TYPE DEFINITION.

Explanation: ACIF only allows internal general entity references, which must be defined in an internal document type definition (DTD). The character count number specified in this message is relative to the start of the record.

System action: ACIF stops processing the current data set and issues a message identifying the position of the error in the data stream.

User response: If you created the XML data, correct the error and resubmit the print request. See the XML specification, Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium website. If the XML data does not have an error, the error might be an ACIF logic error. If you used a program to create the XML data, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the XML data with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2054I DATA IN AN INPUT RECORD IS NOT VALID: THE CHARACTER IN A TAG NAME AT CHARACTER COUNT NUMBER *number* IS NOT VALID.

Explanation: A character in an XML tag name is not valid. The character count number specified in this message is relative to the start of the record.

System action: ACIF stops processing the current data set and issues a message identifying the position of the error in the data stream.

User response: If you created the XML data, correct the error and resubmit the print request. See the XML specification, Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium website. If the XML data does not have an error, the error might be an ACIF logic error. If you used a program to create the XML data, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the XML data with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2055I DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE ENCODING SCHEME IDENTIFIER FOR THE USER DATA IS NOT SPECIFIED IN THE ENCODING SCHEME TRIPLET ON THE BDM STRUCTURED FIELD.

Explanation: The Encoding Scheme Identifier for User Data (ESidUD) is missing on the Encoding Scheme triplet (X'50') on a Begin Data Map (BDM) structured field. This information is required when processing an XML page definition.

System action: ACIF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User response: You must provide the encoding scheme for the user data. See *Advanced Function Presentation: Programming Guide and Line Data Reference* and *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2056I DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE SAME QUALIFIED TAG WAS SPECIFIED IN XMD STRUCTURED FIELD NUMBERS *number1* AND *number2*. ALL QUALIFIED TAGS MUST BE UNIQUE IN THE SAME DATA MAP.

Explanation: All XML Descriptor (XMD) structured fields in a data map must have a unique qualified tag specified; with the exception of these types of XMD structured fields:

- Default Page Header
- Default Page Trailer
- Field
- Conditional Processing
- Attribute

System action: ACIF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* and *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2057I DATA IN A PAGEDEF RESOURCE IS NOT VALID: RELATIVE INLINE POSITIONING ON AN XMD STRUCTURED FIELD CAN ONLY BE USED TO PLACE TEXT DATA.

Explanation: A Resource Object Include, Extended Resource Local ID, Bar Code Symbol Descriptor, or Graphics Descriptor triplet is specified on an XML Descriptor (XMD) structured field that uses relative inline positioning. You must use absolute inline positioning when including a page segment, overlay, or object with an XMD structured field. You must also use absolute inline positioning when generating a bar code or graphics object with an XMD structured field.

System action: ACIF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User response: You must change your inline positioning to an absolute value. See *Advanced Function Presentation: Programming Guide and Line Data Reference* and *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2072I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: AN INCORRECT COMBINATION OF TRIPLETS WAS SPECIFIED WHEN MAPPING A DATA OBJECT FONT IN AN MDR STRUCTURED FIELD.

Explanation: When mapping a data object font (DOF) in a Map Data Resource (MDR) structured field, you must have Fully Qualified Name (FQN) type X'DE', FQN type X'BE', and DOF Descriptor X'8B' triplets specified as well. In addition, the FQN type X'BE' triplet must specify a one-byte local ID.

System action: ACIF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* and *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2073I DATA IN AN INPUT RECORD IS NOT VALID: THE FULLY QUALIFIED TRIPLET TYPE AND THE OBJECT TYPE SPECIFIED IN A REPEATING GROUP ON A PREPROCESS PRESENTATION OBJECT STRUCTURED FIELD DO NOT AGREE.

Explanation: When a repeating group in a Preprocess Presentation Object (PPO) structured field is mapping an object container, you must use a Fully Qualified Name (FQN) triplet of type X'CE'. When the repeating group is mapping an IOCA object or overlay, you must use an FQN triplet of type X'84'.

System action: ACIF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. It is possible that the problem is the object type OID specified in the X'10' Object Classification triplet. It might specify that a TrueType or OpenType collection is being mapped when a font has really been mapped. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2074I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: AN MDR STRUCTURED FIELD IS MAPPING THE NAME OF A TRUETYPE OR OPENTYPE COLLECTION.

Explanation: When mapping a data object font (DOF), you can only specify the name of a TrueType or OpenType font. This font might actually reside in a collection, but the Map Data Resource (MDR) structured field needs the font name in the collection.

System action: ACIF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. It is possible that the problem is the object type OID specified in the X'10' Object Classification triplet. It might specify that a TrueType or OpenType collection is being mapped when a font has really been mapped. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2075S TRCS ARE NOT ALLOWED WITH A PAGE THAT HAS FONTS MAPPED IN BOTH AN MCF AND AN MDR. THE DATA MAP BEING PROCESSED IS *datamap*.

Explanation: You can use table reference characters (TRCs) with fonts mapped in a Map Coded Font (MCF) structured field (FOCA fonts) or a Map Data Resource (MDR) structured field (TrueType and OpenType fonts).

However, you cannot have a mixture of both types of fonts in a data map and use TRCs.

System action: ACIF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User response: Change your page definition to use either all FOCA fonts (mapped in an MCF) or all TrueType or OpenType fonts (mapped in an MDR).

System programmer response: If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error.

APK2076I PAGE BASED SOSI PROCESSING HAS BEEN REQUESTED BUT A SINGLE BYTE FONT WITH A FONT ID OF 1 AND A DOUBLE BYTE FONT WITH A FONT ID OF 2 HAVE NOT BEEN MAPPED. THE DATA MAP BEING PROCESSED IS *datamap*.

Explanation: When doing page-based SOSI processing, you are switching back and forth between the same two fonts. As a result, there must be two fonts mapped by using font IDs 1 and 2.

System action: ACIF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User response: Change your page definition to map a single-byte font with font ID 1 and a double byte font with font ID 2. See the documentation for the application that you use to generate page definitions for information about how to map fonts to specific font IDs.

System programmer response: If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error.

APK2077I DATA IN AN INPUT RECORD IS NOT VALID: AN INLINE TRUETYPE OR OPENTYPE COLLECTION DOES NOT HAVE ANY BASE FONTS SPECIFIED.

Explanation: The Begin Resource (BRS) structured field must have Fully Qualified Name triplet of type X'6E' for each base font contained in the collection.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2078I DATA IN AN INPUT RECORD IS NOT VALID: AN INLINE RESOURCE HAS AN INCORRECT SPECIFICATION OF BASE FONTS, LINKED FONTS, OR MAPPED CMRS.

Explanation: A Begin Resource (BRS or BR) structured field has an error. Base fonts (Fully Qualified Name triplets of type X'6E') can only be specified for TrueType or OpenType collections. Linked fonts (Fully Qualified Name triplets of type X'7E') can only be specified for a TrueType or OpenType font or for a base font of a TrueType or OpenType collection. Mapped CMRs (Fully Qualified Name triplets of type X'41') can only be specified for color management resources (CMRs).

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2079I THE INFORMATION NEEDED TO DESCRIBE A TRUETYPE OR OPENTYPE FONT OR COLLECTION *name* EXCEEDS THE BEGIN OBJECT CONTAINER STRUCTURED FIELD.

Explanation: The number of names and linked fonts for a TrueType or OpenType font or the number of base fonts and linked fonts for a TrueType or OpenType collection exceeds the Begin Object Container structured field.

System action: ACIF stops processing the object container.

User response: You cannot collect this TrueType or

OpenType font or font collection.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2080I INPUT DATA *inputdata* **CANNOT BE CONVERTED TO AN ENCODING OF** *ccsid***. RETURN CODE** *returncode* **AND REASON CODE** *reasoncode* **VALUES WERE RETURNED BY THE CONVERTER.**

Explanation: ACIF must convert the input data to the specified encoding to continue processing. An error occurred during this conversion. If the input data is a resource name, the CCSID indicates that mixed single-byte or double-byte EBCDIC data is being converted to mixed single-byte or double-byte ASCII data for a Quick Response (QR) Code bar code. If the error occurs on data for a bar code, only the first 50 bytes of the data are shown in the message. The return codes and reason codes are returned by the system's conversion services (ICONV on z/OS and UCONV on AIX and Windows). See the system documentation for these conversion services for more information about the errors.

System action: ACIF stops processing the input file and issues a message identifying the position of the structured field in the file or resource.

User response: Correct the error as described by the system documentation for the conversion service.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2082I DATA IN AN INPUT RECORD IS NOT VALID. RESOURCE *resourcename* **IS SPECIFIED ON A PREPROCESS PRESENTATION OBJECT (PPO) STRUCTURED FIELD BUT IS NOT MAPPED IN THE RESOURCE ENVIRONMENT GROUP.**

Explanation: All resources specified on a PPO structured field must be mapped in the Resource Environment Group (REG). Overlays must be mapped with a Map Page Overlay (MPO) structured field. IOCA image and object containers must be mapped with a Map Data Resource (MDR) structured field.

System action: ACIF stops processing the input file and issues a message identifying the position of the structured field in the file or resource.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If a licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid.

APK2083I DATA IN A PAGEDEF RESOURCE IS NOT VALID: DATA MAP *data map name* **HAS RECORD FORMAT IDS THAT ARE NOT THE SAME LENGTH.**

Explanation: All the record format IDs for a data map in a page definition must be the same length. Blanks can be used in the record format ID to make it the required length.

System action: ACIF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field. If the structured field is correct, the error might be an ACIF or printer logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If a licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your systems's diagnosis reference for assistance in determining the source of the problem. If the error involves separator pages or the message data set, use the information in the User Response section to correct the error.

APK2084I DATA IN AN INPUT RECORD IS NOT VALID: THE LENGTH OF DATA IN RECORD NUMBER *record number* **DOES NOT MATCH THE LENGTH REQUIRED FOR THE USER DATA TYPE SPECIFIED IN THE PAGE DEFINITION.**

Explanation: The possible causes of this error depend on the type of user data specified in the page definition:

- If you have specified UTF16 data, the record length must be a multiple of 2.

- If you have specified UTF8 data, the length of each character can vary from 1 to 4 bytes.

System action: ACIF stops processing the current data set and issues a message identifying the position of the error in the input data stream. ACIF issues additional messages that identify the processing environment when the error was found.

User response: If you created the data, correct the data in the record to match the specified data type, and resubmit the print request. If the data has no error, the error might be an ACIF logic error. If you used a program to create the data, contact your system programmer.

System programmer response: If a licensed program was used to create the data with the error, verify that the input to that program is valid.

APK2088I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: STRUCTURED FIELD *structuredfield* HAS AN INCORRECT SCOPE VALUE ON A CMR DESCRIPTOR TRIPLET.

Explanation: The scope value is not correct on the Color Management Resource (CMR) Descriptor triplet, X'91', for the specified structured field.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2089I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE *structuredfield* STRUCTURED FIELD CONTAINS UNPAIRED FQN X'DE' AND CMR DESCRIPTOR TRIPLETS.

Explanation: When specifying a color management resource (CMR), the CMR Descriptor triplet (X'91') must immediately follow a Fully Qualified Name (FQN) triplet with an FQNType of Data Object External Resource Reference (X'DE').

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the file or resource.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2090I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: STRUCTURED FIELD *structuredfield* HAS AN INCORRECT PROCESSING MODE VALUE ON A CMR DESCRIPTOR TRIPLET.

Explanation: The processing mode value is not correct on the Color Management Resource (CMR) Descriptor triplet, X'91', for the specified structured field. Only audit, instruction, or device link CMR modes are valid.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the file or resource.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2093I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A REPEATING GROUP IN AN MDR STRUCTURED FIELD CONTAINS AN INCOMPLETE SPECIFICATION FOR A CMR.

Explanation: A repeating group in a Map Data Resource (MDR) structured field for a color management resource (CMR) is missing a Fully Qualified Name (FQN) triplet (X'02') with an FQNType of Data Object External Resource Reference (X'DE'), a CMR Descriptor triplet (X'91'), or both.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the file or resource.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2096I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A COLOR MANAGEMENT RESOURCE (CMR) NAME HAS AN ERROR.

Explanation: A problem exists with the name of a color management resource (CMR) that has been specified in a Map Data Resource (MDR) or a Begin Resource (BRS or BR) structured field. The possible problems are:
- A link (LK) CMR cannot be specified in an MDR.
- A generic CMR must have a type of tone transfer curve (TTC) or halftone (HT).
- A pass-through CMR must have a type of color conversion (CC).
- The CMR name length must be 73 bytes in single-byte encoding or 146 bytes in double-byte encoding.
- A device link (DL) CMR is device-specific and cannot be generic.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the file or resource.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields, contact your system programmer.

System programmer response: If a licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2102S DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: STRUCTURED FIELD *structuredfield* HAS AN INCORRECT OBJECT TYPE IN AN OBJECT OFFSET TRIPLET.

Explanation: The object type in an Object Offset triplet (X'5A') is not correct. The object type must be "document" if the selected object is a document type object and "page" if the selected object is a page or paginated object.

System action: ACIF stops processing the print job.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2103I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE *structuredfield* STRUCTURED FIELD IN A PAGE DEFINITION IS MISSING A CMR DESCRIPTOR TRIPLET.

Explanation: When specifying a color management resource (CMR), a CMR Descriptor triplet (X'91') must immediately follow a Fully Qualified Name (FQN) triplet with an FQNType of Data Object External Resource Reference (X'DE').

System action: ACIF stops processing the data set.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2104I TOO MANY CMRs HAVE BEEN SPECIFIED.

Explanation: One of these conditions occurred:
- Too many color management resources (CMRs) were specified in the data object resource access table (RAT) to fit on the Include Object (IOB) command or the Preprocess Presentation Object (PPO) command.

- Too many CMRs were specified on a Begin Image (BIM) or Begin Object Container (BOC) structured field to write the OID from the data object RAT on the BIM or BOC.

System action: ACIF stops processing the data set.

User response: You must specify thousands of CMRs to create this condition. Contact the generator of your data stream to have the extraneous CMRs removed.

System programmer response: If an IBM licensed program was used to create the structured fields for the print data set or the resource with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2105W THE DATA STREAM IS MISSING STRUCTURED FIELD *structuredfield*.

Explanation: A Begin Named Group (BNG) structured field must have a matching End Named Group (ENG) structured field. However, an ENG structured field was not found for at least one BNG. Therefore, the indexing created for the data set might not be valid.

System action: ACIF builds the output document and index files as requested, but the output might not be what the user expects.

User response: Check the input data stream to ensure that each BNG structured field has a matching ENG structured field. If it does not meet this requirement, add the missing ENG structured fields.

System programmer response: If an IBM licensed program was used to create the data stream with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2108I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A RESOURCE OTHER THAN A CMR HAS BEEN SPECIFIED IN AN MDR STRUCTURED FIELD FOR A FORM DEFINITION.

Explanation: Only color management resources (CMRs) can be specified in a Map Data Resource (MDR) structured field for a form definition.

System action: ACIF stops processing the print job.

User response: If you created the structured fields, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the form definition, contact your system programmer.

System programmer response: If an IBM licensed program was used to create the structured fields for the form definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2116S DATA IN A PAGEDEF RESOURCE IS NOT VALID. CONFLICTING SEQUENCE NUMBER TYPES HAVE BEEN SPECIFIED FOR A CONCATENATED BAR CODE ON A *structuredfield* STRUCTURED FIELD.

Explanation: All segments of a given concatenated bar code must specify the same type of sequence numbering. All segments must specify either sequence numbers or no sequence numbers. Concatenated bar code sequence numbers are part of the Concatenate Bar Code Data triplet (X'93'), which is specified on a Line Descriptor (LND), Record Descriptor (RCD), or XML Descriptor (XMD) structured field in the page definition.

System action: ACIF stops processing the print job.

User response: If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

System programmer response: If a licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK2120I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE INITIAL TEXT CONDITIONS IN THE PTD STRUCTURED FIELD ARE INCORRECT.

Explanation: The Presentation Text Descriptor (PTD) structured field is in the Object Environment Group (OEG) of a PTOCA object. This object can be in a page, overlay, or a resource.

System action: ACIF stops processing the input file and issues another message identifying the position of the structured field in the data stream or resource.

User response: If you created the structured fields for the print data set or resource, correct the error and resubmit the print request. See *Presentation Text Object Content Architecture Reference* for more information about the correct format of the referenced structured field. If the structured field is correct, the error might be an ACIF logic error. If you used a program to create the structured fields for the print data set or resource, contact your system programmer.

System programmer response: If a licensed program was used to create the structured fields for the object with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

| **APK2121I** **DATA WAS FOUND AFTER AN END PRINT FILE (EPF) STRUCTURED FIELD WHEN AN END OF FILE (EOF) WAS EXPECTED.**

| **Explanation:** When ACIF finds a Begin Print File (BPF) and End Print File (EPF) structured field pair, an End of File (EOF) should immediately follow the EPF. However, ACIF found data other than an EOF after the EPF.

| **System action:** ACIF stops processing the print job.

| **User response:** If you created the structured fields for the page definition, correct the error and resubmit the print request. See *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field does not have an error, the error might be an ACIF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

| **System programmer response:** If a licensed program was used to create the structured fields for the page definition with the error, verify that the input to that program is valid. If the input is valid, see your system's diagnosis reference for assistance in determining the source of the problem.

APK3506I **DATA OBJECT RESOURCE TYPE *type*. OBJECT ID *objectid*, COULD NOT BE FOUND IN THE RESOURCE LIBRARY.**

Explanation: The registration ID (object-type OID) for the specified data object resource cannot be read from the resource library. Only objects with valid data object resource names or resource locator names are supported by ACIF. The registration ID is specified in the Object Classification triplet on an Include Object (IOB), Begin Object Container (BOC), Begin Resource (BRS or BR), or Map Data Resource (MDR) structured field. If the *objectid* specified in this message is ***, ACIF either does not support the registration ID or does not have enough information to identify the *objectid*.

System action: ACIF stops processing the print data set and issues a message identifying the position of the structured field in the data stream or resource.

User response: Modify the structured field that refers to the object to include a resource locator triplet.

System programmer response: If an IBM licensed program was used to create the structured fields, verify that the input to that program is valid and the correct printer is being used.

APK3507I **RESIDENT COLOR PROFILE *type*, OBJECT ID *objectid*, COULD NOT BE FOUND IN THE RESOURCE LIBRARY.**

Explanation: The resident color profile with object ID (object-type OID) could not be found because no resource locator name was specified. ACIF cannot access objects by OID name only.

System action: ACIF ignores the request for the resident color profile and, because the profile is not necessary, continues processing,

User response: Modify the structured field that refers to the object to include a resource locator triplet.

System programmer response: None.

Appendix A. Helpful hints for using ACIF

When you are using ACIF, these topics might prove helpful to you:
- Working with control statements that contain numbered lines (z/OS, VM, and VSE environments only)
- Placing TLEs in named groups to avoid storage problems
- Understanding how ANSI and machine carriage controls are used
- Transferring files into AIX and Windows
- Understanding common methods of transferring files into AIX or Windows from other systems:
  - Physical media such as tape
  - PC file transfer program
  - File Transfer Protocol (FTP)
  - Download for z/OS
  - Other considerations
- Creating Invoke Medium Map (IMM) structured fields
- Indexing considerations
- Concatenating the resource file and the document file
- Processing inline resources
- Specifying the IMAGEOUT parameter
- Creating a MO:DCA-P object container
- Understanding error code 310
- Processing Unicode complex text

Working with control statements that contain numbered lines

This section applies only to the z/OS, VM, VSE environments. If you work in the AIX or Windows environment, you can skip this information about control statements.

Because ACIF reads all columns of the control statements for processing purposes, you sometimes can receive unexpected results when data set names are continued and the control statements have line numbers in the last eight columns. (ACIF attempts to use the line number as a data set name, and issues message APK451S with a numeric value.) To resolve this problem, remove any line numbers from the control statements and rerun the job, or use a comment indicator ("/*") before each line number.

Placing TLEs in named groups to avoid storage problems

You should be aware that if you request **INDEXOBJ=ALL** for a job that has an input data set that contains composed (MO:DCA-P) pages, page-level TLEs (TLE records after the AEG), and no named groups (BNG/ENG), your job might end with message APK410S or message APK408S.

To avoid having ACIF end your job, IBM suggests that you place page-level Tag Logical Elements (TLEs) inside named groups by using one named group per page. This suggestion is because, when no named groups are present, the page-level TLE records must be collected in memory until the end of the input document or file. MO:DCA-P index structures contain the extent (size) of the object that is being indexed. Indexed objects are delimited by a named group or end document (EDT). If no named groups are present, ACIF continues to build the index in memory. If the input file is large enough, there is not enough memory, and ACIF stops. The ACIF memory manager currently limits the number (but not the size) of memory blocks that can be allocated; therefore, increasing REGION size might not alleviate the problem.

Understanding how ANSI and machine carriage controls are used

In many environments (including IBM mainframes and most minicomputers), printable data normally contains a carriage control character. The carriage control character acts as a vertical tab command to position the paper at the start of a new page, at a specified line on the page, or to control skipping to the next line. The characters can be one of two types: ANSI carriage control or machine carriage control.

- **ANSI carriage control characters**

  The most universal carriage control is ANSI, which consists of a single character that is a prefix for the print line. The standard ANSI characters are:

ANSI	Command
space	Single space the line and print.
0	Double space the line and print.
-	Triple space the line and print.
+	Do not space the line and print.
1	Skip to channel 1 (the top of the form, by convention).
2–9	Skip to hardware-defined position on the page.
A,B,C	Defined by a vertical tab record or FCB.

  All ANSI control characters do the required spacing before the line is printed. ANSI controls can be encoded in EBCDIC (**CCTYPE=A**) or in ASCII (**CCTYPE=Z**).

- **Machine carriage control characters**

  Machine carriage controls were originally the actual hardware control commands for IBM printers and are often used on non-IBM systems. Machine controls are literal values, not symbols. They are not represented as characters in any encoding and, therefore, machine controls cannot be translated. Typical machine controls are:

Machine	Command
X'09'	Print the line and single space.
X'11'	Print the line and double space.
X'19'	Print the line and triple space.
X'01'	Print the line and do not space.
X'0B'	Space one line immediately (do not print).
X'89'	Print the line and then skip to channel 1 (top of form, by convention).
X'8B'	Skip to channel 1 immediately (do not print).

Machine controls print before they do any required spacing. There are many more machine control commands than ANSI. Carriage controls can be present in a print file or not, but every record in the file must contain a carriage control if the controls are to be used. If the file contains carriage controls, but **CC=NO** is specified to ACIF, the carriage controls are treated as printing characters. If no carriage controls are specified, the file is printed as though it is single spaced.

Transferring files into AIX and Windows

Information in this section applies only to transferring files into the AIX and Windows environments; therefore, if you work in the z/OS, VM, or VSE environment, you can skip this section.

ACIF needs to know two things about a file to print it:
- The length of each print record
- The kind of carriage control used

As simple as these requirements are, they cause the most difficulty for people who are printing with ACIF in an AIX or Windows environment.

ACIF processes print records. A record is a sequence of contiguous characters, typically representing a printed line or a MO:DCA-P structured field.[2] Each record has a defined boundary or length. Some files contain information in each record that describes the record's length; these files are called variable-length files. Other files require an external definition of length; these files are called fixed-length files.

- **Variable-length files**
  - Variable-length files can use a length prefix to indicate the length of the record in the file. The length prefix is a 2-byte binary number that prefixes each record. The record length is all the bytes in the record other than the 2-byte length prefix, but including X'5A' carriage control characters at the start of structured fields. Use the **FILEFORMAT=RECORD** parameter to identify files with length prefixes.
  - Variable-length files can use a separator or delimiter (also called a newline character) to indicate the end of a record, instead of using a length prefix. All of the bytes up to, but not including, the delimiter are considered part of the record. For AIX or Windows, the default delimiter is X'0A'. If the file uses EBCDIC encoding, the default delimiter is X'25'. Use the **FILEFORMAT=STREAM** parameter to designate files that use delimiters to indicate record boundaries. NEWLINE can be used with **FILEFORMAT=STREAM** to specify the delimiter if the default is not correct. See “FILEFORMAT” on page 44 for the NEWLINE values you can specify.
  - If NEWLINE is not specified, ACIF reads the first 6 bytes to decide whether a file is encoded in ASCII or EBCDIC characters. If only characters below X'7F' are found, ACIF assumes that the file is ASCII and looks for the ASCII newline character (X'0A') to delimit the end of a record. Otherwise, ACIF looks for the EBCDIC newline character (X'25') to delimit the end of a record. Because ACIF might decide incorrectly whether the file is ASCII or EBCDIC (for example, if the data contains non-English-language characters), the best way to ensure that your data is processed correctly is to explicitly specify NEWLINE with the **FILEFORMAT** parameter. See “FILEFORMAT” on page 44 for the NEWLINE values you can specify.

2. Structured fields are similar to print commands.

- **Fixed-length files**

  Fixed-length files contain records that are all the same length. No other separators or prefixes or self-identifying information exists that indicates the record length. You must know the record length and use the **FILEFORMAT=RECORD,***n* parameter, where *n* represents the length of each record.

For variable- and fixed-length files that use length prefixes, MO:DCA-P structured fields are treated as a special case. All such structured fields are self-identifying and contain their own length. They need not contain a length prefix to be correctly interpreted, but are processed correctly if there is a length prefix.

Note: CRLF characters found in mixed mode at the end of MO:DCA-P structured fields are treated as a separate record, which causes extra blank lines to be printed.

Understanding common methods of transferring files into AIX or Windows from other systems

You can use various methods to transfer files from other systems into AIX or Windows. Each method results in a different set of possible outputs. Some methods produce output that cannot be used by ACIF. These methods are commonly used to transfer files from other systems to AIX or Windows and produce output that ACIF can use:
- Physical media (such as tape)
- PC file transfer program
- File Transfer Program (FTP)
- Download for z/OS

Other considerations for transferring files are also listed in this section.

Physical media

Normally, you can copy fixed-length files without any transformation by using a physical media, such as tape. For variable-length files, however, either the creator of the tape or the copy program must include a 2-byte binary length as a prefix to each record.

PC file transfer program

You can transfer files from other systems to AIX or Windows by using a PC file transfer program, such as IND$FILE. You can also transfer files from a host to a personal computer. The variety of possible parameters that can affect printing are host-dependent. IBM suggests that you use these settings:
- For z/OS and VM/CMS files, the default is binary.
- For CICS® and VSE, binary is preferred.
- For files with fixed-length records, binary is preferred (you must know the record length).
- For files with variable-length records that contain only printable characters and either ANSI carriage control characters, or no carriage control characters:
  - Use ASCII and CRLF.
  - Specify **INPEXIT=asciinpe** to remove the otherwise unprintable carriage return (X'0D') that is inserted in the file.

- For VSE files, more file transfer parameters are available.
- For files with machine carriage control, you can specify BINARY, CRLF and CC. This specification provides an EBCDIC file with correct carriage controls separated by ASCII delimiters and carriage returns.

FTP

From most systems, FTP works similarly to PC file transfer; most of the same options are provided. Also, when FTP is processed on an AIX or Windows system, you can omit the extraneous carriage return. However, you must test and check your implementation; some FTPs use IMAGE as a synonym for BINARY.

Download for z/OS

The Download for z/OS feature of PSF for z/OS automatically transmits data from the JES spool to another system in the IBM Internet Protocol network. A print server, such as PSF for z/OS or InfoPrint Manager, receives the data sets for printing, or an archive server, such as Content Manager OnDemand, receives the data sets for archiving. Download for z/OS can supply the 2-byte record length prefix for each file that is downloaded from the JES spool.

Other considerations

Conventional file transfer programs cannot correctly handle the combination of variable-length files, which contain bytes that cannot be translated from their original representation to ASCII, and might also contain machine control characters, mixed line data and structured fields, or special code points that have no standard mapping.[3] Your best solution is to either NFS-mount the file, or write a small filter program on the host system that appends the 2-byte record length to each record and transfer the file binary.

Generally, NFS-mounted files are not translated. However, NFS includes a 2-byte binary record length as a prefix for variable-length records. (Check your NFS implementation; you might have to use special parameters.)

Note: Some NFS systems do not supply the binary record length for fixed-length files.

ACIF treats a file that contains only structured fields (MO:DCA-P) as a special case. You can always transfer such a file as binary with no special record separator, and ACIF can always read it because structured fields are self-defining, containing their own length; ACIF handles print files and print resources (form definitions, fonts, page segments, overlays, and other resources) in the same way.

Creating Invoke Medium Map (IMM) structured fields

To ensure that pages are reprinted (or viewed) by using the correct medium map, retrieval programs must be able to detect which medium map is active. To ensure that the correct medium map is used, use the Active Medium Map triplet and the Medium Map Page Number triplet (from the appropriate Index Element (IEL) structured field in the index object file), which designate the name of the last explicitly called IMM structured field and the number of pages that are produced since the IMM was called. The retrieval system can use this information to

3. When ASCII is specified, for example, the file transfer program might destroy the data in translation. When binary is specified, the file transfer program might not be able to indicate record lengths.

dynamically create IMM structured fields at the appropriate locations when it retrieves a group of pages from the archived document file.

If an ACIF input file consists of more than one document (determined by the BDT and EDT structured fields) and **INDEXOBJ=BDTLY** is not specified, ACIF removes all BDT and EDT structured fields when it processes the file. This action can cause a document to begin with an incorrect medium map. To prevent an incorrect medium map from being used, specify **INSERTIMM=YES**. ACIF inserts the appropriate IMM before the first page that was indicated by the BDT structured field that ACIF removed.

Indexing considerations

The index object file contains Index Element (IEL) structured fields that identify the location of the tagged groups in the print file. The tags are contained in the Tag Logical Element (TLE) structured fields.

The structured field offset and byte offset values are accurate at the time ACIF creates the output document file. However, if you extract various pages or page groups for viewing or printing, you must dynamically create from the original a temporary index object file that contains the correct offset information for the new file. For example:

- ACIF processed all the bank statements for six branches by using the account number, statement date, and branch number.
- The resultant output files were archived by using a system that lets these statements be retrieved based on any combination of these three indexing values.

If you wanted to view all the bank statements from Branch 1, your retrieval system must be able to extract all the statements from the print file ACIF created (possibly by using the IELs and TLEs in the index object file) and create another document for viewing. This new document would need its own index object file that contains the correct offset information.

Under some circumstances, the indexing that ACIF produces might not be what you expect, for example:

- If your page definition produces multiple-up output, and if the data values you are using for your indexing attributes appear on more than one of the multiple-up subpages, ACIF might produce two indexing tags for the same physical page of output. In this situation, only the first index attribute name appears as a group name, when you are using AFP Workbench Viewer. To avoid this situation, specify a page definition that formats your data without multiple-up when you submit the indexing job to ACIF.
- If your input file contains machine carriage control characters, and you use the new page carriage control character as a TRIGGER, the indexing tag created points to the page on which the carriage control character was found, not to the new page created by the carriage control character. This situation happens because machine controls write before they process any action and are, therefore, associated with the page or line on which they appear. Using machine carriage control characters for triggers is not a recommended practice.
- If your input file contains application-generated separator pages (for example, banner pages), and you want to use data values for your indexing attributes, you can write an Input Data exit program to remove the separator pages. Otherwise, the presence of those pages in the file makes the input data too unpredictable for ACIF to reliably locate the data values. As alternatives to

writing an exit program, you can also change your application program to remove the separator pages from its output, or you can use the **INDEXSTARTBY** parameter to instruct ACIF to start indexing on the first page after the header pages.

- If you want to use data values for your indexing attributes, but none of the values appear on the first page of each logical document, you can cause ACIF to place an indexing tag on the first page by defining a **FIELD** parameter with a large enough negative relative record number from the anchor record to "page" backward to the first page. Without referencing this **FIELD** parameter in an **INDEX** parameter, the tag that is generated by any **INDEX** parameter is placed on the first page.
- If your input file contains Unicode data and you specify **EXTENSIONS=IDXCPGID** to process the code page identifiers, you must ensure that:
  - The **CPGID** parameter indicates the code page of the document and the extracted index values, which must be in the same code page.
  - The **TRIGGER** parameter value and **INDEX** parameter name are expressed in big endian format in the code page that is specified by the **CPGID** parameter.
  - The **FIELD** parameter values are extracted from the document in big endian format.
  - The mask field is not specified on the **FIELD** parameter unless you are using code page 1208 and only indexing single-byte characters. MASK does not support the multiple-byte characters of code page 1208 (UTF-8).

  Figure 34 shows the ACIF parameters for a document with a code page of 1200.

```
CC=YES
CCTYPE=A
CPGID=1200
FILEFORMAT=RECORD,401
TRIGGER1=*,228,X'0050004100470045',(TYPE=GROUP)   /* P A G E */
FIELD1=0,246,10,(TRIGGER=1,BASE=0)
FIELD2=0,-76,16,(TRIGGER=1,BASE=TRIGGER)
INDEX1=X'0070006100670065',FIELD1,(TYPE=GROUP,BREAK=YES)   /* page */
INDEX2=X'006E0061006D0065',FIELD2,(TYPE=GROUP,BREAK=YES)  /* name */
EXTENSIONS=IDXCPGID
FORMDEF=F1IBMTU3
PAGEDEF=P1IBMTU3
RESLIB=\acif\reslib2
```

Figure 34. Example of ACIF parameters for processing documents with Unicode data

In the example, on the first page, these 10 bytes are extracted in big endian format for FIELD1:

```
X'00200020002000200031'  /* 1 */
```

and these 16 bytes are extracted for FIELD2:

```
X'002000500045004C0053004800320032'  /* PELSH22 */
```

Concatenating the resource file and the document file

You can create a print file that contains all the required print resources by concatenating the output document file to the end of the resource file. Remember these considerations:

- Although AFP Workbench Viewer and the other PSF products support all types of inline resources, PSF/VSE supports only inline page definitions and form definitions.

- The offset information in the index object file applies to the document; that is, to the Begin Document (BDT) structured field. The offset information also applies to the file I/O level, because a single document is in the output document file. When you concatenate these two files, the offset information in the index object file no longer applies to the resultant file; that is, you cannot use this information to randomly access a specific page or page group without first determining the location of the BDT structured field. This situation is not a problem for AFP Workbench Viewer, because it removes any inline objects before it uses the offset information.

Processing inline resources

To process inline resources, do one of these tasks:

- Include the inline resources in the input file in the order in which they are used.

  Note: The input file cannot have inline resources in XML data.
- Specify **EXTENSIONS=RESORDER** (see “EXTENSIONS” on page 38).

ACIF does not look ahead in the inline resources. Therefore, if the inline resources are not in the correct order and **EXTENSIONS=RESORDER** is not specified, ACIF tries to read the referenced resource from a resource library. If the resource is not found, ACIF ends processing with an error.

Keep these considerations in mind:

- If **EXTENSIONS=RESORDER** is not specified, and a resource references another resource, the referenced resource must be included inline before the resource that references it. For example, if an overlay references a coded font that consists of the character set C0D0GT18 and code page T1D0BASE, the inline resources must be in this order:

  ```
  code page T1D0BASE
  character set C0D0GT18
  coded font
  overlay
  ```
- If a color management resource (CMR) associated with a data object is included inline, it must appear before the data object in the resource group. Otherwise, **EXTENSIONS=RESORDER** must be specified.
- When you are indexing and writing inline resources to the output file, the offsets in the index object file are the same as if you are doing regular resource collection to a resource file. This is because the offsets are calculated from the Begin Document (BDT) structured field, not from the beginning of the output document file. The offset from the BDT structured field to the indexed data is the same regardless of whether resources precede it.
- To determine how to write resources that are inline in the data file to the output file (OUTPUTDD), the resource file (RESOBJDD), or both, see “RESTYPE” on page 72.

Specifying the IMAGEOUT parameter

ACIF converts IM1 format images in the input file, in overlays, and in page segments to uncompressed IOCA format, if **IMAGEOUT=IOCA** (the default) is specified. An uncompressed IOCA image can use a higher number of bytes than an IM1 image and can take more processing time to convert, especially for shaded or patterned areas.

Although IOCA is the MO:DCA-P standard for image data, and some data stream receivers might require it, all products cannot accept IOCA data. IBM suggests that you specify **IMAGEOUT=ASIS**, which produces all image data in the same format as in the input file, unless you have a specific requirement for IOCA images.

Creating MO:DCA-P object containers

Object containers are MO:DCA-P resources that contain non-OCA objects, such as TIFF images, Encapsulated PostScript (EPS), JFIF, and microfilm setup. Object containers can be included in a data stream by using the Include Object (IOB) structured field. If you are including object containers from a page definition, see Appendix B, “Processing resources installed with resource access tables,” on page 217.

Not all presentation systems can present non-OCA objects, but ACIF includes them as part of the resource object if the **RESTYPE** parameter is set to **ALL** or includes **OBJCON**. When ACIF processes an IOB, it checks that the object type value is X'92' for **OTHER** and the named object that is read from the resource library is not already a MO:DCA-P object. ACIF then creates a MO:DCA-P object container object by wrapping the raw object data in Object Container Data (OCD) structured fields and creating an Object Environment Group by using the values that are given by the IOB. The result is a MO:DCA-P object container that is saved in the resource object file. For information about the structure of object containers, see *Mixed Object Document Content Architecture Reference*.

Understanding error return code 310

When you are running ACIF on AIX or Windows, the most common I/O errors occur in the input file and produce error messages APK411S and APK413S with return code 310. This return code typically indicates one of these:

- The value that you specified for the **FILEFORMAT** parameter does not match the actual format of the data file. Check that **NEWLINE** and its encoding values are correct if you specified **FILEFORMAT=STREAM**, or that the record length is correct for **FILEFORMAT=RECORD,***n*.
- ACIF read an input line (record) larger than 32 KB. In this case, the default **FILEFORMAT=STREAM** was specified, but no record separator was found within the first 32 KB of the current input line. This situation is typically because the value of the **NEWLINE** characters does not match the record separator (line endings) used in the input file. ACIF uses a default value of X'0A' for **NEWLINE**, which is the UNIX newline character. Although files from PC workstations typically use carriage returns or line feeds (X'0D0A') as delimiters, stream files from z/OS systems can use EBCDIC newline characters (X'15') or EBCDIC line-feed characters (X'25'). ACIF cannot always reliably detect the record separator; therefore, you must ensure that the value specified for **NEWLINE** is correct for the input file ACIF is processing.
- ACIF has not read enough bytes at the end of file. Some input files contain no record separator characters. These files must be processed as **FILEFORMAT=RECORD,***n*, where ***n*** is the length of each record, or as **FILEFORMAT=RECORD**, where each input record must be preceded by its 2-byte length. If **FILEFORMAT=RECORD,***n* is specified and the number of bytes in the file is not an exact multiple of ***n***, ACIF returns an error code of 310 when the last byte in the file is read.

Processing Unicode complex text

ACIF supports input data sets that contain complex text, which is Unicode-encoded text that cannot be translated with the traditional one-code-point to one-glyph method; for example, bidirectional Arabic text or combined Hindi characters. Complex text requires:

- Extra processing.
- Identification with a PTOCA Unicode Complex Text or Glyph Layout Control (GLC) control sequence.
- A layout engine that examines runs of code points and maps the code points to runs of glyph indexes and their positions.
- TrueType and OpenType fonts.

Font layout tables contain script-specific information about glyph substitution, glyph positioning, justification, and baseline positioning, all of which are used by the layout engine to translate complex text.

For ACIF to correctly process GLC control sequences, the TrueType and OpenType fonts that are used must be placed inline in the print data set. ACIF looks in the inline resource group for the font that is referenced in the Map Data Resources (MDR) structured field. If ACIF cannot find the font inline, the complex text is not processed.

Appendix B. Processing resources installed with resource access tables

Originally, ACIF could only support resource files that are installed as partitioned data set (PDS) members. This restriction meant that the resource names ACIF processed were limited to 8 characters. Now, with changes to MO:DCA and the use of resource access tables (RATs), ACIF no longer has this limitation on AIX, Windows, and z/OS systems. For more information, see *Mixed Object Document Content Architecture Reference*.

A RAT maps a resource name that is specified in the MO:DCA-P data stream to information used to find and process the resource. The resources that are installed with a RAT include:

- TrueType and OpenType fonts
- Data object resources, such as color management resources (CMRs)

  For more information about using data objects and CMRs in color printing, see *PSF for z/OS: User's Guide*.

In order for ACIF to process resources installed with a RAT, you must:

1. Use the InfoPrint AFP Resource Installer or a similar product to install the resources and create RATs in the appropriate resource directories on your system.
2. Run ACIF. ACIF searches in this order for object containers in these locations:
   a. Inline resources
   b. RAT entries in any directory that is specified with the USERPATH parameter
   c. File name that matches the object name in the paths (for each directory in the path, ACIF checks for a file with names in this order: 1. **no extension** 2. **.OBJ** 3. **.OBJECT**) or DD names that are specified with the USERLIB parameter
   d. RAT entries in any ACIF system paths that are specified with the OBJCPATH parameter for data objects or CMRs, the FONTPATH parameter for TrueType and OpenType fonts, or the RESLIB parameter (AIX and Windows)
   e. File name in these system paths:
      - OBJCONLIB parameter
      - RESLIB parameter
      - PSFPATH environment variable (AIX only)
      - `/usr/lpp/psf/reslib` directory (AIX only)
      - Registry value for RESLIB (Windows only; for each directory, ACIF checks for a file with names in this order: 1) no extension 2) .OBJ 3) .OBJECT)
3. Modify your application to include the RAT-installed resources in a page definition, form definition, or Map Data Resource (MDR) structured field. For more information about including resources, see *Page Printer Formatting Aid: User's Guide*.

Note: You can use the RESTYPE parameter to control what type of resources are included in the resource file.

Appendix C. Structured fields that ACIF uses

General-use Programming Interface and Associated Guidance Information is contained in this appendix.

This appendix describes these structured fields: Tag Logical Element (TLE), Begin Resource Group (BRG), Begin Resource (BRS or BR), End Resource Group (ERG), End Resource (ERS or ER), Begin Print File (BPF), End Print File (EPF), and No Operation (NOP). It also describes the formats of the resource data sets.

Note: All MO:DCA-P data and resource files that are processed by ACIF must contain a X'5A' carriage control character at the start of each structured field.

Tag Logical Element (TLE) structured field

ACIF can generate and process TLE structured fields, but not at the same time. If the input file contains TLEs, no indexing parameters are allowed with ACIF. TLEs in the input are only used to create an external index object (consisting of Index Element [IEL] structured fields). For the complete syntax of the TLE structured field, see *Mixed Object Document Content Architecture Reference*.

TLEs generated by ACIF

ACIF generates TLEs from information that is provided with the TRIGGER, INDEX, and FIELD parameters. The attribute name comes from the INDEX parameter and the attribute value is extracted from the data by using the FIELD information. If **EXTENSIONS=IDXCPGID** is specified, the TLE and IEL structured fields that ACIF creates also contain encoding triplets (X'01') to identify which code page was used to encode the indexing data.

TLE structured fields can be associated with a group of pages or with individual pages. Consider a bank statement application. Each bank statement is a group of pages, and you might want to associate specific indexing information at the statement level (for example, account number, date, and customer name). You might also want to index (tag) a specific page within the statement, such as the summary page. The following example is a print file that contains TLEs at the group level and at the page level:

```
BDT
  BNG
    TLE Account #, 101030
    TLE Customer Name, Bob Smith
      BPG
        Page 1 data
      EPG
      BPG
        Page 2 data
      EPG
      ...
      ...
      BPG
        TLE Summary Page, n
        Page n data
      EPG
  ENG
  ...
EDT
```

TLEs in MO:DCA-P input files

ACIF can accept input files that contain both group-level and page-level indexing tags. In the case where ACIF indexes the print file, it supports indexing specific pages if you are using enhanced ACIF indexing. See Chapter 4, “Enhanced indexing parameters,” on page 83.

You can also use the input record exit of ACIF to insert TLE structured fields into an AFP data stream (MO:DCA-P) file, where applicable. The indexing information in the TLE structured field applies to the page or group that contains them. In the case of groups, the TLE structured field can appear anywhere between a Begin Named Group (BNG) structured field and the first page (BPG structured field) in the group. In the case of composed-text pages, the TLE structured field can appear anywhere following the Active Environment Group, between the End Active Environment (EAG) and End Page (EPG) structured fields. Although ACIF does not limit the number of TLE structured fields that can be placed in a group or page, consider the performance and storage ramifications of the number included.

ACIF does not require the print file to be indexed in a uniform manner; that is, every page that contains TLE structured fields does not have to have the same number of tags as other pages or the same type of index attributes or tag values. This option allows a great deal of flexibility for the application. When ACIF completes processing a print file that contains TLE structured fields, the resultant indexing information file can contain records of variable length.

TLEs in mixed-mode data input files

AFP does not explicitly allow TLE structured fields in mixed-mode documents (see the *Advanced Function Presentation: Programming Guide and Line Data Reference*). ACIF tolerates TLEs and passes them to the output file; however, because their use in line data is not architected, users must be aware that they might not get the results they want. For example:

- No conditional processing is done on TLE structured fields; they are written where they are received.
- If a page is already started, the TLEs are stored in the page.
- If outside of a page, the TLEs are written between pages.
- The same processing applies to Link Logical Element (LLE) structured fields in a mixed-mode document.

The following examples illustrate the processing that is done on TLEs

Example 1

```
TLE
1Line data page 1
TLE
1Line Data page 2
```

The carriage control value of “1” at the start of the line data causes a new page. The example generates these output structured fields:

```
TLE - no page was started, so the TLE is before the BPG

BPG
BPT PTX EPT sequence with Line Data page 1 in PTX
TLE - when the TLE was encountered, CCM was still working on page 1
EPG
```

```
BPG
BPT PTX EPT sequence with Line Data Page 2 in the PTX
EPG
```

Example 2

```
TLE
1Line Data page 1
IMM
TLE
1Line Data page 2
```

The example generates:

```
TLE - no page was started, so the TLE is before the BPG

BPG
BPT PTX EPT sequence with Line Data page 1 in PTX
EPG

IMM
TLE - when the TLE was encountered, ACIF was between pages because the IMM
      caused a page boundary and page 1 was ended before ACIF encountered the TLE

BPG
BPT PTX EPT sequence with Line Data Page 2 in the PTX
EPG
```

This same scenario occurs when any structured field that causes a page boundary is encountered.

Example 3

```
TLE
1Line Data page 1  (this line of data has conditional processing applied,
                    which causes a switch to a medium map or data map AFTER LINE)
TLE
1Line Data page 2
```

The example generates:

```
TLE - no page was started, so the TLE is before the BPG

BPG
BPT PTX EPT sequence with Line Data page 1 in PTX
EPG

IMM - because condiitonal processing invoked a medium map
TLE - when the TLE was encountered, CCM was between pages because conditional
      processing caused an IMM to be inserted after the line data for page 1,
      which caused page 1 to end

BPG
BPT PTX EPT sequence with Line Data Page 2 in the PTX
EPG
```

Begin Resource Group (BRG) structured field

ACIF assigns a null token name (X'FFFF') to this structured field and also creates several more triplets, including a Fully Qualified Name (FQN) type X'01' triplet, an Object Date and Time Stamp triplet, and an FQN type X'83' triplet. The FQN type X'01' triplet contains the data set name that is identified in the DDname statement for **RESOBJDD**. The Object Date and Time Stamp triplet contains date and time information from the operating system on which ACIF runs. The date and time values reflect when ACIF was called to process the print file. The FQN type X'83' triplet contains the MO:DCA-P output print file name that is identified by the DDname specified in the **OUTPUTDD** parameter.

Begin Resource (BRS) structured field

ACIF uses this structured field to delimit the resources in the file. ACIF also uses the X'21' triplet on the BRS structured field (also called the BR structured field) to identify the type of resource that follows this structured field. For more information, see *Mixed Object Document Content Architecture Reference*.

For TrueType and OpenType fonts, the 8-character name on the BRS structured field is always DOFFONT. The actual full font name is stored in an FQN triplet on the BRS structured field and is used to match the font to the Map Data Resources (MDR) structured field. For more information, see *Using OpenType Fonts in an AFP System*.

End Resource (ERS) and End Resource Group (ERG) structured fields

ACIF always assigns a null token name (X'FFFF') to the ERS and ERG structured fields it creates. The null name forces a match with the corresponding BRS and BRG structured fields. The ERS structured field is also called the ER structured field.

Begin Print File (BPF) and End Print File (EPF) structured fields

MO:DCA-P data that ACIF processes might contain BPF and EPF structured fields, which define the boundaries of a print file. The BPF structured field is at the beginning of the MO:DCA-P input file and the EPF structured field is at the end of the file.

Some products concatenate the ACIF resource file (RESOBJDD) to the front of the output file (OUTPUTDD). However, if any data, such as a resource group, is found before the BPF structured field or after the EPF structured field in the ACIF output file, the MO:DCA-P data stream is not valid. By default, ACIF removes the BPF and EPF structured fields from the MO:DCA-P input file before it processes the file. Also, if the input file contains an index object, ACIF ignores it and does not pass it to the output file.

The **EXTENSION=PASSPF** parameter indicates that ACIF passes the BPF and EPF structured fields to the output file when they are found in the input file. This parameter also controls whether a BPF/EPF structured field pair that the input record exit tries to insert is actually inserted. If PASSPF is not specified and the input record tries to insert a BPF/EPF pair, the attempt fails and the pair is discarded.

Notes:
1. Be careful when you use PASSPF. If the output file contains BPF and EPF structured fields and it is concatenated with the resource file, the resulting MO:DCA-P data stream is not valid.
2. When PASSPF is specified and there is a BPF and EPF structured field pair in the input file, ACIF passes all Begin Document (BDT) and End Document (EDT) structured field pairs from the MO:DCA-P input file to the output data stream without adding the normal comment and time stamp triplets.

3. ACIF issues an error message if PASSPF is specified with the IDXCPGID parameter. If **EXTENSIONS=ALL** is specified, PASSPF is ignored and IDXCPGID is used.
4. ACIF does not verify whether the input file is MO:DCA IS/3 compliant.

Before ACIF discards or passes the BPF and EPF structured fields, it checks the placement and format of the pair in the input file; for example, if the input file contains a BPF structured field, it must also contain an EPF structured field. If the BPF/EPF pair is incorrect, ACIF issues an error message. If the placement and format is correct, ACIF discards or passes the pair.

No Operation (NOP) structured field

An NOP structured field causes an application to move to the next instruction for processing without taking any other action.

NOP structured fields found *inside* inline resources are copied to the output resource library. NOP structured fields that are found *between* inline resources appear in the output AFP document after the Begin Document (BDT) structured fields (see “Begin Document (BDT) structured field” on page 231). NOP structured fields found *within* the line data or AFP input file are copied to the output file.

When an input file is mixed mode data and the page definition contains CONDITION statements, ACIF does conditional processing where the input records are buffered until the output page format is determined by the CONDITION. Originally, input records with NOP structured fields were not buffered with the other input records, which resulted in the NOP records changing position relative to the other input records. With PSF for z/OS and InfoPrint Manager, NOP records are buffered for CONDITION processing and maintain their position relative to the other input records. Therefore, any application that relies on NOPs appearing in a particular place in the output file might be affected.

Keep in mind: The use of an NOP structured field to carry comments or associate semantic data is not recommended because, by definition, the contents of NOP structured fields should be ignored and not processed. For more information, see *Mixed Object Document Content Architecture Reference*.

Format of the resources file

ACIF retrieves referenced AFP resources from specified libraries and creates a single file that contains these resources. With ACIF, you can control the number of resources and the type of resources in the file by using a combination of **RESTYPE** values and processing in the resource exit.

ACIF can retrieve all the resources that are used by the print file and can place them in a separate resource file. The resource file contains a resource group structure with this syntax:

```
BRG
  BRS
    AFP Resource 1
  ERS
  BRS
    AFP Resource 2
  ERS
  ..
  BRS
    AFP Resource n
  ERS
ERG
```

ACIF does not limit the number of resources that can be included in this object, but available storage is certainly a limiting factor.

Appendix D. Format of the index object file

General-use Programming Interface and Associated Guidance Information is contained in this appendix.

One of the optional files ACIF can produce contains indexing, offset, and size information. The purpose of this index object file is to enable applications such as archival and retrieval applications to selectively determine the location of a page group or page within the AFP data stream print file, which is based on its index (tag) values.

This example shows the general internal format of an index object file:

```
BDI
  IEL GroupName=G1
    TLE (INDEX1)
    ...
    TLE (INDEXn)
      IEL PageName=G1P1
        TLE (INDEX1)
        ...
        TLE (INDEXn)
      ...
      IEL PageName=G1Pn
  ...
  IEL GroupName=Gn
    TLE (INDEX1)
    ...
    TLE (INDEXn)
      IEL PageName=GnP1
        TLE (INDEX1)
        ...
        TLE (INDEXn)
      ...
      IEL PageName=GnPn
EDI
```

The example illustrates an index object file that contains both page-level and group-level Index Element (IEL) structured fields.

Group-Level Index Element (IEL) structured field

If **INDEXOBJ=GROUP** is specified, ACIF creates an index object file with this format:

```
BDI
  IEL Groupname=G1
    TLE
    ...
    TLE
  ...
  IEL Groupname=Gn
    TLE
    ...
    TLE
EDI
```

This format is useful to reduce the size of the index object file, but it allows manipulation only at the group level; that is, you cannot obtain the offset and size information for individual pages. You also lose any indexing information (TLEs) for pages; the TLE structured fields for the pages still exist in the output print file, however.

Page-Level Index Element (IEL) structured field

If **INDEXOBJ**=ALL is specified, ACIF creates an index object file with this format:

```
BDI
  IEL Groupname=G1
    TLE
    ...
      IEL Pagename=G1P1
        TLE
        ...
      ...
      IEL Pagename=G1Pn....
  ...
  IEL Groupname=Gn
    TLE
    ...
      IEL Pagename=GnP1
      ...
      IEL Pagename=GnPn
        TLE
        ...
EDI
```

This example contains IEL structured fields for both pages and groups. Notice that TLE structured fields are associated with both pages and groups. When ACIF does the actual indexing function, it supports page-level indexing if you are using enhanced ACIF indexing. See Chapter 4, “Enhanced indexing parameters,” on page 83.

An index object file that contains both page-level and group-level IEL structured fields can provide added flexibility and capability to applications that operate on the files that are created by ACIF. This type of index object file provides the best performance when you are using AFP Workbench Viewer to view a file.

Begin Document Index (BDI) structured field

ACIF assigns a null token name (X'FFFF') and a Fully Qualified Name (FQN) type X'01' triplet to this structured field. The FQN type X'01' value is the file name that is identified by the DDname specified in the **INDEXDD** parameter. ACIF also creates an FQN type X'83' triplet that contains the name of the AFP output print file, which is identified by the DDname specified in the **OUTPUTDD** parameter.

ACIF also creates a Coded Graphic Character Set Global Identifier triplet X'01' by using the code page identifier that is specified in the **CPGID** parameter. ACIF assigns a null value (X'FFFF') to the Graphic Character Set Global Identifier. For more information about the **CPGID** parameter, see “CPGID” on page 37.

Index Element (IEL) structured field

The IEL structured field associates indexing tags with a specific page or group of pages in the output document file. It also contains the byte and structured-field offset to the page or page group and the size of the page or page group in both bytes and structured-field count. This list shows the triplets that compose the IEL structured field:

- FQN Type X'8D'

  This triplet contains the name of the active medium map that is associated with the page or page group. For page groups, this triplet is the medium map that is active for the first page in the group because other medium maps can be referenced after subsequent pages in the group. If no medium map is explicitly called with an Invoke Medium Map (IMM) structured field, ACIF uses a null name (8 bytes of X'FF') to identify the default medium map; that is, the first medium map in the form definition.
- Object Byte Extent (X'57')

  This triplet contains the size, in bytes, of the page or group this IEL structured field references. The value begins at 1.
- Object Structured Field Extent (X'59')

  This triplet contains the number of structured fields that compose the page or group that is referenced by this IEL structured field. In the host environment, each record contains only one structured field, so this value also represents the number of records in the page or group. The value begins at 1.
- Direct Byte Offset (X'2D')

  This triplet contains the offset, in bytes, from the start of the output print file to the particular page or group this IEL structured field references. The value begins at 0.
- Object Count (X'58')

  This triplet specifies the number of pages in a page group. This triplet applies only to group level IEL structured fields.
- Object Structured Field Offset (X'58')

  This triplet contains the offset, in number of structured fields, from the start of the output print file to the start of the particular page or group this IEL structured field references. The value begins at 0.
- FQN Type X'87'

  This triplet contains the name of the page with which this IEL structured field is associated. The name is the same as the FQN type X'01' on the BPG structured field. This triplet applies **only** to page-level IEL structured fields.
- FQN Type X'0D'

  This triplet contains the name of the page group with which this IEL structured field is associated. The name is the same as the FQN type X'01' on the BNG structured field. This triplet applies **only** to group-level IEL structured fields.
- Medium Map Page Number (X'56')

  This triplet defines the relative page count since the last Invoke Medium Map (IMM) structured field was processed or from the logical invocation of the default medium map. For page groups, this value applies to the first page in the group. The value begins at 1 and is incremented for each page.

Tag Logical Element (TLE) structured field

ACIF creates TLE structured fields as part of its indexing process, or it can receive these structured fields from the input print file. When ACIF creates TLE structured fields, the first TLE structured field is **INDEX1**, the next TLE structured field is **INDEX2**, and so on, to a maximum of eight per page group. When ACIF processes a print file that contains TLE structured fields, it always outputs the TLE structured fields in the same order and position. The TLE structured fields in this object are the same as those structured fields in the output document file, and they follow the IEL structured field with which they are associated.

End Document Index (EDI) structured field

ACIF assigns a null token name (X'FFFF') to this structured field, which forces a match with the BDI structured field name.

Appendix E. Format of the output document file

This appendix contains General-use Programming Interface and Associated Guidance Information.

ACIF can create three separate output files, one of which is the print file in AFP data stream format. In doing so, ACIF might create these structured fields:

- Tag Logical Element (TLE)
- Begin Named Group (BNG)
- End Named Group (ENG)

The TLE is described in Appendix D, "Format of the index object file," on page 225; the other two structured fields are described in this appendix. Figure 35 and Figure 36 on page 230 illustrate the two possible AFP data stream document formats ACIF can produce.

```
BDT
  BNG Groupname=(index value + sequence number)
    TLE (INDEX1)
    TLE (INDEX2)
    ...
    TLE (INDEXn)
      BPG
        Page 1 of group 1
      EPG
      BPG
        Page 2 of group 1
      EPG
      ...
      BPG
        Page n of group 1
      EPG
  ENG
  ...
  BNG Groupname=(index value + sequence number)
    TLE (INDEX1)
    TLE (INDEX2)
    ...
    TLE (INDEXn)
      BPG
        Page 1 of group n
      EPG
      BPG
        Page 2 of group n
      EPG
      ...
      BPG
        Page n of group n
      EPG
  ENG
EDT
```

Figure 35. Example of code that contains group-level indexing

Figure 35 illustrates the format ACIF produces when it converts and indexes a print file with group-level indexing.

```
BDT
  BNG Groupname=(index value + sequence number)
    TLE (INDEX1)
    TLE (INDEX2)
    ...
    TLE (INDEXn)
      BPG
        TLE (INDEX1)
        ...
        TLE (INDEXn)
        Page 1 of group 1
      EPG
      BPG
        Page 2 of group 1
      EPG
      ...
      BPG
        TLE (INDEX1)
        ...
        TLE (INDEXn)
        Page n of group 1
      EPG
  ENG
  ...
  BNG Groupname=(index value + sequence number)
    TLE (INDEX1)
    TLE (INDEX2)
    ...
    TLE (INDEXn)
      BPG
        Page 1 of group n
      EPG
      BPG
        TLE (INDEX1)
        ...
        TLE (INDEXn)
        Page 2 of group n
      EPG
      ...
      BPG
        Page n of group n
      EPG
  ENG
EDT
```

Figure 36. Example of code that contains group- and page-level indexing

Figure 36 illustrates an input file that has already been indexed (tagged) and converted to MO:DCA-P format. This example shows that you can index (tag) both groups and pages from an application.

Page groups

Page groups are architected groups of one or more pages to which some action or meaning is assigned. Consider the example of the bank statement application. Each bank statement in the print file comprises one or more pages. By grouping each statement in a logical manner, you can assign specific indexing or tag information to each group (statement). You can then use this grouping to do actions such as archival, retrieval, viewing, preprocessing, and postprocessing. The grouping also represents a natural hierarchy. For the AFP Workbench Viewer, you can locate a group of pages and then locate a page within a group. If you again use the example of the bank statement application, you can see how useful this grouping can be. You can retrieve from the archival (storage) system all of the bank statements for a specific branch. You can then select a specific bank statement (group-level) to view and select a tagged summary page (page-level).

Begin Document (BDT) structured field

When ACIF processes an AFP data stream print file, it checks for a Fully Qualified Name (FQN) type X'01' triplet in the BDT structured field. If the FQN triplet exists, ACIF uses it; otherwise, ACIF creates one by using the file name that is identified in the DDname statement for **OUTPUTDD**. ACIF uses the FQN value when it creates an FQN type X'83' triplet on the Begin Document Index (BDI) structured field in the index object file and on the Begin Resource Group (BRG) structured field in the resource file. Although the input file can contain multiple BDT structured fields, unless **INDEXOBJ=BDTLY** is specified, the ACIF output contains only one BDT structured field. (The same is true of End Document (EDT) structured fields.)

For line data, ACIF creates the BDT structured field. ACIF assigns a null token name (X'FFFF') and creates an FQN type X'01' triplet by using the file name that is identified in the DDname statement for **OUTPUTDD**.

ACIF also creates a Coded Graphic Character Set Global Identifier triplet X'01' by using the code page identifier that is specified in the **CPGID** parameter. ACIF assigns a null value (X'FFFF') to the Graphic Character Set Global Identifier. For more information about the **CPGID** parameter, see “CPGID” on page 37.

ACIF creates two more FQN triplets for the resource name (type X'0A') and the index object name (type X'98'). These two values are the same as those values contained in their respective type X'01' triplets on the BDI and BRG structured fields.

ACIF also creates a comment triplet (X'65') that shows the current APAR level of the code that is used to build the AFP document.

Begin Named Group (BNG) structured field

When ACIF processes an AFP data stream print file that contains page groups, it checks for an FQN type X'01' triplet on each BNG structured field. If the FQN triplet exists, ACIF uses the value when it creates an FQN type X'0D' triplet on the corresponding Index Element (IEL) structured field in the index object file. ACIF appends an 8-byte rolling sequence number to ensure uniqueness in the name. If no FQN triplet exists, ACIF creates one and, unless **UNIQUEBNGS=NO** is specified, appends a rolling, 8-byte EBCDIC sequence number to ensure uniquely named groups, up to a maximum of 99999999 groups within a print file.

When ACIF indexes a print file, it creates the BNG structured fields. It assigns a rolling 8-byte EBCDIC sequence number to the token name (for example, 00000001 where 1=X'F1'). The sequence number begins with 00000001 and is incremented by 1 each time a group is created. Unless **UNIQUEBNGS=NO** is specified, ACIF also creates an FQN type X'01' triplet by concatenating the specified index value (**GROUPNAME**) with the same sequence number used in the token name. If the value of the index that is specified in **GROUPNAME** is too long, the trailing bytes are replaced by the sequence number. This situation occurs only if the specified index value exceeds 242 bytes in length. A maximum of 99999999 groups can be supported before the counter wraps, which means that ACIF ensures a maximum of 99999999 unique group names.

Tag Logical Element (TLE) structured field

As mentioned in "Tag Logical Element (TLE) structured field" on page 227, ACIF creates TLE structured fields as part of its indexing process, or it can receive these structured fields from the input print file. When ACIF creates TLE structured fields, the first TLE is **INDEX1**, the next TLE is **INDEX2**, and so on to a maximum of eight per page group. When ACIF processes a print file that contains TLE structured fields, it always outputs the TLE structured fields in the same order and position.

Begin Page (BPG) structured field

When ACIF processes an AFP data stream print file, it checks for an FQN type X'01' triplet on every page. If the FQN triplet exists, ACIF uses the value when it creates an FQN type X'87' triplet on the corresponding Index Element (IEL) structured field in the index object file. If one does not exist, ACIF creates one by using a rolling 8-byte EBCDIC sequence number, which ensures uniquely named pages up to a maximum of 99999999 pages within a print file. ACIF creates IEL structured fields for pages only if **INDEXOBJ=ALL** is specified.

When ACIF processes a line data print file, it creates the BPG structured fields. It assigns a rolling 8-byte EBCDIC sequence number to the token name (for example, 00000001, where 1=X'F1'). The sequence number begins with 00000001 and is incremented by 1 each time a group is created. ACIF also creates an FQN type X'01' triplet by using the same sequence number value, and uses this value in the appropriate IEL structured field if **INDEXOBJ=ALL** is specified. A maximum of 99999999 groups can be supported before the counter wraps, which means that ACIF ensures a maximum of 99999999 unique group names.

End Named Group (ENG), End Document (EDT), and End Page (EPG) structured fields

ACIF always assigns a null token name (X'FFFF') to the Exx structured fields it creates. It does not modify the Exx structured field created by an application unless it creates an FQN type X'01' triplet for the corresponding Bxx structured field. In this case, it assigns a null token name (X'FFFF'), which forces a match with the Bxx name.

Output MO:DCA-P data stream

Regardless of the input data stream, ACIF always produces output files in the MO:DCA-P format. Each structured field in the file is a single record that is preceded by a X'5A' carriage control character.

| **Note:** When BPF and EPF structured fields are found in the input file, ACIF does
| not pass them to the output file unless the **EXTENSION=PASSPF** parameter
| is specified. See "Begin Print File (BPF) and End Print File (EPF) structured
| fields" on page 222 for more information.

The following sections describe the required changes ACIF must make to an AFP input file to support MO:DCA-P output format.

Composed Text Control (CTC) structured field

Because this structured field is obsolete, ACIF ignores it and does not pass it to the output file.

Map Coded Font (MCF) Format 1 structured field

ACIF converts this structured field to an MCF Format 2 structured field. Unless **MCF2REF=CF** is specified, ACIF resolves the coded font into the appropriate font character set and code page pairs.

Map Coded Font (MCF) Format 2 structured field

ACIF does not modify this structured field, and it does **not** map any referenced GRID values to the appropriate font character set and code page pairs. This situation might affect document integrity in the case of archival because no explicit resource names are referenced for ACIF to retrieve.

ACIF requires that FOCA fonts be named according to the suggested IBM naming conventions in Table 10. If the naming conventions are not followed, you might get unexpected results. For example, ACIF bases the font character rotation on the second character in the font name.

Table 10. FOCA font naming conventions

Font Resource Objects	Prefix
240- and 300-pel character set	C0
3800 character set	C1–CG
Outline character set	CZ
Code page; extended code page	T1
240- and 300-pel coded font	X0 (required)
3800 coded font	X1–XG (required)
Outline coded font	XZ (required)

Presentation Text Data Descriptor (PTD) Format 1 structured field

ACIF converts this structured field to a PTD Format 2 structured field.

Inline resources

Inline resources at the beginning of the input file are copied to the resource file (**RESOBJDD**) if the appropriate **RESTYPE** value is specified. Inline resources are only copied to the output file (**OUTPUTDD**) if **RESTYPE=INLINE** is specified.

Page definitions

Because page definitions are used only to compose line data into pages, this resource is not included in the resource file. The page definition is not included because it is no longer needed to view or print the document file.

Appendix F. Accessibility

Accessible publications for this product are offered through the z/OS Information Center, which is available at http://www.ibm.com/systems/z/os/zos/bkserv/. If you experience any accessibility problems with the z/OS Information Center, send an email to mhvrcfs@us.ibm.com or write to the following address:

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Attention: MHVRCFS Reader Comments
Department H6MA, Building 707
2455 South Road
Poughkeepsie, NY 12601-5400
USA

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, use software products successfully. The major accessibility features in z/OS let users:

- Use assistive technologies such as screen readers and screen magnifier software.
- Operate specific or equivalent features by using only the keyboard.
- Customize display attributes such as color, contrast, and font size.

Using assistive technologies

Assistive technology products, such as screen readers, function with the user interfaces found in z/OS. Consult the assistive technology documentation for specific information when using such products to access z/OS interfaces.

Keyboard navigation of the user interface

Users can access z/OS user interfaces by using TSO/E or ISPF. For more information, see *z/OS TSO/E Primer*, *z/OS TSO/E User's Guide*, and *z/OS ISPF User's Guide Vol I*. These guides describe how to use TSO/E and ISPF, including the use of keyboard shortcuts or function keys (PF keys). Each guide includes the default settings for the PF keys and explains how to modify their functions.

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This publication includes documentation of intended programming interfaces that the customer can use to write programs to obtain the services of ACIF.

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Glossary

This glossary defines technical terms and abbreviations used in PSF for z/OS documentation. If you do not find the term you are looking for, view the IBM terminology website at:

`http://www.ibm.com/software/globalization/terminology/`

These cross-references are used in this glossary:

- **See.** Refers to preferred synonyms or to defined terms for acronyms and abbreviations.
- **See also.** Refers to related terms that have similar, but not synonymous, meanings, or to contrasted terms that have opposite or substantively different meanings.

A

ACIF. See AFP Conversion and Indexing Facility.

Advanced Function Presentation (AFP). A set of licensed programs, together with user applications, that use the all-points-addressable concept to print data on a wide variety of printers or to display data on a variety of display devices. AFP includes creating, formatting, archiving, retrieving, viewing, distributing, and printing information.

Advanced Interactive Executive (AIX). A UNIX operating system developed by IBM that is designed and optimized to run on POWER microprocessor-based hardware, such as servers, workstations, and blades.

AFP. See Advanced Function Presentation.

AFP Conversion and Indexing Facility (ACIF). An optional feature of PSF for z/OS that converts a print file into a MO:DCA document, creates an index file for later retrieval and viewing, and retrieves resources used by an AFP document into a separate file.

AFP Toolbox. A product that assists application programmers in formatting printed output. Without requiring knowledge of the AFP data stream, AFP Toolbox provides access to sophisticated AFP functions through a callable C, C++, or COBOL interface.

AFP Workbench Viewer. A product that displays AFP and ASCII files at a Windows workstation in the same format they are printed.

AIX. See Advanced Interactive Executive.

alphanumeric. Pertaining to a character set that contains letters, digits, and other characters, such as punctuation marks.

American National Standards Institute (ANSI). A private, nonprofit organization whose membership includes private companies, U.S. government agencies, and professional, technical, trade, labor, and consumer organizations. ANSI coordinates the development of voluntary consensus standards in the U.S.

American Standard Code for Information Interchange (ASCII). A standard code used for information exchange among data processing systems, data communication systems, and associated equipment. ASCII uses a coded character set consisting of 7-bit coded characters. See also Extended Binary Coded Decimal Interchange Code.

anchor point. The point in a document that signals to ACIF the beginning of a group of pages, after which it adds indexing structured fields to delineate this group. See also trigger.

ANSI. See American National Standards Institute.

architecture. The set of rules and conventions that govern the creation and control of data types such as text, image, graphics, font, fax, color, audio, bar code, and multimedia.

ASCII. See American Standard Code for Information Interchange.

B

bar code. An array of elements, such as bars, spaces, and two-dimensional modules, that encode data in a particular symbology. The elements are arranged in a predetermined pattern following unambiguous rules defined by the symbology.

Bar Code Object Content Architecture (BCOCA). An architected collection of constructs used to interchange and present bar code data.

BCOCA. See Bar Code Object Content Architecture.

big endian. Pertaining to the order in which binary data is stored or transmitted with the most significant byte placed first. See also little endian.

C

carriage control character. A character that is used to specify a write, space, or skip operation. See also control character.

CCSID. See coded character set identifier.

character. (1) Any symbol that can be entered on a keyboard, printed, or displayed. For example, letters, numbers, and punctuation marks are all characters. (2) In a computer system, a member of a set of elements that is used for the representation, organization, or control of data. See also control character, glyph, and graphic character. (3) In bar codes, a single group of bars and spaces that represent an individual number, letter, punctuation mark, or other symbol.

character rotation. The alignment of a character with respect to its character baseline, measured in degrees in a clockwise direction. See also rotation and orientation.

character set. A defined set of characters that can be recognized by a configured hardware or software system. A character set can be defined by alphabet, language, script, or any combination of these items. See also font character set.

CMR. See color management resource.

coded character set identifier (CCSID). A 16-bit number that includes a specific set of encoding scheme identifiers, character set identifiers, code page identifiers, and other information that uniquely identifies the coded graphic-character representation.

coded font. A font file that associates a code page and a font character set. For double-byte fonts, a coded font associates multiple pairs of code pages and font character sets.

code page. A particular assignment of code points to graphic characters. Within a given code page, a code point can only represent one character. A code page also identifies how undefined code points are handled. See also coded font and extended code page.

color management resource (CMR). An object that provides color management in presentation environments.

complex text. Unicode-encoded text that cannot be rendered in the traditional one-code-point to one-glyph fashion, such as bidirectional Arabic text or combined Hindi characters.

concatenated data set. A group of logically connected data sets that are treated as one data set for the duration of a job step. See also data set, partitioned data set, and library.

control character. (1) A character that represents a command that is sent to an output device, such as a printer or monitor. Examples are line-feed, shift-in, shift-out, carriage return, font change, and end of transmission. See also carriage control character. (2) A character whose occurrence in a particular context initiates, modifies, or stops a control function.

copy group. In PSF, an internal object in a form definition or a print data set that controls such items as modifications to a form, page placement, and overlays.

D

data object resource. An object container resource or IOCA image resource that is either printer resident or downloaded. Data object resources can be:

- Used to prepare for the presentation of a data object, such as with a resident color profile resource object
- Included in a page or overlay through the Include Object (IOB) structured field; for example, PDF single-page and multiple-page objects, Encapsulated PostScript (EPS) objects, and IOCA images
- Called from within a data object; for example, PDF resource objects

data set. The major unit of data storage and retrieval, consisting of a collection of data in one of several prescribed arrangements and described by control information to which the system has access. See also file, concatenated data set, partitioned data set, and sequential data set.

data stream. The commands, control codes, data, or structured fields that are transmitted between an application program and a device, such as printer or nonprogrammable display station.

DCF. See Document Composition Facility.

device link profile. A profile that preserves black channel separation across the entire color space using any Color Management Module (CMM).

document. (1) A machine-readable collection of one or more objects that represent a composition, a work, or a collection of data. (2) Data that has already been composed into pages and that contains a Begin Document and an End Document structured field.

Document Composition Facility (DCF). An IBM licensed program used to format input to a printer.

download. To transfer data from a computer to a connected device, such as a workstation or a printer. Typically, users download from a large computer to a diskette or fixed disk on a smaller computer or from a system unit to an adapter.

Download for z/OS. An optional feature of PSF for z/OS that uses TCP/IP to automatically send data sets from the JES spool, without formatting them, directly to a PSF for z/OS, InfoPrint Manager, Ricoh ProcessDirector, or OnDemand server.

E

EBCDIC. See Extended Binary Coded Decimal Interchange Code.

Extended Binary Coded Decimal Interchange Code (EBCDIC). A coded character set of 256 eight-bit characters developed for the representation of textual data. EBCDIC is not compatible with ASCII character coding. See also American Standard Code for Information Interchange.

extended code page. A code page that is stored in a partitioned data set (PDS or PDSE) in a font resource library or in a UNIX file in a font path library. Extended code pages might contain Unicode values that a printer uses to print EBCDIC or ASCII encoded text strings with TrueType and OpenType fonts.

F

file. (1) A collection of related data that is stored and retrieved by an assigned name. A file can include information that starts a program (program-file object), contains text or graphics (data-file object), or processes a series of commands (batch file). (2) See also data set, partitioned data set, sequential data set, and library.

FOCA. See Font Object Content Architecture.

font. (1) A family or assortment of characters of a given size and style, for example, 9-point Bodoni modern. A font has a unique name and might have a registry number. (2) A particular type style (for example, Bodoni or Times Roman) that contains definitions of character sets, marker sets, and pattern sets. See also coded font.

font character set. (1) Part of an AFP font that contains the raster patterns, identifiers, and descriptions of characters. See also character set. (2) A Font Object Content Architecture (FOCA) resource containing descriptive information, font metrics, and the digital representation of character shapes for a specified graphic character set.

Font Object Content Architecture (FOCA). An architecture that defines the content of digital font resources by means of a set of parameter definitions.

form. (1) A physical piece of paper or other medium on which data is printed. See also page and sheet. (2) A display screen, printed document, or file with defined spaces for information to be inserted.

form definition. An AFP resource object used by PSF that defines the characteristics of the form or printed media, including: overlays to be used, duplex printing, text suppression, the position of composed-text data on the form, and the number and modifications of a page.

G

glyph. (1) A graphic symbol whose appearance conveys information, for example, the vertical and horizontal arrows on cursor keys that indicate the directions in which they control cursor movement. (2) An image, typically of a character, in a font. See also character and graphic character.

GOCA. See Graphics Object Content Architecture.

graphic character. (1) A visual representation of a character, other than a control character, that is typically produced by writing, printing, or displaying. See also glyph. (2) A member of a set of symbols that represent data. Graphic characters can be letters, digits, punctuation marks, or other symbols.

Graphics Object Content Architecture (GOCA). An architecture that provides a collection of graphics values and control structures used to interchange and present graphics data.

group. (1) A logical organization of users whose membership allows them to perform the same activities or provide the same authority to access resources. (2) A series of records logically joined together or having the same value for a particular field in all records. (3) A named collection of sequential pages that form a logical subset of a document.

H

hexadecimal. Pertaining to a numbering system that has a base of 16.

I

i5/OS™. The IBM licensed program that was used as the operating system for System i® servers. The predecessor to i5/OS was OS/400®. See IBM i.

IBM i. The IBM licensed program that is used as the principal operating system for Power Systems™ products. The predecessor to IBM i was i5/OS, which was preceded by OS/400.

image. (1) A pattern of toned and untoned pels that form a picture. See also impression. (2) An electronic representation of an original document or picture produced by a scanning device or created from software.

Image Object Content Architecture (IOCA). An architecture that provides a collection of constructs used to interchange and present images, such as printing image data on a page, page segment, or overlay.

impression. The transfer of an image to a sheet of paper. Multiple impressions can be printed on each side of a sheet. Printer speed is often measured in impressions per minute (ipm).

indexing. In ACIF, a process of matching reference points within a file and creating structured field tags within the MO:DCA document and the separate index object file.

indexing with data values. Adding indexing tags to a MO:DCA document by using data that is already in the document and that is consistently located in the same place in each group of pages.

indexing with literal values. Adding indexing tags to a MO:DCA document by assigning literal values as indexing tags, because the document is not organized such that common data is located consistently throughout the document.

index object file. A file created by ACIF that contains Index Element (IEL) structured fields, which identify the location of the tagged groups in the AFP file. The indexing tags are contained in the Tag Logical Element (TLE) structured fields.

InfoPrint AFP Resource Installer. An application that runs on a Windows workstation. InfoPrint AFP Resource Installer installs and manages fonts, data objects, and color management resources (CMRs) in resource libraries. It also creates CMRs and associates CMRs with data objects.

InfoPrint Manager. A print management product that | runs on an AIX, Linux, or Windows operating system. InfoPrint Manager handles the scheduling, archiving, retrieving, and assembly of a print job and its related resource files. It also tracks the finishing and packaging of the printed product.

inline resource. A resource contained in a print file or a print data set.

Intelligent Printer Data Stream (IPDS). An all-points-addressable data stream that lets users position text, images, graphics, and bar codes at any defined point on a printed page. IPDS is the strategic AFP printer data stream generated by PSF.

IOCA. See Image Object Content Architecture.

IPDS. See Intelligent Printer Data Stream.

J

JCL. See job control language.

JES. See Job Entry Subsystem.

JES2. An MVS subsystem that receives jobs into the system, converts them to internal format, selects them for processing, processes their output, and purges them from the system. In an installation with more than one processor, each JES2 processor independently controls its job input, scheduling, and output processing. See also Job Entry Subsystem and JES3.

JES3. An MVS subsystem that receives jobs into the system, converts them to internal format, selects them for processing, processes their output, and purges them from the system. In complexes that have several loosely coupled processing units, the JES3 program manages processors so that the global processor exercises centralized control over the local processors and distributes jobs to them by using a common job queue. See also Job Entry Subsystem and JES2.

job control language (JCL). A command language that identifies a job to an operating system and describes the job's requirements.

Job Entry Subsystem (JES). An IBM licensed program that receives jobs into the system and processes all output data that is produced by jobs. See also JES2 and JES3.

L

library. (1) A system object that serves as a directory to other objects. A library groups related objects, and allows the user to find objects by name. (2) A data file that contains copies of a number of individual files and control information that allows them to be accessed individually. (3) A partitioned data set or a series of concatenated partitioned data sets. (4) In VSE, a collection of data stored in sublibraries on disk. A library consists of at least one sublibrary in which data is stored as members of various types such as phase, object module, or source book.

library member. (1) A named collection of records or statements in a library. See also resource object. (2) In VSE, the smallest unit of data that can be stored in and retrieved from a sublibrary.

licensed program. A separately priced program and its associated materials that bear a copyright and are offered to customers under the terms and conditions of a licensing agreement.

line data. Data prepared for printing on a line printer without any data placement or presentation information. Line data can contain carriage-control characters and table-reference characters (TRC) for spacing and font selections. See also record format line data and traditional line data.

little endian. Pertaining to the order in which binary data is stored or transmitted with the least significant byte placed first. See also big endian.

logical page. The defined presentation space on the physical form. All the text and images in the print data must fit within the boundaries of the logical page, which has specified characteristics, such as size, shape, orientation, and offset. See also form and physical page.

M

Mixed Object Document Content Architecture (MO:DCA). An architected, device-independent data stream for interchanging documents.

Mixed Object Document Content Architecture for Presentation (MO:DCA-P). The subset of MO:DCA that defines presentation documents. ACIF supports MO:DCA Presentation Interchange Set data streams.

MO:DCA. See Mixed Object Document Content Architecture.

MO:DCA data. Print data that has been composed into pages. Text-formatting programs (such as DCF) can produce composed text data consisting entirely of structured fields. ACIF or AFP Download Plus can transform line data or XML data to MO:DCA data.

MO:DCA-P. See Mixed Object Document Content Architecture for Presentation.

| **MO:DCA IS/1.** See MO:DCA Presentation Interchange
| Set 1.

| **MO:DCA IS/3.** See MO:DCA Presentation Interchange
| Set 3.

| **MO:DCA Presentation Interchange Set 1 (MO:DCA
| IS/1).** A subset of MO:DCA that defines an
| interchange format for presentation documents.

| **MO:DCA Presentation Interchange Set 3 (MO:DCA
| IS/3).** A subset of MO:DCA that defines an
| interchange format for presentation documents. The
| MO:DCA IS/3 data stream includes structured fields
| that are not found in MO:DCA IS/1.

Multiple Virtual Storage (MVS). An IBM operating system that accesses multiple address spaces in virtual storage.

MVS. See Multiple Virtual Storage.

O

object. In AFP architecture, a collection of structured fields, bounded by a begin-object function and an end-object function. The object can contain other structured fields containing data elements of a particular type. Examples of objects are text, fonts, graphics, images, and bar codes.

object container. A MO:DCA structure that carries object data, which might or might not be defined by a presentation architecture.

offset. The number of measuring units from an arbitrary starting point to some other point.

OpenType font. An extension of the TrueType font format that adds support for PostScript outlines and more support for international character sets and advanced typographic control.

orientation. In printing, the number of degrees an object is rotated relative to a reference; for example, the orientation of an overlay relative to the logical page origin, or the orientation of printing on a page relative to the page coordinates. Orientation typically applies to blocks of information, whereas character rotation applies to individual characters. See also character rotation.

OS/400. Pertaining to the IBM licensed program that can be used as the operating system for System i servers prior to Version 5 Release 3. See IBM i.

outline font. A font whose graphic character shapes are defined by mathematical equations rather than by raster patterns. See also raster font.

overlay. (1) A resource object that contains predefined presentation data, such as text, image, graphics, and bar code data, that can be merged with variable data on a page or form while printing. (2) The final representation of a collection of predefined presentation data on a physical medium.

P

page. (1) A collection of data that can be printed on one side of a sheet of paper or a form. (2) A data stream object delimited by a Begin Page structured field and an End Page structured field. A page can contain presentation data such as text, image, graphics, and bar code data. See also logical page and physical page.

page definition. An AFP resource object used by PSF that defines the rules for transforming line data and XML data into MO:DCA data and text controls, such as width of margins and text orientation.

page segment. An AFP resource object containing text, image, graphics, or bar code data that can be positioned on any addressable point on a page or an electronic overlay.

parameter. A value or reference passed to a function, command, or program that serves as input or controls actions. The value is supplied by a user or by another program or process.

partitioned data set (PDS). A data set in direct-access storage that is divided into partitions, called members, each of which can contain a program, part of a program, or data. See also sequential data set.

PDS. See partitioned data set.

physical page. A single surface (front or back) of a form. See also form, logical page, and page.

pitch. A unit of measurement for the width of type (or a printed character), based on the number of characters that can be set (or printed) in one linear inch; for example, 10-pitch has 10 characters per inch. Uniformly spaced fonts are measured in pitch. See also point.

point. A unit of measurement used mainly for describing type sizes. Each pica has 12 points, and an inch has approximately 72 points. See also pitch.

point size. The height of a font in points.

PostScript. A page description language developed by Adobe Systems, Incorporated that describes how text and graphics are presented on printers and display devices.

Presentation Text Object Content Architecture (PTOCA). An architecture that provides a collection of constructs used to interchange and present presentation text data, such as printing text data on a page, page segment, or overlay.

print data set. A data set created by an application program that contains the actual information to be printed and, optionally, some of the data that controls the format of the printing. The types of print data sets are composed text, line format, XML data, and mixed format. See also print file.

Printer Control Language (PCL). The Hewlett Packard page description language that is used in laser and ink-jet printers.

print file. A file that is created for the purpose of printing data. A print file includes information to be printed and, optionally, some of the data that controls the format of the printing. See also print data set.

Print Services Facility (PSF). An IBM licensed program that manages and controls the input data stream and output data stream required by supported page printers. PSF is supported under z/OS, VSE, VM, and IBM i operating systems.

program temporary fix (PTF). For System i, System p®, and System z products, a package containing individual or multiple fixes that is made available to all licensed customers. A PTF resolves defects and might provide enhancements.

PSF. See Print Services Facility.

PTOCA. See Presentation Test Object Content Architecture.

R

raster font. A font in which the characters are defined directly by the raster bit map. See also outline font.

RAT. See resource access table.

record format line data. A form of line data where each record is preceded by a 10-byte identifier. See also line data.

resource. A collection of printing instructions used, in addition to the print data set, to produce the printed output. Resources include coded fonts, font character sets, code pages, page segments, overlays, form definitions, and page definitions.

resource access table (RAT). An array of data that is used to map a resource name specified in the MO:DCA data stream to information used to find and process the resource on a given system.

resource object. In AFP, a collection of printing instructions, and sometimes data to be printed, that consists entirely of structured fields. A resource object is stored as a member (or file) of a library and can be called for by PSF when needed. The different resource objects include: coded font, font character set, code page, page segment, overlay, form definition, and page definition. See also library member.

rotation. The number of degrees a graphic character is turned relative to the page coordinates. See character rotation. See also orientation.

S

sequential data set. A data set whose records are organized on the basis of their successive physical positions, such as on magnetic tape. See also partitioned data set.

sheet. A division of the physical medium; multiple sheets can exist on a physical medium. For example, a roll of paper might be divided by a printer into rectangular pieces of paper, each representing a sheet. Envelopes are an example of a physical medium that comprises only one sheet. The IPDS architecture defines four types of sheets: cut-sheets, continuous forms, envelopes, and computer output on microfilm. Each type of sheet has a top edge. A sheet has two sides, a front side and a back side. See also form.

structured field. (1) A self-identifying string of bytes and its data or parameters. (2) A mechanism that permits variable length data to be encoded for transmission in the data stream.

syntax. The rules for the construction of a command or statement.

T

tag. A type of structured field used for indexing in an AFP document. Tags associate an index attribute-value pair with a specific page or group of pages in a document.

text orientation. A description of the appearance of text as a combination of print direction and character rotation.

traditional line data. A form of line data that is prepared for printing on a line printer. See also line data.

trigger. Data values that are used to delineate the beginning and ending of a new group of pages. The first trigger is then the anchor point from which defined index values are located. See also anchor point.

TrueType font. A font format based on scalable outline technology in which the graphic character shapes are based on quadratic curves. The font is described with a set of tables contained in a TrueType font file.

typeface. All characters of a single type family or style, weight class, width class, and posture, regardless of size. An example is Helvetica bold condensed italic, in any point size. See also font.

U

Unicode. A character encoding standard that supports the interchange, processing, and display of text that is written in the common languages around the world, plus some classical and historical texts. For example, the text name for $ is "dollar sign" and its numeric value is X'0024'. The Unicode standard has a 16-bit character set defined by ISO 10646.

V

virtual machine (VM). An instance of a data-processing system that appears to be at the exclusive disposal of a single user, but whose functions are accomplished by sharing the resources of a physical data-processing system.

Virtual Storage Extended (VSE). A system that consists of a basic operating system (VSE/Advanced Functions), and any IBM supplied and user-written programs required to meet the data processing needs of a user. VSE and the hardware that it controls form a complete computing system. Its current version is called VSE/ESA.

VM. See virtual machine.

VSE. See Virtual Storage Extended.

W

Workbench Viewer. See AFP Workbench Viewer.

X

XML data. Data identified with the Extensible Markup Language (XML), which is a standard metalanguage for defining markup languages that is based on Standard Generalized Markup Language (SGML). For printing on page printers, a page definition is required to provide the data placement and presentation information. The XML data processed by ACIF can be encoded in EBCDIC, ASCII, UTF-8 or UTF-16.

Z

z/OS. An IBM mainframe operating system that uses 64-bit real storage.

Bibliography

This bibliography lists the titles of publications containing additional information about PSF, AFP, the z/OS operating system, InfoPrint Manager, and related products.

The titles and order numbers might change from time to time. To verify the current title or order number, consult your IBM marketing representative.

You can obtain many of the publications listed in this bibliography from the AFP Consortium, `http://www.afpcinc.org`, and the z/OS printing software web page:

`http://www.ibm.com/systems/z/zos/printsoftware/supportmanuals_ww.html`

You can obtain InfoPrint Manager publications from the Ricoh Production Print Information Center: `http://rpp.ricoh-usa.com/help/index.jsp`

Advanced Function Presentation (AFP)

Publication	Order Number
AFP Toolbox User's Guide	S544-5292
Guide to Advanced Function Presentation	G544-3876
Overlay Generation Language User's Guide and Reference	S544-3702
Architecture	
Advanced Function Presentation: Programming Guide and Line Data Reference	S544-3884
AFP Consortium: AFP Color Management Architecture (ACMA)	AFPCC
Bar Code Object Content Architecture Reference	AFPC-0005
Color Management Object Content Architecture Reference	AFPC-0006
Font Object Content Architecture Reference	S544-3285
Graphics Object Content Architecture for Advanced Function Presentation Reference	AFPC-0008
Image Object Content Architecture Reference	AFPC-0003
Intelligent Printer Data Stream Reference	AFPC-0001
Mixed Object Document Content Architecture Reference	AFPC-0004
Presentation Text Object Content Architecture Reference	SC31-6803
Fonts	
IBM AFP Fonts: Font Summary for AFP Font Collection	S544-5633
IBM Infoprint Fonts: Font Summary	G544-5846
Using OpenType Fonts in an AFP System	G544-5876
z/OS Font Collection	GA32-1048

Text Processing

Publication	Order number
Document Composition Facility SCRIPT/VS Language Reference	SH35-0070

Print Management

Publication	Order Number
InfoPrint Manager for AIX: Getting Started	G550-1061
InfoPrint Manager for AIX: Introduction and Planning Guide	G550-1060
InfoPrint Manager for AIX: Procedures	G550-1066
InfoPrint Manager for Linux: Getting Started	G550-20263
InfoPrint Manager for Linux: Introduction and Planning Guide	G550-20262
InfoPrint Manager for Linux: Procedures	G550-20264
InfoPrint Manager for Windows: Getting Started	G550-1072
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Printed in USA

S550-0436-04