Print Services Facility

AFP Conversion and Indexing Facility: User's Guide

S544-5285-03

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Note

Before using this information and the product it supports, be sure to read the general information in “Notices” on page 203.

Fourth Edition (March 2002)

This edition applies to AFP™ Conversion and Indexing Facility, which is shipped with Print Services Facility™ 3.3.0 for OS/390® (Program Number 5655-B17), Print Services Facility/MVS™ 2.2.0 (Program Number 5695–040), 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® 3.2.0 (Program Number 5648-B34), and Infoprint Manager for Windows NT® and Windows® 2000 1.1.0 (Program Number 5639–I27). This edition applies to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters. Be sure to use the correct edition for the level of the product.

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About This Publication

This publication describes Advanced Function Presentation™ Conversion and Indexing Facility (ACIF), which is supported by Print Services Facility (PSF) and Infoprint Manager. PSF supports ACIF in the OS/390, z/OS™, MVS, VM, and VSE environments, while Infoprint Manager supports ACIF in the AIX, Windows NT, and Windows 2000 environments. In this publication, the term ″OS/390″ refers to OS/390, z/OS, and MVS, unless otherwise specified; Windows NT/2000 or simply NT/2000 refers to Windows NT and Windows 2000.

Note: ACIF is also supported by Infoprint Server on OS/400®; however, this publication only describes using ACIF with PSF and Infoprint Manager. For information about using ACIF with Infoprint Server on OS/400, refer to *Infoprint Server for iSeries: User's Guide*, G544-5775.

This publication assumes that you are familiar with Advanced Function Presentation (AFP) concepts as well as the parameters that you specify when printing with PSF, Infoprint Manager for AIX, and Infoprint Manager for Windows NT/2000. If you are not familiar with AFP concepts, refer to *Guide to Advanced Function Presentation*. If you are not familiar with the PSF print parameters, refer to : *IBM Infoprint Manager for AIX: User's and Operator's Guide*, *IBM Infoprint Manager: Reference*, or the PSF user's guide for your operating system, as listed in "Bibliography" on page 213.

This publication also assumes that you are familiar with the MO:DCA-P architecture and structured fields. You can order *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:

- 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 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 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 pertaining to ACIF support for AIX, Windows NT/2000, OS/390, VM, and VSE operating environments supported by Infoprint Manager and PSF:

- 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 invoking ACIF.
- Chapter 3, “ACIF Parameters” describes the parameters used for ACIF processing, including syntax rules and parameter values.
- Chapter 4, “Examples of Using ACIF” shows examples of an ACIF application.
- Chapter 5, “User Exits and Input Print File Attributes” describes the exits available for customizing ACIF.
- Chapter 6, “ACIF Messages” provides the ACIF messages, with suggestions for responding to the errors.
- The appendixes contain more information about ACIF:
  - Appendix A, “Helpful Hints” describes some considerations of using ACIF as a front-end preprocessor for viewing, archiving, and retrieving information.
  - Appendix B, “Data Stream Information” describes the structured-field information for indexing.
  - Appendix C, “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, based on the indexing tags.
  - Appendix D, “Format of the Output Document File” shows the three separate output files that ACIF can produce.
  - Appendix E, “Accessibility” describes the accessibility features available in OS/390 and z/OS.

A notices section, glossary, bibliography, and index are included. The bibliography lists the publications containing 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 Mixed Object Document Content Architecture - Presentation (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, Windows NT/2000, OS/390, VM, and VSE systems.

Table 1. Term Definitions

	File	**Library**
AIX	A collection of related data	A directory in which AFP resources are stored
NT/2000	A collection of related data	• A directory • A list of files stored on a disk or diskette
OS/390	• 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
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 Book

This publication uses consistent conventions for the following:
- 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 three-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 only enter 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 and Windows NT/2000, 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={**YES** | **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 book or that contain additional information about Advanced Function Presentation (AFP), the OS/390 or z/OS operating systems, PSF, Infoprint Manager, and related products are listed in the "Bibliography" on page 213.

For additional information about OS/390, z/OS, PSF, and Infoprint Manager, refer to these Web pages:

```
http://www.ibm.com/servers/s390/os390/
http://www.ibm.com/servers/eserver/zseries/zos/
http://www.ibm.com/printers/R5PSC.NSF/web/s390
http://www.ibm.com/printers
```

To obtain the latest documentation updates for OS/390 base elements and optional features that result from DOC APARs and PTFs, refer to the DOC APARs and ++HOLD DOC Web page:

```
http://www.ibm.com/s390/os390/bkserv/new_tech_info.html
```

To obtain the latest documentation updates for PSF for OS/390, refer to these members in SYS1.SAMPLIB:

Member	Publication
APSGCUS3	*PSF for OS/390 & z/OS: Customization*, S544-5622
APSGDGN3	*PSF for OS/390 & z/OS: Diagnosis*, G544-5623
APSGDLG3	*PSF for OS/390 & z/OS: Download for OS/390*, S544-5624
APSGMAC3	*PSF for OS/390 & z/OS: Messages and Codes*, G544-5627
APSGSEC3	*PSF for OS/390 & z/OS: Security Guide*, S544-3291
APSGUSR3	*PSF for OS/390 & z/OS: User's Guide*, S544-5630

Using LookAt to View Message Explanations

LookAt is an online facility that lets you view explanations for OS/390 and z/OS messages, system abends, and some codes. Using LookAt to find information is faster than a conventional search because in most cases LookAt goes directly to the message explanation.

You can access LookAt from the Internet at:

```
http://www.ibm.com/servers/eserver/zseries/zos/bkserv/lookat/lookat.html
```

or from anywhere in OS/390 or z/OS where you can access a TSO command line (for example: TSO prompt, ISPF, UNIX® System Services running OMVS).

To find a message explanation on the Internet, go to the LookAt Web site and simply enter the message identifier (for example, `IAT1836` or `IAT*`). You can select a specific release to narrow your search. You can also download code from the *z/OS Collection* and the LookAt Web site so you can access LookAt from a PalmPilot (Palm VIIx suggested).

To use LookAt as a TSO command, you must have LookAt installed on your host system. You can obtain the LookAt code for TSO from a disk on your *z/OS Collection* or from the LookAt Web site. To obtain the code from the LookAt Web site, do the following:

1. Go to

   `http://www.ibm.com/servers/eserver/zseries/zos/bkserv/lookat/lookat.html`
2. Click the **News** button.
3. Scroll to **Download LookAt Code for TSO and VM.**
4. Click the ftp link, which will take you to a list of operating systems. Select the appropriate operating system. Then select the appropriate release.
5. Find the **lookat.me** file and follow its detailed instructions.

To find a message explanation from a TSO command line, simply enter: **lookat** *message-id*. LookAt will display the message explanation for the message requested.

Note: Some messages have information in more than one book. For example, IEC192I has routing and descriptor codes listed in *z/OS MVS Routing and Descriptor Codes*. For such messages, LookAt prompts you to choose which book to open.

Summary of Changes

Summary of Changes for AFP Conversion and Indexing Facility: User's Guide, S544-5285-03

This publication contains additions and changes to information previously presented in *AFP Conversion and Indexing Facility: User's Guide*, S544-5285-02. The technical additions and changes are marked with a revision bar (|) in the left margin.

These general changes have been made throughout the book:

- References to MVS/ESA™ have been removed because IBM no longer services this operating system.

The following information is new or updated:

- A new section has been added that explains how to use the LookAt tool to view OS/390 and z/OS message explanations. See "Using LookAt to View Message Explanations" on page xiv.
- ACIF now supports XML data. See "XML Data" on page 4.
- A new attribute, **BDTLY**, has been added to the **INDEXOBJ** parameter. See page 47.
- The description of specifying an '*' for **TRIGGER1** has been clarified. See "TRIGGERn" on page 67.
- The description of when to specify **NO** on the **UNIQUEBNGS** parameter has been updated. See "UNIQUEBNGS" on page 68.
- The examples for concatenating Windows NT/2000 output files have been updated and separated into a separate section from the AIX files. See "Concatenating ACIF Output Files" on page 86.
- Chapter 6, "ACIF Messages" on page 103 has been updated with these new or updated messages:

APK158I	APK343I	APK2033I	APK2046I	APK2054I
APK263S	APK352I	APK2039I	APK2047I	APK2055I
APK319I	APK366I	APK2040I	APK2048I	APK2056I
APK330I	APK367I	APK2041I	APK2049I	APK2057I
APK337I	APK2008I	APK2042I	APK2050I	APK3506I
APK339I	APK2011I	APK2043I	APK2051I	APK3507I
APK340I	APK2014I	APK2044I	APK2052I	
APK342I	APK2019I	APK2045I	APK2053I	

- A new appendix has been added that describes the accessibility features available in OS/390 and z/OS. See Appendix E, "Accessibility" on page 201.
- The term "alphanumeric" has been defined in the glossary. The term "national characters" has been removed from the text and replaced with the term "special characters (# & @)".

Message APK345I has been removed.

Chapter 1. Understanding ACIF

AFP Conversion and Indexing Facility (ACIF) is a batch application development utility that lets you create documents by formatting line data (record format and traditional), XML data, MO:DCA print files, and unformatted ASCII files with IBM Infoprint Manager or IBM Print Services Facility (PSF). Infoprint Manager supports ACIF in the AIX and Windows NT/2000 environments, while PSF supports ACIF in the OS/390, VM, and VSE environments. ACIF also provides indexing and resource retrieval capabilities that let you view, distribute, archive, and retrieve document files across systems and platforms.

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

Overview

With ACIF you can:

- Convert line data, XML data, or mixed data into MO:DCA-P data, which is an architected, device-independent data stream used for interchanging documents between different platforms.
- 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 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 NT/2000 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 the following:

- Use PSF or Infoprint Manager to print the AFP document file. If you have 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 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 as well as large enterprise installations with hundreds of system users. OnDemand provides a server to store report files and other types of business documents. End-users can search for and retrieve files from the server with client programs that run under Microsoft® Windows and MVS CICS/ESA®. OnDemand supports full fidelity viewing 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, 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 the text data, which can be provided and used by various AFP and AFP-compatible products, that can feed into ACIF for processing. 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.

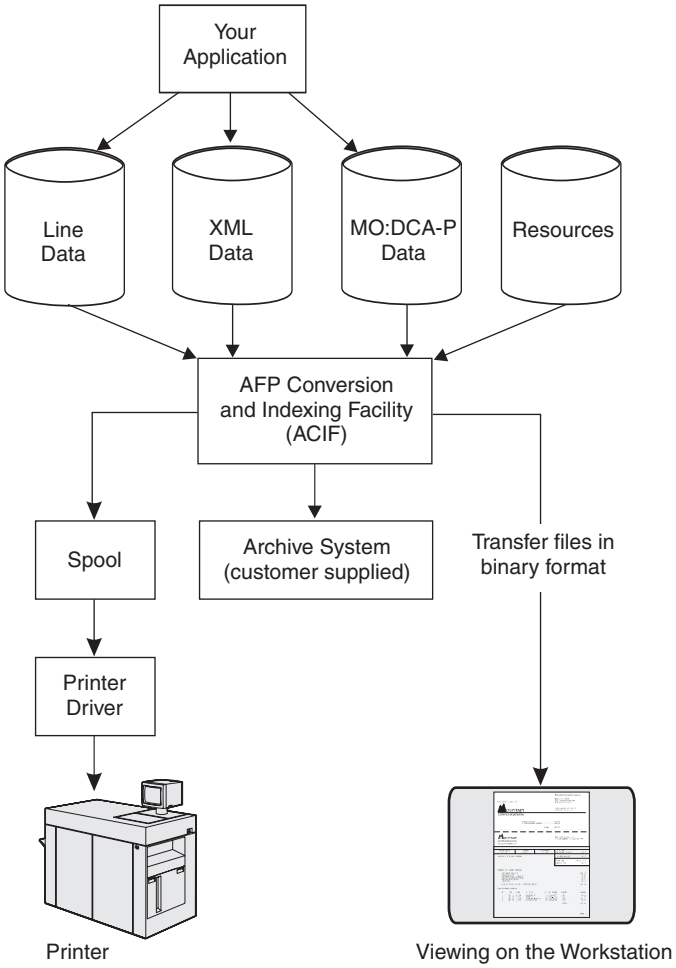


Figure 1. How ACIF Fits into Advanced Function Presentation

ACIF Functions

You can use ACIF to perform these functions:

- Convert data streams
- Index documents
- Retrieve resources

Convert 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 NT/2000 only)

The following sections describe each type of data and refer you to additional publications, if you need to better understand them:

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. For more information on this data stream format, refer to *Mixed Object Document Content Architecture Reference*, which points to publications describing the other types of data objects.

Mixed Object Document Content Architecture Data

ACIF supports MO:DCA-P data as a valid input data stream, with these restrictions:

- Every structured field must appear 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 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 contains only one BDT/EDT structured-field pair. See “Output MO:DCA-P Data Stream” on page 198 for information about the changes ACIF makes to support MO:DCA-P output format.

For more information about this data stream, refer to *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 prepared for printing on a line printer. Record format line data is a form of line data where each record is preceded by a 10–byte 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, refer to *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, refer to *Advanced Function Presentation: Programming Guide and Line Data Reference*.

XML Data

Data that has been identified 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 processed by ACIF can be encoded in EBCDIC, ASCII, UTF-8 or UTF-16. For more information about XML data, refer to *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 the workstation environment and is not formatted for printing. Unformatted ASCII data is formatted by ACIF using a page definition resource. ASCII data containing 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 (using a Proprinter emulation font and 60 lines per page, for example).

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 AIX and Infoprint Manager for Windows NT/2000. For information about how to create page definitions using PPFA, refer to *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 describing a single customer's account. For example, a bank-statement application probably produces a large printout consisting 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.

Using ACIF, you can also create an index object file, which lets you:

- Retrieve individual statements from storage, 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 Tagged Logical Element [TLE] structured fields, which are described in Appendix A, "Helpful Hints" and Appendix B, "Data Stream Information") You can use the indexing-tag structured fields to identify a group of pages.[1] Figure 2 on page 6 shows the relationship between the group-level tags and the entries in the index object file.

1. With ACIF, you can generate group-level tags; with Document Composition Facility (DCF) and AFP Toolbox, you can generate both group-level tags and page-level tags. See "IBM Products Used with ACIF" on page 14 for more information about these products.

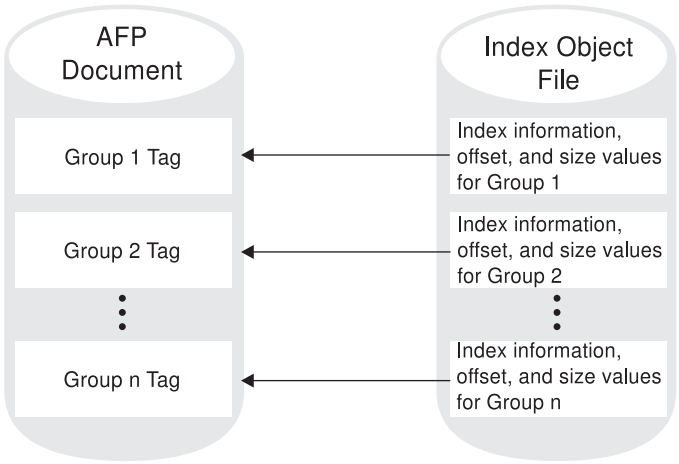


Figure 2. AFP Document with Index Tags and the Index Object File

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

- Line data, XML data, or mixed-mode data
- Unformatted ASCII data
- AFP data 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 produced by any other application

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

- 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.*
- Use values present in the input data itself, when the data has been formatted 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 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 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 using the account number, and you can retrieve and view the same statement using the account number. If the data value you want to use in an indexing tag is consistently located 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: 09/30/99
 CHECK# 001 - 455.00
 CHECK# 002 - 337.85
 ...
1ACCOUNT NUMBER: 333-56-4378-5        PAGE 1
 CUSTOMER NAME: KATHERINE CHARLES
 DATE: 09/30/99
 CHECK# 221 - 5.00
 CHECK# 222 - 1567.35
 ...
```

Figure 3. Example Bank Statement Input File

In Figure 3, the print file contains bank statements dated September 30, 1999 (09/30/99). 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 using 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 (carriage control characters, no carriage control characters, table-reference characters, and so on), 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 using the account number and the date, first define the trigger values and the fields as shown in Figure 4 on page 8.

```
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 containing 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 containing **TRIGGER1** as the anchor point. The **FIELDn** 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 has extracted 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. ACIF inserts structured fields before the corresponding pages of the output file where it finds the matches in the input file. ACIF also places structured fields that point to these matches in the index object 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 could add the index triggers. One possible location is the record containing the new-page carriage-control character (for example, a skip-to-channel 1). The application would need to add the indexing trigger and attribute value to this record at a specified location on each statement in the print file. This allows ACIF to retrieve this information at processing time. (For information about different types of carriage control characters, see "CCTYPE" on page 31 for a description of the parameter.)

Retrieving Resources

ACIF can determine the list of required AFP resources 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 platform in a distributed print environment.

When you archive a document, ACIF also lets you 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 at a later date, even if the resources have changed since that time. 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 requested by the print file:

  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=FDEF,FONT,PSEG,OVLY,OBJCON,BCOCA,GOCA,IOCA** or **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 OS/390 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 platforms (for example, Infoprint Manager for Windows NT/2000) or when storing a print file in an archive system (for example, Content Manager OnDemand).
- 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 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 4, "Examples of Using ACIF" on page 71.

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 you 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 (3a) to the AFP document (3b). 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 (3c) 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.

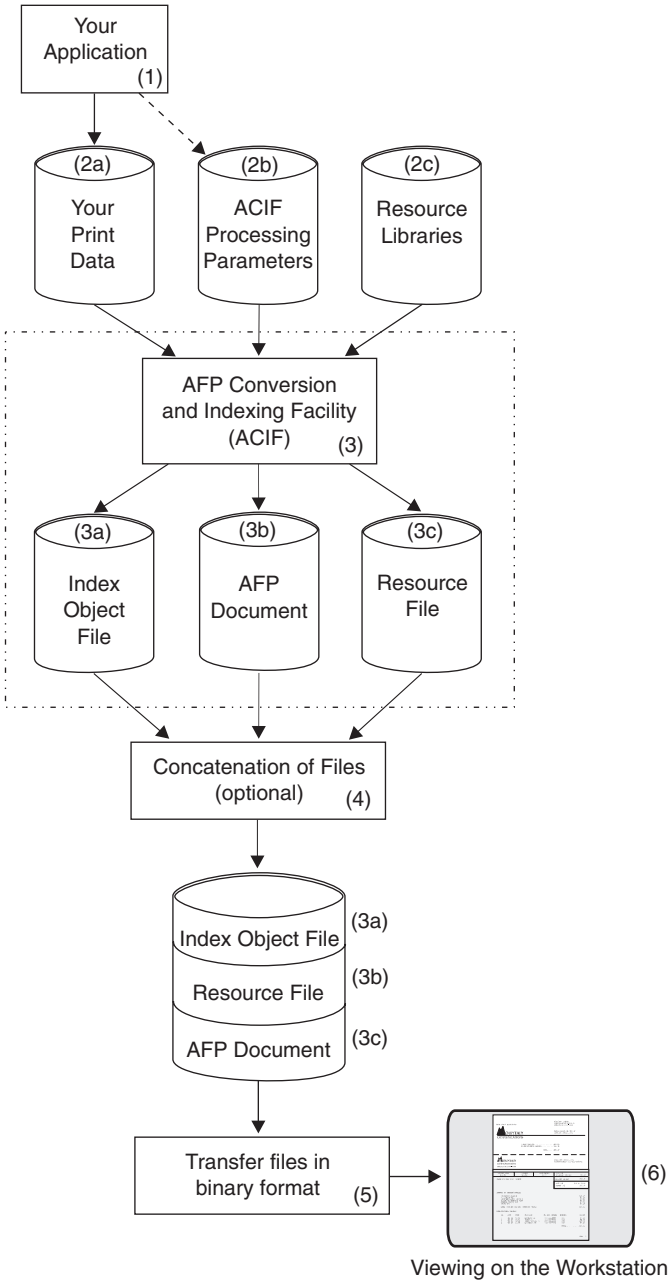


Figure 5. Using ACIF to Prepare Files for Viewing

Preparing Files for Printing

Figure 6 on page 13 shows the steps you 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 AIX or Windows NT/2000, and your resources reside on another operating system, you can use the Network File System (NFS) to mount them to the AIX or Windows NT/2000 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 platform, concatenate the AFP document file to the end of the resource file before submitting the file to PSF or Infoprint Manager. If your resources are already present on the remote PSF or Infoprint Manager platform, you do not have to concatenate or transmit them.
3. Submit (3) your MO:DCA-P print job to PSF or Infoprint Manager.

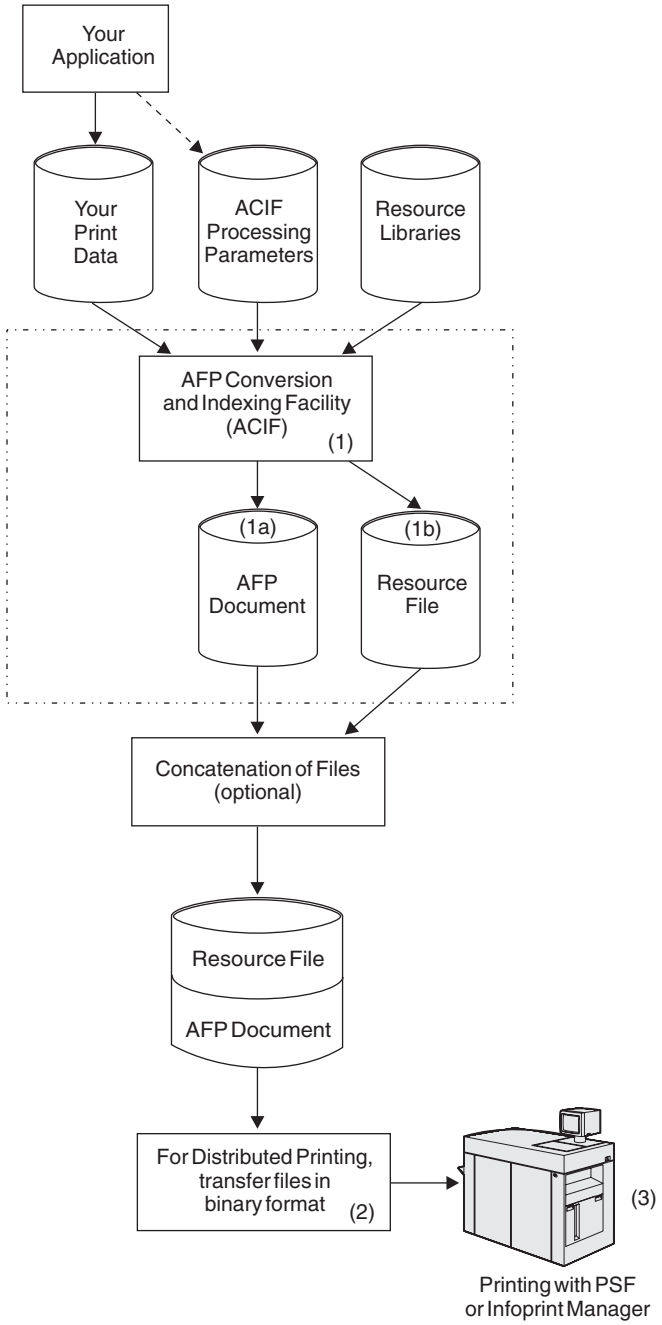


Figure 6. Using ACIF to Prepare Files for Distributed Printing

Preparing Files for Archiving and Retrieval

Figure 7 on page 14 shows the steps 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.

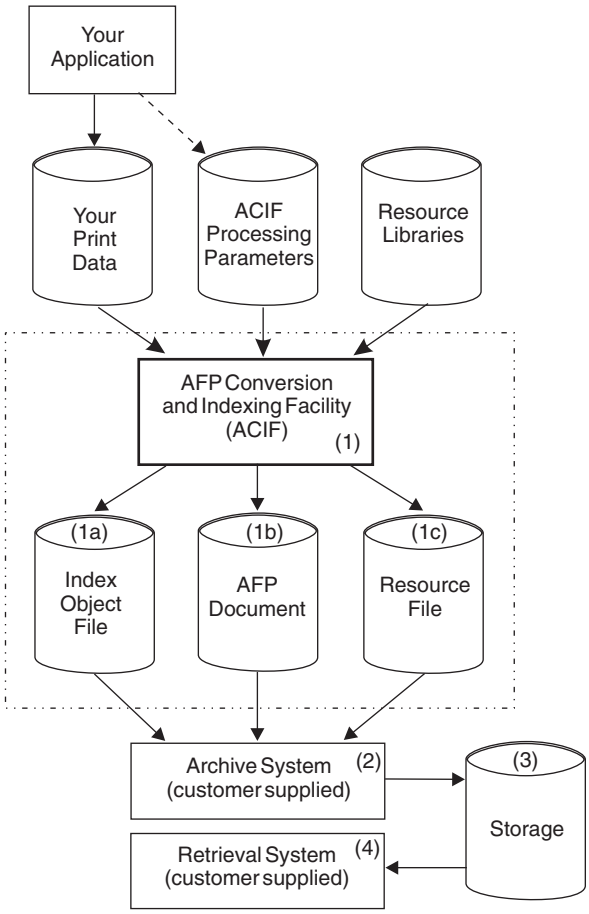


Figure 7. Using ACIF to Prepare Files for Archiving and Retrieving

IBM Products Used with ACIF

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

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

AFP Workbench Viewer

Figure 8 on page 15 shows how AFP Workbench Viewer can display documents on a workstation running Microsoft Windows 3.1, Windows 95/98, Windows NT/2000, or OS/2® operating systems. These documents can contain an index object file and a resource group.

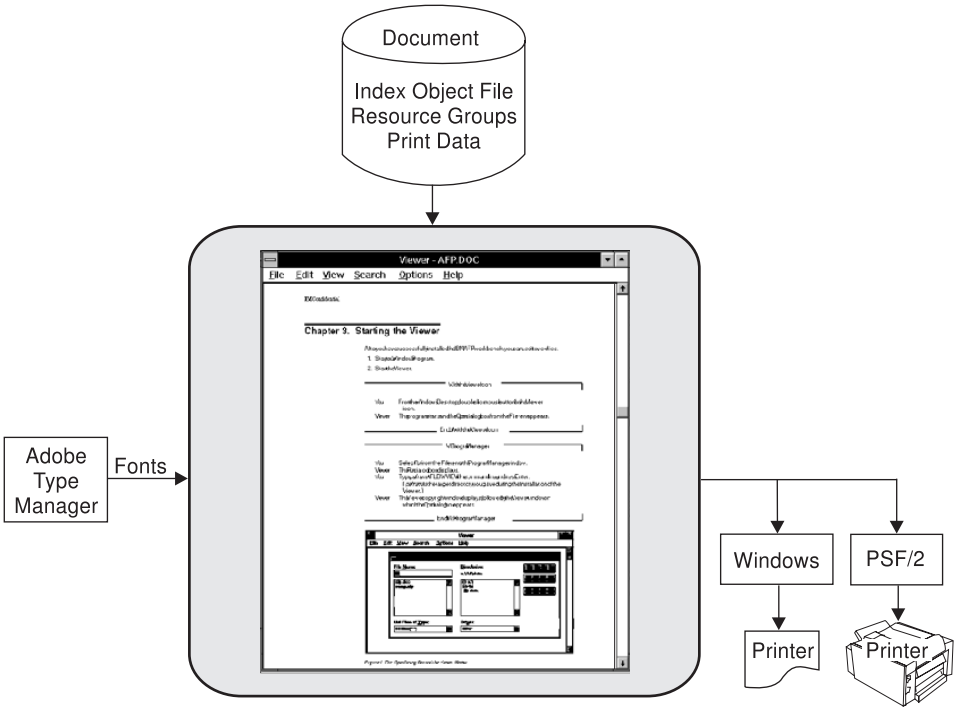


Figure 8. AFP Workbench Viewer

AFP Workbench Viewer uses Adobe Type 1 or true type outline fonts when displaying documents. If the document references a 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 to let you define which Type 1 fonts are to be substituted for your AFP fonts. Because AFP Workbench Viewer does not use AFP fonts, you do not need to specify the **RESTYPE**=**FONT** ACIF parameter when preparing a document to use with AFP Workbench Viewer.

When 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. (It is important that the document file comes last, at the end of the resulting concatenated file; otherwise, an error occurs.)

AFP Workbench Viewer limits the size of the attribute names in indexing information to 64 bytes. When indexing data for viewing, make your attribute names unique within the first 64 bytes. (ACIF allows up to 250 bytes for attribute names.)

AFP Workbench Viewer supports a subset of MO:DCA-P data and might not display everything that PSF or Infoprint Manager can print. For example, AFP Workbench Viewer for Windows 95 and Windows NT recognizes but ignores bar code (BCOCA) objects, whereas PSF and Infoprint Manager can print these objects.

AFP Toolbox for Multiple Operating Systems

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:

- 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 using a wide variety of fonts.
- Create graphical data objects such as pie charts and bar charts.

AFP Toolbox is available on OS/390, AIX, OS/2, and OS/400 platforms.

Document Composition Facility (DCF)

Document Composition Facility (DCF) is a program 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 OS/390, VM, or VSE environments. Along with its many other features, DCF provides the ability to 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 very 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 further information about DCF, refer to *Document Composition Facility SCRIPT/VS Language Reference*. Note that DCF is not applicable to the AIX or Windows NT/2000 environment.

What Are the System Considerations for ACIF?

You must consider these when using ACIF:

- System limitations
- System prerequisites

System Limitations

If you are using ACIF to build applications for PSF for OS/390, PSF/MVS, PSF/VM, or PSF/VSE, you need to take the following limitations into consideration:

PSF for OS/390 and PSF/MVS Limitations

To print an ACIF output file that contains indexing information, you must have either PSF/MVS 2.2.0 or PSF 3.1.0 for OS/390 or higher installed.

Note: PSF/MVS is mentioned in this publication even though IBM no longer services this product after April 2002.

PSF/VM Limitations

To print an ACIF output file that contains indexing information, you must have PSF/VM 2.1.1 or PSF/VM 2.1.0 with PTF UN37799 installed.

PSF/VSE Limitations

PSF/VSE does not support inclusion of fonts, page segments, and overlays in the print file. If you use ACIF to retrieve these resources, do not concatenate the ACIF resource file to the print file. If you want to print an ACIF output document using PSF/VSE, ensure that the resources are present on that platform.

To print an ACIF output file that contains indexing information, you must have either PSF/VSE 2.2.1 or PSF/VSE 2.2.0 with APAR DY42845 installed.

System Prerequisites

The following section describes system prerequisites necessary to use ACIF in the AIX, Windows NT/2000, OS/390, VM, and VSE environments.

AIX Prerequisites

Infoprint Manager for AIX 3.2.0 is required to use ACIF. This version of Infoprint Manager requires AIX version 4.2.1 or higher.

Note: PSF for AIX is no longer serviced.

Windows NT/2000 Prerequisites

Infoprint Manager for Windows NT and Windows 2000 1.1.0 or higher is required to use ACIF.

OS/390 Prerequisites

These OS/390 software products are required to use ACIF:

- OS/390 2.8.0 or higher or z/OS 1.1.0 or higher
- PSF/MVS 2.2.0 or PSF 3.1.0 for OS/390 or higher

VM Prerequisites

These VM software products are required to use ACIF:

- VM/SP 5 or higher
- VM/SP HPO 5 or higher
- VM/XA 1.2.1 or higher
- VM/ESA® 1.1.0 or higher

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

VSE Prerequisites

These VSE software products are required to use ACIF:

- VSE/SP 4.1.2 or higher
- VSE/ESA™ 1.1.0 or higher

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

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

Chapter 2. Using ACIF

This chapter describes how to invoke ACIF in AIX, Windows NT/2000, OS/390, VM, and VSE environments.

Using ACIF in AIX and Windows NT/2000

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:

- Print the file on a printer defined to Infoprint Manager for AIX, Infoprint Manager for Windows NT/2000, or to other PSF products.
- View the file using a viewer product such as AFP Workbench Viewer.
- Archive and retrieve the file using your own archival management system.

ACIF searches for resources in AIX in this order:

1. Paths specified by the **USERLIB** parameter
2. Paths specified by the **FDEFLIB**, **FONTLIB**, **PDEFLIB**, **PSEGLIB**, **OBJCONLIB**, and **OVLYLIB** parameters for specific types of resources
3. Paths specified by the **RESLIB** parameter
4. Paths specified by the **PSFPATH** environment variable
5. The directory **/usr/lpp/psf/reslib**
6. The directory **/usr/lpp/afpfonts**

   In Infoprint Manager for AIX, the fonts are included in the AFP Font Collection. Refer to *IBM AFP Fonts: Font Summary for AFP Font Collection* for more information.
7. The directory **/usr/lpp/psf/fontlib**

ACIF searches for resources in Windows NT/2000 in this order:

1. Paths specified by the **USERLIB** parameter
2. Paths specified by the **FDEFLIB**, **FONTLIB**, **PDEFLIB**, **PSEGLIB**, **OBJCONLIB**, and **OVLYLIB** parameters for specific types of resources
3. ACIF uses the Windows registry to locate:
   a. Default **RESLIB** (*install_directory***reslib**)
   b. Default **FONTLIB** (*install_directory***fontlib**)
   c. AFP Font Collection

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 2 on page 20 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 2. File Extensions for Resources

Type of Resource	File Extensions Searched (see Note)
Form definitions	1. No file extension 2. FDEF3820 3. FDEF38PP 4. FDE
Page definitions	1. No file extension 2. PDEF3820 3. PDEF38PP 4. PDE
Fonts, 240-pel resolution	1. No file extension 2. 240 3. FONT3820 4. FONT38PP
Fonts, 300-pel resolution	1. No file extension 2. 300 3. FONT300
Fonts, outline	1. No file extension 2. OLN 3. FONTOLN
Page segments	1. No file extension 2. PSEG3820 3. PSEG38PP 4. PSG
Overlays	1. No file extension 2. OVLY3820 3. OVLY38PP 4. OVL
BCOCA (bar code) objects	1. No File extension
GOCA (graphics) objects	1. No File extension
IOCA (IO image) objects	1. No File extension
Coded fonts	1. No file extension 2. FONT3820 3. FONT38PP 4. CFT
Setup data	1. No file extension 2. SETUP 3. SET 4. COMSETUP
Note: All file extensions must be in uppercase format.	

You can use ACIF to prepare line data, XML data, mixed-mode data, or unformatted ASCII files. At print submission time, to *automatically* invoke the **acif** command for the purpose of preparing line data, XML data, mixed-mode data, or unformatted ASCII files for printing with Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000, use the **-odatatype=line** flag and keyword-value pair with one of the AIX print commands (**enq**, **lp**, or **qprt**), or use the **psfin** command to specify a job script with a setting of **-JsFiletype=line**.

Note: The **line2afp** command of Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000 is the same as the **acif** command and uses the **acif** command parameters for conversion to produce output for printing. As does

ACIF, 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 **line2afp** command is described in *IBM Infoprint Manager: Reference*.

ACIF and the **line2afp** command use the following parameters for *conversion*: **CC**, **CCTYPE**, **CHARS**, **EXTENSIONS**, **FDEFLIB**, **FILEFORMAT**, **FONTLIB**, **FORMDEF**, **IMAGEOUT**, **INPEXIT**, **INPUTDD**, **INSERTIMM**, **MCF2REF**, **MSGDD**, **OUTEXIT**, **OUTPUTDD**, **OVLYLIB**, **PAGEDEF**, **PARMDD**, **PDEFLIB**, **PRMODE**, **PSEGLIB**, **RESEXIT**, **RESLIB**, **TRC**, and **USERLIB**.

ACIF uses the following parameters for *resource retrieval*: **COMSETUP**, **FDEFLIB**, **FONTLIB**, **FORMDEF**, **OBJCONLIB**, **OVLYLIB**, **PSEGLIB**, **RESEXIT**, **RESOBJDD**, and **RESTYPE**.

ACIF uses the following parameters for its *indexing* functions: **CPGID**, **DCFPAGENAMES**, **FIELD***n*, **GROUPNAME**, **INDEX***n*, **INDEXDD**, **INDEXOBJ**, **INDEXSTARTBY**, **INDXEXIT**, and **TRIGGER***n*.

Implementation Specifics

The **acif** command is part of Infoprint Manager for AIX and Infoprint Manager for Windows NT/2000.

Files

The executable program (acif command)

- AIX: **/usr/lpp/psf/bin/acif**
- NT/2000: *****install_directory***\bin\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**
- NT/2000: *****install_directory***\exits\acif\apkinp.c, apkind.c, apkres.c, apkout.c, apka2e.c, asciinp.c, asciinpe.c**

Sample user exit executables

- AIX: **/usr/lpp/psf/bin/apka2e, apkinp, apkind, apkres, apkout, asciinp, asciinpe**
- NT/2000: use *.dsw files to build

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

- AIX: **/usr/lpp/psf/bin/Makefile**
- NT/2000: use *.dsw files to build

C language header file for ACIF user exits

- AIX: **/usr/lpp/psf/acif/apkexits.h**
- NT/2000: *****install_directory***\exits\acif\apkexits.h**

Note: Infoprint Manager for AIX must be installed if you want to use the examples documented in this publication that contain path names indicating **/psf/**; for example:

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

Infoprint Manager for Windows NT/2000 must be installed if you want to use the examples documented in this publication that contain path names indicating **\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 NT/2000 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

Refer to these publications for more information about printing with Infoprint Manager, form definitions, and page definitions:

- *IBM Infoprint Manager: Reference* for information about transforming line data for printing with Infoprint Manager and for information about form definitions and page definitions supplied with Infoprint Manager for AIX and Infoprint Manager for Windows NT/2000.
- *Page Printer Formatting Aid: User's Guide*for information about how to create your own form definitions and page definitions.
- *IBM InfoPrint Manager for AIX: Administrator's Guide* and *IBM InfoPrint Manager for AIX: User's and Operator's Guide*.

Using ACIF in OS/390

Figure 9 contains sample JCL to invoke 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=*.USERAPPL.PRINTOUT
//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 parms go here
```

Figure 9. Sample OS/390 JCL to Invoke ACIF

OS/390 JCL Statements for Invoking ACIF

The JCL statements in Figure 9 are explained in this section. For more information about programming JCL, refer to *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 invokes 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 terminates 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 a variety of 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 22 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 22, 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 22 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. This statement is not required if **RESTYPE=NONE** is specified in the processing parameter data set. See "RESTYPE" on page 64 for more information about the **RESTYPE** parameter.

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

Using ACIF in VM

Figure 10 contains sample VM/CMS commands to invoke 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 Invoke ACIF

VM/CMS Commands for Invoking ACIF

The CMS commands in Figure 10 are explained as follows.

USERAPPL
Invokes 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 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
Invokes 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 containing the ACIF processing parameters. If **PARMDD** is not specified, ACIF uses **SYSIN** as the default DD name and terminates 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 a variety of informational or error messages. If **MSGDD** is not specified as an invocation parameter, ACIF uses **SYSPRINT** as the default DD name and terminates processing if **SYSPRINT** is not defined. **MSGDD** requires a 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 that used in OS/390.

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 to invoke 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 Invoke ACIF

VSE JCL Statements for Invoking ACIF

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

PRNTOUT
Defines the output file 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 to run 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.

// ASSGN SYS006,... // DLBL INPUT,... // EXTENT SYS006,...
Defines the file to be processed by ACIF. In Figure 11 on page 25, 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 **OUTPUTDD** on page 54 for the characteristics of this file.

// ASSGN SYS008,... // DLBL RESOBJ,... // EXTENT SYS008,...
Defines the optional file in which ACIF places print resources used in processing the application's print file. This file is not required if **RESTYPE=NONE** is specified in the processing parameter file. See "RESTYPE" on page 64 for more information about the **RESTYPE** parameter.

// 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 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
Invokes 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 NT/2000, OS/390, VM, and VSE operating systems.

Many of the parameters specified to ACIF are the same as the parameters specified to PSF or Infoprint Manager when you print a job. For those parameters that are common to both PSF or Infoprint Manager and ACIF, such as **OBJCONLIB**, **FONTLIB**, and **PSEGLIB**, you should specify the same parameter value to ACIF as specified to PSF or Infoprint Manager.

Notes:

1. For AIX or Windows NT/2000, you might need to consult with your system support group for information about resource directories and other printing defaults contained in the Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000 printer profiles used in your installation.
2. For OS/390 and VSE, you might need to consult with your system programmer for information about resource library names and other printing defaults contained in the PSF startup procedures used in your installation.
3. For VM/CMS, you might need to link to the appropriate disks containing the resource files used to convert and print your job.

Syntax Rules

The following are general syntax rules for ACIF parameter files:

- Blank characters 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 the following is specified:

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

  ACIF uses code page 395.

- Comments must be specified 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 following the "/*" character string.

- Although ACIF supports parameter values spanning multiple records, it does not support multiple parameters in a single record. The following is an example of this:

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

Syntax Rules for AIX and Windows NT/2000

In AIX and Windows NT/2000, you can enter ACIF parameters with the **acif** command, in a parameter file, or both. If both are used, the value specified in the parameter file overrides the value specified with the **acif** command. To use a parameter file in AIX or Windows NT/2000, specify the parameter file name with the **acif** command and the **PARMDD** parameter. For example, to use a parameter file named `PARMFILE`, specify:

```
acif parmdd=PARMFILE
```

The syntax for entering parameters with the **acif** command is:

acif [cc=*value*] [**cctype=***value*] [**chars=***fontnames*] [**comsetup=***name*] [**cpgid=***value*] [**dcfpagenames=***value*] [**extensions=***value*] [**fdeflib=***pathlist*] [**field***n*={ *record,column,length*} | {*'literal value'* | **X***'literal value'*}] [**fileformat=***value*] [**fontlib=***pathlist*] [**formdef=***fdefname*] [**groupname=***value*] [**imageout=***value*] [**index***n={'attribute name'* | **X***'attribute name'*}{*,field definition*}] [**indexdd=***filename*] [**indexobj=***value*] [**indexstartby=***value*] [**indxexit=***programname*] [**inpexit=***programname*] [**inputdd=***filename*] [**insertimm=***value*] [**mcf2ref=***value*] [**msgdd=***filename*] [**objconlib=***pathlist*] [**outexit=***programname*] [**outputdd=***filename*] [**ovlylib=***pathlist*] [**pagedef=***pdefname*] [**parmdd=***filename*] [**pdeflib=***pathlist*] [**prmode=***value*] [**pseglib=***pathlist*] [**resexit=***programname*] [**reslib=***pathlist*] [**resobjdd=***filename*] [**restype=***value*] [**trc=***value*] [**trigger***n*= {*record* | *},{*column* | * },{*'trigger value'* | **X***'trigger value'*}] [**userlib=***pathlist*]

The syntax shown here is what the **acif** command expects to receive. For example, acif expects to receive literal single quote characters for the **field**, **index**, and **trigger** parameters. In order for ACIF to receive these single quote characters, you must “escape” the quote characters so that your shell will not parse them. The way you “escape” quote characters depends on the shell you are using. If you need guidance in passing the **acif** command parameter syntax through the shell, refer to the documentation for the shell you are using in *AIX RISC System/6000 Commands Reference*.

| Though the parameters themselves are not case-sensitive, associated values, such
| as file names, attribute names, and directory names in AIX and attribute names in
| Windows NT/2000, *are* case-sensitive. For example,
|
| ```
| formdef=F1MINE
| ```
|
| is *not* the same as
|
| ```
| formdef=f1mine
| ```

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).

Syntax Rules for OS/390, VM, and VSE

In OS/390, 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 additional 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:

OS/390

```
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

Table 3 lists the ACIF parameters and the values for the AIX, Windows NT/2000, OS/390, VM, and VSE operating systems. 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. The Windows NT/2000 operating system is referred to as "NT" in the table.

Table 3. ACIF Parameters and Operating Systems

ACIF Parameters	Operating System	See Page...
CC={**YES** | **NO**}	AIX, NT, OS/390, VM, VSE	31
CCTYPE={**Z** | **A** | **M**}	AIX, NT	32
CCTYPE={**Z** | **A** | **M**}	OS/390, VM, VSE	32
CHARS=*fontname1*[,*fontname2*] [,*fontname3*][,*fontname4*]	AIX, NT, OS/390, VM, VSE	32
COMSETUP=*name*	AIX, NT, OS/390, VM	34
CPGID={**850** | *codepageid*}	AIX, NT	35
CPGID={**500** | *codepageid*}	OS/390, VM, VSE	36
DCFPAGENAMES={**YES** | **NO**}	AIX, NT, OS/390, VM, VSE	36
EXTENSIONS={**NONE** | **ALL** | [**PRCOLOR**][,**BOX**][,**FRACLINE**][,**CELLED**][,**SPCMPRS**[}	AIX, NT, OS/390, VM, VSE	36
FDEFLIB=*pathlist*	AIX, NT	37
FDEFLIB=*dsname1*[, *dsname2*][,*dsname3...*]	OS/390	37
FDEFLIB=*filetype1*[,*filetype2*][,*filetype3...*]	VM	38
FIELD*n*={*record,column,length*} | {*'literal value'* | **X***'literal value'*}	AIX, NT, OS/390, VM, VSE	38
FILEFORMAT={**RECORD** | **RECORD,*n*** | **STREAM** | **STREAM,(NEWLINE=X'*nnnn*')**}	AIX, NT	40
FONTECH=**UNBOUNDED**	OS/390, VM, VSE	41
FONTLIB=*pathlist*	AIX, NT	41
FONTLIB=*dsname1*[,*dsname2*][,*dsname3...*]	OS/390	42
FONTLIB=*filetype1*[,*filetype2*][,*filetype3...*]	VM	42
FORMDEF=*fdefname*	AIX, NT, OS/390, VM, VSE	43
GROUPNAME={**INDEX1** | **INDEX***n*}	AIX, NT, OS/390, VM, VSE	45
IMAGEOUT={ASIS | **IOCA**}	AIX, NT, OS/390, VM, VSE	45

Table 3. ACIF Parameters and Operating Systems (continued)

ACIF Parameters	Operating System	See Page...
INDEX*n*={*'attribute name'* | **X***'attribute name'*}{,**FIELD***n***[,FIELD***n***...]}**	AIX, NT, OS/390, VM, VSE	45
INDEXDD={**INDEX** | *filename*}	AIX, NT	46
INDEXDD={**INDEX** | *ddname*}	OS/390, VM	47
INDEXDD={**INDEX** | *filename* (**DEVT**=**TAPE** | **DISK**)}	VSE	47
INDEXOBJ={**GROUP** | **ALL** | **NONE** | **BDTLY**}	AIX, NT, OS/390, VM, VSE	47
INDEXSTARTBY={**1** | *nn*}	AIX, NT, OS/390, VM, VSE	48
INDXEXIT=*programname*	AIX, NT	48
INDXEXIT=*modulename*	OS/390, VM, VSE	49
INPEXIT=*programname*	AIX, NT	49
INPEXIT=*modulename*	OS/390, VM, VSE	49
INPUTDD={**STDIN** | *filename*}	AIX, NT	50
INPUTDD={**INPUT** | *ddname*}	OS/390, VM	50
INPUTDD={**INPUT** | *filename* (**LRECL**=*nnnn*,**BLKSIZE**=*nnnn*, **RECFM**=**F**|**FB**| **V**|**VB**,**DEVT**=**TAPE**|**DISK**)}	VSE	50
INSERTIMM={**YES** | **NO**}	AIX, NT, OS/390, VM, VSE	51
MCF2REF={**CPCS** | **CF**}	AIX, NT, OS/390, VM, VSE	51
MSGDD={**STDERR** | *filename*	AIX, NT	51
MSGDD={**SYSPRINT** | *ddname*}	OS/390, VM	51
OBJCONLIB=*pathlist*	AIX, NT	52
OBJCONLIB=*dsname1*[,*dsname2*][,*dsname3...*]	OS/390	52
OBJCONLIB=*filetype1*[,*filetype2*][,*filetype3...*]	VM	53
OUTEXIT=*programname*	AIX, NT	53
OUTEXIT=*modulename*	OS/390, VM, VSE	53
OUTPUTDD={**STDOUT** | *filename*}	AIX, NT	53
OUTPUTDD={**OUTPUT** | *ddname*}	OS/390, VM	54
OUTPUTDD={**OUTPUT** | *filename* (**DEVT**=**TAPE** | **DISK**)}	VSE	54
OVLYLIB=*pathname*	AIX, NT	54
OVLYLIB=*dsname1*[,*dsname2*][,*dsname3...*]	OS/390	55
OVLYLIB=*filetype1*[,*filetype2*][,*filetype3...*]	VM	55
PAGEDEF=*pdefname*	AIX, NT, OS/390, VM, VSE	56
PARMDD=*filename*	AIX, NT	58
PARMDD={**SYSIN** | *ddname*}	OS/390, VM	58
PDEFLIB=*pathlist*	AIX, NT	58
PDEFLIB=*dsname1*[,*dsname2*][,*dsname3...*]	OS/390	58
PDEFLIB=*filetype1*[,*filetype2*][,*filetype3...*]	VM	59
PRMODE={**SOSI1** | **SOSI2** | **SOSI3** | *aaaaaaaa*}	AIX, NT, OS/390, VM, VSE	59
PSEGLIB=*pathlist*	AIX, NT	60
PSEGLIB=*dsname1*[,*dsname2*][,*dsname3...*]	OS/390	60
PSEGLIB=*filetype1*[,*filetype2*][,*filetype3...*]	VM	61
RESEXIT=*programname*	AIX, NT	61

Table 3. ACIF Parameters and Operating Systems (continued)

ACIF Parameters	Operating System	See Page...
RESEXIT=*modulename*	OS/390, VM, VSE	62
RESFILE={**SEQ** | **PDS**}	OS/390	62
RESLIB=*pathlist*	AIX, NT	63
RESOBJDD={**RESOBJ** | *filename*}	AIX, NT	63
RESOBJDD={**RESOBJ** | *ddname*}	OS/390, VM	63
RESOBJDD={**RESOBJ** | *filename* (**DEVT**=**TAPE** | **DISK**)}	VSE	64
RESTYPE={**NONE** | **ALL** | [**FDEF**][**,PSEG**][**,OVLY**][**,FONT**][**,OBJCON**][**,BCOCA**][**,GOCA**][**,IOCA**][**,INLINE**]}	AIX, NT, OS/390, VM, VSE	64
TRACE={YES | **NO**}	OS/390	66
TRC={YES | **NO**}	AIX, NT, OS/390, VM, VSE	66
TRIGGERn={*record* | ***},{*column* | ***},{*'triggervalue'* | **X***'triggervalue'*}	AIX, NT, OS/390, VM, VSE	67
UNIQUEBNGS={**YES** | **NO**}	OS/390, VM, VSE	68
USERLIB=*pathlist*	AIX, NT	69
USERLIB=*dsname1*[,*dsname2*][,*dsname3...*]	OS/390	69
USERLIB=*filetype1*[,*filetype2*][,*filetype3...*]	VM	70

The following sections describe the ACIF parameters. The format and usage is the same in all environments (AIX, Windows NT/2000, OS/390, 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, as well as 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.

AIX and Windows NT/2000

CCTYPE={Z | A | M}

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

OS/390, VM, and VSE

CCTYPE=Z | A | M

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

CHARS

Specifies the file name (in AIX, Windows NT/2000, or VM) or the member name (in OS/390 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.

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 two-character prefix of the coded-font name (X0 through XG). In AIX and Windows NT/2000, the font name is case-sensitive.

Use **CHARS** to specify coded fonts in a font library having names of six or fewer characters (including the prefix). You can rename any fonts having 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 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 the following:

- Specify **TRC=YES**.
- 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 the following:

- Specify **TRC=NO**.
- Use **CHARS** to indicate the single font in which the file should 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 NT/2000

The font name in AIX and Windows NT/2000 is case-sensitive.

If you use the ASCII fonts that are supplied with Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000, use the four-character short names (see Table 4 on page 73 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:

- 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:

- 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 do this, specify the **INPEXIT** parameter. For example:

  In AIX , use one of these:

  – `inpexit=/usr/lpp/psf/bin/apka2e`
  – `inpexit=/usr/lpp/psf/bin/asciinpe`

  In Windows NT/2000, use one of these:

  – `inpexit=\install_directory\exits\acif\apka2e.dll`
  – `inpexit=\install_directory\exits\acif\asciinpe.dll`

  See the **INPEXIT** parameter on page 49 for a description of apka2e and asciinpe functions.

OS/390 and VM

In OS/390 and VM, fonts you specify must reside in a library specified with the **FONTLIB** parameter or reside in a user library specified with the **USERLIB** parameter.

VSE

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

COMSETUP

AIX, Windows NT/2000, OS/390, and VM

Specifies the name of a COM setup file in AIX, Windows NT/2000, OS/390, and VM. A COM setup file is an AFP resource that contains instructions 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 NT/2000, or VM) or member name (in OS/390). The *name* can be one to eight alphanumeric characters (a-z, A-Z, 0–9) and special characters (# $ @), including the two-character prefix, if there is one. In AIX and Windows NT/2000, *name* is case-sensitive.

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

The COM setup file you use can be located:

- In an OS/390 or VM library.
- In an AIX or Windows NT/2000 directory.
- Inline in the file (that is, within the file itself).

If the COM setup file is in an AIX or Windows NT/2000 directory or an OS/390 or VM library, use the **USERLIB** or **OBJCONLIB** parameter to specify the path to the file or the data set. For example:

- In AIX , use one of these:
  - `comsetup=mysetup userlib=/usr/afp/resources`
  - `comsetup=mysetup objconlib=/usr/lib/setups`
- In Windows NT/2000, use this:
  - `comsetup=mysetup userlib=\`*`install_directory`*`\resources`
- In OS/390 or VM, use one of these:
  - `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 do one of these:

- Specify **COMSETUP=***name*, where *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.
- Specify **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 three- or four-digit identifier that defines an IBM-registered code page 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, refer to *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, refer to *IBM AFP Fonts: Technical Reference for Code Pages*, S544–3802.

AIX and Windows NT/2000

CPGID={850 | *codepageid*}
The values are:

850
IBM code page 850

codepageid
Any valid code page, which is a three- or four-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.

OS/390, VM, and VSE

CPGID={500 | *codepageid*}
The values are:

500
IBM code page 500

codepageid
Any valid code page, which is a three- or four-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 using an 8-byte counter or uses structured field tokens found in the input data stream. If the input data contains BPGs with 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 using an 8-byte counter.

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

EXTENSIONS

Specifies the extended options that ACIF uses. Extensions are MO:DCA data stream advanced features that might not be supported for all presentation devices. You should use care when choosing these options to ensure that they are supported by your print server, viewer, or printer.

EXTENSIONS={NONE | ALL |
[PRCOLOR][,BOX][,FRACLINE][,CELLED][,SPCMPRS]}
The values are:

NONE
ACIF does not use any extended options.

ALL
ACIF uses all extended options.

Note: Be very careful when specifying **ALL**. More options might be added in the future that might not be supported by your presentation device.

PRCOLOR
ACIF uses GOCA process color drawing orders when using a Record Formatting Page Definition.

BOX
ACIF uses the GOCA box drawing order when using a Record Formatting Page Definition.

FRACLINE
ACIF uses the GOCA fractional line width drawing order when using a Record Formatting Page Definition.

CELLED
ACIF uses the IOCA Replicate and Trim function when 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** be specified (the default).

SPCMPRS
ACIF uses the repeat string PTOCA order to remove trailing blanks from line data and compress embedded blanks.

FDEFLIB

AIX or Windows NT/2000

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 NT/2000 to separate multiple paths. ACIF searches the paths in the order in which they are specified.

ACIF searches for the form definition in the following order:
1. The paths you specified with **USERLIB**, if any
2. The paths you specified with **FDEFLIB**, if any
3. The paths you specified with **RESLIB**, if any
4. The paths specified by the **PSFPATH** environment variable in AIX
5. The directory **/usr/lpp/psf/reslib** (AIX) or *****install_directory***\reslib** (Windows NT/2000)

For more information about how Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000 selects resources, see “Using ACIF in AIX and Windows NT/2000” on page 19 or refer to *IBM Infoprint Manager: Reference*.

OS/390

FDEFLIB=*dsname1***[,***dsname2***][,***dsname3...***]**
Specifies the data sets that compose the form definition library. You can specify a maximum of eight 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 searching 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 used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, refer to *PSF for OS/390: 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 located in the library defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, refer to *Print Services Facility/VSE: System Programming Guide*.

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 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 containing 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 to 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 compose this field. The supported range of values for ***length*** are 1 to 250.

The field can extend outside the record length, as long as the column where it begins lies within the record length. In this case, ACIF adds padding blanks (X'40') to fill out 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 to 250 bytes in length. ACIF does not perform 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 NT/2000, EBCDIC character data in OS/390, VM or VSE, or hexadecimal data. However, if the input data file is *anything other than* ASCII in AIX or Windows NT/2000 or EBCDIC in OS/390, 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, while 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 6 and “Indexing with Data Values” on page 7.

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.

FILEFORMAT

AIX and Windows NT/2000

Specifies the format of the input file in AIX and Windows NT/2000. 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|STREAM,(NEWLINE=X'***nn***')}**

The values are:

RECORD
The input file is formatted in S/390® record format, where the first two bytes of each line, called the record descriptor word (RDW), specify the length of the line. Files with **RECORD** format typically are OS/390 or VM files with a variable record format. These files are either NFS-mounted to AIX or Windows NT/2000 or sent using Download for OS/390.

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 from 1 to 32767, and specifies the fixed length of the entire record. 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 host system, such as OS/390 or VM.

STREAM
The input file has no length information; it is a stream of data separated by a new-line 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 NT/2000, or DOS.

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

STREAM,(NEWLINE=X*'nnnn'*)
NEWLINE is an optional subparameter of **FILEFORMAT** that is used only with the **STREAM** parameter. You use **NEWLINE** to specify a 1 or 2-byte hexadecimal value for the new-line character in the input data file.

You can use **NEWLINE** when ACIF's algorithm cannot determine the correct new-line character (if blanks are at the beginning of the file, for instance). Or you can use **NEWLINE** if you want to specify a new-line character that is not the standard default. For example, in PC-DOS files you could use **NEWLINE** as follows:

```
FILEFORMAT=STREAM,(NEWLINE=X'0D0A')
```

If **NEWLINE** is not specified, ACIF uses the algorithm specified under **FILEFORMAT=STREAM**.

FONTECH

OS/390, VM, and VSE

Indicates that ACIF should process 3800 (unbounded box) fonts.

FONTECH=UNBOUNDED
Indicates that ACIF should process 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 unbounded box fonts are not syntax checked. If there are errors in the AFPDS making up the font, ACIF does not issue an error message.

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 archived has very limited use. Unbounded box fonts cannot be used by Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000.

FONTLIB

AIX and Windows NT/2000

FONTLIB=*pathlist*
Specifies the directories in which fonts are stored. The value is:

pathlist
Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows NT/2000 to separate multiple paths. ACIF searches the paths in the order in which they are specified.

ACIF searches for the fonts in the following order:
1. The paths you specified with **USERLIB**, if any
2. The paths you specified with **FONTLIB**, if any
3. The paths you specified with **RESLIB**, if any
4. The paths specified by the **PSFPATH** environment variable in AIX
5. The directory **/usr/lpp/psf/reslib** (AIX) or *****install_directory***\reslib** (Windows NT/2000)
6. The directory **/usr/lpp/afpfonts** (AIX)

7. The directory **/usr/lpp/psf/fontlib** (AIX) or *****install_directory***\fontlib** (Windows NT/2000)

For more information about how Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000 selects resources, see “Using ACIF in AIX and Windows NT/2000” on page 19 or refer to *IBM Infoprint Manager: Reference*.

OS/390

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

Specifies the data sets that compose the font library. You can specify a maximum of eight 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 searching 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 used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, refer to *PSF for OS/390: Customization*.
3. For systems before MVS/DFP Version 2.3, data sets must be concatenated with the largest block size first.
4. This is a required parameter 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 font libraries. 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 is a required parameter 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 located in the library defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, refer to *Print Services Facility/VSE: System Programming Guide*.

FORMDEF

Specifies the file name (in AIX, Windows NT/2000, or VM) or the member name (in OS/390 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*

The value is:

fdefname

Any valid form definition name. The *fdefname* can be one to eight alphanumeric characters (a-z, A-Z, 0–9) and special characters (# $ @), including the two-character prefix, if there is one. Unlike PSF for OS/390, PSF/MVS, PSF/VM, and PSF/VSE, ACIF does **not** require the name to begin with a 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 specifying the form definition. For example, to use a form definition named **MEMO.FDEF38PP**, specify **FORMDEF=MEMO**.
3. ACIF requires a form definition to process the input file (even though the form definition actually gets used at print time). If you do not specify the **FORMDEF** parameter or you specify **FORMDEF** without a form definition file name, ACIF reports an error condition and ends processing.

The form definition you use can be located:

- Inline in the file (that is, within the file itself)
- In an AIX or Windows NT/2000 directory
- In a OS/390 or VM user library referenced in the **USERLIB** parameter
- In an OS/390 or VM library referenced in the **FDEFLIB** parameter
- In a VSE library referenced in the **// LIBDEF PHASE,SEARCH=(...) DLBL** JCL statement

If the form definition file is in an AIX or Windows NT/2000 directory or an OS/390 or VM library, use the **USERLIB** or **FDEFLIB** parameter to specify the path to the file or the data sets. For example:

- In AIX, use one of these:
  -
```
formdef=memo
userlib=/usr/afp/resources
```

  - `formdef=memo fdeflib=/usr/lib/formdefns`
- In Windows NT/2000, use this:
  - `formdef=memo userlib=\install_directory\resources`
- In OS/390 or VM, use one of these:
  - `FORMDEF=MEMO USERLIB=USER.RESOURCES`
  - `FORMDEF=MEMO FDEFLIB=USER.FORMDEFNS`

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:

- Include an inline form definition in the file.
- 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 OS/390 or VSE for the record format (variable blocked with ANSI carriage-control characters [VBA] or variable blocked with machine carriage control characters [VBM]).
  - Specify variable length records in VM for the record format.
- Specify **FORMDEF** with one of these values:
  - *fdefname*, where *fdefname* is the name of the 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 the **FORMDEF** search path.
  - **DUMMY**

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

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.

GROUPNAME

Specifies which of the eight possible **INDEX** values should be used as the group name for each index group. Using a unique index value for the group name is recommended. 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 the value of **INDEX1** as the default.

IMAGEOUT

Specifies the format of the image data produced by ACIF in the output document.

IMAGEOUT={ASIS | IOCA}
The values are:

ASIS
Specifies that ACIF produce all image data in the same format as in the input file.

IOCA
Specifies that ACIF produce all image data in uncompressed Image Object Content Architecture (IOCA) format.

If **IMAGEOUT** is not specified, ACIF uses the value of **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 **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 from 1 to 250 bytes in length. ACIF does not perform 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 NT/2000, EBCDIC character data in OS/390, VM or VSE, or hexadecimal data. However, if the input data file is *anything other than* ASCII in AIX or Windows NT/2000 or EBCDIC in OS/390, 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 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 based on the indexing anchor record, set by the **TRIGGER***n* parameters.

A valid set of index parameters comprises either of these:

- **FIELD** definitions containing only literal values (constant data).
- **FIELD** definitions containing 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', while 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 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 NT/2000 or EBCDIC in OS/390, VM, or VSE, the literal values used in these examples would be expressed in hexadecimal strings. For an AIX example using hexadecimal strings, see Figure 15 on page 78.

INDEXDD

AIX and Windows NT/2000

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 containing only those alphanumeric characters supported in AIX and Windows NT/2000 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.

OS/390 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 containing only those alphanumeric characters supported in the operating environment. When ACIF is indexing the file, it writes indexing information to this DD name. These are suggested DCB 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 that which 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 containing only those alphanumeric characters 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 that which 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 normally removes any Begin Document (BDT) and End Document (EDT) structured fields from the input file and generates a single BDT/EDT for the entire output because MO:DCA-P indexes are relative to the BDT structured field. However, after the ACIF output goes to PSF for printing, the printer stapling function uses the BDT/EDT to indicate document boundaries for stapling. Specifying **BDTLY** (BDT only) tells ACIF to pass all BDT/EDT structured fields found in the document into the output data stream in the same order they are found, and not create any additional BDT/EDT pairs. This file is suitable for printing, but should 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 an indexing field, if ACIF is indexing the file.

INDEXSTARTBY={1 | *nn*}
The values are:

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

nn Specifies the output page number (1–99) by which ACIF must find the index criteria specified.

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 one greater than the number of header pages (**INDEXSTARTBY=3**).

If ACIF does not find an indexing field before the page number specified in the **INDEXSTARTBY** parameter, it issues a message and stops processing.

INDXEXIT

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

AIX and Windows NT/2000

INDXEXIT=*programname*
This is the program ACIF calls for every record (structured field) it writes in the index object file (**INDEXDD**). If you specify the program file name without a path, ACIF searches for the exit program in the paths 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.

OS/390, VM, and VSE

INDXEXIT=*modulename*

This is the name of the module ACIF loads during initialization and subsequently calls for every record (structured field) it writes to the index object file (**INDEXDD**). If this parameter is not specified, no index record exit is used. See “Index Record Exit” on page 93 for more detailed information.

INPEXIT

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

AIX and Windows NT/2000

INPEXIT=*programname*

ACIF calls this program for every record (every line) it reads from the input file (**INPUTDD**). If you specify the file name without a path, ACIF searches for the exit program in the paths 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 supplied with Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000:

/usr/lpp/psf/bin/apka2e (AIX) or ***install_directory*\exits\acif\apka2e.dll (NT/2000)**

Converts ASCII stream data to EBCDIC stream data.

/usr/lpp/psf/bin/asciinp (AIX) or ***install_directory*\exits\acif\asciinp.dll (NT/2000)**

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 (NT/2000)**

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.

If your input file uses fonts that have ASCII code points (for example, you specify **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 for AIX or Infoprint Manager for Windows NT/2000.

OS/390, VM, and VSE

INPEXIT=*modulename*

This is the name of the module ACIF loads during initialization and subsequently calls for every input record it reads from the input file (**INPUTDD**). If this parameter is not specified, no input record exit is used. See “Input Record Exit” on page 90 for more detailed information.

INPUTDD

AIX and Windows NT/2000

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.

OS/390 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 containing only those alphanumeric characters 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 containing only those alphanumeric characters supported in the operating environment.

The values are:

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

filename
A character string containing only those alphanumeric characters 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 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.

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

MSGDD

AIX and Windows NT/2000

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 you do not specify **MSGDD**, ACIF uses **STDERR** as the default for its message output.

OS/390 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 containing only those alphanumeric characters 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

AIX and Windows NT/2000

OBJCONLIB=*pathlist*

Specifies the directories in which object container setup files and non-OCA objects are stored. ACIF supports these object container resources: color mapping table, encapsulated PostScript, and microfilm setup. A COM setup file consists of a MO:DCA structure called an object container. (For more information about the COM setup file, see "COMSETUP" on page 34.) Non-OCA objects are resources other than BCOCA, GOCA, IOCA, and page segment.

The value is:

pathlist

Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows NT/2000 to separate multiple paths. ACIF searches the paths in the order in which they are specified.

ACIF searches for a setup file in this order:

1. The paths you specified with **USERLIB**, if any
2. The paths you specified with **OBJCONLIB**, if any
3. The paths specified in **RESLIB**, if any
4. The paths specified by the **PSFPATH** environment variable in AIX
5. The directory **/usr/lpp/psf/reslib** (AIX) or *****install_directory***\reslib** (Windows NT/2000)

For more information about how Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000 selects resources, see "Using ACIF in AIX and Windows NT/2000" on page 19 or refer to *IBM Infoprint Manager: Reference*.

OS/390

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

Specifies the data sets that compose the setup file library. You can specify a maximum of eight data sets. For example:

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

This parameter also specifies the concatenation sequence when ACIF searches for a particular setup file. ACIF first looks for a setup file in *dsname1*. If it cannot find the setup file in *dsname1*, it continues the search with *dsname2*, and so on, until it locates the requested setup 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 searching 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 used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, refer to *PSF for OS/390: 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 setup 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 setup 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 located in the library defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, refer to *Print Services Facility/VSE: System Programming Guide*.

OUTEXIT

AIX and Windows NT/2000

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 (**OUTPUTDD**). If you specify the file name without a path, ACIF searches for the file name in the paths 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.

OS/390, VM, and VSE

OUTEXIT=*modulename*

Specifies the name of the output record exit program. This is a 1- to 8-byte character name of the module ACIF loads during initialization and subsequently calls for every output record it writes to the output document file (**OUTPUTDD**). If this parameter is not specified, no output record exit is used. See “Output Record Exit” on page 95 for more detailed information.

OUTPUTDD

AIX and Windows NT/2000

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 you do not specify **OUTPUTDD**, ACIF uses **STDOUT** as the default.

OS/390 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 containing only those alphanumeric characters supported in the operating environment. When ACIF processes a print file, it writes the resultant converted print data to this DD name. Suggested DCB characteristics of the file are:

- 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 containing only those alphanumeric characters 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 that which 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

AIX and Windows NT/2000

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 NT/2000 to separate multiple paths. ACIF searches the paths in the order in which they are specified.

ACIF searches for an overlay in this order:

1. The paths you specified with **USERLIB**, if any
2. The paths you specified with **OVLYLIB**, if any
3. The paths specified in **RESLIB**, if any
4. The paths specified by the **PSFPATH** environment variable in AIX

5. The directory **/usr/lpp/psf/reslib** (AIX) or *install_directory***reslib** (Windows NT/2000)

You should specify the same value for the **OVLYLIB** parameter to ACIF as specified to Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000. In this way, the search paths and resources used at transform time are identical to the search paths and resources used at print time.

For more information about how Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000 selects resources, see "Using ACIF in AIX and Windows NT/2000" on page 19 or refer to *IBM Infoprint Manager: Reference*.

OS/390

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

Specifies the data sets that compose the overlay library. You can specify a maximum of eight 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 searching 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 used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, refer to *PSF for OS/390: Customization*.
3. For systems before MVS/DFP Version 2.3, data sets must be concatenated with the largest block size first.
4. This is a required parameter 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 is a required parameter 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 located in the library defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, refer to *Print Services Facility/VSE: System Programming Guide*.

PAGEDEF

Specifies the file name (in AIX, Windows NT/2000, or VM) or the member name (in OS/390 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. ACIF uses a page definition only at transform time to convert data streams; it does not use a page definition at print time to retrieve resources.

PAGEDEF=*pdefname*

The value is:

pdefname

Any valid page definition name. The *pdefname* can be one to eight alphanumeric characters (a-z, A-Z, 0–9) and special characters (# $ @), including the two-character prefix, if there is one. Unlike PSF for OS/390, PSF/MVS, 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 specifying the page definition. For example, to use a page definition named **MEMO.PDEF38PP**, specify **PAGEDEF=MEMO**.
3. ACIF does not require a page definition when 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, you should 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 processed on a page is defined in the page definition.

The page definition you use can be located:

- Inline in the file (that is, within the file itself)
- In an AIX or Windows NT/2000 directory
- In a OS/390 or VM user library referenced in the **USERLIB** parameter
- In a library referenced in the **PDEFLIB** parameter
- In a VSE library referenced in the **// LIBDEF PHASE,SEARCH=(...) DLBL** JCL statement

If the page definition file is in an AIX or Windows NT/2000 directory or an OS/390 or VM library, use the **USERLIB** or **PDEFLIB** parameter to specify the path to the file or the data sets. For example:

- In AIX, use one of these:
  - `pagedef=memo`
    `userlib=/usr/afp/resources`
  - `pagedef=memo`
    `pdeflib=/usr/lib/pagedefns`
- In Windows NT/2000, use this:
  - `pagedef=memo`
    `userlib=\`*`install_directory`*`\resources`
- In OS/390 or VM, use one of these:
  - `PAGEDEF=MEMO`
    `USERLIB=USER.RESOURCES`
  - `PAGEDEF=MEMO`
    `PDEFLIB=USER.PAGEDEFNS`

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:

- Include an inline form definition in the file.
- 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 OS/390 or VSE for the record format (variable blocked with ANSI carriage-control characters [VBA] or variable blocked with machine carriage control characters [VBM]).
  - Specify variable length records in VM for the record format.
- Specify **PAGEDEF** with one of these values:
  - *pdefname*, where *pdefname* is 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 you specify **PAGEDEF=DUMMY** but the file does not include an inline page definition, ACIF looks for the page definition named **DUMMY**. If ACIF cannot find a form definition named **DUMMY**, it reports an error and ends processing.

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 form definitions.

PARMDD

AIX and Windows NT/2000

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 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.

OS/390 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 containing only those alphanumeric characters 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.

PDEFLIB

AIX and Windows NT/2000

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 NT/2000 to separate multiple paths. ACIF searches the paths in the order in which they are specified.

ACIF searches for a page definition in the following order:

1. The paths you specified with **USERLIB**, if any
2. The paths you specified with **PDEFLIB**, if any
3. The paths specified in **RESLIB**, if any
4. The paths specified by the **PSFPATH** environment variable in AIX
5. The directory **/usr/lpp/psf/reslib** (AIX) or *install_directory***reslib** (Windows NT/2000)

For more information about how Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000 selects resources, see “Using ACIF in AIX and Windows NT/2000” on page 19 or refer to *IBM Infoprint Manager: Reference*.

OS/390

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

Specifies the data sets that compose the page-definition library. You can specify a maximum of eight 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 searching 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 used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, refer to *PSF for OS/390: Customization*.
3. For systems before MVS/DFP Version 2.3, files must be concatenated with the largest block size first.
4. This is a required parameter 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 is a required parameter 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 located in the library defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, refer to *Print Services Facility/VSE: System Programming Guide*.

PRMODE

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

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

The values are:

SOSI1

Specifies that each shift-out, shift-in code be converted to a blank and a Set

Coded Font Local text control. This **SOSI1** data conversion is the same as the one performed by PSF for OS/390, PSF/MVS, PSF/VM, and PSF/VSE.

SOSI2
Specifies that each shift-out, shift-in code be converted to a Set Coded Font Local text control. This **SOSI2** data conversion is the same as the one performed by PSF for OS/390, PSF/MVS, PSF/VM, and PSF/VSE.

SOSI3
Specifies that each shift-out character be 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 performed by PSF for OS/390 and PSF/MVS.

aaaaaaaa
Any eight-byte alphanumeric string. This value is supplied to all of the ACIF user exits.

For the **SOSI** processing to work correctly, the first font 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.

PSEGLIB

AIX and Windows NT/2000

PSEGLIB=*pathlist*
Specifies the directories in which page segments and BCOCA, GOCA, and IOCA objects are stored. The value is:

pathlist
Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows NT/2000 to separate multiple paths. ACIF searches the paths in the order in which they are specified.

ACIF searches for page segments in this order:
1. The paths you specified with **USERLIB**, if any
2. The paths you specified with **PSEGLIB**, if any
3. The paths specified in **RESLIB**, if any
4. The paths specified by the **PSFPATH** environment variable in AIX
5. The directory **/usr/lpp/psf/reslib** (AIX) or *****install_directory***\reslib** (Windows NT/2000)

You should specify the same value for the **PSEGLIB** parameter to ACIF as specified to Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000. In this way, the search paths and resources used at transform time are identical to the search paths and resources used at print time.

For more information about how Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000 selects resources, see “Using ACIF in AIX and Windows NT/2000” on page 19 or refer to *IBM Infoprint Manager: Reference*.

OS/390

PSEGLIB=*dsname1***[,***dsname2***][,***dsname3...***]**
Specifies the data sets that compose the page segment library. You can specify a maximum of eight 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, or IOCA 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 specified in **USERLIB** before searching 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 used by the PSF startup procedure, the printed and converted results might differ. For information about how PSF selects resources, refer to *PSF for OS/390: Customization*.
3. For systems before MVS/DFP Version 2.3, data sets must be concatenated with the largest block size first.
4. This is a required parameter 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 is a required parameter 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 located in the library defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, refer to *Print Services Facility/VSE: System Programming Guide*.

RESEXIT

AIX and Windows NT/2000

RESEXIT=*programname*

Specifies the name or the full path name of the resource exit program. This is

the program ACIF calls each time 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 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.

OS/390, VM, and VSE

RESEXIT=*modulename*
Specifies the name of the resource exit program. This is a 1- to 8-byte character name of the module ACIF loads during initialization and subsequently calls each time it attempts to retrieve a requested resource from a library. If this parameter is not specified, no resource exit is used. See “Resource Exit” on page 97 for more detailed information.

RESFILE

OS/390

RESFILE={SEQ | PDS}
Specifies the format of the resource file created by ACIF in OS/390. ACIF can create either a sequential data set or a partitioned data set (PDS) from the resources it retrieves from the PSF for OS/390 or PSF/MVS resource libraries.

The values are:

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

PDS
Creates a member that can be placed in a user library or in a system library for use by PSF. The file 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. See “Format of the Resources File” on page 189 for more information about the contents of the resource data set.

It is important that the parameters you use to allocate the **RESOBJDD** data set 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 may result in a **RESOBJDD** data set that is unusable.

RESLIB

AIX and Windows NT/2000

RESLIB=*pathlist*

Specifies the paths for the system resource directories. The value is:

pathlist

Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows NT/2000 to separate multiple paths.

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).

In most cases, you want ACIF to find the same resources that Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000 uses when it prints the file. If so, the **RESLIB** paths should be the same as the paths specified with the **RESPATH** parameter to Infoprint Manager.

ACIF searches for resources in this order:

1. Paths specified by the **USERLIB** parameter
2. Paths specified by the **FDEFLIB**, **FONTLIB**, **PDEFLIB**, **PSEGLIB**, **OBJCONLIB**, and **OVLYLIB** parameters for specific types of resources
3. Paths specified by the **RESLIB** parameter
4. Paths specified by the **PSFPATH** environment variable in AIX
5. The directory **/usr/lpp/psf/reslib** (AIX) or *****install_directory***\reslib** (Windows NT/2000)
6. The directory **/usr/lpp/afpfonts** (AIX)
7. The directory **/usr/lpp/psf/fontlib** (AIX) or *****install_directory***\fontlib** (Windows NT/2000)

RESOBJDD

AIX and Windows NT/2000

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 containing all or some of the resources required to print or view the file. Values are:

RESOBJ

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

filename

A character string containing only those alphanumeric characters supported in AIX and Windows NT/2000 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.

OS/390 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 containing all or some of the resources 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 containing only those alphanumeric characters supported in the operating environment. Suggested DCB characteristics for the file are:

- 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 **RESOBJDD** statement. If this 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 containing only those alphanumeric characters 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 that which is allowed by the DLBL or TLBL JCL statement. If this happens, ACIF ends processing abnormally.
- A block size of 32760
- Assigned to programmer logical unit 008

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

RESTYPE

Specifies the type of AFP print resources ACIF should retrieve from the resource directories or libraries for inclusion in the resource file (**RESOBJDD**). (See "RESLIB" on page 63 for the order that ACIF searches for resources.)

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

The values are:

NONE
: Specifies that no resource file be created.

ALL
: Specifies that all resources required to print or view the output document file (**OUTPUTDD**) be included in the resource file (**RESOBJDD**).

FDEF
: Specifies that the form definition (**FORMDEF**) used in processing the file be included in the resource file.

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

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

FONT
Specifies that all font character sets and code pages required to print or view 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.

Note: Specifying **RESTYPE=FONT** is not recommended with double-byte raster fonts because of the size and large number of library members needed to process double-byte rasters.

OBJCON
Specifies that all object container files requested by the input data stream (including the one specified by the **COMSETUP** parameter) be included in the resource file.

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

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

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

INLINE
Specifies that inline resources are written to the output file in addition to being written to the resource file. The resources precede the document in the output file. For example, **RESTYPE=FONT,PSEG,INLINE** causes any inline fonts and page segments to be written to the output file. Also, both inline and library fonts and page segments are written to the resource file. See “Writing Inline Resources to the Output File” on page 183 for more information.

Because multiple resource types are contained in the page segment and object container libraries, and ACIF does not enforce a prefix for the eight-character resource name, you should define a naming convention that identifies each type of resource in the library. IBM recommends a two-character prefix:

B1 for BCOCA objects
E1 for encapsulated PostScript objects
G1 for GOCA objects
H1 for microfilm setup objects
I1 for IOCA objects
IT for IOCA tile objects
M1 for color mapping table objects
PP for PDF single-page objects
PR for PDF resource objects
S1 for page segments

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

```
RESTYPE=FDEF,PSEG,OVLY
```

Because the AFP Workbench Viewer does not use AFP raster fonts when presenting the data on the screen, you might want to specify **RESTYPE=FDEF,PSEG,OVLY,OBJCON,BCOCA,GOCA,IOCA** to prevent fonts from being included in the resource file. This reduces the number of bytes transmitted when the file is transferred to the workstation.

Note: 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 be saved in the resource file because the overlays are not searched. In this case, you need to request that both page segments and overlays be saved.

TRACE

OS/390

TRACE={YES | NO}

Specifies that ACIF should provide diagnostic trace information while processing the file. The values are:

YES
ACIF uses the facilities of the OS/390 and MVS 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 subsequently modified with **USR=(314)**.

NO
ACIF does not produce diagnostic trace records

Tracing increases processor overhead and should be turned off unless you need to do problem determination. If **YES** is specified and GTF is active, ACIF ends with a Return Code 4 (RC=4).

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.

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 used to process each line of the file might not be the one you expect and one 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 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 containing 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* **| *},{***'trigger value'* **| X***'trigger value'***}**

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 should be checked for the presence of the **TRIGGER1** value. After the **TRIGGER1** value has been 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 to 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 a '0', or as an '*'. 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 containing carriage-control characters, column 1 refers to the carriage-control character. The supported range of values for column is 1 to 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.

'trigger value' **| X***'trigger value'*

Specifies the actual alphanumeric or hexadecimal value of the trigger. ACIF does not perform any validity checking on this value, but uses it in performing a byte-for-byte comparison with the records in the file. The trigger value can be 1 to 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 NT/2000, EBCDIC character data in OS/390, VM or VSE, or hexadecimal data. However, if the input data file is *anything other than* ASCII in AIX or Windows NT/2000 or EBCDIC in OS/390, 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 containing '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 containing **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 containing **TRIGGER1** + 1).

Notes:

1. ACIF requires that at least one **TRIGGER*n*** or **FIELD*n*** value appear within the page range specified by the **INDEXSTARTBY** parameter. If no **TRIGGER*n*** or **FIELD*n*** parameter is satisfied within the **INDEXSTARTBY** page range, ACIF stops processing and issues an error message.
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.

UNIQUEBNGS

Specifies whether ACIF creates a unique group name by generating an eight-character numeric string and appending the string to the group name. The group name defined in the Begin Named Page Group (BNG) structured field is comprised of an index value and a sequence number.

UNIQUEBNGS={YES | NO}

YES
Specifies that ACIF generate an eight-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

AIX and Windows NT/2000

USERLIB=*pathlist*

Specifies the names of user directories containing AFP resources for processing the input file. The directories can contain any AFP resources (fonts, page segments, overlays, page definitions, form definitions, 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 should use the **USERLIB** parameter to specify resources that are not retrieved with the **FDEFLIB**, **FONTLIB**, **OBJCONLIB**, **OVLYLIB**, **PDEFLIB**, or **PSEGLIB** parameters. The value is:

pathlist

Any valid search path. You must use a colon (:) in AIX or a semicolon (;) in Windows NT/2000 to separate multiple paths.

ACIF searches for resources in this order:

1. Paths specified by the **USERLIB** parameter
2. Paths specified by the **FDEFLIB**, **FONTLIB**, **OBJCONLIB**, **OVLYLIB**, **PDEFLIB**, **PSEGLIB** parameters for specific types of resources
3. Paths specified by the **RESLIB** parameter
4. Paths specified by the **PSFPATH** environment variable in AIX
5. The directory **/usr/lpp/psf/reslib** (AIX) or *install_directory***reslib** (Windows NT/2000)
6. The directory **/usr/lpp/afpfonts** (AIX)
7. The directory **/usr/lpp/psf/fontlib** (AIX) or *install_directory***fontlib** (Windows NT/2000)

OS/390

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

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

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

ACIF dynamically allocates these data sets and searches for resources in them in the order specified in the **USERLIB** parameter. If a resource is not found, ACIF searches the appropriate resource libraries defined for that resource type (for example, **PDEFLIB** for page definitions). The libraries 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. Because AFP resources (except page segments) have reserved prefixes, naming conflicts should not occur.
2. An inline resource overrides a resource of the same name contained in a **USERLIB** parameter.
3. Data sets must be specified as fully-qualified names without quotation marks.
4. 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 containing AFP resources for processing the input file. You can specify a maximum of eight file types. For example:

```
USERLIB=USER3820,TEMPUSER
```

ACIF searches for resources in these file types in the order specified in the **USERLIB** parameter. If a resource is not found, ACIF searches the appropriate resource libraries defined for that resource type (for example, **PDEFLIB** for page definitions). The libraries 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 located in the library defined by the **// LIBDEF PHASE,SEARCH=(...)** JCL statement. For information about how PSF/VSE selects resources, refer to *Print Services Facility/VSE: System Programming Guide*.

Chapter 4. Examples of Using ACIF

This chapter shows examples of how to use ACIF processing parameters for transforming data, retrieving resources, specifying fonts, and identifying the location of resource libraries. A detailed example of how to use ACIF for viewing and indexing a document is also described. For examples of using ACIF or the **line2afp** command to transform line data and unformatted ASCII files for printing with Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000, refer to *IBM Infoprint Manager: Reference*.

Examples of Using ACIF Processing Parameters

This section shows how you can use ACIF processing parameters to:

- Transform line data or XML data into a MO:DCA-P document.
- Retrieve resources.
- Specify fonts.
- Identify the location of resource libraries.

Note: In the following AIX and Windows NT/2000 examples, 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 do this for line data or XML data, enter these parameters for your operating system:

AIX or Windows NT/2000

```
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.

OS/390, 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 NT/2000 you indicate this by specifying **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 do this, enter these parameters for your operating system:

AIX or Windows NT/2000

```
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.

OS/390, 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 processing the file.

For more information about using ACIF's resource retrieval functions, see Retrieving Resources on page 9.

Specifying Fonts

You have an input file (**MYFILE.asc**) that contains unformatted ASCII data, and you want these three 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 supplied with PSF or Infoprint Manager (`P1A06462`), and the page definition does not name any fonts. To use the three fonts, enter these parameters for your operating system:

AIX or Windows NT/2000

```
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.

OS/390, VM, or VSE

```
INPUTDD=MYFILE
OUTPUTDD=MYFILE
CHARS=H350,N350,4350
TRC=YES
PAGEDEF=P1A06462
FORMDEF=F1A10110
```

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 4, 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 4. 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 processing the file with the **PAGEDEF** and **FORMDEF** parameters.

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
```

Windows NT/2000

```
acif inputdd=INFILE outputdd=OUTFILE pagedef=PAGED6B formdef=FORMD1A
userlib=\directory\mystuff\art1;\directory\mystuff\art2
pdeflib=\directory\dept\pdefdir3 reslib=\directory\site\resdir
```

Note: The command parameters must be on one continuous line.

OS/390 or VM

```
INPUTDD=INFILE
OUTPUTDD=OUTFILE
PAGEDEF=PAGED6B
FORMDEF=FORMD1A
USERLIB=USER.ART1,USER.ART2
PDEFLIB=USER.PDEFDIR3
```

VSE

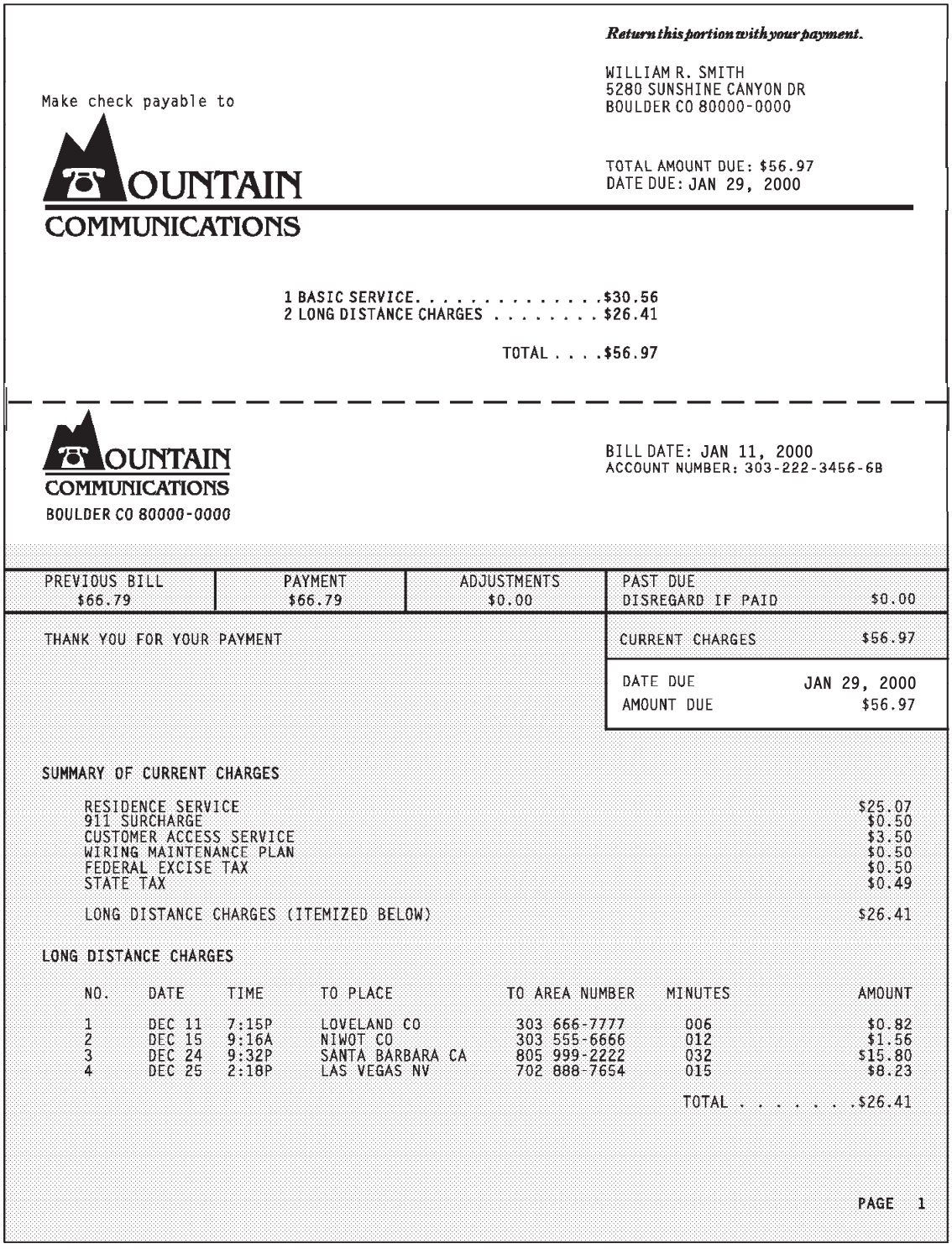
```
INPUTDD=INFILE
OUTPUTDD=OUTFILE
PAGEDEF=PAGED6B
FORMDEF=FORMD1A
```

Note: VSE resources are located in the library defined by the **// LIBDEF PHASE, SEARCH=(...)** JCL statement.

The page definition you want to use (**PAGED6B**) is stored in one of the several page definition libraries 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 have 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 specified by the **USERLIB** parameter first, your page segments are found in your personal libraries. ACIF next searches the paths specified by the parameters for specific resource libraries (**PDEFLIB**, **FDEFLIB**, and so forth), so ACIF then finds the page definition you want to use from the department's library. In AIX or Windows NT/2000, ACIF then searches the path specified with the **RESLIB** parameter, finding your form definition and your overlay. ACIF does *not* use the page definition 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 specified with the **PDEFLIB** parameter.

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 75.



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:

- 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.

The following sections describe the tasks you do 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 NT/2000, OS/390, VM, or VSE. See “Specifying ACIF Processing Parameters” on page 79.
3. Index the input data file for data retrieval. See “Indexing Data in the Input File” on page 83.
4. Identify the locations of the resources used when the bill is printed. See “Identifying the Locations of the Resources” on page 85.
5. Determine the form definition and page definition needed to format and print the bill. See “Determining the Form Definition and the Page Definition” on page 85.
6. Run the ACIF job to create the output files. See “Running the ACIF Job” on page 85.
7. Concatenate the output files. See “Concatenating ACIF Output Files” on page 86.
8. Access the document file from a workstation for viewing with AFP Workbench Viewer. See “Accessing the Document File for Viewing” on page 87.

Examining the Input File

Figure 13 on page 77 shows the line data file currently used to print the telephone bill shown in Figure 12 on page 75.

Note: The line-data input file 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 NT/2000 or in EBCDIC for OS/390, 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 78 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 NT/2000 or *not* EBCDIC in OS/390, 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 or Windows NT/2000

In AIX and Windows NT/2000, 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 NT/2000 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 2nd index attribute (**INDEX2**), do the following:

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 2nd 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, refer to the documentation for the shell you are using in *AIX Commands Reference*, SBOF-1851.

By using this method to convert the ASCII literals to the EBCDIC literals, no mistakes are made when converting the literals 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 NT/2000, enter the **acif** command, parameters, and values on the command line or in a shell script.

The following sections show examples of AIX, Windows NT/2000, OS/390, VM, and VSE parameter files for the telephone bill.

AIX and Windows NT/2000 Parameter File

An AIX parameter file is shown in Figure 16 on page 80. A Windows NT/2000 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 NT/2000 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

OS/390 Parameter File

The JCL for an OS/390 parameter file is shown in Figure 17 on page 81. 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=(12288,(150,15),RLSE),UNIT=SYSDA,
//         DCB=(LRECL=12284,BLKSIZE=12288,RECFM=VBM,DSORG=PS)
//SYSPRINT DD DSN=APKACIF.SYSPRINT,DISP=(NEW,CATLG),
//         SPACE=(9044,(15,15),RLSE),UNIT=SYSDA,
//         DCB=(BLKSIZE=141,RECFM=FB,DSORG=PS)
```

Figure 17. Example of an OS/390 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 83.

```
// 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 you create invokes the ACIF program to index the input file. The example in Figure 14 on page 78 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 containing the values of all five of these attributes.

To generate these indexing attributes, specify the **TRIGGER1** parameter first, because ACIF always scans for the data specified in **TRIGGER1** first. Because the data contains carriage-control characters, including a carriage-control character of '1' to indicate a new page, request that ACIF locate the start of a page by searching every record in the file for a trigger value of '1' in column 1 of the data. To do this, specify:

```
TRIGGER1 = *,1,'1'
```

When ACIF finds a record that contains a '1' in column 1, that record becomes the indexing anchor record.

Subsequent **TRIGGER***n* parameters are defined relative to the indexing anchor record. In this example, you want to ensure that the page being 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 following 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 supplied in the **INDEX***n* parameters.

Next, 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 located in the 13th record from the index anchor record starting in byte 66 and extending for 15 bytes, specify:

```
FIELD1=13,66,15
INDEX1='Account Number',FIELD1
```

To create the indexing tag for the Name attribute, define `'Name'` as the indexing attribute. Locate the value for 'Name' in the anchor record in the data starting at byte 50 and extending for 30 bytes. The ACIF parameters to specify this are:

```
FIELD2=0,50,30
INDEX2='Name',FIELD2
```

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 1st 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 2nd 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 3rd 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 4th 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 5th 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 using any combination of the indexing attributes.

Identifying the Locations of the Resources

To build the resource file, ACIF must know where to find the resources specified in the job. In the parameter file examples for the telephone bill (Figure 16 on page 80, Figure 17 on page 81, Figure 18 on page 82, and Figure 19 on page 83), the parameter file defines 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, and IOCA object library

Determining the Form Definition and the Page Definition

To format and print the job, you need to specify form definition and page definition resources. In the parameter file examples for the telephone bill (Figure 16 on page 80, Figure 17 on page 81, Figure 18 on page 82, and Figure 19 on page 83), the parameter file defines these resources:

FORMDEF

F1A10110, a standard form definition provided with PSF or Infoprint Manager.

PAGEDEF

P1A08682, a standard page definition provided with PSF or Infoprint Manager.

Running the ACIF Job

Run the ACIF job, depending on your operating system:

AIX and Windows NT/2000

Use one of these methods:

- Use a parameter file that contains the parameters and values needed for the application (see Figure 16 on page 80). To use a parameter file, enter the **acif** command, the **PARMDD** parameter, and the parameter file name. For example, to use a parameter file named `PARMFILE`, specify the following 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, you would 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 71 for examples of running ACIF from the command line. For information about creating and running shell scripts, refer to *IBM Infoprint Manager: Reference*.

OS/390 and VSE
Run a batch job using the JCL you created for the parameter file (see Figure 17 on page 81 and Figure 19 on page 83).

VM Run the CMS command for the parameter file you created (see Figure 18 on page 82).

ACIF processes the parameters that you have specified in the parameter file, on the command line, or in the shell script and creates output files. Table 5 shows the output files that ACIF creates for AIX, Windows NT/2000, OS/390, VM, and VSE. The Windows NT/2000 operating system is referred to as "NT" in the table.

Table 5. Output Files ACIF Creates

Type of File	AIX and NT	OS/390	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 view the document file on a workstation using AFP Workbench Viewer, you must first concatenate the index object file, the resource file, and the document file. The order of the files in the concatenated file must be the index object file first, the resource file next, and the document file last.

AIX Files

Use one of the methods described in these shell command examples to perform the concatenation of the AIX output files:

- `cat INDXOBJ RESDATA OUTDOC > NEWFILE`

  The index object file, the resource file, and the document file are combined to create a new file that contains all three files.

- `cat RESDATA OUTDOC >> INDXOBJ`

  The resource file and the document file are added on to the end of the existing index object file.

Windows NT/2000 Files

Use one of the methods described in these shell command examples to perform the concatenation of the Windows NT/2000 output files:

- `copy /b INDXOBJ + RESDATA + OUTDOC NEWFILE`

The index object file, the resource file, and the document file are combined to create a new file that contains all three files.

- `copy /b INDXOBJ + RESDATA + OUTDOC`

  The resource file and the document file are added on to the end of the existing index object file.

OS/390 Files

The following is an example of OS/390 JCL you can use to perform the concatenation:

```
//PRINT EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DUMMY
//SYSUT1   DD DSN=APKACIF.INDEX,DISP=SHR
//         DD DSN=APKACIF.RESLIB,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 index object file, plus the size of the resource file, plus the size of the document file.

Note: The resource file must have been created by specifying **RESFILE**=**SEQ**.

VM Files

The following is an example of the VM CMS commands you can use to perform the concatenation:

```
COPY APKACIF INDEX A APKACIF RESLIB 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 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 NT/2000 directory on the workstation where AFP Workbench Viewer is installed.

Notes:

1. You must have TCP/IP installed on both the AIX, Windows NT/2000, OS/390, VM, or VSE system and the workstation system where AFP Workbench Viewer is installed.
2. To *mount* your AIX or Windows NT/2000 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 NT/2000 system and on the workstation system where AFP Workbench Viewer is installed.

   For additional information about TCP/IP and NFS, refer to 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 the document file to reside, enter the FTP command and the name of your AIX, Windows NT/2000, OS/390, 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 currently resides, enter:
   `cd` *directoryname*
5. To transfer the file in binary format, enter:
   `bin`
6. To transfer a concatenated document file 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 NT/2000 Directory on the Workstation

You can *mount* your AIX or Windows NT/2000 directory on the workstation where Microsoft Windows and AFP Workbench Viewer are installed by using the NFS **mount** command and the procedures documented in the NFS manuals or your own installation file mounting procedures.

Chapter 5. User Exits and Input Print File Attributes

A user exit is a point during ACIF processing that lets you run a user-written program and return control of processing to ACIF after your user-written program ends. 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

These exits are described in the following sections. Sample AIX or Windows NT/2000 C language headers and OS/390, VM, or VSE DSECTs are shown for each programming exit.

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 NT/2000.) Each of these parameters is described in Chapter 3, “ACIF Parameters”.

ACIF provides the code for sample AIX or Windows NT/2000 exits. The sample code is located in the AIX directory **/usr/lpp/psf/acif/** or the Windows NT/2000 directory *****install_directory***\exits\acif**. Microsoft Visual C++ project (*.dsp) and workspace (*.dsw) files are also provided in the Windows NT/2000 directory. The sample exits are:

apkinp.c
: Input record exit

apkind.c
: Index record exit

apkout.c
: Output record exit

apkres.c
: Resource exit

In addition, ACIF provides these AIX or Windows NT/2000 user input record exits to translate input data streams:

apka2e.c
: Converts ASCII stream data to EBCDIC stream data.

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.

The C language header file for all AIX or Windows NT/2000 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 NT/2000 user exit programs, refer to *IBM Infoprint Manager for AIX: Administrator's Guide* or *IBM Infoprint Manager: Reference*.

Sample exits for OS/390, VM, and VSE are available from the IBM Printing Systems Division Web page, http://www.ibm.com/printers.

Input Record Exit

ACIF provides an exit that enables you to add, delete, or modify records in the input file. You can also use the exit to insert indexing information. The program invoked at 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 performed on the input record. The exit can request that the record be discarded, processed, or processed and control 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.

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 187 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. This is an alternative to 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 20 contains a sample C language header that describes the control block that is passed to the AIX or Windows NT/2000 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                */
   void           *reserved1; /* Reserved for future use                    */
   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 20. AIX or Windows NT/2000 Sample Input Record Exit C Language Header

Figure 21 on page 91 contains a sample DSECT that describes the control block for OS/390, 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 21. OS/390, VM, or VSE Sample Input Record Exit DSECT

The address of the control block containing the following parameters is passed to the input record exit. For OS/390, VM, and VSE, the address is passed in a standard parameter list pointed to by register 1; for AIX and Windows NT/2000, the address is passed by the first parameter.

Note: AIX and Windows NT/2000 parameters are specified in lowercase if they differ from the uppercase parameters listed; for example, **WORK@ | work** means that the parameter for OS/390, VM, or VSE is **WORK@** while the parameter for AIX and Windows NT/2000 is **work**. Otherwise, all uppercase parameters are assumed to be lowercase for AIX and Windows NT/2000.

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 full word boundary and is initialized to binary zeros before the first call. The user-written exit program must provide the code required to manage this work area.

PFATTR@ | pfattr (Bytes 5–8)
A pointer to the print file attribute data structure. See “Attributes of the Input Print File” on page 99 for more information about the format of this data structure and the information it contains.

RECORD@ | record (Bytes 9–12)
A pointer to the first byte of the input record including the carriage control character. The record resides in a buffer that resides in storage allocated by ACIF, but the exit program is allowed to modify the input record.

RESERVED1 (Bytes 13–16)
These bytes are reserved for future use.

RECORDLN (Bytes 17–18)
Specifies 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.

RESERVED2 (Bytes 19–20)
These bytes are reserved for future use.

REQUEST (Byte 21)
Specifies 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 control returned to the exit program to let it 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 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 additional 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 reside 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 has been encountered. When **EOF** is signaled (**EOF=Y**), the last record has already been presented to the input exit, and the input file has been closed. The pointer **RECORD@** | **record** is no longer valid. Records cannot be inserted when **EOF** is signaled. The following are the only valid values for this parameter:

Y Specifies that **EOF** has been encountered.
N Specifies that **EOF** has not been encountered.

This end-of-file indicator lets the exit program perform 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 NT/2000

The **apka2e** input record exit program translates data that is encoded in ASCII (code set IBM-850) into EBCDIC (code set IBM-037) encoded data.You should use this exit when your print job requires fonts such as GT12, which has only EBCDIC code points defined.

To use the **apka2e** input record exit program, set these parameters in your ACIF parameter file:

```
inpexit=apka2e
cc=yes
cctype=z
```

Also, ensure that the directory where the **apka2e** input record exit program resides is included in the **PATH** environment variable. When determining offsets for indexing parameters, if **asciinp** is to be used with ACIF to produce an index file, consideration must be made for the carriage control character inserted by **asciinp** into byte 0.

The **asciinp** input record exit program transforms an ASCII data stream into a record format that contains a 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.

To execute the **asciinp** input record exit program, set these parameters in your ACIF parameter file:

```
inpexit=asciinp
cc=yes
cctype=z
```

Also, ensure that the directory where the **asciinp** input record exit program resides is included in the **PATH** environment variable.

Note: If **asciinp** is to be used with ACIF to produce an index file, consideration must be made for the carriage control character inserted by **asciinp** into byte 0 when determining offsets for indexing parameters.

The **asciinpe** input record exit program combines both user input record exits described above. To execute, specify `inpexit=asciinpe` and follow the directions specified for both **apka2e** and **asciinp**. Also, ensure that the directory where the **asciinpe** input record exit program resides is included in the **PATH** environment variable.

Note: If **asciinpe** is to be used with ACIF to produce an index file, consideration must be made for the carriage control character inserted by asciinp into byte 0 when determining offsets for indexing parameters.

While the **asciinp** and **asciinpe** input record exits do not recognize other ASCII printer commands, you can modify these exits to account for the following:
- Backspacing (X'08')
- Horizontal tabs (X'09')
- Vertical tabs (X'0B')

For more information about using and modifying these programs, refer to 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 NT/2000 in the *install_directory***exits\acif** directory.

Index Record Exit

ACIF provides an exit that lets you modify or ignore the records that ACIF writes in the index object file. The program invoked at 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 be ignored or processed. The largest record that can be processed is 32752 bytes (this does not include the record descriptor word).

Figure 22 contains a sample C language header that describes the control block that is passed to the AIX or Windows NT/2000 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 22. AIX or Windows NT/2000 Sample Index Record Exit C Language Header

Figure 23 contains a sample DSECT that describes the control block that is passed to the OS/390, 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 23. OS/390, VM, or VSE Sample Index Record Exit DSECT

The address of the control block containing the following parameters is passed to the input record exit. For OS/390, VM, and VSE, the address is passed in a standard parameter list pointed to by register 1; for AIX and Windows NT/2000, the address is passed by the first parameter.

Note: AIX and Windows NT/2000 parameters are specified in lowercase if they differ from the uppercase parameters listed; for example, **WORK@ | work** means that the parameter for OS/390, VM, or VSE is **WORK@** while the parameter for AIX or Windows NT/2000 is **work**. Otherwise, all uppercase parameters are assumed to be lowercase for AIX or Windows NT/2000.

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 full word boundary and is initialized to binary zeros before to the first call. The user-written exit program must provide the code required to manage this work area.

PFATTR@ | pfattr (Bytes 5–8)
A pointer to the print file attribute data structure. See “Attributes of the Input Print File” on page 99 for more information about the format of this data structure and the information it contains.

RECORD@ | record (Bytes 9–12)
A pointer to the first byte of the index record including the carriage control character. The record resides in a 32 KB buffer (where KB equals 1024 bytes). The buffer resides in storage allocated by ACIF, but the exit program is allowed to modify the index record.

RECORDLN (Bytes 13–14)
Specifies 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)
Specifies 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 reside 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 has finished processing the index object file.

When **EOF** is signaled (**EOF=Y**), the last record has already been presented to the index exit. The pointer **RECORD@** | **record** is no longer valid. Records cannot be inserted when **EOF** is signaled. The following are the only valid values for this parameter:

Y Specifies that the last record has been written.

N Specifies that the last record has not been written.

This end-of-file flag, used as a last call indicator, lets the exit program return 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 invoked at 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 be ignored or processed. 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 24 contains a sample C language header that describes the control block passed to the AIX or Windows NT/2000 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 24. AIX or Windows NT/2000 Sample Output Record Exit C Language Header

Figure 25 contains a sample DSECT that describes the control block passed to the OS/390, 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 25. OS/390, VM, or VSE Sample Output Record Exit DSECT

The address of the control block containing the following parameters is passed to the input record exit. For OS/390, VM, and VSE, the address is passed in a standard parameter list pointed to by register 1; for AIX and Windows NT/2000, the address is passed by the first parameter.

Note: AIX and Windows NT/2000 parameters are specified in lowercase if they differ from the uppercase parameters listed; for example, **WORK@ | work** means that the parameter for OS/390, VM, or VSE is **WORK@** while the parameter for AIX or Windows NT/2000 is **work**. Otherwise, all uppercase parameters are assumed to be lowercase for AIX or Windows NT/2000.

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 full word boundary and is initialized to binary zeros before to the first call. The user-written exit program must provide the code required to manage this work area.

PFATTR@ | pfattr (Bytes 5–8)
A pointer to the print file attribute data structure. See “Attributes of the Input Print File” on page 99 for more information about the format of this data structure and the information contained in it.

RECORD@ | record (Bytes 9–12)
A pointer to the first byte of the output record. The record resides in a 32 KB buffer (where KB equals 1024 bytes). The buffer resides in storage allocated by ACIF, but the exit program is allowed to modify the output record.

RECORDLN (Bytes 13–14)
Specifies 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)
Specifies 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 reside 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 has finished writing the output file.

When **EOF** is signaled (**EOF=Y**), the last record has already been presented to the output exit. The pointer **RECORD@ | record** is no longer valid. Records cannot be inserted when **EOF** is signaled. The following are the only valid values for this parameter:
Y Specifies that the last record has been written.
N Specifies that the last record has not been written.

This end-of-file flag, used as a last-call indicator, lets the exit program return to ACIF. The exit program cannot change this parameter.

Resource Exit

ACIF provides an exit that lets you “filter” resources from being included in the resource file. If you want to exclude a specific type of resource (for example, an overlay), you can control this with the **RESTYPE** parameter. This exit is useful in controlling resources at the file name level. For example, assume you are going to send ACIF output to PSF and you only wanted to send those fonts that were not shipped with the PSF product. You can code this exit program to contain a table of all fonts shipped with PSF and filter those from the resource file. Security is another consideration for using this exit because you can prevent certain named resources from being included. The program invoked at 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 be 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 26 contains a sample C language header that describes the control block that is passed to the AIX or Windows NT/2000 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                  */
   char           restype;    /* Type of resource                            */
   char           request;    /* Ignore or process the resource              */
   char           eof;        /* Last call indicator                         */
} RESEXIT_PARMS;
```

Figure 26. AIX or Windows NT/2000 Sample Resource Exit C Language Header

Figure 27 contains a sample DSECT that describes the control block that is passed to the OS/390, 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
RESNAME  DS    CL8      Name of requested resource
RESTYPE  DS    X        Type of resource
REQUEST  DS    X        Ignore or process the resource
EOF      DS    X
```

Figure 27. OS/390, VM, or VSE Sample Resource Exit DSECT

The address of the control block containing the following parameters is passed to the input record exit. For OS/390, VM, and VSE, the address is passed in a standard parameter list pointed to by register 1; for AIX and Windows NT/2000, the address is passed by the first parameter.

Note: AIX and Windows NT/2000 parameters are specified in lowercase if they differ from the uppercase parameters listed; for example, **WORK@ | work** means that the parameter for OS/390, VM, or VSE is **WORK@** while the parameter for AIX or Windows NT/2000 is **work**. Otherwise, all uppercase parameters are assumed to be lowercase for AIX or Windows NT/2000.

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 full word boundary and is initialized to binary zeros before to the first call. The user-written exit program must provide the code required to manage this work area.

PFATTR@ | pfattr (Bytes 5–8)
A pointer to the print file attribute data structure. See “Attributes of the Input Print File” on page 99 for more information about the format of this data structure and the information presented.

RESNAME (Bytes 9–16)
Specifies the name of the requested resource. This value cannot be modified by the exit program.

RESTYPE (Byte 17)
Specifies the type of resource the name refers to. This is a 1-byte hexadecimal value 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'FB' Specifies a page segment
X'FC' Specifies an overlay

ACIF does **not** call this exit for the following 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 (**setup**) 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 included in the resource file, specify **RESTYPE=NONE** or explicitly exclude it from the **RESTYPE** list.

REQUEST (Byte 18)

Specifies 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 the resource be processed. 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 has finished writing the resource file.

When **EOF** is signaled (**EOF=Y**), the last record has already been presented to the resource exit. The pointer **RECORD@** | **record** is no longer valid. Records cannot be inserted when **EOF** is signaled. The following are the only valid values for this parameter:

Y Specifies that the last record has been written.

N Specifies that the last record has not been written.

This end-of-file flag, used as a last-call indicator, returns control to ACIF. The exit program cannot change this parameter.

User Exit Search Order

When ACIF loads a specified user exit program during initialization, the OS/390, VM, or VSE operating system determines the search order and method used to locate these load modules.

OS/390

Exit load modules can reside in a load library used as STEPLIB, JOBLIB, or in a system library. ACIF uses the standard OS/390 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 located in the library defined by the // LIBDEF PHASE,SEARCH=(...) JCL statement.

Non-Zero Return Codes

If ACIF receives a non-zero return code from any exit program, ACIF issues message 0425-412 and terminates processing.

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 28 on page 100 shows a sample C language header that describes the format of the AIX or Windows NT/2000 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 28. AIX or Windows NT/2000 Sample Print File Attributes C Language Header

Figure 29 shows a sample DSECT that describes the format of the OS/390, 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 29. OS/390, VM, or VSE Sample Print File Attributes DSECT

The address of the control block containing the following parameters is passed to the input record exit. For OS/390, VM, and VSE, the address is passed in a standard parameter list pointed to by register 1; for AIX and Windows NT/2000, the address is passed by the first parameter.

Note: All uppercase parameters are assumed to be lowercase for AIX and Windows NT/2000.

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-justified, 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 above data structure is 'P1TESTbb'.
2. Exit programs cannot change the values 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 6. 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. ACIF supports the standard return codes.

Notes:

1. ACIF messages contain instructions for the PSF or Infoprint Manager system programmer. Please show your system programmer these messages, because they might not be contained in the PSF or Infoprint Manager messages publications.
2. AIX and Windows NT/2000 users can invoke the PSF MSG command to view or print messages online.

Message Identifiers

ACIF issues the same messages for AIX, Windows NT/2000, OS/390, VM, and VSE users. However, the message identifiers in AIX and Windows NT/2000 differ from those in OS/390, VM, and VSE:

- In AIX and Windows NT/2000, the format of the message identifier is **0425-***nnn*, where:

  0425- Identifies a message in AIX or Windows NT/2000.

  nnn Specifies the three-digit message number.

- In OS/390, VM, and VSE, the format of the message identifier is **APK***nnnt*, where:

  APK Identifies a message in OS/390, VM, or VSE.

  nnn Specifies the three-digit message number.

  t Specifies an error condition:

Error Type	Description
S	Severe error that causes ACIF to terminate processing the current print file. The exact method of termination can vary. For certain severe errors, ACIF abends with a return code and reason code. This is generally the case when some system service fails. In other cases, ACIF terminates with the appropriate error messages written to the message file specified when you invoked ACIF. Most error conditions 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 if the correct processing parameters have been specified. These messages can assist in providing an audit trail.

The three-digit message number, *nnn*, is the same in all environments (for example, 0425-**031** in AIX or Windows NT/2000 or APK**031**I in OS/390, VM, or VSE). In this publication, the ACIF messages and explanations are listed according to the

OS/390, VM, and VSE message identifiers (for example, APK031I) because AIX and Windows NT/2000 users are more likely to use the PSF MSG command to view the messages online.

The terms used in the messages and explanations are those used for OS/390, VM, and VSE, even though the messages and explanations also apply to AIX and Windows NT/2000. The following list shows some of the terms used in the messages in this publication and what those terms refer to in AIX and Windows NT/2000:

Term	AIX, NT/2000
print data set	input file
data set	input file
data stream	file
PSF	PSF or Infoprint Manager
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 you start with the first one (for example, 105, 108, 109 or 105, 108, or 105, 110, and so on). The first message accurately describes the error condition; any subsequent messages provide additional 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 containing 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. Some general errors are limited to a few resources, while others can occur in any resource.

APK031I AN INLINE MEDIUM MAP WAS ENCOUNTERED IN THE DATASET, 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.

APK102S 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 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 ICP structured field is zero.

System Action: ACIF stops processing the input file.

User Response: Correct the error and resubmit the request.

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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK103S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: *structuredfield1* **STRUCTURED FIELD WAS FOUND WHERE** *structuredfield2* **STRUCTURED FIELD WAS EXPECTED.**

Explanation: *structuredfield1* is incorrect at the present point in the input data stream or resource. The structured-field type expected at this point is *structuredfield2*. Either the required structured field is missing or out of sequence, or a line-data record is in the wrong place.

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 or resource, correct the error and resubmit the print request. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

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. The record might be line data. If inline resources are used with data-set header pages, multiple resource groups might be present.

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. Refer to *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 was valid. If the input was valid, refer to 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***.**

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 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.

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. Refer to *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 was valid. If the input was valid, refer to 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 *identifier* **OF THE STRUCTURED FIELD** *structuredfield* **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.

System Action: If the error occurred in a structured field in a page or resource, PSF attempts to find the end of the page or resource. If PSF can find the end of the page, it prints any data accumulated for the current page. If PSF cannot find the end of the page, the data set is terminated. If the error occurred in a form definition, a page definition, or non-presentation object container resource (for example, COMSETUP), the form definition, page definition, or non-presentation object container resource is not used, and one of these occurs:

- PSF is not started for any of these:
  - The default form definition
  - A form definition specified for printing messages or separator pages
  - A page definition specified for printing messages or separator pages
- PSF cannot begin printing the data set for a form definition or non-presentation object container resource (or page definition if printing line date) specified on a user's OUTPUT JCL statement; PSF tries to print the next data set. PSF issues a message identifying the position of the structured field in the data stream or resource. PSF issues additional messages identifying the processing environment in which the error occurred.

User Response: If you created the structured fields for the object, correct the error and resubmit the print request. Refer to *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK114S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: RDW LENGTH DOES NOT AGREE WITH LENGTH IN STRUCTURED FIELD INTRODUCER.

Explanation: All structured fields are preceded by a record descriptor word (RDW) that specifies the length of that record, including the RDW. The record length in the RDW for the current record is less than the sum of the LENGTH parameter in the structured-field introducer and the number of bytes for both the RDW (4 bytes) and the control character (1 byte).

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 RDW for the structured field that is not valid contains a valid record length, 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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 on the OUTPUT JCL statements for this job, and no default page definition was defined in the PSF initialization procedure.

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, PSF detects an error.

System Action: ACIF stops processing the print data set.

User Response: If you intended to print line data or XML data, do one of these to specify a page definition:

- Code the PAGEDEF parameter on the OUTPUT JCL statement. For information about how to code the OUTPUT statement, refer to *PSF for OS/390 & z/OS: User's Guide*.
- Code the FCB parameter on the DD JCL statement.
- Request that your system programmer code a default page definition name in the PSF initialization procedure.

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. 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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.

APK163S 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, 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. Refer to *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 was valid. If the input was valid, refer to 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: If the error is contained in a page definition, PSF terminates processing of the data set and continues processing with the next data set. Otherwise, PSF terminates the page or overlay containing the structured field in error. PSF attempts to locate the end of the current page and resume processing on the next page. If the end of the current page cannot be located, PSF stops printing the data set. PSF issues a message identifying the position of the structured field in the input data stream or resource. PSF 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. Refer to *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 PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to your

system's diagnosis reference for assistance in determining the source of the problem.

APK182S 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK183S 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: The form definition containing the error is not used, and one of these occurs:

- PSF is not started if the form definition containing the error is defined in the PSF startup procedure. The form definition resources defind in the PSF startup procedure are for separator pages, for the message data set, and for the default form definition resource for user print data sets.
- If the error is in a form definition specified on the user's OUTPUT JCL statement, PSF cannot begin printing the data set; it tries to print the next data set. PSF issues a message identifying the position of the structured field in the form definition. PSF issues additional messages identifying the processing environment when the error was found.

User Response: If you created the structured fields for the form definition, correct the error and resubmit the print request. Refer to *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 PSF 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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK188S THE SET OF MODIFICATIONS SPECIFIED IN THE MCC STRUCTURED FIELD SELECTS MORE THAN ONE INPUT SOURCE, AND THE DEVICE DOES NOT SUPPORT MORE THAN ONE INPUT SOURCE.

Explanation: The Medium Copy Count (MCC) structured field refers to one or more Medium Modification Control (MMC) structured fields , which include requests for more than one input source or media type local ID. You cannot specify more than one input source or media type local ID for multiple copy groups, because the printer you are using does not support it. The MCC and MMC structured fields are in the form definition.

System Action: The form definition containing the error is not used, and one of these occurs:

- If the error is in the default form definition, or a form definition specified for printing messages or separator pages, PSF is not started.
- If the error is in a form definition specified on the user's OUTPUT JCL statement, PSF cannot begin printing the data set; it tries to print the next data set. PSF issues a message identifying the position of the structured field in the form definition. PSF issues additional messages identifying the processing environment in which the error occurred.

User Response: Request that the job be printed on a printer that supports the specification of input source in the Load Copy Control (LCC) command. If you created the structured fields for the form definition, correct the MMC structured field and resubmit the print request. Refer to *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the MMC has no errors, the error might be a PSF or printer 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 was valid. If the input was valid, refer to your

system'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 provided in the User Response section to correct the error.

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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK209S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: *structuredfield1* STRUCTURED FIELD WAS FOUND WHERE *structuredfield2* STRUCTURED FIELD WAS EXPECTED.

Explanation: *structuredfield1* is incorrect at the present point in the input data stream or resource. The structured-field type expected at this point is *structuredfield2*. Either the required structured field is missing or out of sequence, or a line-data record is in the wrong place.

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 or resource, correct the error and resubmit the print request. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK210S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: 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: If the structured field is included in an object container, bar code, graphics, or image object embedded in a page or overlay, PSF ignores the object and continues processing the current page or overlay.

If the structured field is in a resource included by a page or overlay, PSF terminates the page or overlay. PSF attempts to locate the end of the current page and

resumes processing on the next page. If the end of the current page cannot be located, PSF stops printing the data set. For non-presentation object containers, PSF stops printing the data set.

If the error is contained in a page definition or form definition, PSF terminates processing of the data set and continues processing with the next data set. PSF issues a message that identifies the position structured field in the input data stream or resource. PSF issues additional messages identifying the processing environment in which the error occurred.

User Response: If you created the structured fields, correct the error and resubmit the print request. Refer to *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 a PSF logic error. If you used a program to create the structured fields for the image 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

APK212S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: THE UNIT BASE PARAMETER IN THE *structuredfield* STRUCTURED FIELD IS INVALID.

Explanation: An incorrect Unit Base value was encountered in the structured field identified in this message. The structured field is contained in the Object Environment Group of an image object. The image object might be contained in a composed-text print data set, an overlay, or a page segment; or it might be embedded in 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 image object, correct the error and resubmit the print request. Refer to *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 image object, contact your system programmer.

System Programmer Response: If an IBM licensed program was used to create the structured fields for the image object with the error, verify that the input to that program was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK213S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: THE L-UNITS PER UNIT BASE PARAMETER IN THE *structuredfield* STRUCTURED FIELD IS INVALID.

Explanation: An incorrect L-Units value was encountered in the structured field identified in this message. The structured field is contained in the Object Environment Group of an image object. The image object might be contained in a composed-text print data set, an overlay, a page segment; or it might be embedded in a data set containing line data.

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 image object, correct the error and resubmit the print request. Refer to *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 image object, contact your system programmer.

System Programmer Response: If an IBM licensed program was used to create the structured fields for the image object with the error, verify that the input to that program was valid. If the input was valid, refer to *Advanced Function Printing: Diagnosis Guide* for assistance in determining the source of the problem.

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 (BR) structured field is not valid. The BR 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 BR structured field in the print data set, correct the error and resubmit the print request. Refer to *Mixed Object Document Content Architecture Reference* for more information about the structured field. If you used a program to place the BR structured field in the print data set, contact your system programmer.

System Programmer Response: If an IBM licensed program was used to place the BR structured field in the print data set, verify that the input to that program was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

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: If this error occurs in a resource, PSF stops processing the data set. If this error occurs in a resource environment group, PSF stops processing the resource environment group and continues processing the data set.

If this error occurs in a composed text page, PSF stops processing the current page. PSF attempts to find the end of the current page and resume printing on the next page. If unable to find the end of the current page, PSF stops printing the data set.

PSF issues additional messages identifying the processing environment in which 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. Refer to *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 was valid. If the input was valid, refer to 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 terminates.

User Response: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK246S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: A REQUIRED TRIPLET with ID *identifier* WAS MISSING FROM AN IOB STRUCTURED FIELD.

Explanation: When identifier is:

X'4C' The x- or y-axis origin for object content or an object area size (X'4C') triplet was specified on an IOB, but no measurement unit (X'4B') triplet was specified. The structured field is contained in a print data set or overlay.

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: If the error is contained in a page definition, PSF terminates processing of the data set and continues processing with the next data set. Otherwise, PSF terminates the page or overlay containing the structured field in error. PSF attempts to locate the end of the current page and resumes processing on the next page. If the end of the current page cannot be located, PSF stops printing the data set. PSF issues a message identifying the position of the structured field in the input data stream or resource. PSF issues additional messages identifying the processing environment when the error was found.

User Response: If you placed the IOB structured field in the print data set or overlay, correct the error and resubmit the ACIF job. Refer to *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: If an IBM licensed program was used to place the IOB structured field in the print data set or overlay, verify that the input to that program was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK247S DATA IN AN INPUT RECORD IS INVALID: A PARAMETER IN AN IOB STRUCTURED FIELD CONTAINS UNACCEPTABLE DATA.

Explanation: One of the parameters in the Include Object (IOB) structured field is not valid. The object type specified is not supported or is not valid or 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'. The IOB structured field is contained in the print data set or an overlay.

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. Refer to *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.

APK248S 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 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. Refer to *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.

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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK252I 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: The form definition containing the error is not used, and one of these occurs:

- If the error is in the default form definition, or a form definition specified for printing messages or separator pages, PSF is not started.
- If the error is in a form definition specified on the user's OUTPUT JCL statement, PSF cannot begin printing the data set; it tries to print the next data set. PSF issues a message identifying the position of the structured field in the form definition. PSF issues additional messages identifying the processing environment when the error was found.

User Response: If you created the structured fields for the form definition, correct the error and resubmit the print request. Refer to *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be a PSF 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.

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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK255S 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 an 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK256S 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: If the error occurred in a form definition, a page definition, or a non-presentation object container resource (for example, COMSETUP), the form definition, page definition, or non-presentation object container resource is not used, and one of these occurs:

- PSF is not started for any of these:
  - The default form definition
  - A form definition specified for printing messages or separator pages
  - A page definition specified for printing messages or separator pages
- PSF cannot begin printing the data set for a form definition or non-presentation object container resource (or page definition if printing line date) specified on a user's OUTPUT JCL statement; PSF tries to print the next data set. If the error occurred in a structured field in a page or another type of resource, PSF attempts to find the end of the page or resource. If PSF can find the end of the page or resource, it prints any data accumulated for the current page. If PSF cannot find the end of the page or resource, the data set is terminated.

PSF issues a message identifying the position of the structured field in the data stream or resource. PSF issues additional messages identifying the processing environment in which the error occurred.

User Response: If you created the structured fields for the object, correct the error and resubmit the print request. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

APK258S 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.

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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK259S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: THE X-DIRECTION AND Y-DIRECTION L-UNITS PER UNIT BASE VALUES SPECIFIED IN STRUCTURED FIELD *structuredfield* **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: If you created the structured fields for the print data set or the resource, correct the error and resubmit the print request. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK260S THE OBJECT SPECIFIED WITH THE *structuredfield* **STRUCTURED FIELD IS NOT SUPPORTED ON THIS PRINTER.**

Explanation: PSF has encountered a valid AFP object that is not supported by the printer. The object is identified either by its Begin structured field, by an Invoke structured field, such as Include Page Overlay (IPO), or by an OTH record (object container without MO:DCA-P structured fields wrapping the data).

System Action: If the object or Invoke structured field is embedded in a page or overlay, PSF ignores the object and continues processing the current page or overlay. If the Begin structured field, the Invoke structured field, or the OTH record is in a resource included by a page or overlay, PSF terminates the page or overlay. PSF attempts to locate the end of the current page and resume processing on the next page. If the end of the current page cannot be located, PSF stops printing the data set.

User Response: To print the object type indicated in the message, submit the print job to a printer that supports the object type. For more information about what object types are supported by your printer, refer to your printer documentation.

System Programmer Response:

Delete the unsupported object type from the separator page data set for this printer.

APK261S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: STRUCTURED FIELD *structuredfield* **CONTAINED A CODED-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 coded font local identifier for different coded fonts. The Map Coded Font (MCF) structured field that attempted to use the already-mapped coded font local identifier is identified in the message. The MCF structured field can be 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 were printing a composed-text print data set or an overlay, and you created the structured fields in the object containing the error, check the Coded Font Local Identifiers in the MCF structured field for duplicates. If the MCF structured field has 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.

If you were printing a data set containing line data using a page definition, and if you created the structured fields for the page definition, check the Coded Font Local Identifiers in the MCF structured field for duplicates. If the MCF 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.

Refer to *Mixed Object Document Content Architecture Reference* or *Advanced Function Presentation: Programming Guide and Line Data Reference* for more information about the structured field.

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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK263S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: 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. Refer to *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 was valid. If the input was valid, refer to 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. ACIF stops processing and printing the 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK265I DATA IN A FORMDEF RESOURCE IS INVALID: THE SCOPE OF THE MFC IS *scope* **BUT** *structuredfield* **IS THE STRUCTURED FIELD THAT BOUNDS THE MFC.**

Explanation: Either a document environment group 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 issurs 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK266I THE INPUT BIN SPECIFIED IN THE MMC STRUCTURED FIELD OR ON THE OUTPUT STATEMENT IS AN INSERTER BIN AND IS DISABLED. AN ALTERNATIVE BIN WAS SUBSTITUTED.

Explanation: The Medium Modification Control (MMC) structured field or the output statement requested an input bin that is supported by the printer but is disabled. This bin is an inserter bin. The MMC structured field is contained in the form definition. The output statement is in the JCL.

System Action: ACIF continues processing, selecting paper from an alternative bin. The inserter pages are blank sheets from the alternative bin.

User Response: If the output is not acceptable, submit the print request to a printer that has the specified bin available, or ensure that the bin is enabled on the original printer before resubmitting the print request.

System Programmer Response: No response is necessary.

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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK268S 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 was valid. If the input was valid, refer to 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), and Image Input Descriptor (IID). The value of zero is not valid for the L-Units per Unit Base.

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. Refer to *Mixed Object Document Content Architecture Reference* for information about the structured fields. 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 resource with the error, verify that the input to that program was valid. If the input was valid, refer to *Mixed Object Document Content Architecture Reference*, *Advanced Function Presentation: Programming Guide and Line Data Reference*, and the appropriate system programming guide for assistance in determining the source of the problem.

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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK276I 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK277I 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. Refer to *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.

APK278S DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE MAPPING OPTION SPECIFIED IN THE *structuredfield* IS INCORRECT OR UNSUPPORTED.

Explanation: The structured field in error contained an incorrect Mapping Option value or the printer does not support the Mapping Option value. The structured field could be contained in a bar code object, graphics object, image object, or object container object, or it could be an IOB structured field with a bad mapping option triplet. The bar code object, graphics object, image object, or IOB can be contained in an overlay, MO:DCA-P page, or embedded in line data. The graphics object can be contained in a composed-text print data set or an overlay, or embedded in a data set containing line data. The image object can be contained in a composed-text print data set, an overlay, or a page segment, or embedded in 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 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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK279I 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK280I 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.

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 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 ICP structured field is zero.

System Action: ACIF stops processing the input file.

User Response: Correct the error and resubmit the request.

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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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***. THE 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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: PSF 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. Refer to *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 a PSF 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 was valid. If the was valid, refer to your system'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 infomation provided in the User Response section to correct the error.

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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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: PSF stops processing the current data set and issues aadditional 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK341S 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: PSF 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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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 was valid. If the input was valid, refer to 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: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

APK344S DATA IN A PAGEDEF RESOURCE IS INVALID: THE NUMBER OF LND 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: PSF stops processing the current data set and issues additional messages that identify the processing environment in which the error occurred.

User Response: If you created the structured fields for the page definition, correct the error and resubmit the print request. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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. Refer to *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 was valid. If the input was valid, refer to *Advanced Function Printing: Diagnosis Guide* for assistance in determining the source of the problem.

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: PSF 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK352I **DATA IN A PAGEDEF RESOURCE IS NOT VALID: BAR CODE GENERATION WAS REQUESTED ON LND, RCD, OR XMD STRUCTURED FIELD NUMBER** *number***, BUT THE PRINTER DOES NOT SUPPORT BAR CODE OBJECTS.**

Explanation: A Line Descriptor (LND), Record Descriptor (RCD), or XML Descriptor (XMD) structured field in a page definition has requested PSF to generate a bar code object from the line data, but the printer does not support bar code objects.

System Action: PSF ignores the request and continues processing the data set.

User Response: To print the data set and have PSF generate bar code objects, submit the print job to a printer that supports bar code objects. For more information about AFP printers that support bar code objects, refer to *AFP: Printer Information*.

System Programmer Response: If the page definition is for a separator page, the message data set, or the default page definition for the user print data sets defined in the PSF startup procedure, delete the option from the page definition that requests that a bar code be generated.

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 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK355S DATA IN A PAGEDEF RESOURCE IS INVALID: A PAGE OVERLAY WAS REQUESTED IN LND OR RCD STRUCTURED FIELD *structuredfield*, BUT THE PRINTER DOES NOT SUPPORT PAGE OVERLAYS.

Explanation: An overlay has been requested by a Line Descriptor (LND) or Record Descriptor (RCD) structured field within the page definition, but the printer does not support page overlays.

System Action: PSF terminates the page and continues processing the data set.

User Response: To print the data set containing the page overlay, submit the print job to a printer that supports page overlays. For more information about AFP printers that support page overlays, refer to *AFP: Printer Information*.

System Programmer Response: If the page definition is for a separator page, the message data set, or the default page definition for the user print data sets defined in the PSF startup procedure, delete the page overlay from the page definition.

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: PSF stops processing the current data set and issues additional messages that identify the processing environment in which an error occurred.

User Response: If you created the structured fields for the page definition, correct the error and resubmit the print request. Refer to *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 a PSF logic error. If you used a program to create the structured fields for the page 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.

APK359I AN INLINE MEDIUM MAP WAS ENCOUNTERED IN THE DATASET, 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: The form definition containing the error is not used, and one of these occurs:

- If the error is in the default form definition, or a form definition specified for printing messages or separator pages, PSF is not started.
- If the error is in a form definition specified on the user's OUTPUT JCL statement, PSF cannot begin printing the data set; it tries to print the next data set. PSF issues a message identifying the position of the structured field in the form definition. PSF issues additional messages identifying the processing environment when the error was found.

User Response: If you created the structured fields for the form definition, correct the error and resubmit the print request. Refer to *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be a PSF 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.

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: PSF stops processing the current data set and issues additional messages that identify the processing environment in which the error occurred.

User Response: If you created the structured fields for the page definition, correct the error and resubmit the print request. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

APK367I DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE OUTPUT OPTION SPECIFIED IN AN IOB STRUCTURED FIELD WITH RESOURCE LOCAL ID *identifier* **IS NOT VALID OR IS 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 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: PSF stops processing the current data set and issues additional messages that identify the processing environment in which an error occurred.

User Response: If you created the structured fields for the resource, correct the error and resubmit the print request. Refer to *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 a PSF 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 was valid. If the input was valid, refer to 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 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: PSF stops processing the current data set and issues additional messages that identify the processing environment in which an error occurred.

User Response: If you created the structured fields for the resource, correct the error and resubmit the print request. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

APK369S DATA IN AN INPUT RECORD IS NOT VALID; A *structuredfield* STRUCTURED FIELD IS ATTEMPTING TO INCLUDE A NON-PRESENTATION OBJECT CONTAINER.

Explanation: The Object Classification triplet (X'10') on a structured field is requesting a non-presentation object as the object class. Only presentation objects are allowed to be included through this structured field.

System Action: PSF stops processing the current page.

PSF attempts to find the end of the current page and to resume printing on the next page. If unable to find the end of the page, PSF stops printing the data set. If this error occurs in a resource, PSF stops processing the data set.

If this error occurs in a resource environment group, PSF stops processing the resource environment group and continues processing the data set.

User Response:

System Programmer Response:

APK380S THE REGISTRATION ID (*identifier*) OF AN OBJECT CONTAINER RESOURCE, NAME *resourcename* OR OBJECT OID *objectoid*, 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 IOB or MDR structured field, but the object classification triplet in the Begin Object Container structured field did not have the corresponding registration ID. For a list of registration IDs and their assumed functions, refer to *Mixed Object Document Content Architecture Reference*. A value of *** means that the resource name or object OID was not specified.

System Action: If the object container was called out by JCL, PSF stops processing the current data set and issues additional messages that identify the processing environment in which an error occurred. If the object container was included by an IOB or MDR structured field, PSF terminates the page or overlay. PSF attempts to locate the end of the current page and resume processing on the next page. If the end of the current page cannot be located, PSF stops printing the data set.

User Response: If you created the structured fields for the object container resource, ensure that the registration ID corresponds to the keyword used to invoke the resource or the registration ID specified in the object classification triplet specified on the IOB or MDR structured field.

System Programmer Response: If an IBM licensed program was used to create the structured fields for the object container that contains the error, verify that the input to that program was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

APK381S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: 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: If the structured field is included in an object embedded in a page or overlay, or the structured field is in a resource included by a page or overlay, PSF terminates the page or overlay. PSF attempts to locate the end of the current page and resume processing on the next page. If the end of the current page cannot be located, PSF stops printing the data set. For non-presentation object containers, PSF stops printing the data set.

If the error is contained in a page definition, PSF terminates processing of the data set and continues processing with the next data set. PSF issues a message that identifies the position of the structured field in the input data stream or resource. PSF issues additional messages identifying the processing environment in which the error occurred.

User Response: If you created the structured fields, correct the error and resubmit the print request. Refer to *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 a PSF 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 field with the error, verify that the input to that program was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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. Refer to *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 was valid. If the input was valid, refer to 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: The form definition containing the error is not used, and one of these occurs:

- PSF is not started if the form definition containing the error is defined in the PSF startup procedure. The form definition resources defind in the PSF startup procedure are for separator pages, for the message data set, and for the default form definition resource for user print data sets.
- If the error is in a form definition specified on the user's OUTPUT JCL statement, PSF cannot begin printing the data set; it tries to print the next data set. PSF issues a message identifying the position of the structured field in the form definition. PSF issues additional messages identifying the processing environment when the error was found.

User Response: If you created the structured fields for the form definition, correct the error and resubmit the print request. Refer to *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 PSF 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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK386S DATA IN AN INPUT RECORD OR RESOURCE IS INVALID: A REQUIRED TRIPLET with ID *identifier* **WAS MISSING FROM AN IOB STRUCTURED FIELD.**

Explanation: When identifier is:

X'4C' The x- or y-axis origin for object content or an object area size (X'4C') triplet was specified on an IOB, but no measurement unit (X'4B') triplet was specified. The structured field is contained in a print data set or overlay.

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: If the error is contained in a page definition, PSF terminates processing of the data set and continues processing with the next data set. Otherwise, PSF terminates the page or overlay containing the structured field in error. PSF attempts to locate the end of the current page and resumes processing on the next page. If the end of the current page cannot be located, PSF stops printing the data set. PSF issues a message identifying the position of the structured field in the input data stream or resource. PSF issues additional messages identifying the processing environment when the error was found.

User Response: If you placed the IOB structured field in the print data set or overlay, correct the error and resubmit the ACIF job. Refer to *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: If an IBM licensed program was used to place the IOB structured field in the print data set or overlay, verify that the input to that program was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK387S DATA IN AN INPUT RECORD IS INVALID: A PARAMETER IN AN IOB STRUCTURED FIELD CONTAINS UNACCEPTABLE DATA.

Explanation: One of the parameters in the Include Object (IOB) structured field is not valid. The object type specified is not supported or is not valid or 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'. The IOB structured field is contained in the print data set or an overlay.

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. Refer to *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 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. Refer to *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 an 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. Refer to *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 was valid. If the input was valid, refer to 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: If the error occurred in a form definition, a page definition, or a non-presentation object container resource (for example, COMSETUP), the form definition, page definition, or non-presentation object container resource is not used, and one of these occurs:

- PSF is not started for any of these:
  - The default form definition
  - A form definition specified for printing messages or separator pages
  - A page definition specified for printing messages or separator pages
- PSF cannot begin printing the data set for a form definition or non-presentation object container resource (or page definition if printing line date) specified on a user's OUTPUT JCL statement; PSF tries to print the next data set. If the error occurred in a structured field in a page or another type of resource, PSF attempts to find the end of the page or resource. If PSF can find the end of the page or resource, it prints any data accumulated for the current page. If PSF cannot find the end of the page or resource, the data set is terminated.

PSF issues a message identifying the position of the structured field in the data stream or resource. PSF issues additional messages identifying the processing environment in which the error occurred.

User Response: If you created the structured fields for the object, correct the error and resubmit the print request. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

APK392I DATA IN A FORMDEF RESOURCE IS INVALID: THE SCOPE OF THE MFC IS *scope* BUT *structuredfield* IS THE STRUCTURED FIELD THAT BOUNDS THE MFC.

Explanation: Either a document environment group 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 issurs 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. Refer to *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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

APK393I THE INPUT BIN SPECIFIED IN THE MMC STRUCTURED FIELD OR ON THE OUTPUT STATEMENT IS AN INSERTER BIN AND IS DISABLED. AN ALTERNATIVE BIN WAS SUBSTITUTED.

Explanation: The Medium Modification Control (MMC) structured field or the output statement requested an input bin that is supported by the printer but is disabled. This bin is an inserter bin. The MMC structured field is contained in the form definition. The output statement is in the JCL.

System Action: ACIF continues processing, selecting paper from an alternative bin. The inserter pages are blank sheets from the alternative bin.

User Response: If the output is not acceptable, submit the print request to a printer that has the specified bin available, or ensure that the bin is enabled on the original printer before resubmitting the print request.

System Programmer Response: No response is necessary.

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. Refer to *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 was valid. If the input was valid, refer to 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. Refer to *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. Refer to *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 was valid. If the input was valid, refer to 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 terminates.

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 quotes.

System Action: ACIF terminates.

User Response: Use single quotes 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 terminates.

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 listed below:

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 terminates.

User Response: Contact IBM Service.

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 quotes was found in the attribute name for an **INDEX***n* parameter.

System Action: ACIF terminates.

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 terminates.

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 terminates.

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 terminates.

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: A GETMAIN macro made an unsuccessful attempt to obtain virtual storage. This message indicates the storage size and the return code from the system GETMAIN macro.

System Action: ACIF terminates.

User Response: Increase the REGION size and resubmit the job.

System Programmer Response: To interpret the GETMAIN return code, refer to the documents about application development macros for your operating system.

APK409S 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. This error message returns the following information:

- Storage request size
- Request type
- Return code

System Action: ACIF terminates.

User Response: No response is necessary.

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:

Return Code	**Description**
0	Successful
1	Permanent I/0 error
2	Specified number of bytes is zero or negative
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 is full
14	RECFM not valid
20	Incorrect file ID
28	File not found
51	Length exceeds maximum
310	File format not valid

System Action: ACIF terminates.

User Response: Use the information provided in the return code to correct the problem.

System Programmer Response: No response is necessary.

APK412W 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.

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.

Return Code	Description
0	Successful
1	Permanent I/0 error
2	Specified number of bytes is zero or negative
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 is full
14	RECFM not valid
20	Incorrect file ID
28	File not found
51	Length exceeds maximum
310	File format not valid

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.

APK414I THE FOLLOWING PARAMETERS WILL BE USED FOR THIS RUN:

Explanation: This message is issued before APK415I, APK416I, and APK417I 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.

APK416I THESE PATHS HAVE BEEN SPECIFIED FOR *libraryname***.**

Explanation: This message is issued before message APK417I and shows the resource type the data set or file type is specified for.

System Action: None.

User Response: No response is necessary.

System Programmer Response: No response is necessary.

APK417I PATH: *name*

Explanation: This message follows APK416I and lists the name of the data set or file type for a particular resource type.

System Action: None.

User Response: No response is necessary.

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 terminates.

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.

System Action: ACIF terminates.

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.

Return Code	Description
0	Successful
1	Permanent I/0 error
2	Specified number of bytes is zero or negative
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 is full
14 RECFM not valid
20 Incorrect file ID
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
51 Length exceeds maximum
310 File format not valid

System Action: ACIF terminates.

User Response: Use the information provided in the return code to correct the problem.

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.

Return Code
Description
0 Successful
1 Permanent I/0 error
2 Specified number of bytes is zero or negative
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 is full
14 RECFM not valid
20 Incorrect file ID
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
51 Length exceeds maximum
310 File format not valid

System Action: ACIF terminates.

User Response: Use the information provided in the return code to correct the problem.

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.

Return Code
Description
0 Successful
1 Permanent I/0 error
2 Specified number of bytes is zero or negative
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 is full
14 RECFM not valid
20 Incorrect file ID
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
51 Length exceeds maximum
310 File format not valid

System Action: ACIF terminates.

User Response: Use the information provided in the return code to correct the problem.

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.

Return Code
Description
0 Successful
1 Permanent I/0 error
2 Specified number of bytes is zero or negative
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 is full
14 RECFM not valid
20 Incorrect file ID
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
51 Length exceeds maximum
310 File format not valid

System Action: ACIF terminates.

User Response: Use the information provided in the return code to correct the problem.

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 OS/390 and MVS; it is incorrect for the AIX, Windows NT, VM, or VSE operating system.

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 FOUND.

Explanation: The input, output, or resource user exit program named on the exit's DD parameter does not exist.

System Action: ACIF terminates.

User Response: Correct your exit program and resubmit the job.

System Programmer Response: No response is necessary.

APK426S PARAMETER MISMATCH: RESTYPE *type* SPECIFIED, 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 terminates.

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.

System Action: ACIF terminates.

User Response: Contact IBM Service.

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 (OS/390 or VSE) or FILEDEF statement (VM).

System Action: ACIF terminates.

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 an incorrect INDEX number specified. The INDEXn range is 1–8.

System Action: ACIF terminates.

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 terminates.

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 terminates.

User Response: Correct the parameters and rerun ACIF.

System Programmer Response: No response is necessary.

APK440I ACIF HAS COMPLETED PROCESSING NORMALLY, WITH RETURN CODE *returncode*.

Explanation: ACIF processing 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 HAS COMPLETED PROCESSING ABNORMALLY WITH RETURN CODE *returncode*.

Explanation: ACIF processing has completed with one of these return codes:

Return Code	Description
4	Warning; processing continues
8	Error; processing stops
12	Severe error; processing stops
16	Fatal error; processing stops

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.

APK442S ACIF HAS BEEN INVOKED WITHOUT ANY PARAMETERS.

Explanation: ACIF needs a minimum number of parameters in order to function.

System Action: ACIF terminates.

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 terminates.

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 terminates.

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 terminates.

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 terminates.

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 in not valid; the lengths must be equal.

System Action: ACIF terminates.

User Response: Correct the ACIF parameters and resubmit the job.

System Programmer Response: No response is necessary.

APK448S **INDEXING WAS REQUESTED, BUT NEITHER 'TRIGGER1' NOR ANY 'FIELD' WAS SATISFIED WITHIN THE PAGE RANGE SPECIFIED BY THE INDEXSTARTBY PARAMETER.**

Explanation: Indexing was requested, but the first INDEX satisfier was outside the range of pages specified in the INDEXSTARTBY parameter.

System Action: ACIF terminates.

User Response: Correct the parameters and resubmit the job.

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 terminates.

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 terminates.

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 terminates.

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. Refer to your operating system's authorized assembler language programs document for information about the SVC 99.

APK452S **A** *trigger* **NUMBER OF** *number* **IS INVALID FOR** *parameter*.

Explanation: The trigger or record number specified in the FIELD*n* or INDEX*n* parameter is not valid.

System Action: ACIF terminates.

User Response: Triggers used in field definitions must be defined. Correct the parameter and rerun ACIF.

System Programmer Response: No response is necessary.

APK453S THE *fields* 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 terminates.

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 FIELD*n*.

Explanation: A FIELD*n* parameter value contains incorrect characters.

System Action: ACIF terminates.

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 terminates.

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 terminates.

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 terminates.

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 TRIGGER*n*.

Explanation: The supplied TRIGGER*n* value was not a literal.

System Action: ACIF terminates.

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 terminates.

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 terminates.

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 terminates.

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 terminates.

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 terminates.

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.

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.

APK466S A SUB-PARAMETER OF *subparameter* IS NOT SUPPORTED ON THE *parameter* PARAMETER.

Explanation: The named sub-parameter 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.

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.

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 terminates.

User Response: Use your local problem reporting system to report the error.

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.

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.

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.

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 manual for the maximum number of values for this parameter, correct the parameter, and rerun ACIF.

APK473S RECORDRANGE SUB-PARAMETER ALLOWED ONLY IF RECORD VALUE IS '*'.

Explanation: The RECORDRANGE sub-parameter is only valid on a TRIGGER*n* parameter if the record value was specified as '*'.

System Action: ACIF terminates.

User Response: Either specify an '*' for the record value or remove the RECORDRANGE sub-parameter from the TRIGGER parameter.

APK474S END-OF-FILE ENCOUNTERED BEFORE CLOSING QUOTE FOUND FOR *value*.

Explanation: The end of the parameter file was found before the closing quote for a literal value.

System Action: ACIF terminates.

User Response: Ensure the literal value is enclosed in quotes and rerun ACIF.

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.

APK476I MESSAGE TEXT NOT AVAILABLE FOR MESSAGE NUMBER: *number*

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: Contact IBM service and inform them that ACIF attempted to write an undefined message. This situation should be corrected by IBM.

APK499S INTERNAL ERROR in MODULE *module* AT FUNCTION *function*.

Explanation: An internal error has occurred.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message. Make note of the module and function specified in the message.

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.

Return Code

	Description
0	Successful
1	Permanent I/0 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 is full
14	RECFM not valid
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 terminates.

User Response: Correct the parameters and rerun ACIF.

APK610I GTF RETURN CODE = *rc*.

Explanation: Generalized Trace Facility (GTF) has returned a nonzero return code from the GTRACE request. The return code *rc* and *error text* explain the error. The return codes and error text are:

RC	Error Text
04	Inactive OS/390 GTF
08	Incorrect length = xxxx
0C	Incorrect data address = xxxx
10	Incorrect FID = xx
14	Incorrect EID = xx
18	No GTF buffer space
1C	Incorrect parameter address = xxxx
20	Data paged out
xx	Unknown GTF return code

System Action: The action depends on the return code; ACIF might or might not continue tracing. For return codes 18 and 20, GTF tracing continues. For the other return codes listed, GTF tracing stops. For unknown return codes, GTF tracing stops.

User Response: No response is necessary.

System Programmer Response: Refer to your operating system's service aids logic documents for more information about the return codes.

APK900S MISSING DAT POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK901S MISSING FORMDEF POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK902S MISSING PAGEDEF POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK903S MISSING OBJECT STACK POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK904S MISSING CODE PAGE POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK905S MISSING FONT METRIC POINTER IN CCM.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK906S UNEXPECTED OTHERWISE STATEMENT ENCOUNTERED.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK907S CCM CANNOT FIND REQUESTED MEDIUM MAP.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK908S CCM CANNOT FIND REQUESTED DATA MAP.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK909S CCM CANNOT FIND REQUESTED MEG.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK910S INPUT BIN LIST CHANGED DURING PROCESSING.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK911S DAT DID NOT SPECIFY ANY INPUT BIN INFORMATION.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK912S OVERLAY LOCAL ID HAS BEEN CHANGED IN LIST.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK913S STARTING COPY COUNT EXCEEDS TOTAL COPIES IN MM.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

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 terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK915S ACIF REQUESTED CODE PAGE DEALLOCATION AS WELL AS CODE PAGE PROCESSING.

Explanation: An internal error has occurred in ACIF.

System Action: ACIF terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

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 terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

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 terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

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 terminates.

User Response: Contact IBM Service and inform them that you have received this message indicating an internal error.

APK919S THE CCM COMPONENT OF ACIF HAS USED UP ITS OBJECT STACK IN *modulename*.

Explanation: The 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 terminates.

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. Contact IBM Service and inform them that you have received this message indicating an internal error.

APK920S ALL THE INPUT BINS ON YOUR PRINTER ARE EITHER DISABLED OR ARE INSERTER BINS. PSF NEEDS TO SUBSTITUTE A BIN BUT NO BINS ARE AVAILABLE TO SUBSTITUTE.

Explanation: This abend is issued by module APKMSGEX. All bins reported back from the printer are either disabled or are inserter bins. As a result, there are no bins available for printing and the current data set cannot be printed.

System Action: ACIF processing terminates abnormally.

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 CCM when processing an object container resource. This is a logic error.

System Action: PSF attempts to recover from this abend by restarting. Message APS057I is issued if PSF successfully restarts.

System Programmer Response: This PSF abend reason code indicates a logic error. Contact your service representative in the IBM Support Center or use your electronic link with IBM service for assistance regarding this error code.

APK2000S THE REGISTERED OBJECT TYPE ID (*identifier*) OF AN OBJECT CONTAINER RESOURCE, NAME *resourcename* OR OBJECT OID *objectoid*, IS NOT VALID OR IS NOT SUPPORTED BY PSF OR THE PRINTER.

Explanation: The registration ID specified for an object container is not supported by the printer. The registration ID is specified in the object classification triplet on an IOB, BOC, or BR structured field. A value of *** for the resource name or object OID means that is was not specified.

System Action: PSF terminates the page or overlay. PSF attempts to locate the end of the current page and resume processing on the next page. If the end of the current page cannot be located, PSF stops printing the data set. PSF issues additional messages that identify the processing environment when the error was found.

User Response: If you created the structured fields for the object container resource, ensure that the registration ID is correct. If the registration ID is correct, submit the print job to a printer that supports this object type. For more information about what object types are supported by your printer, refer to your printer documentation.

System Programmer Response: If an IBM licensed program was used to create the structured fields, verify that the input to that program was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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: PSF stops processing the current data set and issues messages identifying the position of the structured field and the processing environment when the error was found.

User Response: If you created the structured fields for the resource, correct the error and resubmit the print request. Refer to *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 a PSF logic error. If you used a program to create the structured fields for the page definition, contact your system programmer.

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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

Problem Determination: Items 1, 2, 3, 13, 15c, 17, 19.

APK2004S DATA IN A FORMDEF RESOURCE IS INVALID: MEDIA TYPE LOCAL IDENTIFIER IN MMC STRUCTURED FIELD, ID *identifier*, WAS NOT FOUND IN THE MMT 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: The form definition containing the error is not used, and one of the following occurs:

- If the error is in the default form definition, or a form definition specified for printing messages or separator pages, PSF is not started.
- If the error is in a form definition specified on the user's OUTPUT JCL statement, PSF cannot begin printing the data ser; it tries to print the next data set.

User Response: If you created the structured fields for the form definition, correct the error and resubmit the print request. Refer to *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field has no error, the error might be a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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: PSF 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 form definition, correct the error and resubmit the print request. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem. If the error involves separator pages, use the information provided in the User Response section to correct the error.

APK2006S DATA IN A PAGEDEF RESOURCE IS NOT VALID: GRAPHICS GENERATION WAS REQUESTED ON RCD STRUCTURED FIELD *structuredfield*, BUT THE PRINTER DOES NOT SUPPORT GRAPHICS OBJECTS.

Explanation: A Record Descriptor (RCD) structured field in a page definition has requested PSF to generate a graphics object from the line data, but the printer does not support graphics objects.

System Action: PSF ignores the request and continues processing the data set.

User Response: To print the data set and have PSF generate graphics objects, submit the print job to a printer that supports graphics objects. For more information about AFP printers that support graphics objects, refer to *AFP: Printer Information*

System Programmer Response: If the page definition is for a separator page, the message data set, or the default page definition for the user print data sets defined in the PSF startup procedure, delete the option from the page definition that requests that a graphics object be generated.

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: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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***. THIS 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: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

APK2009S DATA IN A PAGEDEF RESOURCE IS NOT VALID: RIGHT ALIGNMENT WAS REQUESTED ON RCD STRUCTURED FIELD *structuredfield***, BUT THE PRINTER DOES NOT SUPPORT RIGHT ALIGNMENT.**

Explanation: A Record Descriptor (RCD) structured field in a page definition has requested that PSF right align a field from the line data, but the printer does not support the controls necessary for PSF to perform this function.

System Action: PSF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User Response: To print the data set and have PSF right align fields, submit the print job to a printer that supports all four inline print directions and all four

character rotations. For more information about inline print directions and character rotations supported by AFP printers, refer to *AFP: Printer Information*.

System Programmer Response: If the page definition is for a separator page, the message data set, or the default page definition for the user print data sets defined in the PSF startup procedure, delete the option from the page definition that requests that a field be right aligned.

APK2010S RECORD FORMATTING WAS REQUESTED BY THE PAGE DEFINITION BUT THAT FUNCTION IS NOT SUPPORTED BY THIS RELEASE OF PSF.

Explanation: The record formatting function is not supported by this release of PSF.

System Action: PSF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User Response: To use the record formatting function, submit this job to a version of print PSF that supports record formatting.

System Programmer Response: If the page definition is for a separator page, the message data set, or the default page definition for the user print data sets defined in the PSF startup procedure, remove this page definition and select one 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: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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 GRAPHID 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. PSF could not find a match between the start and end Graphics Descriptor triplets using the GRAPHID parameter from the end Graphics Descriptor triplet and the TEXT ORIENTATION parameter value from the RCD structured field.

System Action: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

APK2017S DATA IN A PAGEDEF RESOURCE IS NOT VALID: A FONT IS NEEDED FOR AN RCD IN DATA MAP *datamap* BUT NO FONTS WERE MAPPED IN THE DATA MAP.

Explanation: Fonts needed for printing record-format line 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) structured field that requires a font, but no fonts were specified in the data map.

System Action: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

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 PSF reset the page number.

System Action: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

APK2019S DATA 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: PSF cannot determine the correct code points to generate when a double-byte font is used to print the page number using th 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: PSF 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

APK2020I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE OBJECT OID LENGTH SPECIFIED IN A FULLY QUALIFIED NAME TRIPLET ON A *structuredfield* STRUCTURED FIELD IS GREATER THAN 129 BYTES.

Explanation: An object OID being specified in a Fully Qualified Name triplet has a length that exceeds 129 bytes.

System Action: PSF stops processing the current page. PSF attempts to find the end of the current page and to resume printing on the next page. If unable to find the end of the page, PSF stops printing the data set. If this error occurs in a resource, PSF stops processing the data set. If this error occurs in a resource environment group, PSF stops processing the resource environment group and continues processing the 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

Problem Determination: Items 1, 2, 3, 13, 15c, 17, 19.

APK2021I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE *structuredfield* STRUCTURED FIELD CONTAINS UNPAIRED FQN X'BE' & FQN X'DE' TRIPLETS.

Explanation: If this is an Include Object (IOB) 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: PSF stops processing the current page. PSF attempts to find the end of the current page and to resume printing on the next page. If unable to find the end of the page, PSF stops printing the data set. If this error occurs in a resource, PSF stops processing the data set.

User Response: If you created the structured fields for the form definition, correct the error and resubmit the print request. Refer to *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field is correct, the error might be a PSF 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 was valid. If the input was valid, refer to your

system's diagnosis reference for assistance in determining the source of the problem.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

Problem Determination: Items 1, 2, 13, 15c, 17, 19.

APK2022I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A RESOURCE NAMED AS A SECONDARY RESOURCE ON AN IOB STRUCTURED FIELD IS NOT NAMED IN THE ACTIVE ENVIRONMENT GROUP OF THE PAGE OR OVERLAY.

Explanation: An Include Object (IOB) structured field calls for a secondary resource. This resource must be named in an MDR in the active environment group of the page or overlay containing the IOB structured field.

System Action: If the object is in a page, PSF terminates the page and continues processing the data set. If the object is in a resource, PSF stops processing and printing the 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. Refer to *Mixed Object Document Content Architecture Reference* for more information about the structured field. If the structured field is correct, the error might be a PSF 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 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 was valid. If the input was valid, refer to your system's diagnosis reference for assistance in determining the source of the problem.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page or for the message data set in the PSF startup procedure. Contact you system programmer.

Problem Determination: Items 2, 17.

APK2023I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE FORMAT SPECIFIED IN A FULLY QUALIFIED NAME TRIPLET ON A *structuredfield* STRUCTURED FIELD IS NOT VALID.

Explanation: The FQNFmt specified in a Fully Qualified Name (FQN) triplet on a structured field is not valid.

System Action: PSF stops processing the current page. PSF attempts to find the end of the current page and to resume printing on the next page. If unable to find the end of the page, PSF stops printing the data set. If this error occurs in a resource, PSF stops processing the data set. If this error occurs in a resource environment group, PSF stops processing the resource environment group and continues processing the 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

Problem Determination: Items 1, 2, 3, 13, 15c, 17, 19.

APK2024I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A FULLY QUALIFIED NAME TRIPLET WITH A TYPE OF X'84' OR X'CE' WAS SPECIFIED ON 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 structured field in an Object Environment Group.

System Action: PSF stops processing the current page. PSF attempts to find the end of the current page and to resume printing on the next page. If unable to find the end of the page, PSF stops printing the data set. If this error occurs in a resource, PSF stops processing the 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

Problem Determination: Items 1, 2, 3, 13, 15c, 17, 19.

APK2025I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: MORE THAN ONE FULLY QUALIFIED NAME TRIPLET WAS SPECIFIED IN A REPEATING GROUP ON AN MDR STRUCTURED FIELD.

Explanation: Only one Fully Qualified Name (FQN) triplet with an FQNType of Begin Resource Object Reference (X'84'), Other Object Data Reference (X'CE'), or Data Object External Resource Reference (X'DE') can be specified in a repeating group.

System Action: PSF stops processing the current page. PSF attempts to find the end of the current page and to resume printing on the next page. If unable to find the end of the page, PSF stops printing the data set. If this error occurs in a resource, PSF stops processing the data set. If this error occurs in a resource environment group, PSF stops processing the resource environment group and continues processing the 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

Problem Determination: Items 1, 2, 3, 13, 15c, 17, 19.

APK2026I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE OBJECT CLASS SPECIFIED IN AN OBJECT CLASSIFICAITON 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' if the Fully Qualified Name triplet type in the repeating group is a Data Object External Resource Reference (X'DE'). The ObjClass specified must be X'01' if the Fully Qualified Name triplet type in the repeating group is an Other Object Data Reference (X'CE').

System Action: PSF stops processing the current page. PSF attempts to find the end of the current page and to resume printing on the next page. If unable to find the end of the page, PSF stops printing the data set. If this error occurs in a resource, PSF stops processing the data set. If this error occurs in a resource environment group, PSF stops processing the resource environment group and continues processing the 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

Problem Determination: Items 1, 2, 3, 13, 15c, 17, 19.

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: PSF stops processing the current page. PSF attempts to find the end of the current page and to resume printing on the next page. If unable to find the end of the page, PSF stops printing the data set. If this error occurs in a resource, PSF stops processing the data set. If this error occurs in a resource environment group, PSF stops processing the resource environment group and continues processing the 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

Problem Determination: Items 1, 2, 3, 13, 15c, 17, 19.

APK2028I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: THE RESOURCE BEGINNING WITH THE *structuredfield* STRUCTURED FIELD CANNOT BE SENT TO THE PRINTER AS A HARD RESOURCE.

Explanation: Either the printer or your PSF does not support sending this resource to the printer before the page and treating it as a hard resource managed by PSF.

System Action: PSF ignores this resource in the MDR and continues processing. PSF treats it as a soft resource each time it is included in a page or resource. A soft resource is sent to the printer each time it is included.

User Response: None.

System Programmer Response: None.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

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: PSF stops processing the current page. PSF attempts to find the end of the current page and to resume printing on the next page. If unable to find the end of the page, PSF stops printing the data set. If this error occurs in a resource, PSF stops processing the 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

Problem Determination: Items 1, 2, 3, 13, 15c, 17, 19.

APK2030I DATA IN AN INPUT RECORD OR RESOURCE IS NOT VALID: A SECONDARY RESOURCE IS SPECIFIED ON AN IOB STRUCTURED FIELD THAT INCLUDES A BAR CODE OR GRAPHICS OBJECT.

Explanation: A Fully Qualified Name (FQN) triplet of type Data Object External Resource Reference (X'DE') is specified on an Include Object (IOB) structured field that is including a bar code or graphics object. Secondary resources are not allowed for these objects.

System Action: The secondary resource reference 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. Refer to *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 a PSF 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 was valid. If the input was valid, refer to your system'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 provided in the User Response section to correct the error.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

Problem Determination: Items 1, 2, 3, 13, 15c, 17, 19.

APK2032I DATA IN PAGEDEF RESOURCE *pagedef* IS NOT VALID: THE RESOURCE BEGINNING WITH THE *structuredfield* STRUCTURED FIELD CANNOT BE SENT TO THE PRINTER AS A HARD RESOURCE.

Explanation: Either the printer or your PSF does not support sending this resource to the printer before the page and treating it as a hard resource managed by PSF.

System Action: PSF ignores this resource in the MDR and continues processing. PSF treats it as a soft resource each time it is included in a page or resource. A soft resource is sent to the printer each time it is included.

User Response: None.

System Programmer Response: None.

Operator Response: If you see this message on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Contact you system programmer.

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: PSF 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.

Operator 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: If the error is in a resource, the resource is not used, and one of the following occurs:

- If the error is in the default form definition, or a form definition specified for printing messages or separator pages, PSF is not started.
- If the error is in a form definition specified on the user's OUTPUT JCL statement, PSF cannot begin printing the data set and tries to print the next data set.
- If the error is in the print data set, PSF stops processing the data set.

PSF issues a message identifying the position of the structured field in the input data stream or resource. PSF issues 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. Refer to *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 a PSF 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.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Inform your system programmer.

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: PSF 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. Refer to *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 a PSF logic error.

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.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page or the message data set in the PSF startup procedure. Inform your system programmer.

APK2041I DATA IN AN INPUT RECORD OR PAGEDEF RESOURCE IS NOT VALID: INPUT DATA BEING USED FOR A VARIABLE RESOURCE NAME IN LND OR RCD STRUCTURED FIELD *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: PSF 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. Refer to *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 a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for

user print data sets in the PSF startup procedure. Inform your system programmer.

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.

System Action: PSF 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 resource, correct the error and resubmit the print request. Refer to *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 a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page or for the message data set in the PSF startup procedure. Inform your system programmer.

APK2043I DATA IN A PAGEDEF RESOURCE IS NOT VALID: THE ATTRIBUTE XMD POINTER VALUE IN XMD STRUCTURED FIELD NUMBER *number* **WILL CAUSE AN INFINITE LOOP.**

Explanation: The Attribute 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: PSF 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. Refer to *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 does not have an error, the error might be a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Inform your system programmer.

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: PSF 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. Refer to *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 a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Inform your system programmer.

APK2045I THE ENCODING SCHEME SPECIFIED IN A PAGE DEFINITION USED TO PROCESS XML DATA IS NOT SUPPORTED BY PSF.

Explanation: The encoding scheme specified is not supported by PSF.

System Action: PSF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User Response: You need to use an encoding scheme that is supported by PSF for XML data processing. Refer to *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 a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Inform your system programmer.

APK2046I XML DATA FORMATTING WAS REQUESTED BY THE PAGE DEFINITION BUT THAT FUNCTION IS NOT SUPPORTED BY THIS RELEASE OF PSF.

Explanation: The XML data formatting function is not supported by this release of PSF.

System Action: PSF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User Response: To use the XML data formatting function, submit this job to a version of PSF that supports XML data formatting.

System Programmer Response: If the page definition is for a separator page, the message data set, or the default page definition for the user print data sets defined in the PSF startup procedure, remove this page definition and select one that does not use the XML data formatting function.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Inform your system programmer.

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: PSF 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. Refer to *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 a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Inform your system programmer.

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: PSF stops processing the current data set and issues a message identifying the position

of the error in the data stream. PSF issues additional messages that identify the processing environment when the error was found.

User Response: If you created the XML data, correct the error and resubmit the print request. Refer to the XML specification Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium Web site. If the XML data does not have an error, the error might be a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that PSF cannot be initialized or cannot print error messages. Inform your system programmer.

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: PSF stops processing the current data set and issues a message identifying the position of the error in the data stream. PSF issues additional messages that identify the processing environment when the error was found.

User Response: If you created the XML data, correct the error and resubmit the print request. Refer to the XML specification Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium Web site. If the XML data does not have an error, the error might be a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that PSF cannot be initialized or cannot print error messages. Inform your system programmer.

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: PSF stops processing the current data set and issues a message identifying the position of the error in the data stream. PSF issues additional messages that identify the processing environment when the error was found.

User Response: If you created the XML data, correct the error and resubmit the print request. Refer to the XML specification Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium Web site. If the XML data does not have an error, the error might be a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that PSF cannot be initialized or cannot print error messages. Inform your system programmer.

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: PSF stops processing the current data set and issues a message identifying the position of the error in the data stream. PSF issues additional messages that identify the processing environment when the error was found.

User Response: If you created the XML data, correct the error and resubmit the print request. Refer to the XML specification Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium Web site. If the XML data does not have an error, the error might be a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that PSF cannot be initialized or cannot print error messages. Inform your system programmer.

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: PSF stops processing the current data set and issues a message identifying the position of the error in the data stream. PSF issues additional messages that identify the processing environment when the error was found.

User Response: If you created the XML data, correct the error and resubmit the print request. Refer to the XML specification Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium Web site. If the XML data does not have an error, the error might be a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that PSF cannot be initialized or cannot print error messages. Inform your system programmer.

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: PSF 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: PSF stops processing the current data set and issues a message identifying the position of the error in the data stream. PSF issues additional messages that identify the processing environment when the error was found.

User Response: If you created the XML data, correct the error and resubmit the print request. Refer to the XML specification Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium Web site. If the XML data does not have an error, the error might be a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that PSF cannot be initialized or cannot print error messages. Inform your system programmer.

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: PSF stops processing the current data set and issues a message identifying the position of the error in the data stream. PSF issues additional messages that identify the processing environment when the error was found.

User Response: If you created the XML data, correct the error and resubmit the print request. Refer to the XML specification Extensible Markup Language (XML) 1.0, on the World Wide Web Consortium Web site. If the XML data does not have an error, the error might be a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that PSF cannot be initialized or cannot print error messages. Inform your system programmer.

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 Identifer 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: PSF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User Response: You need to provide the encoding scheme for the user data. Refer to *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 a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Inform your system programmer.

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: PSF 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. Refer to *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 a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Inform your system programmer.

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: PSF stops processing the current data set and issues additional messages that identify the processing environment when the error was found.

User Response: You need to change your inline positioning to an absolute value. Refer to *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 a PSF 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, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error.

Operator Response: If this message displays on the operator's console, it indicates that the resource containing the error is defined for a separator page, for the message data set, or as the default resource for user print data sets in the PSF startup procedure. Inform your system programmer.

APK3506I DATA OBJECT RESOURCE TYPE *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 IOB, BOC, BR, or 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: If this error is encountered when processing a Resource Environment Group (REG), PSF skips over this particular data object resource and tries to process any other resources specified in the REG. If this error is encountered while processing a page or overlay object, PSF terminates the page or overlay object. PSF attempts to locate the end of the current page and resume processing on the next page. If the end of the current page cannot be located, PSF stops printing the data set. PSF issues additional messages that identify the processing environment when the error was found.

User Response: If you created the structured fields for the data object resource, ensure that the registration ID is correct. If the registration ID is correct, submit the print job to a printer that supports this object type. For more information about what object types are supported by your printer, refer to your printer documentation.

System Programmer Response: If an IBM licensed program was used to create the structured fields, verify that the input to that program was valid and the correct printer is being used. If the input was valid, refer to *PSF for OS/390 & z/OS: Diagnosis* for assistance in determining the source of the problem. If the error involves separator pages or the message data set, use the information provided in the User Response section to correct the error.

APK3507I DATA OBJECT RESOURCE TYPE *objectid* COULD NOT BE FOUND IN THE RESOURCE LIBRARY. THIS OBJECT IS NOT REQUIRED FOR PRINTING AND IS SKIPPED.

Explanation: The data object resource type specified could not be activated by the printer. The printer does not know about this data object resource; however, this object is not required for printing this document. PSF records this condition and continues. It is likely that the print file was formatted for a color printer that supports color profiles but is being printed on a printer that does not support these color profile objects. It is also possible that the *objectid* was specified incorrectly. If the *objectid* specified in this message is ***, ACIF does not have enough information to identify it.

System Action: PSF records this condition and then continues processing.

User Response: If the printed output is not acceptable, choose a printer that knows the object OIDs that are specified in this print file, correct the object OID, or reformat this print file for the printer on which this print file is being printed.

System Programmer Response: Verify that the formatting options at the time the print file is produced are compatible with the printer on which this print file is printing. Correct any mismatches.

Appendix A. Helpful Hints

When using ACIF, these topics might prove helpful to you:

- Working with control statements that contain numbered lines (OS/390, VM, and VSE environments only)
- Placing TLEs in named groups
- Understanding how ANSI and machine carriage controls are used
- Transferring files into AIX and Windows NT/2000
- Understanding common methods of transferring files into AIX or Windows NT/2000 from other systems:
  - Physical media such as tape
  - PC file transfer program
  - File Transfer Protocol (FTP)
  - Download for OS/390
  - Other considerations
- Creating Invoke Medium Map (IMM) structured fields
- Indexing considerations
- Concatenating the resource file and the document file
- Writing inline resources to the output file
- Specifying the IMAGEOUT parameter
- Creating a MO:DCA object container
- Understanding error code 310

Working with Control Statements That Contain Numbered Lines

This section applies only to the OS/390, VM, VSE environments. If you work in the AIX or Windows NT/2000 environment, you can skip this information about control statements.

Because ACIF reads all 80 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 columns 73-80. (ACIF attempts to use the line number as a data set name, and issues MSGAPK451S and MSGAPK417I 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 having your job terminated by ACIF, IBM recommends that you place page-level Tag Logical Elements (TLEs) inside named groups, using one named group per page.

You should be aware that if you request **INDEXOBJ=ALL** for a job that has an input data set containing composed (AFPDS) pages, page-level TLEs (TLE records after the AEG), and no named groups (BNG/ENG), your job might end with MSGAPK410S or MSGAPK408S. The reason for this action is that no named groups are present, and the page-level TLE records must be collected in memory until the end of the input document or file. MO:DCA index structures contain the extent (size) of the object 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 will not be enough memory, and ACIF will terminate. 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
+	Don't 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

  Note that all ANSI control characters perform 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 don't space
X'0B'	Space one line immediately (don't print)
X'89'	Print the line, then skip to channel 1 (top of form, by convention)
X'8B'	Skip to channel 1 immediately (don't print)

  Note that machine controls print before performing 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 were single spaced.

Transferring Files into AIX and Windows NT/2000

Information in this section only applies to transferring files into the AIX and Windows NT/2000 environments; therefore, if you work in the OS/390, VM, or VSE environment, you can skip this section.

ACIF needs to know two things about a file in order to print it:

- The length of each print record
- The kind of carriage control used

As simple as this sounds, it is the source of most of the difficulty people have printing with ACIF in an AIX or Windows NT/2000 environment.

ACIF processes print records. A record is a sequence of contiguous characters, usually representing a printed line or a MO:DCA (AFPDS) 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 are called variable-length files. Other files require an external definition of length; these are called fixed-length files.

- **Variable-length files**
  - Variable-length files can use a length prefix, which means they contain a prefix that identifies the length of the record in the file. Each record contains a field that gives the length of the record. If the record contains a length, that length must be a prefix for each record and it must be a 16-bit binary number. Use the **FILEFORMAT=RECORD** control statement to identify files with length prefixes.
  - Variable-length files can use a separator or delimiter (also called a new-line 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 NT/2000, the default delimiter is X'0A'. If the file uses EBCDIC encoding, the delimiter is X'25'. Use the **FILEFORMAT=STREAM** control statement to designate files that use delimiters to indicate record boundaries. The **NEWLINE** subparameter of the **FILEFORMAT=STREAM** parameter can be used to specify the delimiter if the default is not correct.
  - ACIF reads the first six bytes and tests for all ASCII characters,[3] to determine if a file is encoded in ASCII or EBCDIC. If no non-ASCII characters are found, ACIF assumes the file uses the ASCII delimiter, X'0A'. Otherwise, ACIF assumes the file uses the EBCDIC delimiter, X'25'. Because an input file can misguide ACIF, either intentionally or by accident (for example, a character from a non-English language), a set of rules has been established to determine how ACIF interprets how a file is processed. These combinations are possible:

Data Type	Delimiter
All EBCDIC	EBCDIC X'25'
All EBCDIC	ASCII X'0A' (See Note)
All ASCII	EBCDIC X'25' (See Note)

2. Structured fields are similar to print commands.

3. Code points from X'00' to X'7F'

Data Type	Delimiter
All ASCII	ASCII X'0A'

Note: This combination is possible only if a file contains a prefix with a string that indicates a different code set than actually exists. For EBCDIC data with ASCII delimiters, use X'0320202020200A'. For ASCII data with EBCDIC delimiters, use X'03C1C1C1C1C125'.

- **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,***nnn* control statement, where *nnn* represents the length of each record.

For variable- and fixed-length files using length prefixes, MO:DCA 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.

Understanding Common Methods of Transferring Files into AIX or Windows NT/2000 from Other Systems

You can transfer files from other systems into AIX or Windows NT/2000 using a variety of methods. Each method results in a different set of possible outputs. Some methods produce output that cannot be used by ACIF. Methods commonly used to transfer files from other systems to AIX or Windows NT/2000 and produce output that ACIF can use are:

- Physical media (such as tape)
- PC file transfer program
- File Transfer Program (FTP)
- Download for OS/390

Physical Media

Normally, you can copy fixed-length files without any transformation 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 NT/2000 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 recommends the following:

- For OS/390 and VM/CMS files, the default is binary.
- For CICS® and VSE, binary is recommended.
- For files with fixed-length records, binary is recommended (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 the control statement **INPEXIT=asciinpe** to remove the otherwise unprintable carriage return (X'0D') that is inserted in the file.
- For VSE files, additional file transfer parameters are available.
- For files with machine carriage control, you can specify BINARY, CRLF and CC. This provides an EBCDIC file with correct carriage controls separated by ASCII delimiters and carriage returns. You must, however, "trick" ACIF by using a prefix of X'0320202020200A'.

FTP

From most systems, FTP works similarly to PC file transfer; most of the same options are provided. Also, when executing FTP on an AIX or Windows NT/2000 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 OS/390

The Download for OS/390 feature of PSF for OS/390 automatically transmits data from the JES spool to an RS/6000® or Windows NT/2000 system using TCP/IP. A cooperative print server or archive server receives the data sets for printing with Infoprint Manager for AIX or Infoprint Manager for Windows NT/2000, or for archiving with Content Manager OnDemand for AIX. Download for OS/390 can supply the two-byte record length prefix for each file 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.[4] 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 or AFPDS or LIST3820) 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 so on) in the same way.

4. 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.

Creating Invoke Medium Map (IMM) Structured Fields

To ensure that pages are reprinted (or viewed) 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 invoked IMM structured field and the number of pages produced since the IMM was invoked. The retrieval system can use this information to 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, which is determined by the Begin Document (BDT) and End Document (EDT) structured fields, ACIF removes all BDT and EDT structured fields when it processes the file. This 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 Tagged 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, assume the following:

- ACIF processed all the bank statements for six branches, using the account number, statement date, and branch number.
- The resultant output files were archived 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 would have to extract all the statements from the print file ACIF created (possibly 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 containing the correct offset information. The retrieval system would have to be able to do this.

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, 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 is because machine controls write before executing any action and are, therefore, associated with the page or line on which they appear. Using machine carriage-control characters for triggers is not recommended.

- 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 generated by any **INDEX** parameter is placed on the first page.

Concatenating the Resource File and the Document File

You can create a print file containing all the required print resources by concatenating the output document file to the end of the resource file. Remember two things when doing this:

- First, 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.
- Second, 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 given page or page group without first determining the location of the BDT structured field. This is not a problem for AFP Workbench Viewer, because it removes any inline objects before using the offset information.

Writing Inline Resources to the Output File

To successfully write inline resources to the output file, the inline resources must be included in the input file in the order in which they are used.

Note: The input file cannot have inline resources in XML data.

If 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
```

ACIF does not look ahead in the inline resources, so, if the inline resources are not in the correct order, ACIF tries to read the referenced resource from a resource library. If the resource is not found, ACIF ends processing with an error.

Keep in mind that when you are indexing and writing inline resources to the output document 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.

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 significantly 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. All software products from the IBM Printing Systems Division do, however, accept IOCA data as well as IM1 image data.

IBM recommends that you specify **IMAGEOUT=ASIS**, unless you have a specific requirement for IOCA images.

Creating MO:DCA Object Containers

Object containers are MO:DCA resources that contain non-OCA objects, such as TIFF images, encapsulated PostScript, JFIF, and microfilm setup. Object containers can be included in a data stream using the Include Object (IOB) structured field.

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 read from the resource library is not a MO:DCA object already. ACIF then creates a MO:DCA object container object by wrapping the raw object data in Object Container Data (OCD) structured fields and creating an Object Environment Group using the values given by the IOB. The result is a MO:DCA object container 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 running ACIF on AIX or Windows NT/2000, 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 usually indicates one of these:

- ACIF has 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 is usually due to the value of the **NEWLINE** characters not matching the record separator (line endings) used in the input file. ACIF uses a default value of X'0A' for **NEWLINE**, which is the UNIX new-line character. Files from PC workstations typically use carriage returns or line feeds (X'0D0A') as delimiters, while stream files from OS/390 systems can use EBCDIC new-line characters (X'15') or EBCDIC line-feed characters (X'25').

ACIF cannot reliably detect the record separator; 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 two-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.

Appendix B. Data Stream Information

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 (BR), End Resource Group (ERG), and End Resourse (ER). It also describes the formats of the resource data sets.

Tag Logical Element (TLE) Structured Field

TLE structured fields are allowed only in AFP data stream (MO:DCA-P) documents. AFP Toolbox for Multiple Operating Systems supports the TLE structured field and can be used from host COBOL and PL/I applications to create indexed AFP data stream (MO:DCA-P) documents. Document Composition Facility (DCF), with APAR PN36437, can also be used to insert TLE structured fields in an output document.

The format of the TLE structured field that ACIF supports and generates is:

Carriage-Control Character (X'5A')
Specifies the carriage-control character, which is required in the first position of the input record to denote a structured field.

Structured Field Introducer (8 bytes)
Specifies the standard structured-field header containing the structured field identifier and the length of the entire structured field, including all of the data.

Tag Identifier Triplet (4–254 bytes)
Specifies the application-defined identifier or attribute name associated with the tag value. An example is 'Customer Name'. This is a Fully Qualified Name triplet (X'02') with a type value of X'0B' (Attribute Name). For more information, refer to *Mixed Object Document Content Architecture Reference*.

Tag Value Triplet (4–254 bytes)
Specifies the actual value of the index attribute. If the attribute is 'Customer Name', the actual tag value might be 'Bob Smith'. This triplet contains a length in byte 1, a type value of X'36' (Attribute Value) in byte 2, two reserved bytes (X'0000'), and the tag value.

The following is an example of a 39-byte TLE structured field containing two index values. For the purposes of illustration, each field within the structured field is listed on a separate line. **X' '** denotes hexadecimal data, and **" "** denotes EBCDIC or character data.

```
X'5A0026D3A090000000'
X'11020B00'
"Customer Name"
X'0D360000'
"Bob Smith"
```

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, customer name, and so on). You might also want to index (tag) a specific page within the statement, such as the summary page. The following is an example of a print file that contains TLEs at the group level as well as at the page level:

```
BDT
  BNG
    TLE Account #, 101030
    TLE Customer Name, Mike Smith
      BPG
        Page 1 data
      EPG
      BPG
        Page 2 data
      EPG
      ...
      ...
      BPG
        TLE Summary Page, n
        Page n data
      EPG
  ENG
  ...
EDT
```

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 creates only TLE structured fields for a group of pages; it does not support indexing specific pages. The only way to index both individual pages and groups of pages is through changes to the application, such as by using AFP Toolbox.

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 containing 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, you should 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 containing 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 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.

Begin Resource Group (BRG) Structured Field

ACIF assigns a null token name (X'FFFF') to this structured field and also creates three additional triplets: an 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 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 invoked to process the print file. The FQN type X'83' triplet contains the AFPDS output print file name identified by the DDname specified in the **OUTPUTDD** parameter.

Begin Resource (BR) Structured Field

ACIF uses this structured field to delimit the resources in the file. ACIF also identifies the type of resource (for example, overlay) that follows this structured field. The type is represented as a 1-byte hexadecimal value where:

X'40' Specifies a font character set

X'41' Specifies a code page

X'92' Specifies an object container

X'FB' Specifies a page segment

X'FC' Specifies an overlay

X'FE' Specifies a form definition

End Resource (ER) and End Resource Group (ERG) Structured Fields

ACIF always assigns a null token name (X'FFFF') to the Exx structured fields it creates. The null name forces a match with the corresponding BR and BRG structured fields.

Format of the Resources File

ACIF retrieves referenced AFP resources from specified libraries and creates a single file that contains these resources. Using ACIF, you can control the number of resources as well as 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 used by the print file and can place them in a separate resource file. The resource file contains a resource group structure whose syntax is:

```
BRG
  BR
    AFP Resource 1
  ER
  BR
    AFP Resource 2
  ER
  ..
  BR
    AFP Resource n
  ER
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 C. 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, based on its index (tag) values.

The following 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 containing both page-level and group-level Index Element (IEL) structured fields. Because ACIF can create TLE structured fields only at the group level, the print file that was processed by ACIF to create this example of an index object file already contained page-level and group-level TLE structured fields.

Group-Level Index Element (IEL) Structured Field

If **INDEXOBJ=GROUP** is specified, ACIF creates an index object file with the following 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 the following 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 performs the actual indexing function, it does not support page-level indexing; therefore, it cannot create TLE structured fields for individual pages. Consequently, it can create only page-level IEL structured fields without any associated TLE structured fields. In this example, where an application created an indexed AFP print file containing both page-level and group-level TLE structured fields, ACIF can create IEL structured fields for the appropriate TLE structured fields.

An index object file containing both page-level and group-level IEL structured fields can provide added flexibility and capability to applications that operate on the files created by ACIF. This type of index object file provides the best performance when you are viewing a file using AFP Workbench Viewer.

Begin Document Index (BDI) Structured Field

ACIF assigns a null token name (X'FFFF') and an FQN type X'01' triplet to this structured field. The FQN type X'01' value is the file name identified by the DDname specified in the **INDEXDD** parameter. ACIF also creates an FQN type X'83' triplet containing the name of the AFP output print file, identified by the DDname specified in the **OUTPUTDD** parameter.

ACIF also creates a Coded Graphic Character Set Global Identifier triplet X'01' using the code page identifier specified in the **CPGID** parameter. For more information on the **CPGID** parameter, see page 36.

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. The following is a list of the triplets that compose this structured field:

- FQN Type X'8D'

  This triplet contains the name of the active medium map associated with the page or page group. In the case of page groups, this 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 invoked 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 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. In the case of 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 exactly the same as those 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 D. 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 C, “Format of the Index Object File” on page 191; the other two structured fields are described later in this appendix. The examples on the next two pages 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 30. Example of Code Containing Group-Level Indexing

Figure 30 illustrates the only format ACIF can produce when it converts and indexes a print file, because ACIF supports indexing only at the group level.

```
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 31. Example of Code Containing Group- and Page-Level Indexing

Figure 31 illustrates an input file that has already been indexed (tagged) and converted to MO:DCA-P format, which AFP Toolbox can do. 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 perform actions such as archival, retrieval, viewing, preprocessing, postprocessing, and so on. The grouping also represents a natural hierarchy. In the case of 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 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 an FQN type X'01' triplet in the BDT structured field. If the FQN triplet exists, ACIF uses it; otherwise, ACIF creates one using the file name 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, the ACIF output contains only one BDT structured field. (The same is true of End Document (EDT) structured fields.)

In the case of line data, ACIF creates the BDT structured field. ACIF assigns a null token name (X'FFFF') and creates an FQN type X'01' triplet using the file name identified in the DDname statement for **OUTPUTDD**.

ACIF also creates a Coded Graphic Character Set Global Identifier triplet X'01' using the code page identifier specified in the **CPGID** parameter. For more information on the **CPGID** parameter, see page 36.

ACIF also creates two additional 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 contained in their respective type X'01' triplets on the BDI and BRG structured fields.

Begin Named Group (BNG) Structured Field

When ACIF processes an AFP data stream print file containing 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. Here too, ACIF 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. 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 specified in **GROUPNAME** is too long, the trailing bytes are replaced by the sequence number. This occurs only if the specified index value exceeds 242 bytes in length. A maximum of 99999999 groups can be supported before the counter wraps. This means that ACIF can guarantee a maximum of 99999999 unique group names.

Tag Logical Element (TLE) Structured Field

As mentioned in “Tag Logical Element (TLE) Structured Field” on page 194, 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, using a rolling 8-byte EBCDIC sequence number. This 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 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. This means that ACIF can guarantee 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 preceded by a X'5A' carriage control character. 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 has been declared 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 might affect document integrity in the case of archival, because no explicit resource names are referenced for ACIF to retrieve.

Presentation Text Data Descriptor (PTD) Format 1 Structured Field

ACIF converts this structured field to a PTD Format 2 structured field.

Inline Resources

MO:DCA-P does not support inline resources at the beginning of a print file (before the BDT structured field); therefore, inline resources must be removed. The resources are saved and used as requested.

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 E. Accessibility

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 OS/390 and z/OS let users:

- Use assistive technologies such as screen-readers and screen magnifier software.
- Operate specific or equivalent features 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 OS/390 and z/OS. Consult the assistive technology documentation for specific information when using it to access OS/390 and z/OS interfaces.

Keyboard Navigation of the User Interface

Users can access OS/390 and z/OS user interfaces using TSO/E or ISPF. For more information, refer to *z/OS TSO/E Primer*, SA22–7787, *z/OS TSO/E User's Guide*, SA22–7794, and *z/OS ISPF User's Guide Volume I*, SC34–4822. 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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Programming Interfaces

This publication includes documentation of intended Programming Interfaces that let the customer write programs to obtain the services of ACIF.

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EuroReady

ACIF is capable of processing data containing the euro sign. Font character sets and code pages that contain and map the euro sign consistently with the application must be present either in a host library or in the printer. AFP fonts that support the euro sign are included in AFP Font Collection (Program Numbers 5648-B33 and 5648-B45).

Year 2000 Ready

ACIF does not have date dependencies and is therefore Year 2000 ready. When used in accordance with its associated documentation, ACIF is capable of correctly processing, providing, and receiving date data within and between the twentieth and twenty-first centuries, provided all other products used with ACIF (including software, hardware, and firmware) properly exchange accurate date data with it.

Glossary

This glossary defines technical terms and abbreviations used in PSF for OS/390 documentation. If you do not find the term you are looking for, see this publication's index or view *IBM Glossary of Computing Terms*, available from:

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Definitions that are specific to IBM products are so labeled—for example, "In SNA," or "In the 3820 printer."

These cross-references are used in this glossary:

- **Contrast with.** Refers to a term that has an opposite or substantively different meaning.
- **See.** Refers to multiple-word terms in which this term appears.
- **See also.** Refers to related terms that have similar, but not synonymous, meanings.
- **Synonym for.** Appears in the commentary of a less desirable or less specific term and identifies the preferred term that has the same meaning.
- **Synonymous with.** Appears in the commentary of a preferred term and identifies less desirable or less specific terms that have the same meaning.

A

ACIF. *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 display data on a variety of display devices. AFP also includes creating, formatting, archiving, retrieving, viewing, and distributing information.

AFP. See *Advanced Function Presentation*.

AFP Conversion and Indexing Facility (ACIF). An AFP program that converts a print file into a MO:DCA-P document, creates an index file for later retrieval and viewing, and retrieves resources used by an AFP document into a separate file.

AFPDS. Advanced Function Presentation data stream. A presentation data stream that is processed in the AFP environment. MO:DCA-P is the strategic AFP interchange data stream. IPDS™ is the strategic AFP printer data stream.

AFP Workbench Viewer. (1) An OS/2 or Windows IBM-licensed PC product that lets you see AFP output in a WYSIWYP (what-you-see-is-what-you-print) format. (2) An OS/2 or Windows platform for the integration of AFP-enabling applications and services.

AIX. Advanced Interactive Executive.

AIX operating system. IBM's implementation of the UNIX operating system. The RS/6000 system, among others, runs the AIX operating system.

alphanumeric. Characters consisting of uppercase or lowercase letters (a-z, A-Z), numbers (0–9), or both.

American Standard Code for Information Interchange (ASCII). The standard code, using a coded character set consisting of 7-bit coded characters (8-bit including parity check), that is used for information interchange among data processing systems, data communication systems, and associated equipment in an AIX environment. The ASCII set consists of control characters and graphic characters. (A) Contrast with *EBCDIC*.

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.

ANSI. 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

BCOCA. Bar Code Object Content Architecture.

C

carriage control character. An optional character in an input data record that specifies a write, space, or skip operation.

character. (1) A member of a set of elements that is used to represent, organize, or control data. Characters can be letters, digits, punctuation marks, or other symbols represented in the form of a spatial arrangement of adjacent or connected strokes or in the form of other physical conditions in data media. (2) A letter, numeral, punctuation mark, or special graphic used for the production of text. (3) A byte of data. (4) See also *character graphic*.

character graphic. A visual representation of a character, other than a control character, that is ordinarily produced by writing, printing, or displaying. (T)

character rotation. The alignment of a character with respect to the baseline, measured in degrees in a clockwise direction. Examples are 0°, 90°, 180°, and 270°. This term usually applies to individual characters. Synonymous with *rotation*. See also *orientation*.

character set. (1) A collection of characters that is composed of some descriptive information and the character shapes themselves. (2) A group of characters used for a specific reason, for example, the set of characters a keyboard contains. (3) For page printers, the font library member that contains the character graphics and their descriptions. (4) Synonymous with *font character set*. See also *coded font*.

coded font. A font library member that associates a code page and a font character set. For double-byte fonts, a coded font associates more than one pair of code pages and font character sets.

code page. (1) A set of assignments, each of which assigns a code point to a character. Each code page has a unique name or identifier. Within a given code page, a code point is assigned to one character. More than one character set can be assigned code points from the same code page. See also *coded font*. (2) A font component that associates code points and character identifiers. A code page also identifies how undefined code points are handled.

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 stream. (1) All information (data and control commands) sent over a data link, usually in a single read or write operation. (2) A continuous stream of data elements being transmitted, or intended for transmission, in character or binary-digit form using a defined format.

DCF. See *Document Composition Facility*.

document. A file containing an AFP data stream document. An AFP data stream document is bounded by Begin Document and End Document structured fields and can be created using a text formatter such as Document Composition Facility (DCF).

Document Composition Facility (DCF). An IBM licensed program that provides a text formatter called SCRIPT/VS. SCRIPT/VS can process files marked up with a unique set of controls and tags.

download. (1) To transfer programs or data from a computer to a connected device, typically a personal computer. (T) (2) To transfer data from a computer to a connected device, such as a workstation or a microcomputer. 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. Contrast with *upload*.

E

EBCDIC. See *extended binary-coded decimal interchange code*.

electronic overlay. A collection of constant data, such as lines, shading, text, boxes, or logos, that is electronically composed in the host processor and stored in a library, and that can be merged with variable data during printing. Contrast with *page segment*.

extended binary-coded decimal interchange code (EBCDIC). A coded character set of 256 eight-bit characters. This is the normal (default) type of data encoding in an OS/390, VM, or VSE environment. Contrast with *ASCII*.

F

font. (1) A family or assortment of characters of a given size and style, for example, 9-point Bodoni Modern. (A) (2) One size and one typeface in a

particular type family, including letters, numerals, punctuation marks, special characters, and ligatures. (3) A paired character set and code page that can be used together for printing a string of text characters. A double-byte font can consist of multiple pairs of character sets and code pages. See *coded font*.

font character set. Part of an AFP font that contains the raster patterns, identifiers, and descriptions of characters. Synonym for *character set*.

FORMDEF. A JCL parameter that specifies a form definition. See *form definition*.

form definition. A resource used by PSF that defines the characteristics of the form, including overlays to be used (if any), paper source (for cut-sheet printers), duplex printing, text suppression, the position of MO:DCA-P data on the form, and the number and modifications of a page. Contrast with *page definition*.

G

GOCA. Graphics Object Content Architecture.

group. A named collection of sequential pages that form a logical subset of a document.

H

hexadecimal. Pertaining to a numbering system with base of 16; valid numbers use the digits 0 through 9 and the characters A through F, where A represents 10 and F represents 15.

I

image. A pattern of toned and untoned pels that form a picture.

indexing. In ACIF, a process of matching reference points within a file and creating structured field tags within the MO:DCA-P document and the separate index object file.

indexing with data values. Adding indexing tags to a MO:DCA-P document 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-P 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 Tagged Logical Element (TLE) structured fields.

Infoprint Manager for AIX or Windows NT/2000. A software component of IBM Infoprint. IBM Infoprint Manager for AIX or Windows NT/2000 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.

IOCA. Image Object Content Architecture.

J

JCL. See *job control language*.

JES. See *job entry subsystem*.

job control language (JCL). A language of control statements used to identify a computer job or describe its requirements to an operating system.

job entry subsystem (JES). A licensed program that receives jobs into the system, converts them to internal format, selects them for execution, processes their output, and purges them from the system.

L

library. A file or a set of related files—for example, a page definition library containing one or more page definition files.

licensed program. A utility that performs a function for the user and usually interacts with and relies upon system control programming or some other IBM-provided control program. A licensed program contains logic related to the user's data and is usable or adaptable to meet specific requirements.

line data. Application data that is prepared for printing, without any data placement or presentation information. See *record format line data* and *traditional line data*.

M

Mixed Object Document Content Architecture (MO:DCA). An IBM-architected, device-independent data stream for interchanging documents.

MO:DCA. See *Mixed Object Document Content Architecture.*

MO:DCA-P. Mixed Object Document Content Architecture for Presentation.

MO:DCA-P 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.

MVS. Multiple Virtual Storage. An IBM operating system operating on an S/390 processor.

O

object. (1) A resource or a sequence of structured fields within a larger entity, such as a page segment or a composed page. (2) A collection of structured fields, of which the first provides a begin-object function and the last provides an end-of-object function. The object can contain one or more other structured fields whose content consists of one or more data elements of a particular data type. An object can be assigned a name, which can be used to reference the object. Examples of objects are text, graphics, and image objects.

offset. The number of measuring units from an arbitrary starting point in a record, area, or control block to some other point.

orientation. 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. This usually applies to blocks of information. Character rotation applies to individual characters. See also *text orientation*.

OS/2. IBM's operating system for the IBM Personal System/2 or a compatible.

OS/390. An IBM operating system that includes and integrates functions previously provided by many IBM software products (including the MVS operating system) and:

- Is an open, secure operating system for the IBM S/390 family of enterprise servers
- Complies with industry standards
- Is Year 2000 ready and enabled for network computing and e-business
- Supports technology advances in networking server capability, parallel processing, and object-oriented programming

outline font. A font-shape technology in which the graphic character shapes are represented in digital form by a series of mathematical expressions that define the outer edges of the strokes. The resulting graphic character shapes can be either solid or hollow. Outline fonts can be scaled (sized) to any size. The name of an IBM outline font character set has the prefix *CZ*. Contrast with *raster font*.

overlay. See *electronic overlay*.

P

page. Part of an AFP document bracketed by a pair of Begin Page and End Page structured fields.

PAGEDEF. A JCL parameter that specifies a page definition. See *page definition*.

page definition. A resource containing a set of formatting controls for printing logical pages of data. Includes controls for number of lines per printed sheet, font selection, print direction, and mapping individual fields in the data to positions on the printed sheets. Contrast with *form definition*.

page segment. A resource containing MO:DCA data and images, prepared before formatting and included during printing. A page segment assumes the environment of an object in which it is included. Contrast with *electronic overlay*.

parameter. (1) A variable that is given a constant value for a specified application and that can denote the application. (I) (A) (2) An item in a menu for which the user specifies a value or for which the system provides a value when the menu is interpreted. (3) Data passed between programs or procedures.

pitch. (1) A unit of measurement for the width of a printed character, reflecting the number of times a graphic character can be set in one linear inch. (2) The character size represented by the number of characters that can be printed horizontally in an inch; for example, 10 pitch has 10 graphic characters per inch. Uniformly spaced fonts are measured in pitch. Contrast with *point*.

point. A unit of about 1/72 inch used in measuring type. Contrast with *pitch*.

point size. The height of a font, in points.

Print Services Facility (PSF). An IBM licensed program that manages and controls the input data stream and output data stream required by supported IBM page printers. PSF is supported under OS/390, z/OS, VSE, VM, AIX, and OS/400 operating systems. PSF manages printer resources such as fonts, images, electronic forms, form definitions, and page definitions, and provides error recovery for print jobs.

When printing line data, PSF supports external formatting using page definitions and form definitions. This external formatting extends page printer functions such as electronic forms and use of typographic fonts without any change to applications programs.

PSF. See *Print Services Facility*.

R

raster font. A font technology in which the graphic characters are defined directly by the raster bit map. Contrast with *outline font*.

record format line data. A form of line data where each record is preceded by a 10-byte identifier.

resource. A collection of printing instructions and sometimes data to be printed consisting entirely of structured fields. A resource can be stored as a member of a library and can be called for by PSF when needed.

Coded fonts, font character sets, code pages, page segments, overlays, form definitions, and page definitions are all resources.

rotation. See *character rotation*. See also *orientation*.

S

structured field. A self-identifying string of bytes and its data or parameters.

syntax. The rules and keywords that govern the use of a programming language.

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, such as 6262 or 3211.

trigger. Data values for which ACIF searches, to delineate the beginning of a new group of pages. The first trigger is then the anchor point from which ACIF locates the defined index values. See also *anchor point*.

typeface. A collection of fonts all having the same style, weight, and width. Each font differs from the others by point size or type family.

typographic font. A font in which the distance between characters varies. The distance from one character to another is adjusted to improve the visual flow of text by eliminating excess space.

U

upload. (1) To transfer programs or data from a connected device, typically a personal computer, to a computer with greater resources. (T) (2) To transfer data from a device, such as a workstation or a microcomputer, to a computer. Contrast with *download*.

V

VM. Virtual Machine. A functional simulation of a computer and its associated devices.

VSE. Virtual Storage Extended. The notion of storage space that can be regarded as addressable main storage by the user of the computer system in which addresses are mapped to real addresses.

W

Workbench Viewer. See *AFP Workbench Viewer*.

X

XML data. Data that has been identified using Extensible Markup Language (XML) standards from the World Wide Web Consortium. 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 processed by ACIF can be encoded in EBCDIC, ASCII, UTF-8 or UTF-16.

Z

z/OS. An IBM operating system that includes and integrates functions previously provided by many IBM software products (including the MVS and OS/390 operating systems) and:

- Is an open, secure operating system for the IBM zSeries™ family of enterprise servers
- Complies with industry standards
- Is Year 2000 ready and enabled for network computing and e-business
- Supports technology advances in networking server capability, parallel processing, and object-oriented programming

Bibliography

This bibliography lists the titles of publications containing additional information about PSF, Advanced Function Presentation, the OS/390 and z/OS operating systems, and related products.

The titles and order numbers may 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 Printing Systems Digital Library: http://www.ibm.com/printers/r5psc.nsf/web/manuals.

Print Services Facility (PSF) for OS/390 and z/OS

Publication	Order Number
AFP Conversion and Indexing Facility: User's Guide	S544-5285
PSF for OS/390 & z/OS: Customization	S544-5622
PSF for OS/390 & z/OS: Diagnosis	G544-5623
PSF for OS/390 & z/OS: Download for OS/390	S544-5624
PSF for OS/390 & z/OS: Introduction	G544-5625
PSF for OS/390 & z/OS: Licensed Program Specifications	G544-5626
PSF for OS/390 & z/OS: Messages and Codes	G544-5627
PSF for OS/390 & z/OS: Security Guide	S544-3291
PSF for OS/390 & z/OS: User's Guide	S544-5630
PSF for OS/390 Collection Kit CD-ROM (BookManager)	SK2T-9267
PSF for OS/390 Collection Kit CD-ROM (PDF)	SK2T-9325
Program Directory for Print Services Facility for OS/390	None
Program Directory for Download for OS/390	None

Infoprint Server

Title	Order Number
Infoprint Server Transforms Licensed Program Specifications	G544-5797
z/OS Infoprint Server Customization	S544-5744
z/OS Infoprint Server Introduction	S544-5742
z/OS Infoprint Server Messages and Diagnosis	G544-5747
z/OS Infoprint Server Migration	G544-5743
z/OS Infoprint Server Operation and Administration	S544-5745
z/OS Infoprint Server User's Guide	S544-5746

Advanced Function Presentation (AFP)

Publication	Order Number
AFP: Printer Information	S544-5750
AFP: Printer Summary	S544-5749
Advanced Function Printing: Host Font Data Stream Reference	S544-3289
AFP Toolbox for Multiple Operating Systems User's Guide	G544-5292
AFP Workbench for Windows and OS/2: Using the Viewer Application	G544-3813
Guide to Advanced Function Presentation	G544-3876
Overlay Generation Language/370 User's Guide and Reference	S544-3700
Page Printer Formatting Aid: User's Guide	S544-5284
Architecture	
Advanced Function Presentation: Programming Guide and Line Data Reference	S544-3884
Bar Code Object Content Architecture Reference	S544-3766
Font Object Content Architecture Reference	S544-3285
Graphics Object Content Architecture Reference	SC31-6804
Image Object Content Architecture Reference	SC31-6805
Intelligent Printer Data Stream Reference	S544-3417
Mixed Object Document Content Architecture Reference	SC31-6802
Presentation Text Object Content Architecture Reference	SC31-6803
Fonts	
IBM AFP Fonts: Font Samples	S544-3792
IBM AFP Fonts: Font Summary for AFP Font Collection	S544-5633
IBM AFP Fonts: Type Transformer User's Guide	G544-3796

Text Processing

Publication	Order number
DCF/DLF General Information	GH20-9158
Document Composition Facility: Bar Code User's Guide	S544-3115
Document Composition Facility: SCRIPT/VS Text Programmer's Guide	SH35-0069
Document Composition Facility: SCRIPT/VS Language Reference	SH35-0070
Publishing Systems BookMaster General Information	GC34-5006
Publishing Systems BookMaster User's Guide	SC34-5009

Infoprint Manager

Publication	Order Number
IBM Infoprint Manager for AIX: Administrator's Guide	S544-5595
IBM Infoprint Manager for AIX: User's and Operator's Guide	S544-5596

Publication	Order Number
IBM Infoprint Manager for Windows NT and Windows 2000: Configuration Guide	Web-based
IBM Infoprint Manager for Windows NT and Windows 2000: Getting Started	G544-5717
IBM Infoprint Manager for Windows NT and Windows 2000: Planning Guide	G544-5716
IBM Infoprint Manager for Windows NT and Windows 2000: PSF Direct Network Configuration Guide	Web-based
IBM Infoprint Manager: Reference	S544-5475
PSF for AIX: AFP Upload Configuration Guide Using SNA	S544-5422
PSF for AIX: AFP Upload Configuration Guide Using TCP/IP	S544-5423

Content Manager OnDemand

Publication	Order Number
IBM Content Manager OnDemand for Multiplatforms V7.1: Administrator's Reference	SC27-0840
IBM Content Manager OnDemand for Multiplatforms V7.1: Indexing Reference	SC27-0842
IBM Content Manager OnDemand for Multiplatforms V7.1: Installation and Configuration Guide for UNIX Servers	GC27-0834
IBM Content Manager OnDemand for Multiplatforms V7.1: Installation and Configuration Guide for Windows Servers	GC27-0835
IBM Content Manager OnDemand for Multiplatforms V7.1: Introduction and Planning Guide	GC27-0839

i-data

Publication	Order Number
i-data 7913 IPDS Printer LAN Attachment for Ethernet Installation Guide	none
i-data 7913 IPDS Printer LAN Attachment for Token Ring Installation Guide	none

z/OS Version 1 Release 3

Publication	Order Number
SMP/E User's Guide	SA22-7773
z/OS Collection	SK3T-4269
z/OS Communications Server: IP Application Programming Interface Guide	SC31-8788
z/OS Communications Server: IP Configuration Reference	SC31-8776
z/OS Communications Server: SNA Diagnosis Vol 1 Techniques and Procedures	LY43-0088
z/OS Communications Server: SNA Diagnosis Vol 2 FFST Dumps and the VIT	LY43-0089

Publication	Order Number
z/OS Communications Server: SNA Messages	SC31-8790
z/OS Communications Server: SNA Network Implementation Guide	SC31-8777
z/OS Communications Server: SNA Operation	SC31-8779
z/OS Communications Server: SNA Programming	SC31-8829
z/OS Communications Server: SNA Resource Definition Reference	SC31-8778
z/OS DFSMS Macro Instructions for Data Sets	SC26-7408
z/OS DFSMSdfp Utilities	SC26-7414
z/OS HCD Planning	GA22-7525
z/OS HCD User's Guide	SC33-7988
z/OS HCD Scenarios	SC33-7987
z/OS JES2 Commands	SA22-7526
z/OS JES2 Initialization and Tuning Guide	SA22-7532
z/OS JES2 Initialization and Tuning Reference	SA22-7533
z/OS JES2 Messages	SA22-7537
z/OS JES3 Commands	SA22-7540
z/OS JES3 Initialization and Tuning Guide	SA22-7549
z/OS JES3 Initialization and Tuning Reference	SA22-7550
z/OS JES3 Messages	SA22-7552
z/OS Language Environment Programming Guide	SA22-7561
z/OS MVS Diagnosis: Procedures	GA22-7587
z/OS MVS Diagnosis: Tools and Service Aids	GA22-7589
z/OS MVS Initialization and Tuning Reference	SA22-7592
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z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN	SA22-7609
z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG	SA22-7610
z/OS MVS Programming: Authorized Assembler Services Reference LLA-SDU	SA22-7611
z/OS MVS Programming: Authorized Assembler Services Reference SET-WTO	SA22-7612
z/OS MVS Recovery and Reconfiguration Guide	SA22-7623
z/OS MVS Routing and Descriptor Codes	SA22-7624
z/OS MVS System Codes	SA22-7626
z/OS MVS System Commands	SA22-7627
z/OS MVS System Management Facilities (SMF)	SA22-7630
z/OS MVS Using the Functional Subsystem Interface	SA22-7641

Publication	Order Number
z/OS SDSF Operation and Customization	SA22-7670
z/OS Security Server RACF General User's Guide	SA22-7685
z/OS Security Server RACF Security Administrator's Guide	SA22-7683
z/OS Security Server RACF System Programmer's Guide	SA22-7681
z/OS Security Server RACF Migration	GA22-7690
z/OS UNIX System Services Command Reference	SA22-7802

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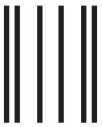

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