COBOL and CICS Command Level
Conversion Aid
for OS/390 & MVS & VM

User's Guide

Version 2 Release 1

SC26-9400-03

Note

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 261.

Third Edition (September 2002)

This edition applies to COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM Version 2 Release 1 Modification 0 (CCCA, program number 5648-B05), and to all subsequent releases and modifications until otherwise indicated in new editions.

Order publications through your IBM representative or the IBM branch office serving your locality. Publications are not stocked at the address given below.

This publication is available on the Web at:

www.ibm.com/s390/le/assist/tools/ccca.html

A form for reader's comments appears at the back of this publication. If the form has been removed, address your comments to:

IBM Corporation
H150/090
555 Bailey Avenue
San Jose, CA
95141-1003
U.S.A.

When you send information to IBM, you grant IBM a non-exclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

Contents

Tables

Figures

About this book

This book describes COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM (CCCA, program number 5648-B05).

CCCA helps you convert old COBOL 68 Standard and COBOL 74 Standard language in source programs and copy books to COBOL 85 Standard language. For a definition of these COBOL standards, see "Industry standards" on page 5.

CCCA can also help you to solve your Year 2000 problems by converting your programs to make use of the millennium language extensions (MLE).

How this book is organized

This book is divided into these chapters and appendixes:

Chapter 1, "Introduction," on page 1
Summarizes what CCCA does, and how it works.

Chapter 2, "Getting started," on page 7
Describes:
- What to do before converting
- Accessing CCCA
- Setting CCCA environment options
- Navigating CCCA menus and panels

Chapter 3, "Converting COBOL programs," on page 17
Describes the procedure for converting COBOL programs:
- Setting source and target language levels
- Setting conversion options
- Submitting the conversion job
- Reading the Diagnostic listing

Chapter 4, "DATE FORMAT Conversion Option," on page 39
Describes:
- Millennium language extensions and date fields
- MLE terms
- The DATE FORMAT clause
- What you need to supply to CCCA for the DATE FORMAT conversion option
- How to select the DATE FORMAT conversion option
- How the DATE FORMAT conversion option works

Chapter 5, "Conversion reports and the conversion log," on page 49
Describes how to:
- Generate conversion reports
- Browse, update, and erase the conversion log

Chapter 6, "Customizing CCCA," on page 61
Describes how to:
- Customize CCCA
- Update the COBOL Reserved Word data set
- Compile Language Conversion Programs (LCPs)
- Delete LCPs from the LCP library
- Activate and deactivate debugging for each LCP
- Print a directory of the LCP library

- Update messages

Chapter 7, "Developing Language Conversion Programs," on page 77
Describes the language and functions you use to develop LCPs.

Appendix A, "Converted COBOL language elements," on page 117
Lists COBOL language elements converted by CCCA.

Appendix B, "Converted CICS commands," on page 141
Lists CICS® commands converted by CCCA.

Appendix C, "Messages," on page 145
Lists CCCA messages.

Appendix D, "LCP reserved words," on page 167
Lists words that have a special meaning to the LCP compiler (you cannot use these words for your LCP data item identifiers or LCP paragraph names).

Appendix E, "Predefined data items," on page 175
Lists data items that are predefined by the LCP compiler.

Appendix F, "List of LCP functions," on page 187
Lists functions you can use in LCPs.

Appendix G, "LCP directory," on page 191
Lists the supplied LCPs.

Appendix H, "Sample output," on page 199
Lists sample CCCA output:
- Reports
- LCP directory
- LCP compilation
- COBOL conversions
- Tokenization
- LCP trace (for debugging)

Appendix I, "Maintaining CCCA under MVS," on page 257
Describes:
- Re-installing CCCA
- Applying Service Updates
- Removing CCCA
- Reporting a Problem with CCCA
- Obtaining Service Information

How to read the syntax diagrams

Throughout this book, syntax descriptions use the structure defined below.

- Read the syntax diagrams from left to right, from top to bottom, following the path of the line as indicated by the following symbols:

  ►►—— The beginning of a statement.

  ——► The statement syntax is continued on the next line.

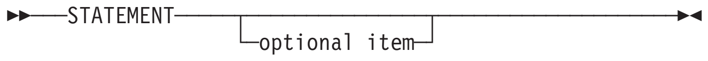
  ►—— The statement is continued from the previous line.

  ——►◄ The end of a statement.

  Diagrams of syntactical units other than complete statements start with the ►—— symbol and end with the ——► symbol.
- Required items appear on the horizontal line (the main path).

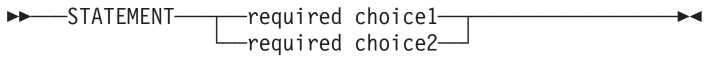
```
►►——STATEMENT————————required item——————————————————————————►◄
```

- Optional items appear below the main path.

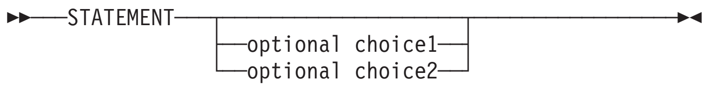


- When you can choose from two or more items, they appear vertically, in a stack.

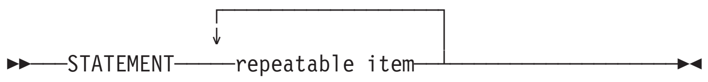
  If you **must** choose one of the items, one item of the stack appears on the main path.



  If choosing one of the items is optional, the entire stack appears below the main path.

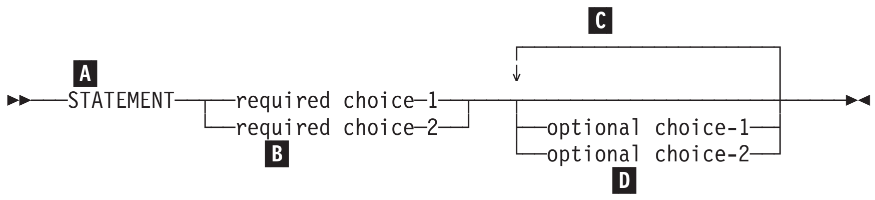


- An arrow returning to the left above the main line indicates an item that can be repeated.



  A repeat arrow above a stack indicates that you can make more than one choice from the stacked items, or repeat a single choice.
- Language Conversion Program (LCP) key words appear in uppercase letters. They must be spelled exactly as shown. Variables appear in all lowercase letters. They represent user-supplied names or values.
- If punctuation marks, parentheses, arithmetic operators, or such symbols are shown, they must be entered as part of the syntax.

The following example shows how the syntax is used.



A	The key word must be specified and coded as shown.
B	One of these two options is required.
C	This is a repeatable item.
D	You can select one or more of these options.

Summary of changes

Fourth edition (July 2013)

The following major enhancements and changes have been made to this manual since the previous edition. All changes are marked in the text by a change bar in the left margin.

COBOL Version 5 changes:

- Removal of MLE functionality
- Removal of USE ... AFTER ... LABEL PROCEDURE ...

Third edition (September 2002)

The following major enhancements and changes have been made to this manual since the previous edition. All changes are marked in the text by a change bar in the left margin.

- Modifications to messages (Appendix C, “Messages,” on page 145).
- Additional DATE FORMAT clauses (Chapter 4, “DATE FORMAT Conversion Option,” on page 39).
- Modifications to the following language elements (Appendix A, “Converted COBOL language elements,” on page 117):
  - ASSIGN
  - CBL
  - CURRENT-DATE
  - ERROR declaratives
  - IF
  - PERFORM
  - PROCESS
  - TIME-OF-DAY
  - TRANSFORM
  - UNSTRING
  - UPSI
  - VALUE
  - WHEN-COMPILED
- Process for deleting or debugging LCPs modified (“Deleting LCPs and activating/deactivating debugging for LCPs” on page 71).
- DLI option added to the Conversion Selection panel (“Submitting the conversion job under MVS” on page 27) to support the recognition of DLI processing.
- Process for maintaining the COBOL Reserved Word file modified (“Updating the COBOL reserved word Data Set” on page 66).
- Modifications to the Conversion Options Panel 2 (“Setting conversion options” on page 19).
- Additional predefined data items (Appendix E, “Predefined data items,” on page 175).
- Enterprise COBOL for z/OS® and OS/390® added as a target language. COBOL for MVS™ & VM and COBOL for OS/390 & VM combined into a single target language (IBM® COBOL) (“Setting source and target language levels” on page 17).

Second edition (October 1988)

The following major enhancements and changes have been made to this manual since the previous edition:

- Where it differs to MVS, the procedure for converting a COBOL program under VM has been added to Chapter 3, “Converting COBOL programs,” on page 17. This new section appears under “Running the conversion job under VM” on page 32.
- Where it differs to MVS, the procedure for compiling an LCP under VM has been added to Chapter 6, “Customizing CCCA,” on page 61. This new section appears under “Compiling LCPs under VM” on page 70.

Chapter 1. Introduction

This chapter summarizes:
- What CCCA does
- How CCCA works

What CCCA does

As supplied, COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM (CCCA) helps you convert COBOL source:

- To COBOL 85 Standard language
- To make use of the millennium language extensions (MLE)

Converting to COBOL 85 Standard Language

Using CCCA, you can convert COBOL source from the source language levels listed in Table 1 to any of the target language levels listed in Table 2.

Table 1. Source language levels

Source language	Version	Release	Program number
DOS/VS COBOL	1	3	5746-CB1
OS/VS COBOL	1	2	5740-CB1
VS COBOL II	1	1, 2, or 3	5668-958
COBOL for VSE/ESA	1	1	5686-068
COBOL for MVS & VM	1	2	5688-197
COBOL for OS/390 & VM	2	2	5648-A25
Enterprise COBOL	4	2	5655-G53

Table 2. Target language levels

COBOL 85 Standard language	Version	Release	Program number
VS COBOL II [1]	1	4	5668-958
COBOL for VSE/ESA	1	1	5686-068
COBOL for MVS & VM	1	2	5688-197
COBOL for OS/390 & VM	2	1	5648-A25
Enterprise COBOL for z/OS and OS/390	3	1	5655-G53
Enterprise COBOL for z/OS	5	0	5655-G53

Note:

1. DATE FORMAT conversion option cannot be used (see "Converting using the Millennium Language Extensions" on page 2).

CCCA identifies COBOL language elements and CICS commands in the input source programs that are:
- Not supported by the target language
- Supported in a different manner

then does one of the following:
- Converts them to the equivalent in the target language

- Removes them
- Flags them

For details on how CCCA converts specific COBOL language elements and CICS commands, see Appendix A, “Converted COBOL language elements,” on page 117 and Appendix B, “Converted CICS commands,” on page 141.

Converting using the Millennium Language Extensions

If you plan to make use of the millennium language extensions to help solve your Year 2000 problem, an option within CCCA will help reduce the workload associated with converting your programs.

If you select this option, CCCA adds the DATE FORMAT clause to the data description entries of the data items that have been identified as containing dates. In the remainder of this document, this is referred to as the *DATE FORMAT conversion option*.

CCCA performs the DATE FORMAT conversion in addition to any other conversion required for converting to a different level of COBOL. The level of COBOL to which you are converting must support the DATE FORMAT clause.

If your program has been written using a level of COBOL that supports the DATE FORMAT clause but the program source does not include the DATE FORMAT clause, you can use CCCA to perform the DATE FORMAT conversion only. This applies to the following levels of COBOL:

- COBOL for VSE/ESA
- COBOL for MVS & VM
- COBOL for OS/390 & VM
- | Enterprise COBOL for z/OS and OS/390 (pre Version 5)

In this case, you:

- Specify the same level of COBOL for both the source and target languages (see “Setting source and target language levels” on page 17)
- Select the DATE FORMAT conversion option (see Chapter 4, “DATE FORMAT Conversion Option,” on page 39)
- Set the conversion option *Remove obsolete elements* to N (see “Setting conversion options” on page 19)

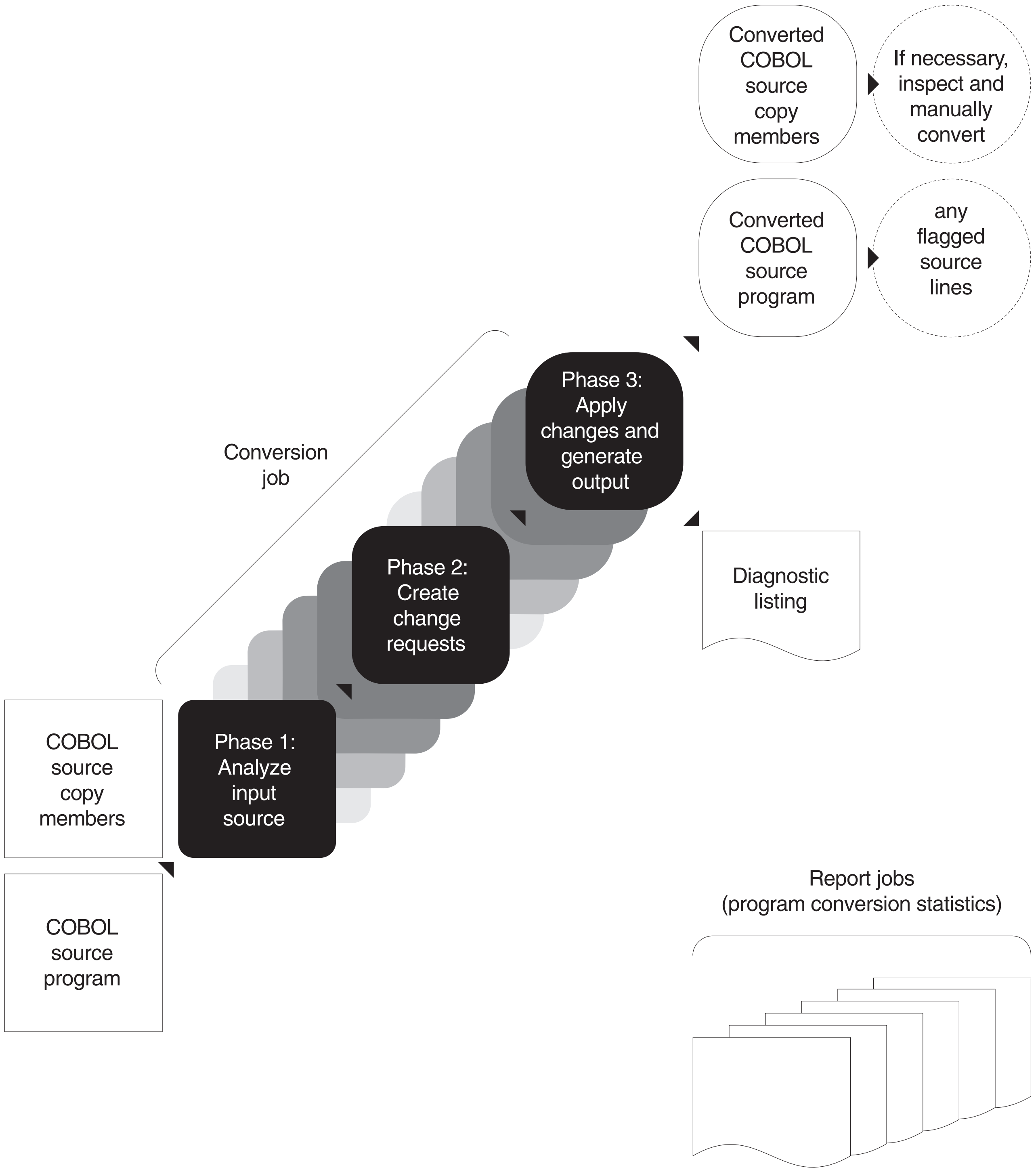

Converted COBOL source copy members
If necessary, inspect and manually convert
Converted COBOL source program
any flagged source lines
Conversion job
Phase 3: Apply changes and generate output
Diagnostic listing
Phase 2: Create change requests
COBOL source copy members
Phase 1: Analyze input source
COBOL source program
Report jobs (program conversion statistics)

Figure 1. The three conversion phases

How CCCA works

CCCA is an interactive system comprising ISPF panels that enable you to access a batch (MVS) or foreground (VM) conversion application. You use CCCA online ISPF panels to:
- Define the type of conversion you want
- Submit a batch job (MVS), or run CCCA in foreground (VM), to convert your programs

Figure 1 on page 3 shows the three phases of a conversion job.

Phase 1: Analyze input source
At the start of a conversion job, phase 1:
- Extracts copy members from the appropriate copy libraries and merges them with the source program
- Translates the original source program and copy books into a set of character strings known as *tokenized source*
- For each language element in the tokenized source, identifies whether conversion is required, and if so, which Language Conversion Program (LCP) to use

Phase 2: Create change requests
For each item that needs converting, phase 2:
- Loads an LCP
- Runs the LCP
- Generates change requests

Phase 3: Apply changes and generate output
Finally, phase 3:
- Applies the change requests from phase 2, creating new source programs and, if required, new copy members
- Generates the Diagnostic listing

BLL cell conversion

CICS programs written in DOS/VS COBOL and OS/VS COBOL have to maintain addressability to storage not contained within the WORKING-STORAGE SECTION. In order to satisfy program requests, these programs must keep track of the storage area addresses allocated by CICS. This requires the manipulation of BLL cells within the application program.

For CICS programs written in any of the target languages, this is no longer required. The manipulation of BLL cells is no longer supported, so conversion of the source code is necessary. CCCA performs much of the required BLL cell conversion.

CCCA uses the CICS translator and the OS/VS COBOL compiler to perform the BLL cell conversion.

CCCA only performs BLL cell conversion if:
-
  – Under MVS, you have set the **CICS** option to Y on the Conversion (Selection) panel (see Figure 12 on page 28)
  – Under VM, you have set the **CICS** option to Y on the Conversion Selection panel (see Figure 15 on page 32),

- You have set the **Source language level** to 1, 2, 3, or 4 (DOS/VS or OS/VS COBOL) on the Language Level panel (see Figure 8 on page 17), and
- CCCA determines that there are BLL cells in the Linkage section of the source program to be converted.

To perform BLL cell conversion, CCCA:

- In phase 1, reduces the source program to a Linkage area
- In a number of intermediate steps between phase 1 and phase 2:
  - Translates and compiles the reduced program
  - Analyzes the compiler's glossary output
- Passes the compiler's glossary output to phase 2

Industry standards

The term “COBOL 68 Standard” is used in this document to refer to the following standards:

- X3.23-1968, American National Standard for Programming Language COBOL
- ISO International Standard 1989-1972 COBOL

The term “COBOL 74 Standard” is used in this document to refer to the following standards:

- X3.23-1974, American National Standard for Programming Language COBOL
- ISO International Standard 1989-1978 COBOL

The term “COBOL 85 Standard” is used in this document to refer to the following standards:

- X3.23-1985, American National Standard for Information Systems - Programming Language - COBOL
- X3.23a-1989, American National Standard for Information Systems - Programming Language - Intrinsic Function Module for COBOL
- ISO 1989:1985, Programming languages - COBOL
- ISO 1989/Amendment 1, Programming languages - COBOL - Amendment 1: Intrinsic function module

Chapter 2. Getting started

This chapter describes:
- Dealing with source produced by earlier COBOL compilers
- What to do before converting
- Accessing CCCA
- Setting CCCA environment options
- Navigating CCCA menus and panels

Dealing with source produced by earlier COBOL compilers

The earlier OS/VS COBOL compilers contained a number of undocumented extensions. Where possible, CCCA attempts to handle these extensions. However, CCCA will not always correctly convert OS/VS COBOL code that compiles with warning-level or error-level diagnostics using the OS/VS COBOL 2.4 compiler.

If you have any OS/VS COBOL programs that you want CCCA to convert, which have not been compiled with the OS/VS COBOL 2.4 compiler, it is recommended that *before* you input these programs to CCCA you:
- Recompile each program using OS/VS COBOL 2.4
- Check for, and correct, any compiler-related warning-level or error-level diagnostics that result

Note: One notable undocumented extension of the pre-OS/VS COBOL 2.4 compiler that CCCA does *not* handle are COPY statements which are not terminated with a period ("`.`").

Therefore, at the very least, you should ensure that all COPY statements, in any of your programs that you intend to convert using CCCA, are terminated with a period.

What to do before converting

Before using CCCA to convert your programs:

Decide whether to customize CCCA

Before converting any programs, you must decide on one of these courses of action:
- Use CCCA as supplied
- Customize CCCA

Most users will opt to use CCCA as supplied.

If, however, you require:
- Additional (possibly non-COBOL) language elements to be converted, flagged, or removed
- Particular language elements converted differently

then you can customize CCCA so that it meets your conversion requirements.

If you are interested in customizing CCCA, read Chapter 6, "Customizing CCCA," on page 61 and Chapter 7, "Developing Language Conversion Programs," on page 77.

For a list of the COBOL language elements converted, removed, or flagged by CCCA as supplied, see Appendix A, “Converted COBOL language elements,” on page 117.

Ensure your source programs are error-free
Ensure your source programs compile and execute without errors.

To enhance conversion performance...
Setting the **Check procedure names** option to N reduces conversion time. For details, see page 23.

Restrictions
CCCA does not support certain COBOL 85 Standard language elements and certain IBM extensions in source code. Unsupported language elements include:

- Nested programs
- Program names that do not conform to the COBOL 85 Standard
- Object-oriented class and method definitions

Accessing CCCA

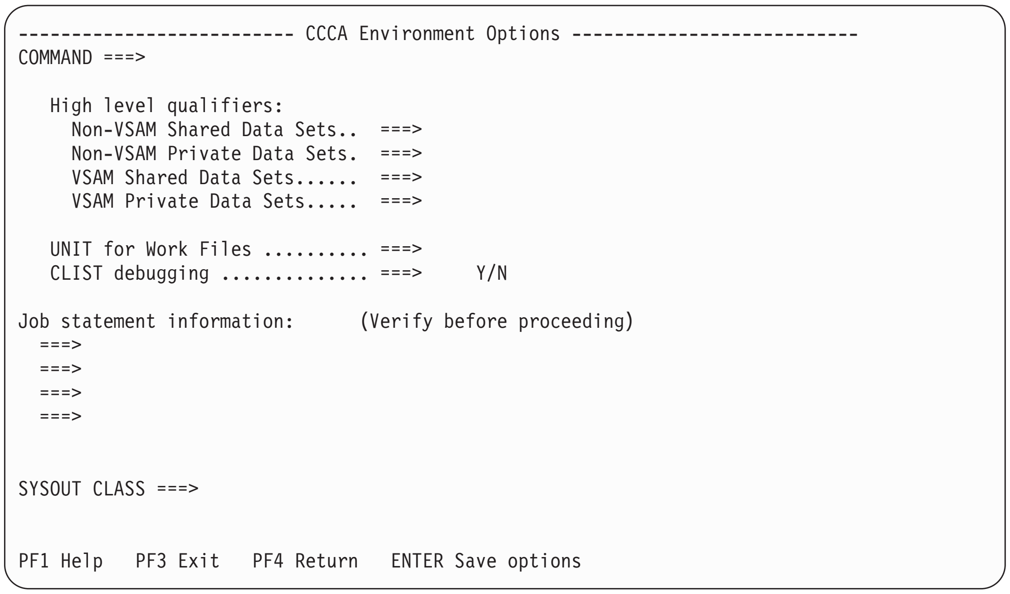
To access CCCA:

1. Log on to TSO (under MVS) or CMS (under VM)
2. Invoke ISPF
3. Select CCCA from your system's application menu—the Master menu appears (see Figure 4 on page 12)
4. **(MVS only)** If you have not already done so, you must set the environment options before you do anything else.

Setting environment options (MVS only)

To set the environment options:

- Go to panel **O.1** to display the Environment Options panel, shown in Figure 2.



```
------------------------- CCCA Environment Options ---------------------------
COMMAND ===>

   High level qualifiers:
     Non-VSAM Shared Data Sets..  ===>
     Non-VSAM Private Data Sets.  ===>
     VSAM Shared Data Sets......  ===>
     VSAM Private Data Sets.....  ===>

   UNIT for Work Files .......... ===>
   CLIST debugging .............. ===>     Y/N

Job statement information:      (Verify before proceeding)
  ===>
  ===>
  ===>
  ===>


SYSOUT CLASS ===>


PF1 Help   PF3 Exit   PF4 Return   ENTER Save options
```

Figure 2. Environment Options panel

- Enter values for:

High Level Qualifiers

The data sets used by CCCA are divided into two categories, “Shared” and “Private”. Shared data sets are available to all users, and were created as part of the installation process. Each user requires a unique set of Private data sets which are used in read/write mode during conversion.

Non-VSAM Shared Data Sets

The high level qualifier name that has been assigned to the Non-VSAM Shared data sets. This name will be available from the system programmer who installed CCCA.

(Dialog variable ABJNVSH)

Non-VSAM Private Data Sets

The high level qualifier name to be assigned to the Non-VSAM Private data sets. The default is Userid.

(Dialog variable ABJNVPR)

VSAM Shared Data Sets

The high level qualifier name that has been assigned to the VSAM Shared data sets. This name will be available from the system programmer who installed CCCA.

(Dialog variable ABJVSSH)

VSAM Private Data Sets

The high level qualifier name to be assigned to the VSAM Private data sets. The default is Userid.

(Dialog variable ABJVSPR)

UNIT for Work Files

The unit on which the CCCA work files are allocated.

(Dialog variable ABJUNIT)

CLIST debugging

Y CCCA provides you with a statement-by-statement CLIST screen display to assist with error determination. Use this option if you are experiencing CLIST problems.

N No CLIST screen is displayed.

The default is N.

(Dialog variable ABJBUG)

Job statement information

The job card information for the batch job that CCCA submits. These lines are submitted as part of batch jobs exactly as they are entered (except for entirely blank lines, which are ignored). All of the rules of JCL must be followed. CCCA does not validate this information.

(Dialog variables BJC1, BJC2, BJC3, and BJC4)

See following **Note**.

SYSOUT CLASS

The output class to which you want your CCCA batch job output sent.

The output class can be:

– An asterisk (*)— indicating the default value for your environment.

  – Any letter (A through Z) or any numeral (0 through 9), indicating a specific output class.

  Note: The output class that you enter on the Environment Options panel becomes the *default output class* for all subsequent jobs that you submit during the current session of CCCA. You can, however, assign a different output class for an individual job at the time of submitting that particular conversion job-see "Submitting the conversion job under MVS" on page 27 and "Compiling LCPs under MVS" on page 68.

- Press Enter.

  JCL is generated to create any private data sets required by CCCA that currently do not exist.

  The generated job consists of JCL to:

  – Define Sequential data sets required for installation verification.

  – Define required VSAM clusters, and load files from members in the sample library.

  CCCA creates an edit session for the generated JCL.
- You must modify this JCL (using the editor) to provide installation-specific information. When you have done this, use the TSO SUBMIT command to submit the job for batch processing.
- Once submission is completed, press Enter.

  CCCA exits the edit session and returns to the Environment Options panel.

Navigating the menus and panels

To exit CCCA

If you are not at the Master Menu, press PF4.

From the Master Menu, press PF3 or PF4.

To select an option from a menu

In the `Option ===>` field, type the highlighted option number or letter then press Enter.

To go to any menu or panel from any other menu or panel

Type an equal sign (=) followed by the options you would enter to get there from the Master Menu. Separate the options with periods.

For example: to go to the Environment Options panel, type **=O.1** in the `Option ===>` or `Command ===>` field, then press Enter.

To go to any menu or panel from the Master Menu

Type the options separated by periods (as above), without an equal sign.

For example: to go to the Conversion Log panel from the Master Menu, type **1.L** in the `Option ===>` field, then press Enter.

The following keys have standard functions in CCCA:

PF1	Displays Help for the current menu or panel
PF3	Exits the current menu or panel, and returns to the previous menu
PF4	Returns to the Master Menu from any menu or panel (except Help)
Enter	Saves changes you have made to the current panel

Within Help, PF3 and PF4 exit the current Help panel, and take you back to the menu or panel you were at when you pressed PF1.

Figure 3 shows a map of CCCA menus and panels.

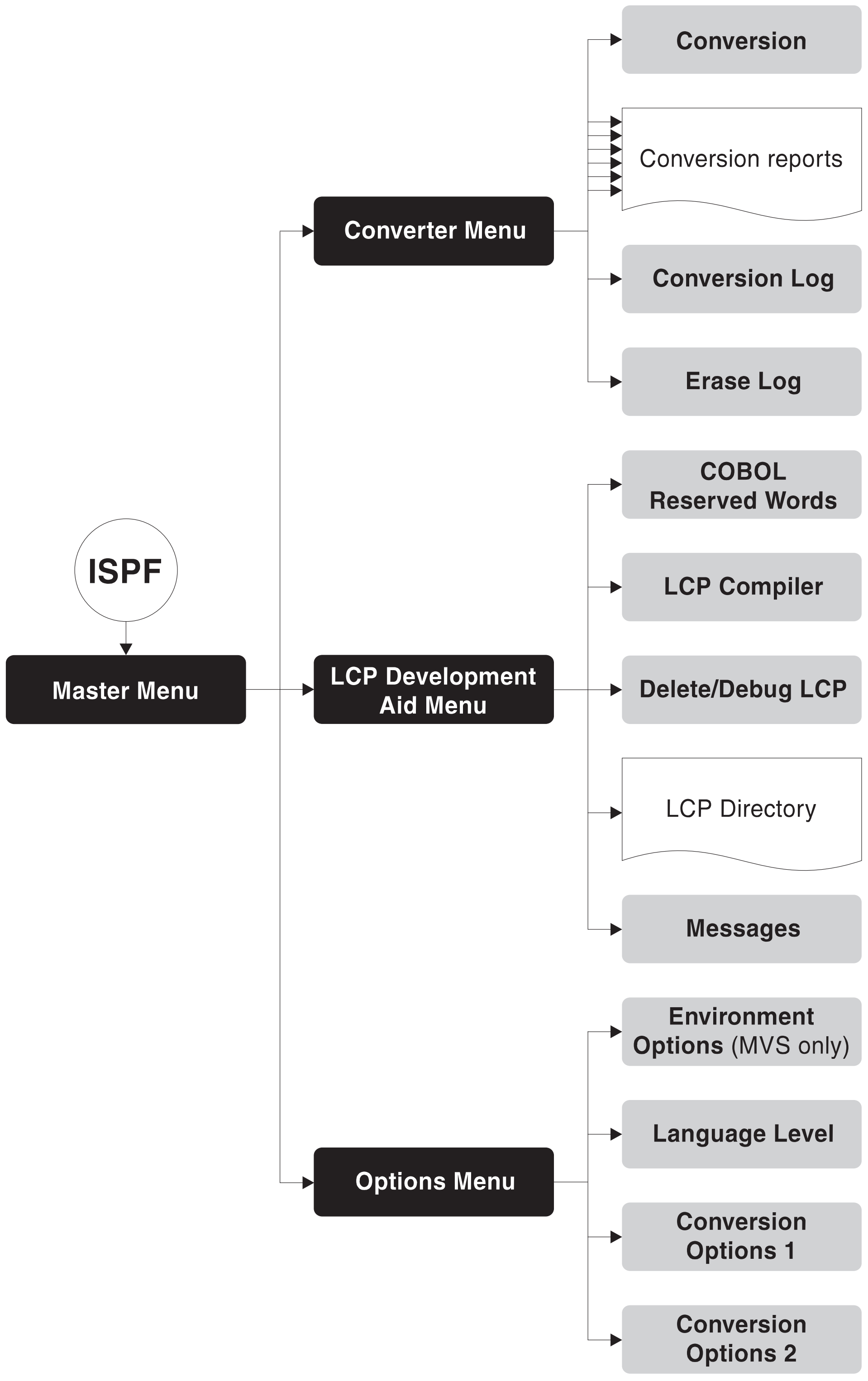
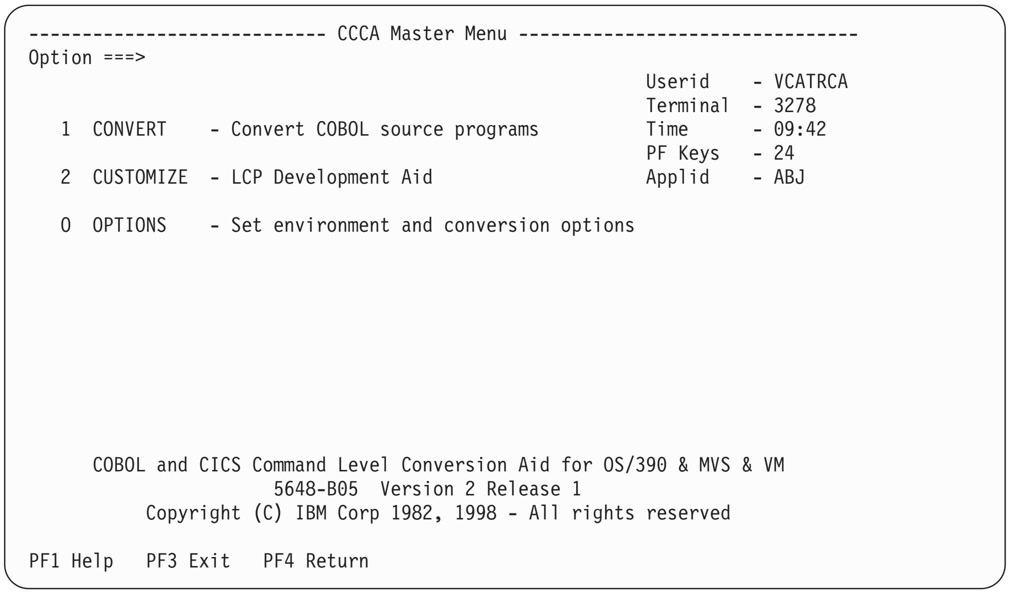


Figure 3. Map of CCCA menus and panels

The following sections describe the CCCA menus.

Master menu

The Master Menu shows the basic CCCA options (see Figure 4).



```
---------------------------- CCCA Master Menu --------------------------------
Option ===>
                                                          Userid    - VCATRCA
                                                          Terminal  - 3278
   1  CONVERT    - Convert COBOL source programs          Time      - 09:42
                                                          PF Keys   - 24
   2  CUSTOMIZE  - LCP Development Aid                    Applid    - ABJ

   0  OPTIONS    - Set environment and conversion options









      COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM
                       5648-B05  Version 2 Release 1
           Copyright (C) IBM Corp 1982, 1998 - All rights reserved

PF1 Help   PF3 Exit   PF4 Return
```

Figure 4. Master menu

On this menu, you can select:

1 CONVERT
Shows the Converter Menu.

If you use CCCA as supplied, the Converter Menu contains all the functions you will need.

For details, see "Converter menu."

2 CUSTOMIZE
Shows the Language Conversion Program (LCP) Development Aid Menu, containing options for customizing CCCA.

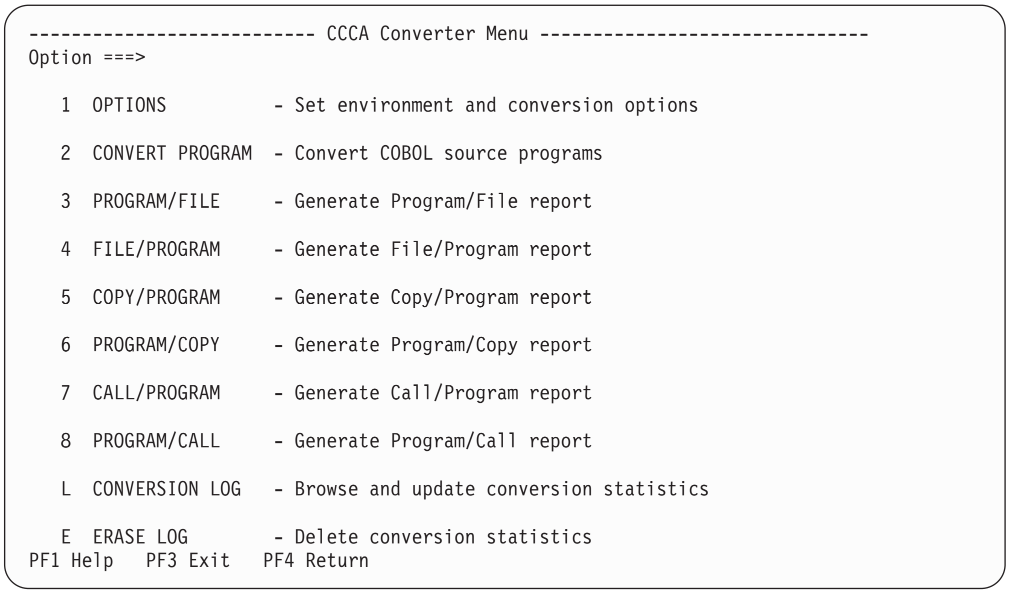
For details, see "LCP Development Aid menu" on page 14.

0 OPTIONS
Shows the Options Menu, with options for defining:
- High level qualifiers for CCCA VSAM files (MVS only)
- Source and target language levels
- CCCA conversion job and report job details
- Output that CCCA generates

For details, see "Options menu" on page 15.

Converter menu

To view the Converter Menu (shown in Figure 5 on page 13), select option **1** from the Master Menu.



```
-------------------------- CCCA Converter Menu ------------------------------
Option ===>

   1  OPTIONS         - Set environment and conversion options

   2  CONVERT PROGRAM  - Convert COBOL source programs

   3  PROGRAM/FILE     - Generate Program/File report

   4  FILE/PROGRAM     - Generate File/Program report

   5  COPY/PROGRAM     - Generate Copy/Program report

   6  PROGRAM/COPY     - Generate Program/Copy report

   7  CALL/PROGRAM     - Generate Call/Program report

   8  PROGRAM/CALL     - Generate Program/Call report

   L  CONVERSION LOG   - Browse and update conversion statistics

   E  ERASE LOG        - Delete conversion statistics
PF1 Help   PF3 Exit   PF4 Return
```

Figure 5. Converter menu

On this menu, you can select:

1 OPTIONS
Shows the Options Menu.

For details, see "Options menu" on page 15.

2 CONVERT PROGRAM
Shows panels that allow you to submit a conversion job for one or more COBOL source programs.

For details, see "Submitting the conversion job under MVS" on page 27 or "Running the conversion job under VM" on page 32.

3 PROGRAM/FILE
4 FILE/PROGRAM
5 COPY/PROGRAM
6 PROGRAM/COPY
7 CALL/PROGRAM
8 PROGRAM/CALL
Generates a report of program conversion statistics.

For details, see Chapter 5, "Conversion reports and the conversion log," on page 49.

L CONVERSION LOG
Shows a panel that allows you to:
- Browse a summary of program conversion statistics
- Update manual conversion statistics

For details, see "Using the conversion log" on page 57.

E ERASE LOG
Shows a panel that allows you to delete all program conversion statistics.

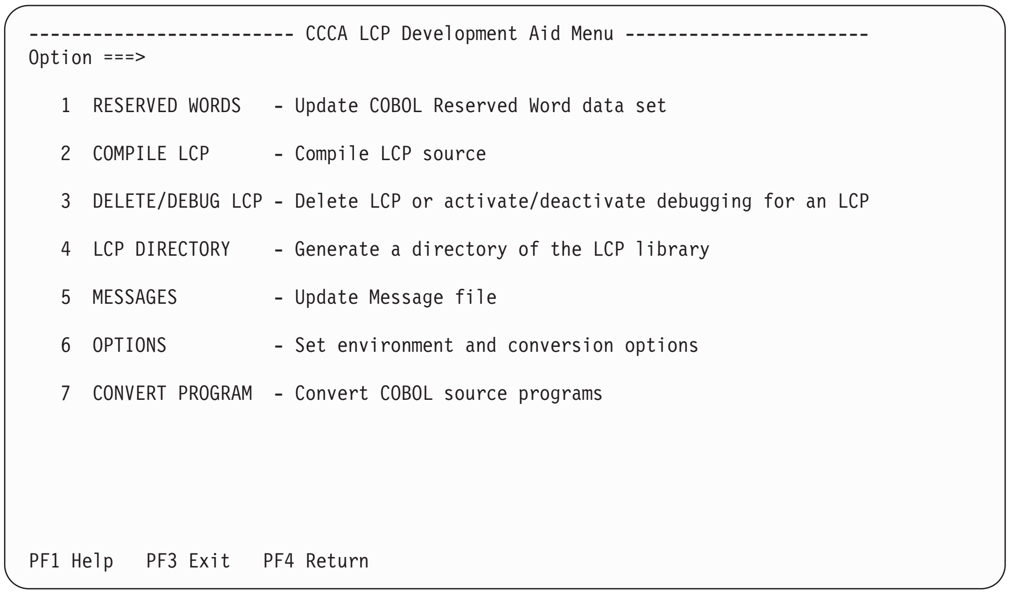
For details, see "Erasing the conversion log" on page 58.

LCP Development Aid menu

The LCP Development Aid Menu contains options for customizing CCCA.

If you use CCCA as supplied, you do not need to use this menu.

To view the LCP Development Aid Menu (shown in Figure 6), select option **2** from the Master Menu.



```
------------------------ CCCA LCP Development Aid Menu -----------------------
Option ===>

   1  RESERVED WORDS   - Update COBOL Reserved Word data set

   2  COMPILE LCP      - Compile LCP source

   3  DELETE/DEBUG LCP - Delete LCP or activate/deactivate debugging for an LCP

   4  LCP DIRECTORY    - Generate a directory of the LCP library

   5  MESSAGES         - Update Message file

   6  OPTIONS          - Set environment and conversion options

   7  CONVERT PROGRAM  - Convert COBOL source programs




PF1 Help   PF3 Exit   PF4 Return
```

Figure 6. LCP Development Aid menu

On this menu, you can select:

1 RESERVED WORDS
Shows a panel that allows you to browse and update the COBOL Reserved Word data set.

For details, see “Updating the COBOL reserved word Data Set” on page 66.

2 COMPILE LCP
Shows a panel that allows you to submit a compile job for one or more LCP source members.

For details, see “Compiling LCPs under MVS” on page 68 or “Compiling LCPs under VM” on page 70.

3 DELETE/DEBUG LCP
Shows a panel that allows you to:
- Delete LCPs from the LCP library
- Activate or deactivate debugging for each LCP

For details, see “Deleting LCPs and activating/deactivating debugging for LCPs” on page 71

4 LCP DIRECTORY
Generates a directory of the LCP library.

For details, see “Generating a directory of the LCP library” on page 72.

5 MESSAGES
Shows a panel that allows you to browse, add, update, or delete CCCA messages.

For details, see “Updating the message file” on page 73.

6 OPTIONS
Shows the Options Menu.

For details, see “Options menu.”

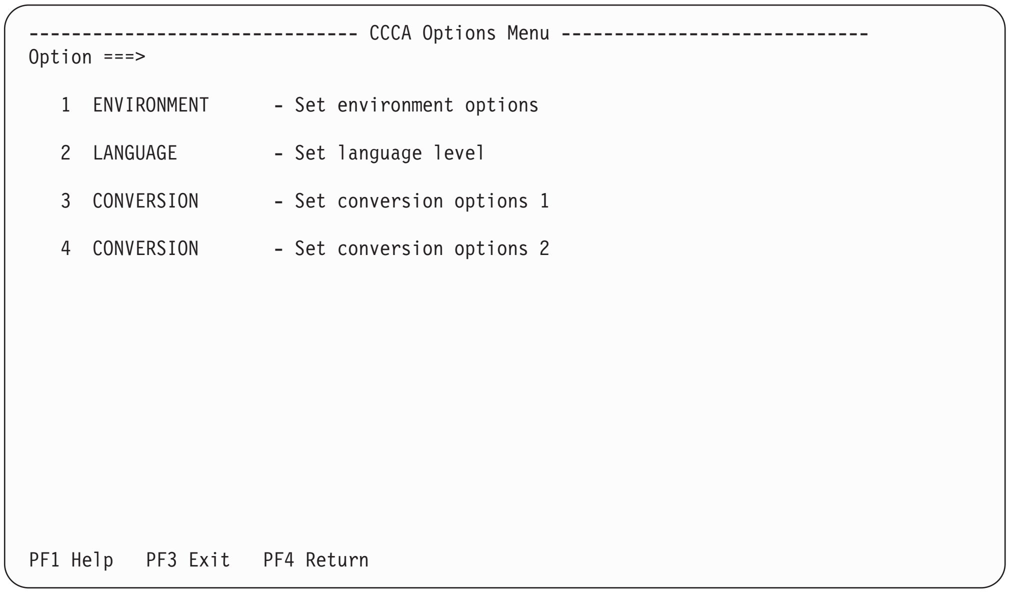
7 CONVERT PROGRAM
Shows a panel that allows you to submit a conversion job for one or more COBOL source programs.

For details, see “Submitting the conversion job under MVS” on page 27 or “Running the conversion job under VM” on page 32.

Options menu

Before converting COBOL programs, you must specify the options you want to use. You can select the Options Menu in several ways:
- From the Master Menu, select option **O**
- From the Converter Menu, select option **1**
- From the LCP Development Aid Menu, select option **6**

Figure 7 shows the Options Menu.



```
------------------------------ CCCA Options Menu ----------------------------
Option ===>

   1  ENVIRONMENT      - Set environment options

   2  LANGUAGE         - Set language level

   3  CONVERSION       - Set conversion options 1

   4  CONVERSION       - Set conversion options 2










PF1 Help   PF3 Exit   PF4 Return
```

Figure 7. Options menu

On this menu, you can select:

ENVIRONMENT
Shows the Environment Options panel, where you specify:
- CCCA conversion and report job details
- High level qualifiers for CCCA VSAM files

For details, see “Setting environment options (MVS only)” on page 8.

LANGUAGE
Shows the Language Level panel, where you specify:
- Source language level CCCA converts from
- Target language level CCCA converts to

For details, see “Setting source and target language levels” on page 17.

`CONVERSION`
: Shows the Conversion Options panels, where you specify the output that CCCA generates.

  For details, see "Setting conversion options" on page 19.

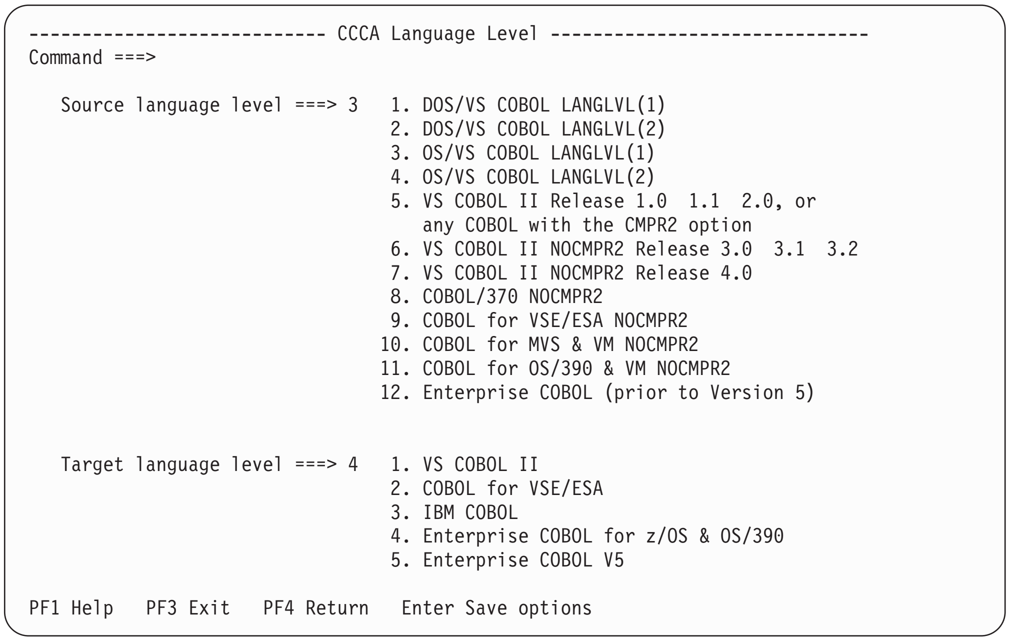
Chapter 3. Converting COBOL programs

This chapter describes the procedure for converting COBOL programs:
1. Setting source and target language levels
2. Setting conversion options
3. Submitting the conversion job
4. Reading the Diagnostic listing

Setting source and target language levels

CCCA converts programs from a *source* COBOL language level to a *target* COBOL language level.

To set the source and target language levels:
1. Go to the Language Level panel (**O.2**), shown in Figure 8.



```
---------------------------- CCCA Language Level ------------------------------
Command ===>

   Source language level ===> 3   1. DOS/VS COBOL LANGLVL(1)
                                  2. DOS/VS COBOL LANGLVL(2)
                                  3. OS/VS COBOL LANGLVL(1)
                                  4. OS/VS COBOL LANGLVL(2)
                                  5. VS COBOL II Release 1.0  1.1  2.0, or
                                     any COBOL with the CMPR2 option
                                  6. VS COBOL II NOCMPR2 Release 3.0  3.1  3.2
                                  7. VS COBOL II NOCMPR2 Release 4.0
                                  8. COBOL/370 NOCMPR2
                                  9. COBOL for VSE/ESA NOCMPR2
                                 10. COBOL for MVS & VM NOCMPR2
                                 11. COBOL for OS/390 & VM NOCMPR2
                                 12. Enterprise COBOL (prior to Version 5)


   Target language level ===> 4   1. VS COBOL II
                                  2. COBOL for VSE/ESA
                                  3. IBM COBOL
                                  4. Enterprise COBOL for z/OS & OS/390
                                  5. Enterprise COBOL V5

PF1 Help   PF3 Exit   PF4 Return   Enter Save options
```

Figure 8. Language LEVEL panel

2. Update the panel options:

   Source language level
   The language level of the program you are converting:

1	DOS/VS COBOL—LANGLVL(1) (COBOL 68 Standard)
2	DOS/VS COBOL—LANGLVL(2) (COBOL 74 Standard)
3	OS/VS COBOL—LANGLVL(1) (COBOL 68 Standard)
4	OS/VS COBOL—LANGLVL(2) (COBOL 74 Standard)
5	VS COBOL II (COBOL 74 Standard) Release 1.0, Release 1.1, or Release 2.0 (or any COBOL with the CMPR2 option)
6	VS COBOL II—NOCMPR2 (COBOL 85 Standard) Release 3.0, Release 3.1, or Release 3.2

7 VS COBOL II—NOCMPR2 (COBOL 85 Standard) Release 4.0

8 COBOL/370 NOCMPR2 (COBOL 85 Standard)

9 COBOL for VSE/ESA NOCMPR2 (COBOL 85 Standard)

10 COBOL for MVS & VM NOCMPR2 (COBOL 85 Standard)

11 COBOL for OS/390 & VM NOCMPR2 (COBOL 85 Standard)

12 Enterprise COBOL (prior to Version 5)

Default is 3.

`Target language level`
The language level (COBOL 85 Standard) you want the program converted to:

1 VS COBOL II—NOCMPR2 Release 4

2 COBOL for VSE/ESA NOCMPR2 Release 1

3 IBM COBOL (COBOL for MVS & VM NOCMPR2 Release 2, and COBOL for OS/390 VM NOCMPR2 Version 2 Release 2)

4 Enterprise COBOL for z/OS and OS/390 Version 3 Release 1

5 Enterprise COBOL V5

Default is 5.

Note: If you select target language level 2, 3, or 4, you can also select the DATE FORMAT conversion option (option 8 on the Conversion Options Panel 2—see Figure 10 on page 23).

3. Press Enter to save the options.

Table 3 shows the valid combinations of source and target language levels.

Table 3. Valid combinations of source and target language levels

Target Language Level	Source Language Level											
	1	2	3	4	5	6	7	8	9	10	11	12
1 [1]	✓	✓	✓	✓	✓	✓	✓[3]					
2 [2]	✓	✓	✓	✓	✓	✓	✓	✓	✓[3]			
3 [2]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓[3]		
4 [2]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓[3]	
5 [2]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓[3]

Note:
1. Does not perform the DATE FORMAT conversion.
2. Target language level supports the DATE FORMAT clause.
3. Source and target language levels are the same. For the types of conversion that CCCA performs, see "When the source and target language levels are the same."

When the source and target language levels are the same

Even if you set the target language level to the same as the source language level, CCCA may still perform some conversion, depending on the conversion options you have selected:

DATE FORMAT conversion option

If your program has been written using a level of COBOL that *supports* the DATE FORMAT clause but the program source does not *include* DATE FORMAT clauses, you can use CCCA to simply perform the DATE FORMAT conversion. This applies to the following levels of COBOL:

- COBOL for VSE/ESA
- IBM COBOL
- Enterprise COBOL (prior to version 5 levels)

In this case, you specify the same level of COBOL for both the source and target languages and select the DATE FORMAT conversion option.

For full details, see Chapter 4, “DATE FORMAT Conversion Option,” on page 39.

Remove obsolete elements conversion option: You can use CCCA to simply remove language elements that have become obsolete with the COBOL 85 Standard.

In this case, you specify the same level of COBOL for both the source and target languages and select the *Remove obsolete elements* conversion option.

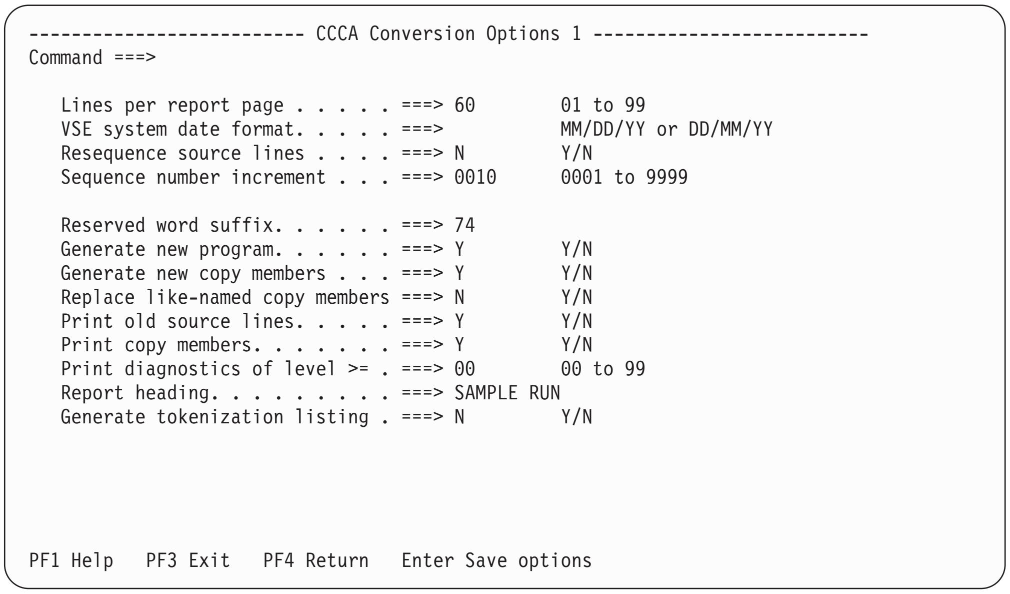
For details, see Figure 10 on page 23.

Setting conversion options

Conversion options determine the output generated by conversion jobs.

To set the conversion options:

1. Go to the Conversion Options panel 1 (**O.3**), shown in Figure 9.



```
-------------------------- CCCA Conversion Options 1 --------------------------
Command ===>

   Lines per report page . . . . . ===> 60        01 to 99
   VSE system date format. . . . . ===>           MM/DD/YY or DD/MM/YY
   Resequence source lines . . . . ===> N         Y/N
   Sequence number increment . . . ===> 0010      0001 to 9999

   Reserved word suffix. . . . . . ===> 74
   Generate new program. . . . . . ===> Y         Y/N
   Generate new copy members . . . ===> Y         Y/N
   Replace like-named copy members ===> N         Y/N
   Print old source lines. . . . . ===> Y         Y/N
   Print copy members. . . . . . . ===> Y         Y/N
   Print diagnostics of level >= . ===> 00        00 to 99
   Report heading. . . . . . . . . ===> SAMPLE RUN
   Generate tokenization listing . ===> N         Y/N




PF1 Help   PF3 Exit   PF4 Return   Enter Save options
```

Figure 9. Conversion Options panel 1

2. Update the panel options:

   `Lines per report page`
      The number of lines per page on the Diagnostic listing and conversion reports.

Must be in the range 01 to 99.

Default is 60.

`VSE system date format`
(For converting DOS/VS COBOL only.)

The date format used by the VSE system on which the old program ran: **MM/DD/YY** or **DD/MM/YY**.

CCCA uses this date format to convert the CURRENT-DATE and WHEN-COMPILED special registers.

Note: This entry field only appears if the source language level on the Language Level panel is 1 or 2 (see Figure 8 on page 17).

`Resequence source lines`
Either:

Y CCCA resequences line numbers in columns 1 through 6 of the new source program and new source copy members, according to the **Sequence number increment** option (see below).

N CCCA does not resequence line numbers.

Default is N.

`Sequence number increment`
(Only has an effect if the **Resequence source lines** option is set to Y.)

Increment for resequenced line numbers.

Must be in the range 0001 to 9999.

Default is 0010.

`Reserved word suffix`
If the program you are converting contains user-defined words that are reserved words in the target language, CCCA appends this suffix to the user-defined words. (If left unchanged, these words would receive compiler errors from the target language compiler.)

Must be a two-digit number.

Default suffix is 74.

`Generate new program`
Either:

Y CCCA generates a new source program.

CCCA puts the new source program in the:

- (MVS only) **Output source—Program library** specified on the Conversion Selection panel (see Figure 12 on page 28).
- (VM only) **Output Source—Program file name** specified on the Conversion Selection panel (see Figure 15 on page 32).

Note: If the **Generate new program** option is set to Y, then CCCA generates new source members regardless of whether there were any changes applied.

N CCCA does not generate a new source program.

Default is Y.

Note: CCCA generates a Diagnostic listing whether or not it generates a new source program.

`Generate new copy members`

Either:

Y CCCA generates new source for copy members called by the source program.

CCCA puts the new source copy members in the:

- (MVS only) **Output source—Copy library** specified on the Conversion Selection panel (see Figure 12 on page 28).
- (VM only) **Output source—Copy library (MACLIB)** specified on the Conversion Selection panel (see Figure 15 on page 32).

If the copy member already exists, CCCA does not replace it, unless the **Replace like-named copy members** option is set to Y (see below).

CCCA does not issue any message or warning if it does not replace a copy member.

Note: If the **Generate new copy members** option is set to Y, then CCCA generates new source members regardless of whether there were any changes applied.

N CCCA does not generate new source copy members.

Default is Y.

`Replace like-named copy members`

(Only has an effect if the **Generate new copy members** option is set to Y.)

If the new source copy member already exists in the output copy library:

Y CCCA replaces it.

N CCCA does not replace it.

Default is N.

`Print old source lines`

Either:

Y Old source lines appear in the Diagnostic listing immediately before the converted or flagged line, with `*OLD**` in place of the sequence number.

For example:

```
000182   *OLD**     OTHERWISE                                       ABJ6021 00 OTHERWISE REPLACED BY ELSE
000183              ELSE
```

`*OLD**` usually indicates a change has been made, or a manual change should be made, to *this* line. Sometimes, however, `*OLD**` appears on a line because there are added or deleted language elements *related* to that line.

For example, CCCA flags the `WORKING-STORAGE SECTION` header with `*OLD**` because the related line `77 LCP-FILE-STATUS-01 PIC XX.` is inserted immediately after.

N Old source lines do not appear in the Diagnostic listing.

Default is Y.

`Print copy members`
Either:

Y CCCA prints copy members (specified in COPY statements) in the Diagnostic listing.

N CCCA does not print copy members in the Diagnostic listing.

Default is Y.

`Print diagnostics of level >=`
CCCA prints diagnostics of severity greater than or equal to this value.

Must be in the range 00 to 99.

Default is 00 (CCCA prints all diagnostics).

CCCA issues a diagnostic of severity level:

00 when it converts a language element.

04 when it converts a language element, but the converted language element may require additional, manual conversion. The new source program that contains this converted language element may compile and run successfully, but you should still manually inspect the converted code.

08 when a language element is encountered that either needs to be, or may need to be, manually converted.

`Report heading`
The heading that appears at the top of each page of the Diagnostic listing and conversion reports.

Maximum length is 25 characters.

Default is SAMPLE RUN.

`Generate tokenization listing`
Either:

Y CCCA generates a tokenization listing (see "Tokenization" on page 238).

N CCCA does not generate a tokenization listing.

Default is N.

3. Press Enter to save the options.
4. Go to the Conversion Options panel 2 (**O.4**), shown in Figure 10 on page 23.

```
------------------------ CCCA Conversion Options 2 --------------------------
Command ===>
Option
     1. Check procedure names . . . . . . . . . . . . . ===> Y   Y/N
     2. Flag Report Writer statements . . . . . . . . . ===> Y   Y/N
     3. Remove obsolete elements. . . . . . . . . . . . ===> N   Y/N
     4. Negate implicit EXIT PROGRAM. . . . . . . . . . ===> N   Y/N
     5. Generate END PROGRAM header . . . . . . . . . . ===> N   Y/N
     6. Compile after converting. . . . . . . . . . . . ===> Y   Y/N
     7. Flag manual changes in new source program . . . ===> Y   Y/N
     8. Add DATE FORMAT clause to date fields . . . . . ===> Y   Y/N
     9. Remove VALUE clauses in File/Linkage Sections   ===> Y   Y/N
    10. Flag FILE-STATUS conditional statements . . . . ===> Y   Y/N
    11. Flag BLL cell arithmetic. . . . . . . . . . . . ===> Y   Y/N
    12. BLL cell conversion method. . . . . . . . . . . ===> B   A/B
    13. Search source for literal delimiter . . . . . . ===> Y   Y/N
    14. Literal delimiter (QUOTE or APOST). . . . . . . ===> A   Q/A
    15. . . . . . . . . . . . . . . . . . . . . . . . . ===> N   Y/N


  Note: Option numbers appear on the Program/File report

PF1 Help   PF3 Exit   F4 Return   ENTER Save options
```

Figure 10. Conversion Options panel 2

5. Update the panel options:

`Check procedure names`
(For converting DOS/VS COBOL or OS/VS COBOL programs only.)

Y CCCA flags the following language elements in the Diagnostic listing:
- CALL...USING statements that specify a procedure name in the USING option.
- USE FOR DEBUGGING declaratives that specify a name that is not a procedure name.

N CCCA does not flag these language elements.

Default is Y.

Note: You must convert these language elements. Flagging is optional for performance reasons; setting the option to N reduces conversion time.

`Flag Report Writer statements`
(For converting DOS/VS COBOL or OS/VS COBOL programs only.)

Either:

Y CCCA flags Report Writer statements in the Diagnostic listing.

N CCCA does not flag Report Writer statements.

Default is Y.

`Remove obsolete elements`
Either:

Y CCCA removes language elements that have become obsolete with the COBOL 85 Standard.

N CCCA does not remove obsolete elements.

Default is Y.

Note: These obsolete elements will not be supported in the next COBOL standard. It is therefore highly recommended that any such elements are removed (option **Y**).

`Negate implicit EXIT PROGRAM`

(For converting COBOL 68 Standard and COBOL 74 Standard programs only—see Source language level.)

Either:

Y If the last physical statement in the program is not EXIT PROGRAM, STOP RUN, or GOBACK, CCCA adds to the end of the program a section that includes a CALL to an abend module.

N CCCA does not add this section.

Default is Y.

`Generate END PROGRAM header`

Either:

Y CCCA adds an END PROGRAM header to the end of the new source program.

N CCCA does not add an END PROGRAM header.

Default is N.

`Compile after converting`

Either:

Y After conversion, the new source is compiled by the target language compiler.

Note: The new source is not compiled if the program conversion receives a return code of 08 or higher.

The return code of the compile appears in the Program/File report.

N The new source program is not compiled.

Default is Y.

`Flag manual changes in new source programs`

Either:

Y CCCA inserts a flagging line in the new source program before any line with diagnostic level 08 or higher, indicating that this line requires manual conversion.

The new source program will not compile unless you remove this flagging line. This ensures that you do not overlook any lines with this level of diagnostic.

If you want to use this option, but there are some diagnostics of level 08 that you don’t want flagged, change the severity level of these diagnostics using the Messages panel. See “Updating the message file” on page 73.

N CCCA does not insert flagging lines.

Default is N.

`Add DATE FORMAT clause to date fields`

Either:

Y CCCA adds a DATE FORMAT clause to the data description entry of each data item that has been identified as being used to contain a date. (The names of these data items are specified in the date identification file—see Chapter 4, “DATE FORMAT Conversion Option,” on page 39 for a full description.)

Note:

a. You can only select this option if the target language level is set to 2, 3, or 4—see “Setting source and target language levels” on page 17.
b. You enter the name of the date identification file on the Conversion Selection panel (MVS)—see Figure 12 on page 28, or the Conversion Selection panel (VM)—see Figure 15 on page 32.

N CCCA does not add DATE FORMAT clauses.

Default is N.

`Remove VALUE clauses in File/Linkage Sections`

(For converting DOS/VS COBOL or OS/VS COBOL programs only.)

Either:

Y CCCA removes any VALUE clauses from data items (which are not level 88) in either the File or Linkage sections of the program.

N CCCA does not remove VALUE clauses.

Default is Y.

`Flag FILE-STATUS conditional statements`

(For converting COBOL 68 Standard and COBOL 74 Standard programs only—see Source language level.)

Either:

Y CCCA flags all conditional statements that check a FILE STATUS variable (IF, PERFORM... UNTIL..., SEARCH... WHEN...).

N CCCA does not flag conditional statements that check a FILE STATUS variable.

Default is Y.

`Flag BLL cell arithmetic`

(For converting CICS programs written in DOS/VS COBOL or OS/VS COBOL only.)

Either:

Y CCCA flags any statements where arithmetic is being performed on a CICS BLL cell.

N CCCA does not flag statements where arithmetic is being performed on a CICS BLL cell.

Default is Y.

`BLL cell conversion method`

(For converting CICS programs written in DOS/VS COBOL or OS/VS COBOL only.)

In order to identify the BLL cells in the program, CCCA invokes the OS/VS COBOL compiler to compile sections of the source program.

Either:

A	CCCA compiles the Linkage section of the source program only.
B	CCCA compiles the Working Storage and the Linkage sections of the source program.

Default is A.

Note: Normally, it is sufficient (and fastest) to use option A. However, if the compile fails due to there being references in the Linkage section to the Working Storage section, then you should resubmit the conversion using option B.

`Search source for literal delimiter`

Either:

Y CCCA uses the following procedure to determine the value of the literal delimiter used in the program:

a. CCCA scans the CBL cards of the source program for the QUOTE or APOST compiler options. If a CBL card is found that specifies one of these compiler options, CCCA uses that value as the delimiter. (If both QUOTE and APOST are specified, CCCA uses the last value.)

b. If there are no CBL cards, or neither the QUOTE nor APOST compiler option is specified, CCCA scans the source and copy code until it finds a quote or an apostrophe that is:
   - Not in a comment line
   - Not in a comment paragraph
   - Not in a NOTE statement (DOS/VS and OS/VS COBOL only)

   and, if found, uses that value as the delimiter.

c. If after scanning the source and copy code, CCCA has not determined a value for the literal delimiter, CCCA will use the value specified for the option **Literal delimiter (QUOTE or APOST)—**see following description.

N CCCA does not search for the literal delimiter and uses the value specified for the option **Literal delimiter (QUOTE or APOST)—**see following description.

Default is Y.

`Literal delimiter (QUOTE or APOST)`

CCCA only uses the value of the literal delimiter specified here when one of these conditions is true:

- The option **Search source for literal delimiter** is set to N
- The option **Search source for literal delimiter** is set to Y but, after searching the source and copy code, CCCA cannot find a value for the delimiter

Either:

Q	Indicates a literal delimiter of a quote (")
A	Indicates a literal delimiter of a apostrophe (')

Default is Q.

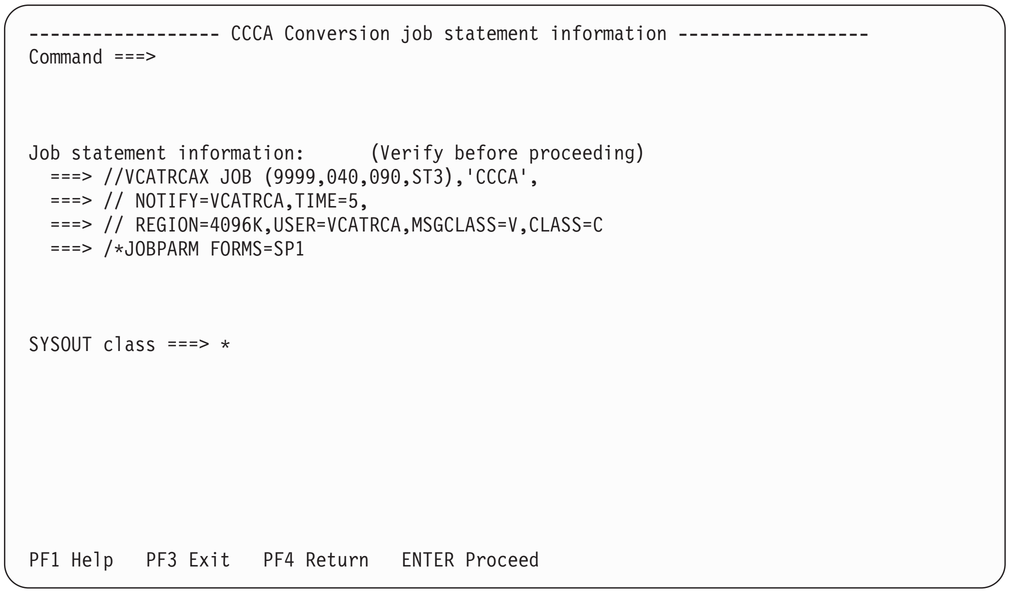
6. Press Enter to save the options.

Submitting the conversion job under MVS

Use the Conversion panels to submit a batch job to convert one or more programs.

To submit a conversion job:

1. Go to panel **1.2** to display the Conversion Job Statement Information panel, shown in Figure 11.



```
------------------ CCCA Conversion job statement information ------------------
Command ===>



Job statement information:      (Verify before proceeding)
  ===> //VCATRCAX JOB (9999,040,090,ST3),'CCCA',
  ===> // NOTIFY=VCATRCA,TIME=5,
  ===> // REGION=4096K,USER=VCATRCA,MSGCLASS=V,CLASS=C
  ===> /*JOBPARM FORMS=SP1



SYSOUT class ===> *









PF1 Help   PF3 Exit   PF4 Return   ENTER Proceed
```

Figure 11. Conversion Job Statement Information panel (MVS)

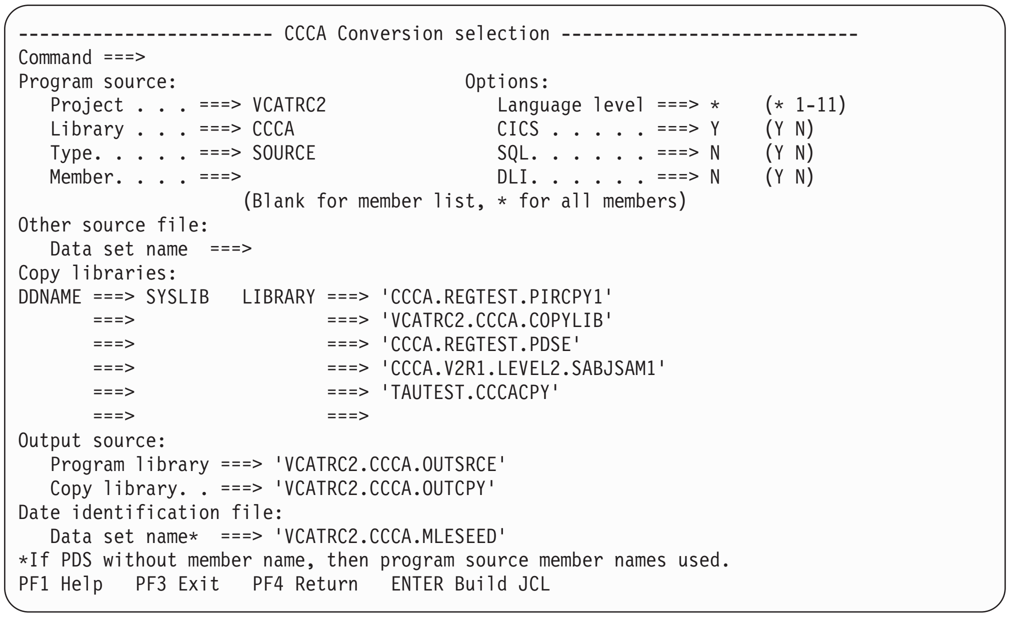
2. If necessary, update the text in:

   Job statement information
   The JCL for the conversion job card.

   SYSOUT class
   The output class. to which you want the output of the conversion job sent.

   SYSOUT class can be:
   - Any letter (A through Z)
   - Any numeral (0 through 9)
   - An asterisk (*)

3. Press Enter to display the Conversion Selection panel (see Figure 12 on page 28).



```
------------------------ CCCA Conversion selection ----------------------------
Command ===>
Program source:                          Options:
   Project . . . ===> VCATRC2               Language level ===> *    (* 1-11)
   Library . . . ===> CCCA                  CICS . . . . . ===> Y    (Y N)
   Type. . . . . ===> SOURCE                SQL. . . . . . ===> N    (Y N)
   Member. . . . ===>                       DLI. . . . . . ===> N    (Y N)
                     (Blank for member list, * for all members)
Other source file:
   Data set name  ===>
Copy libraries:
DDNAME ===> SYSLIB   LIBRARY ===> 'CCCA.REGTEST.PIRCPY1'
       ===>                  ===> 'VCATRC2.CCCA.COPYLIB'
       ===>                  ===> 'CCCA.REGTEST.PDSE'
       ===>                  ===> 'CCCA.V2R1.LEVEL2.SABJSAM1'
       ===>                  ===> 'TAUTEST.CCCACPY'
       ===>                  ===>
Output source:
   Program library ===> 'VCATRC2.CCCA.OUTSRCE'
   Copy library. . ===> 'VCATRC2.CCCA.OUTCPY'
Date identification file:
   Data set name*  ===> 'VCATRC2.CCCA.MLESEED'
*If PDS without member name, then program source member names used.
PF1 Help   PF3 Exit   PF4 Return   ENTER Build JCL
```

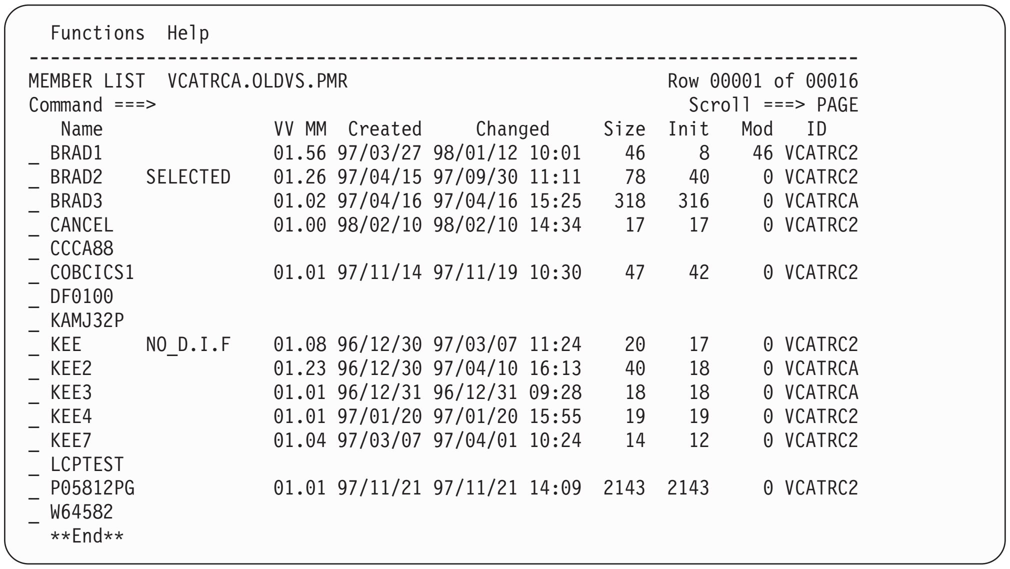
Figure 12. Conversion Selection panel (MVS)

4. Enter values for:

   Program source

   If the program source that you want converted is in a sequential data set, enter the data set name in the usual manner in the *Other source file* field (**Data set name**).

   If the program source that you want converted is in a partitioned data set, enter the data set name and the member name in the usual manner in either the *Program source* fields (**Project**, **Library**, **Type**, and **Member**) or the *Other source file* field (**Data set name**). If you want all members of the data set converted, enter an asterisk (*) instead of the member name. If you do not specify a member name or an asterisk, a member list will be displayed after you press Enter (see Figure 13).
   Place an “S” in front of all members in the list that you want converted.



```
   Functions  Help
 -----------------------------------------------------------------------------
 MEMBER LIST  VCATRCA.OLDVS.PMR                              Row 00001 of 00016
 Command ===>                                                  Scroll ===> PAGE
    Name               VV MM  Created     Changed     Size  Init   Mod   ID
 _ BRAD1               01.56 97/03/27 98/01/12 10:01    46     8    46 VCATRC2
 _ BRAD2    SELECTED   01.26 97/04/15 97/09/30 11:11    78    40     0 VCATRC2
 _ BRAD3               01.02 97/04/16 97/04/16 15:25   318   316     0 VCATRCA
 _ CANCEL              01.00 98/02/10 98/02/10 14:34    17    17     0 VCATRC2
 _ CCCA88
 _ COBCICS1            01.01 97/11/14 97/11/19 10:30    47    42     0 VCATRC2
 _ DF0100
 _ KAMJ32P
 _ KEE      NO_D.I.F   01.08 96/12/30 97/03/07 11:24    20    17     0 VCATRC2
 _ KEE2                01.23 96/12/30 97/04/10 16:13    40    18     0 VCATRCA
 _ KEE3                01.01 96/12/31 96/12/31 09:28    18    18     0 VCATRCA
 _ KEE4                01.01 97/01/20 97/01/20 15:55    19    19     0 VCATRC2
 _ KEE7                01.04 97/03/07 97/04/01 10:24    14    12     0 VCATRC2
 _ LCPTEST
 _ P05812PG            01.01 97/11/21 97/11/21 14:09  2143  2143     0 VCATRC2
 _ W64582
   **End**
```

Figure 13. Conversion Member List panel (MVS)

Note: If you have selected the DATE FORMAT conversion option (option 8 on the Conversion Options panel 2—see Figure 10 on page 23), and you have not specified a specific member for the date identification file on the Conversion Selection panel, the message “NO_D.I.F” appears against any member that you select if that member name does not exist in the date identification file data set.

Options
Most options for the conversion are specified in the option panels. Three however can be set on this panel:

Language level
Overrides—for this conversion job only—the **Source language level** specified on the Language Level panel. For a list of source language level values, see “Setting source and target language levels” on page 17.

If you specify an asterisk (*), CCCA uses the value specified in the Language Level panel.

CICS
Either:

Y	The program you are submitting for conversion contains EXEC CICS commands.
N	The program does not contain EXEC CICS commands.

SQL
Either:

Y	The program you are submitting for conversion contains SQL statements in the Linkage Section.
N	The program does not contain SQL statements in the Linkage Section.

DLI
Either:

Y	The program you are submitting for conversion contains EXEC DLI statements.
N	The program does not contain EXEC DLI statements.

Copy libraries
(Only required if the program you are converting contains COPY statements.)

The copy libraries of the old source copy members:

- The copy libraries are usually accessed through ddname SYSLIB.
  The COPY statement gives the member name in the library as specified by the SYSLIB DD statement.
- The COPY statement may also indicate a specific library.
  For example:

  COPY MOD **OF** LIB1
  or

  COPY MOD **IN** LIB1
  In this case, the library is accessed by specifying a ddname that defines the data set itself.

```
DDNAME ===>SYSLIB   LIBRARY ===>'CCCA.INCLUDE.LIB1'
DDNAME ===>         LIBRARY ===>'CCCA.INCLUDE.LIB2'
DDNAME ===>         LIBRARY ===>'CCCA.INCLUDE.LIB3'
DDNAME ===>LIB1     LIBRARY ===>'CCCA.SPECIAL.INCLUDE.LIB1'
DDNAME ===>         LIBRARY ===>'CCCA.SPECIAL.INCLUDE.LIB2'
```

Concatenation

Concatenation of libraries is possible for any ddname that you specify. The normal MVS rules for concatenation of libraries apply, and you must ensure that the data set with the largest block size is listed first.

In this case, if different modules have the same name in different libraries, the module copied is the first encountered in the sequence of the libraries.

As the above example shows, you can concatenate up to six libraries under ddname SYSLIB or any other ddname.

Output source (Program library)

(You can specify this only if the **Generate new program** field on Conversion Options panel 1 is set to Y.)

The output library that you specify should be the same organization as the input library.

CCCA puts the new source program into this library.

If the data set is partitioned, the member name of the new source program will be the same as the member name of the old source program in the input library.

If a member with this name already exists in the output library, CCCA replaces it.

CCCA checks that the library you specify is:
- A valid library name and that it exists
- Not the same as the input source library
- Not the same as any of the input copy libraries
- Not the same as the output copy library

Note: You must enter the name of a library, even if the **Generate new program** field is set to N.

Output source (Copy library)

(You can specify this only if the **Generate new copy members** field on Conversion Options panel 1 is set to Y.)

CCCA puts new source for copy members called by the source program into this library. The new copy member will have the same name as the old copy member.

If a member with this name already exists in the output copy library, it is not replaced unless the **Replace like-named copy members** field on Conversion Options panel 1 is set to Y.

CCCA checks that the library you specify is:
- A valid library name and that it exists
- A partitioned data set
- Not the same as any of the input copy libraries
- Not the same as the input source library
- Not the same as the output source library

You can specify only one output copy library.

`Date identification file`

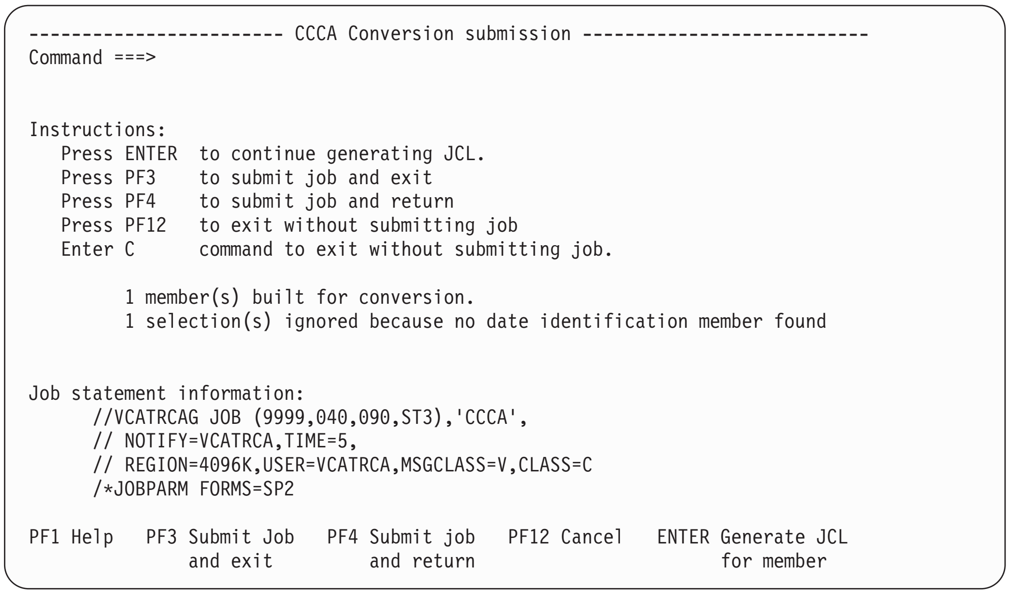
If you have selected the DATE FORMAT conversion option (option 8 on the Conversion Options panel 2—see Figure 10 on page 23), an entry field appears on the Conversion Selection panel into which you enter the data set name for the date identification file.

Note:

a. If you specify a PDS without a member name, CCCA uses the same member name as for the program source.
b. If the input source is a sequential file, you must specify a member for the date identification file.
c. If you specify a PDS and a member name, CCCA searches that member for entries that match the program name of the source program. For a detailed description, refer to "Date Identification file" on page 42.
d. If you specify a sequential file, CCCA searches the file for entries that match the name of the source program. For a detailed description, refer to "Date Identification file" on page 42.

5. Press Enter.

   ISPF generates the JCL for the conversion and then displays the Conversion Submission panel (see Figure 14).



```
------------------------ CCCA Conversion submission ---------------------------
Command ===>


Instructions:
   Press ENTER  to continue generating JCL.
   Press PF3    to submit job and exit
   Press PF4    to submit job and return
   Press PF12   to exit without submitting job
   Enter C      command to exit without submitting job.

         1 member(s) built for conversion.
         1 selection(s) ignored because no date identification member found


Job statement information:
      //VCATRCAG JOB (9999,040,090,ST3),'CCCA',
      // NOTIFY=VCATRCA,TIME=5,
      // REGION=4096K,USER=VCATRCA,MSGCLASS=V,CLASS=C
      /*JOBPARM FORMS=SP2

PF1 Help   PF3 Submit Job   PF4 Submit job   PF12 Cancel   ENTER Generate JCL
               and exit         and return                       for member
```

Figure 14. Conversion Submission panel (MVS)

The Conversion Submission panel shows how many members have been selected (and also how many selections have not been successful) and redisplays the Job card parameters for information only. This panel can no longer be overtyped, since the Job statement has already been generated.

To select additional programs to be converted, press Enter,

To cancel the submission of the job, type `C` on the command line and press Enter.

6. Press either PF3 or PF4.

   ISPF submits the generated JCL for execution.

   The message `JOB` *`xxxxxc`* `SUBMITTED` appears once for each member that you selected for conversion (where *`xxxxxc`* is the specified job name). The final message is followed by three asterisks (`***`).

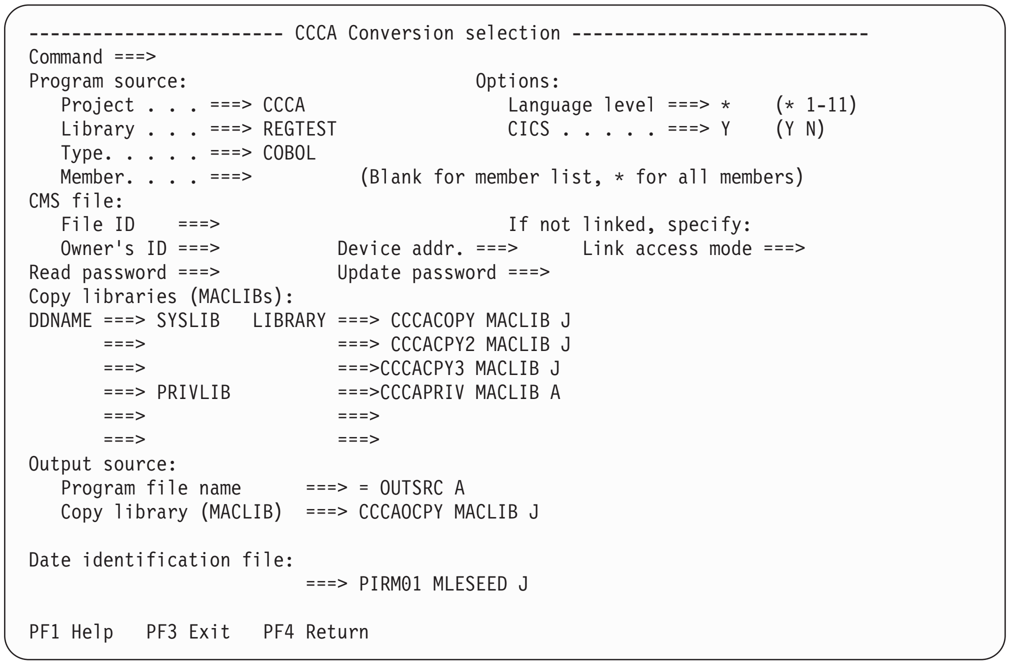
You may press Enter or any other interrupt key to return to the Converter panel.

Running the conversion job under VM

Use the Conversion Selection panel to convert one or more programs.

To run a conversion job:

1. Go to panel **1.2** to display the Conversion Selection panel, shown in Figure 15.



```
------------------------ CCCA Conversion selection ----------------------------
Command ===>
Program source:                            Options:
   Project . . . ===> CCCA                    Language level ===> *    (* 1-11)
   Library . . . ===> REGTEST                 CICS . . . . . ===> Y    (Y N)
   Type. . . . . ===> COBOL
   Member. . . . ===>         (Blank for member list, * for all members)
CMS file:
   File ID    ===>                            If not linked, specify:
   Owner's ID ===>           Device addr. ===>      Link access mode ===>
Read password ===>           Update password ===>
Copy libraries (MACLIBs):
DDNAME ===> SYSLIB   LIBRARY ===> CCCACOPY MACLIB J
       ===>                  ===> CCCACPY2 MACLIB J
       ===>                  ===>CCCACPY3 MACLIB J
       ===> PRIVLIB          ===>CCCAPRIV MACLIB A
       ===>                  ===>
       ===>                  ===>
Output source:
   Program file name      ===> = OUTSRC A
   Copy library (MACLIB)  ===> CCCAOCPY MACLIB J

Date identification file:
                          ===> PIRM01 MLESEED J

PF1 Help   PF3 Exit   PF4 Return
```

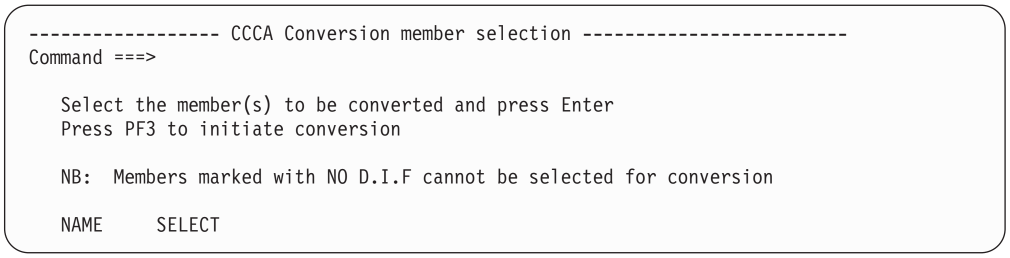
Figure 15. Conversion Selection panel (VM)

2. Enter values for:

   Program source
   If the program source that you want converted is within an ISPF partitioned data set, enter the data set name and the member name in the **Project**, **Library**, **Type**, and **Member** fields.

   If the program source that you want converted is within a MACLIB, enter the MACLIB file name in **File ID** and the member name in the **Member** field.

   If you want all members of the MACLIB or ISPF partitioned data set converted, enter an asterisk (*) instead of the member name. If you do not specify a member name or an asterisk, CCCA displays the Conversion Member Selection panel after you press Enter (see Figure 16 on page 33).



```
------------------ CCCA Conversion member selection -------------------------
Command ===>

   Select the member(s) to be converted and press Enter
   Press PF3 to initiate conversion

   NB:  Members marked with NO D.I.F cannot be selected for conversion

   NAME     SELECT
```

Figure 16. Conversion Member Selection panel (VM)

Place an “S” in front of all members in the list that you want converted.

Place a “C” in front of any selected member in the list to cancel the selection.

Note: If you have selected the DATE FORMAT conversion option (option 8 on the Conversion Options panel 2—see Figure 10 on page 23), and you have not specified a specific member for the date identification file on the Conversion Selection panel, the message “NO_D.I.F” appears against any member in the member selection list that does not have a corresponding member in the date identification file data set. You cannot select these members for conversion.

`CMS file—File ID`
If the program source that you want converted is a simple CMS file, enter the file details (`fn ft fm`).

`Linkage fields`
If you are not already linked to the minidisk where the file resides enter the appropriate details in **Owner's ID**, **Device addr**, and **Link access mode**.

`Passwords`
If required, enter the appropriate passwords in the **Read password** and **Update password** fields.

`Options`
Most options for the conversion are specified in the option panels. Two however can be set on this panel:

`Language level`
Overrides—for this conversion job only—the **Source language level** specified on the Language Level panel. For a list of source language level values, see “Setting source and target language levels” on page 17.

If you specify an asterisk (*), CCCA uses the value specified in the Language Level panel.

`CICS`
Either:

Y The program you are submitting for conversion contains EXEC CICS commands.

N The program does not contain EXEC CICS commands.

`Copy libraries (MACLIBs)`
(Only required if the program you are converting contains COPY statements.)

The copy libraries containing the old source copy members:
- The copy libraries are usually accessed through ddname SYSLIB.

The COPY statement gives the member name in the library as specified by the SYSLIB DD statement.

- The COPY statement may also indicate a specific library.

  For example:

  COPY MOD **OF** LIB1

  or

  COPY MOD **IN** LIB1

  In this case, the library is accessed by specifying a ddname that defines the data set itself.

  ```
  DDNAME ===>SYSLIB   LIBRARY ===>'COBCOPY1 MACLIB A'
  DDNAME ===>         LIBRARY ===>'COBCOPY2 MACLIB A'
  DDNAME ===>         LIBRARY ===>'COBCOPY3 MACLIB C'
  DDNAME ===>LIB1     LIBRARY ===>'SPCLCOPY MACLIB D'
  DDNAME ===>         LIBRARY ===>'SPCLCPY2 MACLIB D'
  ```

  As the above example shows, you can concatenate up to six libraries under ddname SYSLIB or any other ddname.

  Concatenation of libraries is possible for any ddname that you specify. The normal CMS rules for concatenation of libraries apply.

Note: Each input copy library that you specify must be a MACLIB, and have a filetype of `MACLIB`.

`Output source—Program file name`

(You can specify this only if the **Generate new program** field on Conversion Options panel 1 is set to Y.)

Enter the name of the file where you want CCCA to put the new source program.

The format of the Program File Name can be:

a. `fn ft fm`

b. `= ft fm` (the `fn` is taken from the input source filename or member name)

c. `fn MACLIB fm`

If you specify an input file that is either a MACLIB or an ISPF PDS without including a member name, you must use either option *b* or *c* above when specifying the Program File Name.

Note: If the file (in option *a* above) or member that you specify already exists, CCCA replaces it.

`Output source—Copy library (MACLIB)`

(You can specify this only if the **Generate new copy members** field on Conversion Options panel 1 is set to Y.)

CCCA puts new source for copy members called by the source program into this library. The new copy member will have the same name as the old copy member. The copy library that you specify must be a MACLIB, and have a filetype of `MACLIB`.

If a member with this name already exists in the output copy library, it is not replaced unless the **Replace like-named copy members** field on Conversion Options panel 1 is set to Y.

CCCA checks that the library you specify is:

- A valid library name and that it exists
- A MACLIB
- Not the same as any of the input copy libraries
- Not the same as the input source library
- Not the same as the output source library

You can specify only one output copy library.

`Date identification file`

If you have selected the DATE FORMAT conversion option (option 8 on the Conversion Options panel 2—see Figure 10 on page 23), an entry field appears on the Conversion Selection panel into which you enter the file name for the date identification file.

The date identification file name can be:

a. A simple CMS file (`fn ft fm`)
b. A MACLIB
c. An ISPF partitioned data set, with member specified
d. An ISPF partitioned data set, with no member specified
e. A simple CMS file with the filename specified as "=" (`= ft fm`)

Note:

a. For options *b*, *d*, and *e*, the member name is taken from the input source file name, or member name.
b. If you specify option *a* or *c*, CCCA searches that file or member for entries that match the name of the source program. For a detailed description, refer to "Date Identification file" on page 42.

3. Press Enter.

   CCCA converts the member (or members) that you have selected in foreground mode. If errors are encountered during the conversion process, CCCA displays a message.

   If you used the Conversion Member Selection panel to select one or more members for conversion, or specified an asterisk (`*`) to convert all members, CCCA displays a message indicating which member it is currently converting.

   When the conversion process is complete, CCCA redisplays the Conversion Selection panel, with a message indicating the highest return code for the conversion.

Reading the Diagnostic listing

The conversion job generates a Diagnostic listing containing:
- Converted source code
- Diagnostic messages

You can tailor the contents of the Diagnostic listing using the following conversion options (for details, see "Setting conversion options" on page 19):
- **Print old source lines**
- **Print copy members**
- **Print diagnostics of level >=**

Figure 17 on page 36 shows an extract from a sample Diagnostic listing.

This sample was generated with:
- **Print old source lines** set to Y
- **Print diagnostics of level >=** 0 (print all diagnostic messages)

```
1       2          3
000179             IF ERROR-FLAG = ZERO
000180                 MOVE "TEST CASE LCPTST09 IS SUCCESSFUL." TO OUTPUT-RECORD
000181                 WRITE OUTPUT-RECORD                                     4      5  6
000182   *OLD**    OTHERWISE                                                   ABJ6021 00 OTHERWISE REPLACED BY ELSE
000183             ELSE
000184                 MOVE "TEST CASE LCPTST09 FAILED." TO OUTPUT-RECORD
000185                 WRITE OUTPUT-RECORD.
000186
000187             COPY CLOSEA.
000188+            CLOSE IN-FILE1.
000189+            CLOSE IN-FILE2.
000190+            CLOSE OUT-FILE.
000191+            CLOSE PRINT-FILE.
000192             STOP RUN.
```

Figure 17. Extract from a diagnostic listing

The columns of this report are described below.

1 Line ID and copy book indicator.

CCCA assigns a sequential line ID to each converted and each old source line appearing in the Diagnostic listing. Each diagnostic message appearing at the end of the listing uses the line ID to reference the line to which it refers.

The copy book indicator ("+") appears when the line is from a copy book.

2 Converted program sequence numbers or old source line indicator.

For converted program source lines, if the **Resequence source lines** field on Conversion Options panel 1 was set to:

Y this column contains the new sequence numbers

N this column contains the contents of columns 1 through 6 from the old source lines

For old program source lines, this column contains `*OLD**`.

3 If column **2** contains `*OLD**`, this is the old source line. (Old source lines appear only if the **Print old source lines** field on Conversion Options panel 1 was set to Y.)

If column **2** does not contain `*OLD**`, this is the converted program source line.

4 Diagnostic message identifier, in the format ABJ*nnnn* (where *nnnn* is a 4-digit number).

5 Diagnostic severity level:

00 The language element has been converted into its equivalent in the target language.

04 The language element has been converted, but you should inspect the change.

08 Either you must, or you may have to, make a change to this language element, if you want the program to behave in the same way it did before conversion.

6 Diagnostic message text.

Each diagnostic message for the converted program appears twice in the Diagnostic listing:

- Alongside the source line to which it applies

- At the end of the Diagnostic listing, alongside the Line ID to which it applies

Conversion return codes

CCCA issues a return code for each converted program. This return code appears in the job log alongside the program conversion step:

00	CCCA did not issue any diagnostics. No changes were made to the program and no language elements were flagged for a manual change.
01	CCCA issued diagnostics of severity 00, but there were no diagnostics of severity greater than 00.
04	CCCA issued diagnostics of severity 04 and lower, but there were no diagnostics of severity greater than 04.
08	CCCA issued diagnostics of severity 08 and lower, but there were no diagnostics of severity greater than 08.
16	Required copy members were missing.
21	Abend occurred during conversion phase 1.
22	Abend occurred during conversion phase 2.
23	Abend occurred during conversion phase 3.

Chapter 4. DATE FORMAT Conversion Option

This chapter describes:
1. Millennium language extensions (MLE) and date fields
2. MLE terms
3. The DATE FORMAT clause
4. What you need to supply to CCCA for the DATE FORMAT conversion option
5. Selecting the DATE FORMAT conversion option
6. How the DATE FORMAT conversion option works

The DATE FORMAT conversion option is one of several options within CCCA that you can select. By selecting this option, CCCA will perform a DATE FORMAT conversion *in addition to* any other type of conversion that it may carry out (according to the source and target language levels that you have specified).

The DATE FORMAT conversion option adds a DATE FORMAT clause to selected data description entries to identify those entries as **date fields**.

The DATE FORMAT clause is part of the **millennium language extensions**.

Millennium Language Extensions (MLE) and Date Fields

Many applications use 2 digits rather than 4 digits to represent the year in date fields, and assume that these values represent years from 1900 to 1999. This compact date format works well for the 1900s, but it does not work for the year 2000 and beyond because these applications interpret "00" as 1900 rather than 2000, producing incorrect results.

The millennium language extensions are designed to allow applications that use 2-digit years to continue performing correctly in the year 2000 and beyond, with minimal modification to existing code. This is achieved using a technique known as windowing, which removes the assumption that all 2-digit year fields represent years from 1900 to 1999. Instead, windowing enables 2-digit year fields to represent years within any 100-year range, known as a **century window**.

For example, if a 2-digit year field contains the value 15, many applications would interpret the year as 1915. However, with a century window of 1960–2059, the year would be interpreted as 2015.

The millennium language extensions provide support for the most common operations on date fields: comparisons, moving and storing, incrementing and decrementing. This support is limited to date fields of certain formats; for details, see "DATE FORMAT Clause" on page 40.

For further information on MLE, see the *IBM COBOL Millennium Extensions Guide*.

Definition of terms

This book uses the following terms when referring to the millennium language extensions.

Date Field

For the purposes of CCCA, a date field is a data item whose data description entry includes a DATE FORMAT clause.

The term date field refers to both **expanded date fields** and **windowed date fields**.

Windowed Date Field

A windowed date field is a date field that contains a **windowed year**. A windowed year consists of 2 digits, representing a year within the century window.

Expanded Date Field

An expanded date field is a date field that contains an **expanded year**. An expanded year consists of 4 digits.

The main use of expanded date fields is to provide correct results when these are used in combination with windowed date fields; for example, where migration to 4-digit year dates is not complete. If all the dates in an application use 4-digit years, there is no need to use the millennium language extensions.

Century window

A century window is a 100-year interval within which any 2-digit year is unique. For windowed date fields, it is specified by the YEARWINDOW compiler option.

DATE FORMAT Clause

In order to indicate that a data item is a date field, the DATE FORMAT clause is used in the data description entry in the Data Division.

The DATE FORMAT clause specifies the format of the date contained in the data item.

Format

```
►►──DATE FORMAT──┬────┬──┬─YY───────┬──────────────────────────────────►◄
                 └─IS─┘  ├─YYX──────┤
                         ├─YYXX─────┤
                         ├─YYXXX────┤
                         ├─YYXXXX───┤
                         ├─XYY──────┤
                         ├─XXYY─────┤
                         ├─XXXYY────┤
                         ├─XXXXYY───┤
                         ├─YYYY─────┤
                         ├─YYYYX────┤
                         ├─YYYYXX───┤
                         ├─YYYYXXX──┤
                         ├─YYYYXXXX─┤
                         ├─XYYYY────┤
                         ├─XXYYYY───┤
                         ├─XXXYYYY──┤
                         └─XXXXYYYY─┘
```

DATE FORMAT clause...	**Specifies that the data item contains...**
YY	A windowed year.

YYX A windowed year followed by 1 character.

YYXX A windowed year followed by 2 characters; for example, digits representing a month (01–12).

YYXXX
A windowed year followed by 3 characters; for example, digits representing a day of the year (001–365).

YYXXXX
A windowed year followed by 4 characters; for example, 2 digits representing a month and 2 digits representing a day of the month.

XYY A windowed year preceded by 1 character.

XXYY A windowed year preceded by 2 characters.

XXXYY
A windowed year preceded by 3 characters.

XXXXYY
A windowed year preceded by 4 characters.

YYYY An expanded year.

YYYYX
An expanded year followed by 1 character.

YYYYXX
An expanded year followed by 2 characters.

YYYYXXX
An expanded year followed by 3 characters.

YYYYXXXX
An expanded year followed by 4 characters.

XYYYY
An expanded year preceded by 1 character.

XXYYYY
An expanded year preceded by 2 characters.

XXXYYYY
An expanded year preceded by 3 characters.

XXXXYYYY
An expanded year preceded by 4 characters.

Examples

```
77  YEAR1             PIC 99 DATE FORMAT YY.
77  DATEA             PIC 9(5) DATE FORMAT YYXXX.
77  DATEB             PIC 9(4) DATE FORMAT XXYY.
77  DATEC             PIC 9(7) DATE FORMAT XXXYYYY.
77  DATED             PIC 9(8) DATE FORMAT YYYYXXXX.
```

What you need to supply to CCCA

CCCA does not, itself, identify which data items within a COBOL program are used to contain dates. Instead, CCCA requires the names (and format) of each of these data items to be supplied as additional input. Typically, this information is supplied by a Year 2000 tool.

The DATE FORMAT conversion option within CCCA requires:

- The COBOL source program that is to be converted
- A **date identification file** that identifies each data item in that COBOL source program that is used to contain a date. The date identification file contains the *program name* followed by details for each such data item:
  - The *line number* of the data item (used only as a delimiter by CCCA)
  - The *format* of the data item
  - The *name* of the data item, qualified as necessary; see "Qualification of data names" on page 45

  Note: Details of data items for more than one program can be held in the same date identification file. For more information, see "Format."

Date Identification file

The purpose of the date identification file is to identify which data items in the COBOL program and copy members to be converted are used to contain dates so that CCCA can add an appropriate DATE FORMAT clause to the corresponding data description entries.

It is your responsibility to create the date identification file. You must use the format as described in this document, and supply the file to CCCA.

The method used to produce the date identification file does not matter. It could be, for example, that you choose to create the file manually, inserting the details of data items in the program that is to be converted that you know are used to contain dates. However, it is much more likely that you will use one of the Year 2000 tools that can generate a date identification file for you.

In either case, it is essential that you carefully check the contents of the date identification file for completeness and accuracy *before* supplying the date identification file to CCCA for the actual program conversion.

CCCA performs some syntax checking before adding a DATE FORMAT clause to a data description entry (see "Checking DATE FORMAT Clause syntax" on page 46). However, CCCA cannot check which data items are used to contain dates. The onus is therefore on you to ensure that the date identification file correctly identifies all such data items.

Format

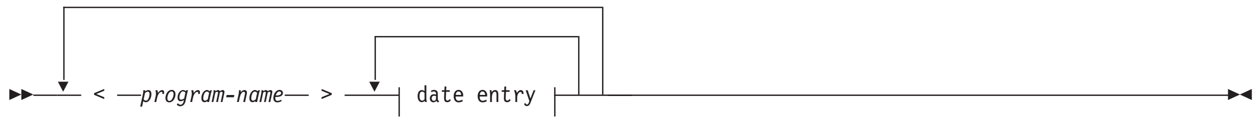
The information in the date identification file relates to each data item, within a specific program, that has been identified (by some external means) as containing a date.

The date identification file consists of 80-byte records containing data in a free-format style. Each record may contain one or more fields. Each field within a record is separated by one or more spaces.

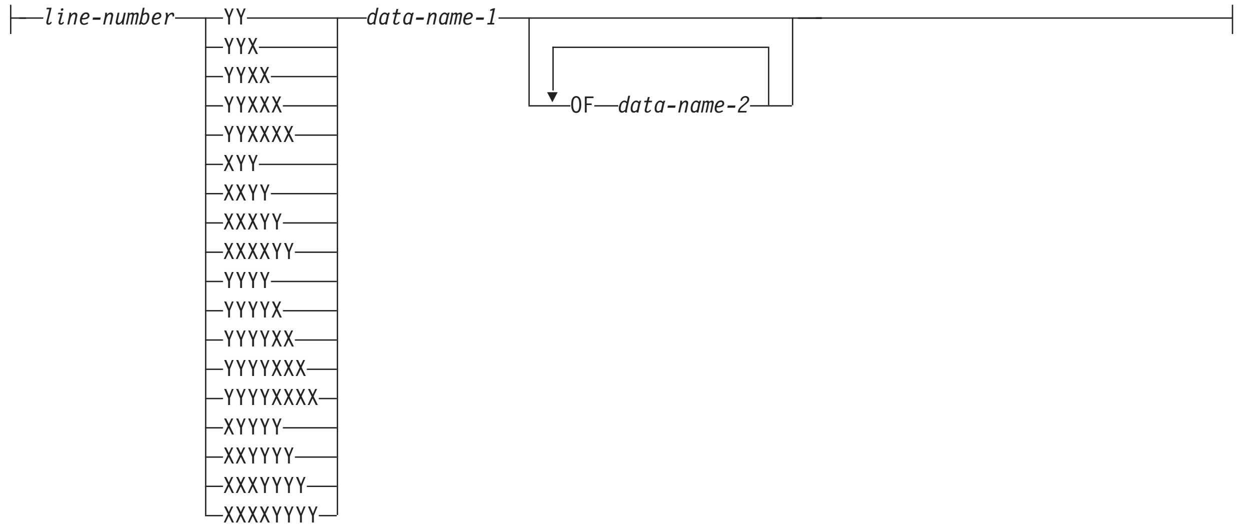
Note:
1. While the date identification file is free-format, you will find it far more readable, and therefore much easier to reference, if a formatted style is used. (Refer to "Examples of date identification file contents" on page 45.)
2. The date identification file can contain the Double-Byte Character Set (DBCS).

The details for each data item are "grouped" by program name, allowing the same date identification file to be used for more than one program. The program to which each group of data item details relate is identified by means of the *program name* preceding the group.

Format of date identification file



date entry:



Note:

1. Line breaks are ignored (except for comments, in which case each line must have an "*" in column 1—see "Comment lines" on page 45).
2. Each item may start in any column and must be separated from the previous item by at least 1 space.

`program-name`
The name of the program to which the data item information (that follows) applies. The *program name* can be a maximum of 30 characters and must be enclosed (with no intervening spaces) in "<" and ">" symbols. For example, `<ABJIVP01>`

`line-number`
A numeric field that *can* be used as a reference to the line number in the source COBOL program where the data item appears. For example, `223`

Note: CCCA uses this field as a delimiter only and does not use its actual value. You can use this field as a useful reference when checking the content of the date identification file against the source program before you input the date identification file to CCCA. However, even if you are not using the field for this purpose, you must still place *some* numeric value ("1", for example) in this position.

YY Specifies the data item contains a windowed year.

YYX
Specifies the data item contains a windowed year followed by 1 character.

YYXX
Specifies the data item contains a windowed year followed by 2 characters; for example, digits representing a month (01–12).

YYXXX
Specifies the data item contains a windowed year followed by 3 characters; for example, digits representing a day of the year (001–365).

YYXXXX
Specifies the data item contains a windowed year followed by 4 characters; for example, 2 digits representing a month and 2 digits representing a day of the month.

XYY
Specifies the data item contains a windowed year preceded by 1 character.

XXYY
Specifies the data item contains a windowed year preceded by 2 characters.

XXXYY
Specifies the data item contains a windowed year preceded by 3 characters.

XXXXYY
Specifies the data item contains a windowed year preceded by 4 characters.

YYYY
Specifies the data item contains an expanded year.

YYYYX
Specifies the data item contains an expanded year followed by 1 character.

YYYYXX
Specifies the data item contains an expanded year followed by 2 characters.

YYYYXXX
Specifies the data item contains an expanded year followed by 3 characters.

YYYYXXXX
Specifies the data item contains an expanded year followed by 4 characters.

XYYYY
Specifies the data item contains an expanded year preceded by 1 character.

XXYYYY
Specifies the data item contains an expanded year preceded by 2 characters.

XXXYYYY
Specifies the data item contains an expanded year preceded by 3 characters.

XXXXYYYY
Specifies the data item contains an expanded year preceded by 4 characters.

Note:

1. MLE does not provide support for any forms of date other than those specified above.
2. MLE does not perform any special processing for any parts of dates except for the year part. Other forms of date that have the same general form as the explicitly supported dates will be treated in the same way. For instance,

MLE regards year and week dates of the form YYWW as if they were year and month dates of the form YYMM (represented by the *date format* YYXX).

data-name-1
The lowest-level name associated with the data item used to hold a date. For example, `DATE-1`

data-name-2
A qualifier which is a higher-level name that helps to uniquely identify *data-name-1*. For example, `A-RECORD`

Qualification of data names: The syntax for qualifying names within normal COBOL source code allows either the word "IN" or the word "OF" to be used between the lower-level data name and the higher-level data name. A detailed description of qualification can be found in the *IBM COBOL Language Reference* for your platform.

However, only "OF" is acceptable in the case of qualified names in the date identification file input to CCCA.

Comment lines

Comment lines can be included in the date identification file. They are identified by having an "*" in column 1 of the record. Comment lines are ignored by CCCA.

Format of date identification file comment line

```
     (1)
►►──*────────comment-text──────────────────────────────────────────────────────►◄
```

Notes:

1 "*" must be in column 1.

Examples of date identification file contents

Example 1 (Recommended formatted style)

```
*    STUDENT FILE PRODUCED 04/16/98
<STUDPRG1>
127      YYXXXX       BIRTH-DATE
157      YY           ENROL-YEAR
162      YYXX         GRAD-MONTH
195      YYXXXX       FEE-DUE-DATE OF CUR-SEMMEST OF SUBJECT-CODE OF
                      COLLEGE-NUM OF STATE-CODE
<STUDPRG2>
96       YYXXXX       ARREARS-DATE OF ARR-1
98       YYXXXX       ARREARS-DATE OF ARR-2
100      YYXXXX       ARREARS-DATE OF ARR-3
<STUDPRG3>
388      YYXXX        PAID-DATE
```

Example 2

```
<VETSYS01>
1
YYXXX
REG-DATE
1
YYXXX
NEXT-INNOC-DATE
1
YYXXX
LAST-INNOC-DATE
```

```
* REMINDER DATE
1
YYXXX
REMIND-DATE
```

Example 3

```
<ACCT1> 1 YYXXXX LOAN-DATE 1 YY VAL-YEAR 1 YYXX DUE-MONTH 1
YYXXXX REPAY-DATE OF CUR-PERIOD <ACCT2> 1 YYXXXX ARREARS-DATE OF
ARR-1 1 YYXXXX ARREARS-DATE OF ARR-2 1 YYXXXX ARREARS-DATE OF
ARR-3 <ACCT3> 1 YYXXX PEN-DATE
```

Selecting the DATE FORMAT Conversion Option

To select the DATE FORMAT conversion option, specify Y for option 8 (**Add DATE FORMAT clause to date fields**) on the Conversion Options 2 panel (see “Setting conversion options” on page 19).

When you select this option, an additional field appears on the Conversion Selection panel (MVS)— see Figure 12 on page 28, or the Conversion Selection panel (VM)— see Figure 15 on page 32, into which you enter the name of the *date identification file*.

Note: You can only select the DATE FORMAT conversion option if the target language level supports the DATE FORMAT clause. For details, see Table 3 on page 18.

How the DATE FORMAT Conversion Option works

If you have selected the DATE FORMAT conversion option, CCCA scans the date identification file for the name of the program being converted.

When the program name is found:
1. CCCA reads the data item details in the date identification file that follow the program name and stores them in an internal table.
2. CCCA checks each data item in the Data Division of the program being converted to determine if its name is in the internal table.
3. If the name is in the internal table, CCCA performs various syntax checking (see “Checking DATE FORMAT Clause syntax”) to determine if a DATE FORMAT clause is allowed for the data description entry.
4. If no syntax violations are found, CCCA adds a DATE FORMAT clause using the date format specified for that data item in the internal table.

Checking DATE FORMAT Clause syntax

Before adding the DATE FORMAT clause, CCCA checks that the addition of the clause does not violate the following syntax rules.

The DATE FORMAT clause can only be specified for a data description entry which:
- Does not already contain a DATE FORMAT clause
- Does not have a:
  - BLANK WHEN ZERO clause
  - JUSTIFIED clause
  - SIGN clause with a SEPARATE CHARACTER phrase
- Has a level number other than 66 or 88

- In the case of an elementary data item:
  - Has a PICTURE string that contains:
    - All 9's
    - An S followed by 9's
    - 9's, A's, and X's only, and not all A's
  - Has a computer storage format (USAGE clause) of DISPLAY, COMPUTATIONAL-3, PACKED-DECIMAL, BINARY, COMPUTATIONAL, or COMPUTATIONAL-4
  - Where the length of the PICTURE clause (999999, for example) matches the length of the corresponding format field in the date identification file (YYXXXX, for example)
- In the case of a group data item:
  - Contains a USAGE clause of DISPLAY
- Is not an external data item or part of an external data item

If any of the above syntax rules are violated, CCCA issues a diagnostic message stating the reason the DATE FORMAT clause was not added. Otherwise, CCCA adds the DATE FORMAT clause to the data description entry.

Note:
1. The above is not a comprehensive list of the DATE FORMAT clause syntax rules.
2. It is possible that CCCA may add the DATE FORMAT clause where it is not allowed. In these cases, the post-conversion compile, if specified, will identify the error.

If you select both the DATE FORMAT conversion option and the **Compile after converting** option (see Figure 10 on page 23), CCCA compiles the converted program with the compiler option DATEPROC(FLAG) and the installation default value of the YEARWINDOW option.

The diagnostics in the resultant compiler listing will indicate whether manual changes to the program are required.

Chapter 5. Conversion reports and the conversion log

This chapter describes how to:
- Generate conversion reports
- Browse, update, and erase the conversion log

Generating conversion reports

Conversion reports list program conversion statistics.

To see the types of conversion report you can generate, go to panel **1** (the Converter Menu, shown in Figure 5 on page 13).

The Converter Menu contains options for generating conversion reports:

Report	Lists details of...	Sorted by
Program/File	Converted programs, and the files they use	Program name
File/Program	As above (with fewer program details)	File name
Copy/Program	Copy members used by converted programs	Copy member name
Program/Copy	As above	Program name
Call/Program	CALL statements in converted programs	CALL subroutine identifier or subroutine literal
Program/Call	As above	Program name

Conversion reports list details only for programs converted since you last erased the conversion log (see "Erasing the conversion log" on page 58).

When there's nothing to report...

With the exception of the Program/File report, CCCA can only produce any of the conversion reports that you request if there are matching records in the CCCA Control file.

For example, if you used CCCA to convert a number of programs none of which contained references to any file names, and you then requested CCCA to generate a File/Program report (option 4 on the Converter Menu, see Figure 5 on page 13), CCCA would be unable to produce the requested report.

In this situation (when no matching records for a requested report exist in the CCCA Control file), CCCA displays one of the following messages in the top right-hand corner of the screen:
- `Report not generated`
- `Nothing to Report on`

Appendix H, "Sample output," on page 199 contains sample report listings.

The following sections describe each conversion report in detail.

Program/File report

The Program/File report lists details of converted programs:
- Date and time the program was last converted
- Options specified for the conversion
- Conversion statistics
- Converted program status
- Details of files used by the program

Note: This report lists details only for programs converted since you last erased the conversion log (see "Erasing the conversion log" on page 58).

Figure 18 shows a sample Program/File report.

```
 5648-B05 V2R1         - IBM COBOL CONVERSION AID - SAMPLE     04/15/98 17:36:40   Page 1


               ......... P R O G R A M -- F I L E  R E P O R T .........

1           2    3   4      5            6             7
                               C                                                          13
---COBOL--                D L  I   -----OPTIONS-----                          --------- FILES DEFINED -------------
  PGM.NAME REV  PBR SUFF  E V  C             1 11111 MEMBER     STATUS        OLD NEW CNV SYSTEM    COBOL
                CNV WORD  L L  S   12345 67890 12345 NAME       DATE/TIME     ORG ORG REQ NAME      NAME

ABJIVP01    01  213    0  Q 2  N   YYYYY YNNNN NNNNN ABJIVP01   COMPLETE 8
                                                                98/04/15 16:24 9
                                                                COMPILE RC=00 10
                                                                98/04/15 16:25 11
                                                             MANUAL COMPLETION 12
                                                                  /  /     :
                                                                              S   S   N   DDPRINT   PRINT-FILE
ABJIVP02    01  208    2  Q 2  N   YYYYY YNNNN NNNNN ABJIVP02   COMPLETE
                                                                98/04/15 16:25
                                                                COMPILE RC=00
                                                                98/04/15 16:26
                                                             MANUAL COMPLETION
                                                                  /  /     :
                                                                              S   S   N   PRINT     PRINT-OUT
```

Figure 18. Program/File report

The columns of this report are described below.

1 The name of the converted program, specified in the Identification Division PROGRAM-ID paragraph.

2 The number of times you have converted the program.

3 The number of Language Conversion Programs (LCPs) invoked during program conversion.

4 The number of user-defined words in the program to which CCCA appended suffixes.

5

DEL Literal delimiter used in the program:

A	Apostrophe (')
Q	Quotation mark (")

LVL Source language level used for the conversion, as specified on the Language Level panel (Figure 8 on page 17) or the
- (MVS only) Conversion (Selection) panel (see Figure 12 on page 28):
- (VM only) Conversion Selection panel (see Figure 15 on page 32):

1	DOS/VS COBOL—LANGLVL(1)
2	DOS/VS COBOL—LANGLVL(2)

3	OS/VS COBOL—LANGLVL(1)
4	OS/VS COBOL—LANGLVL(2)
5	VS COBOL II Release 1.0, Release 1.1, or Release 2.0 (or any COBOL with the CMPR2 option)
6	VS COBOL II—NOCMPR2 Release 3.0, Release 3.1, or Release 3.2
7	VS COBOL II—NOCMPR2 Release 4.0
8	COBOL/370—NOCMPR2
9	COBOL for VSE/ESA—NOCMPR2
10	COBOL for MVS & VM—NOCMPR2
11	COBOL for OS/390 & VM—NOCMPR2
12	Enterprise COBOL (prior to Version 5)

CICS CICS processing option used for the conversion, as specified on the
- (MVS only) Conversion Selection panel (see Figure 12 on page 28).
- (VM only) Conversion Selection panel (see Figure 15 on page 32).

You should have set this option to:

Y	If the program you submitted for conversion contained EXEC CICS statements
N	If the program had no EXEC CICS commands

6 Options CCCA used to convert the program, as specified on Conversion Options panel 2 (Figure 10 on page 23).

For a description of these options, see “Setting conversion options” on page 19.

7

Under MVS
Member name of the program (if the old source program was in a partitioned data set).

CCCA uses the same name for the new source member (if it is generated).

Under VM
The *fn* of the program, or the member name if the old source program was in a CMS MACLIB or ISPF partitioned data set.

CCCA uses the same name for the new source file (*fn*) or source member (if it is generated).

8 Status of the converted program:

NOCHANGE
The last conversion of this program received return code 00. CCCA made no changes to the program. No manual changes to the program are required.

COMPLETE
The last conversion of this program received return code 01. The program has been completely converted. No manual changes to the program are required.

WARNING
The last conversion of this program received return code 04. The program has been converted. The program may compile and execute successfully, but you should inspect the converted language elements that received level 04 diagnostics.

ERROR
: The last conversion of this program received return code 08. CCCA issued level 08 diagnostics, indicating you may need to manually convert these program elements.

ABEND
: The last attempted conversion of this program abnormally terminated:

  ABEND-002
  : Abend occurred in conversion phase 2

  ABEND-003
  : Abend occurred in conversion phase 3

9 Date and time this program was last converted by CCCA.

10 Return code of the post-conversion compile (shown only if the program was compiled after its last conversion).

A program is compiled after conversion if these conditions are met:

- The **Compile after converting** field on Conversion Options panel 2 (Figure 10 on page 23) is set to Y
- The status of the converted program is NOCHANGE, COMPLETE, or WARNING

Note: If these conditions are met, and the **CICS** field on the Conversion panel is set to Y, the new source code is translated by the CICS command language translator before compilation.

11 Date and time of the last post-conversion compile of the new source program.

12 Date and time you completed manual changes to the new source program. You enter this information on the Conversion Log panel (see "Browsing or updating the conversion log" on page 57).

13 For each file that the program uses, the report lists:

Old Org
: Organization of the file before conversion:

A	Actual track addressing
D	Direct organization
I	Indexed organization
R	Relative organization
S	Standard sequential organization
U	Actual track addressing (REWRITE)
W	Direct organization (REWRITE)

New Org
: Organization that the file requires after the program is converted:

I	VSAM Indexed organization
R	VSAM Relative organization
S	Sequential organization

Cnv Req
: Does the file require conversion?

N	You will not have to convert the file.
Y	You will have to convert the file.

System Name
: System name (ddname) of the file, as specified in the ASSIGN clause of the COBOL program.

Note: If this system name is not used consistently at your installation, it may be associated with different data sets.

COBOL Name
The name used for the file in the COBOL program, as specified in the SELECT statement.

File/Program report

The File/Program report lists details of files used by converted programs:
- System name (ddname) of the file
- COBOL name of the file
- File organization required by the converted program
- Whether or not you will have to convert the file

This report is sorted by the system name of the files.

Note: This report lists details only for programs converted since you last erased the conversion log (see “Erasing the conversion log” on page 58). Also, see “When there's nothing to report...” on page 49.

Use this report for planning file conversions.

Figure 19 shows a sample File/Program report.

```
 5648-B05 V2R1        - IBM COBOL CONVERSION AID - SAMPLE     04/15/98 17:49:47   Page 1

      .........  F I L E  --  P R O G R A M   R E P O R T  .........
      1          2            3       4          5
       SYSTEM     PROGRAM      ORG  CONVERSION COBOL
       NAME       NAME               REQUIRED  NAME


      EIPARM     EI030BPF      I       YES    EIPARM
      IBDAM      LCPIO105      R       YES    BDAM-IN
                 LCPIO107      R       YES    BDAM-IN
```

Figure 19. File/Program report

The columns of this report are described below.

1 System name (ddname) of the file, as specified in the ASSIGN clause of the COBOL program.

Note: If this system name is not used consistently at your installation, it may be associated with different data sets.

2 The names of the converted programs (as specified in the PROGRAM-ID paragraph of the Identification Division) that use the file with the given system name.

3 Organization required for the file after the program is converted:

I	VSAM Indexed organization
R	VSAM Relative
S	Sequential

4 Does the file require conversion?

NO	You will not have to convert the file.
YES	You will have to convert the file.

5 The name used for the file in the COBOL program, as specified in the SELECT statement.

Copy/Program report

The Copy/Program report lists details of copy members used by converted programs:

- Programs that use the copy member
- For each program:
  - The section of the program into which the member is copied
  - The associated name in the COPY statement (if it exists)

This report is sorted by copy member name.

Note: This report lists details only for programs converted since you last erased the conversion log (see "Erasing the conversion log" on page 58). Also, see "When there's nothing to report..." on page 49.

Figure 20 shows a sample Copy/Program report.

```
 5648-B05 V2R1        - IBM COBOL CONVERSION AID - SAMPLE     04/15/98 17:50:27   Page 1

     ..........  C O P Y  --  P R O G R A M   R E P O R T  ..........
     1           2              3               4
     COPY        PROGRAM      LOCATION        ASSOCIATED
     NAME        NAME                         NAME

     ALTPCB      AMPM2AA                      ALT-IO-PCB
     CPNMA       CPGM1501     WORKING-STORAGE DATA-PARAM-CARD
     CPNMD       CPGM1501     WORKING-STORAGE DATA-SEL-HEADER
```

Figure 20. Copy/Program report

The columns of this report are described below.

1 The name of the copy member.

2 The names of the programs that use this copy member.

3 Section of the COBOL program into which the member is copied. This is one of the following:
- Environment Division
- File Section
- Identification Division
- Input-Output Section
- Linkage Section
- Procedure Division
- Report Section
- Working-Storage Section

4 Associated name in the COPY statement (if it exists).

COBOL 68 Standard language allows the COPY statement with an an associated name. For example:

```
01  INPUT-RECORD COPY RDIN2.
```

(where `INPUT-RECORD` is the associated name)

Program/Copy report

The Program/Copy report lists details of copy members used by converted programs:

- Copy members each program uses
- For each copy member:
  - The section of the program into which the member is copied
  - The associated name in the COPY statement (if it exists)

This report is sorted by program name.

Note: This report lists details only for programs converted since you last erased the conversion log (see “Erasing the conversion log” on page 58). Also, see “When there's nothing to report...” on page 49.

Figure 21 shows a sample Program/Copy report.

```
 5648-B05 V2R1         - IBM COBOL CONVERSION AID - SAMPLE     04/15/98 17:53:02   Page 1

     ..........  P R O G R A M  - - C O P Y   R E P O R T  ..........
     1           2            3                4
     PROGRAM     COPY         LOCATION        ASSOCIATED
     NAME        NAME                         NAME

     LCPTST09    L09OPT1      FILE SECTION    OUTPUT-RECORD
                 L09OPT2      FILE SECTION
                 L09OPT3      WORKING-STORAGE NUM-OF-ITEMS
                 L09OPT3A     WORKING-STORAGE
                 L09OPT4      WORKING-STORAGE
     LCPTST20    L20OPT1      WORKING-STORAGE

     ..........       E N D   O F   R E P O R T           ..........
```

Figure 21. Program/Copy report

The columns of this report are described below.

1 The name of the program, as specified in the PROGRAM-ID paragraph of the Identification Division.

2 The names of the copy members used in this program.

3 Section of the COBOL program into which the member is copied. This is one of the following:
- Environment Division
- File Section
- Identification Division
- Input-Output Section
- Linkage Section
- Procedure Division
- Report Section
- Working-Storage Section

4 Associated name in the COPY statement (if it exists).

COBOL 68 Standard language allows the COPY statement with an an associated name. For example:

```
01  INPUT-RECORD COPY RDIN2.
```

(where `INPUT-RECORD` is the associated name)

Call/Program report

The Call/Program report lists CALL statements in converted programs.

This report is sorted by CALL statement subroutine identifier or subroutine literal.

Note: This report lists details only for programs converted since you last erased the conversion log (see "Erasing the conversion log" on page 58). Also, see "When there's nothing to report..." on page 49.

Figure 22 shows a sample Call/Program report.

```
 5648-B05 V2R1        - IBM COBOL CONVERSION AID - SAMPLE     04/15/98 17:55:50   Page 1

    .......... C A L L -- P R O G R A M  R E P O R T ..........

    1           2      3
    PROGRAM     NO OF  CALL
    NAME        CALLS  NAME

    BLGA201     00005  'CBLBTS'
    BLGF200     00001
    AMPM2AA     00010  'CBLTDLI'
    FCCMENU     00012
    MENU        00039
    RDT01       00013
    RDT02       00014
    RDT03       00014

    ..........         E N D   O F   R E P O R T       ..........
```

Figure 22. Call/Program report

The columns of this report are described below.

1 The name of the program that contains the `CALL 'name'` statement.

2 The number of `CALL 'name'` statements in the program.

3 CALL statement subroutine identifier or subroutine literal.

Program/Call report

The Program/Call report lists CALL statements in converted programs.

This report is sorted by program name.

Note: This report lists details only for programs converted since you last erased the conversion log (see "Erasing the conversion log" on page 58). Also, see "When there's nothing to report..." on page 49.

Figure 23 shows a sample Program/Call report.

```
 5648-B05 V2R1        - IBM COBOL CONVERSION AID - SAMPLE     04/15/98 17:59:32   Page 1

     .......... P R O G R A M -- C A L L  R E P O R T ..........
     1           2      3
     PROGRAM     NO OF  CALL
     NAME        CALLS  NAME

     AMPM2AA     00010  'CBLTDLI'
                 00001  'CSERR'
                 00001  'MPM202'

     BLGA201     00005  'CBLBTS'
                 00002  'DATMAN'
                 00003  'DISTHD'
                 00004  'LDCALL'
                 00026  'PROGMS'
```

Figure 23. Program/Call report

The columns of this report are described below.

1	The name of the program that contains the `CALL 'name'` statement.
2	The number of `CALL 'name'` statements in the program.
3	CALL statement subroutine identifier or subroutine literal.

Using the conversion log

CCCA records program conversion statistics in the conversion log.

CCCA uses these statistics to generate the conversion reports.

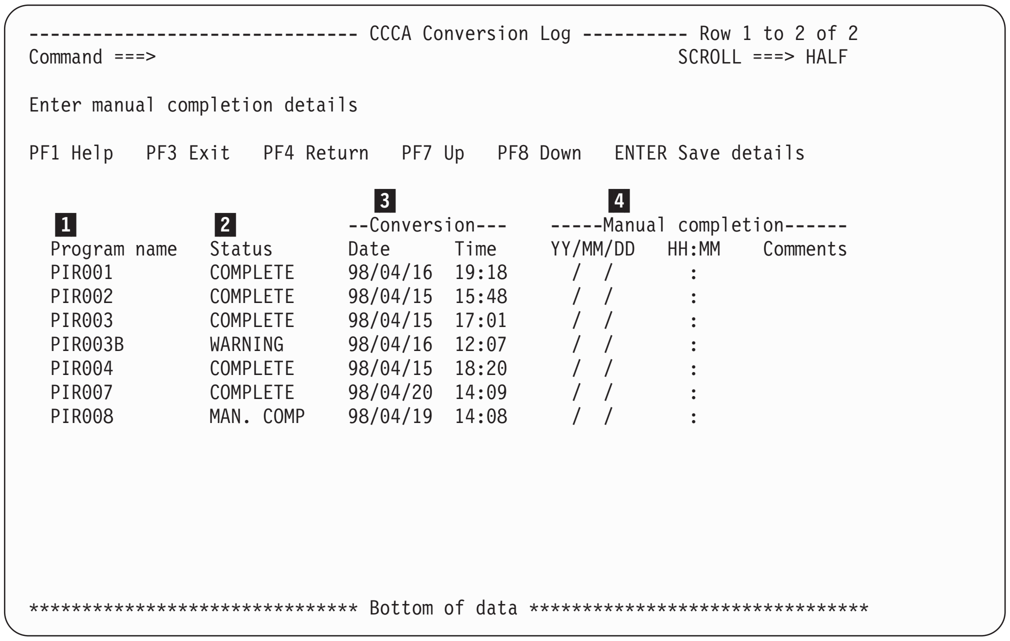
The conversion log is stored in your Control file.

To browse a summary of the conversion log, and update statistics of manual conversions, see "Browsing or updating the conversion log."

To erase the conversion log, see "Erasing the conversion log" on page 58.

Browsing or updating the conversion log

To browse or update the conversion log, go to panel **1.L** (the Conversion Log panel, shown in Figure 24).



```
------------------------------ CCCA Conversion Log ---------- Row 1 to 2 of 2
Command ===>                                                 SCROLL ===> HALF

Enter manual completion details

PF1 Help   PF3 Exit   PF4 Return   PF7 Up   PF8 Down   ENTER Save details

                              3                   4
  1              2            --Conversion---    -----Manual completion------
  Program name   Status       Date      Time     YY/MM/DD   HH:MM    Comments
  PIR001         COMPLETE     98/04/16  19:18      /  /       :
  PIR002         COMPLETE     98/04/15  15:48      /  /       :
  PIR003         COMPLETE     98/04/15  17:01      /  /       :
  PIR003B        WARNING      98/04/16  12:07      /  /       :
  PIR004         COMPLETE     98/04/15  18:20      /  /       :
  PIR007         COMPLETE     98/04/20  14:09      /  /       :
  PIR008         MAN. COMP    98/04/19  14:08      /  /       :







******************************* Bottom of data ********************************
```

Figure 24. Conversion Log panel

For each program converted since you last erased the conversion log, this panel lists:
- Status of the program after it was last converted by CCCA
- Date and time the program was last converted by CCCA

If you have to manually convert a program, this panel allows you to record:
- Date and time you completed manual conversion
- Comments about the conversion

When you have updated these details, press Enter to save them.

Note: Enter information on this panel only if you are using the log to keep track of manual conversion effort. CCCA does not use the information you enter on this panel. (The date and time you enter appear on the Program/File report, under the heading "Manual completion".)

To scroll through the conversion log, use PF7 and PF8.

The columns of this panel are described below.

1 The name of the converted COBOL program.

2 Status of the program after it was last converted by CCCA:

NOCHANGE
CCCA made no changes to the program. No manual changes to the program are required.

COMPLETE
The program has been completely converted. No manual changes to the program are required.

WARNING
The program has been converted. It may compile and execute successfully, but you should inspect the converted language elements that received level 04 diagnostics.

MAN. COMP
Manual changes to the program may be required. Check the language elements that received level 08 diagnostics.

ABEND
The last attempted conversion of this program abnormally terminated:

ABEND-002
Abend occurred in conversion phase 2

ABEND-003
Abend occurred in conversion phase 3

3 Date and time the program was last converted by CCCA.

4 Enter:
- Date and time you completed manual changes to the program
- Comments you want to make about the conversion of this program

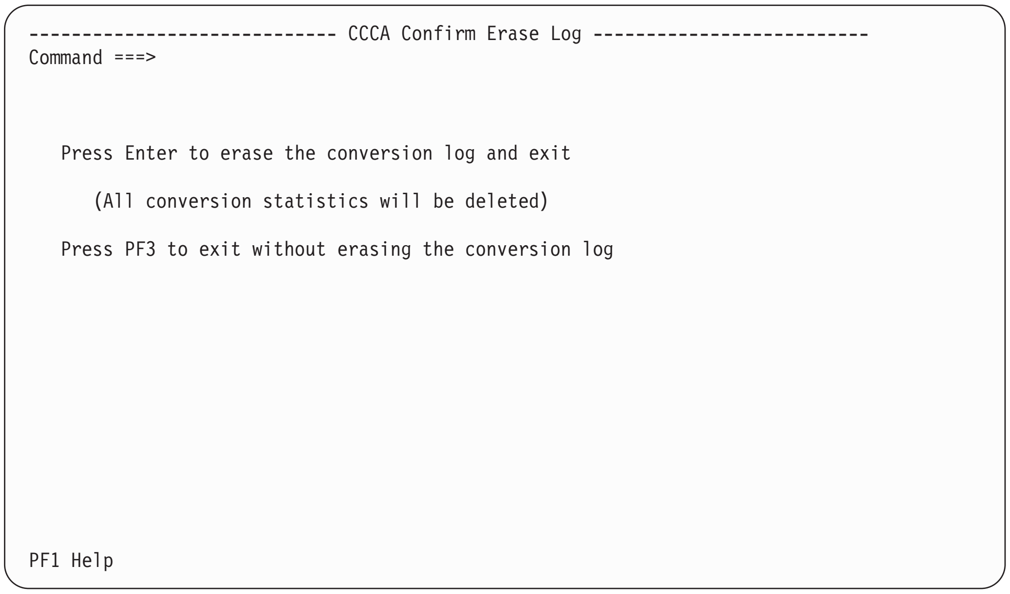
Erasing the conversion log

Erasing the conversion log deletes the program conversion statistics.

You should erase the conversion log when it becomes too large or when you have converted an application, and you are no longer interested in the conversion statistics.

Attention (MVS only)
Do not erase the conversion log while you are running a batch conversion. The conversion results may be unpredictable.

To erase the conversion log:
1. Go to panel **1.E** (the Confirm Erase Log panel, shown in Figure 25 on page 59).



```
----------------------------- CCCA Confirm Erase Log --------------------------
Command ===>



   Press Enter to erase the conversion log and exit

      (All conversion statistics will be deleted)

   Press PF3 to exit without erasing the conversion log









PF1 Help
```

Figure 25. Confirm Erase Log panel

2. To erase the conversion log and exit the panel, press Enter.
   or
   To exit the panel without erasing the log, press PF3.

Conversion log

Chapter 6. Customizing CCCA

This chapter describes how to:
- Customize CCCA
- Update the COBOL Reserved Word data set
- Compile LCPs
- Delete LCPs from the LCP library
- Activate and deactivate debugging for each LCP
- Print a directory of the LCP library
- Update messages

You can use CCCA as supplied to convert your COBOL programs.

However, if you want to:
- Convert, flag, or remove additional (possibly non-COBOL) language elements
- Change how CCCA converts particular language elements

then you need to customize CCCA by:
- Modifying the supplied Language Conversion Programs (LCPs)
- Writing new LCPs

An LCP is a COBOL-like program that converts one or more COBOL language elements.

For a list of supplied LCPs, see Appendix G, “LCP directory,” on page 191.

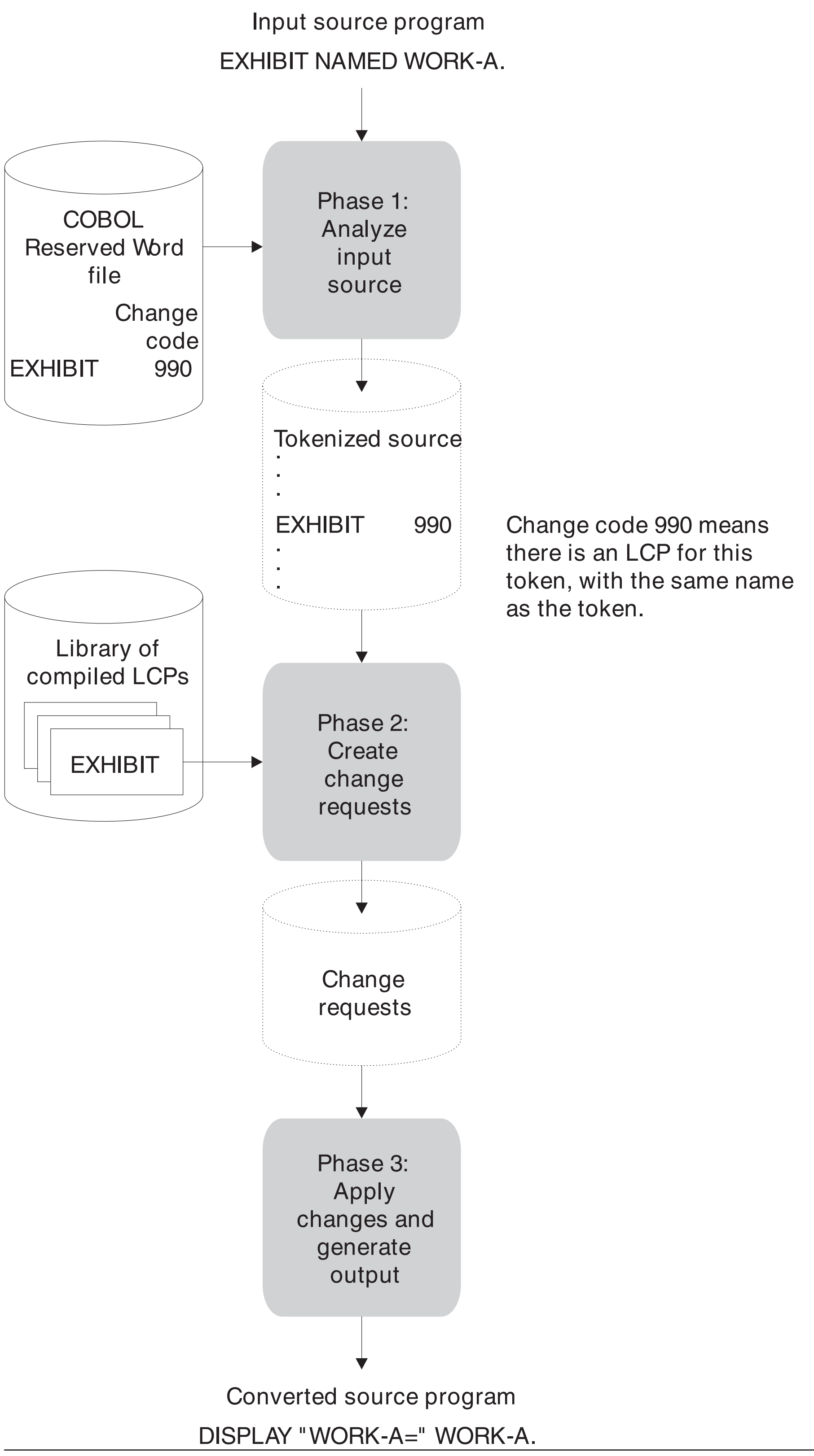

Input source program
EXHIBIT NAMED WORK-A.
COBOL Reserved Word file
Change code
EXHIBIT 990
Phase 1: Analyze input source
Tokenized source
EXHIBIT 990
Change code 990 means there is an LCP for this token, with the same name as the token.
Library of compiled LCPs
EXHIBIT
Phase 2: Create change requests
Change requests
Phase 3: Apply changes and generate output
Converted source program
DISPLAY "WORK-A=" WORK-A.

Figure 26. How CCCA invokes LCPs

How CCCA invokes LCPs

Before customizing CCCA, you need to understand how CCCA invokes LCPs during conversion.

This section assumes you have already read the introductory section "How CCCA works" on page 4.

Figure 26 on page 62 shows how CCCA uses the tokenized source and the *COBOL Reserved Word data set* to determine which LCPs to invoke during conversion.

In conversion phase 1, CCCA reads the input source program and creates a token record for each:
- COBOL word
- Literal
- Picture character-string
- Separator
- Line of the following comment paragraphs in the Identification Division:
  - AUTHOR
  - INSTALLATION
  - DATE-WRITTEN
  - DATE-COMPILED
  - SECURITY
  - REMARKS (DOS/VS COBOL and OS/VS COBOL only)

Comment lines, and the following compiler directives, are *not* tokenized:
- SKIP1
- SKIP2
- SKIP3
- EJECT
- TITLE
- *CBL
- *CONTROL

CCCA checks whether each COBOL word in the input source program is in the COBOL Reserved Word data set or not.

The COBOL Reserved Word data set lists words that may invoke LCPs, and specifies:

Word type
: Where a word can occur in a COBOL program

Change code
: The LCP (if any) to invoke when a word occurs

If CCCA finds the word in the COBOL Reserved Word data set, it adds the word type and change code to the token record.

In conversion phase 2, CCCA reads the tokenized source. When a token record is encountered that has something other than change code 999, CCCA invokes the LCP that is indicated by the code.

The invoked LCPs generate detailed change requests for converting the input source program.

In conversion phase 3, CCCA applies the change requests to the input source program.

Customizing the way CCCA converts a language element

If CCCA already converts a language element, but you want to customize the way it is converted:

1. **Determine which LCP converts the language element**

   Determine the word in the language element that invokes the LCP.

   The word will be on the Reserved Words panel (**2.1**, shown in Figure 27 on page 66) with a change code other than 999.

   If the word's **Change code** is

   990 This word invokes an LCP that has the word in its CONVER statement.

   This LCP is not invoked by any other words.

   The LCP source member name is the **Reserved word name**, or an abbreviation.

   nnn (Other than 990 and 999) this word invokes an LCP that has LCP-*nnn* in its CONVER statement.

   This LCP may be invoked by other words.

   The LCP source member name is LCP*nnn*.

   Examine the LCP source member to confirm that this is the LCP that converts this language element.

   If you are not sure, delete the LCP from the LCP library, and see if CCCA still converts the language element (see “Deleting LCPs and activating/deactivating debugging for LCPs” on page 71). If it does, this isn’t the LCP you’re after. Replace the LCP by compiling it (see “Compiling LCPs under MVS” on page 68 or “Compiling LCPs under VM” on page 70), then continue looking for the correct LCP.

   If you are replacing an existing LCP which has a change code of 990 (invoked by word), then delete the old LCP (see “Deleting LCPs and activating/deactivating debugging for LCPs” on page 71) before updating the reserved word table and recompiling the new LCP.

2. **Edit the LCP source**

   Update the LCP source member to convert the language element as required.

   For details, see Chapter 7, “Developing Language Conversion Programs,” on page 77.

3. **Compile the LCP**

   For details, see “Compiling LCPs under MVS” on page 68 or “Compiling LCPs under VM” on page 70.

4. **Test the LCP**

   Convert sample programs containing the language element and all its variants.

   To activate debugging for the LCP, see “Deleting LCPs and activating/deactivating debugging for LCPs” on page 71.

Customizing CCCA to convert an additional language element

To convert a language element not currently converted by CCCA:

1. **Choose the word in the language element that will invoke the LCP**

   If there is more than one candidate for this word, then choose the word that occurs least often in other language elements. (You should try to minimize the number of times an LCP is called unnecessarily.)

2. **Determine whether the word already invokes an LCP**

   Go to panel **2.1** (the Reserved Words panel, shown in Figure 27 on page 66).

   A word that satisfies the following conditions already invokes an LCP:
   - Appears in the reserved word list.
   - Has any **Change code** except 999.

   Otherwise, the word does not invoke an LCP.
3. **If the word already invokes an LCP**

   If the word's **Change code** is

   990 this word invokes an LCP that has the word in its CONVER statement.

   This LCP is not invoked by any other words.

   The LCP source member name is the **Reserved word name**, or an abbreviation.

   a. Update the word's **Change code** to 999.

      If necessary, update the **Word type**.

      For details, see "Updating the COBOL reserved word Data Set" on page 66.

   b. Edit the LCP source to convert the language element.

      For details, see Chapter 7, "Developing Language Conversion Programs," on page 77.

   nnn (other than 999 and 990) this word invokes an LCP that has LCP-*nnn* in its CONVER statement.

   This LCP may be invoked by other words.

   The LCP source member name is LCP*nnn*.

   a. Update the word's **Change code** to 999.

      If necessary, update the **Word type**.

      For details, see "Updating the COBOL reserved word Data Set" on page 66.

   b. Copy the code from the existing LCP source member to a new member.

   c. In the new LCP source, change the LCP-*nnn* in the CONVER statement to the reserved word.

   d. Edit the new LCP source to convert the language element.

      For details, see Chapter 7, "Developing Language Conversion Programs," on page 77.

   If the word does not invoke an LCP

   a. If the word does not appear in the Reserved Word list, add the word to the list. Specify a **Change code** of 999.

   b. If necessary, update the **Word type**.

      For details, see "Updating the COBOL reserved word Data Set" on page 66.

   c. Write a new LCP to convert the language element.

      For details, see Chapter 7, "Developing Language Conversion Programs," on page 77.
4. **Compile the LCP**

   For details, see "Compiling LCPs under MVS" on page 68 or "Compiling LCPs under VM" on page 70.
5. **Test the LCP**

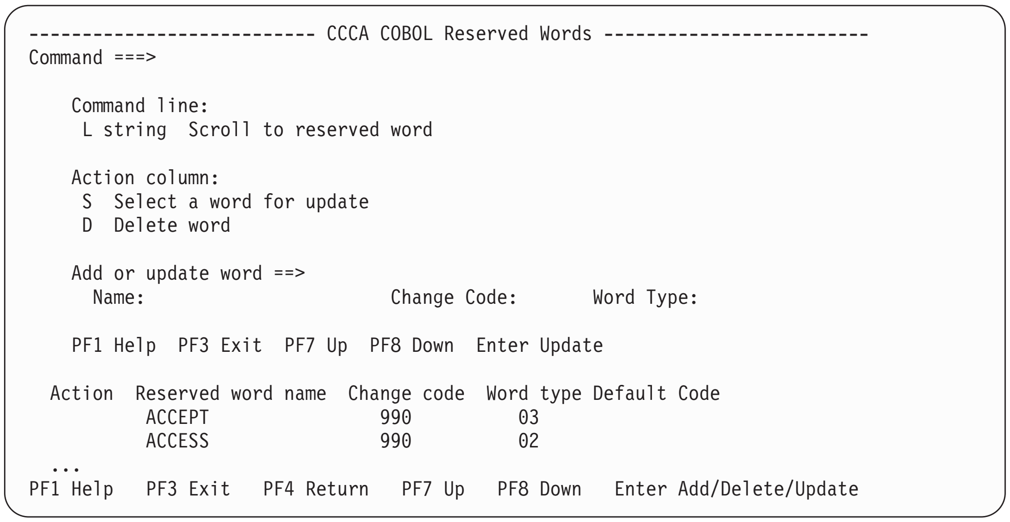
Convert sample programs containing the language element and all its variants.

To activate debugging for the LCP, see “Deleting LCPs and activating/deactivating debugging for LCPs” on page 71.

Updating the COBOL reserved word Data Set

As supplied, the COBOL Reserved Word file contains a record for each reserved word in the source language levels.

To browse or update the Reserved Word data set, go to panel **2.1** (the Reserved Words Update panel, shown in Figure 27).



```
--------------------------- CCCA COBOL Reserved Words -------------------------
Command ===>

    Command line:
     L string  Scroll to reserved word

    Action column:
     S  Select a word for update
     D  Delete word

    Add or update word ==>
      Name:                       Change Code:       Word Type:

    PF1 Help  PF3 Exit  PF7 Up  PF8 Down  Enter Update

  Action  Reserved word name  Change code  Word type Default Code
           ACCEPT                990          03
           ACCESS                990          02
  ...
PF1 Help   PF3 Exit   PF4 Return   PF7 Up   PF8 Down   Enter Add/Delete/Update
```

Figure 27. Reserved Words panel

This panel lists the reserved words in alphabetical order.

To scroll through the list:
- Use PF7 and PF8.

To locate a specific reserved word:
- On the command line, type **L**, **LOC**, or **LOCATE**, followed by the word you want to find.
- Press Enter.

To add a new reserved word:
- Tab to **Add or update word**.
- Enter:
  - Name (required)
  - Change code (required)
  - Word type (optional)

To update a reserved word:
- Locate the reserved word.
- Type **S** in the adjacent **Action** entry field.
- Press Enter.

  This places the reserved word into the **Add or update word** section of the panel, ready for updating.
- Overtype existing fields.

- Press Enter.

To delete a reserved word:
- Locate the reserved word.
- Type **D** in the adjacent **Action** entry field.

  The word is deleted from the file when you exit the panel. While you are using the panel, you can reinstate the word at any time by overtyping the **D** in the **Action** entry field with a space.

The fields in this panel are described below.

Reserved word name
This is the key field.

Change code
Indicates which LCP (if any) CCCA invokes when it encounters this word in the source program being converted:

999	Word does not invoke an LCP.
990	Invokes an LCP that has the word in the CONVER statement.
nnn	(Other than 999 and 990). This word invokes an LCP that has LCP-*nnn* in its CONVER statement.

The following list shows the change codes used by CCCA and the change codes you can use for your own LCPs:

000
860-989
992-998
Reserved, used by CCCA.

001-799
Available for your own LCPs.

800-859
Used by supplied LCPs.

991
Used by CCCA.

Word type
Specifies where in a COBOL program the word occurs. You specify this value as two characters. Each character can be:

	Indicates the word occurs...
1	In a paragraph or section name
2	At the beginning of a clause
3	At the beginning of a statement and its operands
5	At the beginning of a phrase

A pair of spaces or pair of zeros indicates the reserved word does not occur in any of the above places.

For definitions of division header, section header, paragraph header, clause, statement and phrase, see the *COBOL Language Reference* for your platform.

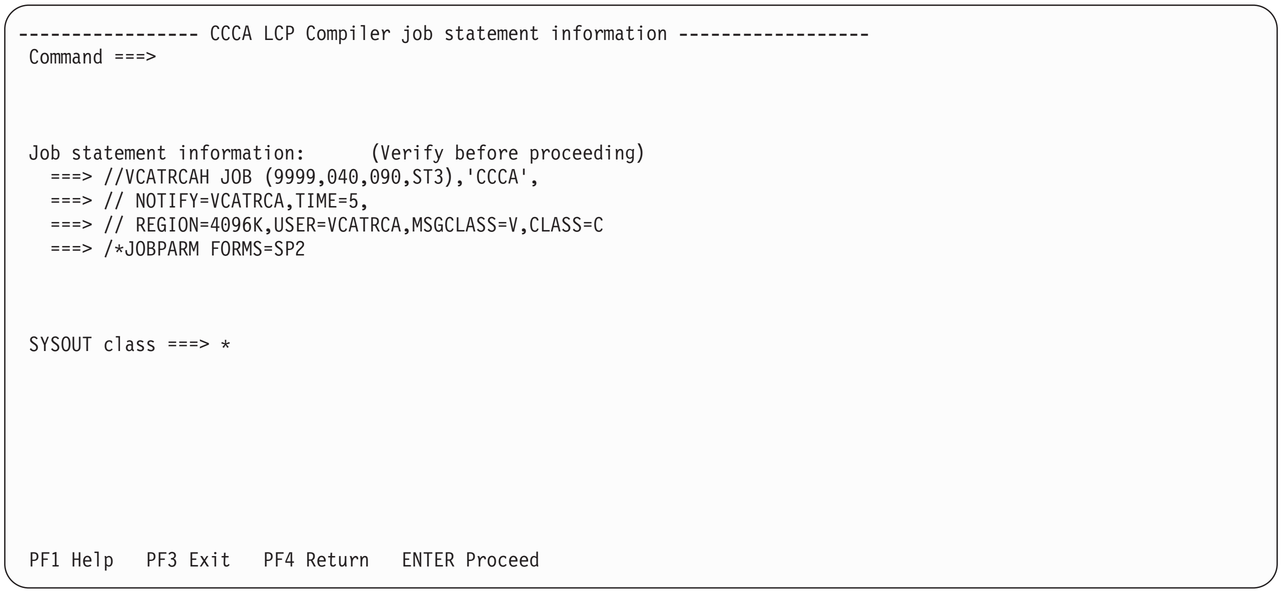
Default Code
The original IBM-supplied change code, displayed for informational purposes only. You cannot update this field.

Compiling LCPs under MVS

Use the LCP Compiler panels to submit a batch job to compile one or more LCPs.

To submit a compilation job:

1. Go to panel **2.2** to display the LCP Compiler job statement information panel (see Figure 28).



```
----------------- CCCA LCP Compiler job statement information ------------------
 Command ===>



 Job statement information:      (Verify before proceeding)
   ===> //VCATRCAH JOB (9999,040,090,ST3),'CCCA',
   ===> // NOTIFY=VCATRCA,TIME=5,
   ===> // REGION=4096K,USER=VCATRCA,MSGCLASS=V,CLASS=C
   ===> /*JOBPARM FORMS=SP2



 SYSOUT class ===> *









 PF1 Help   PF3 Exit   PF4 Return   ENTER Proceed
```

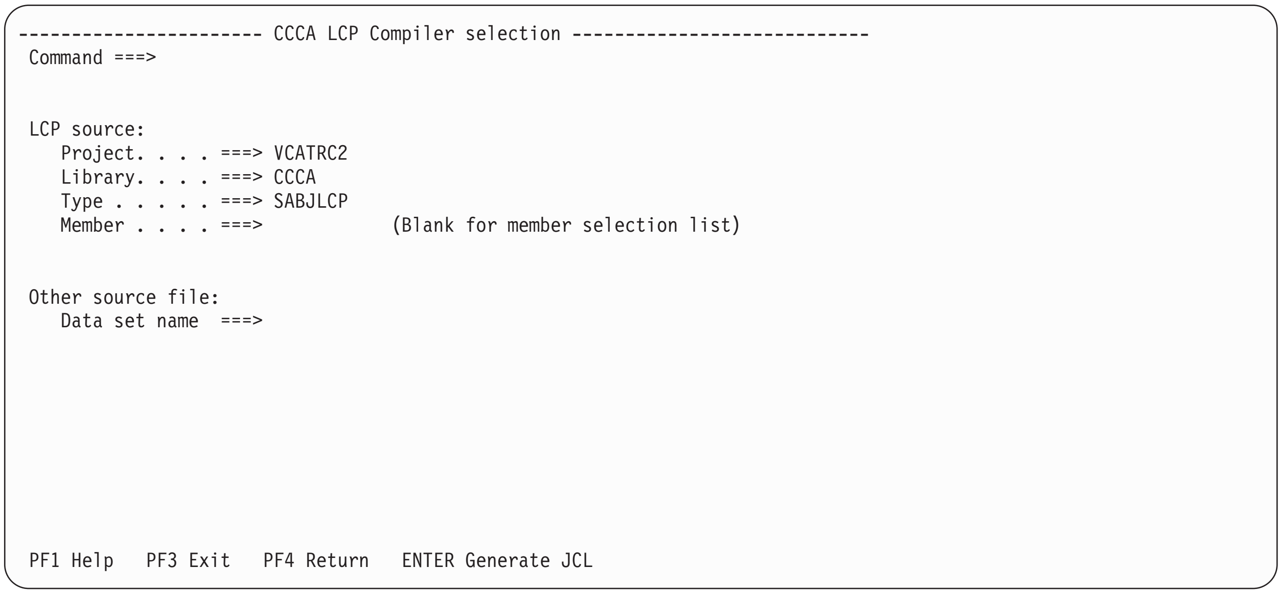
Figure 28. LCP compiler job statement information panel (MVS)

2. If necessary, update the text in:

   Job statement information
   The JCL for the LCP compile job card.

   SYSOUT class
   The output class to which you want the output of the LCP compile job sent.

   SYSOUT class can be:
   - Any letter (A through Z)
   - Any numeral (0 through 9)
   - An asterisk (*)
3. Press Enter to display the LCP Compiler selection panel (see Figure 29 on page 69).



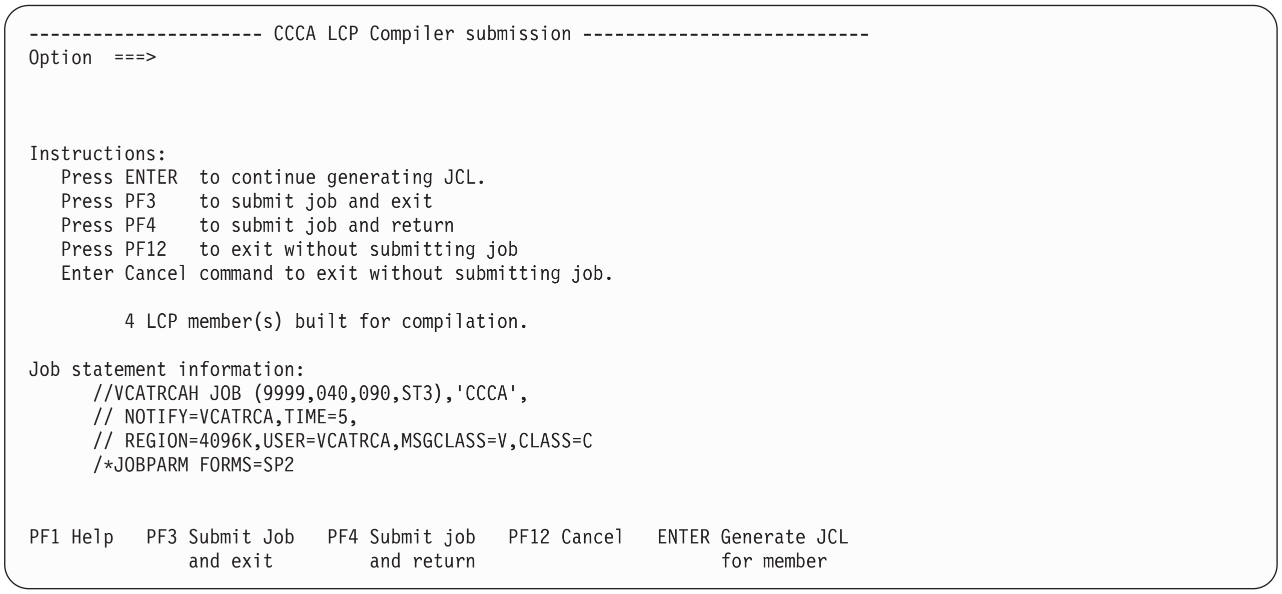
```
---------------------- CCCA LCP Compiler selection ---------------------------
 Command ===>


 LCP source:
    Project. . . . ===> VCATRC2
    Library. . . . ===> CCCA
    Type . . . . . ===> SABJLCP
    Member . . . . ===>           (Blank for member selection list)


 Other source file:
    Data set name  ===>









 PF1 Help   PF3 Exit   PF4 Return   ENTER Generate JCL
```

Figure 29. LCP Compiler Selection panel (MVS)

4. Enter values for the full data set name and member name for one of these:
   - An ISPF library
   - Other partitioned data set name.

   If you do not specify a member name, a member list is displayed. You may select members from the list by entering an S in front of the member names.
5. Press Enter.

   ISPF generates the JCL for the compilation and then displays the LCP Compiler submission panel (see Figure 30).



```
 --------------------- CCCA LCP Compiler submission --------------------------
 Option  ===>



 Instructions:
    Press ENTER  to continue generating JCL.
    Press PF3    to submit job and exit
    Press PF4    to submit job and return
    Press PF12   to exit without submitting job
    Enter Cancel command to exit without submitting job.

          4 LCP member(s) built for compilation.

 Job statement information:
       //VCATRCAH JOB (9999,040,090,ST3),'CCCA',
       // NOTIFY=VCATRCA,TIME=5,
       // REGION=4096K,USER=VCATRCA,MSGCLASS=V,CLASS=C
       /*JOBPARM FORMS=SP2


 PF1 Help   PF3 Submit Job   PF4 Submit job   PF12 Cancel   ENTER Generate JCL
                and exit         and return                       for member
```

Figure 30. LCP Compiler Submission panel (MVS)

This panel shows the number of LCP members that have been selected for compilation and redisplays the Job card parameters for information only. This panel can no longer be overtyped, since the Job statement has already been generated.

To select additional LCPs to be compiled, press Enter, To cancel the submission of the job, type `C` on the command line and press Enter.

6. Press either PF3 or PF4.

   ISPF submits the generated JCL for execution.

   The message `JOB` *`xxxxxc`* `SUBMITTED` appears once for each member that you selected for compilation (where *`xxxxxc`* is the specified job name). The final message is followed by three asterisks (***).

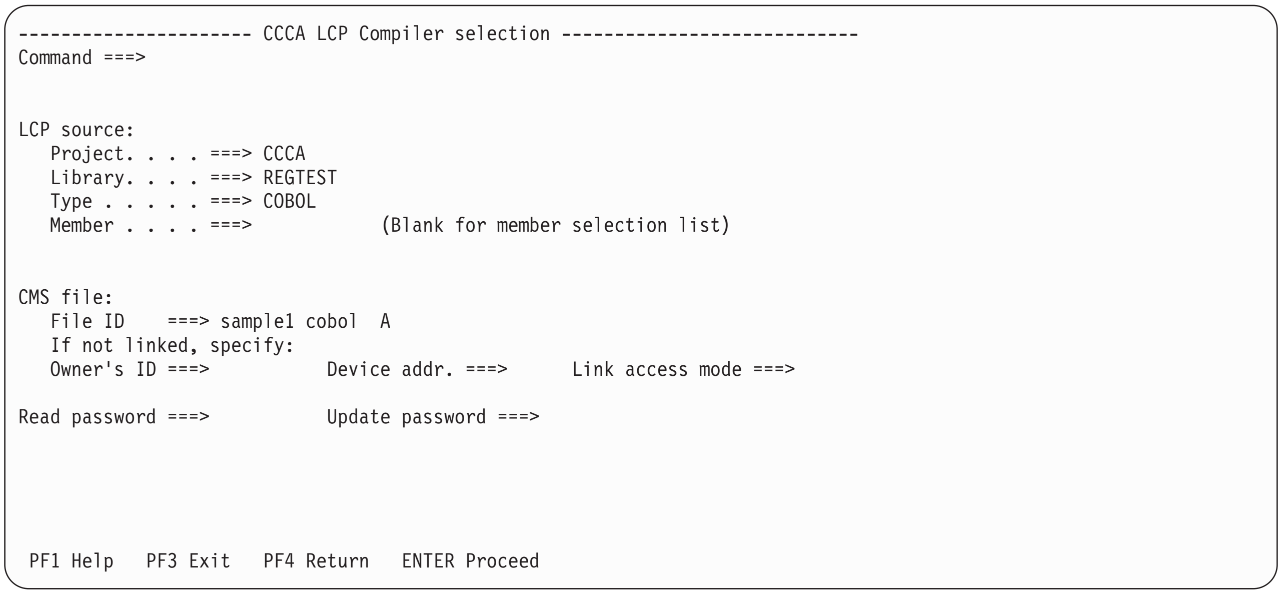
   You may press Enter or any other interrupt key to return to the LCP Development Aid menu.

Compiling LCPs under VM

Use the LCP Compiler Selection panel to compile one or more LCPs.

To compile an LCP:

1. Go to panel **2.2** to display the LCP Compiler Selection panel see (Figure 31).



```
---------------------- CCCA LCP Compiler selection ----------------------------
Command ===>


LCP source:
   Project. . . . ===> CCCA
   Library. . . . ===> REGTEST
   Type . . . . . ===> COBOL
   Member . . . . ===>            (Blank for member selection list)


CMS file:
   File ID    ===> sample1 cobol  A
   If not linked, specify:
   Owner's ID ===>          Device addr. ===>      Link access mode ===>

Read password ===>          Update password ===>




 PF1 Help   PF3 Exit   PF4 Return   ENTER Proceed
```

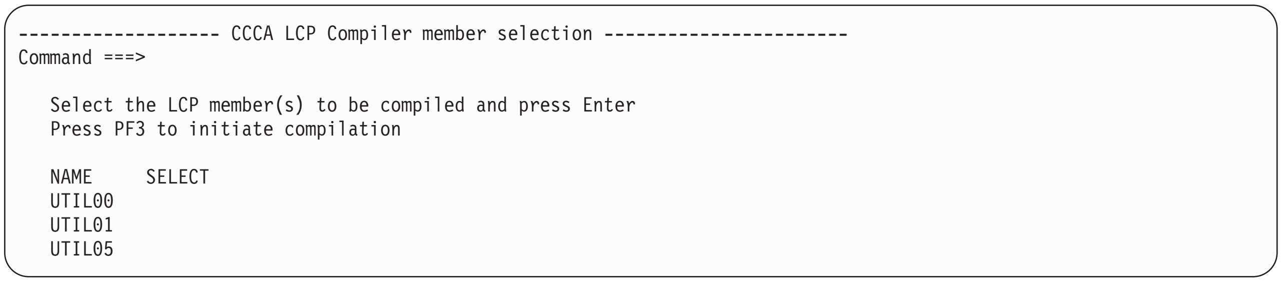
Figure 31. LCP Compiler Selection panel (VM)

2. Enter values for:

   `LCP source`
   If the LCP that you want to compile is within an ISPF partitioned data set, enter the data set name and the member name in the **Project**, **Library**, **Type**, and **Member** fields.

   If the LCP that you want to compile is within a MACLIB, enter the MACLIB file name in **File ID** and the member name in **Member**.

   If you do not specify a member name or an asterisk, CCCA displays the LCP Compiler Member Selection panel after you press Enter (see Figure 32 on page 71).



```
------------------- CCCA LCP Compiler member selection -----------------------
Command ===>

   Select the LCP member(s) to be compiled and press Enter
   Press PF3 to initiate compilation

   NAME     SELECT
   UTIL00
   UTIL01
   UTIL05
```

Figure 32. LCP compiler member selection panel (VM)

Place an “S” in front of all members in the list that you want compiled.

`CMS file—File ID`
If the LCP that you want compiled is a simple CMS file, enter the file details (`fn ft fm`).

`Linkage fields`
If you are not already linked to the minidisk where the LCP resides, enter the appropriate details in **Owner's ID**, **Device addr**, and **Link access mode**.

`Passwords`
If required, enter the appropriate passwords in the **Read password** and **Update password** fields.

3. Press Enter.

   CCCA compiles the LCP (or LCPs) that you have selected in foreground mode. If errors are are encountered during the compilation process, CCCA displays a message.

   If you used the LCP Compiler Member Selection panel to select one or more members for compilation, or specified an asterisk (*) to compile all members, CCCA displays a message indicating which member it is currently compiling.

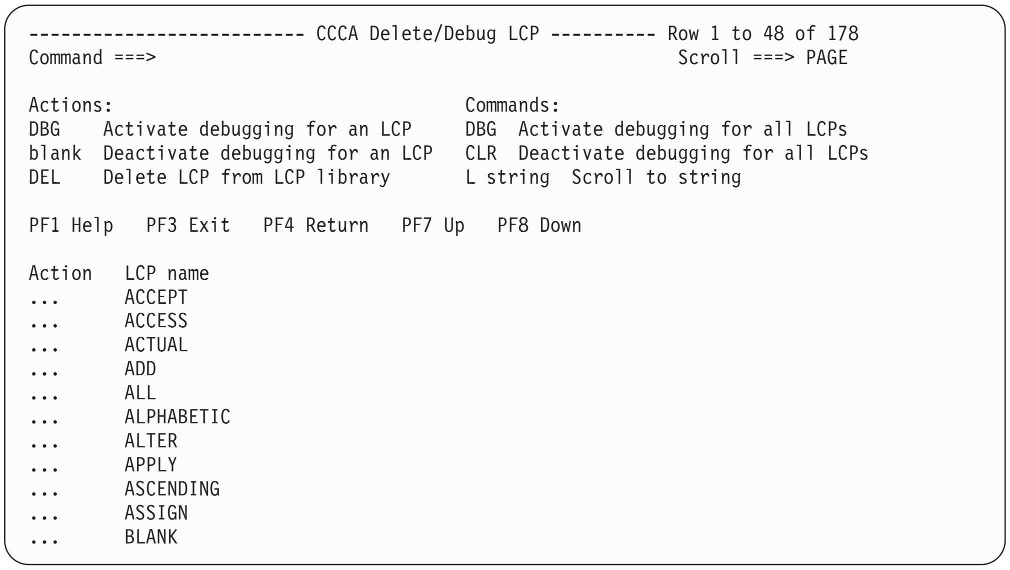
   When the compilation process is complete, CCCA redisplays the LCP Compiler Selection panel, with a message indicating the return code for the compilation.
4. To return to the LCP Development Aid menu, press PF3.

Deleting LCPs and activating/deactivating debugging for LCPs

To delete LCPs or activate/deactivate debugging for LCPs, go to panel **2.3** (the Delete/Debug LCP panel, shown in Figure 33 on page 72).

If debugging for an LCP is activated, during conversion CCCA generates a “trace” of each executed statement of the LCP.

Deleting an LCP only deletes the LCP from the LCP library. It does not delete the LCP source member.



```
------------------------- CCCA Delete/Debug LCP ---------- Row 1 to 48 of 178
Command ===>                                               Scroll ===> PAGE

Actions:                                 Commands:
DBG    Activate debugging for an LCP     DBG  Activate debugging for all LCPs
blank  Deactivate debugging for an LCP   CLR  Deactivate debugging for all LCPs
DEL    Delete LCP from LCP library       L string  Scroll to string

PF1 Help   PF3 Exit   PF4 Return   PF7 Up   PF8 Down

Action   LCP name
...      ACCEPT
...      ACCESS
...      ACTUAL
...      ADD
...      ALL
...      ALPHABETIC
...      ALTER
...      APPLY
...      ASCENDING
...      ASSIGN
...      BLANK
```

Figure 33. Delete/Debug LCP panel

The panel lists the names of the LCPs in the LCP library in alphabetical order.

To scroll through the list, use PF7 and PF8.

To delete an LCP from the LCP library
: Type **DEL** next to the LCP, then press PF3.

  To put the LCP back in the library, compile the LCP (see "Compiling LCPs under MVS" on page 68 or "Compiling LCPs under VM" on page 70).

To activate debugging for an LCP
: Type **DBG** next to the LCP, then press PF3.

To deactivate debugging for an LCP
: Erase the DBG next to the LCP, then press PF3.

To activate debugging for all LCPs
: Type **DBG** on the command line, then press Enter.

To clear actions for all LCPs
: Type **CLR** on the command line, then press Enter.

To locate an LCP using a string search
: Type **L** *xxx* on the command line, then press Enter.

Generating a directory of the LCP library

To generate a directory of the LCP library, go to panel **2** (the LCP Development Aid menu), then select option **4** (LCP DIRECTORY).

Figure 34 on page 73 is an extract from a directory of the LCP library.

```
 5648-B05 V2R1                 - IBM COBOL CONVERSION AID -                   04/16/98 15:47:58    Page    1
              ..........       L C P   D I R E C T O R Y       ..........
1                              2                                          3          4
RESERVED WORD                  PROCESSING DESCRIPTION                     DATE       TIME     CORE  DBG
                                                                                              SIZE  OPT
                                                                                                5     6
-------------------------------------------------------------------------------------------------------
ACCESS                         UPDATE FILE INFORMATION IN CONTROL FILE  04/15/98  09:49:44   575
ACTUAL                         REPLACE BY RELATIVE                      04/15/98  09:49:52   630
ADD                            ADD WITH BLL'S                           04/15/98  09:49:58  8205
ALL                            MOVE ALL ...                             04/15/98  09:50:44   885
ALPHABETIC                     CHANGE TO ALPHABETIC-UPPER               04/15/98  09:50:39   260
```

Figure 34. Extract from a directory of the LCP library

For each LCP in the LCP library, the directory lists:

1 COBOL reserved word or LCP-*nnn* identifier specified in the CONVER statement of the LCP.

As supplied, this is also the LCP source member name (or, if the reserved word is too long, the member name is an abbreviation of the reserved word).

2 Descriptive text in the CONVER statement of the LCP.

3 Date that the LCP was last compiled (in the format MM/DD/YY).

4 Time that the LCP was last compiled.

5 Size of the compiled LCP in bytes.

The maximum permitted size for a compiled LCP is 12600 bytes.

6 Indicates whether debugging for the LCP is activated:

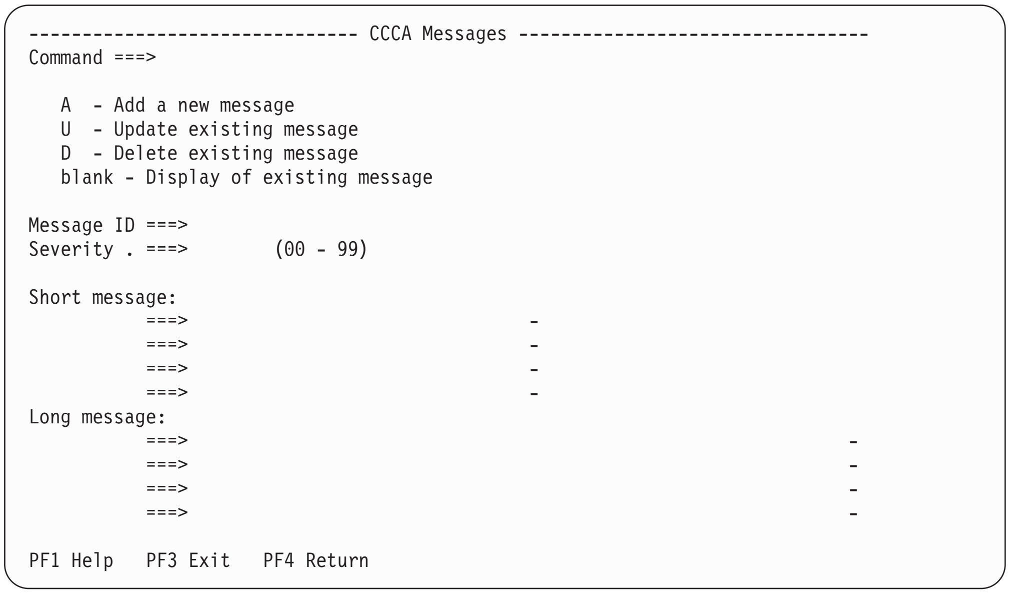
blank	Debugging is not activated
DBG	Debugging is activated

The complete directory of the LCP library (as supplied) is shown in “LCP directory” on page 201.

Updating the message file

The message management facility interactively handles message file processing, making individual messages directly accessible at any time. Through the facility you can browse, add, update, and delete messages.

Select option **5** from the LCP Development Aid menu (see Figure 6 on page 14) to display the Messages panel (see Figure 35 on page 74).



```
------------------------------ CCCA Messages --------------------------------
Command ===>

   A  - Add a new message
   U  - Update existing message
   D  - Delete existing message
   blank - Display of existing message

Message ID ===>
Severity . ===>       (00 - 99)

Short message:
           ===>                            -
           ===>                            -
           ===>                            -
           ===>                            -
Long message:
           ===>                                                        -
           ===>                                                        -
           ===>                                                        -
           ===>                                                        -

PF1 Help   PF3 Exit   PF4 Return
```

Figure 35. Messages panel

The fields are:

Command
Choose the command code from:

A	Add a new message
U	Update an existing message
D	Delete an existing message
Blank	Display an existing message

Message ID
This must always be entered. It takes the form ABJ*nnnn*, where *nnnn* is the 4-digit identifier.

Severity
A 2-digit number (00 through 99). The severity level of a message can affect the output of CCCA. For details, see “Setting conversion options” on page 19.

Short message
This message will appear on the conversion diagnostic listing.

Long message
This message is informational only and will not be displayed on the listing. It is useful for displaying supplementary information or guidelines for handling statements that require manual inspection.

If this message will be longer than four 60-character lines, press Enter to display a message continuation panel, which allows you to create a longer message.

To display an existing message:

1. A **Command** value is not required
2. Enter a value for **Message ID**
3. Press Enter

To add a new message:

1. Enter a **Command** value of **A**

2. Enter values for: **Message ID**, **Severity**, **Short message**, and, optionally, **Long message**.
3. Press Enter

To update the severity level and message text of a message:
1. Enter a **Command** value of **U**
2. Enter a value for **Message ID**
3. Press Enter
4. Enter modified values for **Severity**, **Short message**, and **Long message** as required
5. Press Enter

To delete an existing message:
1. Enter a **Command** value of **D**
2. Enter a value for **Message ID**
3. Press Enter

Note: CCCA is delivered with messages in English. The message management facility may be used to replace the message text with that of a different language, as long as the language uses characters of the EBCDIC character set.

Chapter 7. Developing Language Conversion Programs

Read this chapter if you are planning to develop your own Language Conversion Programs (LCPs) or if you want to change the supplied LCPs.

This chapter describes:
- LCP language structure and syntax
- How to use LCP functions to:
  - Edit the tokenized source program
  - Read and update the files CCCA uses during conversion
- How to debug LCPs
- Differences between processing tokens and elements
- COBOL Reserved Word data set processing

This chapter documents intended Programming Interfaces that allow the customer to write programs to obtain the services of CCCA.

What is an LCP?

An LCP is a COBOL-like program containing:
- A subset of COBOL statements
- Calls to CCCA functions

What LCPs do

LCPs generate change requests to convert language elements from one COBOL implementation to another.

(CCCA invokes LCPs in conversion phase 2, and applies their change requests in phase 3. For details, see “How CCCA invokes LCPs” on page 63.)

LCPs can:
- Add, replace, or remove words, clauses or statements
- Indicate areas in the converted code you should review for possible manual changes
- Update conversion statistics in the Control file

CCCA is supplied with LCPs for converting between several COBOL implementations (listed in “What CCCA does” on page 1).

You can customize CCCA to meet your installation's requirements by:
- Developing new LCPs
- Modifying the supplied LCPs

For a list of LCPs supplied with CCCA, see Appendix G, “LCP directory,” on page 191.

LCP structure

Here are the details of the structure required in an LCP.

LCP divisions

LCPs contain three separate COBOL-like divisions (but unlike COBOL, there are no division headers):

Identification Division
: Consists of only one statement: CONVER, CONVERA, or CONVERQ. This statement identifies and describes the LCP, and specifies whether nonnumeric literals are enclosed in apostrophes (') or quotation marks (").

Data Division (optional)
: Consists of data description entries.

: Your LCP may not need a Data Division, because many of the data items you use in an LCP are predefined by CCCA, and do not need a Data Division entry.

Procedure Division
: Consists of the statements and function calls that define the conversion process.

: The Procedure Division must start with a paragraph name.

LCP source line format

LCP source lines use the 72-column COBOL reference format:

```
         1         2         3         4         5         6           7
123456789012345678901234567890123456789012345678901234567890123456789012
└────┘│└───────────────────────────────┬───────────────────────────────┘
  │   │                           Program text
  │   └ Comment character
  │
  └ Sequence numbers
```

Column
: **Is used for...**

1 through 6
: Sequence numbers

7
: Comment character (except for 05 and 77 data description entries and the CONVER statement, this indicates the remainder of the line is comment text)

8 through 72
: Program or comment text

Characters

Table 4 lists the characters you can use in an LCP, their meaning, and their use.

Note:

1. You **cannot** use lowercase letters (a–z) in LCPs, except in comments and nonnumeric literals.
2. Comments and nonnumeric literals can contain *any* EBCDIC character.

Table 4. LCP characters—their meanings and uses

Character	Meaning	Use
ƀ	Space or Blank	Punctuation
.	Decimal point or Period	Punctuation

Table 4. LCP characters—their meanings and uses (continued)

Character	Meaning	Use
0–9	Numerals	Data item identifiers Nonnumeric literals Numeric literals Paragraph names Reserved words
A–Z	Alphabet (uppercase only)	Data item identifiers Nonnumeric literals Paragraph names Reserved words
-	Hyphen	Data item identifiers Paragraph names Reserved words
*	Asterisk	In column 7, indicates the remainder of the line is a comment (except for 05 and 77 data entry descriptions and the CONVER statement)
/	Stroke or Slash	In column 7, indicates the remainder of the line is a comment
=	Equal sign	Relational operator in conditions (synonym for EQUAL TO)
>	Greater than	Relational operator in conditions (synonym for GREATER THAN)
<	Less than	Relational operator in conditions (synonym for LESS THAN)
'	Apostrophe	Encloses nonnumeric literals (if you specify the CONVER or CONVERA statement)
"	Quotation mark	Encloses nonnumeric literals (if you specify the CONVERQ statement)

Data item identifiers and paragraph names

Data item identifiers and paragraph names:
- Must start with a letter (A through Z)
- Can contain these characters:
  - 0 through 9
  - A through Z
  - - (hyphen)
- Can contain up to 30 characters
- Cannot end with a hyphen

Reserved words

You cannot use LCP reserved words for paragraph names or for your own data item identifiers.

LCP reserved words consist of:
- COBOL language elements, keywords, and related symbols
- LCP function names

- Predefined data item identifiers

For a complete list of LCP reserved words, see Appendix D, "LCP reserved words," on page 167.

Literals

Nonnumeric literals
A nonnumeric literal is a character string enclosed by apostrophes (') or quotation marks (") and containing any EBCDIC character. The maximum length of a nonnumeric literal is 30 characters.

If you want to imbed an enclosing character in a nonnumeric literal, you must specify a pair of enclosing characters. For example:

```
"THIS ISN""T WRONG"
```

The choice of apostrophe or quotation mark is specified by the CONVER statement at the start of an LCP:

CONVER or CONVERA
Specifies that nonnumeric literals are enclosed by apostrophes (')

CONVERQ
Specifies that nonnumeric literals are enclosed in quotation marks (")

Numeric literals
A numeric literal is a string of digits (0 through 9) with a maximum length of 10 digits. Numeric literals are unsigned.

Comment lines

Comments appear on a line by themselves; you cannot mix code and comments on the same source line.

Comment lines can appear anywhere in an LCP.

Format

```
         (1)
►►──┬─*──────┬─comment-text──────────────────────────────────────────►◄
    └─/──────┘
```

Notes:

1 An asterisk (*) or a slash (/) must appear in column 7.

comment-text
Can contain any EBCDIC characters.

Punctuation

Statements
Each statement must begin on a new line.

Paragraphs
A paragraph is a sequence of statements, beginning with a paragraph name. A paragraph name is a label that can be referred to by GO TO and PERFORM statements.

Paragraph names must appear on a line by themselves.

Periods

A period must appear immediately following:
- The last statement in a paragraph
- A paragraph name
- A data item identifier
- The last statement within an IF statement (for details, see "IF statement" on page 86)

A period may appear after any statement (except CONVER, CONVERA, or CONVERQ); except for the situations described in the list above, these trailing periods are optional and are not significant.

Blank lines

Blank lines can appear anywhere in an LCP.

LCP statement summary

Table 5 shows a summary of LCP statements.

Table 5. LCP statement summary

Division	Statement	Description
Identification Division	CONVER, CONVERA, CONVERQ	Identifies and describes the LCP, and specifies whether nonnumeric literals are enclosed in apostrophes (') or quotation marks (").
Data Division (optional)	01, 05, 77	Defines data items. Your LCP may not need a Data Division, because many of the data items you use in an LCP are predefined by CCCA, and do not need a Data Division entry.
Procedure Division	ADD	Adds one number to another.
	EXIT	Must appear in the last paragraph executed by a PERFORM THRU statement.
	GO TO	Transfers control to another paragraph in the LCP. GO TO END-CHANGE terminates the LCP.
	IF	Controls the execution of statements by testing a condition. For information on conditions, see "Conditions" on page 84.
	MOVE	Copies a numeric or nonnumeric literal or data item to another data item.
	PERFORM	Executes one or more paragraphs a specified number of times or until a specified condition is true.
	SUBTRACT	Subtracts one number from another.

The following sections describe each statement in detail.

Identification Division

Here are the details of the contents of the Identification Division.

CONVER statement

The CONVER statement:
- Identifies and describes the LCP

- Specifies whether nonnumeric literals are enclosed in apostrophes (') or quotation marks (").

Format

```
        (1)          (2)
►►──*───────┬─CONVER──┬───┬─COBOL-reserved-word─┬──descriptive-text──────────►◄
            ├─CONVERA─┤   └─LCP-nnn─────────────┘
            └─CONVERQ─┘
```

Notes:

1 An asterisk (*) must appear in column 7.

2 CONVER, CONVERA, or CONVERQ must appear in columns 12–18.

CONVER or CONVERA
Specifies that nonnumeric literals are enclosed in apostrophes (').

CONVERQ
Specifies that nonnumeric literals are enclosed in quotation marks (").

COBOL-reserved-word
The COBOL reserved word that this LCP converts. Must be alphanumeric, starting with an alphabetic character.

This word must appear in the COBOL Reserved Word data set. For details, see “Updating the COBOL reserved word Data Set” on page 66.

LCP-*nnn*
If this LCP converts more than one COBOL reserved word, identify the LCP by “LCP-” followed by three digits (for example: LCP-352).

Each COBOL reserved word that this LCP converts must appear in the COBOL Reserved Word data set, with a change code of *nnn*. For details, see “Updating the COBOL reserved word Data Set” on page 66.

descriptive-text
A nonnumeric literal (with a maximum length of 50 characters) that describes what the LCP does.

Must be enclosed in either apostrophes (') or quotation marks ("), depending on whether you specified CONVER, CONVERA, or CONVERQ.

For example: "OTHERWISE replaced by ELSE".

Note:

1. The LCP directory lists the *COBOL-reserved-word* (or LCP-*nnn*) and the *descriptive-text* of all LCPs. To view or print the LCP directory, see “Generating a directory of the LCP library” on page 72.
2. As supplied, LCP source member names are the same as the identifier in this CONVER statement: either *COBOL-reserved-word* or LCP*nnn*.

   Note that you specify LCP-*nnn* in the CONVER statement, but the LCP source member name is LCP*nnn*, with no hyphen.
3. You can use any name for your LCP source members; CCCA only looks at the identifier in the LCP's CONVER statement (not its source member name).

Data Division (Optional)

Data Division entries define data items.

You can define only elementary data items in an LCP.

Unlike a COBOL program, in an LCP there is no difference between “05” and “77” data items. The 01, 05, and 77 numbers are kept only to maintain a COBOL-like appearance.

Note: Your LCP may not need a Data Division, because many of the data items you use in an LCP are predefined by CCCA, and do not need a Data Division entry. For a complete list of predefined data items, see Appendix E, “Predefined data items,” on page 175.

Format 1 (treated as comment only)

```
        (1)
►►──┬─*01───────┬─identifier──.──────────────────────────────────────►◄
    └─ 01───────┘
```

Notes:

1 An asterisk (*) or a blank must appear in column 7. 01 must appear in columns 8–9.

Format 2

```
        (1)
►►──┬─*77───────┬─identifier──┬─PICTURE─┬──┬─9(n)─┬──.────────────────►◄
    └─ 77───────┘             └─PIC─────┘  └─X(n)─┘
```

Notes:

1 An asterisk (*) or a blank must appear in column 7. 77 must appear in columns 8–9.

Format 3

```
            (1)
►►──┬─*    05───────┬─identifier──┬─PICTURE─┬──┬─9(n)─┬──.───────────►◄
    └─     05───────┘             └─PIC─────┘  └─X(n)─┘
```

Notes:

1 An asterisk (*) or a blank must appear in column 7. 05 must appear in columns 12–13.

identifier
A data item identifier:
- Must start with a letter (A through Z)
- Can contain these characters:
  0 through 9
  A through Z
  - (hyphen)
- Can contain up to 30 characters
- Cannot end with a hyphen

9(*n*)
Specifies that the data item is numeric (can contain only digits), with length *n* (where *n* is 1 through 10).

If *n* is less than 10, you can add a leading zero. For example: 9(03).

X(*n*)
Specifies that the data item is alphanumeric (can contain any EBCDIC characters), with length *n* (where *n* is 1 through 30).

If *n* is less than 10, you can add a leading zero. For example: X(09).

Format 1
Treated as a comment. An asterisk (*) or a blank must be in column 7, and 01 must appear in columns 8–9.

Format 2
An asterisk (*) or a blank must be in column 7, and 77 must appear in columns 8–9.

Format 3
An asterisk (*) or a blank must be in column 7, and 05 must appear in columns 12–13.

Procedure Division

Here are the details of the Procedure Division

ADD statement

The ADD statement adds two numbers, and stores the result in the data item *identifier-2*.

Format

```
►►──ADD──┬─identifier-1─┬──TO──identifier-2──┬───┬──────────────────────────►◄
         └─n────────────┘                    └─.─┘
```

identifier-1
identifier-2
Numeric data items.

n A numeric literal.

Conditions

The IF and PERFORM UNTIL statements use conditions to determine whether or not to execute statements.

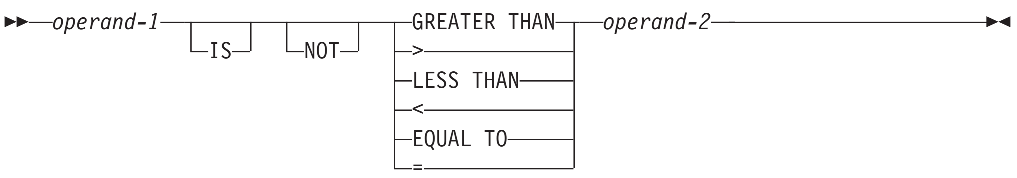
There are two types of condition: simple and combined.

Simple conditions

Simple conditions must appear on the same source line as IF or UNTIL. For example:

```
IF simple-condition
   statement-1
ELSE
   statement-2.
```

Format



operand-1
operand-2
The operands to be compared. These can be literals or data items, but they must be of the same type (numeric or nonnumeric). You cannot compare a numeric operand with a nonnumeric operand.

Combined conditions

A combined condition consists of either:

Format 1
Two or more simple conditions connected by OR

Format 2
Two or more simple conditions connected by AND

You cannot mix OR and AND in a combined condition.

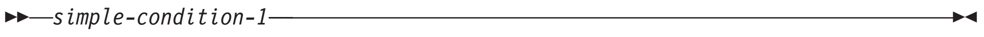
In a combined condition:

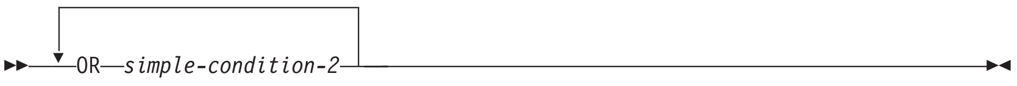
- *simple-condition-1* must appear on the same source line as IF or UNTIL
- "OR *simple-condition-2*" and "AND *simple-condition-2*" must appear on a separate source line, immediately following the IF or UNTIL line

For example:

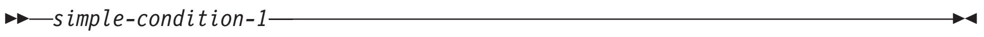
```
PERFORM function-name
UNTIL simple-condition-1
   OR simple-condition-2
```

Format 1





Format 2



```
      ┌───────────────────────────┐
      ▼                           │
►►────AND──simple-condition-2─────┴──────────────────────────────────────────►◄
```

simple-condition-1
simple-condition-2
Simple conditions. For details, see “Simple conditions” on page 84.

EXIT statement

The EXIT statement must appear in the last paragraph executed by a PERFORM THRU statement.

The EXIT statement:
- Must appear on a line immediately below a paragraph name
- Must be immediately followed by a period
- Must be the only statement in the paragraph

Format

```
►►──exit-paragraph-name──.───────────────────────────────────────────────►◄
```

```
►►──EXIT──.──────────────────────────────────────────────────────────────►◄
```

exit-paragraph-name
The paragraph name appearing after THRU in the PERFORM statement. For details, see “PERFORM statement” on page 89.

GO TO statement

The GO TO statement transfers control to another paragraph in the LCP.

GO TO END-CHANGE terminates the LCP.

Format

```
►►──GO TO──┬─paragraph-name─┬──┬───┬─────────────────────────────────────►◄
           └─END-CHANGE─────┘  └─.─┘
```

paragraph-name
A paragraph name in the LCP.

END-CHANGE
Terminates the LCP.

An LCP can contain multiple GO TO END-CHANGE statements.

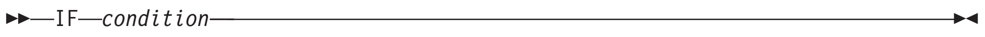
Note: END-CHANGE must not appear as a paragraph name in an LCP.

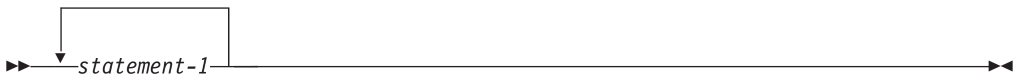
IF statement

The IF statement controls the execution of statements by testing a condition.

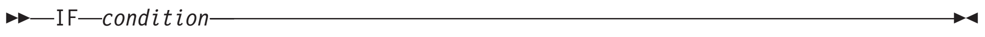
For information on conditions, see “Conditions” on page 84.

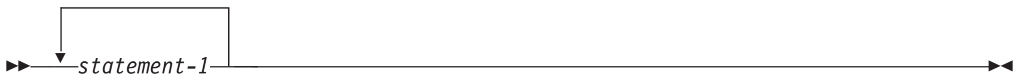
Format 1

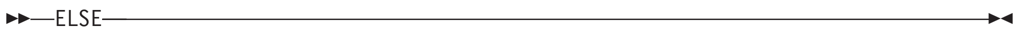


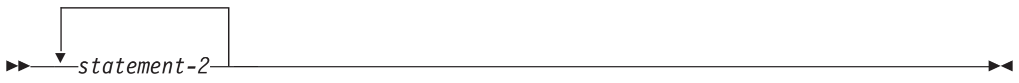


Format 2









`statement-1`
: One or more statements, executed only if the *condition* is true.

  Must appear on a separate line from IF (and ELSE).

  Cannot contain another IF statement.

`ELSE (Format 2 only)`
: Specifies that the statements to follow are executed only if the *condition* is false.

  Must appear on a separate line from *statement-1* and *statement-2*.

`statement-2` **`(Format 2 only)`**
: One or more statements, executed only if the *condition* is false.

  Must appear on a separate line from ELSE.

  Cannot contain another IF statement.

Note:

1. **Periods**. The last statement under the control of the IF statement (and only the last statement) **must** end with a period.

   For example:

```
IF condition
   statement-1
   statement-1
   statement-1.
.
.
.
IF condition
   statement-1
   statement-1
ELSE
   statement-2
   statement-2.
```

2. *statement-1* and *statement-2* cannot contain IF statements (IF statements cannot be nested).

MOVE statement

The MOVE statement copies a numeric or nonnumeric literal or data item to the data item *identifier-2*.

Format

```
►►──MOVE──┬─identifier-1─┬──TO──identifier-2──┬───┬──────────────────────────►◄
          └─literal──────┘                    └─.─┘
```

identifier-1
: The data item containing the numeric or nonnumeric value that you want to copy to *identifier-2*.

literal
: The numeric or nonnumeric literal that you want to copy to *identifier-2*. Nonnumeric literals must appear inside enclosing characters.

You can MOVE only:
- Numeric data to numeric data (right-justified)
- Alphanumeric data to alphanumeric data (left-justified)
- Numeric data to alphanumeric data (left-justified)

	identifier-1	*identifier-2*	
MOVE type	**or** *literal*	**Before**	**After**
numeric to numeric	2 1 5 4 2 1 7 5 4 2 1	1 0 2 5 1 0 2 5 1 0 2 5	0 0 2 1 5 4 2 1 5 4 2 1
alphanumeric to alphanumeric	H E I C H E F I C H E	D A T E D A T E D A T E	H E I C H E F I C H
numeric to alphanumeric	2 1 5 4 2 1 7 5 4 2 1	D A T E D A T E D A T E	2 1 5 4 2 1 7 5 4 2

Paragraph names

A paragraph is a sequence of statements, beginning with a paragraph name. A paragraph name is a label that can be referred to by GO TO and PERFORM statements.

The Procedure Division must start with a paragraph name.

Paragraph names must appear on a line by themselves.

Format

```
►►──paragraph-name──.──────────────────────────────────────────────►◄
```

paragraph-name
A paragraph name:
- Must start with a letter (A through Z)
- Can contain these characters:
  0 through 9
  A through Z
  - (hyphen)
- Can contain up to 30 characters
- Cannot end with a hyphen
- Must be immediately followed by a period (.)

PERFORM statement

The PERFORM statement:

- Executes a function a specified number of times (default is once)
- Executes a sequence of paragraphs once only
- Executes a function or sequence of paragraphs one or more times, until a specified condition is true

Format 1

```
►►──PERFORM──function-name──┬──────────────────────┬──┬───┬────────►◄
                            └─numeric-literal──TIMES┘  └─.─┘
```

Format 2

```
►►──PERFORM──paragraph-name──THRU──exit-paragraph-name──┬───┬──────►◄
                                                        └─.─┘
```

Format 3

```
►►──PERFORM──┬─function-name──────────────────────────────┬────────►◄
             └─paragraph-name──THRU──exit-paragraph-name──┘
```

```
►►──UNTIL──condition──┬───┬────────────────────────────────────────►◄
                      └─.─┘
```

function-name
An LCP function. For more information, see "LCP functions" on page 91.

numeric-literal
A numeric literal with a maximum value of 12.

paragraph-name
: The name of the first paragraph in the LCP to be executed by the PERFORM THRU statement.

  The paragraphs executed by the PERFORM THRU statement can appear in the LCP source either before or after the PERFORM THRU statement.

  paragraph-name must appear in the LCP source before the *exit-paragraph-name*. For example:

```
FIRST-PARA.
.
.
.
SECOND-PARA.
.
.
.
THIRD-PARA.
.
.
.
END-PARA.
  EXIT.
.
.
.
PERFORM FIRST-PARA THRU END-PARA
UNTIL condition
```

exit-paragraph-name
: The name of the last paragraph in the LCP to be executed by the PERFORM THRU statement. This paragraph must contain only an EXIT statement. For details, see "EXIT statement" on page 86.

UNTIL (Format 3 only)
: Must appear on a separate source line from PERFORM.

condition
: A simple or combined condition. For details, see "Conditions" on page 84.

  The *condition* is tested **after** the function or entire paragraph sequence has executed.

SUBTRACT statement

The SUBTRACT statement subtracts a number from *identifier-2*, and stores the result in the data item *identifier-2*.

Format

```
►►──┬─identifier-1────┬──FROM──identifier-2─────────────────────────────────►◄
    └─numeric-literal─┘
```

identifier-1
: The data item containing the numeric value that you want to subtract from *identifier-2*.

identifier-2
: A numeric data item.

numeric-literal
: An unsigned number (with a maximum length of 10 digits) that you want to subtract from *identifier-2*.

LCP functions

You use LCP functions to manipulate the tokenized source of the program being converted.

In conversion phase 1 (see “How CCCA works” on page 4), CCCA breaks apart the COBOL source program into *elements* and *tokens*.

Elements are:
- Character strings in COBOL COPY statements
- COBOL comment paragraph lines

All other character strings are tokens.

Note: Comment lines, and the following compiler directives, are *not* tokenized:
- SKIP1
- SKIP2
- SKIP3
- EJECT
- TITLE
- *CBL
- *CONTROL

In conversion phase 2, CCCA invokes LCPs to examine the tokenized source and generate change requests.

The LCPs use functions that:
- Retrieve tokenized source
- Bypass token identifiers
- Remove tokenized source
- Modify tokenized source and insert tokens
- Edit tokens
- Construct tokens
- Bypass token processing

The functions write the change requests to the CHANGE data set.

In conversion phase 3, CCCA applies the change requests to the source program.

Using LCP functions

You invoke LCP functions using the PERFORM statement:

```
PERFORM function-name
```

You pass values to and from LCP functions using *predefined data items*.

For example:

```
PERFORM GET-FIRST-TOKEN
```

retrieves information about the first token of the program, and places the information in predefined data items (such as TOKEN-LENGTH and TOKEN-TEXT) that you can examine and modify.

Similarly:

```
MOVE 'NEW COMMAND' TO ADD-TEXT
PERFORM REPLACE-TOKEN
```

replaces the current token in the program with the value you moved to the predefined data item ADD-TEXT. (Since ADD-TEXT is a predefined data item, you do not need to include it as an entry in the LCP Data Division.)

The following sections describe the LCP functions, and list their related predefined data items.

For a complete list of LCP functions, see Appendix F, "List of LCP functions," on page 187.

For a complete description of each predefined data item, see Appendix E, "Predefined data items," on page 175.

Retrieving tokenized source

The following functions retrieve tokenized source of the program being converted:

LCP function	Description
GET-FIRST-TOKEN or GET-FIRST	Retrieve the first token of the program
GET-LAST-TOKEN or GET-LAST	Retrieve the last token of the program
GET-TOKEN	Retrieve the token or element for the pointer value currently set
GET-NEXT-TOKEN or GET-NEXT	Retrieve the token following the current record or the pointer value currently set
GET-PREVIOUS-TOKEN or GET-PREVIOUS	Retrieve the token preceding the current record or the pointer value currently set
GET-ELEMENT	Retrieve the token or element for the pointer value currently set
GET-NEXT-ELEMENT	Retrieve the element or token following the current record or the pointer value currently set
GET-PREVIOUS-ELEMENT	Retrieve the element or token preceding the current record or the pointer value currently set

These functions return values in the following predefined data items:

```
05 TOKEN-SEQUENCE           PIC X(6) .
05 TOKEN-POSITION           PIC 9(2) .
05 TOKEN-LENGTH             PIC 9(3) .
05 TOKEN-TYPE-CODE          PIC X(1) .
05 TOKEN-CHANGE-CODE        PIC 9(3) .
05 TOKEN-LINE-CODE          PIC X(1) .
05 TOKEN-FLAG               PIC X(2) .
05 TOKEN-TEXT               PIC X(30).
05 TOKEN-SOURCE             PIC X(1) .
```

TOKEN-POSITION refers to the column number within the program text area (columns 8 through 72). For example, a TOKEN-POSITION value of 5 refers to column 12 in the generated source program.

Moving through the tokenized source

The TOKEN-POINTER predefined data item determines the current token of the program being converted.

You can move through the tokenized source by changing the value of TOKEN-POINTER. Figure 36 shows how to save the current token pointer, then move back to that token later in the LCP.

```
/*****************************************************************
*                                                                *
*    CONVERA EXAMPLE      'SHOW USE OF TOKEN POINTER'            *
     .
     .
     .
*    05  TOKEN-POINTER-SAVE      PIC 9(7)  .
     .
     .
     .
     PERFORM GET-NEXT-TOKEN.
*  SAVE CURRENT TOKEN POSITION
     MOVE TOKEN-POINTER TO TOKEN-POINTER-SAVE.
     .
     .
     .
*  RE-ESTABLISH TOKEN POSITION
     MOVE TOKEN-POINTER-SAVE TO TOKEN-POINTER.
     PERFORM GET-TOKEN.
     .
     .
     .
     GO TO END-CHANGE.
```

Figure 36. Saving and repositioning TOKEN-POINTER

Bypassing token identifiers

The BYPASS-IDENTIFIER function bypasses the tokens that qualify the current token:

LCP function	Description
BYPASS-IDENTIFIER	Bypass qualifier, subscript, index, and reference modifier of a data item

This function returns values in the following predefined data items:

```
05 BYPASSED-REF-TYPES       PIC X(3).
05 BYPASSED-REF-QUAL        PIC X(1).
05 BYPASSED-REF-SUB         PIC X(1).
05 BYPASSED-REF-MOD         PIC X(1).
```

Removing tokenized source

The following functions remove source from the program being generated:

LCP function	Description
REMOVE-TOKEN or REMOVE	Remove the last token or element read
REMOVE-NEXT-TOKEN or REMOVE-NEXT	Get next token and remove it
REMOVE-CLAUSE	Remove the clause
REMOVE-STATEMENT	Remove the statement

Be careful when using the REMOVE-STATEMENT and REMOVE-CLAUSE functions. They remove from the token just read (the current token) until the beginning of a new statement or clause. The beginning of clauses and statements are defined by the **Word type** field in the COBOL Reserved Word data set (see "Updating the COBOL reserved word Data Set" on page 66).

Modifying tokenized source and inserting tokens

The following functions modify or insert code into the program being generated:

LCP function	Description
INSERT-BEFORE-TOKEN or INSERT-BEFORE	Insert new text before the current token **Note:** If you insert text before the first token of a line, the INSERT-BEFORE function inserts the text after the last token of the preceding line (there is no shuffling of tokens across the line).
REPLACE-TOKEN or REPLACE	Replace the current token
INSERT-AFTER-TOKEN or INSERT-AFTER	Insert text after the current token providing an intervening space
SUFFIX-TOKEN or SUFFIX	Append text to the current token without an intervening space
REMOVE-SUFFIX	Remove suffix from token

You pass values to these functions in the following predefined data items:

```
05 ADD-GROUP.
  10 ADD-LENGTH            PIC 9(2).
  10 ADD-TEXT              PIC X(30).
05 STARTING-POSITION       PIC 9(2).
```

Move the new text into ADD-TEXT.

STARTING-POSITION refers to the column number within the program text area (columns 8 to 72) where you want to add the text. For example, a STARTING-POSITION value of 5 refers to column 12 in the generated source program.

If you want CCCA to determine the length of the data in ADD-TEXT, set ADD-LENGTH to zero.

If ADD-TEXT contains imbedded blanks, or you want ADD-TEXT to have trailing blanks, set ADD-LENGTH to an appropriate value.

Note: Before using these functions, always set ADD-LENGTH to zero or some other appropriate value. Otherwise, you may inadvertently use a previous, and inappropriate, value for ADD-LENGTH.

For example:

```
**************************************************
* Replaces current token with 'GO' (*not* 'GO TO')
**************************************************
* Replace token in same position
     MOVE TOKEN-POSITION TO STARTING-POSITION
* ADD-LENGTH zero tells interpreter to determine length
     MOVE 0 TO ADD-LENGTH
* Note imbedded blank - interpreted as end of string
     MOVE 'GO TO' TO ADD-TEXT
* Replaces current token with 'GO' (*not* 'GO TO')
     PERFORM REPLACE-TOKEN
 .
 .
 .
**************************************************
* Replaces current token with 'GO TO'
**************************************************
     MOVE TOKEN-POSITION TO STARTING-POSITION
     MOVE 5 TO ADD-LENGTH
     MOVE 'GO TO' TO ADD-TEXT
     PERFORM REPLACE-TOKEN
```

Note:

1. If an LCP contains more than one REPLACE-TOKEN function for the same token, only the last REPLACE-TOKEN has an effect. For example:

   ```
   MOVE 'COMMAND ONE' TO ADD-TEXT
   PERFORM REPLACE-TOKEN
   MOVE 'COMMAND TWO' TO ADD-TEXT
   PERFORM REPLACE-TOKEN
   MOVE 'COMMAND THREE' TO ADD-TEXT
   PERFORM REPLACE-TOKEN
   ```

   has the same effect as:

   ```
   MOVE 'COMMAND THREE' TO ADD-TEXT
   PERFORM REPLACE-TOKEN
   ```

2. If the last statement of a COBOL program is COPY, the last character string (which should be a period) of the main program is considered to be the last token. It is not the last character string of the COPY member. Therefore, if you add code to the end of the program, it will appear on the listing immediately after the COPY statement. The expansion of the COPY module will appear after the section and not right after the COPY statement.

Editing tokens

The following functions edit tokens in the program being generated:

LCP function	Description
SPLIT-LINE	Start a new line
MAINTAIN-LINE-POSITION	Try to write in the same column of the line if there is enough space
COMMENT	Put an asterisk (*) in column 7
DIAGNOSTIC	Write the contents of the ADD-TEXT predefined data item in the diagnostic area
EJECT	Put a slash (/) in column 7
EDIT-MESSAGE	Write a message identifier, return code, and message text in the diagnostic area, according to the value of the MESSAGE-ID predefined data item

DIAGNOSTIC function

The DIAGNOSTIC function causes message text to be written to the Diagnostic listing. Use this function to write messages that do not appear in the Message file.

Before calling DIAGNOSTIC, move the message text to the ADD-TEXT predefined data item.

For example:

```
MOVE 'DIAGNOSTIC MESSAGE' TO ADD-TEXT
PERFORM DIAGNOSTIC
```

writes 'DIAGNOSTIC MESSAGE' in the diagnostic message area of the statement it applies to. (The diagnostic message area is on the right hand side of the Diagnostic listing.) The message is repeated in the message summary at the end of the listing.

Note: CCCA assigns the message identifier ABJ9999 to DIAGNOSTIC messages.

EDIT-MESSAGE function

The EDIT-MESSAGE function causes messages to be written to the Diagnostic listing. Unlike the DIAGNOSTIC function (where you specify the message text directly), with the EDIT-MESSAGE function you refer to a message identifier in the Message file:

```
MOVE 'ABJ6018' TO MESSAGE-ID
PERFORM EDIT-MESSAGE
```

The message text appears in the diagnostic message area of the statement it applies to. (The diagnostic message area is on the right hand side of the Diagnostic listing.) The message is repeated in the message summary at the end of the listing. For more information on the Message file, see "Updating the message file" on page 73.

Constructing tokens

The following functions construct tokens:

LCP function	Description
DETERMINE-LENGTH	Determines the length of the character string in ADD-TEXT, and puts the result in ADD-LENGTH
MOVE-LCP	Move characters

LCP function	Description
STRING-LCP	Concatenate character strings
UNSTRING-LCP	Break apart a character string into one or more character strings
CONVERT-ALPHA-NUMERIC	Convert an alphanumeric string into a numeric string

DETERMINE-LENGTH function

The DETERMINE-LENGTH function determines the length of the character string you have moved to the ADD-TEXT predefined data item, and puts the result in the ADD-LENGTH predefined data item.

For example, when you code:

```
MOVE 'ACCESS' TO ADD-TEXT
PERFORM DETERMINE-LENGTH
```

you use these predefined data items:

```
      10 ADD-LENGTH            PIC 9(2).
      10 ADD-TEXT              PIC X(30).
```

CCCA analyzes the contents of ADD-TEXT:

```
ADD-TEXT                |A|C|C|E|S|S|
                        └─┴─┴─┴─┴─┴─┘
```

and produces the result:

```
ADD-LENGTH = 06
```

ADD-LENGTH is determined by the position of the first blank character in ADD-TEXT.

MOVE-LCP function

The MOVE-LCP function copies characters from one data item to another.

The MOVE-LCP functions uses these predefined data items:

```
    05 INPUT-TEXT              PIC X(30).
    05 STARTING-CHARACTER      PIC 9(2).
    05 RECEIVING-CHARACTER     PIC 9(2).
    05 LENGTH-OF-MOVE          PIC 9(2).
    05 OUTPUT-TEXT             PIC X(30).
```

For example, these statements:

```
MOVE 'SPECIAL'     TO INPUT-TEXT
MOVE 'INTERPRETER' TO OUTPUT-TEXT
MOVE 4             TO STARTING-CHARACTER
MOVE 8             TO RECEIVING-CHARACTER
MOVE 4             TO LENGTH-OF-MOVE
```

set these values:

```
                                ┌ LENGTH-OF-MOVE = 4
                             ┌──┴──┐
INPUT-TEXT              |S|P|E|C|I|A|L|
                        └─┴─┴─┴─┴─┴─┴─┘
                               ↑
                               └ STARTING-CHARACTER = 4

OUTPUT-TEXT             |I|N|T|E|R|P|R|E|T|E|R|
                        └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘
                                      ↑
                                      └ RECEIVING-CHARACTER = 8
```

With the above values, `PERFORM MOVE-LCP` produces:

```
OUTPUT-TEXT           │I│N│T│E│R│P│R│C│I│A│L│
                      └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘
```

STRING-LCP function

The STRING-LCP function:

1. Concatenates character strings in the STRING-WORD-*nn* predefined data items (where *nn* is 00 through 10)
2. Puts the concatenated string in the STRING-TEXT predefined data item
3. Puts the length of the concatenated string in the STRING-LENGTH predefined data item

The STRING-LCP function uses these predefined data items:

```
           05 STRING-TEXT             PIC X(30).
           05 STRING-DELIMITER        PIC X(1).
           05 STRING-LENGTH           PIC 9(2).
       01 STRING-WORDS.
           05 STRING-WORD-01          PIC X(30).
           05 STRING-WORD-02          PIC X(30).
           05 STRING-WORD-03          PIC X(30).
           05 STRING-WORD-04          PIC X(30).
           05 STRING-WORD-05          PIC X(30).
           05 STRING-WORD-06          PIC X(30).
           05 STRING-WORD-07          PIC X(30).
           05 STRING-WORD-08          PIC X(30).
           05 STRING-WORD-09          PIC X(30).
           05 STRING-WORD-10          PIC X(30).
```

For example:

```
      * First, initialize STRING-WORDS-nn
      * by moving SPACE to STRING-WORDS
           MOVE SPACE    TO STRING-WORDS
           MOVE 'COPY'   TO STRING-WORD-01
           MOVE 'RECORD' TO STRING-WORD-02
           MOVE '-'      TO STRING-WORD-03
           MOVE 'NAME'   TO STRING-WORD-04
           MOVE SPACE    TO STRING-DELIMITER
           PERFORM STRING-LCP
```

concatenates these predefined data items:

```
STRING-WORD-01        │C│O│P│Y│ │ │       │ │ │ (30 characters)
                      └─┴─┴─┴─┴─┴─┘ . . . ┴─┴─┘

STRING-WORD-02        │R│E│C│O│R│D│       │ │ │
                      └─┴─┴─┴─┴─┴─┘ . . . ┴─┴─┘

STRING-WORD-03        │-│ │ │ │ │ │       │ │ │
                      └─┴─┴─┴─┴─┴─┘ . . . ┴─┴─┘

STRING-WORD-04        │N│A│M│E│ │ │       │ │ │
                      └─┴─┴─┴─┴─┴─┘ . . . ┴─┴─┘

STRING-WORD-05        │ │ │ │ │ │ │       │ │ │
                      └─┴─┴─┴─┴─┴─┘ . . . ┴─┴─┘

STRING-WORD-06        │ │ │ │ │ │ │       │ │ │
                      └─┴─┴─┴─┴─┴─┘ . . . ┴─┴─┘
```

```
STRING-WORD-07          | | | | | | | . . . | | |

STRING-WORD-08          | | | | | | | . . . | | |

STRING-WORD-09          | | | | | | | . . . | | |

STRING-WORD-10          | | | | | | | . . . | | |
```

producing these results:

```
STRING-TEXT             |C|O|P|Y|R|E|C|O|R|D|-|N|A|M|E|

STRING-LENGTH = 15
```

Note: STRING-DELIMITER contains the character that the STRING-LCP function uses to determine the end of each STRING-WORD-*nn* character string. The default STRING-DELIMITER value is SPACE.

UNSTRING-LCP function

The UNSTRING-LCP function breaks apart the character string in the STRING-TEXT predefined data items, and stores the parts in the STRING-WORD-*nn* predefined data items.

The UNSTRING-LCP function uses these predefined data items:

```
        05 STRING-TEXT              PIC X(30).
        05 STRING-DELIMITER         PIC X(1).
        05 STRING-LENGTH            PIC 9(2).
    01 STRING-WORDS.
        05 STRING-WORD-01           PIC X(30).
        05 STRING-WORD-02           PIC X(30).
        05 STRING-WORD-03           PIC X(30).
        05 STRING-WORD-04           PIC X(30).
        05 STRING-WORD-05           PIC X(30).
        05 STRING-WORD-06           PIC X(30).
        05 STRING-WORD-07           PIC X(30).
        05 STRING-WORD-08           PIC X(30).
        05 STRING-WORD-09           PIC X(30).
        05 STRING-WORD-10           PIC X(30).
```

For example:

```
    MOVE 'DA-3340-I-CLIENT' TO STRING-TEXT
    MOVE '-' TO STRING-DELIMITER
    PERFORM UNSTRING-LCP
```

breaks apart the character string:

```
STRING-TEXT             |D|A|-|3|3|4|0|-|I|-|C|L|I|E|N|T|
```

into:

```
STRING-WORD-01          |D|A| | | | | . . . | | |  (30 characters)

STRING-WORD-02          |3|3|4|0| | | . . . | | |

STRING-WORD-03          |I| | | | | | . . . | | |
STRING-WORD-04          |C|L|I|E|N|T| . . . | |

STRING-WORD-05          | | | | | | | . . . | |

STRING-WORD-06          | | | | | | | . . . | |

STRING-WORD-07          | | | | | | | . . . | |

STRING-WORD-08          | | | | | | | . . . | |

STRING-WORD-09          | | | | | | | . . . | |

STRING-WORD-10          | | | | | | | . . . | |
```

Note: Before breaking apart STRING-TEXT, the UNSTRING-LCP function initializes the STRING-WORD-*nn* predefined data items to SPACES.

CONVERT-ALPHA-NUMERIC function

The CONVERT-ALPHA-NUMERIC function converts the left-aligned character string in the LCP-ALPHA predefined data item to a numeric value, and stores the numeric value in the LCP-NUMERIC predefined data item.

The CONVERT-ALPHA-NUMERIC function uses these predefined data items:

```
05 LCP-ALPHA              PIC X(10).
05 LCP-NUMERIC            PIC 9(10).
```

For example:

```
MOVE '1234' TO LCP-ALPHA
PERFORM CONVERT-ALPHA-NUMERIC
```

converts the alphanumeric string:

```
LCP-ALPHA            |1|2|3|4| | | | | | |
```

to the numeric string:

```
LCP-NUMERIC          |0|0|0|0|0|0|1|2|3|4|
```

BYPASS-POINTER function

To bypass processing relating to the current token, use the BYPASS-POINTER Function:

LCP function	Description
BYPASS-OPTION	Bypass the conversion process associated with the token currently in storage

If the current token:
- Is after the token that invoked the LCP, and
- Has a change code that will invoke its own LCP

then the invocation of the BYPASS-POINTER function will result in that LCP not being invoked for the current token.

The BYPASS-POINTER function updates the change code in the current token to 994, causing the LCP processing to be bypassed.

Manipulating files

During conversion, CCCA uses two physical files: Control and Work.

The Control file contains five record types:

OPTION
COBOL source program member name and conversion options.

PROGRAM
Program name (as defined inside the COBOL program) before and after conversion, and conversion status.

FILE Information about each file (such as organization and access mode) used in the COBOL program.

CALL Details of CALL statements in the COBOL program.

COPY Details of COPY statements in the COBOL program.

The Work file contains thirteen record types:

KEY KEY clause information (if supplied) for each file used in the COBOL program.

RECORD
Records names linked to each file used in the COBOL program.

WORK-*nn*
(where *nn* is 01 through 10) Storage for miscellaneous conversion information.

CICS Details of BLL statements in the COBOL program.

CCCA makes selected information in these records available to you as predefined data items.

One of the predefined data items for each record is an *access key* that you can use to retrieve or update a specific record. (Except KEY, which is linked to the FILE record, and OPTION, which is a single record.) Figure 37 on page 102 shows the relationships between these records.

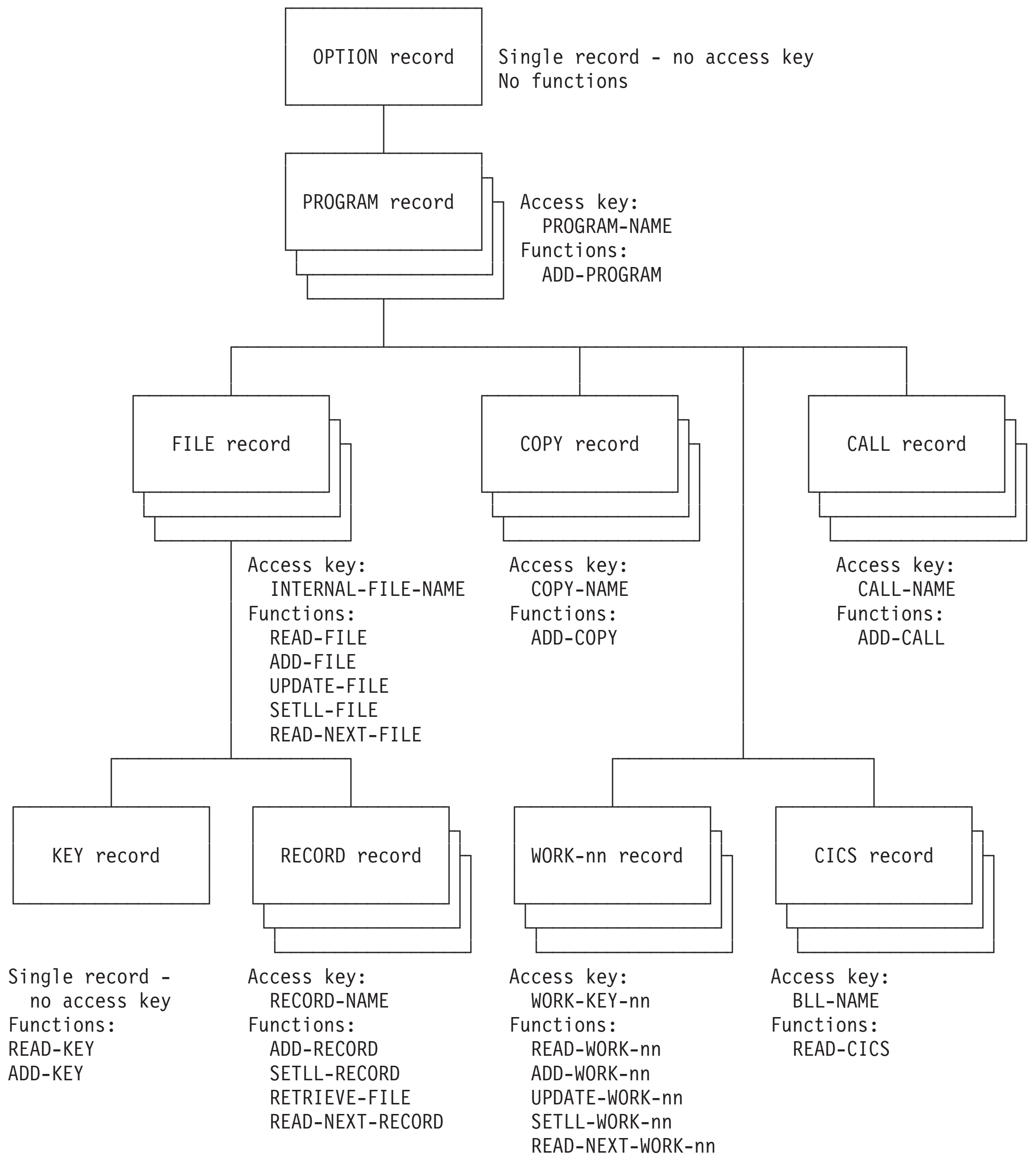


Figure 37. Control and work file record relationships

Control file

Here are the details of the control file.

OPTION record

The OPTION record contains the conversion options, available as these predefined data items:

```
05 LITERAL-SEPARATOR        PIC X.
05 OPTION-01                PIC X.
05 OPTION-02                PIC X.
05 OPTION-03                PIC X.
05 OPTION-04                PIC X.
05 OPTION-05                PIC X.
```

```
05 OPTION-06              PIC X.
05 OPTION-07              PIC X.
05 OPTION-08              PIC X.
05 OPTION-09              PIC X.
05 OPTION-10              PIC X.
05 OPTION-11              PIC X.
05 OPTION-12              PIC X.
05 OPTION-13              PIC X.
05 OPTION-14              PIC X.
05 OPTION-15              PIC X.
05 MEMBER-NAME            PIC X(10).
05 COBOL-STANDARD         PIC X(5).
05 TARGET-LANGUAGE        PIC X(5).
05 OPTION-CICS            PIC X.
05 COBOL-TYPE             PIC X(6).
05 DATE-FORMAT            PIC X(8).
```

CCCA gets this information from the details you enter on the Conversion Options panels (see "Setting conversion options" on page 19).

PROGRAM record

Each program CCCA converts has a PROGRAM record. Its access key is the PROGRAM NAME defined in the COBOL program.

The PROGRAM record exists to contain statistics for the Program/File and File/Program reports (for details, see Chapter 5, "Conversion reports and the conversion log," on page 49). You cannot read this record from an LCP.

LCP function	Description
ADD-PROGRAM	Add a PROGRAM record using the current values in the OPTION record

The PROGRAM record contains these predefined data items:

```
05 PROGRAM-STATUS         PIC X(10).
05 PROGRAM-NAME           PIC X(10). ◄ Access key
05 OLD-PROGRAM-NAME       PIC X(10).
```

The PROGRAM record also contains:

- The conversion options CCCA used to convert each program (in a similar format to the current conversion options stored in the OPTION record)
- A program conversion revision count

The ADD-PROGRAM function:

- Updates (or adds, if no record exists) a PROGRAM record for the PROGRAM-NAME you specify with the current conversion options (from the OPTION record)
- Increments the PROGRAM record revision count by one

FILE record

The FILE record contains information about each file (such as organization and access mode) used in a COBOL program.

There is one FILE record for each each file defined in the COBOL program.

LCP function	Description
READ-FILE	Retrieve a specific FILE record

LCP function	Description
UPDATE-FILE	Update a specific FILE record
ADD-FILE	Add a FILE record
SETLL-FILE	Position at the first FILE record
READ-NEXT-FILE	Read the next FILE record

These functions give you access to the following predefined data items:

```
05 ORGANIZATION-FILE-MODE       PIC X.
05 ACCESS-FILE-MODE             PIC X.
05 SEQUENCE-STATUS-NO           PIC 9(2).
05 EXTERNAL-FILE-NAME           PIC X(10).
05 INTERNAL-FILE-NAME           PIC X(30). ◄ Access key
05 UPDATE-FILE-FLAG             PIC X.
05 ASCII-FILE                   PIC X.
05 FILE-CONVERSION              PIC X.
05 OLD-ORGANIZATION-FILE-MODE   PIC X.
05 VSAM-ORGANIZATION            PIC X.
```

CALL record

There is a CALL record for each CALL statement in the COBOL program.

LCP function	Description
ADD-CALL	Add a CALL record

This function gives you access to the following predefined data item:

```
05 CALL-NAME               PIC X(30). ◄ Access key
```

CCCA uses the CALL file records to generate the Call/Program report and the Program/Call report. Performing the ADD-CALL function results in a CALL record being generated identifying the CALL-NAME provided as a sub-program called by the program being converted.

COPY record

There is a COPY record for each COPY statement in the COBOL program.

LCP function	Description
ADD-COPY	Add a COPY record

This function gives you access to the following predefined data items:

```
05 COPY-NAME               PIC X(10). ◄ Access key
05 COPY-LOCATION           PIC X(3).
05 ASSOCIATE-NAME          PIC X(30).
```

CCCA uses the COPY records to generate the Copy/Program and Program/Copy reports. The ADD-COPY function adds a COPY record that identifies the contents of the COPY-NAME predefined data item as a COPY member in the program being converted.

Work file

Here are the details of the work file.

KEY record

When the KEY clause is defined in a file description, a KEY file record is automatically generated, linking the key to the active FILE record.

LCP function	Description
READ-KEY	Retrieve a KEY record for the active file
ADD-KEY	Add or update a KEY record for the active file

These functions give you access to the following predefined data items:

```
05 NOMINAL-KEY-NAME         PIC X(30).
05 RECORD-KEY-NAME          PIC X(30).
05 RELATIVE-KEY             PIC X(30).
05 FILE-STATUS-NAME         PIC X(30).
```

RECORD record

Within each file a record name can be defined allowing several records to be linked to the active FILE record.

One record per 01 level data in File Description (FD).

LCP function	Description
ADD-RECORD	Add a RECORD record for the active file
SETLL-RECORD	Position at the beginning of the RECORD file for the active file.
READ-NEXT-RECORD	Read next RECORD record for the active FILE record
RETRIEVE-FILE	Retrieve the FILE record using a RECORD-NAME (first possible file).

These functions give you access to the following predefined data item:

```
05 RECORD-NAME              PIC X(30). ◄ Access key
```

WORK-*nn* records

During LCP execution, you can save conversion information WORK records.

LCP function	Description
READ-WORK-nn	Read a WORK-*nn* record
UPDATE-WORK-nn	Update a WORK-nn record
ADD-WORK-nn	Add a WORK-nn record
SETLL-WORK-nn	Set to the beginning of the WORK-nn records
READ-NEXT-WORK-nn	Read next WORK-nn record

These functions give you access to the following predefined data items:

```
05 WORK-KEY-nn              PIC X(30). ◄ Access key
05 WORK-TEXT-nn             PIC X(30).
05 WORK-NUMERIC-nn          PIC 9(7).
05 WORK-TYPE-nn             PIC X(3).
05 WORK-TEXT2-nn            PIC X(30).
05 WORK-NUMERIC2-nn         PIC 9(7).
05 WORK-TYPE2-nn            PIC X(3).
```

Note:

1. *nn* is 01 through 10.
2. WORK records 01 to 03 are available for user-written LCPs.
3. WORK record 04 is also available if MLE conversions are *not* required.
4. WORK records 05 to 10 are reserved for use by CCCA.
5. The supplied DEBUGGING LCP contains an example of how to use WORK records.

CICS record

For each BLL statement defined in the converted COBOL program, there is a corresponding record.

LCP function	Description
READ-CICS	Read the CICS record that is used to relate the BLL to the 01 level data area as mapped in the Linkage Section.

This function gives you access to the following predefined data items:

```
01 CICS-REC.
    05 BLL-NAME                PIC X(30). ◄ Access key
    05 CICS-RECORD-NAME        PIC X(30).   (Name of data area pointed to by BLL)
```

Using LCPs

Here is how you use LCPs.

Controlling LCP invocation

The name of the LCP that CCCA invokes to convert a language element is determined by the value of the TOKEN-CHANGE-CODE predefined data item.

During phase 1 (tokenization of the input source program) a TOKEN record is written for every tokenized word in the source program. As each word is tokenized, the word is used as a search argument to search the COBOL Reserved Word data set. If a match is found, the change code in the matching data set entry is stored in the TOKEN-CHANGE-CODE field of the TOKEN record (every word in the COBOL Reserved Word data set has a change code in the range 000 through 999). If no match is found, a value of 999 is stored in the TOKEN-CHANGE-CODE.

During phase 2, CCCA uses the value in the TOKEN-CHANGE-CODE field of each TOKEN record to determine the name of the LCP that is invoked to process the tokenized word. The name of the LCP is determined as follows:

- If the value in the TOKEN-CHANGE-CODE field is 990, the name of the LCP is the same as the tokenized word. For example, in the supplied COBOL Reserved Word data set, the word OTHERWISE has a change code of 990, which indicates that the LCP named OTHERWISE is to be invoked. One of the supplied LCPs is an LCP named OTHERWISE that is used to convert the reserved word OTHERWISE.
- If the value in the TOKEN-CHANGE-CODE field is 999, no LCP is invoked to convert the language element. For example, in the supplied Reserved Word data set, the word ALTERNATE has a change code of 999. That is, no LCP is invoked to convert the ALTERNATE language element.
- If the TOKEN-CHANGE-CODE field has a value other than 990 or 999, the name of the LCP is LCP*nnn*, where *nnn* is the value of the TOKEN-CHANGE-CODE field. For example, in the supplied Reserved Word data set, the reserved

words UPSI-0 through UPSI-7 have a change code of 850. That is, the supplied LCP named LCP850 is invoked to process conversion of these reserved words in a source program. Note that one LCP can be used to convert more than one reserved word.

For details on adding new words to the supplied COBOL Reserved Word file and setting change codes, see “Updating the COBOL reserved word Data Set” on page 66.

Processing LCPs

Figure 38 is an example of source code for the OTHERWISE LCP. During conversion, each time a token with the value OTHERWISE is found within the COBOL source program, the OTHERWISE LCP is executed. The purpose of this LCP is to change the COBOL reserved word OTHERWISE to ELSE.

```
*****************************************************************00001000
*                                                               *00002000
*    CONVERA OTHERWISE 'REPLACE OTHERWISE BY ELSE'              *00003000
*                                                               *00004000
*    REPLACE OTHERWISE BY ELSE                                  *00005000
*                                                               *00006000
*****************************************************************00007000
*   LICENSED MATERIALS - PROPERTY OF IBM                         00008000
*   5785-ABJ 5785-CCC 5648-B05 5686-A07                          00008800
*   (C) COPYRIGHT IBM CORP. 1982, 1998. ALL RIGHTS RESERVED.     00009600
*   US GOVERNMENT USERS RESTRICTED RIGHTS - USE,                 00010400
*   DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP              00011200
*   SCHEDULE CONTRACT WITH IBM CORP.                             00012100
                                                                 00013000
 OTHER-WISE-010 .                                                00014000
     IF COBOL-TYPE NOT = 'DOS/VS'                                00015000
     AND COBOL-TYPE NOT = 'OS/VS'                                00015500
         GO TO END-CHANGE.                                       00016000
     IF WHERE-USED IS NOT EQUAL TO 'PR'                          00017000
         GO TO END-CHANGE.                                       00018000
     MOVE '04ELSE' TO ADD-GROUP .                                00019000
     PERFORM REPLACE .                                           00020000
     MOVE 'ABJ6021' TO MESSAGE-ID.                               00021000
     PERFORM EDIT-MESSAGE.                                       00022000
     GO TO END-CHANGE .                                          00023000
```

Figure 38. OTHERWISE LCP source code

When an LCP is compiled, CCCA produces *intermediate text* and a listing. The intermediate text is written to the LCP library (also known as the DRIVEN data set). The listing that is produced can be used during debugging. The statement numbers contained in the listing are the statement numbers referred to in LCP traces.

Figure 39 on page 108 is an example of the OTHERWISE LCP listing produced by the LCP compiler.

```
 5648-B05 V2R1        - IBM COBOL CONVERSION AID - SAMPLE RUN

  STMT SEQNBR  A 1 B.. ... 2 ... ...    LCP SOURCE STATEMENTS  ... 6 ... ... 7

          *****************************************************************
          *                                                               *
 1        *    CONVERA OTHERWISE 'REPLACE OTHERWISE BY ELSE'              *
          *                                                               *
          *    REPLACE OTHERWISE BY ELSE                                  *
          *                                                               *
          *****************************************************************
          *   LICENSED MATERIALS - PROPERTY OF IBM
          *   5785-ABJ 5785-CCC 5648-B05 5686-A07
          *   (C) COPYRIGHT IBM CORP. 1982, 1998. ALL RIGHTS RESERVED.
          *   US GOVERNMENT USERS RESTRICTED RIGHTS - USE,
          *   DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP
          *   SCHEDULE CONTRACT WITH IBM CORP.

 2         OTHER-WISE-010 .
 3             IF COBOL-TYPE NOT = 'DOS/VS'
 4             AND COBOL-TYPE NOT = 'OS/VS'
 5                 GO TO END-CHANGE.
 6             IF WHERE-USED IS NOT EQUAL TO 'PR'
 7                 GO TO END-CHANGE.
 8             MOVE '04ELSE' TO ADD-GROUP .
 9             PERFORM REPLACE .
10             MOVE 'ABJ6021' TO MESSAGE-ID.
11             PERFORM EDIT-MESSAGE.
12             GO TO END-CHANGE .
    TEXT DESCRIPTION -       REPLACE OTHERWISE BY ELSE
    LCP PROGRAM NAME -       OTHERWISE
    TABLE DRIVEN CORE SIZE -    290
```

Figure 39. OTHERWISE LCP compilation listing

Tokenization

During conversion phase 1 (see “How CCCA works” on page 4), the COBOL source program is analyzed in terms of character strings called tokens. You can print a listing of the tokenization by setting the **Generate tokenization listing** field on Conversion Options panel 1 (see Figure 9 on page 19) to Y.

Figure 40 on page 109 is an example of the tokenization of a COBOL source program.

```
                                                                                   SEQ-NO/POS/LNGTH/TYPE/CODE/FLAG 1
002160       EXAMINE FILE-A-RECORD TALLYING ALL ".".                        01772202   2
             EXAMINE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002160 05 007 W 990  03     3
                     FILE-A-RECORD ::::::::::::::::::::::::::::::::::::::::::::::::: 002160 13 013 W 000         3
                                   TALLYING :::::::::::::::::::::::::::::::::::::::: 002160 27 008 W 000         3
                                            ALL :::::::::::::::::::::::::::::::::::: 002160 36 003 W 990         3
                                                "." :::::::::::::::::::::::::::::::: 002160 40 003 L 000         3
                                                   . ::::::::::::::::::::::::::::::: 002160 43 001   000         3
002170       DISPLAY FILE-A-RECORD "  COUNT OF " TALLY.                     01772300
             DISPLAY ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002170 05 007 W 999  23
                     FILE-A-RECORD ::::::::::::::::::::::::::::::::::::::::::::::::: 002170 13 013 W 000
                                   "  COUNT OF " ::::::::::::::::::::::::::::::::::: 002170 27 013 L 000
                                                 TALLY ::::::::::::::::::::::::::::: 002170 41 005 W 000
                                                      . :::::::::::::::::::::::::::: 002170 46 001   000
002180       IF (TALLY = 3)                                                 01772402
             IF :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002180 05 002 W 999  03
                ( :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002180 08 001   000
                 TALLY ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002180 09 005 W 000
                       = ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002180 15 001 1 997
                         3 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002180 17 001 N 000
                          ) :::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002180 18 001   000
002190         AND (FILE-A-RECORD = ".B.D.F")                               01772502
               AND ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002190 07 003 W 000
                   ( ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002190 11 001   000
                    FILE-A-RECORD :::::::::::::::::::::::::::::::::::::::::::::::::: 002190 12 013 W 000
                                  = :::::::::::::::::::::::::::::::::::::::::::::::: 002190 26 001 1 997
                                    ".B.D.F" ::::::::::::::::::::::::::::::::::::::: 002190 28 008 L 000
                                            ) :::::::::::::::::::::::::::::::::::::: 002190 36 001   000
002200           THEN DISPLAY "    TST-504-A2 WAS SUCCESSFUL"               01772602
                 THEN :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002200 09 004 W 990  03
                      DISPLAY :::::::::::::::::::::::::::::::::::::::::::::::::::::: 002200 14 007 W 999  23
                              "    TST-504-A2 WAS SUCCESSFUL" :::::::::::::::::::::: 002200 22 031 L 000
002210          OTHERWISE MOVE "Y" TO CONVERSION-ERROR-SWITCH               01772702
                OTHERWISE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002210 08 009 W 990
                          MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::: 002210 18 004 W 851  03
                               "Y" ::::::::::::::::::::::::::::::::::::::::::::::::: 002210 23 003 L 000
                                   TO :::::::::::::::::::::::::::::::::::::::::::::: 002210 27 002 W 000
                                      CONVERSION-ERROR-SWITCH :::::::::::::::::::::: 002210 30 023 W 000
002220            DISPLAY "    TST-504-A2 WAS UNSUCCESSFUL".                01772802
                  DISPLAY :::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002220 10 007 W 999  23
                          "    TST-504-A2 WAS UNSUCCESSFUL" :::::::::::::::::::::::: 002220 18 033 L 000
                                                           . ::::::::::::::::::::::: 002220 51 001   000
002230       DISPLAY " END TEST PIR-025-A SUCCESSFUL RUN ".                 01772902
             DISPLAY ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002230 05 007 W 999  23
                     " END TEST PIR-025-A SUCCESSFUL RUN " ::::::::::::::::::::::::: 002230 13 037 L 000
                                                          . :::::::::::::::::::::::: 002230 50 001   000
002240       STOP RUN.                                                      01773002
             STOP :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002240 05 004 W 999  03
                  RUN :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002240 10 003 W 000
                     . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 002240 13 001   000
```

Figure 40. Section of a tokenized COBOL source program

The main features of the listing are:

1 The report headings:

SEQ-NO	TOKEN-SEQUENCE
POS	TOKEN-POSITION
LNGTH	TOKEN-LENGTH
TYPE	TOKEN-TYPE-CODE
CODE	TOKEN-CHANGE-CODE
FLAG	TOKEN-FLAG

See Appendix E, “Predefined data items,” on page 175 for a description of these fields.

2 Input program source line.

3 Tokenized source. There is a record written to the TOKEN data set for each token.

Note: CCCA does not tokenize literals which are greater than 30 chars long. The tokenization report reflects this fact with a filler of asterisks as shown in the following example:

```
01  TEST-LINE-2 PIC X(80) VALUE              00311001
01 :::::::::::::::::::::::::::::::::::::::::::::::::  000410 01 002 N 990
    TEST-LINE-2 :::::::::::::::::::::::::::::::::::::  000410 05 011 W 000
                PIC :::::::::::::::::::::::::::::::::  000410 17 003 P 990  02
                    X(80) :::::::::::::::::::::::::::  000410 21 005 P 000
                          VALUE :::::::::::::::::::::  000410 27 005 W 990  02
>>  "BBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB".    00312006
>>  *********************************** :::::::::::  000420 05 036 L 864  00
                                        . :::::::::::  000420 41 001   000
```

Debugging LCPs

To aid in the debugging of LCPs, a facility is provided that will generate trace output for specific LCPs.

To activate debugging for one or more LCPs, use the Delete/Debug LCP panel (see Figure 33 on page 72).

An example of the OTHERWISE LCP trace is shown in Figure 41.
The columns of this listing are described below.

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -   SAMPLE RUN                    04/13/98 12:15:24       PAGE    1
         1
*CONVER:OTHERWISE            *TEXT:REPLACE OTHERWISE BY ELSE                                      *DATE:041398
12915
 2                            3    4     5
                              LCP  LCP     ID
TOKEN-TEXT                    STMT OPCODE  FILE    *... ... 1 ... ... 2 ...  ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7

OTHERWISE                        3 IFEQA
OTHERWISE                        4 IFEQA
OTHERWISE                        6 IFEQA
OTHERWISE                        8 MOVE
OTHERWISE                        9 RP
                                       CHANGE  002210086     04ELSE                          01  Y
                                       CHANGE  002210085                                         Y
OTHERWISE                       10 MOVE
OTHERWISE                       11 EDMSG
                                       CHANGE  002210083     00OTHERWISE  REPLACED BY ELSE          YABJ602100
OTHERWISE                       12 GOTO
```

Figure 41. Trace of OTHERWISE LCP execution

1 LCP Name
The name of the LCP that is currently in control. This is the program name or LCP-identifier provided on the CONVER statement of the LCP.

2 TOKEN-TEXT
The value of the token currently being processed.

3 LCP Statement Number
The LCP statement number of the LCP being executed. This can be matched to the statement numbers from the compilation listing for the LCP.

4 LCP OP Code
The instruction code of the LCP function associated with the LCP statement number being executed. See Appendix F, "List of LCP functions," on page 187.

5 Logical File and Record
This identifies the record and the record used by the LCP instruction being executed.

The result of OTHERWISE LCP execution is shown in Figure 42.

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -       SAMPLE RUN                   PIR025A           04/13/98 12:15:53  PAGE  7
0SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN OLD/SQ S  MSGID SEV --- D I A G N O S T I C S --
0
 024000     MOVE ZERO TO TALLY                                                    017721
 *OLD**     EXAMINE FILE-A-RECORD TALLYING ALL ".".                      01772202 017722
 024100     INSPECT FILE-A-RECORD TALLYING TALLY FOR ALL ".".            01772202 017722   ABJ6019 00 EXAMINE REPLACED BY INSPECT
 024200     DISPLAY FILE-A-RECORD "  COUNT OF " TALLY.                   01772300 017723
 024300     IF (TALLY = 3)                                               01772402 017724
 024400       AND (FILE-A-RECORD = ".B.D.F")                             01772502 017725
 024500         THEN DISPLAY "    TST-504-A2 WAS SUCCESSFUL"             01772602 017726
 *OLD**        OTHERWISE MOVE "Y" TO CONVERSION-ERROR-SWITCH             01772702 017727
 024600        ELSE MOVE "Y" TO CONVERSION-ERROR-SWITCH                  01772702 017727   ABJ6021 00 OTHERWISE REPLACED BY ELSE
 024700          DISPLAY "    TST-504-A2 WAS UNSUCCESSFUL".              01772802 017728
 024800     DISPLAY " END TEST PIR-025-A SUCCESSFUL RUN ".               01772902 017729
 *OLD**     STOP RUN.                                                    01773002 017730
 024900     STOP RUN.                                                    01773002          ABJ6126 99 *--------------------------*
 025000 END PROGRAM PIR025A.                                                      017730              *  END OF COBOL CONVERSION *
                                                                                                      * 5648-B05 COBOL CONVERSION*
                                                                                                      *--------------------------*
```

Figure 42. Section of the Diagnostic listing showing result of OTHERWISE conversion

Processing differences between tokens and elements

The following section explains the differences that exist between the processing of tokens and elements. Differences exist in the way they are tokenized and how they are retrieved from the TOKEN data set. The differences are shown through the use of an LCP and a sample COBOL program.

Figure 43 on page 112 shows the LCP TKNTEST.

When TKNTEST is invoked, it uses the GET-NEXT-ELEMENT and GET-NEXT-TOKEN functions. These two functions show the difference in the way tokens and elements are treated by functions that retrieve records from the TOKEN data set.

```
 5648-B05 V2R1         - IBM COBOL CONVERSION AID -   SAMPLE RUN                           04/14/98 12:40:36

  STMT SEQNBR  A 1 B.. ... 2 ... ...    LCP SOURCE STATEMENTS  ... 6 ... ... 7

          *****************************************************************
          *                                                               *
   1      *    CONVERA  TKNTEST 'SHOW DIFFERENCE BETWEEN TOKEN AND ELEMENT'*
          *****************************************************************
          *    TO SHOW THE DIFFERENCES BETWEEN PROCESSING ELEMENTS AND     *
          *    TOKENS, THIS LCP WILL:                                     *
          *     1. SAVE THE CURRENT TOKEN/ELEMENT POSITION                *
          *     2. READ 20 ELEMENTS                                       *
          *     3. REPOSITION TO THE SAVED POSITION                       *
          *     4. READ 20 TOKENS                                         *
          *     5. REPOSITION TO THE SAVED POSITION                       *
          *     6. EXIT                                                   *
          *****************************************************************

   2          05  SAVE-POINTER       PIC 9(7).
   3       SHOW-USAGE.
   4          MOVE TOKEN-POINTER  TO SAVE-POINTER.
   5          PERFORM GET-NEXT-ELEMENT 10 TIMES.
   6          PERFORM GET-NEXT-ELEMENT 10 TIMES.
   7          MOVE SAVE-POINTER   TO TOKEN-POINTER.
   8          PERFORM GET-TOKEN.
   9          PERFORM GET-NEXT-TOKEN 10 TIMES.
  10          PERFORM GET-NEXT-TOKEN 10 TIMES.
  11          MOVE SAVE-POINTER   TO TOKEN-POINTER.
  12          GO TO END-CHANGE.
       TEXT DESCRIPTION -       SHOW DIFFERENCE BETWEEN TOKEN AND ELEMENT
       LCP PROGRAM NAME -       TKNTEST
       TABLE DRIVEN CORE SIZE -    385
```

Figure 43. TKNTEST LCP compilation listing

Figure 44 shows the COBOL program SAMPLPRG which is written to show the differences that exist between the processing of tokens and elements.

In the program, the word TKNTEST is used to show how tokenization affects the invoking of LCPs. The program also provides examples of the two types of element.

```
 IDENTIFICATION DIVISION.
 PROGRAM-ID.  SAMPLPRG.
 DATE-WRITTEN. 05/05/1998
     Uses the LCP TKNTEST to show the difference between  1
     TOKENS and ELEMENTS.

 ENVIRONMENT DIVISION.
 SKIP2
 DATA DIVISION.
 FILE SECTION.
 WORKING-STORAGE SECTION.
 77  PRG-NAME           PIC X(10)   VALUE 'SAMPLPRG'.
 77  TKNTEST            PIC X(10).   2
 77  PRG-NAME1          PIC X(10)   VALUE SPACES.
 COPY TSTMEMBR  REPLACING TEMP-FLD BY TKNTEST. 3
 EJECT
 PROCEDURE DIVISION.
*  comments are not tokenized
 START-HERE.
     IF PRG-NAME1       = SPACES
         MOVE PRG-NAME  TO PRG-NAME1.
     DISPLAY 'TEST COMPLETE '.
     STOP RUN.
```

Figure 44. Source of program to be converted

The word TKNTEST occurs three times in the program SAMPLPRG:

1 In a comment paragraph

2 In a data item description entry

3 in a COBOL COPY statement

As you will see, not all occurrences of the word TKNTEST result in the LCP TKNTEST being invoked.

Figure 45 is the tokenized source of the program SAMPLPRG and shows token and element tokenization.

```
                                                                       SEQ-NO/POS/LNGTH/TYPE/CODE/FLAG
IDENTIFICATION DIVISION.
IDENTIFICATION ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000010 01 014 W 990  01
               DIVISION :::::::::::::::::::::::::::::::::::::::::::::::::  000010 16 008 W 990
                       . ::::::::::::::::::::::::::::::::::::::::::::::::  000010 24 001   000
PROGRAM-ID.  SAMPLPRG.
PROGRAM-ID ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000020 01 010 W 990  01
          . :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000020 11 001   000
             SAMPLPRG :::::::::::::::::::::::::::::::::::::::::::::::::::  000020 14 008 W 000
                     . ::::::::::::::::::::::::::::::::::::::::::::::::::  000020 22 001   000
DATE-WRITTEN. 05/05/1998                                                                            1
DATE-WRITTEN ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000030 01 012 W 856  01
  :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000030 13 053 * 000
    Uses the LCP TKNTEST to show the difference between                                             1
  :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000040 01 065 * 000
    TOKENS and ELEMENTS.                                                                            1
  :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000050 01 065 * 000

ENVIRONMENT DIVISION.
ENVIRONMENT :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000070 01 011 W 990  01
            DIVISION ::::::::::::::::::::::::::::::::::::::::::::::::::::  000070 13 008 W 990
                    . :::::::::::::::::::::::::::::::::::::::::::::::::::  000070 21 001   000
SKIP2                                                                                               2
DATA DIVISION.
DATA ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000090 01 004 W 999  21
     DIVISION :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000090 06 008 W 990
             . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000090 14 001   000
FILE SECTION.
FILE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000100 01 004 W 999  01
     SECTION ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000100 06 007 W 990
            . :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000100 13 001   000
WORKING-STORAGE SECTION.
WORKING-STORAGE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000110 01 015 W 990  01
                SECTION :::::::::::::::::::::::::::::::::::::::::::::::::  000110 17 007 W 990
                       . ::::::::::::::::::::::::::::::::::::::::::::::::  000110 24 001   000
77  PRG-NAME           PIC X(10)   VALUE 'SAMPLPRG'.
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000120 01 002 N 990
    PRG-NAME ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000120 05 008 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000120 24 003 P 990  02
                           X(10) ::::::::::::::::::::::::::::::::::::::::  000120 28 005 P 000
                                   VALUE ::::::::::::::::::::::::::::::::  000120 36 005 W 990  02
                                         'SAMPLPRG' :::::::::::::::::::::  000120 42 010 L 864  00
                                                   . ::::::::::::::::::::  000120 52 001   000
77  TKNTEST            PIC X(10).
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000130 01 002 N 990
    TKNTEST :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000130 05 007 W 000      3
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000130 24 003 P 990  02
                           X(10) ::::::::::::::::::::::::::::::::::::::::  000130 28 005 P 000
                                . :::::::::::::::::::::::::::::::::::::::  000130 33 001   000
77  PRG-NAME1          PIC X(10)   VALUE SPACES.
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000140 01 002 N 990
    PRG-NAME1 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000140 05 009 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000140 24 003 P 990  02
                           X(10) ::::::::::::::::::::::::::::::::::::::::  000140 28 005 P 000
                                   VALUE ::::::::::::::::::::::::::::::::  000140 36 005 W 990  02
                                         SPACES :::::::::::::::::::::::::  000140 42 006 W 999
                                               . ::::::::::::::::::::::::  000140 48 001   000
```

Figure 45. Tokenization of the COBOL source program containing tokens and elements (Part 1 of 2)

```
                                                                              SEQ-NO/POS/LNGTH/TYPE/CODE/FLAG
       COPY TSTMEMBR  REPLACING TEMP-FLD BY TKNTEST.                                                       4
       COPY :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000150 01 004 C 995  03  4
            TSTMEMBR ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000150 06 008 C 000      4
                      REPLACING :::::::::::::::::::::::::::::::::::::::::::::::::  000150 16 009 C 000      4
                                TEMP-FLD ::::::::::::::::::::::::::::::::::::::::  000150 26 008 C 000      4
                                         BY :::::::::::::::::::::::::::::::::::::  000150 35 002 C 000      4
                                            TKNTEST :::::::::::::::::::::::::::::  000150 38 007 C 000      4
                                                   . ::::::::::::::::::::::::::::  000150 45 001 C 000      4
       EJECT                                                                                               2
       PROCEDURE DIVISION.
       PROCEDURE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000170 01 009 W 990  01
                 DIVISION :::::::::::::::::::::::::::::::::::::::::::::::::::::::  000170 11 008 W 990
                         . ::::::::::::::::::::::::::::::::::::::::::::::::::::::  000170 19 001   000
*        comments are not tokenized                                                                        5
       START-HERE.
       START-HERE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000190 01 010 W 860  01
                 . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000190 11 001   000
           IF PRG-NAME1       = SPACES
           IF :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000200 05 002 W 999  03
              PRG-NAME1 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000200 08 009 W 000
                              = :::::::::::::::::::::::::::::::::::::::::::::::::  000200 24 001 W 997  00
               MOVE PRG-NAME  TO PRG-NAME1.
                                SPACES ::::::::::::::::::::::::::::::::::::::::::  000200 26 006 W 999
               MOVE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000210 09 004 W 851  03
                    PRG-NAME ::::::::::::::::::::::::::::::::::::::::::::::::::::  000210 14 008 W 000
                              TO ::::::::::::::::::::::::::::::::::::::::::::::::  000210 24 002 W 999
                                 PRG-NAME1 ::::::::::::::::::::::::::::::::::::::  000210 27 009 W 000
                                          . :::::::::::::::::::::::::::::::::::::  000210 36 001   000
           DISPLAY 'TEST COMPLETE '.
           DISPLAY ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000220 05 007 W 990  23
                   'TEST COMPLETE ' :::::::::::::::::::::::::::::::::::::::::::::  000220 13 016 L 864  00
                                   . ::::::::::::::::::::::::::::::::::::::::::::  000220 29 001   000
           STOP RUN.
           STOP :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000230 05 004 W 990  03
                RUN :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000230 10 003 W 999
                   . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000230 13 001   000
```

Figure 46. Tokenization of the COBOL source program containing tokens and elements (Part 2 of 2)

1 The comment paragraph line is treated as a single element. If the conversion option *Remove obsolete elements* (see “Setting conversion options” on page 19) is set to Y, these lines are commented out.

2 SKIP*n* and EJECT compiler directives are not tokenized.

3 Example of a token.

4 The COPY statement is analyzed into elements.

5 Comment lines are not tokenized.

Once tokenized, tokens and elements are identified by their TOKEN-TYPE-CODE value. See Appendix F, “List of LCP functions,” on page 187.

During conversion the LCP TKNTEST will be invoked by:

3 The token TKNTEST contained in the data item definition

The LCP is **not** invoked by:

1 The TKNTEST in the comment paragraph.

4 The TKNTEST in the COPY statement.

Figure 47 on page 115 shows the trace of LCP TKNTEST generated during the conversion of the program SAMPLPRG.

```
                               LCP  LCP     ID
CODE-
TOKEN-TEXT                     STMT OPCODE  FILE    *... ... 1 ... ... 2 ... .... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7

TKNTEST                           4 MOVE   1
TKNTEST                           5 GTNXE
                                            TOKEN   00013024003P990 02PIC                          YP
PIC                               5 GTNXE
                                            TOKEN   00013028005P000 00x(10)                        YP
x(10)                             5 GTNXE
                                            TOKEN   00013033001 000 00.                            NP
.                                 5 GTNXE
                                            TOKEN   00014001002N000 0077                           NP
77                                5 GTNXE
                                            TOKEN   00014005009W000 00PRG-NAME1                    YP
PRG-NAME1                         5 GTNXE
                                            TOKEN   00014024003P990 02PIC                          YP
PIC                               5 GTNXE
                                            TOKEN   00014028005P000 00x(10)                        YP
x(10)                             5 GTNXE
                                            TOKEN   00014036005W990 02VALUE                        YP
VALUE                             5 GTNXE
                                            TOKEN   00014042006W000 00SPACES                       YP
SPACES                            5 GTNXE
                                            TOKEN   00014048001 000 00.                            NP
.                                 6 GTNXE
                                            TOKEN   00015001004C995 03COPY                         NP   2
COPY                              6 GTNXE
                                            TOKEN   00015006008C000 00TSTMEMBR                     YP   2
TSTMEMBR                          6 GTNXE
                                            TOKEN   00015016009C999 02REPLACING                    YP   2
REPLACING                         6 GTNXE
                                            TOKEN   00015026008C000 00TEMP-FLD                     YP   2
TEMP-FLD                          6 GTNXE
                                            TOKEN   00015035002C000 00BY                           YP   2
BY                                6 GTNXE
                                            TOKEN   00015038007C990   TKNTEST                      YP   2
TKNTEST                           6 GTNXE
                                            TOKEN   00015045001C000 00.                            NP   2
.                                 6 GTNXE
                                            TOKEN   00016001002N990   01                           NC
01                                6 GTNXE
                                            TOKEN   00016005009W000 00TEMP-LINE                    YC
TEMP-LINE                         6 GTNXE
                                            TOKEN   00016014001 000 00.                            NC
.                                 7 MOVE
.                                 8 GTTKN  3
                                            TOKEN   00013005007W990   TKNTEST                      YP
TKNTEST                           9 GTNXT
                                            TOKEN   00013024003P990 02PIC                          YP
PIC                               9 GTNXT
                                            TOKEN   00013028005P000 00x(10)                        YP
x(10)                             9 GTNXT
                                            TOKEN   00013033001 000 00.                            NP
.                                 9 GTNXT
                                            TOKEN   00014001002N000 0077                           NP

77                                9 GTNXT
                                            TOKEN   00014005009W000 00PRG-NAME1                    YP
PRG-NAME1                         9 GTNXT
                                            TOKEN   00014024003P990 02PIC                          YP
PIC                               9 GTNXT
                                            TOKEN   00014028005P000 00x(10)                        YP
x(10)                             9 GTNXT
                                            TOKEN   00014036005W990 02VALUE                        YP
VALUE                             9 GTNXT
                                            TOKEN   00014042006W000 00SPACES                       YP
SPACES                            9 GTNXT
                                            TOKEN   00014048001 000 00.                            NP
```

Figure 47. Trace of TKNTEST LCP execution (Part 1 of 2)

```
                              LCP  LCP     ID
CODE-
TOKEN-TEXT                    STMT OPCODE  FILE    *... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7

.                               10 GTNXT   4
                                           TOKEN   00015001004C995 03COPY                          NP     5
                                           TOKEN   00015006008C000 00TSTMEMBR                      YP     5
                                           TOKEN   00015016009C999 02REPLACING                     YP     5
                                           TOKEN   00015026008C000 00TEMP-FLD                      YP     5
                                           TOKEN   00015035002C000 00BY                            YP     5
                                           TOKEN   00015038007C990   TKNTEST                       YP     5
                                           TOKEN   00015045001C000 00.                             NP     5
                                           TOKEN   00016001002N990   01                            NC
01                              10 GTNXT
                                           TOKEN   00016005009W000 00TEMP-LINE                     YC
TEMP-LINE                       10 GTNXT
                                           TOKEN   00016014001 000 00.                             NC
.                               10 GTNXT
                                           TOKEN   00017005002N000 0005                            YC
05                              10 GTNXT
                                           TOKEN   00017009006W000 00FILLER                        YC
FILLER                          10 GTNXT
                                           TOKEN   00017033003P990 02PIC                           YC
PIC                             10 GTNXT
                                           TOKEN   00017037005P000 00X(30)                         YC
X(30)                           10 GTNXT
                                           TOKEN   00017042001 000 00.                             NC
.                               10 GTNXT
                                           TOKEN   00018005002N000 0005                            YC
05                              10 GTNXT
                                           TOKEN   00018009008W000 00TEMP-FLD                      YC
TEMP-FLD                        11 MOVE
TEMP-FLD                        12 GOTO
```

Figure 48. Trace of TKNTEST LCP execution (Part 2 of 2)

Items of interest in the trace listing:

1 Entry into LCP
The first invocation of the LCP. Triggered by the token TKNTEST in the data item definition.

2 COBOL COPY elements
The elements of the COPY statement are retrieved by the GET-NEXT-ELEMENT function.

3 Reposition TOKEN data set
Repositioning of the TOKEN data set after performing the function GET-NEXT-ELEMENT 20 times. This is done to be able to show the difference when the same TOKEN data set records are read using the function GET-NEXT-TOKEN.

4 GET-NEXT-TOKEN
GET-NEXT-TOKEN function called to retrieve the next TOKEN.

5 COBOL COPY elements
The elements that constitute the COPY statement are bypassed by the GET-NEXT-TOKEN function.

Appendix A. Converted COBOL language elements

Table 6 describes the language elements converted, flagged, or removed by CCCA.

The columns of this table are described below.

Language element
The language element in the input source program.

Conversion status
The status of the language element after the program is converted by CCCA:

C	Converted
R	Removed
F	Flagged
I	Information

Language level
The source language level(s) for which the conversion and/or flagging is performed:

1	DOS/VS COBOL—LANGLVL(1) (COBOL 68 Standard)
2	DOS/VS COBOL—LANGLVL(2) (COBOL 74 Standard)
3	OS/VS COBOL—LANGLVL(1) (COBOL 68 Standard)
4	OS/VS COBOL—LANGLVL(2) (COBOL 74 Standard)
5	VS COBOL II (COBOL 74 Standard) Release 1.0, Release 1.1, or Release 2.0 (or any COBOL with the CMPR2 option)
6	VS COBOL II—NOCMPR2 (COBOL 85 Standard) Release 3.0, Release 3.1, or Release 3.2
7	VS COBOL II—NOCMPR2 (COBOL 85 Standard) Release 4.0
8	COBOL/370—NOCMPR2 (COBOL 85 Standard)
9	COBOL for VSE/ESA—NOCMPR2 (COBOL 85 Standard)
10	COBOL for MVS & VM—NOCMPR2 (COBOL 85 Standard)
11	COBOL for OS/390 & VM—NOCMPR2 (COBOL 85 Standard)
12	Enterprise COBOL (prior to Version 5)

Table 6. Language elements converted to specified target language

Language element	Conversion status	Language level	Notes
ACCEPT MESSAGE COUNT statement Communication feature	F	3,4	This is a Communication statement. The Communication module is not supported by the target languages and there is nothing with which it can be replaced.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
ACTUAL KEY clause	C F	1-4	The ACTUAL KEY clause is replaced by the RELATIVE KEY clause. The clause is used for BDAM files. You should convert the file to which the clause refers, to VSAM/RRDS. If the new file organization is not relative (ORGANIZATION clause), the RELATIVE clause is flagged as being incompatible with the new file organization.
ALPHABET clause	C	1-5	The keyword ALPHABET is added in front of the alphabet name within the ALPHABET clause of the SPECIAL-NAMES paragraph.
ALPHABETIC class	C	1-5	ALPHABETIC is changed to ALPHABETIC-UPPER.
APPLY CORE-INDEX clause	R	1-4	This is an ISAM file handling clause. The clause is removed from the I-O-CONTROL paragraph.
APPLY CYL-INDEX clause	R	1,2	The clause is removed from the I-O-CONTROL paragraph.
APPLY CYL-OVERFLOW clause	R	1,2	The clause is removed from the I-O-CONTROL paragraph.
APPLY EXTENDED-SEARCH clause	R	1,2	The clause is removed from the I-O-CONTROL paragraph.
APPLY MASTER-INDEX clause	R	1,2	The clause is removed from the I-O-CONTROL paragraph.
APPLY RECORD-OVERFLOW clause	R	3,4	The clause is removed from the I-O-CONTROL paragraph.
APPLY REORG-CRITERIA clause	R	3,4	This is an ISAM file handling clause. The clause is removed from the I-O-CONTROL paragraph.
APPLY WRITE-VERIFY clause	R	1,2	The clause is removed from the I-O-CONTROL paragraph.

Table 6. Language elements converted to specified target language (continued)

Language element	Con ver sion status	Lang uage level	Notes

ASSIGN clause organization parameter	C F	1-4	The assignment name is modified under the following conditions:
			• If the target language level is 2 (COBOL for VSE/ESA) and the device type is "UR", the assignment name is set to the system logical device (SYS*nnn*). For example,
			`SYSnnn-UR-device-S-<NAME>`
			is changed to
			`SYSnnn`
			• If the device class is not "UR" and the external file name is missing (only applies to DOS/VS programs), then the system logical device (SYS*nnn*) is added as the external file name. For example,
			`SYSnnn-UT-device-C-<-nn>`
			is changed to
			`SYSnnn-UT-device-C-<-nn>-SYSnnn`
			
			Files that have an organizational parameter equal to D, W, A, U, or R should be converted to VSAM/RRDS. An ORGANIZATION IS RELATIVE clause and a FILE STATUS IS LCP-STATUS-nn clause is added to the SELECT entries.
			
			Files that have an organizational parameter equal to I should be converted to VSAM/KSDS. An ORGANIZATION IS INDEXED clause and a FILE STATUS IS LCP-STATUS-*nn* clause is added to the SELECT entries.
			
			When the target language is COBOL for VSE/ESA, if the file is a tape device and both the programmer logical device (SYSnnn) and an external file name are included in the file assignment name, CCCA displays message ABJ6027.

ASSIGN integer system-name	C	1-4	The integer is removed from the clause.
ASSIGN...OR	C	1-4	The OR is removed.
AUTHOR paragraph	C	1-11	If you specify Y for the Remove obsolete elements option on Conversion Options panel 2, the AUTHOR paragraph in the Identification Division is commented out.
BDAM files	C F	1-4	The target languages do not support the processing of BDAM files. You should convert BDAM files into VSAM/RRDS files. CCCA converts the file definitions but you must add the key algorithms manually. See also in this table the other BDAM file processing language elements: ACTUAL KEY clause. APPLY RECORD-OVERFLOW clause. SEEK statement. TRACK-LIMIT clause.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
BLANK WHEN ZERO clause	R	1-4	If the data description entry has a BLANK WHEN ZERO clause and a PICTURE string with an * (zero suppression) symbol in it, the BLANK WHEN ZERO clause is removed.
BLOCK CONTAINS clause	R	1-11	The concept of blocking has no meaning for VSAM files. If you specify Y for the Remove obsolete elements option on Conversion Options panel 2, the clause will be removed from VSAM file descriptions.
CALL statement	C	1,2	If the program-name in the CALL statement is not enclosed in quotation marks or apostrophes, then quotation marks (if the literal delimiter is the quotation mark) or apostrophes (if the literal delimiter is the apostrophe) are placed around the program-name.
CALL identifier statement	F	3-5	The statement is flagged if the identifier has a PICTURE string consisting of A's and B's only. The COBOL 74 Standard classes these fields as alphabetic, whilst the COBOL 85 Standard classes them as alphanumeric-edited. You will have to make a change to the program as alphanumeric-edited identifiers are not permitted in the CALL statement.
CALL...ON OVERFLOW statement	F	1-5	Under the COBOL 85 Standard the ON OVERFLOW phrase executes under more conditions than it does under the COBOL 68 and COBOL 74 Standards.
	F	1-7	The ON OVERFLOW phrase in a DOS/VS COBOL, OS/VS COBOL or VS COBOL II program is not invoked, if the program is running under CICS. When an overflow condition occurs in a COBOL/VSE program running under CICS, the ON OVERFLOW phrase will be invoked, if it is specified. The statement is flagged if the target language is not VS COBOL II.
CALL...ON EXCEPTION statement	F	6,7	The ON EXCEPTION phrase in a VS COBOL II program is not invoked, if the program is running under CICS. When an exception condition occurs in a COBOL/VSE program running under CICS, the ON EXCEPTION phrase will be invoked, if it is specified. The statement is flagged if the target language is not VS COBOL II.
CALL...USING statement	F	1-4	If identifiers following USING are VSAM file names then the statement is flagged. If identifiers following USING are procedure names and the Check procedure names option on Conversion Options panel 2 is set to Y, then the statement is flagged.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
CANCEL statement	F	3-5	The statement is flagged if there is an identifier in the statement with a PICTURE string consisting of A's and B's only. The COBOL 74 Standard classes these fields as alphabetic, whilst the COBOL 85 standard classes them as alphanumeric-edited. You will have to make a change to the program as alphanumeric-edited identifiers are not permitted in the CANCEL statement.
CBL statement	C F	1-4	The following options are obsolete and are replaced with new compile options: BUF, CLIST, DMAP, CATALR, LINECNT, LOAD, PMAP, SYST, SYSx, STATE, SYNTAX, CSYNTAX, SUPMAP, SXREF, VBSUM.
	R F	1-4	The following options are removed: BATCH, COUNT, ENDJOB, FLOW, LANGLVL1/2, SYMDMP, CDECK, FDECK, LCOL1/2, LSTONLY, LSTCOMP, L120, L132, OSDECK. The following option is removed if the target language is not COBOL II: RESIDENT.
	C F	5-7	The following option is replaced if the target language is not COBOL II: FDUMP.
	R F	5-7	The following option is removed if the target language is not COBOL II: RESIDENT.
		5-11	All compiler options that the target language does not support are removed from the statement and, where possible, are replaced with the target language equivalents.
CLOSE...WITH DISP CLOSE...WITH POSITIONING statements	R	3,4	The WITH DISP phrase and the WITH POSITIONING phrase are removed.
CLOSE...REEL/UNIT FOR REMOVAL statement	F	3,4	CLOSE...REEL/UNIT FOR REMOVAL statements are flagged because in the target languages the FOR REMOVAL option is treated as a comment.
COM-REG special register	F	1,2	The COM-REG special register is not supported by the target languages. You should remove all references to it from the program.
COMMUNICATION SECTION	F	3,4	The Communication module is not supported by the target languages and there is nothing with which it can be replaced. See also in this table the other Communication module language elements: ACCEPT MESSAGE COUNT statement. DISABLE statement. ENABLE statement. RECEIVE statement. SEND statement.

Table 6. Language elements converted to specified target language (continued)

Language element	Con ver sion status	Lang uage level	Notes
CONFIGURATION SECTION header	C F	1-4	The CONFIGURATION SECTION header is added, if it is missing and a SOURCE-COMPUTER, an OBJECT-COMPUTER, or a SPECIAL-NAMES paragraph is present. If the CONFIGURATION SECTION header is coded out of sequence, then attempts are made to put it in its correct place. If this cannot be done, then the CONFIGURATION SECTION header is flagged.

COPY statement	C	1,3	COPY statements with associated names are not supported by the target languages.
			
			The following example shows how these COPY statements are converted:
			`01 RECORD1 COPY MBR-A.`
			
			Copy member (MBR-A) before and after conversion:
			`01 RECORD-A.`
			`   05 FIELD-A...`
			`   05 FIELD-B...`
			
			Statement after conversion:
			`01 RECORD1`
			`   COPY MBR-A REPLACING`
			`   ==01 RECORD-A.== BY ==    ==.`

		1-5	Under the COBOL 68 and COBOL 74 Standard, National extension characters @, # and $ are allowed in the text-name and library-name. The COBOL 85 Standard allows these characters in the text-name and library-name, if they are in the form of a nonnumeric literal. If the text-name or library-name contains these National characters and is not in the form of a numeric literal, CCCA encloses the name in quotation marks or apostrophes.

Table 6. Language elements converted to specified target language (continued)

Language element	Con ver sion status	Lang uage level	Notes
COPY...REPLACING statement	F	1-5	If there are lowercase alphabetic characters in operands of the REPLACING phrase, that are not in nonnumeric literals, the statement is flagged. Under the COBOL 68 and COBOL 74 standards the REPLACING phrase is case sensitive. Under the COBOL 85 standard, lowercase characters are treated as their uppercase equivalent. You should check to see if this change will result in different text being copied into your program. If the operands of the REPLACING phrase contain a colon (:) character, that is not in a nonnumeric literal, the statement is flagged. Under the COBOL 68 and COBOL 74 Standards the colon (:) is a non-COBOL character. Under the COBOL 85 Standard the colon character is treated as a separator. You should check to see if this change will result in different text being copied into your program. If the operands of the REPLACING phrase contain an COBOL 85 Standard non-COBOL character that is not in a nonnumeric literal, the statement is flagged. Under the COBOL 68 and COBOL 74 Standards non-COBOL characters are permitted in the REPLACING option. Under the COBOL 85 standard non-COBOL characters in the REPLACING phrase are diagnosed. You should remove all non-COBOL characters from the REPLACING phrase and from the copy book.
CURRENCY SIGN clause	F	1,3	The target languages do not accept the / (slash) character or the = (equal) character in the CURRENCY SIGN clause.
CURRENT-DATE special register	C	1-4	The CURRENT-DATE register is not supported by the target languages. Wherever CURRENT-DATE is referenced in the program, it is replaced by code that obtains the date from the system and puts it in the format of the CURRENT-DATE register. The fields required for the reformatting are generated in the WORKING-STORAGE section. For CICS programs converting to VS COBOL II, the date is retrieved from the system using an EXEC CICS ASKTIME statement. (CICS Release 1.7 or later is required.) For non-CICS programs converting to VS COBOL II, the ACCEPT...FROM DATE statement is used to obtain the date. For programs converting to a non-VS COBOL II level, the Intrinsic Function CURRENT-DATE is used to obtain the date. The fields required for reformatting are generated in the WORKING-STORAGE SECTION. For DOS/VS COBOL, there are two different formats for the CURRENT-DATE register. You must specify in the VSE system date format field on Conversion Options panel 1, the date format that is used at your installation. If you specify the wrong one CCCA will not convert this language element correctly.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
DATA RECORDS clause	R	1-11	If you specify Y for the Remove obsolete elements option on Conversion Options panel 2, the DATA RECORDS clause is removed from the FD entry. The word RECORDS is added if missing when the clause is not removed.
DATE COMPILED/ DATE WRITTEN headers	C	1-4	If the hyphen after DATE is missing, it is added.
DATE-COMPILED/ DATE-WRITTEN paragraphs	C	1-11	If you specify Y for the Remove obsolete elements option on Conversion Options panel 2, these paragraphs in the Identification Division are commented out.
DATE-COMPILED header	C	1-4	If you specify N for the Remove obsolete elements option on Conversion Options panel 2 and there is no period after the header, a period is added.
DEBUG card and packet	R	1-4	These are commented out.
DISABLE statement Communication feature	F	3,4	This is a Communication statement. The Communication module is not supported by the target languages and there is nothing with which it can be replaced.
DIVIDE...ON SIZE ERROR statement	F	1-5	DIVIDE...ON SIZE ERROR statements with multiple receiving fields are flagged because the ON SIZE ERROR phrase will not be executed for intermediate results under the COBOL 85 Standard.
ENABLE statement Communication feature	F	3,4	This is a Communication statement. The Communication module is not supported by the target languages and there is nothing with which it can be replaced.
ENTER statement	R	1-11	If you specify Y for the Remove obsolete elements option on Conversion Options panel 2, the ENTER statement is removed.
ERROR declaratives	C	1-4	An ERROR declarative SECTION is generated for each file that is to be converted to VSAM, as long as there does not exist a global file declarative (such as INPUT, OUTPUT, I-O, EXTEND) or a declarative for the file in question. The code in the SECTION includes a DISPLAY of the returned file status and a GOBACK.
ERROR declaratives GIVING option	R I	1-4	The GIVING option is removed from the program.
EXAMINE	C	1-4	The EXAMINE statement is replaced by an INSPECT statement and the statement MOVE ZERO TO TALLY is added in front of it.
EXHIBIT statement	C	1-4	The EXHIBIT statement is replaced by a DISPLAY statement.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
EXIT PROGRAM statement GOBACK statement STOP RUN statement	C	1-5	Under the COBOL 85 Standard, control can not flow beyond the last line of a called subprogram. The compiler generates an implicit EXIT PROGRAM at the end of each program. Under the COBOL 68 and COBOL 74 Standard control can flow beyond the last line of a called program. When this happens the program ABENDs. The COBOL 68 and COBOL 74 Standard behavior can be preserved under the COBOL 85 Standard by adding, at the end of the program, a section with a call to an abend module. If you specify Y for the Negate implicit EXIT PROGRAM option on Conversion Options panel 2, and EXIT PROGRAM, STOP RUN, or GOBACK is not the last physical statement in the program, a section will be added to the end of the program. If the program being converted is a batch program, the section will include a CALL to one of the following modules: • ILBOABN0—if you are converting to VS/COBOL II • CEE5ABD—if you are converting to COBOL for VSE/ESA • CEE3ABD—if you are converting to COBOL for MVS & VM or COBOL for OS/390 & VM If the program being converted is a CICS program, the section will include an `EXEC CICS ABEND('CCCA')` statement.
FILE-LIMIT/ FILE-LIMITS clauses	R	1-4	The clause is removed from the FILE-CONTROL paragraph.
FILE STATUS clause	C	1-4	A FILE STATUS clause: `FILE-STATUS IS LCP-FILE-STATUS-nn` is added to the FILE-CONTROL paragraph for each file that is to be converted to VSAM. The status key data item LCP-FILE-STATUS-nn referred to in the clause is added to the WORKING-STORAGE section. nn is a sequence number.
FILE STATUS codes	F	1-5	The file status codes returned under the COBOL 85 Standard are different from those returned under the COBOL 68 and COBOL 74 Standard. You should check all references to the file status key in the program and update the values of the file status codes where it is required.
GOBACK statement	C	1-5	See the EXIT PROGRAM statement entry in this table.
GREATER THEN relational operator	C	1-4	THEN is changed to THAN.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes

IF statement	C F	1-4	Brackets immediately prior to relational operators are moved, but you should inspect the conversion.
			
			For example:
			`IF A (= B)`
			
			is converted to:
			`IF (A = B)`
			
			The target languages do not accept the following statements:
			`IF dataname ZEROS...`
			`IF dataname ZEROES...`
			
			They are converted to:
			`IF dataname zero...`
			
			Superfluous IFs are removed.

Indexes (qualified)	F	3,4	Qualified indexes are no longer permitted. Any reference to one will be flagged.
INITIALIZE...REPLACING ALPHABETIC/ ALPHANUMERIC-EDITED statement	F	5	The statement is flagged if there are receiving fields with PICTURE strings that consist of A's and B's only. The COBOL 74 Standard classes these fields as alphabetic, whilst the COBOL 85 Standard classes them as alphanumeric-edited. In most cases you will have to change this statement if you want it to exhibit the same behavior as before.
INSPECT statement	F	3-5	The statement is flagged if the PROGRAM COLLATING SEQUENCE established in the OBJECT COMPUTER paragraph identifies an alphabet that was defined with the ALSO clause. Under these circumstances the statement will behave differently under the COBOL 85 Standard.
INSTALLATION paragraph	C	1-11	If you specify Y for the Remove obsolete elements option on Conversion Options panel 2, the INSTALLATION paragraph in the Identification Division is commented out.
ISAM files	C	1-4	The target languages do not support the processing of ISAM files. You should convert ISAM files into VSAM/KSDS files. CCCA will convert the file definition and I/O statements for ISAM files. See also in this table the other ISAM file processing language elements: APPLY CORE-INDEX clause. APPLY REORG-CRITERIA clause NOMINAL KEY clause. TRACK AREA clause. START...USING KEY statement

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
JUSTIFIED JUST RIGHT JUSTIFIED RIGHT clause	C F	1,3	Under the COBOL 68 Standard, if a JUSTIFIED clause is specified together with a VALUE clause for a data description entry, the initial data is right justified. Under the COBOL 85 Standard the initial data is not right justified. To preserve the COBOL 68 Standard behavior of this language element, CCCA makes the following conversion. If the length of the nonnumeric literal in the VALUE clause is less than the length of the field as specified in the PICTURE clause, spaces are added to the front of the literal string until there lengths are equal. The clause will be flagged, instead of converted, if the literal has more than 28 characters.
LABEL RECORDS clause	R	1-11	If you specify Y for the Remove obsolete elements option on the Optional Processing Panel, this clause is removed. The word RECORDS is added, if missing, when the clause is not removed.
LABEL RECORDS... TOTALING/TOTALED AREA option	R I	1-4	This option is removed from the program. The data-name associated with this option is listed at the end of the diagnostic listing.
LESS THEN relational operator	C	1-4	THEN is changed to THAN.
Literals - Nonnumeric	C F	1-4	If the continuation of a nonnumeric literal begins in Area A, it is shifted to the right until its whole length lies within Area B. If the continuation is too long to fit in Area B, it is flagged. If the continuation does not start with a delimiter, then one is added.
MEMORY SIZE clause	R	1-11	If you specify Y for the Remove obsolete elements option on Conversion Options panel 2, the MEMORY SIZE clause of the OBJECT-COMPUTER paragraph is removed.
MOVE statement	R	1-4	Superfluous TOs are removed.
MOVE ALL literal	F	1,3	MOVE ALL literal TO numeric will be flagged with a warning.
MOVE CORR/ CORRESPONDING statement	C	1-4	The target languages do not allow multiple receiving fields in the MOVE CORRESPONDING statement. If the statement has multiple receiving fields, it is replaced by separate MOVE CORRESPONDING statements for each of the receiving fields.
FOR MULTIPLE REEL/UNIT clause	R	1-4	The clause is removed from the program.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
MULTIPLE FILE TAPE clause	R	1-11	If you specify Y for the Remove obsolete elements option on Conversion Options panel 2, this clause is removed from the I-O-CONTROL paragraph.
MULTIPLY...ON SIZE ERROR statement	F	1-5	MULTIPLY...ON SIZE ERROR statements with multiple receiving fields are flagged because the ON SIZE ERROR phrase will not be executed for intermediate results under the COBOL 85 Standard.

NOMINAL KEY clause	C R	1-4	You should convert this file to VSAM.
			
			If the new organization for the file is INDEXED the NOMINAL KEY clause is removed. Before every I/O statement for these file, the following statement is added prior to the I/O statement:
			`MOVE nominal-key-name TO record-key-name`
			
			After the I/O statement, the statement
			`MOVE record-key-name TO nominal-key-name`
			
			If the new organization for the file is RELATIVE NOMINAL KEY is replaced by RELATIVE KEY.

NOT	C F	1,3	**C**: NOT in an abbreviated combined relation will be changed into an unabbreviated relation condition. **F**: If more than one NOT is involved, the expression is flagged. You will have to update the expression manually.
NOTE statement	C	1-4	The NOTE statement is used to write comments in the source program. It is not supported by the target languages. CCCA fully converts this statement by commenting it out. If the NOTE sentence is the first sentence of a paragraph, an asterisk is placed in column 7 of each line in the paragraph. If the Note sentence is not the first sentence of the paragraph, an asterisk is placed in column 7 of all lines up to the first period. If other language elements, not part of the NOTE statement, are on the first or last line of the NOTE statement, the line is split in order to isolate the NOTE.
NSTD-REELS special register	F	1,2	The NSTD-REELS special register is not supported in the target languages. You should remove all references to it from the program.
OCCURS clause	C	1-4	OS/VS COBOL and DOS/VS COBOL allow a non-standard order for phrases in the OCCURS clause. They allow the DEPENDING ON phrase after or among the ASCENDING/DESCENDING phrases. They also allow the DEPENDING ON phrase after the INDEXED BY phrase. The target languages only allow phrases in the standard order. Phrases in the OCCURS clause are put in the standard order.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes

OCCURS DEPENDING ON clause (variable length record)	C	1-5	COBOL statements that result in data transfer to a variable length receiver that contains its own OCCURS DEPENDING ON (ODO) object behave differently under the COBOL 85 Standard.
			
			Under the COBOL 68 and COBOL 74 Standards all ODO objects in sending and receiving fields must be set before the statement is executed. The actual lengths of the sender and receiver are calculated just before the execution of the data movement statement.
			
			Under the COBOL 85 Standard, in some circumstances, the maximum length of the variable length group is used when it is a receiver, whereas the COBOL 68 and COBOL 74 Standard always use the actual length.
			
			CCCA preserves the COBOL 68 and COBOL 74 behavior in the following way.
			
			For the following statements
			• MOVE...TO identifier
			• READ...INTO identifier
			• RETURN...INTO identifier
			• UNSTRING...INTO identifier DELIMITER IN identifier
			
			If the identifier is a variable length data item that contains its own ODO object, then reference modification is added to it.
			
			For example:
			`MOVE...TO identifier`
			
			is changed to
			`MOVE...TO identifier (1:LENGTH OF identifier)`
			
			For the following statements
			• RELEASE record-name FROM identifier
			• REWRITE record-name FROM identifier
			• WRITE record-name FROM identifier
			
			if the identifier is a variable length data item that contains its own ODO object, the FROM phrase is removed from the statement and a MOVE statement with reference modification is added before the statement:
			
			For example,
			`WRITE record-name FROM identifier`
			
			is changed to
			`MOVE identifier TO record-name (1:LENGTH OF record-name)`
			`WRITE record-name`
			
			MOVE CORRESPONDING statements are flagged as reference modification is not allowed when the CORRESPONDING phrase is specified.

Table 6. Language elements converted to specified target language (continued)

Language element	Con ver sion status	Lang uage level	Notes

OCCURS DEPENDING ON clause (reference modification)	C	6	VS COBOL II Release 3 (COBOL 85 Standard) and the target languages differ in the length used for the data transfer of a reference modified variable length group receiver that contains its own OCCURS DEPENDING ON (ODO) object. If no length is specified in the reference modifier, VS COBOL II Release 3 uses the current length of the group as defined by the ODO object.
			
			The target languages use the maximum length of the ODO object regardless of the value in the ODO.
			
			To preserve the behavior of this language element, the converter inserts the length of the receiver into the receiver. For example:
			`MOVE ODO-SENDER TO ODO-RECEIVER (1:)`
			
			where ODO-RECEIVER is a variable length field that contains its own ODO object is converted to:
			`MOVE ODO-SENDER TO ODO-RECEIVER (1:LENGTH OF RECEIVER)`

ON statement	C F	1-4	The ON statement is not supported by the target languages.
			
			The statement:
			`ON integer`
			`   imperative statement`
			
			is converted to:
			`ADD 1 TO LCP-ONCTR-nn`
			`IF LCP-ONCTR-nn = integer`
			`   imperative statement`
			
			The statement:
			`ON integer-1 until integer-2`
			`   imperative statement`
			
			is converted to:
			`ADD 1 TO LCP-ONCTR-nn`
			`IF LCP-ONCTR-nn > (integer-1 - 1) & < integer-2`
			`   imperative statement`
			
			A data item with the dataname LCP-ONCTR-nn (where nn is a sequence number) is added into the WORKING-STORAGE section with an initial value of zero.
			
			More complex ON statements are flagged.

OPEN...DISP OPEN...LEAVE OPEN...REREAD statements	C	3,4	The DISP option, LEAVE option and REREAD option are removed.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
OPEN...REVERSED statement	F	3,4	You should check whether the file in the OPEN statement has multiple reels. If it does, you will have to make a change to the program, because for the target languages this option is only valid for single reel files. OS/VS COBOL handles single reel files and in an undocumented extension multireel files.
ORGANIZATION clause	C	1-4	For VSAM files, this clause is removed.
OTHERWISE	C	1-4	OTHERWISE is replaced by ELSE.
PERFORM/ALTER	F	1-4	The section is checked for a priority number less than 49 and for the presence of ALTER. If this is not the case, manual changes may be required if this independent section is performed from outside the section.
PERFORM...VARYING... AFTER statement	F	1-5	Under the COBOL 85 Standard the rules for augmenting variables have changed. If there are dependencies between variables of the statement, then the statement may behave differently PERFORM...VARYING...AFTER statements are flagged if the conversion process detects a possible dependency. You should check to see if there are any dependencies between the variables of the statement that will result in different behavior. If there are you should modify the statement.
Periods	C	1-4	If there is no period immediately before or immediately after paragraph names or section headers in the PROCEDURE DIVISION, one is inserted.
PICTURE clause scaled integers	F I	1,3	Scaled integers (that is, data items that have a P as the rightmost symbol in their PICTURE strings) are flagged. If the scaled integer is the sending field in a MOVE statement and the receiving field is alphanumeric or numeric edited, you will have to convert this statement. If the scaled integer is compared with an alphanumeric or numeric edited field, you will have to convert this statement.
	F	2,4,5	Scaled integers are flagged. If the scaled integer is compared with a nonnumeric field, you will have to convert this statement.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
PROCESS statement	C F	1-4	The following options are obsolete and are replaced with new compile options: BUF, CLIST, DMAP, CATALR, LINECNT, LOAD, PMAP, SYST, SYSx, STATE, SYNTAX, CSYNTAX, SUPMAP, SXREF, VBSUM.
	R F	1-4	The following options are removed: BATCH, COUNT, ENDJOB, FLOW, LANGLVL1/2, SYMDMP, CDECK, FDECK, LCOL1/2, LSTONLY, LSTCOMP, L120, L132, OSDECK. The following option is removed if the target language is not COBOL II: RESIDENT.
	C F	5-7	The following option is replaced if the target language is not COBOL II: FDUMP.
	R F	5-7	The following option is removed if the target language is not COBOL II: RESIDENT.
		5-11	All compiler options that the target language does not support are removed from the statement and, where possible, are replaced with the target language equivalents.
PROCESSING MODE clause	R	1-4	The PROCESSING MODE clause is removed.
Program name	C	1-4	The target languages do not allow a data item to have a data-name that is the same as the program name. If there is one in the program, the dataname will be suffixed, in the same manner as datanames that are reserved words.
PROGRAM-ID header	C	1-4	If the PROGRAM-ID header begins in Area B, it is moved to the left so that it begins in Area A.

READ statement ISAM files	C	1-4	For randomly accessed indexed (ISAM) files, the following statement is added prior to the READ statement:
			`MOVE nominal-key-name TO record-key-name`
			
			After the READ statement, the statement
			`MOVE record-key-name TO nominal-key-name`
			
			is added.
			
			You should convert the file to VSAM.

READY TRACE statement	R	1-4	The statement is removed.
RECEIVE statement Communication feature	F	3,4	This is a Communication statement. The Communication module is not supported by the target languages and there is nothing with which it can be replaced.
RECORD CONTAINS	R	1-11	The clause is removed from the program, except for RECORD CONTAINS 0, which is left in place.
RECORDING MODE clause	R	1-11	The target language compilers ignore this clause, if it is specified for a VSAM file. If the clause is in a file description entry for a VSAM file or a file that is to be converted to VSAM, it is removed.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
REDEFINES clause in FD or SD entry	C	1-4	The target languages do not permit REDEFINES clauses in FD or SD entries. As they are superfluous, they are removed.
Picture P in RELATIVE KEY	F	1-5	This is flagged.
REMARKS paragraph	C	1-4	This is converted to comments with an asterisk (*) inserted in column 7 of the paragraph header and all succeeding lines of the paragraph.
REPLACE statement	F	6	The REPLACE statement is flagged because blank lines and comment lines in text that match pseudo-text are treated differently in the target languages. This could affect the semantics of the resulting program since the line numbers could be different. (For example if the program uses the USE FOR DEBUGGING declarative, the contents of the DEBUG-ITEM may be different). You should check that the semantics of the program is not altered.
REPORT SECTION & REPORT WRITER statements	F	1-4	These statements are not supported by the target languages: GENERATE INITIATE REPORT TERMINATE USE BEFORE REPORTING If you specify Y for the Flag Report Writer Statements option on Conversion Options panel 2, they will be flagged. If you want to keep these statements, you will require the COBOL Report Writer Pre-compiler.
RESERVE ALTERNATE AREAS	C	1-4	The following changes are performed: from `RESERVE NO/n ALTERNATE AREA/AREAS.` to `RESERVE 1/n + 1 AREA/AREAS.`
RESERVE AREAS	C	1-4	The following changes are performed: from `ANS68 RESERVE n AREA/AREAS.` to `ANS74 RESERVE n+1 AREA/AREAS.`
Reserved word	C	1-9	A suffix is appended to all user defined words that are reserved words in the target language. You specify the suffix that you want appended in the Reserved word suffix field of the Conversion Parameters Panel. -74 is the default suffix.
RESET TRACE statement	R	1-4	The statement is removed.

Table 6. Language elements converted to specified target language (continued)

Language element	Con ver sion status	Lang uage level	Notes
REWRITE statement ISAM files	C	1-4	For randomly accessed indexed (ISAM) files, the following statement is added prior to the REWRITE statement: `MOVE nominal-key-name TO record-key-name` After the REWRITE statement, the statement `MOVE record-key-name TO nominal-key-name` is added. You should convert the file to VSAM.
SAME AREA clause	C	1-4	SAME AREA is changed to SAME RECORD AREA.
SEARCH ALL	F	1,3	The statement is flagged.
SEARCH...WHEN	C	1-4	In DOS/VS COBOL and OS/VS COBOL the ASCENDING/ DESCENDING KEY data item may be specified as either the subject or the object of the WHEN relation condition. In the target languages it must be specified as the subject. If the key is not the subject, the condition is reversed, so that the subject becomes the object. NEXT SENTENCE is added if no statement is found.
SECURITY paragraph	C	1-11	If you specify Y for the Remove obsolete elements option on Conversion Options panel 2, the SECURITY paragraph in the Identification Division is commented out.
SEEK	R	1-4	This is a BDAM file handling statement. The statement is removed from the program.
SELECT OPTIONAL	R	1,3	The OPTIONAL phrase is removed from the program.
SEND statement Communication feature	F	3,4	This is a Communication statement. The Communication module is not supported by the target languages and there is nothing with which it can be replaced.
SET...TO TRUE statement	F	5	Under the COBOL 74 Standard, the SET...TO TRUE statement is performed according to the rules of the MOVE statement. Under the COBOL 85 Standard, SET...TO TRUE follows the rules of the VALUE clause. There are three instances in which different behavior arises: • when the conditional variable is described by a JUSTIFIED clause and the condition name value is not justified. • when the conditional variable is described by a BLANK WHEN ZERO clause and the condition name value is zero. • when the conditional variable has editing symbols in its PICTURE string. CCCA will flag all occurrences of such condition names when they appear in a SET...TO TRUE statement.
SORT-OPTION clause	R	1,2	The clause is removed from the SD entry.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
START...USING KEY statement	C	1-4	The USING KEY clause of the START statement is not supported by the target languages. START statements that specify this clause are converted to START...KEY statements.
STOP RUN statement	C	1-5	See the EXIT PROGRAM statement entry in this table.
STRING statement	F	3-5	The statement is flagged if it has a receiving field with a PICTURE string that consist of A's and B's only. The COBOL 74 Standard classes these fields as alphabetic, whilst the COBOL 85 Standard classes them as alphanumeric-edited. You will have to make a change to the program as alphanumeric-edited receiving fields in the STRING statement are not permitted.
	F	3-5	The statement is flagged if the PROGRAM COLLATING SEQUENCE established in the OBJECT COMPUTER paragraph identifies an alphabet that was defined with the ALSO clause. Under these circumstances the statement will behave differently under the COBOL 85 Standard.

	F	3,4	String statements:
			`STRING identifier-1 DELIMITED BY identifier-2`
			`  INTO identifier-3 WITH POINTER identifier-4...`
			
			where identifier-1 or identifier-2 is the same as identifier-3 or identifier-4 or where identifier-3 is the same as identifier-4 are flagged.

> THAN relational operator	C	1-4	THAN is removed.
< THAN relational operator	C	1-4	THAN is removed.
> THEN relational operator	C	1-4	THEN is removed.
< THEN relational operator	C	1-4	THEN is removed.
THEN	R	1-4	THEN used between statements is removed.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
TIME-OF-DAY special register	C	1-4	The TIME-OF-DAY register is not supported by the target languages. Wherever TIME-OF-DAY is referenced in the program, it is replaced by code that obtains the time from the system and puts it in the format of the TIME-OF-DAY register. The fields required for the reformatting are generated in the WORKING-STORAGE section. For CICS programs converting to VS COBOL II, the time is retrieved from the system using an EXEC CICS ASKTIME statement. (CICS Release 1.7 or later is required.) For non-CICS programs converting to VS COBOL II, the ACCEPT...FROM TIME statement is used to obtain the time. For programs converting to a non-VS COBOL II level, the Intrinsic Function CURRENT-DATE is used to obtain the time. The fields required for reformatting are generated in the WORKING-STORAGE SECTION.
= TO relational operator	C	1-4	TO is removed.
TOTALING/ TOTALED AREA	R I	3,4	This option is removed from the program. The data-name associated with this option is listed at the end of the diagnostic listing.
TRACE	R	1-4	The clause is removed from the program.
TRACK-AREA	R	1-4	The clause is removed from the program.
TRACK-LIMIT clause	R	3,4	The clause is removed from the program.

Table 6. Language elements converted to specified target language (continued)

Language element	Conversion status	Language level	Notes
TRANSFORM statement	C F	1-4	CCCA converts a TRANSFORM to an INSPECT statement when a TRANSFORM statement is converting: • From a figurative constant to another figurative constant • From a figurative constant to a nonnumeric literal • From a figurative constant to the value of an identifier • From a nonnumeric literal to a figurative constant • From the value of an identifier to a figurative constant • From the value of one identifier to the value of another CCCA may convert a TRANSFORM to an INSPECT statement when a TRANSFORM statement is converting: • A nonnumeric literal to another nonnumeric literal: – The "from" and the "to" literals must be the same size. If they are not, it is assumed the "to" literal is a single character. – If the "from" literal is 28 characters or less, the TRANSFORM is converted to an INSPECT statement. – If the "from" literal is more than 28 characters in length, manual intervention is required due to an internal limitation within CCCA. • the value of an identifier to a nonnumeric literal: – The "to" literal must be longer than a single character. If this is the case, it is assumed the literal is the same size as the identifier and conversion to the INSPECT statement occurs. – If the literal is a single character, manual intervention is required as CCCA cannot determine if this matches the size of the "from" identifier. Manual intervention is required whenever a TRANSFORM statement is converting a nonnumeric literal to the value of an identifier. CCCA flags any INSPECT statements which it is unable to convert to INSPECT statements.
UNSTRING statement	F	1,3	The UNSTRING statement is flagged if an ALL is specified in the DELIMITED BY phrase and the DELIMITER IN phrase is also specified.
	C	1-4	Insert the word OR between identifiers in the DELIMITED BY phrase if it is missing and remove any commas or semicolons. Remove the word IS if it appears in the POINTER phrase.
	F	1-4	The UNSTRING statement is flagged if subscripted data items are found following the DELIMITED BY/INTO/DELIMITER IN/ COUNT IN phrases.
	F	3-5	The statement is flagged if the PROGRAM COLLATING SEQUENCE established in the OBJECT COMPUTER paragraph identifies an alphabet that was defined with the ALSO clause. Under these circumstances the statement will behave differently under the COBOL 85 Standard.

Table 6. Language elements converted to specified target language (continued)

Language element	Con ver sion status	Lang uage level	Notes

UPSI name	C F	1-5	Condition names are added. `UPSI-n` is replaced by `condition-name`. For example:
			`LCP-ON-UPSI-n`
			
			and
			`LCP-OFF-UPSI-n`
			
			Where n is a number from 0 to 7.
			Note: When the target language is COBOL/VSE, CCCA generates a warning message to highlight the need to possibly alter the program's JCL.

USE Procedures (precedences of)	F	6	In VS COBOL II Release 3, a GLOBAL file specific USE procedure always takes precedence even if an applicable mode specific USE procedure exists in the current program or if a mode specific USE procedure with the GLOBAL attribute in an outer program is nearer than the (GLOBAL) file-specific procedure. CCCA will flag all GLOBAL file-specific USE procedures. Mode-specific declaratives in contained programs will now take precedence. You should check the consequences of this.
USE AFTER STANDARD .. ON .. GIVING	R I	1-4	The GIVING option is removed from the program. A list of affected data-names is printed in the conversion listing.
| USE ... AFTER ... LABEL PROCEDURE ...	R	1-4	Removed if the target language 5 is selected.
USE BEFORE STANDARD	R	1-4	USE BEFORE STANDARD is removed from the program.
USE FOR DEBUGGING	F	1-4	If an identifier following DEBUGGING is a file name, then the statement is flagged. If an identifier following DEBUGGING is not a procedure name and the Check procedure names option on Conversion Options panel 2 is set to Y, then the statement is flagged.
VALUE in 88 level	C	1-4	If the value of a level 88 refers to a variable defined with a PICTURE X and the value is not enclosed between quotes or apostrophes, quotes or apostrophes will be added.
VALUE in non-88 level	C	1-4	If the data item PICTURE string is numeric and the contents of the VALUE literal is also numeric, then the VALUE literal is changed to a numeric literal. That is, the quotes or apostrophes are removed.
Signed VALUE	C	1-4	The sign is removed from the value if PIC is unsigned.
VALUES	C	1-4	If not used in 88 level, VALUES is changed to VALUE.

Table 6. Language elements converted to specified target language (continued)

Language element	Con ver sion status	Lang uage level	Notes
VALUE OF clause	R	1-11	If you specify Y for the Remove obsolete elements option on Conversion Options panel 2, the VALUE OF clause is removed from the FD entry.
WHEN-COMPILED	C	1,2	Programs converting to VS COBOL II with a date format of DD/MM/YY obtain the date and time from the WHEN-COMPILED special register.
	C	3,4	Programs converting to VS COBOL II obtain the date and time from the WHEN-COMPILED special register. Note that the original format of the WHEN-COMPILED special register included a 4-digit year. The century value is not available from the current special register and, if required, must be manually added to the converted source program.
	C	1-4	Programs converting to a non-VS COBOL II target level obtain the date and time information from the Intrinsic Function WHEN-COMPILED. The fields required for reformatting are generated in the WORKING-STORAGE SECTION.

WRITE statement ISAM files	C	1-4	For randomly accessed indexed (ISAM) files, the following statement is added prior to the WRITE statement:
			`MOVE nominal-key-name TO record-key-name`
			
			After the WRITE statement, the statement
			`MOVE record-key-name TO nominal-key-name`
			
			is added.
			
			You should convert the file to VSAM.

WRITE...BEFORE/AFTER ADVANCING mnemonic-name LINE/LINES	C	1-4	The target languages do not accept LINE or LINES in this statement. They are removed.
WRITE ... AFTER POSITIONING n lines	C	1-4	If n is a literal, this is changed to `WRITE ... AFTER ADVANCING n LINES`. If n is an identifier, SPECIAL-NAMES are generated and a section is added at the end of the program. **Note:** When compiling the converted program with the target language compiler, use the NOADV option. If POSITIONING and ADVANCING are used in the old program, you should review the ADV option.

Appendix B. Converted CICS commands

CCCA converts CICS Command Level statements from the syntax of the source language level to the target language level.

The Base Locator for Linkage sections (BLLs) are classified as either primary or secondary. Primary BLLs are associated with the portion of the record that is equal to or less than 4Kb (4096 bytes), and secondary BLLS correspond to record portions greater than 4Kb (4096 bytes).

Linkage section

If the CICS option on the Conversion (Selection) panel (see Figure 12 on page 28), is set to Y, the BLL definitions are removed. If the entire BLL structure is redefined, the redefined structure is removed. If the BLLs are not defined with a length of 4 bytes, the CICS conversion cannot be performed.

Note: If the level 01 of the BLL structure is FILLER, the BLL definitions are not removed from the Linkage Section, but all of the references to BLLs in the Procedure Division are processed.

Working-Storage Section

If needed by the conversion of statements involving primary BLLs, the following code is generated in the Working-Storage Section for use with the POINTER facility.

```
77   LCP-WS-ADDR-COMP PIC S9(8) COMP.
77   LCP-WS-ADDR-PNTR REDEFINES LCP-WS-ADDR-COMP USAGE POINTER.
```

Table 7 on page 142 identifies statements that deal with primary BLLs.

Table 7. Converted CICS commands

Element	Conversion status	Notes

ADD	C	These primary BLL references are changed to ADDRESS OF special registers and POINTER facilities. For example:
		• `ADD ID1, ... TO BLL`
		is changed to
		`SET LCP-WS-ADDR-PNTR TO ADDRESS OF REC`
		`ADD ID1, ... TO LCP-WS-ADDR-COMP`
		`SET ADDRESS OF REC TO LCP-WS-ADDR-PNTR`
		• `ADD BLL TO ID1, ID2`
		is changed to
		`SET LCP-WS-ADDR-PNTR TO ADDRESS OF REC`
		`ADD LCP-WS-ADDR-COMP TO ID1, ID2`
		• `ADD ID1, ID2 GIVING BLL`
		is changed to
		`ADD ID1, ID2 GIVING LCP-WS-ADDR-COMP`
		`SET ADDRESS OF REC TO LCP-WS-ADDR-PNTR`
		• `ADD ID1, BLL1 GIVING BLL2 BLL3`
		is changed to
		`SET LCP-WS-ADDR-PNTR TO ADDRESS OF REC1`
		`ADD ID1, LCP-WS-ADDR-COMP GIVING LCP-WS-ADDR-COMP`
		`SET ADDRESS OF REC2 TO LCP-WS-ADDR-PNTR`
		`SET ADDRESS OF REC3 TO LCP-WS-ADDR-PNTR`
		• `ADD ID1, BLL1 GIVING ID2 ID3`
		is changed to
		`SET LCP-WS-ADDR-PNTR TO ADDRESS OF REC1`
		`ADD ID1, LCP-WS-ADDR-COMP GIVING ID2 ID3`

COMPUTE	C	The primary BLL references are changed to ADDRESS OF special register and POINTER facilities. For example:
		• `COMPUTE BLL = exp (BLL)`
		is changed to
		`SET LCP-WS-ADDR-PNTR TO ADDRESS OF REC COMPUTE LCP-WS-ADDR-COMP = EXP (LCP-WS-ADDR-COMP)`
		• `COMPUTE ID = exp (BLL)`
		is changed to
		`SET LCP-WS-ADDR-PNTR TO ADDRESS OF REC COMPUTE ID = exp (LCP-WS-ADDR-COMP)`
		• `COMPUTE BLL = exp (BLL)`
		is changed to
		`COMPUTE LCP-WS-ADDR-COMP = exp (BLL)`

Table 7. Converted CICS commands (continued)

Element	Conversion status	Notes
END-EXEC	F	An error message is generated if an EXEC CICS statement does not finish with an END-EXEC statement.
EXEC CICS used with SET option	C	The primary BLLs are replaced by corresponding ADDRESS OF special register. For example: `EXEC CICS READ ... SET(BLL1)...` is replaced by `EXEC CICS READ ... SET(ADDRESS OF REC1)...` The statements affected are: GETMAIN, READ, READNEXT, READPREV, READQ, RECEIVE, RETRIEVE, SEND CONTROL, SEND PAGE, SEND TEXT, LOAD, CONVERSE, ISSUE RECEIVE, and POST.
EXEC CICS used with CICS ADDRESS statements	C	The primary BLL is replaced by corresponding ADDRESS OF special register. The options affected are CSA, CWA, EIB, TCTUA, and TWA. For example: `EXEC CICS ADDRESS TWA(BLL)` is replaced by `EXEC CICS ADDRESS TWA(ADDRESS OF TWA).`
MOVE	C	The primary BLL references are changed to ADDRESS OF special register and POINTER facility. For example: • `MOVE BLL1 TO BLL2` is changed to `SET ADDRESS OF REC2 TO ADDRESS OF REC1` • `MOVE ID TO BLL` is changed to `MOVE ID TO LCP-WS-ADDR-COMP` `SET ADDRESS OF REC TO LCP-WS-ADDR-PNTR` • `MOVE BLL TO ID` is changed to `SET LCP-WS-ADDR-PNTR TO ADDRESS OF REC` `MOVE LCP-WS-ADDR-COMP TO ID`
SERVICE RELOAD	C	SERVICE RELOAD is replaced by CONTINUE.
SUBTRACT	C	The primary BLL references are changed to ADDRESS OF special register and POINTER facility. This conversion is the same as the conversion for ADD.
C=Converted R=Removed F=Flagged I=Information		

Note: For secondary BLLs, LCP892 replaces any statement associated with these BLLS by CONTINUE. For example: `ADD 4096 TO BLL` is replaced by CONTINUE.

Appendix C. Messages

There are four categories of ABJ*nnnn* messages:

0000-0100
Converter error messages

1002-3999,
9001
LCP compiler error messages

4000-5999
Tokenization diagnostics

6000-6999
Conversion diagnostics from the supplied LCPs

Note: Your LCPs should use message numbers outside these ranges.

Converter error messages

ABJ0000 00
`PROCESSING &1`

ABJ0012 16
`ADD MEMBER &1 FAILED IN FILE &2.&3`

ABJ0014 16
`RESERVED WORD TABLE NOT FOUND`

ABJ0015 16
`TABLE FILE NOT CREATED`

ABJ0020 16
`FILE FULL &1.&2`

The referenced file has to be redefined with more space.

ABJ0021 16
`SOURCE OR COPY OUTPUT LIBRARY FULL`

ABJ0022 16
`INVALID KEY FOR FILE DRWORK OR FILE DRWORK FULL`

ABJ0023 16
`INVALID FILE/RECORD NAME OR DRWORK FULL`

ABJ0025 16
`OPTION RECORD MISSING IN CONTROL FILE`

ABJ0026 16
`SOURCE FILE EMPTY - MEMBER &1`

ABJ0027 16
`NO TOKEN FILE GENERATED FROM PHASE 1`

ABJ0029 16
`ERRORS OCCURRED DURING PREVIOUS CONVERSION`

ABJ0030 16
`PROGRAM &1 NOT CONVERTED`

ABJ0031 16
`SEQUENCE ERROR DURING EXECUTION OF PHASE 3`

ABJ0040 16
`TERMINAL ERROR FOUND DURING CONVERSION OF &1`

ABJ0041 16
`INVALID READ OF TOKEN FILE`

This message occurs when an LCP is checking the syntax of a COBOL statement. This message is followed by message LCP0046, that indicates which LCP issues the message and on which statement. Report these 2 messages to your support organization.

ABJ0042 16
`INVALID READ OF &1 FILE - KEY &2 - RC &3`

ABJ0043 16
`INVALID UPDATE OF &1. FILE - KEY &2 - RC &3`

ABJ0044 16
`INVALID ADD-TEXT LENGTH - MUST BE GREATER THAN ZERO`

ABJ0045 16
`INVALID TOKEN LENGTH - TOKEN SEQUENCE IS &1 - ADD-TEXT IS &2`

ABJ0046 16
`LCP PROGRAM IS &1 - STATEMENT NUMBER IS &2`

ABJ0047 16
`INVALID RECORD NAME`

ABJ0048 16
`TOKEN SEQUENCE IS &1 - RECORD NAME IS &2 - RC &3`

ABJ0064 16
`NO INFORMATION FOR THIS LCP`

ABJ0070 16
`READ/WRITE ERROR ON FILE &2 FILE STATUS IS &1`

ABJ0071 16
`WRITE ERROR ON FILE &2 FILE STATUS IS &1`

ABJ0072 16
`READ ERROR ON FILE &2 FILE STATUS IS &1`

ABJ0073 16
`OPEN ERROR ON FILE &2 FILE STATUS IS &1`

ABJ0074 16
`I/O ERROR ON FILE SOURCE FILE STATUS IS &1`

ABJ0075 16
`INVALID KEY IN CONTROL FILE`

ABJ0076 16
`NO MAP PRODUCED`

When CICS option is set to Y (YES), the Linkage Section of the program is compiled. If no map is produced by the compiler, no conversion is performed.

ABJ0077 16
```
ERROR WHILE COMPILING LINKAGE SECTION - CHECK ERRORS WITHIN LINKAGE
SECTION
```

When CICS option is set to Y (YES), the Linkage Section of the program is compiled. If there are compilation errors, they are listed. The CICS commands are not converted.

ABJ0078 16
`PROGRAM NOT CONVERTED`

ABJ0079 12
`CICS STATEMENTS NOT CONVERTED`

ABJ0080 12
`BLLS DEFINED IN LINKAGE SECT BUT NO RECORD DEFINED IN LINKAGE SECTION`

When CICS option is set to Y (YES), the Linkage Section of the program is compiled. BLLs are defined but no records are defined. CICS statements are not converted.

ABJ0081 08
`MORE THAN 200 REDEFINED BLLS IN LINKAGE SECTION - REDEFINED BLLS NOT FLAGGED`

More than 200 BLLs are redefined. The program is not converted.

ABJ0082 16
`BLL LENGTH NOT = 4 UNABLE TO PROCESS`

A BLL is defined and the length is not four bytes. The program is not converted.

ABJ0083 16
`MORE THAN 200 BLLS DEFINED IN LINKAGE SECTION`

More than 200 BLLs are defined in Linkage Section. The program is not converted. This is a limit of the converter.

ABJ0084 16
`PICTURE IS NOT 0CLX OR X..C`

A picture of a BLL is not 9(4) or X(4). The program is not converted.

ABJ0085 12
`NO BLLS DEFINED IN LINKAGE SECTION`

There is a Linkage Section, but no BLLs are defined. The CICS statements are not converted.

ABJ0090 16
`XXX ERROR - FILE=XXX - FILE STATUS =` *`nn`* `<KEY=XXXXXX>`

Note: The meaning of the file status is given in the *IBM COBOL Programming Guide Release 2* for your platform.

ABJ0092 16
`ERROR WRITING COPY MEMBER &1 - DDNAME &2 - RC = &3`

RC = 8
WRITE I/O Error

RC = 32
RECORD length different from 80

RC = 48
OPEN Error.

ABJ0093 16
`STOW ERROR COPY MEMBER &1 - DDNAME &2 - RC = &3`

RC = 4
STOW (without R) for member already in the library

RC = 12
File not opened.

Note: Parameters &1, &2, &3, and &4 are replaced by the correct values once the message is printed.

LCP compiler error messages

ABJ1002 08
`NAME OR LITERAL EXCEEDS 30 CHARACTERS`

ABJ1003 08
`MORE THAN 10 WORDS SPECIFIED ON THE SAME LINE`

ABJ2001 08
`DATA NAME OR PARAGRAPH NAME IS A RESERVED WORD`

ABJ2004 08
`INVALID SYNTAX IN DATA NAME OR PARAGRAPH NAME`

ABJ2005 08
`INVALID SYNTAX IN *CONVER`

ABJ2006 08
`INVALID DATA NAME OR RESERVED WORD`

ABJ2007 08
`PERIOD OR SPACE NOT FOUND`

ABJ2008 08
`INVALID PARAGRAPH NAME IN 'PERFORM' STATEMENT`

ABJ2009 08
`ELEMENT NOT IN AREA B`

ABJ2010 08
`DUPLICATE PARAGRAPH NAME`

ABJ2011 08
`TOO MANY PARAGRAPH NAMES IN PROGRAM - MAXIMUM PARAGRAPH NAMES IS 100`

ABJ2012 08
`NO PARAGRAPH NAME BEFORE FIRST LCP STATEMENT`

ABJ2013 08
`INVALID STATEMENT`

ABJ2014 08
`INVALID STATEMENT AFTER PERIOD`

ABJ2015 08
`PERIOD REQUIRED OR SYNTAX ERROR`

ABJ2016 08
`INVALID DATA NAME OR LITERAL`

ABJ2017 08
`DUPLICATE DATA NAME`

ABJ2018 08
`TOO MANY DATA NAMES - MAXIMUM 50 PER LCP PROGRAM`

ABJ2019 08
`NO PICTURE CLAUSE FOR THIS DATA NAME`

ABJ2020 08
`INVALID PICTURE CLAUSE FOR THIS DATA NAME`

ABJ2021 08
`'AND' RELATION INVALID IN THIS CONTEXT`

ABJ2022 08
`PARAGRAPH NAME NOT IN AREA A`

ABJ2023 08
`FACTOR 1 MUST BE A DATA NAME`

ABJ2024 08
`INVALID LITERAL OR DATA NAME USED BUT NEVER DEFINED`

ABJ2025 08
`'UNTIL' OPTION INVALID IN THIS CONTEXT`

ABJ2026 08
`INVALID CONDITION IN IF, UNTIL, OR, AND STATEMENT`

ABJ2027 08
`INVALID CLASS OPERAND IN CONDITION STATEMENT`

ABJ2028 08
`INVALID WORD AFTER OPERAND 2 IN CONDITION`

ABJ2030 08
`INVALID SYNTAX IN MOVE, ADD, SUBTRACT STATEMENT`

ABJ2031 08
`FACTOR 2 MUST BE A DATA NAME`

ABJ2034 08
`'IF' STATEMENT INVALID IN THIS CONTEXT`

ABJ2035 08
`'OR' RELATION INVALID IN THIS CONTEXT`

ABJ2036 08
`'ELSE' IS UNMATCHED BY 'IF'`

ABJ2037 08
`PARAGRAPH NAME ALREADY DEFINED AS DATA NAME`

ABJ2038 08
`FACTORS 1, 2 MUST BE NUMERIC IN 'ADD' OR 'SUBTRACT' STATEMENT`

ABJ2039 08
`MOVE ALPHABETIC TO NUMERIC IS INVALID IN 'MOVE'`

ABJ2040 08
```
*CONVER MUST BE FIRST LCP STATEMENT - SYNTAX IS: * IN COLUMN 7,
CONVER OR CONVERQ IN COLUMN 12 TO 18
```

ABJ2044 08
`CORRECT *CONVER AND RETRY`

ABJ2045 08
`TERMINAL ERROR FOUND IN LCP PROGRAM &1`

ABJ3029 08
PARAGRAPH NAME USED BUT NEVER DEFINED

ABJ3032 08
LCP PROGRAM TOO BIG - MAXIMUM 18000 BYTES PER PROGRAM

ABJ3033 08
INVALID PARAGRAPH NAME 2 IN PERFORM STATEMENT

Tokenization diagnostics

ABJ4001 16
BLL REQUEST AND NO LINKAGE SECTION.

ABJ4002 16
BLL REQUEST AND NO PROCEDURE DIVISION.

ABJ4003 16
SYSTEM PARAMETERS COULD NOT BE SET.

ABJ4004 16
I/O ERROR OF BLL FILE.

ABJ4005 16
MLE FILE COULD NOT BE OPENED.

ABJ4006 16
PROGRAM ID &1 NOT IN MLE FILE.

ABJ4007 16
RSW TABLE EXPANSION EXCEEDED.

ABJ4008 16
UNEXPECTED END OF DATA ON INPUT PROGRAM SOURCE.

ABJ4009 16
AN I/O ERROR OCCURRED WHILE READING A COPY LIBRARY MEMBER.

ABJ4010 16
INSUFFICIENT STORAGE AVAILABLE BELOW THE 16M LINE.

ABJ4011 16
INSUFFICIENT STORAGE AVAILABLE FOR CCCA PROCESSING.

ABJ4012 16
OPEN FAILURE ON INPUT SOURCE FILE.

ABJ4013 16
NO INVOCATION OPTIONS SPECIFIED.

ABJ4014 16
INSUFFICIENT STORAGE AVAILABLE FOR CCCA PROCESSING.

ABJ4015 16
I/O ERROR ON DRWORK VSAM FILE.

ABJ4016 16
ERRORS IN DATE IDENTIFICATION FILE INPUT.   CONVERSION PROCESS TERMINATED.

ABJ4017 16
&1 DATASET COULD NOT BE OPENED.

ABJ4018 16
&1 DATASET I/O ERROR.

ABJ4019 16
`&1 DATASET COULD NOT BE CLOSED.`

ABJ4020 16
`CRITICAL DATASET COULD NOT BE CLOSED.`

ABJ4024 16
`AN ERROR OCCURRED WHILE ATTEMPTING TO LOAD MODULE &1.`

ABJ4025 16
`AN ERROR OCCURRED WHILE ATTEMPTING TO DELETE MODULE &1.`

ABJ4026 16
`LISTING HEADING OR LISTING ANNOTATION LINE(S) ID "&1" WAS NOT FOUND IN THE LISTING HEADER DATA FILE.`

ABJ4027 16
`AN ERROR OCCURRED DURING RETRIEVAL OF DATA FROM THE LISTING HEADER DATA FILE.`

ABJ4028 16
`A REQUEST WAS ISSUED TO EXPAND A STATIC TABLE.`

ABJ4029 16
`THERE WAS AN ATTEMPT TO PRIME A TABLE THAT WAS PREVIOUSLY PRIMED.`

ABJ4030 16
`THERE WAS AN ATTEMPT TO FREE A TABLE THAT WAS PREVIOUSLY FREED.`

ABJ4031 16
`LANGUAGE TABLE &&&&&&&& COULD NOT BE DYNAMICALLY LOADED.`

ABJ4032 16
`INSUFFICIENT STORAGE TO DYNAMICALLY LOAD LANGUAGE TABLE.`

ABJ5000 00
`DATE IDENTIFICATION FILE ERROR IN RECORD &1 COLUMN $$.`

ABJ5001 00
`UNEXPECTED DATA FOUND BEFORE PROGRAM NAME. SKIPPED TO THE NEXT PROGRAM NAME.`

ABJ5002 00
`UNEXPECTED DATA FOUND BEFORE LINE NUMBER. SKIPPED TO THE NEXT LINE NUMBER.`

ABJ5003 00
`RESERVED WORD "OF" USED IMPROPERLY.`

ABJ5004 00
`INVALID COBOL USER WORD IN DATA NAME.`

ABJ5005 00
`UNRECOGNIZED DATE FORMAT SPECIFICATION.`

ABJ5006 00
`UNEXPECTED DATA FOUND WHERE "OF" EXPECTED.`

Conversion diagnostics from LCPs

ABJ6000 08
`******* MANUAL UPDATE REQUIRED`

ABJ6001 00
`'THEN' IS REMOVED`

ABJ6002 00
`LCP-`*`xxx`*` DATE/TIME DATA ITEMS GENERATED IN WORKING-STORAGE FOR CURRENT-DATE/TIME-OF-DAY/WHEN-COMPILED CONVERSIONS`

ABJ6003 00
`NEW CODE GENERATED FOR CURRENT-DATE`

ABJ6004 08
`UNABLE TO SUCCESSFULLY CONVERT TRANSFORM TO INSPECT ******* MANUAL UPDATE REQUIRED`

ABJ6005 00
`NEW CODE GENERATED FOR TIME-OF-DAY`

ABJ6006 08
`DUPLICATE CHARACTERS FOUND IN "FROM" LITERAL ******* MANUAL UPDATE REQUIRED`

ABJ6007 00
`NEW CODE GENERATED FOR WHEN-COMPILED`

ABJ6008 04
`RELATIVE KEY DEFINED AS GROUP *MANUAL UPDATE MAY BE REQUIRED`

ABJ6009 00
`MULTIPLE MOVE CORRESPONDING CHANGED TO SEPARATE MOVES`

ABJ6010 00
`REDEFINES CLAUSE IN FD REMOVED`

ABJ6011 00
`REMARKS CHANGED TO COMMENT`

ABJ6012 00
`VALUE CLAUSE IS CHANGED`

ABJ6013 08
`DATA EXCEEDS 28 CHARACTERS DATA NOT RIGHT JUSTIFIED ******* MANUAL UPDATE REQUIRED`

ABJ6014 00
`COMBINED EXPRESSION IS CHANGED`

ABJ6015 04
`NEW CODE GENERATED FOR WHEN-COMPILED ** WARNING CENTURY VALUE NOT SET, MANUAL UPDATE MAYBE REQD`

ABJ6016 00
`HYPHEN ADDED TO DATE`

ABJ6017 00
`EJECT REPLACED BY /`

ABJ6018 00
`TALLY IS INITIALIZED`

ABJ6019 00
`EXAMINE REPLACED BY INSPECT`

ABJ6020 04
`MOVE ALL STATEMENT FOUND 68 STANDARD INTERPRETATION *MANUAL UPDATE MAY BE REQUIRED`

ABJ6021 00
`OTHERWISE REPLACED BY ELSE`

ABJ6022 00
NOTE CHANGED TO COMMENT

ABJ6023 08
CURRENCY SIGN CLAUSE FOUND ******* MANUAL UPDATE REQUIRED

ABJ6024 00
OPTIONAL IS REMOVED

ABJ6025 08
UNSTRING ... DEL. BY ALL FOUND 68 STANDARD INTERPRETATION ******* MANUAL UPDATE REQUIRED

ABJ6026 04
SCALED VARIABLE FOUND 68 STANDARD INTERPRETATION *MANUAL UPDATE MAY BE REQUIRED

ABJ6027 04
IF TAPE IS 'UNLABELLED', CHECK JCL FOR A MATCHING TLBL STATEMENT AND REMOVE

ABJ6028 04
UPSI SWITCHES MAY ONLY BE SET USING THE LE/VSE UPSI RUN-TIME OPTION *****JCL UPDATE MAY BE REQURED

ABJ6030 08
ASCII FILE TO BE CHECKED

ABJ6031 00
SPECIAL-NAMES IS GENERATED

ABJ6032 04
MNEMONIC NAME FOUND *MANUAL UPDATE MAY BE REQUIRED

ABJ6033 00
INTEGER IS REMOVED

ABJ6034 08
FOR MULTIPLE REEL/UNIT IS REMOVED ******* MANUAL UPDATE REQUIRED

ABJ6035 00
NOMINAL IS CHANGED TO RELATIVE FOR VSAM RRDS

ABJ6036 00
PERIOD ADDED AT THE END OF THE PARAGRAPH

ABJ6037 00
RESERVE AREA IS CHANGED

ABJ6038 00
FILE-LIMIT CLAUSE IS REMOVED

ABJ6039 00
PROCESSING MODE CLAUSE IS REMOVED

ABJ6040 00
APPLY CLAUSE IS REMOVED

ABJ6041 08
TOTALING/TOTALED AREA REMOVED ******* MANUAL UPDATE REQUIRED

ABJ6042 00
DISP/POSITIONING OPTION IN CLOSE IS REMOVED

ABJ6043 00
LEAVE/REREAD/DISP OPTION IN OPEN IS REMOVED

ABJ6044 08
`GIVING OPTION IS REMOVED ******* MANUAL UPDATE REQUIRED`

ABJ6045 08
`USE BEFORE .... IS REMOVED ******* MANUAL UPDATE REQUIRED`

ABJ6046 00
`WRITE...AFTER POSITIONING...CHANGED TO WRITE...AFTER ADVANCING`

ABJ6047 00
`LCP-ASA DATA NAME IS GENERATED`

ABJ6048 00
`LCP-WRITE-... SECTION IS ADDED`

ABJ6049 08
`FILE TO BE CONVERTED TO VSAM RRDS  *******************`

ABJ6050 00
`PERIOD ADDED`

ABJ6051 00
`TO IS REMOVED`

ABJ6052 00
`ACTUAL IS CHANGED TO RELATIVE FOR VSAM RRDS`

ABJ6053 00
`SAME AREA CHANGED TO SAME RECORD AREA`

ABJ6054 08
`LABEL RECORDS CHANGED TO STANDARD`

ABJ6055 00
`RECORDING MODE IS REMOVED`

ABJ6056 00
`SEEK IS REMOVED`

ABJ6057 08
`TRACK-LIMIT CLAUSE IS REMOVED ******* MANUAL UPDATE REQUIRED`

ABJ6058 08
`FILE TO BE CONVERTED TO VSAM KSDS  *******************`

ABJ6059 00
`THAN IS REMOVED`

ABJ6060 00
`TRACK AREA CLAUSE IS REMOVED`

ABJ6061 08
`USING IS REMOVED ********* CHECK IF GENERIC KEY`

ABJ6062 00
`LCP-EOP DATA NAME IS GENERATED`

ABJ6063 00
`SUPERFLUOUS 'INTO' REMOVED`

ABJ6064 00
`ADDITIONAL ASSIGNMENT NAMES REMOVED`

ABJ6065 08
`REPORT WRITER STATEMENT FOUND ******* MANUAL UPDATE REQUIRED`

ABJ6066 08

```
USE FOR DEBUGGING ONLY ALLOWED FOR PROCEDURE NAME ******* MANUAL
UPDATE REQUIRED
```

ABJ6067 08

```
ON STATEMENT FOUND ******* MANUAL UPDATE REQUIRED
```

ABJ6068 04

```
READY/RESET TRACE IS REMOVED
```

ABJ6069 00

```
EXHIBIT CHANGED TO DISPLAY
```

ABJ6070 00

```
EXHIBIT CHANGED TO DISPLAY TREATED AS EXHIBIT NAMED
```

ABJ6071 08

```
DEBUG IS NOT SUPPORTED
```

ABJ6072 08

```
DATA EXCEEDS 28 CHARACTERS DATA SHOULD BE BETWEEN QUOTES *******
MANUAL UPDATE REQUIRED
```

ABJ6073 08

```
COMMUNICATIONS NOT SUPPORTED ******* MANUAL UPDATE REQUIRED
```

ABJ6074 00

```
NOMINAL KEY FIELD MOVED TO RECORD KEY FIELD
```

ABJ6075 08

```
****** ERROR FILE NAME *******
```

Check if the SELECT statement, ASSIGN clause, and FD definition match. This takes place when the converter writes a record in DRWORK file with a duplicate key. If the program compiles without error at the source language level, report the problem, providing the list of the Input-Output Section in the Environment Division and all the File Descriptions (FD) in the Data Division. Also provide a printout of the DRWORK.ABJ file.

ABJ6076 00

```
PROGRAM-ID PARAGRAPH IS ADDED
```

ABJ6077 08

```
QUALIFIED KEY NOT SUPPORTED ******* MANUAL UPDATE REQUIRED
```

ABJ6078 00

```
NOMINAL KEY IS REMOVED
```

ABJ6079 04

```
** WARNING POSSIBLE SUBSCRIPT EVALUATION DIFFERENCES
```

ABJ6080 00

```
FILE STATUS CLAUSE IS ADDED
```

ABJ6081 00

```
RECORD KEY FIELD MOVED BACK TO NOMINAL KEY
```

ABJ6082 00

```
NEW  ORGANIZATION IS ADDED
```

ABJ6084 04

```
"NOT" IN ABBREVIATED COMBINED RELATION CONDITION. CONDITION IS NOW
EXPANDED DIFFERENTLY. *MANUAL UPDATE REQUIRED
```

ABJ6085 00
```
DECLARATIVE IS ADDED
```

ABJ6086 08
```
NO FILE STATUS TEST ******* MANUAL UPDATE REQUIRED
```

ABJ6087 00
```
CODE-SET CLAUSE IS ADDED
```

ABJ6088 00
```
LANGLEVEL 1 COPY IS CHANGED
```

ABJ6089 00
```
UPSI CHANGED TO CONDITION NAME
```

ABJ6090 08
```
ONLY CONDITION NAME IS ALLOWED ******* MANUAL UPDATE REQUIRED
```

ABJ6091 00
```
TRANSFORM REPLACED BY INSPECT
```

ABJ6092 04
```
MANUAL CHANGE MAY BE REQUIRED IF THIS INDEPENDENT SECTION IS
PERFORMED OUTSIDE THE SECTION
```

ABJ6093 00
```
DATA ITEM LCP-FILE-STATUS  IS GENERATED
```

ABJ6094 00
```
FILE STATUS TEST IS ADDED
```

ABJ6095 00
```
LABEL CLAUSE IS REMOVED
```

ABJ6096 04
```
MULTIPLE "NOT" FOUND   ******MANUAL UPDATE MAY BE REQUIRED
```

ABJ6097 00
```
KEY DATA ITEM CHANGED TO BE THE SUBJECT
```

ABJ6098 00
```
ASSIGNMENT NAME IS CHANGED
```

ABJ6099 08
```
PERFORM KEYCALC IS ADDED USER SHOULD PROVIDE KEYCALC SECTION
*************
```

ABJ6103 99
```
***************************
** DATA NAMES TO BE CHECKED **
***************************
```

ABJ6104 99
```
*   USED IN LABEL CLAUSE     *
```

ABJ6105 99
```
*   USED IN TOTALING CLAUSE  *
```

ABJ6106 99
```
*   USED IN TOTALED CLAUSE   *
```

ABJ6107 99
```
*   USED IN GIVING OPTION    *
```

ABJ6109 99
```
*      USED AS UPSI          *
```

ABJ6110 99
```
*  USED AS SCALED VARIABLE   *
```

ABJ6111 00
```
PICTURE CHANGED FOR RELATIVE KEY
```

ABJ6112 08
```
PROC/FILE NAME NOT ALLOWED ****** MANUAL UPDATE REQUIRED
```

ABJ6114 08
```
INVALID PICTURE FOR RELATIVE KEY ******* MANUAL UPDATE REQUIRED
```

ABJ6115 00
```
SYSTEM NAME CHANGED TO IBM-370
```

ABJ6116 00
```
ON STATEMENT CHANGED TO IF
```

ABJ6117 00
```
ON COUNTER GENERATED IN WORKING STORAGE
```

ABJ6118 08
```
TOO MANY QUALIFIERS ******* MANUAL UPDATE REQUIRED
```

ABJ6119 00
```
RECORDING MODE CLAUSE REMOVED
```

ABJ6122 08
```
RELATIVE KEY NOT FOUND RELATIVE FILE NAME IS :
```

ABJ6124 04
```
EXEC STATEMENT FOUND *MANUAL UPDATE MAY BE REQUIRED
```

ABJ6125 00
```
USER-DEFINED WORD IS RESERVED WORD IN TARGET LANGUAGE SUFFIX HAS
BEEN ADDED.
```

ABJ6126 99
```
*----------------------------*
*  END OF COBOL CONVERSION   *
* 5648-B05 COBOL CONVERSION  *
*----------------------------*
```

ABJ6127 08
```
RELATIVE KEY NAME NOT DEFINED IN WORKING-STORAGE SECTION KEY IS :
```

ABJ6128 00
```
RECORD KEY IS ADDED
```

ABJ6132 00
```
THEN REPLACED BY THAN
```

ABJ6133 00
```
WORKING-STORAGE SECTION ADDED
```

ABJ6134 08
```
ILLEGAL USE OF CURRENT-DATE ******* MANUAL UPDATE REQUIRED
```

ABJ6135 08
```
ILLEGAL USE OF TIME-OF-DAY ******* MANUAL UPDATE REQUIRED
```

ABJ6136 00
```
NEXT SENTENCE ADDED
```

ABJ6142 00
```
IDENTIFIER CHANGED TO LITERAL
```

ABJ6144 08
```
COM-REG SPECIAL REGISTER FOUND ******* MANUAL UPDATE REQUIRED
```

ABJ6145 08
```
NSTD-REELS SPECIAL REG FOUND ******* MANUAL UPDATE REQUIRED
```

ABJ6146 08
```
SORT-OPTION CLAUSE IS REMOVED ******* MANUAL UPDATE REQUIRED
```

ABJ6147 00
```
ENTER STATEMENT IS REMOVED
```

ABJ6148 00
```
LCP NOT FOUND - RECOMPILE LCP
```

ABJ6151 00
```
RECORDS WORD IS ADDED
```

ABJ6152 00
```
PARAGRAPH CHANGED TO COMMENT
```

ABJ6153 08
```
ERROR WRITING CONTROL FILE FILE CONVERSION MAY BE WRONG **********
CHECK CONTROL FILE
```

ABJ6160 00
```
CONFIGURATION SECTION ADDED
```

ABJ6161 08
```
SORT-OPTION CLAUSE IS REMOVED ******* MANUAL UPDATE REQUIRED
```

ABJ6162 08
```
NSTD-REELS SPECIAL REG FOUND ******* MANUAL UPDATE REQUIRED
```

ABJ6170 00
```
ALPHABET WORD IS ADDED
```

ABJ6171 00
```
ALPHABETIC CHANGED TO ALPHABETIC-UPPER
```

ABJ6172 00
```
EXIT PROGRAM IS ADDED
```

ABJ6173 00
```
ALPHABET CLAUSE ADDED FOR ASCII FILE
```

ABJ6174 00
```
ACTUAL LENGTH ADDED TO VARIABLE LENGTH RECEIVING ITEM
```

ABJ6175 08
```
MAXIMUM LENGTH USED FOR VARIABLE LENGTH RECEIVING ITEM *******
MANUAL UPDATE REQUIRED
```

ABJ6176 00
```
ABEND CODE GENERATED IN WS
```

ABJ6177 00
```
RECORD CLAUSE IS REMOVED
```

ABJ6178 08
```
UPSI NOT ALLOWED AS QUALIFIER ******* MANUAL UPDATE REQUIRED
```

ABJ6179 00
```
CONTINUE STATEMENT IS ADDED
```

ABJ6180 08
SYMBOL P IN PIC NOT ALLOWED FOR RELATIVE KEY ******* MANUAL UPDATE REQUIRED

ABJ6181 00
OBSOLETE ELEMENT IS REMOVED

ABJ6182 00
VALUES CHANGED TO VALUE

ABJ6183 00
LINE/LINES IS REMOVED

ABJ6184 00
SIGN IS REMOVED IN VALUE

ABJ6185 08
COPY FOUND IN NOTE END OF NOTE NOT PROCESSED ******* MANUAL UPDATE REQUIRED

| **ABJ6186 04**
| OBSOLETE ELEMENT IS REMOVED ******* MANUAL UPDATE MAYBE REQUIRED

ABJ6200 08
LEVEL 01 BLL FOUND ******* MANUAL UPDATE REQUIRED

ABJ6201 00
POINTER OPTION IN EXEC CICS CHANGED TO ADDRESS OF ...

ABJ6202 00
SERVICE RELOAD REPLACED BY CONTINUE

ABJ6203 00
BLL'S ARE REMOVED

ABJ6204 08
UNIDENTIFIED BLL ******* MANUAL UPDATE REQUIRED

ABJ6205 08
PRIMARY BLL FOUND NOT IN MOVE CALL ADD SUBTRACT ******* MANUAL UPDATE REQUIRED

ABJ6206 00
SERVICE RELOAD IS REMOVED

ABJ6207 00
BLL CONVERTED TO SET POINTER SET ADDRESS OF ...

ABJ6208 00
STATEMENT WITH SECONDARY BLL REPLACED BY CONTINUE

ABJ6209 00
BLL REPLACED BY ADDRESS OF ...

ABJ6210 08
UNDEFINED/REDEFINED BLL FOUND ******* MANUAL UPDATE REQUIRED

ABJ6211 08
BLL FOUND ******* MANUAL UPDATE REQUIRED

ABJ6212 00
WORKING POINTER FOR CICS ADDED TO WORKING STORAGE

ABJ6213 08
MULTIPLE MOVE NOT PROCESSED ******* MANUAL UPDATE REQUIRED

ABJ6214 08
MOVE CORR NOT PROCESSED ******* MANUAL UPDATE REQUIRED

ABJ6215 08
UNDEFINED STATEMENT WITH BLL ******* MANUAL UPDATE REQUIRED

ABJ6216 08
BLL MIXED WITH IDENTIFIER(S) IN A MOVE, ADD OR SUBTRACT ******* MANUAL UPDATE REQUIRED

ABJ6217 08
MULTIPLE ADD NOT PROCESSED ******* MANUAL UPDATE REQUIRED

ABJ6218 00
PRIMARY BLL IN ADD SUBTRACT CHANGED TO ADDRESS OF ...

ABJ6219 08
MULTIPLE BLL BEFORE GIVING IN ADD OR SUBTRACT STATEMENT ******* MANUAL UPDATE REQUIRED

ABJ6220 00
PRIMARY BLL IN COMPUTE CHANGED TO ADDRESS OF ...

ABJ6221 08
ILLEGAL USE OF SECONDARY BLL ******* MANUAL UPDATE REQUIRED

ABJ6222 04
MORE THAN 3 LEVELS OF QUALIFICATION ON TABLE. *MANUAL UPDATE MAY BE REQUIRED

ABJ6223 00
SUPERFLUOUS "TO" REMOVED

ABJ6224 04
COPY...REPLACING ENCOUNTERED *MANUAL UPDATE MAY BE REQUIRED

ABJ6225 08
BRACKETS MOVED *MANUAL UPDATE MAY BE REQUIRED

ABJ6226 00
ENVIRONMENT DIVISION MOVED.

ABJ6227 08
END-EXEC NOT FOUND *MANUAL UPDATE REQUIRED

ABJ6228 00
BLANK WHEN ZERO IS REMOVED

ABJ6229 08
ACTUAL KEY INCOMPATIBLE WITH FILE ORGANIZATION *MANUAL UPDATE REQUIRED

ABJ6230 08
CONFIGURATION SECTION OUT OF ORDER. *MANUAL UPDATE REQUIRED

ABJ6231 08
VALUE SHOULD NOT START IN AREA A. *MANUAL UPDATE MAY BE REQUIRED

ABJ6233 00
ZEROS/ZEROES REPLACED.

ABJ6234 08
STRING INTO SAME AREA. *MANUAL UPDATE REQUIRED

ABJ6235 00
SUFFIX - DATANAME SAME AS PROGRAM NAME.

ABJ6236 00
LITERAL DELIMITER ADDED.

ABJ6237 08
LITERAL DELIMITER MISSING. *MANUAL UPDATE REQUIRED

ABJ6238 08
REFERENCE TO FIRST BLL CAN NOT BE CONVERTED. *MANUAL UPDATE REQUIRED

ABJ6239 08
COPYBOOK NAME MUST START WITH ALPHABETIC CHARACTER. *MANUAL UPDATE REQUIRED

ABJ6240 08
THE ON OVERFLOW PHRASE OF THE CALL STATEMENT WILL NOW EXECUTE UNDER MORE CONDITIONS. *MANUAL UPDATE MAY BE REQUIRED

ABJ6241 08
COMPARISONS BETWEEN A SCALED INTEGER AND A NONNUMERIC WILL NOW BE PERFORMED DIFFERENTLY. *MANUAL UPDATE MAY BE REQUIRED

ABJ6242 08
THIS STATEMENT WILL NO LONGER USE THE COLLATING SEQUENCE IN THE OBJECT-COMPUTER PARAGRAPH. *MANUAL UPDATE MAY BE REQUIRED

ABJ6243 08
THE ON SIZE ERROR PHRASE WILL NO LONGER BE EXECUTED FOR INTERMEDIATE RESULTS. *MANUAL UPDATE MAY BE REQUIRED

ABJ6244 08
BLL CELL DOES NOT REFERENCE A 01 LEVEL RECORD. VERIFY BLL CELL USAGE. *MANUAL UPDATE REQUIRED

ABJ6245 08
RECORD WITH INSUFFICIENT BLL CELLS AVAILABLE TO PROVIDE ADDRESSABILITY. *MANUAL UPDATE REQUIRED

ABJ6246 08
CONDITIONAL VARIABLE WILL NO LONGER BE RIGHT JUSTIFIED. *MANUAL UPDATE REQUIRED

ABJ6247 08
CONDITIONAL VARIABLE WILL NOW BE SET TO ZERO (NOT SPACES). *MANUAL UPDATE REQUIRED

ABJ6248 08
PICTURE CLAUSE OF CONDITIONAL VARIABLE HAS EDITING SYMBOLS. RESULTS WILL BE DIFFERENT. *MANUAL UPDATE REQUIRED

ABJ6249 08
THE COLON WILL NOW BE TREATED AS A SEPARATOR. RESULTS MAY BE DIFFERENT. *MANUAL UPDATE MAY BE REQUIRED

ABJ6250 08
LOWERCASE CHARACTERS WILL NOW BE TREATED AS THEIR UPPERCASE EQUIVALENTS. *MANUAL UPDATE MAY BE REQUIRED

ABJ6251 08
THE NON-COBOL CHARACTERS IN THE REPLACE CLAUSE WILL NOW BE DIAGNOSED. *MANUAL UPDATE REQUIRED

ABJ6252 08
DIFFERENT FILE STATUS VALUES WILL NOW BE RETURNED. *MANUAL UPDATE MAY BE REQUIRED

ABJ6253 08
RULES FOR AUGMENTING VARIABLES HAVE CHANGED. IF DEPENDENCIES BETWEEN VARIABLES EXIST, THEN *MANUAL UPDATE MAY BE REQUIRED

ABJ6254 08
PICTURE CLAUSE OF A RECEIVING FIELD CONSISTS OF A'S AND B'S - NO LONGER CLASSED ALPHABETIC *MANUAL UPDATE REQUIRED

ABJ6255 08
PICTURE CLAUSE OF A RECEIVING FIELD CONSISTS OF A'S AND B'S - NO LONGER PERMITTED. *MANUAL UPDATE REQUIRED

ABJ6256 08
CALL IDENTIFIER HAS A PICTURE CLAUSE CONSISTING OF A'S AND B'S - NO LONGER PERMITTED. *MANUAL UPDATE REQUIRED

ABJ6257 08
CANCEL IDENTIFIER HAS PICTURE CLAUSE CONSISTING OF A'S AND B'S - NO LONGER PERMITTED. *MANUAL UPDATE REQUIRED

ABJ6258 08
BLANK LINES AND COMMENT LINES IN TEXT THAT MATCH PSEUDO-TEXT ARE NOW TREATED DIFFERENTLY. *MANUAL UPDATE MAY BE REQUIRED

ABJ6259 08
MODE SPECIFIC DECLARATIVES IN CONTAINED PROGRAMS NOW TAKE PRECEDENCE OVER THIS ONE. *MANUAL UPDATE MAY BE REQUIRED

ABJ6260 08
ON OVERFLOW PHRASE CAN NOW BE INVOKED WHEN RUNNING UNDER CICS. *MANUAL UPDATE MAY BE REQUIRED

ABJ6261 08
ON EXCEPTION PHRASE CAN NOW BE INVOKED WHEN RUNNING UNDER CICS. *MANUAL UPDATE MAY BE REQUIRED

ABJ6262 00
'OR' HAS BEEN INSERTED BETWEEN THE DELIMITERS IN THE DELIMITED BY PHRASE.

ABJ6263 00
THE 'IS' HAS BEEN REMOVED FROM THE POINTER PHRASE.

ABJ6264 08
THE REVERSED OPTION IS NOW ONLY VALID FOR SINGLE REEL FILES. *MANUAL UPDATE MAY BE REQUIRED

ABJ6265 08
PHRASES IN THE OCCURS CLAUSE ARE NOT IN THE CORRECT SEQUENCE. *MANUAL UPDATE REQUIRED

ABJ6266 08
THE FOR REMOVAL OPTION IS NOW TREATED AS A COMMENT. *MANUAL UPDATE MAY BE REQUIRED

ABJ6267 08
QUALIFIED INDEXES ARE NO LONGER PERMITTED. *MANUAL UPDATE IS REQUIRED.

ABJ6269 00
OLD OPTIONS REMOVED

ABJ6270 00
NEW COMPILER OPTION ADDED

ABJ6271 00
: DATA NAME IS THE SAME AS THE PROGRAM NAME. SUFFIX HAS BEEN ADDED.

ABJ6272 04
: DATE FORMAT CLAUSE NOT ADDED DATE FORMAT INCOMPATIBLE WITH DATA ITEM'S PICTURE CLAUSE

ABJ6273 04
: DATE FORMAT CLAUSE NOT ADDED - NOT PERMITTED WITH BLANK WHEN ZERO CLAUSE

ABJ6274 04
: DATE FORMAT CLAUSE NOT ADDED - NOT PERMITTED WITH JUSTIFIEDCLAUSE

ABJ6275 04
: DATE FORMAT CLAUSE NOT ADDED - NOT PERMITTED WITH SIGN CLAUSE

ABJ6276 04
: DATE FORMAT CLAUSE NOT ADDED - DATA ITEM ALREADY HAS ONE

ABJ6277 04
: DATE FORMAT CLAUSE NOT ADDED - DATE FIELDS THAT ARE GROUP ITEMS MUST HAVE USAGE DISPLAY

ABJ6278 04
: DATE FORMAT CLAUSE NOT ADDED - INCOMPATIBLE WITH SPECIFIED OR ASSUMED USAGE CLAUSE

ABJ6279 04
: DATE FORMAT CLAUSE NOT ADDED - INCOMPATIBLE WITH EXTERNAL CLAUSE IN 01 ENTRY

ABJ6280 04
: DATE FORMAT CLAUSE NOT ADDED - INCOMPATIBLE WITH EXTERNAL CLAUSE IN FD OR SD ENTRY

ABJ6281 04
: DATE FORMAT CLAUSE ADDED

ABJ6284 04
: * WARNING - COMPILER WARNING MESSAGES WILL BE GENERATED

ABJ6300 08
: STATEMENT IS INVALID IN A CICS PROGRAM *** MANUAL UPDATE REQUIRED

ABJ6301 04
: 31 BIT ESA ADDRESSES WILL BE TREATED AS NEGATIVE NUMBERS: RESULTS MAY BE UNPREDICTABLE *** MANUAL UPDATE RECOMMENDED

ABJ6302 04
: FIELD USED IN SET ADDRESS STATEMENT CHANGED TO USAGE IS POINTER

ABJ6304 00
: COPYBOOK NAME IS NOW A LITERAL

ABJ6305 04
: BACK-TO-BACK PARENTHESES REMOVED

ABJ6306 04
: FILE SECTION ADDED

ABJ6307 08
: CONFIGURATION SECTION OUT OF ORDER

ABJ6308 00
PERIOD REMOVED

ABJ6309 00
"IS" IS REMOVED

ABJ6310 08
END-OF-PAGE PHRASE NOT ALLOWED WITHOUT A LINAGE CLAUSE FILE DESCRIPTION ENTRY *MANUAL UPDATE IS REQUIRED

ABJ6311 16
MORE THAN 999999 CHANGE RECORDS HAVE BEEN CREATED FOR A TOKEN - POSSIBLE PROGRAM ERROR *** CONTACT IBM'S CCCA HELPLINE

ABJ6312 00
PERIOD ADDED AFTER DIVISION HEADER

ABJ6313 00
PERIOD ADDED AFTER SECTION HEADER

ABJ6317 00
SUPERFLUOUS "IF" REMOVED PARENTHESES ADDED

ABJ6401 08
UNEXPECTED END OF COPY STATEMENT. COPY STATEMENT NOT CONVERTED

ABJ6402 08
NESTED COPY STATEMENT WITHIN COPY WITH REPLACING PHRASE. COPY STATEMENT NOT CONVERTED

ABJ6403 08
COPY STATEMENT WITH REPLACING PHRASE WITHIN A NESTED COPY. COPY STATEMENT NOT CONVERTED

ABJ6404 08
COPY STATEMENT HAS INVALID SYNTAX. COPY STATEMENT NOT CONVERTED

ABJ6405 08
COPY STATEMENT HAS INVALID SYNTAX. MISSING "BY". COPY STATEMENT NOT CONVERTED

ABJ6406 08
LIBRARY MEMBER WAS EMPTY.

ABJ6407 08
MEMBER NOT FOUND IN COPY LIBRARY.

ABJ6408 08
COPY STATEMENT HAS NULL OR INVALID PSEUDO-TEXT-1. COPY STATEMENT NOT CONVERTED

ABJ6409 08
PSEUDO-TEXT ENDING DELIMITER "==" WAS MISSING. COPY STATEMENT NOT CONVERTED

ABJ6410 08
A RIGHT PARENTHESIS MISSING IN AN IDENTIFIER SPECIFIED IN THE REPLACING PHRASE. COPY STATEMENT NOT CONVERTED

ABJ6411 08
THE COPY LIBRARY WAS NOT FOUND

ABJ6412 08
COPY STATEMENT CAUSES RECURSION.

ABJ9001 00

```
&1 ERRORS FOUND DURING COMPILATION
```

Appendix D. LCP reserved words

With the exception of predefined data item names and LCP function names, this list identifies all reserved words of the LCP compiler. Only those in ***bold italics*** have a meaning to the LCP compiler. The other words in the list have no meaning to the LCP compiler, but if used they will elicit an error message from the compiler.

This appendix documents intended Programming Interfaces that allow the customer to write programs to obtain the services of CCCA.

See Appendix E, "Predefined data items," on page 175 for a list of predefined data items and Appendix F, "List of LCP functions," on page 187 for a list of LCP functions.

The following words are reserved for the LCP compiler. Do not confuse this list of words with the COBOL compiler's list of reserved words. For a complete list of COBOL reserved words, please refer to the appropriate COBOL *Language Reference* manual.

accept	comp
access	comp-3
acquire	comp-4
add	computational
advancing	computational-3
after	computational-4
all	compute
alphabetic	configuration
also	contains
alter	control
alternate	controls
and	control-area
apply	copy
are	core-index
area	corr
areas	corresponding
ascending	count
assign	csp
at	currency

LCP reserved words

attribute-data
c01

author

data

date

before date-compiled

blank date-written

block day

bottom
de

by debug-contents

debug-item

call debug-line

cancel debug-name

cd debug-sub-1

cf debug-sub-2

ch debug-sub-3

changed
debugging

character
decimal-point

characters
declaratives

clock-units
delete

close delimited

cobol delimiter

code depending

code-set
descending

collating
destination

column
detail

comma
disable

communication
display

divide indexed

division
indic

down
drop
duplicates
dynamic
egi
else
emi
enable
end
end-change
end-of-page
enter
environment
eop
equal
error
esi
every
exception
exclusive
exhibit
exit
extend
fd
file
file-control
filler
final

indicate
indicator
indicators
initial
initiate
input
input-output
inspect
installation
into
invalid
is
just
justified
key
label
last
leading
left
length
less
limit
limits
linage
linage-counter
line
lines

LCP reserved words

first	line-counter
footing	
	linkage
for	local-data
format	
	lock
from	low-value
	low-values
generate	
giving	memory
go	merge
greater	
	message
group	mode
	modules
heading	
	move
high-value	
	multiple
high-values	
	multiply
	named
I-O	native
I-O-control	
	negative
identification	
	next
if	no
in	***not***
index	note
number	
	reports
numeric	
	requestor
	rerun
object-computer	
	reserve
occurs	reset
of	return
off	reversed

omitted

on

open

optional

or

organization

output

overflow

page

page-counter

perform

pf

ph

pic

picture

plus

pointer

position

positive

printing

procedure

procedures

proceed

program

program-id

rewind

rewrite

rf

rh

right

rolling

rounded

run

same

sd

search

section

security

segment

segment-limit

select

send

sentence

separate

sequence

sequential

set

sign

size

sort

	sort-merge
queue	source
quote	source-computer
quotes	
	space
	spaces
random	
	special-names
rd	standard
read	standard-1
receive	
	start
record	starting
records	
	status
redefines	
	stop
reel	string
references	
	subtract
relative	
	sub-queue-1
release	
	sub-queue-2
remainder	
	sub-queue-3
removal	
	sum
renames	
	suppress
replacing	
	symbolic
report	sync
reporting	
	synchronized
system-console	
	upon
system-shutdown	
	upsi-0
	upsi-1
table	upsi-2
tallying	
	upsi-3

tape

terminal

terminate

text

than

then

through

thru

time

times

to

top

trace

trailing

transaction

true

type

unit

unstring

until

up

upsi-4

upsi-5

upsi-6

upsi-7

usage

use

using

value

values

varying

when

with

words

working-storage

write

zero

zeroes

zeros

Appendix E. Predefined data items

This appendix documents intended Programming Interfaces that allow the customer to write programs to obtain the services of CCCA.

The following list describes predefined data items you can use in LCPs.

Access to data contained in these data items is available:
- At all times
- As a result of using an LCP function

Note: Do not code Data Division statements in your LCPs for predefined data items.

Name	Description

ACCESS-FILE-MODE
X(1) FILE record
	`Access-type:   I   Indexed    S   Sequential`
	`               R   Relative   D   Dynamic`

ADD-GROUP X(30) CHANGE data set	Used to define the concatenation of data; ADD-LENGTH, ADD-TEXT.
ADD-LENGTH 9(2) CHANGE data set	Length of token to be added or modified.
ADD-TEXT X(30) CHANGE data set	Text to be added or modified.
ASCII-FILE X(1) FILE record	Y if the file has ASCII-data.
ASSOCIATE NAME X(30) COPY record	Data name defined in the original source program being copied.
BLL-NAME X(30) CICS file	Name of BLL found in the Linkage Section.
BYPASSED-REF-MOD X(1) Interpreter	Identifies when Reference modification has been bypassed as a result of a call to the function BYPASS-IDENTIFIER. Y Reference modification has been bypassed N Reference modification was not present Byte 3 of BYPASSED-REF-TYPES.
BYPASSED-REF-QUAL X(1) Interpreter	Identifies when qualification has been bypassed as a result of a call to the function BYPASS-IDENTIFIER. Y Qualification of the data item has been bypassed N Data Item was not qualified Byte 1 of BYPASSED-REF-TYPES.
BYPASSED-REF-TYPES X(3) Interpreter	A concatenation of BYPASSED-REF-QUAL, BYPASSED-REF-SUB and BYPASSED-REF-MOD. Identifies what has been bypassed by a call to the function BYPASS-IDENTIFIER.

Name	Description
BYPASSED-REF-SUB X(1) Interpreter	Identifies when subscripting and indexing have been bypassed as a result of a call to the function BYPASS-IDENTIFIER. Y Subscripting or indexing of the data item has been bypassed N Data Item was not subscripted or indexed. Byte 2 of BYPASSED-REF-TYPES.
CALL-NAME X(30) CALL file	Name of program to be called.
CHARACTER-STRING X(1)	Reserved.
CICS-RECORD-NAME X(30) CICS file	Name of record pointed by BLL-NAME.
COBOL-STANDARD X(5) OPTION record	The level of the COBOL to be converted: **Note:** *L/Level* refers to the Source Language Level that you specify on the Language Level panel (see Figure 8 on page 17). **ANS68** ANS 68: DOS/VS COBOL LANGLVL(1), or OS/VS COBOL LANGLVL(1) (L/Levels 1 and 3) **ANS74** ANS 74: DOS/VS COBOL LANGLVL(2), OS/VS COBOL LANGLVL(2), VS COBOL II Release 1.0, 1.1, 2.0, or any COBOL with the CMPR2 option (L/Levels 2, 4, and 5) **ANS85** ANS 85: VS COBOL II NOCMPR2 Release 3.0, 3.1, 3.2, VS COBOL II NOCMPR2 Release 4.0, COBOL/370 NOCMPR2, COBOL for VSE/ESA NOCMPR2, COBOL for MVS & VM NOCMPR2, or COBOL for OS/390 & VM NOCMPR2 (L/Levels 6, 7, 8, 9, 10, 11) Enterprise COBOL for z/OS

Name	Description
COBOL-TYPE X(6) OPTION record	Indicates the type of source COBOL to be converted: **Note:** *L/Level* refers to the Source Language Level that you specify on the Language Level panel (see Figure 8 on page 17). **DOS/VS** DOS/VS COBOL (L/Levels 1 and 2) **OS/VS** OS/VS COBOL (L/Levels 3 and 4) **COBII** VS COBOL II (any release before 4.0) (L/Levels 5 and 6) **COBII4** VS COBOL II (Release 4.0) (L/Level 7) **COB370** COBOL/370 NOCMPR2 (L/Level 8) **COBVSE** COBOL for VSE/ESA NOCMPR2 (L/Level 9) **COBMVS** COBOL for MVS & VM NOCMPR2 (L/Level 10) **COB390** COBOL for OS/390 & VM NOCMPR2 (L/Level 11) | **COBENT** Enterprise COBOL for z/OS (pre version 5)
CONSOLE-NAME X(6)	Reserved.
COPY-LIBRARY X(8)	Name of copy library.
COPY-LOCATION X(3) COPY record	Indicates where the COPY member is used: EN Environment Division FS File Section LI Linkage Section WS Working-Storage Section PR Procedure Division.
COPY-NAME X(10) COPY record	Name of COPY member.
COPY-POINTER 9(7)	Location of the last COPY statement.
DA-LOCATION 9(7) Interpreter	Location of token DATA in token file (Data Division).

Predefined data items

Name	Description
DATE-FORMAT X(8) OPTION record	Format of the date as generated in VSE for DOS/VS COBOL. It can be MM/DD/YY or DD/MM/YY.
DEVICE-FILE-NAME X(10)	Set to “DISK” or blank for REWRITE LCP.
DEVICE-OVERRIDE-01 X(2)	Reserved.
DEVICE-OVERRIDE-02 X(2)	Reserved.
EN-LOCATION 9(7) Interpreter	Location of token ENVIRONMENT in token file (Environment Division).
END-OF-COPY X(1) OPTION record	End-of-copy definition **P** First period after the word COPY **L** Source line end, containing the word COPY **N** Do not process.
EXTERNAL-FILE-NAME X(10) FILE record	Name of the external file name.
FIELD-SIZE 9(7)	Reserved.
FILE-CONVERSION X(1) FILE record	Y or N conversion required.
FILE-SEQUENCE-NO 9(2) Interpreter	+1 for each file then -1 if no file status added.
FILE-STATUS-NAME X(30) KEY record	Name of FILE-STATUS in COBOL program.
FIRST-TOKEN-POINTER 9(7) Interpreter	Location of the first token of the program.
IBM-SYSTEM X(2)	Reserved.
ID-LOCATION 9(7) Interpreter	Location of token IDENTIFICATION in token file. (Identification Division).
INPUT-FILE X(10)	Reserved.
INPUT-LIBRARY X(8)	Reserved.

Name	Description
INPUT-TEXT X(30) Interpreter	Data field used by the MOVE-LCP function from which characters are moved.
INTERNAL-FILE-NAME X(30) FILE record	File name in the COBOL program.
IO-LOCATION 9(7) Interpreter	Location of token INPUT-OUTPUT in token file (Input-Output Section).
LAST-TOKEN-POINTER 9(7) Interpreter	Location of the last token of the source program.
LCP-ALPHA X(10) Interpreter	Contains alphanumeric data for CONVERT-ALPHA-NUMERIC function.
LCP-NUMERIC 9(10) Interpreter	Contains numeric data after execution of CONVERT-ALPHA-NUMERIC function.
LENGTH-OF-MOVE 9(2) Interpreter	Number of characters to be moved from INPUT-TEXT to OUTPUT-TEXT by the MOVE-LCP function.
LINAGE X(1)	Linage clause found in File Section.
LI-LOCATION 9(7) Interpreter	Location of token LINKAGE in token file. (Linkage Section.)
LITERAL-SEPARATOR X(1) OPTION record	Separation character for nonnumeric literals: A Apostrophe Q Quotation mark.
MEMBER-NAME X(8) OPTION record	Source member name containing the program to be converted.
MESSAGE-ID X(7) Interpreter	Identifier for conversion messages.
NOMINAL-KEY-NAME X(30) KEY record	Name of field defining the NOMINAL KEY in the COBOL program.
NUMERIC-nn 9(10) Interpreter	Ten data elements used to save numeric values. **Note:** Do not use these data items for your LCPs; they are used by the supplied LCPs. For your LCPs, use USER-NUMERIC-nn.
OBJECT-COMPUTER-NAME X(30)	Reserved.

OLD-ORGANIZATION-
-FILE-MODE
X(1) FILE record
	File organization:
	`A:    D:    I:`
	`R:    S:    U:    W:`

Name	Description
OLD-PROGRAM-NAME X(30) PROGRAM record	COBOL program name before conversion if name changed.
OPTION-CICS X(1) OPTION record	Indicator from panel for enabling CICS command conversion.
OPTION-nn X(1) OPTION record	Fifteen indicators used to control optional conversion processing. Values: Y, N.

ORGANIZATION-FILE-MODE X(1) FILE record	File-organization:
	`I Indexed` `S Sequential`
	`R Relative`

OUTPUT-FILE X(10)	Reserved.
OUTPUT-LIBRARY X(8)	Reserved.
OUTPUT-TEXT X(30) Interpreter	Data field used by the MOVE-LCP function to store characters moved from the INPUT-TEXT field.
PROGRAM-NAME X(10) PROGRAM record	Name of the converted COBOL program. This name will appear after PROGRAM-ID in the converted program.
PROGRAM-STATUS X(10) PROGRAM record	Save field for information about the conversion of the COBOL program. For example: COMPLETE, ERROR, and WARNING.
PR-LOCATION 9(7) Interpreter	Location of token PROCEDURE in token file. (Procedure Division).
RECEIVING-CHARACTER 9(2) Interpreter	Position of the first character in the OUTPUT-TEXT field to be replaced by the MOVE-LCP function.
RECORD-KEY-NAME X(30) KEY record	Name of field defining the RECORD KEY in the COBOL program.
RECORD-NAME X(30) RECORD record	Record name.
RELATIVE-KEY-NAME X(30) KEY record	Name of field defining the RELATIVE KEY in the COBOL program.

Name	Description
RETURN-CODE X(2) Interpreter	Updated by the interpreter, giving the return code after each I/O operation on all the logical files: **00** Successful operation **23** Record not found (after READ or READ-NEXT) **24** File full (after WRITE). For other return code values, refer to the STATUS KEY values listed in the COBOL *Language Reference* manual.

SELECT-LOCATION
9(7)
	Location of SELECT clause.

SEQUENCE-STATUS-NO 9(2) FILE record	Sequence number of the definition of the file described in the converted COBOL program.
SOURCE-COMPUTER-NAME X(30)	Reserved.
SP-LOCATION 9(7) Interpreter	Location of token SPECIAL-NAMES in token file.
STARTING-CHARACTER 9(2) Interpreter	Number of first character to be moved from the INPUT-TEXT field by the MOVE-LCP function.
STARTING-POSITION 9(2) CHANGE data set	Start position of TOKEN in the converted statement. Position 1 is equal to column 8 in a COBOL statement.
STRING-DELIMITER X(1) Interpreter	Character used by the STRING-LCP and UNSTRING-LCP functions to concatenate character strings or to separate character strings.
STRING-LENGTH 9(2) Interpreter	Length of string in STRING-TEXT after execution of the STRING-LCP function.
STRING-TEXT X(30) Interpreter	Field used by the STRING-LCP and UNSTRING-LCP functions.
STRING-WORD-nn X(30) Interpreter	Ten fields used by the UNSTRING-LCP function to store a character string extracted from STRING-TEXT and used by the STRING-LCP function to define STRING-TEXT.
STRING-WORDS	The 01-level item for the STRING-WORDS-nn fields. Before using the STRING-LCP function, initialize the STRING-WORDS-nn fields by moving SPACES to STRING-WORDS.
SUBSCRIPT1-WORDS X(30)	Reserved.
SUBSCRIPT2-WORDS X(30)	Reserved.
SUBSCRIPT1-nn X(30) Interpreter	Ten fields used to save subscripts or indexes defined in the COBOL program

Name	Description
SUBSCRIPT2-nn X(30) Interpreter	Ten fields used to save subscripts or indexes defined in the COBOL program
TARGET-LANGUAGE X(5) OPTION record	Indicates the target COBOL language that the program is being converted to. COBII = VS COBOL II CBVSE = COBOL for VSE/ESA CBIBM = IBM COBOL (COBOL for MVS & VM, COBOL for OS/390 & VM) CBENT = Enterprise COBOL for z/OS and OS/390
TEXT-nn X(30) Interpreter	Ten fields used to save alphanumeric values. **Note:** Do not use these data items for your LCPs; they are used by the supplied LCPs. For your LCPs, use USER-TEXT-nn.
TOKEN-CHANGE-CODE 9(3) TOKEN data set	Indicates what LCP (if any) CCCA invokes when to convert the associated token: **999** CCCA does not invoke an LCP. **990** CCCA invokes an LCP that has the token in its CONVER statement. *nnn* (other than 999 and 990) CCCA invokes an LCP that has LCP-*nnn* in its CONVER statement. The following list shows the change codes used by CCCA, and the change codes you can use for your own LCPs: **000, 860-989, 992-998** Used by CCCA, or reserved for use These LCPs are invoked by internal CCCA programs, not by reserved words. You cannot enter these values in the **Change code** field. **001-799** Available for your own LCPs. **800-859** Used by supplied LCPs. **991** Used by CCCA. LCP991 is invoked both by reserved words and internal CCCA programs.
TOKEN-FLAG-01 X(1) TOKEN data set	Word type defined in COBOL Reserved Word data set: **1** Section or paragraph name **2** Start of a clause **3** Start of a statement **5** Start of a phrase **9** Reserved for compiler, no meaning.
TOKEN-FLAG-02 X(1) TOKEN data set	Used in the same manner as TOKEN-FLAG-01, for example, where the token is either a statement, a clause, or a section name.

Name	Description

TOKEN-FLAG
X(2) TOKEN data set
	Concatenates TOKEN-FLAG-01 and TOKEN-FLAG-02
	Example:
	TOKEN-FLAG-01 = 1
	TOKEN-FLAG-02 = 3
	then
	TOKEN-FLAG = 13.

TOKEN-LENGTH 9(3) TOKEN data set	Length of token.
TOKEN-LINE-CODE X(1)	Reserved.
TOKEN-MESSAGE-ID X(7)	Reserved.
TOKEN-POINTER 9(7) Interpreter	Position of token in token file.
TOKEN-POSITION 9(2) TOKEN data set	Location of the first character of the token in the source statement. **Note:** Position 1 is equal to column 8 in the COBOL source statement.
TOKEN-SEQUENCE X(6) TOKEN data set	Source statement number, containing token.
TOKEN-SOURCE X(1) TOKEN data set	Source of token: **C** Token contained in a COPY member **P** Token contained in a program statement.
TOKEN-TEXT X(30) TOKEN data set	Character string containing the token. With a literal of more than 30 characters, the value of TOKEN-TEXT in the token file is blank.
TOKEN-TYPE-CODE X(1) TOKEN data set	Token-type code: **C** COPY statement (Element) **L** Nonnumeric literal (Token) **N** Numeric literal (Token) **P** Data-description (PICTURE) (Token) **W** Word (Token) **/** Command (Element) ***** Comment or element. (Element)
UDATE X(08) Interpreter	The date of the conversion. The format is MM/DD/YY.
UPDATE-FILE-FLAG X(1) FILE record	Flag used when the file is open in input/output mode.
USER-NUMERIC-nn 9(10) Interpreter	Ten fields available to user written LCPs for saving numeric values.

Predefined data items

Name	Description
USER-TEXT-nn X(30) Interpreter	Ten fields available to user written LCP for saving alphanumeric values.
UTIME X(08) Interpreter	The time of the conversion. The format is HH:MM:SS.
VSAM-ORGANIZATION X(1) FILE record	Y or N if VSAM.
WHERE-USED X(3) Interpreter	Used to save the location of the token in the COBOL program: **EN** Environment Division **FS** File Section **ID** Identification Division **IO** Input-Output Section **LI** Linkage Section. **PR** Procedure Division **RP** Report Section **WS** Working-Storage Section
WORD-SUFFIX X(02) OPTION record	TWO numeric characters used to change reserved word used as data name.
WORD-SUFFIX-COUNT 9(4)	Reserved.
WORK-KEY-nn X(30) WORK file	Name of field containing the access key for WORK-nn file.
WORK-NUMERIC-nn 9(7) WORK file	Name of field containing a numeric work value for WORK-nn file.
WORK-NUMERIC2-nn 9(7) WORK file	Name of field containing a numeric work value for WORK-nn file.
WORK-TEXT-nn X(30) WORK file	Name of field containing a work value for WORK-nn file.
WORK-TEXT2-nn X(30) WORK file	Name of field containing a work value for WORK-nn file.
WORK-TYPE-nn X(3) WORK file	Name of field containing a work value for WORK-nn file.
WORK-TYPE2-nn X(3) WORK file	Name of field containing a work value for WORK-nn file.

Name	Description
	Position of the token WORKING-STORAGE in the token file.
WS-LOCATION 9(7) Interpreter	

Appendix F. List of LCP functions

This appendix documents intended Programming Interfaces that allow the customer to write programs to obtain the services of CCCA.

The following list describes functions you can use in LCPs.

Note: If debugging for an LCP is activated (see "Deleting LCPs and activating/deactivating debugging for LCPs" on page 71), the **Op codes** in the following list appears in the LCP OPCODE column of the debug listing.

Name	Op code	Description
ADD-CALL	AD-CL	Write a CALL record to the logical CALL file.
ADD-COPY	AD-CY	Write a COPY record to the logical COPY file.
ADD-FILE	AD-FL	Write a FILE record to the logical FILE file.
ADD-KEY	AD-KY	Write or update a KEY record to the logical Key file.
ADD-PROGRAM	AD-PR	Write a PROGRAM record to the logical PROGRAM file.
ADD-RECORD	AD-RC	Write a RECORD record to the logical RECORD file.
ADD-WORK-nn	AD-nn	Write a WORK-nn record to the logical WORK-nn file.
BYPASS-IDENTIFIER	BYID	Bypass the identification of a data name (that is, qualifier, subscript, index, and reference modifier)
BYPASS-POINTER	BYPN	Bypass conversion process associated with the token currently in storage.
COMMENT	CM	Put an * in column 7 in the source statement of the token.
CONVERT-ALPHA-NUMERIC	ALNUM	Convert alphanumeric character string to numeric.
DETERMINE-LENGTH	DTLN	Calculate the length of data in ADD-TEXT. Result in ADD-LENGTH.
DIAGNOSTIC	DG	Place message text contained in ADD-TEXT into the message summary which appears at the end of the conversion diagnostics listing.
EDIT-MESSAGE	EDMSG	Used to write informational and error messages to the conversion listing.
EJECT	EP	Put a / in column 7 of the generated source statement.
GET-FIRST GET-FIRST-TOKEN	GTFRT	Retrieve first token from the TOKEN data set.
GET-LAST GET-LAST-TOKEN	GTLST	Retrieve last token from the TOKEN data set.
GET-NEXT GET-NEXT-TOKEN	GTNXT	Retrieve next token from the TOKEN data set.
GET-PREVIOUS GET-PREVIOUS-TOKEN	GTPRT	Retrieve previous token form the TOKEN data set.

LCP functions

Name	Op code	Description
GET-TOKEN	GTTKN	Retrieve specified token or element from the TOKEN data set.
GET-NEXT-ELEMENT	GTNXE	Retrieve next token or element from the TOKEN data set.
GET-PREVIOUS-ELEMENT	GTPRE	Retrieve previous token or element from the TOKEN data set.
GET-ELEMENT	GTELM	Retrieve specified token or element from the TOKEN data set.
INSERT-AFTER INSERT-AFTER-TOKEN	INAF	Insert a token or element after current token or element.
INSERT-BEFORE INSERT-BEFORE-TOKEN	INBF	Insert a token or element before current token or element.
MAINTAIN-LINE-POSITION	MNLNP	If possible, maintain the physical position of the token or element in the line of generated source.
MOVE-LCP	MVLCP	Move characters within predefined fields.
READ-CICS	RD-CI	Read a CICS record.
READ-FILE	RD-FL	Read a FILE record.
READ-KEY	RD-KY	Read a KEY record.
READ-WORK-nn	RD-nn	Read a WORK-nn record.
READ-NEXT-FILE	RN-FL	Read next FILE record.
READ-NEXT-RECORD	RN-RC	Read the next RECORD record for the current FILE record.
READ-NEXT-WORK-nn	RN-nn	Read the next WORK-nn record.
REMOVE REMOVE-TOKEN	RM	Remove current token.
REMOVE-CLAUSE	RMCL	Remove token currently in storage and the tokens following that are part of the same clause.
REMOVE-NEXT REMOVE-NEXT-TOKEN	RMNXT	Remove token following the token currently in storage.
REMOVE-SUFFIX	RMSUF	Remove the reserved word suffix added in pass 1.
REMOVE-STATEMENT	RMST	Remove token currently in storage and the tokens following that are part of the same statement.
REPLACE REPLACE-TOKEN	RP	Replace the current token with the value held in ADD-TEXT.
RETRIEVE-FILE	RT-FL	Set and read a FILE record according to the RECORD record currently in storage.
SETLL-FILE	ST-FL	Set FILE file to the first record.
SETLL-RECORD	ST-RC	Set logical RECORD file to first RECORD record for the current FILE record.
SETLL-WORK-nn	ST-nn	Set logical WORK-nn file to the first WORK-nn record.
SPLIT-LINE	SPLN	Start a new line after the token currently in storage.
STRING-LCP	STLC	Concatenate fields into a single character string.

Name	Op code	Description
SUFFIX SUFFIX-TOKEN	SF	Insert after current token, leaving no blank between the current token and the token being added.
UNSTRING-LCP	UNLC	Separate a character string into parts delimited by a specified delimiter.
UPDATE-FILE	UP-FL	Update logical FILE file for FILE record currently in storage.
UPDATE-WORK-nn	UP-nn	Update logical WORK-nn record currently in storage.

Appendix G. LCP directory

This appendix lists the supplied Language Conversion Programs (LCPs), with a brief description of the processing performed by each one.

LCPs fall into one of five categories:

1. LCPs that convert CICS commands
2. LCPs that convert COBOL statements
3. LCPs that partially convert COBOL statements
4. LCPs that flag COBOL statements
5. LCPs that set information for other LCPs

For a more complete description of the conversion and flagging of the language elements performed by the LCPs see Appendix A, "Converted COBOL language elements," on page 117.

Converted CICS commands

EXEC BLL references changed to ADDRESS OF

SERVICE RELOAD
Replaced by CONTINUE

ADD (851)
BLL references changed to POINTER facilities

COMPUTE
BLL references changed to POINTER facilities

MOVE
BLL references changed to POINTER facilities

SUBTRACT
BLL references changed to POINTER facilities.

Completely converted COBOL statements

ACTUAL
ACTUAL KEY clause; replaced by RELATIVE

ALPHABETIC
Changed to ALPHABETIC-UPPER

APPLY
Remove APPLY clause in I-O-CONTROL paragraph

ASSIGN
Change ASSIGN clause syntax

CBL Modify compiler options for COBOL/370

COPY Converts COBOL Standard 68 syntax and adds COPY information

CORR/CORRESP
Multiple MOVE changed to separate MOVEs

CURRENT-DATE
Replaced by DATE special register and reformatted or by EXEC CICS ASKTIME in a CICS program

DATE Add hyphen if missing in DATE COMPILED and DATE WRITTEN

DATE-COMPILED
Add period after header if missing.

DISP In OPEN and CLOSE statements option deleted

ENTER
Obsolete element removed.

ENVIRONMENT
Add Configuration Section header if it is needed; relocate it if it is in the wrong place.

EXAMINE
Change EXAMINE to INSPECT

EXHIBIT
EXHIBIT statement changed to DISPLAY

FD Convert FD entry, check LABEL clause

FILE-LIMIT
Delete FILE-LIMIT clause (COBOL 68 Standard)

FILE-LIMITS
Delete FILE-LIMITS clause (COBOL 68 Standard)

JUST Value literal is changed for COBOL 68 Standard syntax

JUSTIFIED
Value literal changed for COBOL 68 Standard syntax

LEAVE
In OPEN statement option deleted

LINE/LINES
Word removed in WRITE BEFORE/AFTER ADVANCING mnemonic

LVL88 Put 88 level value string in quotes, if missing

MEMORY
Remove MEMORY SIZE clause if **Remove obsolete elements** field on Conversion Options panel 2 is set to Y

MOVE (851)
Add reference modification to variable length receivers that contain their ODO object

MULTIPLE
For multiple reel/unit COBOL 68 Standard CLAUSE deleted

NATIVE
Add ALPHABET word in SPECIAL-NAMES

NOMINAL
Replaced by RELATIVE or clause deleted

NOTE Change to comment

OPEN Add FILE STATUS test for VSAM files that have had FILE STATUS clauses added

OTHERWISE	Clause of IF statement replaced by ELSE
POSITIONING	AFTER POSITIONING clause of WRITE statement replaced by AFTER ADVANCING clause
PROCEDURE	An Error Declaratives Section is added for each file that is to be converted to VSAM.
PROCESSING	Delete PROCESSING MODE clause (COBOL 68 Standard)
READ	MOVE NOMINAL TO RECORD KEY for ISAM files Add reference modification to variable length receivers that contain their own ODO object
REDEFINES	Remove clause in FD
RELEASE	Add reference modification to variable length receivers that contain their own ODO object
REMARKS	Change to a comment
REREAD	In OPEN statement option deleted
RESERVE	Change RESERVE syntax COBOL 68 Standard
RETURN (851)	Add reference modification to variable length receivers that contain their own ODO object
REWRITE	MOVE NOMINAL KEY TO RECORD KEY for ISAM files Add reference modification to variable length receivers that contain their own ODO object
SAME	Change SAME AREA to SAME RECORD AREA
SD	Conver SD ENTRY, LABEL clause
SEARCH	SEARCH WHEN KEY
SEEK	Statement deleted
SEQUENCE	Add ALPHABET word in SPECIAL-NAMES
SPECIAL-NAMES	Add SPECIAL NAMES
STANDARD-1	Add ALPHABET word in SPECIAL-NAMES
START	MOVE NOMINAL TO RECORD KEY
THAN	Removed after > or < relational operators

THEN Delete THEN between statements

TIME-OF-DAY
Replaced by TIME special register or by an EXEC CICS ASKTIME (in a CICS program) and reformatted.

TRACK-AREA
TRACK-AREA removed

TRANSFORM
Replaced by INSPECT statement

UNSTRING
Add reference modification to variable length receivers that contain their own ODO object.

UPSI-0 (850)
Replace UPSI switch by condition name

UPSI-1 (850)
Replace UPSI switch by condition name

UPSI-2 (850)
Replace UPSI switch by condition name

UPSI-3 (850)
Replace UPSI switch by condition name

UPSI-4 (850)
Replace UPSI switch by condition name

UPSI-5 (850)
Replace UPSI switch by condition name

UPSI-6 (850)
Replace UPSI switch by condition name

UPSI-7 (850)
Replace UPSI switch by condition name

USING
START...USING KEY USING word deleted

VALUE
Remove sign if PICTURE unsigned

VALUES
Changed to VALUE if not used in level 88

WHEN-COMPILED
WHEN-COMPILED special register output reformatted (OS/VS COBOL only)

WRITE
MOVE NOMINAL KEY TO RECORD KEY for ISAM files;
add reference modification to variable length receivers
that contain their own ODO.

COBOL statements converted with warning

NOT Change abbreviated relation condition COBOL 68 Standard syntax

ON ON integer changed to IF
ON integer UNTIL integer changed to IF
other cases flagged

COBOL statements flagged

The flagged COBOL statements may be put in several categories:

1. Language elements from functions of the source language that are no longer supported in the target languages and have no replacement or equivalent in the target languages. Therefore, a conversion cannot be performed.
   a. Communication Facility (OS/VS COBOL only)

      COMMUNICATION
      Communication Section header flagged

      COUNT
      ACCEPT MESSAGE COUNT statement flagged

      DISABLE
      DISABLE statement flagged

      ENABLE
      ENABLE statement flagged

      RECEIVE
      Receive statement flagged

      SEND Send statement flagged

   b. Report Writer section (flagged if **Flag Report Writer statements** field on Conversion Options panel 2 is set to Y)

      GENERATE
      Generate statement flagged

      INITIATE
      Initiate statement flagged

      LINE-COUNTER (855)
      Flagged

      PAGE-COUNTER (855)
      Flagged

      PRINT-SWITCH (855)
      Flagged

      REPORT
      Flagged

      REPORTS
      Flagged

      TERMINATE
      Statement flagged

      USE Flagged USE BEFORE REPORTING

2. Other cases

   ALL Flag MOVE ALL (if COBOL 68 Standard syntax)

   ALTER
   SEGMENTATION - flag

   CALL Flagged if the identifier has a PICTURE string that consists of A's and B's only; CALL...USING procedure name/VSAM file name statements are flagged;

CANCEL	Flagged if there is an identifier in the statement with a PICTURE string that consists of A's and B's only; procedure name/VSAM file name statements are flagged
CURRENCY	Flag COBOL 68 Standard CURRENCY SIGN clause
DEBUGGING	USE FOR DEBUGGING flag if not procedure name
DIVIDE	Flag ON SIZE ERROR when multiple receivers
IN	Flag qualified indexes
INITIALIZE	Flag INITIALIZE...REPLACING ALPHABETIC/ALPHANUMERIC-EDITED if there are receiving fields with PICTURE strings that consist of A's and B's only.
INSPECT	Flagged if the PROGRAM COLLATING SEQUENCE established in the OBJECT COMPUTER paragraph identifies an alphabet defined with the ALSO clause
LABEL RECORD	Data name changed to STANDARD
MULTIPLY	Flag ON SIZE ERROR when there are multiple receivers
NSTD-REELS	Flag references to NSTD-REELS special register
OCCURS	Flags if phrases of OCCURS clause are in non-standard order
OF	Flag qualified indexes
PIC	Check scaled variables
PICTURE	Check scaled variables
REPLACE	Flagged if COBOL 85 Standard source
RELATIVE	Check if PICTURE of relative key has scaling position
STRING	Statement flagged if the receiver has a PICTURE string that consists of A's and B's only;
TOTALING/ TOTALED AREA	In LABEL clause deleted
TRACE	READY/RESET TRACE statement deleted
TRACK-LIMIT	TRACK-LIMIT removed
TRUE	SET...TO TRUE statement flagged if COBOL Standard 85 standard behavior is different.

UNSTRING	UNSTRING DELIMITED BY ALL flag (if COBOL 68 Standard)
USE	GIVING phrase removed in USE AFTER STANDARD

LCPs corresponding to information

ACCESS	Update FILE information in CONTROL file
ASCENDING	Save key ID for SEARCH ... WHEN
DECLARATIVES	Check section end
DEPENDING	Save name of object of ODO
DESCENDING	Save key ID for SEARCH ... WHEN
END-OF-CONVERSION-1	Add WRITE ... AFTER ADVANCING section
END-OF-CONVERSION-2	Add data items in WS
END-OF-CONVERSION-3	Add data items in WS
END-OF-CONVERSION-4	Add SPECIAL NAMES
END-OF-CONVERSION-5	List data names to be checked
ENVIRONMENT	Set flag when entering Environment Division
ID	Set flag when entering ID Division
IDENTIFICATION	Set flag when entering ID Division
INDEXED	Store Indexes on Work file; used by the IN and the OF LCP
INPUT-OUTPUT	Set flag when entering I/O Section
LINKAGE	Set flag when entering Linkage Section
PROGRAM-ID	Update PROGRAM FILE
RECORD	Update key record
SECTION	Set flag when entering a section
SELECT	Update CONTROL file

WORKING-STORAGE	
	Set flag entering WS SECTION
01	Save RECORD name of FD

Appendix H. Sample output

This appendix contains sample output generated by CCCA.

Program/File report

```
 5648-B05 V2R1         - IBM COBOL CONVERSION AID -   SAMPLE RUN                    17 APR 1998 18:45:39    Page    1
               ..........  P R O G R A M  --   F I L E   R E P O R T  ..........
                               C
---COBOL--                D L  I   -----OPTIONS-----                          --------- FILES DEFINED --------------------
  PGM.NAME REV  PBR SUFF  E V  C             1 11111 MEMBER     STATUS        OLD NEW CNV SYSTEM    COBOL
                CNV WORD  L L  S   12345 67890 12345 NAME       DATE/TIME     ORG ORG REQ NAME      NAME

ABJIVP01    03  213    0  Q 1  N   YYYYY YNNNN NNNNN ABJIVP01   COMPLETE
                                                                98/04/16 18:26
                                                                COMPILE RC=00
                                                                98/04/16 18:26
                                                             MANUAL COMPLETION
                                                                  /  /     :
                                                                              S   S   N   DDPRINT   PRINT-FILE
ABJIVP02    04  208    2  Q 1  N   YYYYY YNNNN NNNNN ABJIVP02   COMPLETE
                                                                98/04/16 18:12
                                                                COMPILE RC=04
                                                                98/04/16 18:12
                                                             MANUAL COMPLETION
                                                                  /  /     :
                                                                              S   S   N   PRINT     PRINT-OUT
ABJIVP03    02  875    0  Q 1  Y   YYYYY NNNNN NNNNN ABJIVP03   COMPLETE
                                                                98/04/16 18:04
                                                             MANUAL COMPLETION
                                                                  /  /     :
DIRECT1     02   42    0  A 2  N   YYYYY NNNNN NNNNN DIRECT1    WARNING
                                                                98/04/16 18:32
                                                             MANUAL COMPLETION
                                                                  /  /     :
                                                                              R   R   Y  MASTER1  DA-FIL1
                                                                              S   S   N  MASTER2  DA-FIL2
                                                                              D   R   Y  MASTER3  DA-FIL3
                                                                              W   R   Y  MASTER4  DA-FIL4
                                                                              A   R   Y  MASTER5  DA-FIL5
                                                                              U   R   Y  MASTER6  DA-FIL6
                                                                              I   I   Y  MASTER7  DA-FIL7
                                                                              U   R   Y  TAT1     B1
                                                                              R   R   Y  TAT2     B2
                                                                              S   S   N  TAT3     B3
                                                                              D   R   Y  TAT4     B4
                                                                              W   R   Y  TAT5     B5
                                                                              A   R   Y  TAT6     B6
      ..........         E N D    O F    R E P O R T        .........
```

File/Program report

```
5648-B05 V2R1        - IBM COBOL CONVERSION AID -   SAMPLE RUN                17 APR 1998 18:46:21    Page    1
     ..........  F I L E  --  P R O G R A M   R E P O R T  ..........
     SYSTEM      PROGRAM      ORG  CONVERSION COBOL
     NAME        NAME               REQUIRED  NAME

     ANSWERS     LCPTST03              NO     PRINT-OUT
     APRINTER    LCPIO101              NO     PRINT-FILE
                 LCPIO105      S       NO     OUTPUT-DEVICE
                 LCPTST05      S       NO     PRINT-FILE
                 LCPTST10      S       NO     PRINT-FILE
                 LCPTST11              NO     OUTPUT-LINE
                 LCPTST12      S       NO     PRINT-LINE
                 LCPTST13      S       NO     PRINT-LINE
                 LCPTST14      S       NO     PRINT-FILE
                 LCPTST15      S       NO     A-LINE
                 LCPTST16      S       NO     A-LINE
     CPNN0001    CPGM0001      S       NO     CAD010T1
     CPNN0002    CPGM0002      S       NO     CSD-ONLINE-RECORD-SORT-FILE
     CPNN0003    CPGM0003      S       NO     CSD-DATABASE-CONTROL-FILE
     CPNN0004    CPGM0004      S       NO     CSD-ONLINE-MASTER-FILE
     DDPRINT     ABJIVP01      S       NO     PRINT-FILE
     DUM         BLGSA01       S       NO     SORTFILE
     EIPARM      EI030BPF      I       YES    EIPARM
     IBDAM       LCPIO105      R       YES    BDAM-IN
                 LCPIO107      R       YES    BDAM-IN
     INFILE      INDEX         S       NO     CARD-FILE
     INFPRINT    INFF0101      S       NO     REPORT-FILE
     IOBDAM      LCPIO105      R       YES    BDAM-IO
                 LCPIO107      R       YES    BDAM-IO
     ISAM01A     LCPIO101      I       YES    QISM-OUT
                 LCPIO101      I       YES    QISM-IN
     ISAM07A     LCPIO106      I       YES    QUISAM
     ISAM08A     LCPIO106      I       YES    QUISAMX
     ISAM09A     LCPIO106      I       YES    BYSAM
     MASTER      INDEX         I       YES    IS-FILE
                 LCPTST04      I       YES    IS-FILE
                 LCPTST07      I       YES    IS-FILE
     MASTER1     DIRECT1       R       YES    DA-FIL1
     MASTER2     DIRECT1       S       NO     DA-FIL2
     MASTER3     DIRECT1       R       YES    DA-FIL3
     PRINT       ABJIVP02      S       NO     PRINT-OUT
     ..........         E N D    O F    R E P O R T       ..........
```

Copy/Program report

```
5648-B05 V2R1        - IBM COBOL CONVERSION AID -   SAMPLE RUN                17 APR 1998 18:47:38    Page    1
     ..........  C O P Y  --  P R O G R A M   R E P O R T  ..........
     COPY        PROGRAM      LOCATION        ASSOCIATED
     NAME        NAME                         NAME

     ABJCIOUT    ABJIVP03     LINKAGE SECTION MAP13I
     ABJCQIN     ABJIVP03     WORKING-STORAGE MAP1I
     ABJCQOUT    ABJIVP03     LINKAGE SECTION MAP11I
     ABJERRMP    ABJIVP03     LINKAGE SECTION MAP12I
     ABJL901     ABJIVP02     FILE SECTION    OUTPUT-RECORD
     ABJL902     ABJIVP02     FILE SECTION
     ABJL903     ABJIVP02     WORKING-STORAGE NUM-OF-ITEMS
     ABJL903A    ABJIVP02     WORKING-STORAGE
     ABJL904     ABJIVP02     WORKING-STORAGE
     DFHAID      ABJIVP03     WORKING-STORAGE DFHAID
     DFHBLLDS    ABJIVP03     LINKAGE SECTION DFHBLLDS
     DFHBMSCA    ABJIVP03     WORKING-STORAGE DFHBMSCA
     DFHCSADS    ABJIVP03     LINKAGE SECTION DFHCSADS
     DFHTCADS    ABJIVP03     LINKAGE SECTION DFHTCADS
     ..........         E N D    O F    R E P O R T       ..........
```

Call/Program report

```
 5648-B05 V2R1        - IBM COBOL CONVERSION AID -   SAMPLE RUN             17 APR 1998 18:48:49    Page    1
      .......... C A L L  --  P R O G R A M   R E P O R T .........
      PROGRAM     N OF   CALL
      NAME        CALLS  NAME

      ABJIVP03    00006  "CBLTDLI"
      AMPM2AA     00010  'CBLTDLI'
      BLGA201     00005  'CBLBTS'
      BLGF200     00001  'BLGT20A'
      ..........        E N D   O F   R E P O R T       .........
```

LCP directory

```
 5648-B05 V2R1                - IBM COBOL CONVERSION AID -                         17 APR 1998 17:16:33    Page    1
               ..........       L C P   D I R E C T O R Y        ..........
RESERVED WORD                PROCESSING DESCRIPTION                         DATE      TIME    CORE  DBG
                                                                                                SIZE  OPT
-------------------------------------------------------------------------------------------------------------------
 ACCEPT                       flag ACCEPT used in CICS programs            20/APR/1998  07:56:10   185
 ACCESS                       Update Control file with FILE information    21/APR/1998  16:38:59   525
 ACTUAL                       ACTUAL KEY... replaced by RELATIVE KEY...    21/APR/1998  16:39:15   670
 ADD                          ADD WITH BLL'S                               20/APR/1998  07:56:44  8480
 ALL                          MOVE ALL ...                                 20/APR/1998  07:57:17   815
 ALPHABETIC                   ALPHABETIC changed to ALPHABETIC-UPPER       21/APR/1998  16:39:29   295
 ALTER                        SEGMENTATION  -  FLAG                        20/APR/1998  07:57:27   530
 APPLY                        Remove APPLY clause from I-O-CONTROL para    21/APR/1998  16:41:51  1065
 ASCENDING                    Save KEY data-name for SEARCH...WHEN         21/APR/1998  16:51:15   690
 ASSIGN                       Change ASSIGN clause syntax                  21/APR/1998  16:42:20  9405
 ASSIGN/DOS                   Change ASSIGN clause syntax                  21/APR/1998  16:42:44  8680
 BLANK                        Save 88's with VALUE zero for SET...TO TRUE  21/APR/1998  16:43:06  3940
 BLOCK                        If VSAM file, remove BLOCK CONTAINS clause   21/APR/1998  16:43:21   245
 CALL                         CALL statement update and flagging           21/APR/1998  16:43:30  5870
 CANCEL                       Flag identifiers with A and B only PICTURE   21/APR/1998  16:43:48  3270
 CBL                          Update compiler options                      21/APR/1998  16:44:03  2595
 CLOSE                        Remove WITH POSITIONING phrase               21/APR/1998  16:44:16  1380
 COM-REG                      Flag reference to COM-REG special register   21/APR/1998  16:44:28   205
 COMMUNICATION                COMMUNICATION SECTION  FLAG                  20/APR/1998  08:00:06   655
 COMPUTE                      CICS - CHANGE BLL TO ADDRESS OF              20/APR/1998  08:00:16  4965
 CONFIGURATION                CHECK IF ENVIRONMENT DIVISION                20/APR/1998  08:00:44   785
 COPY                         COPY statement update and flagging           21/APR/1998  16:44:38  3240
 CORR                         REPLACED BY SEPARATE MOVES                   20/APR/1998  08:01:28  5520
 CORRESPONDING                REPLACED BY SEPARATE MOVES                   20/APR/1998  08:01:46  5520
 COUNT                        COMMUNICATION SECTION - FLAG                 20/APR/1998  08:02:05   345
 CURRENCY                     FLAG ANS 68 CURRENCY SIGN CLAUSE             20/APR/1998  08:02:41   560
 CURRENT-DATE                 CHANGE DATE FORMAT                           20/APR/1998  08:02:26  3400
 DATE                         ADD - TO DATE COMPILED AND DATE WRITTEN      20/APR/1998  08:03:02  1555
 DATE-COMPILED                COMMENT OUT DATE-COMPILED PARAGRAPH          20/APR/1998  08:02:52   300
 DEBUG                        CHANGE TO COMMENT THE PACKET                 20/APR/1998  08:03:13   755
 DEBUGGING                    USE FOR DEBUGGING  FLAG IF ¬ PROCNAME        20/APR/1998  08:03:24  1230
 DECLARATIVES                 CHECK SECTION END (ALTER-PERFORM)            20/APR/1998  08:03:35   460
 DELETE                       flag DELETE used in CICS programs            20/APR/1998  08:03:45   185
 DELIMITED                    CHECK IF STRING INTO SAME AREA               20/APR/1998  08:03:54  1565
 DEPENDING                    STORE ODO ON WORK FILE                       20/APR/1998  08:04:06  4690
 DESCENDING                   SAVE KEY ID FOR SEARCH ... WHEN              20/APR/1998  08:04:24   690
 DISABLE                      COMMUNICATION SECTION   FLAG                 20/APR/1998  08:04:34   645
 DISP                         OPEN/CLOSE..DISP ..TAPE                      20/APR/1998  08:04:44   845
 DISPLAY                      flag DISPLAY used in CICS programs           20/APR/1998  08:04:55   185
 DIVIDE                       FLAG SIZE ERROR WHEN MULTIPLE RECEIVERS      20/APR/1998  08:05:04  1820
 DIVISION                     ENSURE PERIOD FOLLOWS DIVISION HDR           20/APR/1998  08:05:16   980
 ENABLE                       COMMUNICATION SECTION   FLAG                 20/APR/1998  08:05:26   645
 END-OF-CONVERSION-1          CHECK 00 ADD WRITE                           20/APR/1998  08:05:36  8805
 END-OF-CONVERSION-2          ADD DATA ITEMS IN WS                         20/APR/1998  08:06:40  8960
 END-OF-CONVERSION-2/DOS      ADD DATA ITEMS IN WS                         20/APR/1998  08:05:57  8820
 END-OF-CONVERSION-3          ADD DATA ITEMS IN WS                         20/APR/1998  08:07:01  8765
 END-OF-CONVERSION-3/DOS      ADD DATA ITEMS IN WS                         20/APR/1998  08:07:23  4115
 END-OF-CONVERSION-4          ADD SPECIAL NAMES                            20/APR/1998  08:07:38  7920
 END-OF-CONVERSION-5          LIST DATA NAMES                              20/APR/1998  08:07:59  3305
 5648-B05 V2R1               - IBM COBOL CONVERSION AID -                       17 APR 1998 17:16:33    Page    2
              ..........       L C P   D I R E C T O R Y        ..........
RESERVED WORD                PROCESSING DESCRIPTION                               DATE      TIME    CORE  DBG
                                                                                                    SIZE  OPT
--------------------------------------------------------------------------------------------------------------
 ENTER                        REMOVE ENTER STATEMENT                             20/APR/1998  08:08:14   605
 ENVIRONMENT                  CHECK IF CONFIGURATION-SECTION                     20/APR/1998  08:08:24  1570
 EXAMINE                      REPLACE EXAMINE WITH INSPECT                       20/APR/1998  08:08:36  3765
 EXEC                         REPLACE POINTER OPTION BY ADDRESS OF ...           20/APR/1998  08:08:52  2990
 EXHIBIT                      CHANGE EXHIBIT TO DISPLAY                          20/APR/1998  08:09:06  7895
 FD                           CONVER FD ENTRY,CHECK LABEL CLAUSE                 20/APR/1998  08:09:28  7750
 FILE-LIMIT                   DELETE FILE-LIMIT ANS 68 CLAUSE                    20/APR/1998  08:09:51   535
 FILE-LIMITS                  DELETE FILE-LIMITS ANS 68 CLAUSE                   20/APR/1998  08:10:06   535
 GENERATE                     STATEMENT FLAGGED     RPWT                         20/APR/1998  08:10:17   365
 ID                           SET FLAG WHEN ENTERING ID DIVISION                 20/APR/1998  08:10:27   160
 IDENTIFICATION               SET FLAG WHEN ENTERING ID DIVISION                 20/APR/1998  08:10:37   160
 IN                           ISSUE MESSAGE FOR QUALIFIED INDEXES                20/APR/1998  08:10:46  2940
 INDEXED                      STORE INDEX NAME ON WORK FILE                      20/APR/1998  08:11:00  2550
 INITIALIZE                   FLAG REPLACING ALPHABETIC/ALPHANUMERIC             20/APR/1998  08:11:14  3930
 INITIATE                     STATEMENT FLAGGED      RPWT                        20/APR/1998  08:11:30   365
 INPUT-OUTPUT                 SET FLAG WHEN ENTERING I-O SECTION                 20/APR/1998  08:11:50   165
 INSPECT                      FLAG IF COLLATING SEQUENCE HAS AN ALSO             20/APR/1998  08:11:40   540
 JUST                         ANSI 68 - RIGHT JUSTIFY PICTURE VALUE              20/APR/1998  08:11:59  6225
 JUSTIFIED                    ANSI 68 - RIGHT JUSTIFY PICTURE VALUE              20/APR/1998  08:12:18  6225
 LABEL                        CHECK LABEL CLAUSE                                 20/APR/1998  08:12:38  3690
 LEAVE                        OPEN...LEAVE TAPE                                  20/APR/1998  08:18:57   620
 LINE                         REMOVE LINE AFTER MNEMONIC NAME                    20/APR/1998  08:19:09   605
 LINES                        REMOVE LINE AFTER MNEMONIC NAME                    20/APR/1998  08:19:19   605
 LINKAGE                      SET FLAG WHEN ENTERING IN LINKAGE SECTION          20/APR/1998  08:19:29   425
 MEMORY                       REMOVE MEMORY SIZE CLAUSE                          20/APR/1998  08:20:48   310
 MERGE                        flag MERGE used in CICS programs                   20/APR/1998  08:20:58   185
 MULTIPLE                     DELETE MULTIPLE FILE TAPE CLAUSE                   20/APR/1998  08:21:07   770
 MULTIPLY                     FLAG SIZE ERROR WHEN MULTIPLE RECEIVERS            20/APR/1998  08:21:18  1800
 NATIVE                       ADD ALPHABET WORD IN SPECIAL-NAMES                 20/APR/1998  08:21:29   615
 NOMINAL                      DELETE NOMINAL KEY CLAUSE                          20/APR/1998  08:21:40   840
 NOT                          FLAG ANSI 68 ABBREV. RELATION CONDITIONS           20/APR/1998  08:21:50  5620
 NOTE                         COMMENT OUT NOTE STATEMENT                         20/APR/1998  08:22:08   650
 NSTD-REELS                   FLAG NSTD-REELS SPECIAL REGISTER                   20/APR/1998  08:22:18   205
 OBJECT-COMPUTER              MOVE INTO AREA A.                                  20/APR/1998  08:22:28   320
 OCCURS                       Correct order of phrases in OCCURS clause          21/APR/1998  16:45:21  1885
 OF                           ISSUE MESSAGE FOR QUALIFIED INDEXES                20/APR/1998  08:22:52  2940
 ON                           FLAG ON DEBUGGING                                  20/APR/1998  08:23:06  4545
 OPEN                         REVERSED OPTION - MULTIREEL FILE                   20/APR/1998  08:23:23   915
 OTHERWISE                    REPLACE OTHERWISE BY ELSE                          20/APR/1998  08:23:34   290
 PERFORM                      FLAG PERFORM...VARYING...AFTER                     20/APR/1998  08:23:44   815
 PIC                          FLAG SCALED VARIABLES                              20/APR/1998  08:23:54  7195
 PICTURE                      FLAG SCALED VARIABLES                              20/APR/1998  08:24:15  7195
 POSITIONING                  CHANGE POSITIONING TO ADVANCING                    20/APR/1998  08:24:35  9580
 PROCEDURE                    GENERATE ERROR DECLARATIVES                        20/APR/1998  08:25:01  4870
 PROCESS                      MODIFY COMPILER OPTIONS FOR COBOL 370              20/APR/1998  08:25:17  2595
 PROCESSING                   DELETE 68 STANDARD CLAUSE                          20/APR/1998  08:25:31   255
 PROGRAM-ID                   UPDATE PROGRAM FILE                                20/APR/1998  08:25:40  2495
 READ                         MOVE NOMINAL TO RECORD KEY                         20/APR/1998  08:25:55   525
 RECEIVE                      COMMUNICATION SECTION  FLAG                        20/APR/1998  08:26:22   640
 5648-B05 V2R1                - IBM COBOL CONVERSION AID -                    17 APR 1998 17:16:33    Page    3
               ..........        L C P    D I R E C T O R Y        ..........
RESERVED WORD                PROCESSING DESCRIPTION                          DATE      TIME    CORE  DBG
                                                                                               SIZE  OPT
--------------------------------------------------------------------------------------------------------------
 RECORD                       UPDATE KEY RECORD OF WORK FILE                 20/APR/1998  08:26:32   240
 REDEFINES                    REMOVE CLAUSE IN FD                            20/APR/1998  08:26:42   425
 RELATIVE                     KEEP RELATIVE KEY                              20/APR/1998  08:26:52   480
 RELEASE                      ADD LENGTH FOR VARIABLE LENGTH RECEIVER        20/APR/1998  08:27:02  4350
 REMARKS                      COMMENT OUT REMARKS PARAGRAPH                  20/APR/1998  08:27:19   340
 REPLACE                      ANSI 85 FLAG OTHERWISE ADD SUFFIX              20/APR/1998  08:27:29   620
 REPORT                       STATEMENT FLAGGED      RPWT                    20/APR/1998  08:27:39   730
 REPORTS                      STATEMENT FLAGGED      RPWT                    20/APR/1998  08:27:50   635
 REREAD                       OPEN...REREAD TAPE                             20/APR/1998  08:28:00   605
 RERUN                        CHANGE RERUN  CLAUSE SYNTAX                    20/APR/1998  08:28:11  2545
 RERUN/DOS                    CHANGE ASSIGN NAME   SYNTAX                    20/APR/1998  08:28:23  4220
 RESERVE                      CHANGE RESERVE SYNTAX ANS 68 TO ANS 74         20/APR/1998  08:28:39  1495
 REWRITE                      MOVE NOMINAL KEY TO RECORD KEY                 20/APR/1998  08:28:51  8215
 SAME                         CHANGE SAME AREA TO SAME RECORD AREA           20/APR/1998  08:29:28   400
 SD                           CONVER SD ENTRY , LABEL CLAUSE                 20/APR/1998  08:29:42  3550
 SEARCH                       SEARCH WHEN KEY                                20/APR/1998  08:29:58  9060
 SECTION                      SET FLAG WHEN ENTERING A SECTION               20/APR/1998  08:30:48  1165
 SEEK                         DELETE STANDARD 68 CLAUSE                      20/APR/1998  08:31:08   680
 SELECT                       UPDATE CONTROL FILE                            20/APR/1998  08:31:26  2875
 SEND                         COMMUNICATION SECTION  FLAG                    20/APR/1998  08:31:42   640
 SEQUENCE                     ADD ALPHABET WORD IN SPECIAL-NAMES             20/APR/1998  08:31:53  2260
 SERVICE                      REPLACE SERVICE RELOAD BY CONTINUE             20/APR/1998  08:32:06  1065
 SORT-OPTION                  REMOVE SORT-OPTION SPECIAL REGISTER            20/APR/1998  08:32:18   290
 SOURCE-COMPUTER              MOVE INTO AREA A                               20/APR/1998  08:32:28   320
 SPECIAL-NAMES                ADD SPECIAL NAMES                              20/APR/1998  08:32:38   680
 STANDARD-1                   ADD ALPHABET WORD IN SPECIAL-NAMES             20/APR/1998  08:32:48   610
 START                        MOVE NOMINAL TO RECORD KEY                     20/APR/1998  08:32:59  5800
 STOP                         flag STOP used in CICS programs                20/APR/1998  08:33:18   280
 STRING                       FLAG ALPHANUMERIC-EDITED RECEIVERS             20/APR/1998  08:33:28  3410
 SUBTRACT                      BLL SUBTRACT             ...                  20/APR/1998  08:33:43  8615
 TERMINATE                    CHANGE TO A COMMENT    RPWT                    20/APR/1998  08:34:07   365
 THAN                         REMOVE THAN IF > THAN OR < THAN                20/APR/1998  08:34:17   340
 THEN                         DELETE THEN BETWEEN STATEMENTS                 20/APR/1998  08:34:26   965
 TIME-OF-DAY                  CHANGE TIME-OF-DAY FORMAT                      20/APR/1998  08:34:49  2810
 TRACE                        REMOVE TRACE STATEMENT                         20/APR/1998  08:35:22  1295
 TRACK-AREA                   TRACK-AREA REMOVED                             20/APR/1998  08:35:03   250
 TRACK-LIMIT                  TRACK-LIMIT REMOVED                            20/APR/1998  08:35:13   210
 TRANSFORM                    REPLACE TRANSFORM BY INSPECT                   20/APR/1998  08:35:34  1310
 TRUE                         SET...TO TRUE - REL. CONDITIONS FLAGGED        20/APR/1998  08:35:46  4620
 UNSTRING                     UNSTRING DELIMITED BY ALL  FLAG                20/APR/1998  08:36:03  8520
 USE                          REMOVE USE FOR DEBUGGING/REPORTING SECTION     20/APR/1998  08:36:27  3510
 USING                        START ...USING KEY                             20/APR/1998  08:36:46  1555
 VALUE                        REMOVE SIGN IF PICTURE UNSIGNED                20/APR/1998  08:37:01  2185
 VALUES                       CHANGED TO VALUE                               20/APR/1998  08:37:14  2640
 WHEN-COMPILED                CHANGE WHEN-COMPILED FORMAT                    20/APR/1998  08:37:27  2610
 WORKING-STORAGE              SET FLAG ENTERING WS SECTION                   20/APR/1998  08:38:04   365
 WRITE                        MOVE NOMINAL KEY TO RECORD KEY                 20/APR/1998  08:37:40  8890
 ZEROES                       REPLACE ZEROES WITH ZERO IN IF                 20/APR/1998  08:38:16  1030
 ZEROS                        REPLACE ZEROS  WITH ZERO IN IF                 20/APR/1998  08:38:28  1030
 5648-B05 V2R1               - IBM COBOL CONVERSION AID -                           17 APR 1998 17:16:33    Page    4
              ..........        L C P   D I R E C T O R Y        ..........
RESERVED WORD                PROCESSING DESCRIPTION                               DATE      TIME    CORE  DBG
                                                                                                    SIZE  OPT
--------------------------------------------------------------------------------------------------------------
 01                           MODULE STANDARD : LEVEL 01                         20/APR/1998  08:19:39  5885
 1                            MODULE STANDARD : LEVEL 1                          20/APR/1998  08:19:57  5965
 77                           MODULE STANDARD : LEVEL 77                         20/APR/1998  08:20:15  3645
 848                          Add suffix to user-defined words                   21/APR/1998  16:45:11   710
 849                          CHECK END-OF-PAGE AGAINST LINAGE                   20/APR/1998  08:13:03   585
 850                          MODIFY UPSI SWITCH                                 20/APR/1998  08:13:17  6655
 851                          add LENGTH for variable length receiver            20/APR/1998  08:13:41  6815
 852                          ADD SUFFIX TO DOS & OS user-defined word           20/APR/1998  08:14:02   470
 853                          ADD ALPHABET WORD IN SPECIAL-NAMES                 20/APR/1998  08:14:12   925
 854                          SAVE MNEMONIC NAMES FOR ADVANCING .. LINE          20/APR/1998  08:14:23   280
 855                          STATEMENT FLAGGED  RPWT                            20/APR/1998  08:14:33   290
 856                          COMMENT OUT COMMENT PARAGRAPH                      20/APR/1998  08:14:43   300
 857                          ADD SUFFIX FOR RESERVED WORD  (DOS)                20/APR/1998  08:14:53   610
 858                          ADD SUFFIX to ANSI68/74 user-defined word          20/APR/1998  08:15:03   465
 859                          ADD SUFFIX TO DOS, OS & VS COBOL II WORD           20/APR/1998  08:15:13   595
 860                          CHECK PERIODS BEFORE/BEHIND LABELS.                20/APR/1998  08:15:23  1760
 861                          ADD SUFFIX TO PROGRAM NAME                         20/APR/1998  08:15:35   970
 862                          ADD QUOTE/APOST MSG ON CONTINUED LITRL             20/APR/1998  08:15:46   625
 863                          REMOVE BACK-TO-BACK PARENTHESES                    20/APR/1998  08:15:56   610
 864                          CHECK LITERAL HAS SPACES FOR AND AFT               20/APR/1998  08:16:07  1435
 865                          REMOVE CONSECUTIVE PERIODS                         20/APR/1998  08:16:19   110
 867                          FLAG FILE-STATUS                                   20/APR/1998  08:16:28  1000
 870                          Add DATE FORMAT clause                             20/APR/1998  08:16:39  9900
 88                           PUT VALUE BETWEEN QUOTE IF NEEDED                  20/APR/1998  08:20:29  5855
 890                          REMOVE BLL CELLS IN LINKAGE SECTION                20/APR/1998  08:17:05  2390
 891                          CHANGE BLL CELLS TO ADDRESS OF ...                 20/APR/1998  08:17:18  6855
 892                          REMOVE STATEMENT WITH SECONDARY BLL                20/APR/1998  08:17:40  1300
 893                          FLAG STATEMENT WITH REDEFINED BLL                  20/APR/1998  08:17:51   465
 894                          FLAG STATEMENT WHICH REFERENCES 1ST BLL            20/APR/1998  08:18:02   455
 895                          FLAG 01 LEVEL RECORDS WITHOUT BLL CELLS            20/APR/1998  08:18:12   190
 896                          FLAG BLL CELLS THAT DO NOT HAVE 01 RECORDS         20/APR/1998  08:18:21   190
 991                          REMOVE BRACKETS AROUND OPERATORS                   20/APR/1998  08:18:30  2335
 997                          REMOVE TO AFTER =                                  20/APR/1998  08:18:43  3435
       ..........        E N D   O F   D I R E C T O R Y ..........
```

Compilation of an LCP

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -              SAMPLE RUN                            17 APR 1998  03:06:46   PAGE    1
  STMT SEQNBR  A 1 B.. ... 2 ... ...    LCP SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN

         /****************************************************************00001000
         *                                                               *00002000
   1     *    CONVERA OBJECT-COMPUTER          'MOVE INTO AREA A.'       *00003001
         *                                                               *00004000
         *****************************************************************00005000
         *   Licensed Materials - Property of IBM                        *00006000
         *                                                               *00007000
         *   5785-CCC 5785-ABJ 5648-B05 5686-A07                         *00008000
         *                                                               *00009000
         *   (c) Copyright IBM Corp. 1982, 1998. All Rights Reserved.    *00009100
         *                                                               *00009200
         *   US Government Users Restricted Rights - Use,                *00009300
         *   duplication or disclosure restricted by GSA ADP             *00009400
         *   Schedule Contract with IBM Corp.                            *00009500
         *                                                               *00009600
         *****************************************************************00010200
                                                                          00011000
   2      OBJECT-010.                                                     00012000
   3          IF COBOL-TYPE NOT = 'DOS/VS'                                00013000
   4          AND COBOL-TYPE NOT = 'OS/VS'                                00014000
   5              GO TO END-CHANGE.                                       00015000
   6          IF WHERE-USED IS NOT EQUAL TO 'EN'                          00016000
   7              GO TO END-CHANGE.                                       00017000
   8          IF TOKEN-POSITION NOT < 5                                   00017100
   9            MOVE 01 TO STARTING-POSITION                              00017300
  10            MOVE TOKEN-TEXT TO ADD-TEXT                               00017400
  11            PERFORM DETERMINE-LENGTH                                  00017500
  12            PERFORM REPLACE.                                          00017600
  13          GO TO END-CHANGE .                                          00029000
      TEXT DESCRIPTION -       MOVE INTO AREA A.
      LCP PROGRAM NAME -       OBJECT-COMPUTER
      TABLE DRIVEN CORE SIZE -    320
```

```
5648-B05 V2R1   - IBM COBOL CONVERSION AID -             SAMPLE RUN                           17 APR 1998  03:06:46   PAGE    1
 STMT SEQNBR  A 1 B.. ... 2 ... ...    LCP SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN

         /***************************************************************00001000
         *                                                              *00002000
  1      *    CONVER EXAMINE       'REPLACE EXAMINE WITH INSPECT'       *00003000
         *                                                              *00005000
         *    REPLACE THE EXAMINE STATEMENT WITH THE INSPECT STATEMENT  *00005300
         *                                                              *00005600
         *    ------------------ SYNTAX DESCRIPTION --------------------- *00006000
         *                                                              *00007000
         *    FORMAT 1 COBOL ANS 68 :                                   *00008000
         *    -----------------------                                   *00009000
         *    -- <EXAMINE> <IDENTIFIER-1>                               *00010000
         *    --      <TALLYING>                                        *00011000
         *    --           <UNTIL FIRST> <LITERAL-1>                    *00012000
         *    --           <ALL> <LITERAL-1>                            *00013000
         *    --           <LEADING> <LITERAL-1>                        *00014000
         *    --                                                        *00015000
         *    ++                <REPLACING> <BY> <LITERAL-2>            *00016000
         *                                                              *00017000
         *    FORMAT 1 COBOL ANS 74 :                                   *00018000
         *    -----------------------                                   *00019000
         *    -- <MOVE> <ZEROS> <TO> <TALLY>                            *00020000
         *    -- <INSPECT> <IDENTIFIER-1>                               *00021000
         *    --      <TALLYING> <TALLY> <FOR>                          *00022000
         *    --           <CHARACTERS > <BEFORE> <ALPHA-LITERAL-1>     *00023000
         *    --           <ALL> <ALPHA-LITERAL-1>                      *00024000
         *    --           <LEADING> <ALPHA-LITERAL-1>                  *00025000
         *    ++                <REPLACING>                             *00026000
         *    ++                     <CHARACTERS > <BY>                 *00027000
         *    ++                          <ALPHA-LITERAL-2>             *00028000
         *    ++                               <BEFORE> <ALPHA-LITERAL-1> *00029000
         *    ++                     <ALL> <ALPHA-LITERAL-1>            *00030000
         *    ++                               <BY> <ALPHA-LITERAL-2>   *00031000
         *    ++                     <LEADING> <ALPHA-LITERAL-1>        *00032000
         *    ++                               <BY> <ALPHA-LITERAL-2>   *00033000
         *                                                              *00034000
         *                                                              *00035000
         *    FORMAT 2 COBOL ANS 68 :                                   *00036000
         *    -----------------------                                   *00037000
         *    -- <EXAMINE> <IDENTIFIER-1>                               *00038000
         *    --      <REPLACING>                                       *00039000
         *    --           <UNTIL FIRST> <LITERAL-3> <BY> <LITERAL-4>   *00040000
         *    --           <ALL> <LITERAL-3> <BY> <LITERAL-4>           *00041000
         *    --           <LEADING> <LITERAL-3> <BY> <LITERAL-4>       *00042000
         *    --           <FIRST> <LITERAL-3> <BY> <LITERAL-4>         *00043000
         *                                                              *00044000
         *    FORMAT 2 COBOL ANS 74 :                                   *00045000
         *    -----------------------                                   *00046000
         *    -- <INSPECT> <IDENTIFIER-1>                               *00047000
         *    --                <REPLACING>                             *00048000
         *    --                     <CHARACTERS >  <BY>                *00049000
         *    --                          <ALPHA-LITERAL-4>             *00050000
         *    --                               <BEFORE> <ALPHA-LITERAL-3> *00051000
         *    --                     <ALL> <ALPHA-LITERAL-3>            *00052000
         *    --                               <BY> <ALPHA-LITERAL-4>   *00053000
         *    --                     <LEADING> <ALPHA-LITERAL-3>        *00054000
         *    --                               <BY> <ALPHA-LITERAL-4>   *00055000
         *    --                     <FIRST> ALPHA-LITERAL-3            *00056000
 STMT SEQNBR  A 1 B.. ... 2 ... ...    LCP SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN

         *    --                              <BY> <ALPHA-LITERAL-4>     *00057000
         *                                                               *00058000
         *****************************************************************00059000
         *   Licensed Materials - Property of IBM                        *00060000
         *                                                               *00061000
         *   5785-CCC 5785-ABJ 5648-B05 5686-A07                         *00062000
         *                                                               *00063000
         *   (c) Copyright IBM Corp. 1982, 1998. All Rights Reserved.    *00064000
         *                                                               *00064100
         *   US Government Users Restricted Rights - Use,                *00064200
         *   duplication or disclosure restricted by GSA ADP             *00064300
         *   Schedule Contract with IBM Corp.                            *00064400
         *                                                               *00064500
         *****************************************************************00064600
                                                                          00065000
   2     *    05  POSITION-SAVE           PIC 9(2)  .                     00066000
   3     *    05  HOLD-TOKEN              PIC X(30) .                     00067000
   4     *    05  HOLD-LENGTH             PIC 9(3)  .                     00068000
   5     *    05  HOLD-LITERAL            PIC X(30) .                     00069000
   6     *    05  LITERAL-LENGTH          PIC 9(3)  .                     00070000
   7     *    05  TOKEN-POINTER-SAVE      PIC 9(7)  .                     00071000
   8     *    05  UNTIL-FLAG              PIC X(1) .                      00072000
                                                                          00073000
   9      SKIP-WS .                                                       00074000
                                                                          00075000
  10          IF COBOL-TYPE NOT = 'DOS/VS'                                00076000
  11          AND COBOL-TYPE NOT = 'OS/VS'                                00076500
  12              GO TO END-CHANGE.                                       00077000
  13          IF WHERE-USED IS NOT EQUAL TO 'PR'                          00078000
  14              GO TO END-CHANGE.                                       00079000
  15          MOVE 'N' TO UNTIL-FLAG.                                     00080000
  16          MOVE TOKEN-POSITION TO POSITION-SAVE.                       00081000
  17          MOVE TOKEN-POINTER TO TOKEN-POINTER-SAVE.                   00082000
                                                                          00083000
  18          MOVE POSITION-SAVE TO STARTING-POSITION.                    00086000
                                                                          00087000
  19          PERFORM GET-NEXT-TOKEN.                                     00088000
  20          PERFORM BYPASS-IDENTIFIER.                                  00089000
  21          IF TOKEN-TEXT IS EQUAL TO 'TALLYING'                        00090000
  22              MOVE TOKEN-POINTER-SAVE TO TOKEN-POINTER                00091000
                                                                          00091100
  23              PERFORM GET-TOKEN                                       00092000
  24              PERFORM REMOVE                                          00092103
  25              MOVE '18MOVE ZERO TO TALLY' TO ADD-GROUP                00093000
  26              PERFORM SUFFIX                                          00094000
  27              PERFORM SPLIT-LINE                                      00094100
  28              MOVE '07INSPECT' TO ADD-GROUP                           00094402
  29              PERFORM SUFFIX                                          00094602
  30              MOVE 'ABJ6018' TO MESSAGE-ID                            00095000
  31              PERFORM EDIT-MESSAGE                                    00096000
  32              MOVE 'A'    TO INPUT-TEXT                               00097000
  33              MOVE TEXT-08 TO OUTPUT-TEXT                             00098000
  34              MOVE 7 TO RECEIVING-CHARACTER                           00099000
  35              MOVE 1 TO STARTING-CHARACTER                            00100000
  36              MOVE 1 TO LENGTH-OF-MOVE                                00101000
  37              PERFORM MOVE-LCP                                        00102000
  38              MOVE OUTPUT-TEXT TO TEXT-08                             00103000
  39          ELSE                                                        00104000
  40              MOVE TOKEN-POINTER-SAVE TO TOKEN-POINTER                00105000
  41              PERFORM GET-TOKEN                                       00106002
  42              MOVE '07INSPECT' TO ADD-GROUP                           00108002
  43              PERFORM REPLACE.                                        00109002
  44          MOVE 'ABJ6019' TO MESSAGE-ID.                               00110000
  STMT SEQNBR  A 1 B.. ... 2 ... ...    LCP SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN

  45          PERFORM EDIT-MESSAGE.                                        00111000
                                                                            00112000
  46          PERFORM GET-NEXT-TOKEN .                                     00113000
  47          PERFORM BYPASS-IDENTIFIER.                                   00114000
                                                                            00115000
  48          IF TOKEN-TEXT = 'TALLYING'                                   00116000
  49                        PERFORM TALLYING-010 THRU TALLYING-END         00117000
  50                        ELSE                                           00118000
  51                        PERFORM REPLACING-010 THRU REPLACING-END.      00119000
  52          GO TO END-CHANGE.                                            00120000
                                                                            00121000
          *                                                               00123000
          *    CONVERSION OF FORMAT 1 .                                   00124000
          *    ------------------------                                   00125000
                                                                            00126000
  53       TALLYING-010.                                                   00127000
                                                                            00128000
  54          MOVE '05TALLY' TO ADD-GROUP.                                 00129000
  55          PERFORM INSERT-AFTER.                                        00130000
  56          MOVE '03FOR' TO ADD-GROUP.                                   00131000
  57          PERFORM INSERT-AFTER.                                        00132000
                                                                            00133000
                                                                            00134000
  58          PERFORM GET-NEXT-TOKEN.                                      00135000
          *    TOKEN-TEXT IS NOW : UNTIL OR ALL OR LEADING .              00136000
          *    HOLD TOKEN-TEXT .                                          00137000
  59          MOVE TOKEN-TEXT TO HOLD-TOKEN.                               00138000
  60          MOVE TOKEN-LENGTH TO HOLD-LENGTH.                            00139000
                                                                            00140000
  61          IF TOKEN-TEXT = 'UNTIL'                                      00141000
  62                        MOVE '10CHARACTERS' TO ADD-GROUP               00142000
  63                        PERFORM REPLACE                                00143000
  64                        PERFORM GET-NEXT-TOKEN                         00144000
  65                        MOVE '06BEFORE' TO ADD-GROUP                   00145000
  66                        PERFORM REPLACE.                               00146000
                                                                            00147000
                                                                            00148000
  67          PERFORM GET-NEXT-TOKEN.                                      00149000
          *    TOKEN-TEXT IS NOW LITERAL-1 .                              00150000
          *    TRANSFORM LITERAL-1 IN ALPHA-LITERAL-1 .                   00151000
  68          PERFORM BLD-LITERAL THRU BLD-LITERAL-END .                   00152000
  69          MOVE TOKEN-TEXT TO HOLD-LITERAL.                             00153000
  70          MOVE TOKEN-LENGTH TO LITERAL-LENGTH.                         00154000
                                                                            00155000
                                                                            00156000
  71          PERFORM GET-NEXT-TOKEN.                                      00157000
          *    TOKEN-TEXT IS NOW ON THE REPLACING OPTION OF FORMAT 1 .    00158000
  72          IF TOKEN-TEXT NOT = 'REPLACING'                              00159000
  73                        GO TO TALLYING-END.                            00160000
                                                                            00161000
  74          IF  HOLD-TOKEN IS EQUAL TO 'UNTIL'                           00162000
  75                        MOVE '10CHARACTERS' TO ADD-GROUP               00163000
  76                        PERFORM INSERT-AFTER                           00164000
  77                        PERFORM GET-NEXT-TOKEN 2 TIMES                 00165000
  78                        PERFORM BLD-LITERAL THRU BLD-LITERAL-END       00166000
  79                        MOVE '06BEFORE' TO ADD-GROUP                   00167000
  80                        PERFORM INSERT-AFTER                           00168000
```

```
5648-B05 V2R1   - IBM COBOL CONVERSION AID -              SAMPLE RUN                            17 APR 1998  03:06:46   PAGE    4
 STMT SEQNBR  A 1 B.. ... 2 ... ...    LCP SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN

 81                         MOVE HOLD-LITERAL TO ADD-TEXT                  00169000
 82                         MOVE LITERAL-LENGTH TO ADD-LENGTH              00170000
 83                         PERFORM INSERT-AFTER .                         00171000
                                                                           00172000
 84           IF HOLD-TOKEN NOT = 'UNTIL'                                  00173000
 85                         MOVE HOLD-TOKEN TO ADD-TEXT                    00174000
 86                         MOVE HOLD-LENGTH TO ADD-LENGTH                 00175000
 87                         PERFORM INSERT-AFTER                           00176000
 88                         MOVE HOLD-LITERAL TO ADD-TEXT                  00177000
 89                         MOVE LITERAL-LENGTH TO ADD-LENGTH              00178000
 90                         PERFORM INSERT-AFTER                           00179000
 91                         PERFORM GET-NEXT-TOKEN 2 TIMES                 00182000
 92                         PERFORM BLD-LITERAL THRU BLD-LITERAL-END.      00183000
                                                                           00184000
 93       TALLYING-END.                                                    00185000
 94           EXIT.                                                        00186000
                                                                           00187000
                                                                           00188000
         *    CONVERSION OF FORMAT 2 :                                     00189000
         *    ------------------------                                     00190000
                                                                           00191000
 95       REPLACING-010.                                                   00192000
                                                                           00193000
 96           PERFORM GET-NEXT-TOKEN.                                      00194000
         *    TOKEN-TEXT IS NOW : UNTIL OR ALL OR LEADING .                00195000
 97           IF TOKEN-TEXT NOT = 'UNTIL'                                  00196000
 98                         PERFORM GET-NEXT-TOKEN                         00197000
 99                         PERFORM BLD-LITERAL THRU BLD-LITERAL-END       00198000
100                         PERFORM GET-NEXT-TOKEN 2 TIMES                 00199000
101                         PERFORM BLD-LITERAL THRU BLD-LITERAL-END       00200000
102                         GO TO REPLACING-END.                           00201000
                                                                           00202000
                                                                           00203000
         *    PROCESS THE UNTIL FIRST OPTION .                             00204000
                                                                           00205000
         *    REPLACE : UNTIL FIRST BY CHARACTERS BY                       00206000
103           PERFORM REMOVE.                                              00207000
104           PERFORM REMOVE-NEXT-TOKEN.                                   00208000
105           MOVE '10CHARACTERS' TO ADD-GROUP.                            00209000
106           PERFORM INSERT-AFTER.                                        00210000
                                                                           00211000
107           PERFORM GET-NEXT-TOKEN.                                      00212000
         *    TOKEN-TEXT IS NOW LITERAL-3 .                                00213000
         *    TRANSFORM LITERAL-3 IN ALPHA-LITERAL-3 .                     00214000
         *    AND REMOVE LITERAL-3 .                                       00215000
108           MOVE 'Y' TO UNTIL-FLAG.                                      00216000
109           PERFORM BLD-LITERAL THRU BLD-LITERAL-END .                   00217000
110           MOVE TOKEN-TEXT TO HOLD-LITERAL                              00218000
111           MOVE TOKEN-LENGTH TO LITERAL-LENGTH.                         00219000
112           PERFORM REMOVE.                                              00220000
113           MOVE 'N' TO UNTIL-FLAG.                                      00221000
                                                                           00222000
114           PERFORM GET-NEXT-TOKEN 2 TIMES .                             00223000
         *    MAINTAIN : BY LITERAL-4                                      00224000
115           PERFORM BLD-LITERAL THRU BLD-LITERAL-END .                   00225000
                                                                           00226000
         *    GENERATE : BEFORE LITERAL-3                                  00228000
```

```
5648-B05 V2R1   - IBM COBOL CONVERSION AID -              SAMPLE RUN                            17 APR 1998  03:06:46   PAGE    5
 STMT SEQNBR  A 1 B.. ... 2 ... ...    LCP SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN

116           MOVE '06BEFORE' TO ADD-GROUP.                                00229000
117           PERFORM INSERT-AFTER.                                        00230000
118           MOVE HOLD-LITERAL TO ADD-TEXT.                               00231000
119           MOVE LITERAL-LENGTH TO ADD-LENGTH.                           00232000
120           PERFORM INSERT-AFTER.                                        00233000
                                                                           00234000
121       REPLACING-END.                                                   00236000
122           EXIT.                                                        00237000
                                                                           00238000
123       BLD-LITERAL .                                                    00241000
124           IF  TOKEN-TYPE-CODE IS EQUAL TO 'L'                          00242000
125           OR  TOKEN-TEXT IS EQUAL TO  'SPACE'                          00243000
126           OR  TOKEN-TEXT IS EQUAL TO  'SPACES'                         00244000
127           OR  TOKEN-TEXT IS EQUAL TO  'ZERO'                           00245000
128           OR  TOKEN-TEXT IS EQUAL TO  'ZEROES'                         00246000
129           OR  TOKEN-TEXT IS EQUAL TO  'ZEROS'                          00247000
130           OR  TOKEN-TEXT IS EQUAL TO  'LOW-VALUE'                      00248000
131           OR  TOKEN-TEXT IS EQUAL TO  'LOW-VALUES'                     00249000
132           OR  TOKEN-TEXT IS EQUAL TO  'HIGH-VALUE'                     00250000
133           OR  TOKEN-TEXT IS EQUAL TO  'HIGH-VALUES'                    00251000
134           OR  TOKEN-TEXT IS EQUAL TO  'QUOTE'                          00252000
135           OR  TOKEN-TEXT IS EQUAL TO  'QUOTES'                         00253000
136                             GO TO BLD-LITERAL-END .                    00254000
137           MOVE SPACES TO STRING-TEXT .                                 00255000
138           MOVE SPACES TO STRING-DELIMITER .                            00256000
139           PERFORM UNSTRING-LCP .                                       00257000
140           IF  LITERAL-SEPARATOR IS EQUAL TO 'A'                        00258000
141                             MOVE '''' TO STRING-WORD-01                00259000
142                             MOVE '''' TO STRING-WORD-03                00260000
143                             ELSE                                       00261000
144                             MOVE '"' TO STRING-WORD-01                 00262000
145                             MOVE '"' TO STRING-WORD-03.                00263000
146           MOVE TOKEN-TEXT TO STRING-WORD-02 .                          00264000
147           PERFORM STRING-LCP .                                         00265000
148           MOVE STRING-TEXT TO TOKEN-TEXT .                             00266000
149           MOVE STRING-LENGTH TO TOKEN-LENGTH .                         00267000
150           MOVE TOKEN-TEXT TO ADD-TEXT .                                00268000
151           MOVE TOKEN-LENGTH TO ADD-LENGTH .                            00269000
152           IF UNTIL-FLAG IS EQUAL TO 'N'                                00270000
153               PERFORM REPLACE .                                        00271000
154       BLD-LITERAL-END .                                                00272000
155           EXIT .                                                       00273000
      TEXT DESCRIPTION -       REPLACE EXAMINE WITH INSPECT
      LCP PROGRAM NAME -       EXAMINE
      TABLE DRIVEN CORE SIZE -   3765
```

COBOL conversion

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP01        15 APR 1998  15:59:39  PAGE  1
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000001          IDENTIFICATION DIVISION.                                        00001000
000002          PROGRAM-ID. ABJIVP01.                                           00002000
000003         *             PROGRAM CONVERTED BY
000004         *             CCCA FOR VSE/ESA 5686-A07
000005         *             CONVERSION DATE 04/20/98 17:34:42.
000006         * ------------------------------------------------------------- *00003000
000007         *   LICENSED MATERIALS - PROPERTY OF IBM                        *00004000
000008         *                                                               *00005000
000009         *   5785-CCC 5785-ABJ 5648-B05 5686-A07                         *00006000
000010         *                                                               *00007000
000011         *   (C) COPYRIGHT IBM CORP. 1982, 1998. ALL RIGHTS RESERVED.    *00008000
000012         *                                                               *00009000
000013         *   US GOVERNMENT USERS RESTRICTED RIGHTS - USE,                *00010000
000014         *   DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP             *00011000
000015         *   SCHEDULE CONTRACT WITH IBM CORP.                            *00012000
000016         *                                                               *00013000
000017         * ------------------------------------------------------------- *00014000
000018   *OLD** REMARKS.                                                        00015000 ABJ6011 00 REMARKS CHANGED TO COMMENT
000019         *REMARKS.                                                        00015000
000020   *OLD**     THIS PROGRAM IS BEING WRITTEN TO TEST THE PROPER CONVERSION  00016000
000021         *    THIS PROGRAM IS BEING WRITTEN TO TEST THE PROPER CONVERSION  00016000
000022   *OLD**     FROM OS/VS COBOL SOURCE LANGUAGE TO IBM SOURCE LANGUAGE.     00017000
000023         *    FROM OS/VS COBOL SOURCE LANGUAGE TO IBM SOURCE LANGUAGE.     00017000
000024   *OLD** AUTHOR. XXXXXX.                                                 00018000 ABJ6181 00 OBSOLETE ELEMENT IS REMOVED
000025         *AUTHOR. XXXXXX.                                                 00018000
000026   *OLD** DATE-WRITTEN. JANUARY 24, 1983.                                 00019000 ABJ6181 00 OBSOLETE ELEMENT IS REMOVED
000027         *DATE-WRITTEN. JANUARY 24, 1983.                                 00019000
000028                                                                          00020000
000029   *OLD**     NOTE - THE FOLLOWING AREAS ARE ADDRESSED                    00021000
000030         *    NOTE - THE FOLLOWING AREAS ARE ADDRESSED                    00021000
000031   *OLD**         1  REMARKS                                              00022000
000032         *        1  REMARKS                                              00022000
000033   *OLD**         2  THEN                                                 00023000
000034         *        2  THEN                                                 00023000
000035   *OLD**         3  OTHERWISE                                            00024000
000036         *        3  OTHERWISE                                            00024000
000037   *OLD**         4  CURRENT-DATE                                         00025000
000038         *        4  CURRENT-DATE                                         00025000
000039   *OLD**         5  TIME-OF-DAY                                          00026000
000040         *        5  TIME-OF-DAY                                          00026000
000041   *OLD**         6  NOTE                                                 00027000
000042         *        6  NOTE                                                 00027000
000043   *OLD**         7  EXAMINE...TALLYING...REPLACING                       00028000
000044         *        7  EXAMINE...TALLYING...REPLACING                       00028000
000045   *OLD**         8  JUSTIFIED.                                           00029000
000046         *        8  JUSTIFIED.                                           00029000
000047                                                                          00030000
000048   *OLD** DATE-COMPILED. TODAYS DATE.                                     00031000 ABJ6181 00 OBSOLETE ELEMENT IS REMOVED
000049         *DATE-COMPILED. TODAYS DATE.                                     00031000
000050          EJECT                                                           00032000
000051          ENVIRONMENT DIVISION.                                           00033000
000052          INPUT-OUTPUT SECTION.                                           00034000
000053          FILE-CONTROL.                                                   00035000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP01         15 APR 1998  15:59:39  PAGE  2
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000054              SELECT PRINT-FILE                                            00036000
000055              ASSIGN TO UT-3330-S-DDPRINT.                                 00037000
000056          DATA DIVISION.                                                   00038000
000057          FILE SECTION.                                                    00039000
000058          FD  PRINT-FILE                                                   00040000
000059   *OLD**     RECORDING MODE IS F                                          00041000 ABJ6119 00 RECORDING MODE CLAUSE REMOVED
000060   *OLD**     LABEL RECORDS ARE STANDARD                                   00042000 ABJ6181 00 OBSOLETE ELEMENT IS REMOVED
000061   *OLD**     DATA RECORD IS OUT-LINE.                                     00043000 ABJ6181 00 OBSOLETE ELEMENT IS REMOVED
000062              .                                                            00042000
000063          01  OUT-LINE           PIC X(80).                                00044000
000064          WORKING-STORAGE SECTION.                                         00045000 ABJ6004 00 LCP-TIME-OF-DAY-68 GENERATED
000065          01  LCP-TIME-OF-DAY-68           PIC 9(6).                                          IN WORKING-STORAGE
000066          01  LCP-TIME-OF-DAY-74.                                                   ABJ6002 00 LCP-CURRENT-DATE-68 GENERATED
000067              05  LCP-TIME-74              PIC 9(6).                                          IN WORKING-STORAGE
000068              05  FILLER                   PIC 9(2).
000069          01  LCP-CURRENT-DATE-68.
000070              05  LCP-MONTH                PIC X(2).
000071              05  FILLER                   PIC X VALUE "/".
000072              05  LCP-DAY1                 PIC X(2).
000073              05  FILLER                   PIC X VALUE "/".
000074              05  LCP-YEAR                 PIC X(2).
000075          01  LCP-DATE-NEW-74.
000076              05  LCP-YEAR                 PIC X(2).
000077              05  LCP-MONTH                PIC X(2).
000078              05  LCP-DAY1                 PIC X(2).
000079          77  MY-COUNTER         PIC 9(5)  VALUE 0.                        00046000
000080          77  TRIPSWCH           PIC 9     VALUE 0.                        00047000
000081          77  PASSWCH            PIC 9     VALUE 0.                        00048000
000082          77  FAILSWCH           PIC 9     VALUE 1.                        00049000
000083          77  CURRFLAG           PIC 9     VALUE 0.                        00050000
000084          77  TOFDFLAG           PIC 9     VALUE 0.                        00051000
000085          77  I                  PIC 9     VALUE 0.                        00052000
000086          77  DATE1              PIC X(8)  VALUE SPACES.                   00053000
000087          77  DATE2              PIC X(8)  VALUE SPACES.                   00054000
000088          77  DATE3              PIC X(8)  VALUE SPACES.                   00055000
000089          77  TIME1              PIC X(6)  VALUE SPACES.                   00056000
000090          77  TIME2              PIC X(6)  VALUE SPACES.                   00057000
000091          77  TIME3              PIC X(6)  VALUE SPACES.                   00058000
000092                                                                           00059000
000093          01  ORIGINAL-NUMBER.                                             00060000
000094              05  FILLER     PIC 9(18) VALUE 0.                            00061000
000095              05  FILLER     PIC 9(18) VALUE 0.                            00062000
000096              05  FILLER     PIC 9(18) VALUE 000000009099843576.           00063000
000097              05  FILLER     PIC 9(18) VALUE 121212121212121290.           00064000
000098                                                                           00065000
000099          01  THIS-DEF REDEFINES ORIGINAL-NUMBER.                          00066000
000100              03  A-NUMBER OCCURS 2 TIMES.                                 00067000
000101                  05  LINE1      PIC 9(18).                                00068000
000102                  05  LINE2      PIC 9(18).                                00069000
000103                                                                           00070000
000104          01  A-POEM.                                                      00071000
000105              03  LINE1.                                                   00072000
000106                  05  FILLER     PIC X(20) VALUE "ROSES ARE RED VIOLET".   00073000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP01        15 APR 1998  15:59:39  PAGE  3
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000107                05  FILLER     PIC X(20) VALUE "S ARE BLUE,        ".  00074000
000108            03  LINE2.                                                  00075000
000109                05  FILLER     PIC X(20) VALUE "SUGAR IS SWEET AND S".  00076000
000110                05  FILLER     PIC X(20) VALUE "O ARE YOU.         ".  00077000
000111                                                                        00078000
000112                                                                        00079000
000113        01  FAIL1CON2.                                                  00080000
000114            03  FILLER         PIC XX    VALUE SPACES.                  00081000
000115            03  CPLACE         PIC X(20) VALUE SPACES.                  00082000
000116                                                                        00083000
000117        01  FAIL2CON.                                                   00084000
000118            03  FILLER         PIC X(20) VALUE "ALL THREE READINGS O".  00085000
000119            03  FILLER         PIC X(20) VALUE "F 'CURRENT-DATE' SHO".  00086000
000120            03  FILLER         PIC X(20) VALUE "ULD BE THE SAME, BUT".  00087000
000121            03  FILLER         PIC X(20) VALUE " THEY ARE:         ".  00088000
000122                                                                        00089000
000123        01  FAIL2CON2.                                                  00090000
000124            03  FILLER         PIC XX    VALUE SPACES.                  00091000
000125            03  DPLACE         PIC X(8)  VALUE SPACES.                  00092000
000126                                                                        00093000
000127        01  FAIL3CON.                                                   00094000
000128            03  FILLER         PIC X(20) VALUE "THE THREE READINGS O".  00095000
000129            03  FILLER         PIC X(20) VALUE "F 'TIME-OF-DAY' SHOU".  00096000
000130            03  FILLER         PIC X(20) VALUE "LD BE EQUAL OR IN AS".  00097000
000131            03  FILLER         PIC X(20) VALUE "CENDING ORDER,     ".  00098000
000132                                                                        00099000
000133        01  FAIL3CON1.                                                  00100000
000134            03  FILLER         PIC X(20) VALUE "BUT THEY ARE:      ".  00101000
000135                                                                        00102000
000136        01  FAIL3CON2.                                                  00103000
000137            03  FILLER         PIC XX    VALUE SPACES.                  00104000
000138            03  TPLACE         PIC X(6)  VALUE SPACES.                  00105000
000139                                                                        00106000
000140        01  FAILCON.                                                    00107000
000141            03  FILLER         PIC X(20) VALUE "TEST CASE SAMPLE   F".  00108000
000142            03  FILLER         PIC X(20) VALUE "AILED.             ".  00109000
000143                                                                        00110000
000144        01  SUCCESS.                                                    00111000
000145            03  FILLER         PIC X(20) VALUE "TEST CASE SAMPLE   I".  00112000
000146            03  FILLER         PIC X(20) VALUE "S SUCCESSFUL.      ".  00113000
000147        EJECT                                                           00114000
000148        PROCEDURE DIVISION.                                             00115000
000149        THIS-IS-A SECTION.                                              00116000
000150        START-HERE.                                                     00117000
000151   *OLD**     MOVE TIME-OF-DAY TO TIME1                                 00118000
000152              ACCEPT LCP-TIME-OF-DAY-74 FROM TIME                       00118000
000153              MOVE LCP-TIME-74 TO LCP-TIME-OF-DAY-68
000154              MOVE LCP-TIME-OF-DAY-68 TO TIME1                                    ABJ6005 00 NEW CODE GENERATED FOR
                                                                                                   TIME-OF-DAY
000155              OPEN OUTPUT PRINT-FILE                                    00119000
000156   *OLD**     MOVE CURRENT-DATE TO DATE1                                00120000
000157              ACCEPT  LCP-DATE-NEW-74 FROM DATE                         00120000
000158              MOVE CORRESPONDING LCP-DATE-NEW-74 TO LCP-CURRENT-DATE-68
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP01        15 APR 1998  15:59:39  PAGE  4
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000159            MOVE LCP-CURRENT-DATE-68 TO DATE1                                ABJ6003 00 NEW CODE GENERATED FOR
                                                                                               CURRENT-DATE
000160   *OLD**     MOVE CURRENT-DATE TO DATE2                             00121000
000161            ACCEPT  LCP-DATE-NEW-74 FROM DATE                        00121000
000162            MOVE CORRESPONDING LCP-DATE-NEW-74 TO LCP-CURRENT-DATE-68
000163            MOVE LCP-CURRENT-DATE-68 TO DATE2                                ABJ6003 00 NEW CODE GENERATED FOR
                                                                                               CURRENT-DATE
000164   *OLD**     MOVE CURRENT-DATE TO DATE3.                            00122000
000165            ACCEPT  LCP-DATE-NEW-74 FROM DATE                        00122000
000166            MOVE CORRESPONDING LCP-DATE-NEW-74 TO LCP-CURRENT-DATE-68
000167            MOVE LCP-CURRENT-DATE-68 TO DATE3.                               ABJ6003 00 NEW CODE GENERATED FOR
                                                                                               CURRENT-DATE
000168                                                                     00123000
000169   *OLD**     MOVE TIME-OF-DAY TO TIME2.                             00124000
000170            ACCEPT LCP-TIME-OF-DAY-74 FROM TIME                      00124000
000171            MOVE LCP-TIME-74 TO LCP-TIME-OF-DAY-68
000172            MOVE LCP-TIME-OF-DAY-68 TO TIME2.                                ABJ6005 00 NEW CODE GENERATED FOR
                                                                                               TIME-OF-DAY
000173            IF DATE1 EQUAL DATE2 AND EQUAL DATE3 THEN                00125000
000174                NEXT SENTENCE                                        00126000
000175   *OLD**     OTHERWISE                                              00127000 ABJ6021 00 OTHERWISE REPLACED BY ELSE
000176            ELSE                                                     00127000
000177                MOVE FAILSWCH TO TRIPSWCH                            00128000
000178                MOVE DATE1 TO DPLACE                                 00129000
000179                WRITE OUT-LINE FROM FAIL2CON                         00130000
000180                WRITE OUT-LINE FROM FAIL2CON2                        00131000
000181                MOVE DATE2 TO DPLACE                                 00132000
000182                WRITE OUT-LINE FROM FAIL2CON2                        00133000
000183                MOVE DATE3 TO DPLACE                                 00134000
000184                WRITE OUT-LINE FROM FAIL2CON2.                       00135000
000185   *OLD**     MOVE TIME-OF-DAY TO TIME3.                             00136000
000186            ACCEPT LCP-TIME-OF-DAY-74 FROM TIME                      00136000
000187            MOVE LCP-TIME-74 TO LCP-TIME-OF-DAY-68
000188            MOVE LCP-TIME-OF-DAY-68 TO TIME3.                                ABJ6005 00 NEW CODE GENERATED FOR
                                                                                               TIME-OF-DAY
000189            IF (TIME1 LESS THAN TIME2 OR EQUAL TIME2) AND            00137000
000190               (TIME2 LESS THAN TIME3 OR EQUAL TIME3) THEN           00138000
000191                NEXT SENTENCE                                        00139000
000192   *OLD**     OTHERWISE                                              00140000 ABJ6021 00 OTHERWISE REPLACED BY ELSE
000193            ELSE                                                     00140000
000194                MOVE FAILSWCH TO TRIPSWCH                            00141000
000195                MOVE TIME1 TO TPLACE                                 00142000
000196                WRITE OUT-LINE FROM FAIL3CON                         00143000
000197                WRITE OUT-LINE FROM FAIL3CON1                        00144000
000198                WRITE OUT-LINE FROM FAIL3CON2                        00145000
000199                MOVE TIME2 TO TPLACE                                 00146000
000200                WRITE OUT-LINE FROM FAIL3CON2                        00147000
000201                MOVE TIME3 TO TPLACE                                 00148000
000202                WRITE OUT-LINE FROM FAIL3CON2.                       00149000
000203        AFTER-THOUGHT.                                               00150000
000204   *OLD**     EXAMINE A-POEM TALLYING ALL SPACES REPLACING BY "*"    00151000 ABJ6018 00 TALLY IS INITIALIZED
000205            MOVE ZERO TO TALLY                                       00151000 ABJ6019 00 EXAMINE REPLACED BY INSPECT
000206            INSPECT A-POEM TALLYING TALLY FOR ALL SPACES REPLACING ALL
```

```
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000207                                             SPACES    BY "*"
000208             MOVE TALLY TO MY-COUNTER                              00152000
000209             MOVE LINE1 OF A-POEM TO OUT-LINE WRITE OUT-LINE       00153000
000210             MOVE LINE2 OF A-POEM TO OUT-LINE WRITE OUT-LINE       00154000
000211   *OLD**    EXAMINE A-POEM TALLYING ALL "*".                      00155000 ABJ6018 00 TALLY IS INITIALIZED
000212             MOVE ZERO TO TALLY                                    00155000 ABJ6019 00 EXAMINE REPLACED BY INSPECT
000213             INSPECT A-POEM TALLYING TALLY FOR ALL "*".
000214             IF TALLY = MY-COUNTER                                 00156000
000215                 MOVE "OK" TO OUT-LINE WRITE OUT-LINE              00157000
000216   *OLD**    OTHERWISE                                             00158000 ABJ6021 00 OTHERWISE REPLACED BY ELSE
000217             ELSE                                                  00158000
000218                 MOVE "BAH" TO OUT-LINE WRITE OUT-LINE.            00159000
000219   *OLD**    EXAMINE A-POEM TALLYING ALL "E"                       00160000 ABJ6018 00 TALLY IS INITIALIZED
000220             MOVE ZERO TO TALLY                                    00160000 ABJ6019 00 EXAMINE REPLACED BY INSPECT
000221             INSPECT A-POEM TALLYING TALLY FOR ALL "E"
000222             PERFORM THREE-LINES                                   00161000
000223   *OLD**    EXAMINE A-POEM TALLYING UNTIL FIRST "."               00162000 ABJ6018 00 TALLY IS INITIALIZED
000224             MOVE ZERO TO TALLY                                    00162000 ABJ6019 00 EXAMINE REPLACED BY INSPECT
000225             INSPECT A-POEM TALLYING TALLY FOR CHARACTERS BEFORE "."
000226             PERFORM THREE-LINES                                   00163000
000227   *OLD**    EXAMINE A-POEM TALLYING LEADING "R"                   00164000 ABJ6018 00 TALLY IS INITIALIZED
000228             MOVE ZERO TO TALLY                                    00164000 ABJ6019 00 EXAMINE REPLACED BY INSPECT
000229             INSPECT A-POEM TALLYING TALLY FOR LEADING "R"
000230             PERFORM THREE-LINES                                   00165000
000231             MOVE 2 TO I                                           00166000
000232   *OLD**    EXAMINE A-NUMBER(I) TALLYING ALL 1                    00167000 ABJ6018 00 TALLY IS INITIALIZED
000233             MOVE ZERO TO TALLY                                    00167000 ABJ6019 00 EXAMINE REPLACED BY INSPECT
000234             INSPECT A-NUMBER(I) TALLYING TALLY FOR ALL "1"
000235             PERFORM THREE-LINES                                   00168000
000236   *OLD**    EXAMINE A-NUMBER(I) TALLYING LEADING 0 REPLACING BY 2.       00169000 ABJ6018 00 TALLY IS INITIALIZED
000237             MOVE ZERO TO TALLY                                    00169000 ABJ6019 00 EXAMINE REPLACED BY INSPECT
000238             INSPECT A-NUMBER(I) TALLYING TALLY FOR LEADING "0" REPLACING
000239                                                 LEADING "0" BY "2".
000240         THREE-LINES.                                              00170000
000241             ADD TALLY TO MY-COUNTER.                              00171000
000242             MOVE TALLY TO OUT-LINE WRITE OUT-LINE                 00172000
000243             MOVE MY-COUNTER TO OUT-LINE WRITE OUT-LINE.           00173000
000244         THE-END.                                                  00174000
000245             IF TRIPSWCH EQUAL FAILSWCH OR MY-COUNTER NOT EQUAL 125       00175000
000246                 WRITE OUT-LINE FROM FAILCON                       00176000
000247   *OLD**    OTHERWISE                                             00177000 ABJ6021 00 OTHERWISE REPLACED BY ELSE
000248             ELSE                                                  00177000
000249                 WRITE OUT-LINE FROM SUCCESS.                      00178000
000250             CLOSE PRINT-FILE.                                     00179000
000251             STOP RUN.                                             00180000 ABJ6126 99 *-----------------------------*
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -        SAMPLE RUN                   ABJIVP01        15 APR 1998  15:59:39  PAGE  6
CONVERSION FROM DOS/VS COBOL         TO  COBOL FOR VSE/ESA
OPTIONS IN EFFECT :
  Check procedure names .......... YES   Source language level .......... DOS/VS COBOL LANGLVL(1)
  Flag Report Writer statements... YES   CICS ........................... NO
  Remove obsolete elements ....... YES   Lines per report page ...........60
  Negate implicit EXIT PROGRAM ... YES   VSE system date format.......... MM/DD/YY
  Generate END PROGRAM header .... NO    Resequence source lines ........ NO
  Compile after converting ....... YES
  Flag manual changes (new source) NO    Reserved word suffix ........... 74
  Add DATE FORMAT clauses (MLE)    NO    Generate new program............ YES
  Remove VALUE clauses in FS & LS  YES   Generate new copy members ...... YES
  FLAG:IF FILE-STATUS (NOT) = "00" YES   Replace like-named copy members. NO
  Flag BLL cell arithmetic ....... YES   Print old source lines ......... YES
  BLL cell conversion method...... A     Print copy members ............. YES
  Search source for literal delim. YES   Print diagnostics of level >=... 00
  Literal delimiter (QUOTE/APOST). QUOTE Generate tokenization listing... NO
  OPTION-15 ...................... NO    SQL ............................ NO
HIGHEST SEVERITY MESSAGE FOR THIS CONVERSION:   00
       0033 MESSAGES ISSUED
       0033 MESSAGES PRINTED
LINEID            MSGID   RC  MESSAGE TEXT

000019           ABJ6011  00  REMARKS CHANGED TO COMMENT
000025           ABJ6181  00  OBSOLETE ELEMENT IS REMOVED
000027           ABJ6181  00  OBSOLETE ELEMENT IS REMOVED
000049           ABJ6181  00  OBSOLETE ELEMENT IS REMOVED
000062           ABJ6119  00  RECORDING MODE CLAUSE REMOVED
000062           ABJ6181  00  OBSOLETE ELEMENT IS REMOVED
000062           ABJ6181  00  OBSOLETE ELEMENT IS REMOVED
000064           ABJ6004  00  LCP-TIME-OF-DAY-68 GENERATED IN WORKING-STORAGE
000064           ABJ6002  00  LCP-CURRENT-DATE-68 GENERATED IN WORKING-STORAGE
000154           ABJ6005  00  NEW CODE GENERATED FOR TIME-OF-DAY
000159           ABJ6003  00  NEW CODE GENERATED FOR CURRENT-DATE
000163           ABJ6003  00  NEW CODE GENERATED FOR CURRENT-DATE
000167           ABJ6003  00  NEW CODE GENERATED FOR CURRENT-DATE
000172           ABJ6005  00  NEW CODE GENERATED FOR TIME-OF-DAY
000176           ABJ6021  00  OTHERWISE REPLACED BY ELSE
000188           ABJ6005  00  NEW CODE GENERATED FOR TIME-OF-DAY
000193           ABJ6021  00  OTHERWISE REPLACED BY ELSE
000205           ABJ6018  00  TALLY IS INITIALIZED
000205           ABJ6019  00  EXAMINE REPLACED BY INSPECT
000212           ABJ6018  00  TALLY IS INITIALIZED
000212           ABJ6019  00  EXAMINE REPLACED BY INSPECT
000217           ABJ6021  00  OTHERWISE REPLACED BY ELSE
000220           ABJ6018  00  TALLY IS INITIALIZED
000220           ABJ6019  00  EXAMINE REPLACED BY INSPECT
000224           ABJ6018  00  TALLY IS INITIALIZED
000224           ABJ6019  00  EXAMINE REPLACED BY INSPECT
000228           ABJ6018  00  TALLY IS INITIALIZED
000228           ABJ6019  00  EXAMINE REPLACED BY INSPECT


 5648-B05 V2R1   - IBM COBOL CONVERSION AID -        SAMPLE RUN                   ABJIVP01        15 APR 1998  15:59:39  PAGE  7


000233           ABJ6018  00  TALLY IS INITIALIZED
000233           ABJ6019  00  EXAMINE REPLACED BY INSPECT
000237           ABJ6018  00  TALLY IS INITIALIZED
000237           ABJ6019  00  EXAMINE REPLACED BY INSPECT
000248           ABJ6021  00  OTHERWISE REPLACED BY ELSE
```

COBOL conversion with COPY

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -        SAMPLE RUN                    ABJIVP02        15 APR 1998  16:13:43  PAGE  1
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000001          IDENTIFICATION DIVISION.                                        00001000
000002          PROGRAM-ID. ABJIVP02.                                           00002000
000003         *             PROGRAM CONVERTED BY
000004         *             CCCA FOR VSE/ESA 5686-A07
000005         *             CONVERSION DATE 04/20/98 17:47:56.
000006         * ------------------------------------------------------------- *00003000
000007         *   LICENSED MATERIALS - PROPERTY OF IBM                        *00004000
000008         *                                                               *00005000
000009         *   5785-CCC 5785-ABJ 5648-B05 5686-A07                         *00006000
000010         *                                                               *00007000
000011         *   (C) COPYRIGHT IBM CORP. 1982, 1998. ALL RIGHTS RESERVED.    *00008000
000012         *                                                               *00009000
000013         *   US GOVERNMENT USERS RESTRICTED RIGHTS - USE,                *00010000
000014         *   DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP             *00011000
000015         *   SCHEDULE CONTRACT WITH IBM CORP.                            *00012000
000016         *                                                               *00013000
000017         * ------------------------------------------------------------- *00014000
000018   *OLD** REMARKS.                                                        00015000 ABJ6011 00 REMARKS CHANGED TO COMMENT
000019         *REMARKS.                                                        00015000
000020   *OLD**     THIS PROGRAM COMPUTES THE GROSS SALARY, TAX AND NET SALARY   00016000
000021         *    THIS PROGRAM COMPUTES THE GROSS SALARY, TAX AND NET SALARY   00016000
000022   *OLD**     OF A GROUP OF EMPLOYEES.                                    00017000
000023         *    OF A GROUP OF EMPLOYEES.                                    00017000
000024   *OLD** AUTHOR. YOUR NAME FOLLOWED BY A PERIOD.                         00018000 ABJ6181 00 OBSOLETE ELEMENT IS REMOVED
000025         *AUTHOR. YOUR NAME FOLLOWED BY A PERIOD.                         00018000
000026   *OLD** INSTALLATION. IBM-370.                                          00019000 ABJ6181 00 OBSOLETE ELEMENT IS REMOVED
000027         *INSTALLATION. IBM-370.                                          00019000
000028   *OLD** DATE-WRITTEN. FEB 27,1981.                                      00020000 ABJ6181 00 OBSOLETE ELEMENT IS REMOVED
000029         *DATE-WRITTEN. FEB 27,1981.                                      00020000
000030         *                                                                00021000
000031   *OLD**     NOTE - THE FOLLOWING AREAS ARE ADDRESSED                    00022000
000032         *    NOTE - THE FOLLOWING AREAS ARE ADDRESSED                    00022000
000033   *OLD**         1  REMARKS                                              00023000
000034         *        1  REMARKS                                              00023000
000035   *OLD**         2  NOTE                                                 00024000
000036         *        2  NOTE                                                 00024000
000037         *        3  COPY FOR LANGLVL(1).                                 00025000
000038         *                                                                00026000
000039   *OLD** DATE-COMPILED. TODAYS DATE.                                     00027000 ABJ6181 00 OBSOLETE ELEMENT IS REMOVED
000040         *DATE-COMPILED. TODAYS DATE.                                     00027000
000041          EJECT                                                           00028000
000042          ENVIRONMENT DIVISION.                                           00029000
000043          CONFIGURATION SECTION.                                          00030000
000044         *SOURCE-COMPUTER. IBM-370.                                       00031000
000045         *OBJECT-COMPUTER. IBM-370.                                       00032000
000046          INPUT-OUTPUT SECTION.                                           00033000
000047          FILE-CONTROL.                                                   00034000
000048              SELECT PRINT-OUT ASSIGN TO UR-2540R-S-PRINT.                00035000
000049          DATA DIVISION.                                                  00036000
000050         *                                                                00037000
000051          FILE SECTION.                                                   00038000
000052          FD  PRINT-OUT                                                   00039000
000053   *OLD**     LABEL RECORDS ARE OMITTED                                   00040000 ABJ6181 00 OBSOLETE ELEMENT IS REMOVED
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                   ABJIVP02         15 APR 1998  16:13:43  PAGE  2
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000054   *OLD**     DATA RECORDS ARE OUTPUT-RECORD ENTRY-DET.                   00041000 ABJ6181 00 OBSOLETE ELEMENT IS REMOVED
000055              .                                                           00040000
000056   *OLD** 01  OUTPUT-RECORD COPY ABJL901.                                 00042000 ABJ6088 00 LANGLEVEL 1 COPY IS CHANGED
000057          01  OUTPUT-RECORD COPY ABJL901 REPLACING ==01  STD-LINE== BY    00042000
000058                                                   ==   ==.               00042000
000059+         01  STD-LINE   PIC X(132).
000060   *OLD** 01  COPY ABJL902 REPLACING STEMPL BY PREMPL STHOURS BY PRHOURS  00043000 ABJ6088 00 LANGLEVEL 1 COPY IS CHANGED
000061          COPY ABJL902 REPLACING STEMPL BY PREMPL STHOURS BY PRHOURS      00043000
000062                  STSALARY BY PRSALARY STTAX BY PRTAX STNET BY PRNET.     00044000
000063+         01  ENTRY-DET.
000064+             03  FILLER      PIC X(8).
000065+             03  FILLER      PIC X(3).
000066+             03  STEMPL      PIC X.
000067+             03  FILLER      PIC X(8).
000068+             03  STHOURS     PIC 99.
000069+             03  FILLER      PIC X(4).
000070+             03  STSALARY    PIC ZZZ.99.
000071+             03  FILLER      PIC X(2).
000072+             03  STTAX       PIC ZZZ.99.
000073+             03  FILLER      PIC X(4).
000074+             03  STNET       PIC ZZZ.99.
000075+             03  FILLER      PIC X(82).
000076         *                                                                00045000
000077          WORKING-STORAGE SECTION.                                        00046000
000078         *                                                                00047000
000079   *OLD** 77  NUM-OF-ITEMS COPY ABJL903.                                  00048000 ABJ6088 00 LANGLEVEL 1 COPY IS CHANGED
000080          77  NUM-OF-ITEMS COPY ABJL903 REPLACING ==77  A== BY ==    ==.  00048000
000081+         77  A    PIC 99     VALUE 12.
000082         *                                                                00049000
000083   *OLD** 77  COPY ABJL903A.                                              00050000 ABJ6088 00 LANGLEVEL 1 COPY IS CHANGED
000084          COPY ABJL903A.                                                  00050000
000085+         77  WORK-GROSS      PIC 9(3)V9(4).
000086         *                                                                00051000
000087          77  WORK-TAX        PIC 9(3)V9(4).                              00052000
000088          77  WORK-NET        PIC 9(3)V9(4).                              00053000
000089          77  SUB1            PIC 99     VALUE 1.                         00054000
000090          77  ERROR-FLAG      PIC 9      VALUE 0.                         00055000
000091          01  INPUT-AREA.                                                 00056000
000092              03  ENTRYA.                                                 00057000
000093                  06  FILLER  PIC X      VALUE "A".                       00058000
000094                  06  FILLER  PIC 99     VALUE 40.                        00059000
000095              03  ENTRYB.                                                 00060000
000096                  06  FILLER  PIC X      VALUE "B".                       00061000
000097                  06  FILLER  PIC 99     VALUE 41.                        00062000
000098              03  ENTRYC.                                                 00063000
000099                  06  FILLER  PIC X      VALUE "C".                       00064000
000100                  06  FILLER  PIC 99     VALUE 39.                        00065000
000101              03  ENTRYD.                                                 00066000
000102                  06  FILLER  PIC X      VALUE "D".                       00067000
000103                  06  FILLER  PIC 99     VALUE 16.                        00068000
000104              03  ENTRYE.                                                 00069000
000105                  06  FILLER  PIC X      VALUE "E".                       00070000
000106                  06  FILLER  PIC 99     VALUE 21.                        00071000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -        SAMPLE RUN                   ABJIVP02        15 APR 1998  16:13:43  PAGE  3
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000107              03  ENTRYF.                                              00072000
000108                  06  FILLER  PIC X      VALUE "F".                        00073000
000109                  06  FILLER  PIC 99     VALUE 44.                         00074000
000110              03  ENTRYG.                                              00075000
000111                  06  FILLER  PIC X      VALUE "G".                        00076000
000112                  06  FILLER  PIC 99     VALUE 55.                         00077000
000113              03  ENTRYH.                                              00078000
000114                  06  FILLER  PIC X      VALUE "H".                        00079000
000115                  06  FILLER  PIC 99     VALUE 60.                         00080000
000116              03  ENTRYI.                                              00081000
000117                  06  FILLER  PIC X      VALUE "I".                        00082000
000118                  06  FILLER  PIC 99     VALUE 41.                         00083000
000119              03  ENTRYJ.                                              00084000
000120                  06  FILLER  PIC X      VALUE "J".                        00085000
000121                  06  FILLER  PIC 99     VALUE 42.                         00086000
000122              03  ENTRYK.                                              00087000
000123                  06  FILLER  PIC X      VALUE "K".                        00088000
000124                  06  FILLER  PIC 99     VALUE 39.                         00089000
000125              03  ENTRYL.                                              00090000
000126                  06  FILLER  PIC X      VALUE "L".                        00091000
000127                  06  FILLER  PIC 99     VALUE 32.                         00092000
000128         *                                                                 00093000
000129   *OLD** 01  COPY ABJL904 REPLACING A BY REDEF-AREA B BY INPUT-AREA.      00094000 ABJ6088 00 LANGLEVEL 1 COPY IS CHANGED
000130          COPY ABJL904 REPLACING A BY REDEF-AREA B BY INPUT-AREA.          00094000
000131+         01  A REDEFINES B.
000132+             03  ENTRY-ITEM OCCURS 12 TIMES.
000133+                 06 EMPLOYEE    PIC X.
000134+                 06 HOURS-WORK  PIC 99.
000135         *                                                                 00095000
000136          01  HDG-1.                                                       00096000
000137              03  FILLER      PIC X(8)   VALUE SPACES.                     00097000
000138              03  FILLER      PIC X(21)  VALUE "_____________________".    00098000
000139              03  FILLER      PIC X(21)  VALUE "_____________________".    00099000
000140              03  FILLER      PIC X(82)  VALUE SPACES.                     00100000
000141          01  HDG-2.                                                       00101000
000142              03  FILLER      PIC X(8)   VALUE SPACES.                     00102000
000143              03  FILLER      PIC X(10)  VALUE SPACES.                     00103000
000144              03  FILLER      PIC X(16)  VALUE "HOURS   GROSS   ".         00104000
000145              03  FILLER      PIC X(13)  VALUE "TAX       NET".            00105000
000146              03  FILLER      PIC X(85)  VALUE SPACES.                     00106000
000147          01  HDG-3.                                                       00107000
000148              03  FILLER      PIC X(8)   VALUE SPACES.                     00108000
000149              03  FILLER      PIC X(10)  VALUE "EMPLOYEE  ".               00109000
000150              03  FILLER      PIC X(8)   VALUE "WORKED  ".                 00110000
000151              03  FILLER      PIC X(8)   VALUE "SALARY  ".                 00111000
000152              03  FILLER      PIC X(10)  VALUE "DEDUCTED  ".               00112000
000153              03  FILLER      PIC X(6)   VALUE "SALARY".                   00113000
000154              03  FILLER      PIC X(82)  VALUE SPACES.                     00114000
000155          01  HDG-4.                                                       00115000
000156              03  FILLER      PIC X(8)   VALUE SPACES.                     00116000
000157              03  FILLER      PIC X(10)  VALUE "________  ".               00117000
000158              03  FILLER      PIC X(8)   VALUE "______  ".                 00118000
000159              03  FILLER      PIC X(8)   VALUE "______  ".                 00119000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP02         15 APR 1998  16:13:43  PAGE  4
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000160             03  FILLER      PIC X(10)  VALUE "________  ".              00120000
000161             03  FILLER      PIC X(6)   VALUE "______".                  00121000
000162             03  FILLER      PIC X(82)  VALUE SPACES.                    00122000
000163         PROCEDURE DIVISION.                                             00123000
000164             OPEN OUTPUT PRINT-OUT.                                      00124000
000165             WRITE OUTPUT-RECORD FROM HDG-1.                             00125000
000166             WRITE OUTPUT-RECORD FROM HDG-2.                             00126000
000167             WRITE OUTPUT-RECORD FROM HDG-3.                             00127000
000168             WRITE OUTPUT-RECORD FROM HDG-4.                             00128000
000169             PERFORM PROCESS THRU PROCESS2 VARYING SUB1 FROM 1 BY 1      00129000
000170                 UNTIL SUB1 GREATER THAN NUM-OF-ITEMS.                   00130000
000171             WRITE OUTPUT-RECORD FROM HDG-4.                             00131000
000172             GO TO EOJ-ROUTINE.                                          00132000
000173         PROCESS.                                                        00133000
000174             MOVE SPACES TO ENTRY-DET.                                   00134000
000175             MOVE EMPLOYEE(SUB1) TO PREMPL.                              00135000
000176             MOVE HOURS-WORK(SUB1) TO PRHOURS.                           00136000
000177             COMPUTE WORK-GROSS ROUNDED = HOURS-WORK(SUB1) * 4.00.       00137000
000178             MOVE WORK-GROSS TO PRSALARY.                                00138000
000179             IF WORK-GROSS GREATER THAN 150.00                           00139000
000180                 COMPUTE WORK-TAX ROUNDED = (WORK-GROSS - 150) * .2 + 5  00140000
000181                 GO TO PROCESS2.                                         00141000
000182             IF WORK-GROSS NOT LESS THAN 100.00                          00142000
000183                 COMPUTE WORK-TAX = (WORK-GROSS - 100) * .1              00143000
000184                 GO TO PROCESS2.                                         00144000
000185             MOVE ZEROS TO WORK-TAX.                                     00145000
000186         PROCESS2.                                                       00146000
000187             MOVE WORK-TAX TO PRTAX                                      00147000
000188                 COMPUTE WORK-NET = WORK-GROSS - WORK-TAX                00148000
000189                 MOVE WORK-NET TO PRNET                                  00149000
000190                 WRITE ENTRY-DET.                                        00150000
000191         EOJ-ROUTINE.                                                    00151000
000192             IF ERROR-FLAG = ZERO                                        00152000
000193                 MOVE "TEST CASE LCPTST09 IS SUCCESSFUL." TO OUTPUT-RECORD00153000
000194                 WRITE OUTPUT-RECORD                                     00154000
000195   *OLD**    OTHERWISE                                                   00155000 ABJ6021 00 OTHERWISE REPLACED BY ELSE
000196             ELSE                                                        00155000
000197                 MOVE "TEST CASE LCPTST09 FAILED." TO OUTPUT-RECORD      00156000
000198                 WRITE OUTPUT-RECORD.                                    00157000
000199             CLOSE PRINT-OUT.                                            00158000
000200             STOP RUN.                                                   00159000 ABJ6126 99 *-----------------------------*
                                                                                                   *  END OF COBOL CONVERSION   *
                                                                                                   * 5648-B05 COBOL CONVERSION  *
                                                                                                   *-----------------------------*
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -        SAMPLE RUN                    ABJIVP02        15 APR 1998  16:13:43  PAGE  5
CONVERSION FROM DOS/VS COBOL          TO  COBOL FOR VSE/ESA
OPTIONS IN EFFECT :
  Check procedure names .......... YES   Source language level .......... DOS/VS COBOL LANGLVL(1)
  Flag Report Writer statements... YES   CICS ........................... NO
  Remove obsolete elements ....... YES   Lines per report page ...........60
  Negate implicit EXIT PROGRAM ... YES   VSE system date format.......... MM/DD/YY
  Generate END PROGRAM header .... NO    Resequence source lines ........ NO
  Compile after converting ....... YES
  Flag manual changes (new source) NO    Reserved word suffix ........... 74
  Add DATE FORMAT clauses (MLE)    NO    Generate new program............ YES
  Remove VALUE clauses in FS & LS  YES   Generate new copy members ...... YES
  FLAG:IF FILE-STATUS (NOT) = "00" YES   Replace like-named copy members. NO
  Flag BLL cell arithmetic ....... YES   Print old source lines ......... YES
  BLL cell conversion method...... A     Print copy members ............. YES
  Search source for literal delim. YES   Print diagnostics of level >=... 00
  Literal delimiter (QUOTE/APOST). QUOTE Generate tokenization listing... NO
  OPTION-15 ...................... NO    SQL ............................ NO
HIGHEST SEVERITY MESSAGE FOR THIS CONVERSION:   00
       0013 MESSAGES ISSUED
       0013 MESSAGES PRINTED
LINEID           MSGID   RC  MESSAGE TEXT

000019          ABJ6011  00  REMARKS CHANGED TO COMMENT
000025          ABJ6181  00  OBSOLETE ELEMENT IS REMOVED
000027          ABJ6181  00  OBSOLETE ELEMENT IS REMOVED
000029          ABJ6181  00  OBSOLETE ELEMENT IS REMOVED
000040          ABJ6181  00  OBSOLETE ELEMENT IS REMOVED
000055          ABJ6181  00  OBSOLETE ELEMENT IS REMOVED
000055          ABJ6181  00  OBSOLETE ELEMENT IS REMOVED
000057          ABJ6088  00  LANGLEVEL 1 COPY IS CHANGED
000061          ABJ6088  00  LANGLEVEL 1 COPY IS CHANGED
000080          ABJ6088  00  LANGLEVEL 1 COPY IS CHANGED
000084          ABJ6088  00  LANGLEVEL 1 COPY IS CHANGED
000130          ABJ6088  00  LANGLEVEL 1 COPY IS CHANGED
000196          ABJ6021  00  OTHERWISE REPLACED BY ELSE
```

COBOL conversion with CICS commands

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP03         27 APR 1998 18:43:36  PAGE  1
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000001    CBL QUOTE                                                              00001000
000002          ID DIVISION.                                                     00002000
000003          PROGRAM-ID. ABJIVP03.                                            00003000
000004         *             PROGRAM CONVERTED BY
000005         *             CCCA FOR VSE/ESA 5686-A07
000006         *             CONVERSION DATE 04/20/98 18:00:49.
000007         * -------------------------------------------------------------- *00004000
000008         *   LICENSED MATERIALS - PROPERTY OF IBM                         *00005000
000009         *                                                                *00006000
000010         *   5785-CCC 5785-ABJ 5648-B05 5686-A07                          *00007000
000011         *                                                                *00008000
000012         *   (C) COPYRIGHT IBM CORP. 1982, 1998. ALL RIGHTS RESERVED.     *00009000
000013         *                                                                *00010000
000014         *   US GOVERNMENT USERS RESTRICTED RIGHTS - USE,                 *00011000
000015         *   DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP              *00012000
000016         *   SCHEDULE CONTRACT WITH IBM CORP.                             *00013000
000017         *                                                                *00014000
000018         * -------------------------------------------------------------- *00015000
000019          ENVIRONMENT DIVISION.                                            00016000
000020          DATA DIVISION.                                                   00017000
000021          WORKING-STORAGE SECTION.                                         00018000 ABJ6212 00 WORKING POINTER FOR CICS
000022         77  LCP-WS-ADDR-COMP              PIC S9(8) COMP.                                    ADDED TO WORKING STORAGE
000023         77  LCP-WS-ADDR-PNTR              REDEFINES LCP-WS-ADDR-COMP
000024                                           USAGE POINTER.
000025         77  PCB     PIC X(4) VALUE "PCB ".                                00019000
000026         77  GN      PIC X(4) VALUE "GN  ".                                00020000
000027         77  GU      PIC X(4) VALUE "GU  ".                                00021000
000028         77  GNP     PIC X(4) VALUE "GNP ".                                00022000
000029         77  TERM    PIC X(4) VALUE "TERM".                                00023000
000030         77  SAVE-TCAFCRC PIC X VALUE SPACE.                               00024000
000031         77  SAVE-TCADLTR PIC X VALUE SPACE.                               00025000
000032         77  SAVE-STATUS-CODE PIC XX VALUE SPACES.                         00026000
000033         01  SAVE-TCACCCA PIC X(32) VALUE SPACES.                          00027000
000034         01  PAGE-OVERFLOW-CTR PIC S9(4) COMP.                             00028000
000035         01      DFHBMSCA.                                                 00029000
000036            02    DFHBMPEM  PICTURE X   VALUE  IS  " ".                    00030000
000037            02    DFHBMPNL  PICTURE X   VALUE  IS  " ".                    00031000
000038            02    DFHBMASK  PICTURE X   VALUE  IS  "0".                    00032000
000039            02    DFHBMUNP  PICTURE X   VALUE  IS  " ".                    00033000
000040            02    DFHBMUNN  PICTURE X   VALUE  IS  "&".                00034000
000041            02    DFHBMPRO  PICTURE X   VALUE  IS  "-".                    00035000
000042            02    DFHBMBRY  PICTURE X   VALUE  IS  "H".                    00036000
000043            02    DFHBMDAR  PICTURE X   VALUE  IS  "<".                    00037000
000044            02    DFHBMFSE  PICTURE X   VALUE  IS  "A".                    00038000
000045            02    DFHBMPRF  PICTURE X   VALUE  IS  "/".                    00039000
000046            02    DFHBMASF  PICTURE X   VALUE  IS  "1".                    00040000
000047            02    DFHBMASB  PICTURE X   VALUE  IS  "8".                    00041000
000048            02    DFHBMEOF  PICTURE X   VALUE  IS  "Ï".                    00042000
000049            02    DFHBMDET  PICTURE X   VALUE  IS  "ƒ".                    00043000
000050            02    DFHSA     PICTURE X   VALUE  IS  " ".                    00044000
000051            02    DFHCOLOR  PICTURE X   VALUE  IS  "Ô".                    00045000
000052            02    DFHPS     PICTURE X   VALUE  IS  "õ".                    00046000
000053            02    DFHHLT    PICTURE X   VALUE  IS  "ã".                    00047000
```

```
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000054            02    DFH3270   PICTURE X   VALUE  IS  "{".                     00048000
000055            02    DFHVAL    PICTURE X   VALUE  IS  "A".                     00049000
000056            02    DFHALL    PICTURE X   VALUE  IS  " ".                     00050000
000057            02    DFHERROR  PICTURE X   VALUE  IS  " ".                     00051000
000058            02    DFHDFT    PICTURE X   VALUE  IS  "ÿ".                     00052000
000059            02    DFHDFCOL  PICTURE X   VALUE  IS  "ÿ".                     00053000
000060            02    DFHBLUE   PICTURE X   VALUE  IS  "1".                     00054000
000061            02    DFHRED    PICTURE X   VALUE  IS  "2".                     00055000
000062            02    DFHPINK   PICTURE X   VALUE  IS  "3".                     00056000
000063            02    DFHGREEN  PICTURE X   VALUE  IS  "4".                     00057000
000064            02    DFHTURQ   PICTURE X   VALUE  IS  "5".                     00058000
000065            02    DFHYELLO  PICTURE X   VALUE  IS  "6".                     00059000
000066            02    DFHNEUTR  PICTURE X   VALUE  IS  "7".                     00060000
000067            02    DFHBASE   PICTURE X   VALUE  IS  "ÿ".                     00061000
000068            02    DFHDFHI   PICTURE X   VALUE  IS  "ÿ".                     00062000
000069            02    DFHBLINK  PICTURE X   VALUE  IS  "1".                     00063000
000070            02    DFHREVRS  PICTURE X   VALUE  IS  "2".                     00064000
000071            02    DFHUNDLN  PICTURE X   VALUE  IS  "4".                     00065000
000072            02    DFHMFIL   PICTURE X   VALUE  IS  " ".                     00066000
000073            02    DFHMENT   PICTURE X   VALUE  IS  " ".                     00067000
000074            02    DFHMFE    PICTURE X   VALUE  IS  " ".                     00068000
000075            02    DFHUNNOD  PICTURE X   VALUE  IS  "(".                     00069000
000076            02    DFHUNIMD  PICTURE X   VALUE  IS  "I".                     00070000
000077            02    DFHUNNUM  PICTURE X   VALUE  IS  "J".                     00071000
000078            02    DFHUNINT  PICTURE X   VALUE  IS  "R".                     00072000
000079            02    DFHUNNON  PICTURE X   VALUE  IS  ")".                     00073000
000080            02    DFHPROTI  PICTURE X   VALUE  IS  "Y".                     00074000
000081            02    DFHPROTN  PICTURE X   VALUE  IS  "%".                     00075000
000082            02    DFHMT     PICTURE X   VALUE  IS  " ".                     00076000
000083            02    DFHMFT    PICTURE X   VALUE  IS  " ".                     00077000
000084            02    DFHMET    PICTURE X   VALUE  IS  " ".                     00078000
000085            02    DFHMFET   PICTURE X   VALUE  IS  " ".                     00079000
000086                                                                            00080000
000087          01    DFHAID.                                                     00081000
000088            02  DFHNULL   PIC  X  VALUE IS " ".                             00082000
000089            02  DFHENTER  PIC  X  VALUE IS QUOTE.                           00083000
000090            02  DFHCLEAR  PIC  X  VALUE IS "_".                             00084000
000091            02  DFHCLRP   PIC  X  VALUE IS "]".                             00085000
000092            02  DFHPEN    PIC  X  VALUE IS "=".                             00086000
000093            02  DFHOPID   PIC  X  VALUE IS "W".                             00087000
000094            02  DFHMSRE   PIC  X  VALUE IS "X".                             00088000
000095            02  DFHSTRF   PIC  X  VALUE IS "h".                             00089000
000096            02  DFHTRIG   PIC  X  VALUE IS """".                            00090000
000097            02  DFHPA1    PIC  X  VALUE IS "%".                             00091000
000098            02  DFHPA2    PIC  X  VALUE IS ">".                             00092000
000099            02  DFHPA3    PIC  X  VALUE IS ",".                             00093000
000100            02  DFHPF1    PIC  X  VALUE IS "1".                             00094000
000101            02  DFHPF2    PIC  X  VALUE IS "2".                             00095000
000102            02  DFHPF3    PIC  X  VALUE IS "3".                             00096000
000103            02  DFHPF4    PIC  X  VALUE IS "4".                             00097000
000104            02  DFHPF5    PIC  X  VALUE IS "5".                             00098000
000105            02  DFHPF6    PIC  X  VALUE IS "6".                             00099000
000106            02  DFHPF7    PIC  X  VALUE IS "7".                             00100000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP03         27 APR 1998 18:43:36  PAGE  3
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000107            02  DFHPF8    PIC  X  VALUE IS "8".                        00101000
000108            02  DFHPF9    PIC  X  VALUE IS "9".                        00102000
000109            02  DFHPF10   PIC  X  VALUE IS ":".                        00103000
000110            02  DFHPF11   PIC  X  VALUE IS "#".                        00104000
000111            02  DFHPF12   PIC  X  VALUE IS "@".                        00105000
000112            02  DFHPF13   PIC  X  VALUE IS "A".                        00106000
000113            02  DFHPF14   PIC  X  VALUE IS "B".                        00107000
000114            02  DFHPF15   PIC  X  VALUE IS "C".                        00108000
000115            02  DFHPF16   PIC  X  VALUE IS "D".                        00109000
000116            02  DFHPF17   PIC  X  VALUE IS "E".                        00110000
000117            02  DFHPF18   PIC  X  VALUE IS "F".                        00111000
000118            02  DFHPF19   PIC  X  VALUE IS "G".                        00112000
000119            02  DFHPF20   PIC  X  VALUE IS "H".                        00113000
000120            02  DFHPF21   PIC  X  VALUE IS "I".                        00114000
000121            02  DFHPF22   PIC  X  VALUE IS ">".                        00115000
000122            02  DFHPF23   PIC  X  VALUE IS ".".                        00116000
000123            02  DFHPF24   PIC  X  VALUE IS "<".                        00117000
000124                                                                       00118000
000125                                                                       00119000
000126          01  PSBNAME PIC X(8).                                        00120000
000127          01  DLIO PIC X(70).                                          00121000
000128          01  SSA1.                                                    00122000
000129              02  FILLER PIC X(19) VALUE "ID      (NUM      =".        00123000
000130              02  SSA1KEY  PIC X(5).                                   00124000
000131              02  FILLER  PIC X VALUE ")".                             00125000
000132          01  SSA2.                                                    00126000
000133              02  FILLER PIC X(19) VALUE "CHEQUE  (COMPTE   =".        00127000
000134              02  SSA2KEY PIC X(5).                                    00128000
000135              02  FILLER PIC X VALUE ")".                              00129000
000136          01  SSA3.                                                    00130000
000137              02  FILLER PIC X(19) VALUE "PRET    (PRENUM   =".        00131000
000138              02  SSA3KEY PIC X(6).                                    00132000
000139              02  FILLER PIC X VALUE ")".                              00133000
000140   *OLD** 01  MAP1I COPY ABJCQIN.                                      00134000 ABJ6088 00 LANGLEVEL 1 COPY IS CHANGED
000141          01  MAP1I. COPY ABJCQIN REPLACING ==01  MAP1I.== BY ====.    00134000
000142+        * ------------------------------------------------------------ *00001000
000143+        *   LICENSED MATERIALS - PROPERTY OF IBM                      *00002000
000144+        *                                                             *00003000
000145+        *   5785-CCC 5785-ABJ 5648-B05 5686-A07                       *00004000
000146+        *                                                             *00005000
000147+        *   (C) COPYRIGHT IBM CORP. 1982, 1998. ALL RIGHTS RESERVED.  *00006000
000148+        *                                                             *00007000
000149+        *   US GOVERNMENT USERS RESTRICTED RIGHTS - USE,              *00008000
000150+        *   DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP           *00009000
000151+        *   SCHEDULE CONTRACT WITH IBM CORP.                          *00010000
000152+        *                                                             *00011000
000153+        * ------------------------------------------------------------ *00012000
000154+         01  MAP1I.                                                   00013000
000155+             02  FILLER PIC X(12).                                    00014000
000156+             02  TITLEL    COMP  PIC  S9(4).                          00015000
000157+             02  TITLEF    PICTURE X.                                 00016000
000158+             02  FILLER REDEFINES TITLEF.                             00017000
000159+               03 TITLEA    PICTURE X.                                00018000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP03         27 APR 1998 18:43:36  PAGE  4
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000160+            02  TITLEI  PIC X(35).                                 00019000
000161+            02  CUSTNOL    COMP  PIC  S9(4).                       00020000
000162+            02  CUSTNOF    PICTURE X.                              00021000
000163+            02  FILLER REDEFINES CUSTNOF.                          00022000
000164+              03 CUSTNOA    PICTURE X.                             00023000
000165+            02  CUSTNOI  PIC X(5).                                 00024000
000166+            02  CHECKNOL    COMP  PIC  S9(4).                      00025000
000167+            02  CHECKNOF    PICTURE X.                             00026000
000168+            02  FILLER REDEFINES CHECKNOF.                         00027000
000169+              03 CHECKNOA    PICTURE X.                            00028000
000170+            02  CHECKNOI  PIC X(5).                                00029000
000171+            02  LOANNOL    COMP  PIC  S9(4).                       00030000
000172+            02  LOANNOF    PICTURE X.                              00031000
000173+            02  FILLER REDEFINES LOANNOF.                          00032000
000174+              03 LOANNOA    PICTURE X.                             00033000
000175+            02  LOANNOI  PIC X(6).                                 00034000
000176+        01  MAP1O REDEFINES MAP1I.                                 00035000
000177+            02  FILLER PIC X(12).                                  00036000
000178+            02  FILLER PICTURE X(3).                               00037000
000179+            02  TITLEO  PIC X(35).                                 00038000
000180+            02  FILLER PICTURE X(3).                               00039000
000181+            02  CUSTNOO  PIC X(5).                                 00040000
000182+            02  FILLER PICTURE X(3).                               00041000
000183+            02  CHECKNOO  PIC X(5).                                00042000
000184+            02  FILLER PICTURE X(3).                               00043000
000185+            02  LOANNOO  PIC X(6).                                 00044000
000186+        01  MAP2I.                                                 00045000
000187+            02  FILLER PIC X(12).                                  00046000
000188+            02  ERRNAMEL    COMP  PIC  S9(4).                      00047000
000189+            02  ERRNAMEF    PICTURE X.                             00048000
000190+            02  FILLER REDEFINES ERRNAMEF.                         00049000
000191+              03 ERRNAMEA    PICTURE X.                            00050000
000192+            02  ERRNAMEI  PIC X(8).                                00051000
000193+            02  ERRNOL    COMP  PIC  S9(4).                        00052000
000194+            02  ERRNOF    PICTURE X.                               00053000
000195+            02  FILLER REDEFINES ERRNOF.                           00054000
000196+              03 ERRNOA    PICTURE X.                              00055000
000197+            02  ERRNOI  PIC X(6).                                  00056000
000198+        01  MAP2O REDEFINES MAP2I.                                 00057000
000199+            02  FILLER PIC X(12).                                  00058000
000200+            02  FILLER PICTURE X(3).                               00059000
000201+            02  ERRNAMEO  PIC X(8).                                00060000
000202+            02  FILLER PICTURE X(3).                               00061000
000203+            02  ERRNOO  PIC X(6).                                  00062000
000204         LINKAGE SECTION.                                           00135000
000205   *OLD** 01  DFHBLLDS SYNCHRONIZED.                                00136000 ABJ6203 00 BLL'S ARE REMOVED
000206         *01  DFHBLLDS SYNCHRONIZED.                                00136000
000207   *OLD**   02  BLLCBAR PICTURE XXXX.                               00137000
000208         *  02  BLLCBAR PICTURE XXXX.                               00137000
000209   *OLD**   02  CSACBAR PICTURE XXXX.                               00138000
000210         *  02  CSACBAR PICTURE XXXX.                               00138000
000211   *OLD**   02  CSAOPBAR PICTURE S9(8) USAGE IS COMPUTATIONAL.      00139000
000212         *  02  CSAOPBAR PICTURE S9(8) USAGE IS COMPUTATIONAL.      00139000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                   ABJIVP03         27 APR 1998 18:43:36  PAGE  5
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000213   *OLD**   02  TCACBAR PICTURE S9(8) USAGE IS COMPUTATIONAL.              00140000
000214         *  02  TCACBAR PICTURE S9(8) USAGE IS COMPUTATIONAL.              00140000
000215   *OLD**     02  PCB-LIST-PTR  PIC S9(8) COMP.                            00141000
000216         *    02  PCB-LIST-PTR  PIC S9(8) COMP.                            00141000
000217   *OLD**     02  PCB1-PTR  PIC S9(8) COMP.                                00142000
000218         *    02  PCB1-PTR  PIC S9(8) COMP.                                00142000
000219   *OLD**     02  CINQOUT-PTR PIC S9(8) COMP.                              00143000
000220         *    02  CINQOUT-PTR PIC S9(8) COMP.                              00143000
000221   *OLD**     02  ERRORMP-PTR PIC S9(8) COMP.                              00144000
000222         *    02  ERRORMP-PTR PIC S9(8) COMP.                              00144000
000223   *OLD**     02  CIDLOUT-PTR PIC S9(8) COMP.                              00145000
000224         *    02  CIDLOUT-PTR PIC S9(8) COMP.                              00145000
000225          01  DFHCSADS SYNCHRONIZED.                                       00146000
000226            02  CSAFILLER PICTURE X(512).                                  00147000
000227            02  FILLER1 REDEFINES CSAFILLER.                               00148000
000228              03  FILLER.                                                  00149000
000229                04  FILLER PICTURE X(76).                                  00150000
000230                04  CSACDTA PICTURE S9(8) USAGE IS COMPUTATIONAL.          00151000
000231                04  CSATODP PICTURE S9(7) USAGE IS COMPUTATIONAL-3.        00152000
000232                04  FILLER PICTURE X(12).                                  00153000
000233                04  CSACTODB PICTURE S9(8) USAGE IS COMPUTATIONAL.         00154000
000234                04  FILLER PICTURE X(24).                                  00155000
000235                04  CSAJYDP PICTURE 9(7) USAGE IS COMPUTATIONAL-3.         00156000
000236                04  FILLER PICTURE X(64).                                  00157000
000237              03  FILLER.                                                  00158000
000238                04  FILLER PICTURE X(8).                                   00159000
000239                04  CSAOPFLA PICTURE S9(8) USAGE IS COMPUTATIONAL.         00160000
000240                04  FILLER PICTURE X(20).                                  00161000
000241                04  FILLER.                                                00162000
000242                  05  CSAKCNAC PICTURE XXXX.                               00163000
000243                  05  CSASCNAC PICTURE XXXX.                               00164000
000244                  05  CSAPCNAC PICTURE XXXX.                               00165000
000245                  05  CSAICNAC PICTURE XXXX.                               00166000
000246                  05  CSADCNAC PICTURE XXXX.                               00167000
000247                  05  CSATCNAC PICTURE XXXX.                               00168000
000248                  05  CSAFCNAC PICTURE XXXX.                               00169000
000249                  05  CSATDNAC PICTURE XXXX.                               00170000
000250                  05  CSATSNAC PICTURE XXXX.                               00171000
000251                  05  CSASANAC PICTURE XXXX.                               00172000
000252                  05  CSATRNAC PICTURE XXXX.                               00173000
000253                  05  CSAPINAC PICTURE XXXX.                               00174000
000254                  05  FILLER PICTURE X(4).                                 00175000
000255                  05  CSASPNAC PICTURE XXXX.                               00176000
000256                  05  CSATCRWE PICTURE XXXX.                               00177000
000257              03  FILLER PICTURE X(215).                                   00178000
000258              03  CSAUTA1 PICTURE S9(5) USAGE IS COMPUTATIONAL-3.          00179000
000259              03  CSAUTA2 PICTURE S9(5) USAGE IS COMPUTATIONAL-3.          00180000
000260              03  CSAUTA3 PICTURE S9(5) USAGE IS COMPUTATIONAL-3.          00181000
000261              03  CSAUTA4 PICTURE S9(5) USAGE IS COMPUTATIONAL-3.          00182000
000262              03  FILLER  PICTURE X(1).                                    00183000
000263         *    ABOVE FILLER ADDED BY APAR PN26174                           00184000
000264                                                                           00185000
000265                                                                           00186000
```

```
000266         01  DFHTCADS PICTURE X(64) SYNCHRONIZED.                      00187000
000267         01  CSAOPFL REDEFINES DFHTCADS SYNCHRONIZED.                  00188000
000268           02  CSAATP PICTURE XXXX.                                    00189000
000269           02  CSAATTCH PICTURE XXXX.                                  00190000
000270           02  CSADLI PICTURE XXXX.                                    00191000
000271           02  CSABFNAC PICTURE XXXX.                                  00192000
000272           02  CSABMS PICTURE XXXX.                                    00193000
000273           02  CSATMSVT PICTURE XXXX.                                  00194000
000274           02  CSAJCNA1 PICTURE XXXX.                                  00195000
000275           02  CSAJCNA2 PICTURE XXXX.                                  00196000
000276           02  CSASRNAC PICTURE XXXX.                                  00197000
000277           02  CSASRTBA PICTURE XXXX.                                  00198000
000278           02  CSAKPNAC PICTURE XXXX.                                  00199000
000279           02  CSAATMSP PICTURE XXXX.                                  00200000
000280           02  CSAXLTBA PICTURE XXXX.                                  00201000
000281           02  CSAJCTBA PICTURE XXXX.                                  00202000
000282         01  DFHTCA SYNCHRONIZED.                                      00203000
000283           02  FILLER.                                                 00204000
000284             03  FILLER PICTURE X(8).                                  00205000
000285             03  TCAFCAAA PICTURE S9(8) USAGE IS COMPUTATIONAL.        00206000
000286             03  FILLER REDEFINES TCAFCAAA.                            00207000
000287               04  TCAFCAA1 PICTURE X.                                 00208000
000288               04  FILLER PICTURE X(3).                                00209000
000289             03 FILLER.                                                00210000
000290               04  FILLER PICTURE X(8).                                00211000
000291               04  TCATCEA PICTURE S9(8) USAGE IS COMPUTATIONAL.       00212000
000292               04  FILLER REDEFINES TCATCEA.                           00213000
000293                 05  TCATCQA PICTURE S9(8) USAGE IS COMPUTATIONAL.     00214000
000294               04  TCATCTR1 PICTURE  9(4) USAGE IS COMPUTATIONAL.      00215000
000295               04  FILLER REDEFINES TCATCTR1.                          00216000
000296                 05  TCATCEI PICTURE X.                                00217000
000297                 05  TCATCTR PICTURE X.                                00218000
000298               04  FILLER REDEFINES TCATCTR1.                          00219000
000299                 05  TCATCDC PICTURE X.                                00220000
000300                 05  FILLER PICTURE X.                                 00221000
000301               04  TCATCDP PICTURE X.                                  00222000
000302               04  FILLER PICTURE X(5).                                00223000
000303               04  TCATCRS PICTURE X(60).                              00224000
000304               04  FILLER REDEFINES TCATCRS.                           00225000
000305                 05  TCATCDP1 PICTURE  9(4) USAGE IS COMPUTATIONAL.    00226000
000306                 05  FILLER PICTURE X(58).                             00227000
000307             03  FILLER.                                               00228000
000308               04  TCASCCA.                                            00229000
000309                 05  TCASCSA PICTURE S9(8) USAGE IS COMPUTATIONAL.     00230000
000310               04  FILLER REDEFINES TCASCCA.                           00231000
000311                 05  TCAFCTL PICTURE S9(8) USAGE IS COMPUTATIONAL.     00232000
000312               04  FILLER REDEFINES TCASCCA.                           00233000
000313                 05  TCASCTR PICTURE X.                                00234000
000314                 05  TCASCIB PICTURE X.                                00235000
000315                 05  TCASCNB PICTURE  9(4) USAGE IS COMPUTATIONAL.     00236000
000316               04  FILLER REDEFINES TCASCCA.                           00237000
000317                 05  TCASCRI PICTURE  9(4) USAGE IS COMPUTATIONAL.     00238000
000318                 05  FILLER PICTURE X(2).                              00239000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP03         27 APR 1998 18:43:36  PAGE  7
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000319                04  TCAFCTL1 PICTURE S9(8) USAGE IS COMPUTATIONAL.        00240000
000320                04  FILLER PICTURE X(28).                                 00241000
000321              03  FILLER.                                                 00242000
000322                04  TCACCCA.                                              00243000
000323                  05  TCACCCA1 PICTURE X(32).                             00244000
000324                  05  TCACCRS1 PICTURE X(56).                             00245000
000325                  05  TCACCSV1 PICTURE S9(4) USAGE IS COMPUTATIONAL.      00246000
000326                  05  TCACCRSV PICTURE XX.                                00247000
000327                  05  TCACCSV2 PICTURE XXXX.                              00248000
000328                04  FILLER REDEFINES TCACCCA.                             00249000
000329                  05  TCATPAPR PICTURE X.                                 00250000
000330                    88  TCATPVAL   VALUE  "6".                            00251000
000331                    88  TCATPNVL   VALUE  "7".                            00252000
000332                    88  TCATPLNR   VALUE  " ".                            00253000
000333                  05  FILLER PICTURE X.                                   00254000
000334                  05  TCATPOS PICTURE S9(4) USAGE IS COMPUTATIONAL.       00255000
000335                  05  TCATPCS PICTURE S9(4) USAGE IS COMPUTATIONAL.       00256000
000336                  05  TCATPOC PICTURE S9(4) USAGE IS COMPUTATIONAL.       00257000
000337                  05  TCATPLDM PICTURE XX.                                00258000
000338                  05  TCATPCON PIC S9(4) USAGE IS COMPUTATIONAL.          00259000
000339                  05  TCATPPNM PICTURE X(8).                              00260000
000340                  05  FILLER PICTURE X(76).                               00261000
000341                04  FILLER REDEFINES TCACCCA.                             00262000
000342                  05  FILLER PICTURE X(24).                               00263000
000343                  05  TCAKCTI PICTURE X(4).                               00264000
000344                  05  TCAKCFA PICTURE S9(8) USAGE IS COMPUTATIONAL.       00265000
000345                  05  FILLER PICTURE X(64).                               00266000
000346                04  FILLER REDEFINES TCACCCA.                             00267000
000347                  05  TCAICDA PICTURE S9(8) USAGE IS COMPUTATIONAL.       00268000
000348                  05  FILLER REDEFINES TCAICDA.                           00269000
000349                    06  TCAICTR PICTURE  9(4) USAGE IS COMPUTATIONAL.     00270000
000350                    06  FILLER PICTURE X(2).                              00271000
000351                  05  FILLER REDEFINES TCAICDA.                           00272000
000352                    06  TCAICRC PICTURE X.                                00273000
000353                    06  FILLER PICTURE X(3).                              00274000
000354                  05  TCAICQID.                                           00275000
000355                      07  TCAICQPX PICTURE XX.                            00276000
000356                      07  FILLER   PICTURE X(6).                          00277000
000357                    05  TCAICRT PICTURE S9(7) USAGE IS COMPUTATIONAL-3.   00278000
000358                  05  TCAICTI PICTURE X(4).                               00279000
000359                  05  TCAICTID PICTURE X(4).                              00280000
000360                  05  FILLER PICTURE X(4).                                00281000
000361                  05  TCAFCTR1 PICTURE  9(4) USAGE IS COMPUTATIONAL.      00282000
000362                  05  FILLER PICTURE X(66).                               00283000
000363                04  FILLER REDEFINES TCACCCA.                             00284000
000364                  05  TCAPCLA PICTURE S9(8) USAGE IS COMPUTATIONAL.       00285000
000365                  05  FILLER REDEFINES TCAPCLA.                           00286000
000366                    06  TCAPCTR PICTURE  9(4) USAGE IS COMPUTATIONAL.     00287000
000367                    06  FILLER PICTURE X(2).                              00288000
000368                  05  FILLER REDEFINES TCAPCLA.                           00289000
000369                    06  TCAPCRC PICTURE X.                                00290000
000370                      88  PCPGMIDER   VALUE " ".                          00291000
000371                      88  PCNORESP    VALUE " ".                          00292000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP03         27 APR 1998 18:43:36  PAGE  8
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000372                      88  ICNORESP    VALUE " ".                          00293000
000373                      88  ICENDDATA   VALUE " ".                          00294000
000374                      88  ICIOERROR   VALUE " ".                          00295000
000375                      88  ICTRNIDER   VALUE " ".                          00296000
000376                      88  ICTRMIDER   VALUE " ".                          00297000
000377                      88  ICTSINVLD   VALUE " ".                          00298000
000378                      88  ICEXPIRD    VALUE " ".                          00299000
000379                      88  ICNOTFND    VALUE "¶".                          00300000
000380                      88  ICINVREQ    VALUE "ÿ".                          00301000
000381                      88  TSNORESP    VALUE " ".                          00302000
000382                      88  TSENERROR   VALUE " ".                          00303000
000383                      88  TSIDERROR   VALUE " ".                          00304000
000384                      88  TSIOERROR   VALUE " ".                          00305000
000385                      88  TSINVREQ    VALUE " ".                          00306000
000386                      88  TDNORESP    VALUE " ".                          00307000
000387                      88  TDQUEZERO   VALUE " ".                          00308000
000388                      88  TDIDERROR   VALUE " ".                          00309000
000389                      88  TDIOERROR   VALUE " ".                          00310000
000390                      88  TDNOTOPEN   VALUE " ".                          00311000
000391                      88  TDNOSPACE   VALUE " ".                          00312000
000392                      88  FCNORESP    VALUE " ".                          00313000
000393                      88  FCDSIDER    VALUE " ".                          00314000
000394                      88  FCSEGIDER   VALUE " ".                          00315000
000395                      88  FCINVREQ    VALUE " ".                          00316000
000396                      88  FCDUPDS     VALUE " ".                          00317000
000397                      88  FCNOTOPEN   VALUE " ".                          00318000
000398                      88  FCENDFILE   VALUE " ".                          00319000
000399                      88  FCIOERROR   VALUE "ø".                          00320000
000400                      88  FCNOTFND    VALUE "a".                          00321000
000401                      88  FCDUPREC    VALUE "b".                          00322000
000402                      88  FCNOSPACE   VALUE "c".                          00323000
000403                      88  FCDUPKEY    VALUE "d".                          00324000
000404                      88  FCILLOGIC   VALUE " ".                          00325000
000405                    06  TCAPCFLA PICTURE X.                               00326000
000406                    06  TCAPCARO PICTURE X.                               00327000
000407                    06  FILLER PICTURE X.                                 00328000
000408                  05  TCAPCPI PICTURE X(8).                               00329000
000409                  05  FILLER REDEFINES TCAPCPI.                           00330000
000410                    06  TCAPCERA PICTURE S9(8) USAGE IS COMPUTATIONAL.    00331000
000411                    06  FILLER PICTURE X(4).                              00332000
000412                  05  TCAPCAC PICTURE XXXX.                               00333000
000413                  05  TCAPCPSW PICTURE X(8).                              00334000
000414                  05  TCAPCINT PICTURE X(8).                              00335000
000415                  05  FILLER PICTURE X(64).                               00336000
000416                04  FILLER REDEFINES TCACCCA.                             00337000
000417                  05  TCADCTR PICTURE  9(4) USAGE IS COMPUTATIONAL.       00338000
000418                  05  TCADCNB PICTURE  9(4) USAGE IS COMPUTATIONAL.       00339000
000419                  05  TCADCSA PICTURE S9(8) USAGE IS COMPUTATIONAL.       00340000
000420                  05  FILLER PICTURE XXXX.                                00341000
000421                  05  TCADCDC PICTURE XXXX.                               00342000
000422                  05  FILLER PICTURE X(80).                               00343000
000423                04  FILLER REDEFINES TCACCCA.                             00344000
000424                  05  TCAFCAA PICTURE S9(8) USAGE IS COMPUTATIONAL.       00345000
```

```
000425                  05  FILLER REDEFINES TCAFCAA.                          00346000
000426                    06  TCAFCTR PICTURE  9(4) USAGE IS COMPUTATIONAL.    00347000
000427                    06  FILLER PICTURE X(2).                             00348000
000428                  05  FILLER REDEFINES TCAFCAA.                          00349000
000429                    06  TCAFCRC PICTURE X.                               00350000
000430                    06  FILLER PICTURE X(3).                             00351000
000431                  05  TCAFCDI PICTURE X(8).                              00352000
000432                  05  TCAFCURL PICTURE  9(4) USAGE IS COMPUTATIONAL.     00353000
000433                  05  FILLER REDEFINES TCAFCURL.                         00354000
000434                    06  TCAFCNRD PICTURE  9(4) USAGE IS COMPUTATIONAL.   00355000
000435                  05  FILLER  PICTURE X(6).                              00356000
000436                  05  FILLER  PICTURE X(8).                              00357000
000437                  05  TCAFCRI PICTURE S9(8) USAGE IS COMPUTATIONAL.      00358000
000438                  05  FILLER PICTURE X(64).                              00359000
000439                04  FILLER REDEFINES TCACCCA.                            00360000
000440                  05  TCATDAA PICTURE S9(8) USAGE IS COMPUTATIONAL.      00361000
000441                  05  FILLER REDEFINES TCATDAA.                          00362000
000442                    06  TCATDRC PICTURE X.                               00363000
000443                    06  FILLER PICTURE X(3).                             00364000
000444                  05  FILLER REDEFINES TCATDAA.                          00365000
000445                    06  TCATDTR PICTURE  9(4) USAGE IS COMPUTATIONAL.    00366000
000446                    06  FILLER PICTURE X(2).                             00367000
000447                  05  TCATDDI PICTURE XXXX.                              00368000
000448                  05  FILLER PICTURE X(88).                              00369000
000449                04  FILLER REDEFINES TCACCCA.                            00370000
000450                  05  TCATSDA PICTURE S9(8) USAGE IS COMPUTATIONAL.      00371000
000451                  05  FILLER REDEFINES TCATSDA.                          00372000
000452                    06  TCATSRC PICTURE X.                               00373000
000453                    06  FILLER PICTURE X(3).                             00374000
000454                  05  FILLER REDEFINES TCATSDA.                          00375000
000455                    06  TCATSTR PICTURE  9(4) USAGE IS COMPUTATIONAL.    00376000
000456                    06  FILLER PICTURE X(2).                             00377000
000457                  05  TCATSDI PICTURE X(8).                              00378000
000458                  05  TCATSRN PICTURE  9(4) USAGE IS COMPUTATIONAL.      00379000
000459                  05  FILLER PICTURE  X(2).                              00380000
000460                  05  TCATSTR2 PICTURE  9(4) USAGE IS COMPUTATIONAL.     00381000
000461                  05  FILLER PICTURE X(78).                              00382000
000462                04  FILLER REDEFINES TCACCCA.                            00383000
000463                  05  TCAMSTR1 PICTURE X(8).                             00384000
000464                  05  FILLER REDEFINES TCAMSTR1.                         00385000
000465                    06  FILLER PICTURE X.                                00386000
000466                    06  TCAMSTR2 PICTURE X.                              00387000
000467                    06  TCAMSTR3 PICTURE X.                              00388000
000468                    06  TCAMSTR4 PICTURE X.                              00389000
000469                    06  TCAMSTR5 PICTURE X.                              00390000
000470                    06  TCAMSTR6 PICTURE X.                              00391000
000471                    06  TCAMSTR7 PICTURE X.                              00392000
000472                    06  TCAMSTR8 PICTURE X.                              00393000
000473                  05  FILLER REDEFINES TCAMSTR1.                         00394000
000474                    06  TCAMSRC1 PICTURE X.                              00395000
000475                    06  TCAMSRC2 PICTURE X.                              00396000
000476                    06  TCAMSRC3 PICTURE X.                              00397000
000477                    06  TCAMSRI1 PICTURE X.                              00398000
```

```
000478                   06  TCAMSPGN PICTURE  9(4) USAGE IS COMPUTATIONAL.     00399000
000479                   06  TCAMSOCN PICTURE  9(4) USAGE IS COMPUTATIONAL.     00400000
000480                 05  FILLER REDEFINES TCAMSTR1.                           00401000
000481                   06  FILLER PICTURE XX.                                 00402000
000482                   06  TCAMSRC3H PICTURE 9(4) USAGE IS COMPUTATIONAL.     00403000
000483                   06  FILLER PICTURE X(4).                               00404000
000484                 05  FILLER REDEFINES TCAMSTR1.                           00405000
000485                   06  TCAMSRC PICTURE XXX.                               00406000
000486                   06  FILLER PICTURE X(5).                               00407000
000487                 05  TCAMSIOA PICTURE S9(8) USAGE IS COMPUTATIONAL.       00408000
000488                 05  FILLER REDEFINES TCAMSIOA.                           00409000
000489                   06  TCAMSTA PICTURE S9(8) USAGE IS COMPUTATIONAL.      00410000
000490                 05  TCAMSFSC PICTURE XXXX.                               00411000
000491                 05  FILLER REDEFINES TCAMSFSC.                           00412000
000492                   06  TCABMSFB PICTURE  9(4) USAGE IS COMPUTATIONAL.     00413000
000493                   06  FILLER REDEFINES TCABMSFB.                         00414000
000494                     07  TCABMSWC PICTURE X.                              00415000
000495                     07  FILLER PICTURE X.                                00416000
000496                   06  FILLER REDEFINES TCABMSFB.                         00417000
000497                     07  TCAMSWCC PICTURE X.                              00418000
000498                     07  TCAMSJ PICTURE X.                                00419000
000499                   06  TCABMSCP PICTURE S9(4) USAGE IS COMPUTATIONAL.     00420000
000500                 05  TCABMSMN PICTURE X(8).                               00421000
000501                 05  FILLER REDEFINES TCABMSMN.                           00422000
000502                   06  TCABMSMA PICTURE S9(8) USAGE IS COMPUTATIONAL.     00423000
000503                   06  FILLER PICTURE X(4).                               00424000
000504                 05  FILLER REDEFINES TCABMSMN.                           00425000
000505                   06  TCAMSHDR PICTURE S9(8) USAGE IS COMPUTATIONAL.     00426000
000506                   06  FILLER PICTURE X(4).                               00427000
000507                 05  FILLER REDEFINES TCABMSMN.                           00428000
000508                   06  TCAMSRLA PICTURE S9(8) USAGE IS COMPUTATIONAL.     00429000
000509                   06  TCAMSRTI PICTURE S9(7) USAGE IS COMPUTATIONAL-3.   00430000
000510                   06  FILLER REDEFINES TCAMSRTI.                         00431000
000511                     07  TCAMSTRL PICTURE S9(8) USAGE IS COMPUTATIONAL.   00432000
000512                 05  TCAMSMSN PICTURE X(8).                               00433000
000513                 05  FILLER REDEFINES TCAMSMSN.                           00434000
000514                   06  TCAMSMSA PICTURE S9(8) USAGE IS COMPUTATIONAL.     00435000
000515                   06  FILLER PICTURE X(4).                               00436000
000516                 05  FILLER REDEFINES TCAMSMSN.                           00437000
000517                   06  TCAMSTI PICTURE X(4).                              00438000
000518                   06  FILLER PICTURE X.                                  00439000
000519                   06  TCAMSOC PICTURE XXX.                               00440000
000520                 05  TCAMSLDM PICTURE XX.                                 00441000
000521                 05  TCAMSLDC PICTURE X.                                  00442000
000522                 05  TCAMSRID PICTURE XX.                                 00443000
000523                 05  FILLER PICTURE XXX.                                  00444000
000524                 05  TCAMSFMP PICTURE X(8).                               00445000
000525                 05  FILLER PICTURE X(48).                                00446000
000526               04  FILLER REDEFINES TCACCCA.                              00447000
000527                 05  TCASPTR PICTURE  9(4) USAGE IS COMPUTATIONAL.        00448000
000528                 05  FILLER PICTURE X(94).                                00449000
000529               04  FILLER REDEFINES TCACCCA.                              00450000
000530                 05  TCADLIO PICTURE S9(8) USAGE IS COMPUTATIONAL.        00451000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP03         27 APR 1998 18:43:36  PAGE 11
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000531                  05  FILLER REDEFINES TCADLIO.                            00452000
000532                    06  FILLER PICTURE X.                                  00453000
000533                    06  TCADLTR PICTURE X.                                 00454000
000534                      88  FCDLINA   VALUE "ÿ".                             00455000
000535                      88  FCPSBSCH  VALUE " ".                             00456000
000536                      88  FCPSBNF   VALUE " ".                             00457000
000537                      88  FCTASKNA  VALUE " ".                             00458000
000538                      88  FCPSBNA   VALUE " ".                             00459000
000539                      88  FCLANGCON VALUE " ".                             00460000
000540                      88  FCPSBFAIL VALUE " ".                             00461000
000541                      88  FCFUNCNS  VALUE " ".                             00462000
000542                      88  FCTERMNS  VALUE " ".                             00463000
000543                    06  FILLER PICTURE X(2).                               00464000
000544                  05  TCADLPCB PICTURE S9(8) USAGE IS COMPUTATIONAL.       00465000
000545                  05  TCADLPSB PICTURE X(8).                               00466000
000546                  05  TCADLSSA PICTURE S9(8) USAGE IS COMPUTATIONAL.       00467000
000547                  05  TCADLPAR PICTURE S9(8) USAGE IS COMPUTATIONAL.       00468000
000548                  05  TCADLECB PICTURE S9(8) USAGE IS COMPUTATIONAL.       00469000
000549                  05  FILLER REDEFINES TCADLECB.                           00470000
000550                    06  TCADLLAN PICTURE X(4).                             00471000
000551                  05  TCADLFUN PICTURE X(4).                               00472000
000552                  05  FILLER PICTURE X(64).                                00473000
000553                04  FILLER.                                                00474000
000554                  05  TCATRF1 PICTURE S9(8) USAGE IS COMPUTATIONAL.        00475000
000555                  05  FILLER REDEFINES TCATRF1.                            00476000
000556                    06  TCATRF1H PICTURE  9(4) USAGE IS COMPUTATIONAL.     00477000
000557                    06  FILLER PICTURE X(2).                               00478000
000558                  05  FILLER REDEFINES TCATRF1.                            00479000
000559                    06  TCATRF1F PICTURE S9(8) USAGE IS COMPUTATIONAL.     00480000
000560                  05  FILLER REDEFINES TCATRF1.                            00481000
000561                    06  TCATRF1C PICTURE X(4).                             00482000
000562                  05  FILLER REDEFINES TCATRF1.                            00483000
000563                    06  TCATRF1P PICTURE 9(7) USAGE IS COMPUTATIONAL-3.    00484000
000564                  05  FILLER REDEFINES TCATRF1.                            00485000
000565                    06  TCATRF1A PICTURE X.                                00486000
000566                    06  FILLER PICTURE X(3).                               00487000
000567                  05  TCATRF2 PICTURE S9(8) USAGE IS COMPUTATIONAL.        00488000
000568                  05  FILLER REDEFINES TCATRF2.                            00489000
000569                    06  TCATRF2H PICTURE  9(4) USAGE IS COMPUTATIONAL.     00490000
000570                    06  FILLER PICTURE X(2).                               00491000
000571                  05  FILLER REDEFINES TCATRF2.                            00492000
000572                    06  TCATRF2F PICTURE S9(8) USAGE IS COMPUTATIONAL.     00493000
000573                  05  FILLER REDEFINES TCATRF2.                            00494000
000574                    06  TCATRF2C PICTURE X(4).                             00495000
000575                  05  FILLER REDEFINES TCATRF2.                            00496000
000576                    06  TCATRF2P PICTURE 9(7) USAGE IS COMPUTATIONAL-3.    00497000
000577                  05  FILLER REDEFINES TCATRF2.                            00498000
000578                    06  TCATRF2A PICTURE X.                                00499000
000579                    06  FILLER PICTURE X(3).                               00500000
000580                  05  TCATRRI PICTURE  9(4) USAGE IS COMPUTATIONAL.        00501000
000581                  05  TCATRRI1 PICTURE  9(4) USAGE IS COMPUTATIONAL.       00502000
000582                  05  FILLER PICTURE X(4).                                 00503000
000583                  05  TCAJCAAD PICTURE S9(8) USAGE IS COMPUTATIONAL.       00504000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP03         27 APR 1998 18:43:36  PAGE 12
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000584                  05  TCAATAC PICTURE S9(8) USAGE IS COMPUTATIONAL.        00505000
000585              03  FILLER.                                                  00506000
000586                04  TCACSPE PICTURE XXXX.                                  00507000
000587                04  TCANXTID PICTURE X(4).                                 00508000
000588          01  PCB-ADDR.                                                    00509000
000589              02  PCB1-ADDR PIC S9(8) COMP.                                00510000
000590          01  PCB1.                                                        00511000
000591              02  DBD-NAME  PIC X(8).                                      00512000
000592              02  SEG-LEVEL  PIC XX.                                       00513000
000593              02  STATUS-CODE  PIC XX.                                     00514000
000594              02  PROC-OPTIONS  PIC X(4).                                  00515000
000595              02  RESERVE-DLI  PIC S9(5) COMP.                             00516000
000596              02  SEG-NAME-FB  PIC X(8).                                   00517000
000597              02  LENGTH-FB-KEY PIC S9(5) COMP.                            00518000
000598              02  NUMB-SENS-SEGS PIC S9(5) COMP.                           00519000
000599              02  KEY-FB-AREA PIC X(30).                                   00520000
000600   *OLD** 01  MAP11I COPY ABJCQOUT.                                        00521000 ABJ6088 00 LANGLEVEL 1 COPY IS CHANGED
000601          01  MAP11I. COPY ABJCQOUT REPLACING ==01  MAP11I.== BY ====.     00521000
000602+        * -------------------------------------------------------------- *00001000
000603+        *   LICENSED MATERIALS - PROPERTY OF IBM                         *00002000
000604+        *                                                                *00003000
000605+        *   5785-CCC 5785-ABJ 5648-B05 5686-A07                          *00004000
000606+        *                                                                *00005000
000607+        *   (C) COPYRIGHT IBM CORP. 1982, 1998. ALL RIGHTS RESERVED.     *00006000
000608+        *                                                                *00007000
000609+        *   US GOVERNMENT USERS RESTRICTED RIGHTS - USE,                 *00008000
000610+        *   DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP              *00009000
000611+        *   SCHEDULE CONTRACT WITH IBM CORP.                             *00010000
000612+        *                                                                *00011000
000613+        * -------------------------------------------------------------- *00012000
000614+         01  MAP11I.                                                      00013000
000615+             02  FILLER PIC X(96).                                        00014000
000616+         01  MAP11O REDEFINES MAP11I.                                     00015000
000617+             02  FILLER PIC X(96).                                        00016000
000618+         01  MAP21I REDEFINES MAP11I.                                     00017000
000619+             02  FILLER PIC X(12).                                        00018000
000620+             02  SEGNAMEL    COMP  PIC  S9(4).                            00019000
000621+             02  SEGNAMEF    PICTURE X.                                   00020000
000622+             02  FILLER REDEFINES SEGNAMEF.                               00021000
000623+               03 SEGNAMEA    PICTURE X.                                  00022000
000624+             02  SEGNAMEI  PIC X(8).                                      00023000
000625+             02  SEGCONTL    COMP  PIC  S9(4).                            00024000
000626+             02  SEGCONTF    PICTURE X.                                   00025000
000627+             02  FILLER REDEFINES SEGCONTF.                               00026000
000628+               03 SEGCONTA    PICTURE X.                                  00027000
000629+             02  SEGCONTI  PIC X(70).                                     00028000
000630+         01  MAP21O REDEFINES MAP21I.                                     00029000
000631+             02  FILLER PIC X(12).                                        00030000
000632+             02  FILLER PICTURE X(3).                                     00031000
000633+             02  SEGNAMEO  PIC X(8).                                      00032000
000634+             02  FILLER PICTURE X(3).                                     00033000
000635+             02  SEGCONTO  PIC X(70).                                     00034000
000636+         01  MAP31I REDEFINES MAP11I.                                     00035000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP03         27 APR 1998 18:43:36  PAGE 13
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000637+            02  FILLER PIC X(12).                                       00036000
000638+        01  MAP31O REDEFINES MAP31I.                                    00037000
000639+            02  FILLER PIC X(12).                                       00038000
000640+        01  MAP41I REDEFINES MAP11I.                                    00039000
000641+            02  FILLER PIC X(12).                                       00040000
000642+        01  MAP41O REDEFINES MAP41I.                                    00041000
000643+            02  FILLER PIC X(12).                                       00042000
000644+        01  MAP51I REDEFINES MAP11I.                                    00043000
000645+            02  FILLER PIC X(12).                                       00044000
000646+        01  MAP51O REDEFINES MAP51I.                                    00045000
000647+            02  FILLER PIC X(12).                                       00046000
000648   *OLD** 01  MAP12I COPY ABJERRMP.                                      00522000 ABJ6088 00 LANGLEVEL 1 COPY IS CHANGED
000649          01  MAP12I. COPY ABJERRMP REPLACING ==01  MAP12I.== BY ====.    00522000
000650+       * -------------------------------------------------------------- *00001000
000651+       *   LICENSED MATERIALS - PROPERTY OF IBM                         *00002000
000652+       *                                                                *00003000
000653+       *   5785-CCC 5785-ABJ 5648-B05 5686-A07                          *00004000
000654+       *                                                                *00005000
000655+       *   (C) COPYRIGHT IBM CORP. 1982, 1998. ALL RIGHTS RESERVED.     *00006000
000656+       *                                                                *00007000
000657+       *   US GOVERNMENT USERS RESTRICTED RIGHTS - USE,                 *00008000
000658+       *   DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP              *00009000
000659+       *   SCHEDULE CONTRACT WITH IBM CORP.                             *00010000
000660+       *                                                                *00011000
000661+       * -------------------------------------------------------------- *00012000
000662+        01  MAP12I.                                                     00013000
000663+            02  FILLER PIC X(12).                                       00014000
000664+            02  ERRMSGL    COMP  PIC  S9(4).                            00015000
000665+            02  ERRMSGF    PICTURE X.                                   00016000
000666+            02  FILLER REDEFINES ERRMSGF.                               00017000
000667+              03 ERRMSGA    PICTURE X.                                  00018000
000668+            02  ERRMSGI  PIC X(70).                                     00019000
000669+        01  MAP12O REDEFINES MAP12I.                                    00020000
000670+            02  FILLER PIC X(12).                                       00021000
000671+            02  FILLER PICTURE X(3).                                    00022000
000672+            02  ERRMSGO  PIC X(70).                                     00023000
000673   *OLD** 01  MAP13I COPY ABJCIOUT.                                      00523000 ABJ6088 00 LANGLEVEL 1 COPY IS CHANGED
000674          01  MAP13I. COPY ABJCIOUT REPLACING ==01  MAP13I.== BY ====.    00523000
000675+       * -------------------------------------------------------------- *00001000
000676+       *   LICENSED MATERIALS - PROPERTY OF IBM                         *00002000
000677+       *                                                                *00003000
000678+       *   5785-CCC 5785-ABJ 5648-B05 5686-A07                          *00004000
000679+       *                                                                *00005000
000680+       *   (C) COPYRIGHT IBM CORP. 1982, 1998. ALL RIGHTS RESERVED.     *00006000
000681+       *                                                                *00007000
000682+       *   US GOVERNMENT USERS RESTRICTED RIGHTS - USE,                 *00008000
000683+       *   DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP              *00009000
000684+       *   SCHEDULE CONTRACT WITH IBM CORP.                             *00010000
000685+       *                                                                *00011000
000686+       * -------------------------------------------------------------- *00012000
000687+        01  MAP13I.                                                     00013000
000688+            02  FILLER PIC X(12).                                       00014000
000689+        01  MAP13O REDEFINES MAP13I.                                    00015000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                   ABJIVP03         27 APR 1998 18:43:36  PAGE 14
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000690+            02  FILLER PIC X(12).                                      00016000
000691         PROCEDURE DIVISION.                                            00524000
000692   *OLD**     MOVE CSACDTA TO TCACBAR.                                  00525000 ABJ6207 00 BLL CONVERTED TO SET POINTER
000693              MOVE CSACDTA TO LCP-WS-ADDR-COMP                          00525000            SET ADDRESS OF ...
000694              SET ADDRESS OF DFHTCA TO LCP-WS-ADDR-PNTR.                         ABJ6301 04 31 BIT ESA ADDRESSES WILL BE
                                                                                                  TREATED AS NEGATIVE NUMBERS:
                                                                                                  RESULTS MAY BE UNPREDICTABLE
                                                                                                  *** MANUAL UPDATE RECOMMENDED
000695              EXEC CICS HANDLE CONDITION ERROR(ERRORS) MAPFAIL(CIDL)    00526000
000696                  OVERFLOW(PAGE-OVERFLOW) END-EXEC.                     00527000
000697              EXEC CICS RECEIVE MAP("MAP1") MAPSET("CINQIN") END-EXEC.  00528000
000698              IF CUSTNOI = SPACES OR CUSTNOL = +0000                    00529000
000699                  MOVE "CUSTOMER" TO ERRNAMEO                           00530000
000700                  MOVE SPACES TO ERRNOO GO TO ERR-MSG.                  00531000
000701              MOVE "PSBCLIG" TO PSBNAME.                                00532000
000702              CALL "CBLTDLI" USING PCB PSBNAME.                         00533000
000703              IF TCAFCRC NOT EQUAL TO " " GO TO INTERFACE-ERROR.        00534000
000704   *OLD**     MOVE TCADLPCB TO PCB-LIST-PTR.                            00535000 ABJ6207 00 BLL CONVERTED TO SET POINTER
000705              MOVE TCADLPCB TO LCP-WS-ADDR-COMP                         00535000            SET ADDRESS OF ...
000706              SET ADDRESS OF PCB-ADDR TO LCP-WS-ADDR-PNTR.                       ABJ6301 04 31 BIT ESA ADDRESSES WILL BE
                                                                                                  TREATED AS NEGATIVE NUMBERS:
                                                                                                  RESULTS MAY BE UNPREDICTABLE
                                                                                                  *** MANUAL UPDATE RECOMMENDED
000707   *OLD**     MOVE PCB1-ADDR TO PCB1-PTR.                               00536000 ABJ6207 00 BLL CONVERTED TO SET POINTER
000708              MOVE PCB1-ADDR TO LCP-WS-ADDR-COMP                        00536000            SET ADDRESS OF ...
000709              SET ADDRESS OF PCB1 TO LCP-WS-ADDR-PNTR.                           ABJ6301 04 31 BIT ESA ADDRESSES WILL BE
                                                                                                  TREATED AS NEGATIVE NUMBERS:
                                                                                                  RESULTS MAY BE UNPREDICTABLE
                                                                                                  *** MANUAL UPDATE RECOMMENDED
000710              MOVE CUSTNOI TO SSA1KEY.                                  00537000
000711              MOVE CHECKNOI TO SSA2KEY.                                 00538000
000712              MOVE LOANNOI TO SSA3KEY.                                  00539000
000713              IF SSA2KEY NOT = LOW-VALUE GO TO CHECK-PROC.              00540000
000714              IF SSA3KEY NOT = LOW-VALUE GO TO LOAN-PROC.               00541000
000715              CALL "CBLTDLI" USING GU PCB1 DLIO SSA1.                   00542000
000716              IF TCAFCRC NOT EQUAL TO " " GO TO INTERFACE-ERROR.        00543000
000717              IF STATUS-CODE = "  " GO TO GU-OK.                        00544000
000718              IF STATUS-CODE = "GE" MOVE "CUSTOMER" TO ERRNAMEO         00545000
000719                  MOVE CUSTNOI TO ERRNOO                                00546000
000720                  GO TO ERR-MSG.                                        00547000
000721              GO TO ERROR1.                                             00548000
000722          CHECK-PROC.                                                   00549000
000723              MOVE CHECKNOI TO SSA2KEY.                                 00550000
000724              CALL "CBLTDLI" USING GU PCB1 DLIO SSA1 SSA2.              00551000
000725              IF TCAFCRC NOT = " " GO TO INTERFACE-ERROR.               00552000
000726              IF STATUS-CODE = "  " GO TO GU-OK.                        00553000
000727              IF STATUS-CODE = "GE" MOVE "CHECK" TO ERRNAMEO            00554000
000728                  MOVE CHECKNOI TO ERRNOO                               00555000
000729                  GO TO ERR-MSG.                                        00556000
000730          LOAN-PROC.                                                    00557000
000731              MOVE LOANNOI TO SSA3KEY.                                  00558000
000732              CALL "CBLTDLI" USING GU PCB1 DLIO SSA1 SSA3.              00559000
000733              IF TCAFCRC NOT = " " GO TO INTERFACE-ERROR.               00560000
```

```
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000734             IF STATUS-CODE = "  " GO TO GU-OK.                       00561000
000735             IF STATUS-CODE = "GE" MOVE "LOAN" TO ERRNAMEO            00562000
000736                 MOVE LOANNOI TO ERRNOO                               00563000
000737                 GO TO ERR-MSG.                                       00564000
000738         GU-OK.                                                       00565000
000739             MOVE 1 TO PAGE-OVERFLOW-CTR.                             00566000
000740   *OLD**    EXEC CICS GETMAIN SET(CINQOUT-PTR) LENGTH(96) END-EXEC.      00567000 ABJ6201 00 POINTER OPTION IN EXEC CICS
000741             EXEC CICS GETMAIN SET(ADDRESS OF MAP11I) LENGTH(96) END-EXEC.00567000            CHANGED TO ADDRESS OF  ...
000742             EXEC CICS SEND MAP("MAP11") MAPSET("CINQOUT") ACCUM      00568000
000743                 ERASE PAGING FRSET FREEKB END-EXEC.                  00569000
000744         PAGE-BUILD.                                                  00570000
000745             MOVE SEG-NAME-FB TO SEGNAMEO.                            00571000
000746             MOVE DLIO TO SEGCONTO.                                   00572000
000747         SEND-MAP2.                                                   00573000
000748             MOVE 2 TO PAGE-OVERFLOW-CTR.                             00574000
000749             EXEC CICS SEND MAP("MAP21") MAPSET("CINQOUT") ACCUM      00575000
000750                 PAGING FRSET FREEKB END-EXEC.                        00576000
000751         GNP-LOOP.                                                    00577000
000752             CALL "CBLTDLI" USING GNP PCB1 DLIO.                      00578000
000753             IF TCAFCRC NOT = " " GO TO INTERFACE-ERROR.              00579000
000754             IF STATUS-CODE = "  " OR STATUS-CODE = "GA"              00580000
000755                 OR STATUS-CODE = "GK" GO TO PAGE-BUILD.              00581000
000756             IF STATUS-CODE = "GE" OR STATUS-CODE = "GB"              00582000
000757                 GO TO END-GNP-LOOP.                                  00583000
000758             GO TO ERROR1.                                            00584000
000759         END-GNP-LOOP.                                                00585000
000760             EXEC CICS SEND MAP("MAP31") MAPSET("CINQOUT") ACCUM      00586000
000761                 PAGING FRSET FREEKB END-EXEC.                        00587000
000762             EXEC CICS SEND MAP("MAP41") MAPSET("CINQOUT") ACCUM      00588000
000763                 PAGING FRSET FREEKB END-EXEC.                        00589000
000764         PAGE-OUT.                                                    00590000
000765             EXEC CICS SEND PAGE NOAUTOPAGE END-EXEC.                 00591000
000766         END-PROG.                                                    00592000
000767         PROG-RETURN.                                                 00593000
000768             CALL "CBLTDLI" USING TERM.                               00594000
000769             EXEC CICS RETURN TRANSID("CINQ") END-EXEC.               00595000
000770         ERRORS.                                                      00596000
000771             PERFORM SAVE-INFO.                                       00597000
000772             EXEC CICS DUMP DUMPCODE("ERRS") END-EXEC.                00598000
000773             GO TO PROG-RETURN.                                       00599000
000774         CIDL.                                                        00600000
000775   *OLD**    EXEC CICS GETMAIN SET(CIDLOUT-PTR) LENGTH(12) END-EXEC.      00601000 ABJ6201 00 POINTER OPTION IN EXEC CICS
000776             EXEC CICS GETMAIN SET(ADDRESS OF MAP13I) LENGTH(12) END-EXEC.00601000            CHANGED TO ADDRESS OF  ...
000777             MOVE LOW-VALUE TO MAP13O.                                00602000
000778             EXEC CICS SEND MAP("MAP13") MAPSET("CIDLOUT") ERASE END-EXEC.00603000
000779             EXEC CICS RETURN END-EXEC.                               00604000
000780         PAGE-OVERFLOW.                                               00605000
000781             EXEC CICS SEND MAP("MAP41") MAPSET("CINQOUT") ACCUM      00606000
000782                 PAGING FREEKB END-EXEC.                              00607000
000783             EXEC CICS SEND MAP("MAP11") MAPSET("CINQOUT") ACCUM      00608000
000784                 ERASE PAGING FRSET FREEKB END-EXEC.                  00609000
000785             GO TO GU-OK SEND-MAP2 DEPENDING ON PAGE-OVERFLOW-CTR.    00610000
000786         ERR-MSG.                                                     00611000
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP03         27 APR 1998 18:43:36  PAGE 16
LINEID   SEQNBR-A 1 B.. ... 2 ... ...  COBOL SOURCE STATEMENTS  ... 6 ... ... 7 .IDENTFCN  MSGID SEV --- D I A G N O S T I C S ---

000787             EXEC CICS SEND MAP("MAP1") MAPSET("CINQIN") ACCUM           00612000
000788                 PAGING FREEKB END-EXEC.                                 00613000
000789             EXEC CICS SEND MAP("MAP2") MAPSET("CINQIN") ACCUM           00614000
000790                 PAGING FREEKB END-EXEC.                                 00615000
000791             EXEC CICS SEND PAGE END-EXEC.                               00616000
000792             GO TO END-PROG.                                             00617000
000793         INTERFACE-ERROR.                                                00618000
000794             MOVE TCAFCRC TO SAVE-TCAFCRC.                               00619000
000795             MOVE TCADLTR TO SAVE-TCADLTR.                               00620000
000796             PERFORM SAVE-INFO.                                          00621000
000797             EXEC CICS DUMP DUMPCODE("INTE") END-EXEC.                   00622000
000798   *OLD**    EXEC CICS GETMAIN SET(ERRORMP-PTR) LENGTH(85) END-EXEC.     00623000 ABJ6201 00 POINTER OPTION IN EXEC CICS
000799             EXEC CICS GETMAIN SET(ADDRESS OF MAP12I) LENGTH(85) END-EXEC.00623000           CHANGED TO ADDRESS OF  ...
000800             MOVE "*** INTERFACE ERROR. DUMP IN PROGRESS.***" TO ERRMSGO. 00624000
000801             EXEC CICS SEND MAP("MAP12") MAPSET("ERRORMP") ACCUM         00625000
000802                 PAGING FREEKB END-EXEC.                                 00626000
000803             GO TO CIDL.                                                 00627000
000804         ERROR1.                                                         00628000
000805             PERFORM SAVE-INFO.                                          00629000
000806             EXEC CICS DUMP DUMPCODE("ERRO") END-EXEC.                   00630000
000807   *OLD**    EXEC CICS GETMAIN SET(ERRORMP-PTR) LENGTH(85) END-EXEC.     00631000 ABJ6201 00 POINTER OPTION IN EXEC CICS
000808             EXEC CICS GETMAIN SET(ADDRESS OF MAP12I) LENGTH(85) END-EXEC.00631000           CHANGED TO ADDRESS OF  ...
000809             MOVE "*** DL/1 CALL ERROR. DUMP IN PROGRESS.***" TO ERRMSGO. 00632000
000810             EXEC CICS SEND MAP("MAP12") MAPSET("ERRORMP") ACCUM         00633000
000811                 PAGING FREEKB END-EXEC.                                 00634000
000812             GO TO CIDL.                                                 00635000
000813         SAVE-INFO.                                                      00636000
000814             MOVE STATUS-CODE TO SAVE-STATUS-CODE.                       00637000
000815             MOVE TCACCCA TO SAVE-TCACCCA.                               00638000
000816         END-PGM.                                                        00639000
000817             STOP RUN.                                                   00640000 ABJ6126 99 *----------------------------*
                                                                                                   *  END OF COBOL CONVERSION   *
                                                                                                   * 5648-B05 COBOL CONVERSION  *
                                                                                                   *----------------------------*
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -         SAMPLE RUN                    ABJIVP03         27 APR 1998 18:43:36  PAGE 17
CONVERSION FROM DOS/VS COBOL          TO  COBOL FOR VSE/ESA
OPTIONS IN EFFECT :
  Check procedure names .......... YES   Source language level .......... DOS/VS COBOL LANGLVL(1)
  Flag Report Writer statements... YES   CICS ........................... YES
  Remove obsolete elements ....... YES   Lines per report page ...........60
  Negate implicit EXIT PROGRAM ... YES   VSE system date format.......... MM/DD/YY
  Generate END PROGRAM header .... NO    Resequence source lines ........ NO
  Compile after converting ....... YES
  Flag manual changes (new source) NO    Reserved word suffix ........... 74
  Add DATE FORMAT clauses (MLE)    NO    Generate new program............ YES
  Remove VALUE clauses in FS & LS  YES   Generate new copy members ...... YES
  FLAG:IF FILE-STATUS (NOT) = "00" YES   Replace like-named copy members. NO
  Flag BLL cell arithmetic ....... YES   Print old source lines ......... YES
  BLL cell conversion method...... A     Print copy members ............. YES
  Search source for literal delim. YES   Print diagnostics of level >=... 00
  Literal delimiter (QUOTE/APOST). QUOTE Generate tokenization listing... NO
  OPTION-15 ...................... NO    SQL ............................ NO
HIGHEST SEVERITY MESSAGE FOR THIS CONVERSION:   04
       0016 MESSAGES ISSUED
       0016 MESSAGES PRINTED
LINEID           MSGID   RC  MESSAGE TEXT

000021          ABJ6212  00  WORKING POINTER FOR CICS ADDED TO WORKING STORAGE
000141          ABJ6088  00  LANGLEVEL 1 COPY IS CHANGED
000206          ABJ6203  00  BLL'S ARE REMOVED
000601          ABJ6088  00  LANGLEVEL 1 COPY IS CHANGED
000649          ABJ6088  00  LANGLEVEL 1 COPY IS CHANGED
000674          ABJ6088  00  LANGLEVEL 1 COPY IS CHANGED
000693          ABJ6207  00  BLL CONVERTED TO SET POINTER SET ADDRESS OF ...
000693          ABJ6301  04  31 BIT ESA ADDRESSES WILL BE TREATED AS NEGATIVE NUMBERS: RESULTS MAY BE UNPREDICTABLE
                             *** MANUAL UPDATE RECOMMENDED
000705          ABJ6207  00  BLL CONVERTED TO SET POINTER SET ADDRESS OF ...
000705          ABJ6301  04  31 BIT ESA ADDRESSES WILL BE TREATED AS NEGATIVE NUMBERS: RESULTS MAY BE UNPREDICTABLE
                             *** MANUAL UPDATE RECOMMENDED
000708          ABJ6207  00  BLL CONVERTED TO SET POINTER SET ADDRESS OF ...
000708          ABJ6301  04  31 BIT ESA ADDRESSES WILL BE TREATED AS NEGATIVE NUMBERS: RESULTS MAY BE UNPREDICTABLE
                             *** MANUAL UPDATE RECOMMENDED
000741          ABJ6201  00  POINTER OPTION IN EXEC CICS CHANGED TO ADDRESS OF  ...
000776          ABJ6201  00  POINTER OPTION IN EXEC CICS CHANGED TO ADDRESS OF  ...
000799          ABJ6201  00  POINTER OPTION IN EXEC CICS CHANGED TO ADDRESS OF  ...
000808          ABJ6201  00  POINTER OPTION IN EXEC CICS CHANGED TO ADDRESS OF  ...
```

Tokenization

In conversion phase 1, the input program is tokenized and written to the TOKEN data set. To get a listing of the input program in its tokenized form, set the **Generate tokenization listing** on Conversion Options panel 1 to Y (for details, see "Setting conversion options" on page 19).

The generated output lists each line of the COBOL program and the tokenization for the line.

The columns on the right hand side of this listing are described below.

SEQ-NO	TOKEN-SEQUENCE Line number in the COBOL source program.
POS	TOKEN-POSITION Starting position in the COBOL statement.
LNGTH	TOKEN-LENGTH Length of the token.
TYPE	TOKEN-TYPE-CODE Type of the token.
CODE	TOKEN-CHANGE-CODE Indicates type of processing.
FLAG	TOKEN-FLAG Indicates paragraph, statement, or clause.

These identifiers and their values are described in Appendix E, "Predefined data items," on page 175.

The following is a partial tokenization listing of the program ABJIVP01.

```
                                                                         SEQ-NO/POS/LNGTH/TYPE/CODE/FLAG
       IDENTIFICATION DIVISION.                                          00001000
       IDENTIFICATION ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000010 01 014 W 990  01
                      DIVISION :::::::::::::::::::::::::::::::::::::::::::::::::  000010 16 008 W 990
                              . ::::::::::::::::::::::::::::::::::::::::::::::::  000010 24 001   000
       PROGRAM-ID. ABJIVP01.                                             00002000
       PROGRAM-ID ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000020 01 010 W 990  01
                 . :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000020 11 001   000
                   ABJIVP01 ::::::::::::::::::::::::::::::::::::::::::::::::::::  000020 13 008 W 000
                           . :::::::::::::::::::::::::::::::::::::::::::::::::::  000020 21 001   000
*       -------------------------------------------------------------- * 00003000
*         LICENSED MATERIALS - PROPERTY OF IBM                         * 00004000
*                                                                      * 00005000
*         5785-CCC 5785-ABJ 5648-B05 5686-A07                          * 00006000                      01
*                                                                      * 00007000
*         (C) COPYRIGHT IBM CORP. 1982, 1998. ALL RIGHTS RESERVED.     * 00008000
*                                                                      * 00009000
*         US GOVERNMENT USERS RESTRICTED RIGHTS - USE,                 * 00010000
*         DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP              * 00011000
*         SCHEDULE CONTRACT WITH IBM CORP.                             * 00012000
*                                                                      * 00013000
*       -------------------------------------------------------------- * 00014000
       REMARKS.                                                          00015000
       REMARKS :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000150 01 007 W 990  01
           THIS PROGRAM IS BEING WRITTEN TO TEST THE PROPER CONVERSION   00016000
           FROM OS/VS COBOL SOURCE LANGUAGE TO IBM SOURCE LANGUAGE.      00017000
       AUTHOR. XXXXXX.                                                   00018000
       AUTHOR ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000180 01 006 W 856  01
       DATE-WRITTEN. JANUARY 24, 1983.                                   00019000
       DATE-WRITTEN ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000190 01 012 W 856  01
                                                                         00020000
           NOTE - THE FOLLOWING AREAS ARE ADDRESSED                      00021000
               1  REMARKS                                                00022000
               2  THEN                                                   00023000
               3  OTHERWISE                                              00024000
               4  CURRENT-DATE                                           00025000
               5  TIME-OF-DAY                                            00026000
               6  NOTE                                                   00027000
               7  EXAMINE...TALLYING...REPLACING                         00028000
               8  JUSTIFIED.                                             00029000
                                                                         00030000
       DATE-COMPILED. TODAYS DATE.                                       00031000
       DATE-COMPILED :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000310 01 013 W 990  01
       EJECT                                                             00032000
       ENVIRONMENT DIVISION.                                             00033000
       ENVIRONMENT :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000330 01 011 W 990  01
                   DIVISION ::::::::::::::::::::::::::::::::::::::::::::::::::::  000330 13 008 W 990
                           . :::::::::::::::::::::::::::::::::::::::::::::::::::  000330 21 001   000
       INPUT-OUTPUT SECTION.                                             00034000
       INPUT-OUTPUT ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000340 01 012 W 990  01
                    SECTION ::::::::::::::::::::::::::::::::::::::::::::::::::::  000340 14 007 W 990
                           . :::::::::::::::::::::::::::::::::::::::::::::::::::  000340 21 001   000
       FILE-CONTROL.                                                     00035000
       FILE-CONTROL ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000350 01 012 W 999  01
                   . :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000350 13 001   000
           SELECT PRINT-FILE                                             00036000
           SELECT ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000360 05 006 W 990  02
           ASSIGN TO UT-3330-S-DDPRINT.                                  00037000
                  PRINT-FILE :::::::::::::::::::::::::::::::::::::::::::::::::::  000360 12 010 W 000
           ASSIGN ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000370 05 006 W 990  02
                  TO :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000370 12 002 W 999
                     UT-3330-S-DDPRINT :::::::::::::::::::::::::::::::::::::::::  000370 15 017 W 000
                                      . ::::::::::::::::::::::::::::::::::::::::  000370 32 001   000
       DATA DIVISION.                                                    00038000
       DATA ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000380 01 004 W 999  21
            DIVISION :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000380 06 008 W 990
                    . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000380 14 001   000
       FILE SECTION.                                                     00039000
       FILE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000390 01 004 W 999  01
            SECTION ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000390 06 007 W 990
                   . :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000390 13 001   000
       FD  PRINT-FILE                                                    00040000
       FD ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000400 01 002 W 990  02
```

```
    RECORDING MODE IS F                                           00041000
    PRINT-FILE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000400 05 010 W 000
    RECORDING :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000410 05 009 W 999  02
              MODE ::::::::::::::::::::::::::::::::::::::::::::::::::::::  000410 15 004 W 999
                   IS :::::::::::::::::::::::::::::::::::::::::::::::::::  000410 20 002 W 999
    LABEL RECORDS ARE STANDARD                                    00042000
                      F :::::::::::::::::::::::::::::::::::::::::::::::::  000410 23 001 W 000
    LABEL :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000420 05 005 W 990  02
          RECORDS :::::::::::::::::::::::::::::::::::::::::::::::::::::::  000420 11 007 W 999
                  ARE :::::::::::::::::::::::::::::::::::::::::::::::::::  000420 19 003 W 999
    DATA RECORD IS OUT-LINE.                                      00043000
                      STANDARD ::::::::::::::::::::::::::::::::::::::::::  000420 23 008 W 999
    DATA ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000430 05 004 W 999  21
         RECORD :::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000430 10 006 W 990  02
                IS ::::::::::::::::::::::::::::::::::::::::::::::::::::::  000430 17 002 W 999
                   OUT-LINE :::::::::::::::::::::::::::::::::::::::::::::  000430 20 008 W 000
                           . ::::::::::::::::::::::::::::::::::::::::::::  000430 28 001   000
01  OUT-LINE           PIC X(80).                                 00044000
01 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000440 01 002 N 990
    OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000440 05 008 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000440 24 003 P 990  02
                           X(80) ::::::::::::::::::::::::::::::::::::::::  000440 28 005 P 000
                                . :::::::::::::::::::::::::::::::::::::::  000440 33 001   000
WORKING-STORAGE SECTION.                                          00045000
WORKING-STORAGE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000450 01 015 W 990  01
                SECTION :::::::::::::::::::::::::::::::::::::::::::::::::  000450 17 007 W 990
                       . ::::::::::::::::::::::::::::::::::::::::::::::::  000450 24 001   000
77  MY-COUNTER         PIC 9(5)  VALUE 0.                         00046000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000460 01 002 N 990
    MY-COUNTER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000460 05 010 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000460 24 003 P 990  02
                           9(5) :::::::::::::::::::::::::::::::::::::::::  000460 28 004 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000460 34 005 W 990  02
                                       0 ::::::::::::::::::::::::::::::::  000460 40 001 N 999
                                        . :::::::::::::::::::::::::::::::  000460 41 001   000
77  TRIPSWCH           PIC 9     VALUE 0.                         00047000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000470 01 002 N 990
    TRIPSWCH ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000470 05 008 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000470 24 003 P 990  02
                           9 ::::::::::::::::::::::::::::::::::::::::::::  000470 28 001 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000470 34 005 W 990  02
                                       0 ::::::::::::::::::::::::::::::::  000470 40 001 N 999
                                        . :::::::::::::::::::::::::::::::  000470 41 001   000
77  PASSWCH            PIC 9     VALUE 0.                         00048000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000480 01 002 N 990
    PASSWCH :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000480 05 007 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000480 24 003 P 990  02
                           9 ::::::::::::::::::::::::::::::::::::::::::::  000480 28 001 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000480 34 005 W 990  02
                                       0 ::::::::::::::::::::::::::::::::  000480 40 001 N 999
                                        . :::::::::::::::::::::::::::::::  000480 41 001   000
77  FAILSWCH           PIC 9     VALUE 1.                         00049000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000490 01 002 N 990
    FAILSWCH ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000490 05 008 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000490 24 003 P 990  02
                           9 ::::::::::::::::::::::::::::::::::::::::::::  000490 28 001 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000490 34 005 W 990  02
                                       1 ::::::::::::::::::::::::::::::::  000490 40 001 N 990
                                        . :::::::::::::::::::::::::::::::  000490 41 001   000
77  CURRFLAG           PIC 9     VALUE 0.                         00050000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000500 01 002 N 990
    CURRFLAG ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000500 05 008 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000500 24 003 P 990  02
                           9 ::::::::::::::::::::::::::::::::::::::::::::  000500 28 001 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000500 34 005 W 990  02
                                       0 ::::::::::::::::::::::::::::::::  000500 40 001 N 999
                                        . :::::::::::::::::::::::::::::::  000500 41 001   000
77  TOFDFLAG           PIC 9     VALUE 0.                         00051000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000510 01 002 N 990
    TOFDFLAG ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000510 05 008 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000510 24 003 P 990  02
```

```
                           9 ::::::::::::::::::::::::::::::::::::::::::::  000510 28 001 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000510 34 005 W 990  02
                                       0 ::::::::::::::::::::::::::::::::  000510 40 001 N 999
                                        . :::::::::::::::::::::::::::::::  000510 41 001   000
77  I                 PIC 9     VALUE 0.                          00052000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000520 01 002 N 990
    I :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000520 05 001 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000520 24 003 P 990  02
                           9 ::::::::::::::::::::::::::::::::::::::::::::  000520 28 001 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000520 34 005 W 990  02
                                       0 ::::::::::::::::::::::::::::::::  000520 40 001 N 999
                                        . :::::::::::::::::::::::::::::::  000520 41 001   000
77  DATE1              PIC X(8)  VALUE SPACES.                    00053000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000530 01 002 N 990
    DATE1 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000530 05 005 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000530 24 003 P 990  02
                           X(8) :::::::::::::::::::::::::::::::::::::::::  000530 28 004 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000530 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::  000530 40 006 W 999
                                             . ::::::::::::::::::::::::::  000530 46 001   000
77  DATE2              PIC X(8)  VALUE SPACES.                    00054000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000540 01 002 N 990
    DATE2 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000540 05 005 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000540 24 003 P 990  02
                           X(8) :::::::::::::::::::::::::::::::::::::::::  000540 28 004 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000540 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::  000540 40 006 W 999
                                             . ::::::::::::::::::::::::::  000540 46 001   000
77  DATE3              PIC X(8)  VALUE SPACES.                    00055000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000550 01 002 N 990
    DATE3 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000550 05 005 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000550 24 003 P 990  02
                           X(8) :::::::::::::::::::::::::::::::::::::::::  000550 28 004 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000550 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::  000550 40 006 W 999
                                             . ::::::::::::::::::::::::::  000550 46 001   000
77  TIME1              PIC X(6)  VALUE SPACES.                    00056000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000560 01 002 N 990
    TIME1 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000560 05 005 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000560 24 003 P 990  02
                           X(6) :::::::::::::::::::::::::::::::::::::::::  000560 28 004 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000560 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::  000560 40 006 W 999
                                             . ::::::::::::::::::::::::::  000560 46 001   000
77  TIME2              PIC X(6)  VALUE SPACES.                    00057000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000570 01 002 N 990
    TIME2 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000570 05 005 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000570 24 003 P 990  02
                           X(6) :::::::::::::::::::::::::::::::::::::::::  000570 28 004 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000570 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::  000570 40 006 W 999
                                             . ::::::::::::::::::::::::::  000570 46 001   000
77  TIME3              PIC X(6)  VALUE SPACES.                    00058000
77 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000580 01 002 N 990
    TIME3 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000580 05 005 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000580 24 003 P 990  02
                           X(6) :::::::::::::::::::::::::::::::::::::::::  000580 28 004 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000580 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::  000580 40 006 W 999
                                             . ::::::::::::::::::::::::::  000580 46 001   000
                                                                  00059000
01  ORIGINAL-NUMBER.                                              00060000
01 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000600 01 002 N 990
    ORIGINAL-NUMBER :::::::::::::::::::::::::::::::::::::::::::::::::::::  000600 05 015 W 000
                   . ::::::::::::::::::::::::::::::::::::::::::::::::::::  000600 20 001   000
    05  FILLER     PIC 9(18) VALUE 0.                             00061000
    05 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000610 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000610 09 006 W 999
                   PIC ::::::::::::::::::::::::::::::::::::::::::::::::::  000610 20 003 P 990  02
                       9(18) ::::::::::::::::::::::::::::::::::::::::::::  000610 24 005 P 000
                             VALUE ::::::::::::::::::::::::::::::::::::::  000610 30 005 W 990  02
```

```
                                   0 :::::::::::::::::::::::::::::::::::: 000610 36 001 N 999
                                    . ::::::::::::::::::::::::::::::::::: 000610 37 001   000
    05  FILLER     PIC 9(18) VALUE 0.                            00062000
    05 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000620 05 002 N 000
        FILLER :::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000620 09 006 W 999
                   PIC :::::::::::::::::::::::::::::::::::::::::::::::::: 000620 20 003 P 990  02
                       9(18) :::::::::::::::::::::::::::::::::::::::::::: 000620 24 005 P 000
                             VALUE :::::::::::::::::::::::::::::::::::::: 000620 30 005 W 990  02
                                   0 :::::::::::::::::::::::::::::::::::: 000620 36 001 N 999
                                    . ::::::::::::::::::::::::::::::::::: 000620 37 001   000
    05  FILLER     PIC 9(18) VALUE 000000009099843576.           00063000
    05 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000630 05 002 N 000
        FILLER :::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000630 09 006 W 999
                   PIC :::::::::::::::::::::::::::::::::::::::::::::::::: 000630 20 003 P 990  02
                       9(18) :::::::::::::::::::::::::::::::::::::::::::: 000630 24 005 P 000
                             VALUE :::::::::::::::::::::::::::::::::::::: 000630 30 005 W 990  02
                                   000000009099843576 ::::::::::::::::::: 000630 36 018 N 000
                                                     . :::::::::::::::::: 000630 54 001   000
    05  FILLER     PIC 9(18) VALUE 121212121212121290.           00064000
    05 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000640 05 002 N 000
        FILLER :::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000640 09 006 W 999
                   PIC :::::::::::::::::::::::::::::::::::::::::::::::::: 000640 20 003 P 990  02
                       9(18) :::::::::::::::::::::::::::::::::::::::::::: 000640 24 005 P 000
                             VALUE :::::::::::::::::::::::::::::::::::::: 000640 30 005 W 990  02
                                   121212121212121290 ::::::::::::::::::: 000640 36 018 N 000
                                                     . :::::::::::::::::: 000640 54 001   000
                                                                 00065000
01  THIS-DEF REDEFINES ORIGINAL-NUMBER.                          00066000
01 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000660 01 002 N 990
    THIS-DEF :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000660 05 008 W 000
             REDEFINES :::::::::::::::::::::::::::::::::::::::::::::::::: 000660 14 009 W 990  02
                       ORIGINAL-NUMBER :::::::::::::::::::::::::::::::::: 000660 24 015 W 000
                                      . ::::::::::::::::::::::::::::::::: 000660 39 001   000
    03  A-NUMBER OCCURS 2 TIMES.                                 00067000
    03 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000670 05 002 N 000
        A-NUMBER :::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000670 09 008 W 000
                 OCCURS ::::::::::::::::::::::::::::::::::::::::::::::::: 000670 18 006 W 990  02
                        2 ::::::::::::::::::::::::::::::::::::::::::::::: 000670 25 001 N 000
                          TIMES ::::::::::::::::::::::::::::::::::::::::: 000670 27 005 W 999
                               . :::::::::::::::::::::::::::::::::::::::: 000670 32 001   000
        05  LINE1      PIC 9(18).                                00068000
        05 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000680 09 002 N 000
            LINE1 ::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000680 13 005 W 000
                       PIC :::::::::::::::::::::::::::::::::::::::::::::: 000680 24 003 P 990  02
                           9(18) :::::::::::::::::::::::::::::::::::::::: 000680 28 005 P 000
                                . ::::::::::::::::::::::::::::::::::::::: 000680 33 001   000
        05  LINE2      PIC 9(18).                                00069000
        05 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000690 09 002 N 000
            LINE2 ::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000690 13 005 W 000
                       PIC :::::::::::::::::::::::::::::::::::::::::::::: 000690 24 003 P 990  02
                           9(18) :::::::::::::::::::::::::::::::::::::::: 000690 28 005 P 000
                                . ::::::::::::::::::::::::::::::::::::::: 000690 33 001   000
                                                                 00070000
01  A-POEM.                                                      00071000
01 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000710 01 002 N 990
    A-POEM :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000710 05 006 W 000
          . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000710 11 001   000
    03  LINE1.                                                   00072000
    03 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000720 05 002 N 000
        LINE1 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000720 09 005 W 000
             . :::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000720 14 001   000
        05  FILLER     PIC X(20) VALUE "ROSES ARE RED VIOLET".   00073000
        05 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000730 09 002 N 000
            FILLER :::::::::::::::::::::::::::::::::::::::::::::::::::::: 000730 13 006 W 999
                       PIC :::::::::::::::::::::::::::::::::::::::::::::: 000730 24 003 P 990  02
                           X(20) :::::::::::::::::::::::::::::::::::::::: 000730 28 005 P 000
                                 VALUE :::::::::::::::::::::::::::::::::: 000730 34 005 W 990  02
                                       "ROSES ARE RED VIOLET" ::::::::::: 000730 40 022 L 864  00
                                                             . :::::::::: 000730 62 001   000
        05  FILLER     PIC X(20) VALUE "S ARE BLUE,         ".   00074000
        05 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000740 09 002 N 000
```

```
            FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000740 13 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::: 000740 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::: 000740 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::: 000740 34 005 W 990  02
                                       "S ARE BLUE,         " :::::::::::: 000740 40 022 L 864  00
                                                             . ::::::::::: 000740 62 001   000
    03  LINE2.                                                    00075000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000750 05 002 N 000
        LINE2 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000750 09 005 W 000
             . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000750 14 001   000
        05  FILLER     PIC X(20) VALUE "SUGAR IS SWEET AND S".    00076000
        05 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000760 09 002 N 000
            FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000760 13 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::: 000760 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::: 000760 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::: 000760 34 005 W 990  02
                                       "SUGAR IS SWEET AND S" :::::::::::: 000760 40 022 L 864  00
                                                             . ::::::::::: 000760 62 001   000
        05  FILLER     PIC X(20) VALUE "O ARE YOU.          ".    00077000
        05 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000770 09 002 N 000
            FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000770 13 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::: 000770 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::: 000770 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::: 000770 34 005 W 990  02
                                       "O ARE YOU.          " :::::::::::: 000770 40 022 L 864  00
                                                             . ::::::::::: 000770 62 001   000
                                                                  00078000
                                                                  00079000
01  FAIL1CON2.                                                    00080000
01 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000800 01 002 N 990
    FAIL1CON2 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000800 05 009 W 000
             . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000800 14 001   000
    03  FILLER         PIC XX    VALUE SPACES.                    00081000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000810 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000810 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::: 000810 24 003 P 990  02
                           XX :::::::::::::::::::::::::::::::::::::::::::: 000810 28 002 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::: 000810 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::: 000810 40 006 W 999
                                             . ::::::::::::::::::::::::::: 000810 46 001   000
    03  CPLACE         PIC X(20) VALUE SPACES.                    00082000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000820 05 002 N 000
        CPLACE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000820 09 006 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::: 000820 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::: 000820 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::: 000820 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::: 000820 40 006 W 999
                                             . ::::::::::::::::::::::::::: 000820 46 001   000
                                                                  00083000
01  FAIL2CON.                                                     00084000
01 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000840 01 002 N 990
    FAIL2CON ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000840 05 008 W 000
            . :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000840 13 001   000
    03  FILLER         PIC X(20) VALUE "ALL THREE READINGS O".    00085000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000850 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000850 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::: 000850 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::: 000850 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::: 000850 34 005 W 990  02
                                       "ALL THREE READINGS O" :::::::::::: 000850 40 022 L 864  00
                                                             . ::::::::::: 000850 62 001   000
    03  FILLER         PIC X(20) VALUE "F 'CURRENT-DATE' SHO".    00086000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000860 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 000860 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::: 000860 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::: 000860 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::: 000860 34 005 W 990  02
                                       "F 'CURRENT-DATE' SHO" :::::::::::: 000860 40 022 L 864  00
                                                             . ::::::::::: 000860 62 001   000
    03  FILLER         PIC X(20) VALUE "ULD BE THE SAME, BUT".    00087000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000870 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000870 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000870 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::  000870 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000870 34 005 W 990  02
                                       "ULD BE THE SAME, BUT" :::::::::::  000870 40 022 L 864  00
                                                             . ::::::::::  000870 62 001   000
    03  FILLER         PIC X(20) VALUE " THEY ARE:          ".    00088000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000880 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000880 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000880 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::  000880 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000880 34 005 W 990  02
                                       " THEY ARE:          " :::::::::::  000880 40 022 L 864  00
                                                             . ::::::::::  000880 62 001   000
                                                                  00089000
01  FAIL2CON2.                                                    00090000
01 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000900 01 002 N 990
    FAIL2CON2 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000900 05 009 W 000
             . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000900 14 001   000
    03  FILLER         PIC XX    VALUE SPACES.                    00091000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000910 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000910 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000910 24 003 P 990  02
                           XX :::::::::::::::::::::::::::::::::::::::::::  000910 28 002 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000910 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::  000910 40 006 W 999
                                             . ::::::::::::::::::::::::::  000910 46 001   000
    03  DPLACE         PIC X(8)  VALUE SPACES.                    00092000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000920 05 002 N 000
        DPLACE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000920 09 006 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000920 24 003 P 990  02
                           X(8) :::::::::::::::::::::::::::::::::::::::::  000920 28 004 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000920 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::  000920 40 006 W 999
                                             . ::::::::::::::::::::::::::  000920 46 001   000
                                                                  00093000
01  FAIL3CON.                                                     00094000
01 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000940 01 002 N 990
    FAIL3CON ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000940 05 008 W 000
            . :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000940 13 001   000
    03  FILLER         PIC X(20) VALUE "THE THREE READINGS O".    00095000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000950 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000950 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000950 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::  000950 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000950 34 005 W 990  02
                                       "THE THREE READINGS O" :::::::::::  000950 40 022 L 864  00
                                                             . ::::::::::  000950 62 001   000
    03  FILLER         PIC X(20) VALUE "F 'TIME-OF-DAY' SHOU".    00096000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000960 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000960 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000960 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::  000960 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000960 34 005 W 990  02
                                       "F 'TIME-OF-DAY' SHOU" :::::::::::  000960 40 022 L 864  00
                                                             . ::::::::::  000960 62 001   000
    03  FILLER         PIC X(20) VALUE "LD BE EQUAL OR IN AS".    00097000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000970 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000970 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000970 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::  000970 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000970 34 005 W 990  02
                                       "LD BE EQUAL OR IN AS" :::::::::::  000970 40 022 L 864  00
                                                             . ::::::::::  000970 62 001   000
    03  FILLER         PIC X(20) VALUE "CENDING ORDER,      ".    00098000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000980 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  000980 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  000980 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::  000980 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  000980 34 005 W 990  02
```

```
                                       "CENDING ORDER,      " :::::::::::  000980 40 022 L 864  00
                                                             . ::::::::::  000980 62 001   000
                                                                  00099000
01  FAIL3CON1.                                                    00100000
01 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001000 01 002 N 990
    FAIL3CON1 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001000 05 009 W 000
             . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001000 14 001   000
    03  FILLER         PIC X(20) VALUE "BUT THEY ARE:       ".    00101000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001010 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001010 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  001010 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::  001010 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  001010 34 005 W 990  02
                                       "BUT THEY ARE:       " :::::::::::  001010 40 022 L 864  00
                                                             . ::::::::::  001010 62 001   000
                                                                  00102000
01  FAIL3CON2.                                                    00103000
01 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001030 01 002 N 990
    FAIL3CON2 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001030 05 009 W 000
             . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001030 14 001   000
    03  FILLER         PIC XX    VALUE SPACES.                    00104000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001040 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001040 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  001040 24 003 P 990  02
                           XX :::::::::::::::::::::::::::::::::::::::::::  001040 28 002 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  001040 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::  001040 40 006 W 999
                                             . ::::::::::::::::::::::::::  001040 46 001   000
    03  TPLACE         PIC X(6)  VALUE SPACES.                    00105000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001050 05 002 N 000
        TPLACE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001050 09 006 W 000
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  001050 24 003 P 990  02
                           X(6) :::::::::::::::::::::::::::::::::::::::::  001050 28 004 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  001050 34 005 W 990  02
                                       SPACES :::::::::::::::::::::::::::  001050 40 006 W 999
                                             . ::::::::::::::::::::::::::  001050 46 001   000
                                                                  00106000
01  FAILCON.                                                      00107000
01 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001070 01 002 N 990
    FAILCON :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001070 05 007 W 000
           . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001070 12 001   000
    03  FILLER         PIC X(20) VALUE "TEST CASE SAMPLE   F".    00108000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001080 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001080 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  001080 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::  001080 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  001080 34 005 W 990  02
                                       "TEST CASE SAMPLE   F" :::::::::::  001080 40 022 L 864  00
                                                             . ::::::::::  001080 62 001   000
    03  FILLER         PIC X(20) VALUE "AILED.              ".    00109000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001090 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001090 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  001090 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::  001090 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  001090 34 005 W 990  02
                                       "AILED.              " :::::::::::  001090 40 022 L 864  00
                                                             . ::::::::::  001090 62 001   000
                                                                  00110000
01  SUCCESS.                                                      00111000
01 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001110 01 002 N 990
    SUCCESS :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001110 05 007 W 000
           . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001110 12 001   000
    03  FILLER         PIC X(20) VALUE "TEST CASE SAMPLE   I".    00112000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001120 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001120 09 006 W 999
                       PIC ::::::::::::::::::::::::::::::::::::::::::::::  001120 24 003 P 990  02
                           X(20) ::::::::::::::::::::::::::::::::::::::::  001120 28 005 P 000
                                 VALUE ::::::::::::::::::::::::::::::::::  001120 34 005 W 990  02
                                       "TEST CASE SAMPLE   I" :::::::::::  001120 40 022 L 864  00
                                                             . ::::::::::  001120 62 001   000
    03  FILLER         PIC X(20) VALUE "S SUCCESSFUL.       ".    00113000
    03 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001130 05 002 N 000
        FILLER ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001130 09 006 W 999
                       PIC :::::::::::::::::::::::::::::::::::::::::::::  001130 24 003 P 990  02
                           X(20) :::::::::::::::::::::::::::::::::::::::  001130 28 005 P 000
                                 VALUE :::::::::::::::::::::::::::::::::  001130 34 005 W 990  02
                                       "S SUCCESSFUL.       " ::::::::::  001130 40 022 L 864  00
                                                          . ::::::::::  001130 62 001   000
EJECT                                                             00114000
PROCEDURE DIVISION.                                               00115000
PROCEDURE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001150 01 009 W 990  01
          DIVISION ::::::::::::::::::::::::::::::::::::::::::::::::::::  001150 11 008 W 990
                  . ::::::::::::::::::::::::::::::::::::::::::::::::::  001150 19 001   000
THIS-IS-A SECTION.                                                00116000
THIS-IS-A :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001160 01 009 W 860  01
          SECTION :::::::::::::::::::::::::::::::::::::::::::::::::::::  001160 11 007 W 990
                 . ::::::::::::::::::::::::::::::::::::::::::::::::::::  001160 18 001   000
START-HERE.                                                       00117000
START-HERE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001170 01 010 W 860  01
          . :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001170 11 001   000
    MOVE TIME-OF-DAY TO TIME1                                     00118000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001180 05 004 W 851  03
         TIME-OF-DAY ::::::::::::::::::::::::::::::::::::::::::::::::::  001180 10 011 W 990
                     TO ::::::::::::::::::::::::::::::::::::::::::::::  001180 22 002 W 999
    OPEN OUTPUT PRINT-FILE                                        00119000
                        TIME1 :::::::::::::::::::::::::::::::::::::::::  001180 25 005 W 000
    OPEN ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001190 05 004 W 990  03
         OUTPUT :::::::::::::::::::::::::::::::::::::::::::::::::::::::  001190 10 006 W 999
    MOVE CURRENT-DATE TO DATE1                                    00120000
                PRINT-FILE ::::::::::::::::::::::::::::::::::::::::::::  001190 17 010 W 000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001200 05 004 W 851  03
         CURRENT-DATE :::::::::::::::::::::::::::::::::::::::::::::::::  001200 10 012 W 990
                      TO ::::::::::::::::::::::::::::::::::::::::::::::  001200 23 002 W 999
    MOVE CURRENT-DATE TO DATE2                                    00121000
                         DATE1 ::::::::::::::::::::::::::::::::::::::::  001200 26 005 W 000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001210 05 004 W 851  03
         CURRENT-DATE :::::::::::::::::::::::::::::::::::::::::::::::::  001210 10 012 W 990
                      TO ::::::::::::::::::::::::::::::::::::::::::::::  001210 23 002 W 999
    MOVE CURRENT-DATE TO DATE3.                                   00122000
                         DATE2 ::::::::::::::::::::::::::::::::::::::::  001210 26 005 W 000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001220 05 004 W 851  03
         CURRENT-DATE :::::::::::::::::::::::::::::::::::::::::::::::::  001220 10 012 W 990
                      TO ::::::::::::::::::::::::::::::::::::::::::::::  001220 23 002 W 999
                         DATE3 ::::::::::::::::::::::::::::::::::::::::  001220 26 005 W 000
                              . :::::::::::::::::::::::::::::::::::::::  001220 31 001   000
                                                                  00123000
    MOVE TIME-OF-DAY TO TIME2.                                    00124000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001240 05 004 W 851  03
         TIME-OF-DAY ::::::::::::::::::::::::::::::::::::::::::::::::::  001240 10 011 W 990
                     TO ::::::::::::::::::::::::::::::::::::::::::::::  001240 22 002 W 999
                        TIME2 :::::::::::::::::::::::::::::::::::::::::  001240 25 005 W 000
                             . ::::::::::::::::::::::::::::::::::::::::  001240 30 001   000
    IF DATE1 EQUAL DATE2 AND EQUAL DATE3 THEN                     00125000
    IF ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001250 05 002 W 999  03
       DATE1 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001250 08 005 W 000
             EQUAL ::::::::::::::::::::::::::::::::::::::::::::::::::::  001250 14 005 W 991
                   DATE2 ::::::::::::::::::::::::::::::::::::::::::::::  001250 20 005 W 000
                         AND ::::::::::::::::::::::::::::::::::::::::::  001250 26 003 W 999
                             EQUAL ::::::::::::::::::::::::::::::::::::  001250 30 005 W 991
                                   DATE3 ::::::::::::::::::::::::::::::  001250 36 005 W 000
        NEXT SENTENCE                                             00126000
                                         THEN :::::::::::::::::::::::::  001250 42 004 W 990  03
        NEXT ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001260 09 004 W 999  03
    OTHERWISE                                                     00127000
             SENTENCE :::::::::::::::::::::::::::::::::::::::::::::::::  001260 14 008 W 999
        MOVE FAILSWCH TO TRIPSWCH                                 00128000
    OTHERWISE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001270 05 009 W 990
        MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001280 09 004 W 851  03
             FAILSWCH :::::::::::::::::::::::::::::::::::::::::::::::::  001280 14 008 W 000
                      TO ::::::::::::::::::::::::::::::::::::::::::::::  001280 23 002 W 999
        MOVE DATE1 TO DPLACE                                      00129000
                         TRIPSWCH :::::::::::::::::::::::::::::::::::::  001280 26 008 W 000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001290 09 004 W 851  03
         DATE1 ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001290 14 005 W 000
               TO :::::::::::::::::::::::::::::::::::::::::::::::::::  001290 20 002 W 999
    WRITE OUT-LINE FROM FAIL2CON                              00130000
                  DPLACE ::::::::::::::::::::::::::::::::::::::::::::  001290 23 006 W 000
    WRITE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001300 09 005 W 990  03
          OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::  001300 15 008 W 000
                   FROM :::::::::::::::::::::::::::::::::::::::::::::  001300 24 004 W 999
    WRITE OUT-LINE FROM FAIL2CON2                             00131000
                        FAIL2CON ::::::::::::::::::::::::::::::::::::  001300 29 008 W 000
    WRITE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001310 09 005 W 990  03
          OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::  001310 15 008 W 000
                   FROM :::::::::::::::::::::::::::::::::::::::::::::  001310 24 004 W 999
    MOVE DATE2 TO DPLACE                                      00132000
                        FAIL2CON2 :::::::::::::::::::::::::::::::::::  001310 29 009 W 000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001320 09 004 W 851  03
         DATE2 ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001320 14 005 W 000
               TO :::::::::::::::::::::::::::::::::::::::::::::::::::  001320 20 002 W 999
    WRITE OUT-LINE FROM FAIL2CON2                             00133000
                  DPLACE ::::::::::::::::::::::::::::::::::::::::::::  001320 23 006 W 000
    WRITE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001330 09 005 W 990  03
          OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::  001330 15 008 W 000
                   FROM :::::::::::::::::::::::::::::::::::::::::::::  001330 24 004 W 999
    MOVE DATE3 TO DPLACE                                      00134000
                        FAIL2CON2 :::::::::::::::::::::::::::::::::::  001330 29 009 W 000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001340 09 004 W 851  03
         DATE3 ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001340 14 005 W 000
               TO :::::::::::::::::::::::::::::::::::::::::::::::::::  001340 20 002 W 999
    WRITE OUT-LINE FROM FAIL2CON2.                            00135000
                  DPLACE ::::::::::::::::::::::::::::::::::::::::::::  001340 23 006 W 000
    WRITE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001350 09 005 W 990  03
          OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::  001350 15 008 W 000
                   FROM :::::::::::::::::::::::::::::::::::::::::::::  001350 24 004 W 999
                        FAIL2CON2 :::::::::::::::::::::::::::::::::::  001350 29 009 W 000
                                 . ::::::::::::::::::::::::::::::::::  001350 38 001   000
MOVE TIME-OF-DAY TO TIME3.                                    00136000
MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001360 05 004 W 851  03
     TIME-OF-DAY ::::::::::::::::::::::::::::::::::::::::::::::::::::  001360 10 011 W 990
                 TO :::::::::::::::::::::::::::::::::::::::::::::::::  001360 22 002 W 999
                    TIME3 :::::::::::::::::::::::::::::::::::::::::::  001360 25 005 W 000
                         . ::::::::::::::::::::::::::::::::::::::::::  001360 30 001   000
IF (TIME1 LESS THAN TIME2 OR EQUAL TIME2) AND                 00137000
IF ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001370 05 002 W 999  03
   ( ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001370 08 001   000
    TIME1 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001370 09 005 W 000
          LESS ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001370 15 004 W 991
               THAN :::::::::::::::::::::::::::::::::::::::::::::::::  001370 20 004 W 990
                    TIME2 :::::::::::::::::::::::::::::::::::::::::::  001370 25 005 W 000
                          OR ::::::::::::::::::::::::::::::::::::::::  001370 31 002 W 999
                             EQUAL ::::::::::::::::::::::::::::::::::  001370 34 005 W 991
                                   TIME2 ::::::::::::::::::::::::::::  001370 40 005 W 000
                                        ) :::::::::::::::::::::::::::  001370 45 001   863  00
   (TIME2 LESS THAN TIME3 OR EQUAL TIME3) THEN                00138000
                                          AND :::::::::::::::::::::::  001370 47 003 W 999
   ( ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001380 08 001   000
    TIME2 :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001380 09 005 W 000
          LESS ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001380 15 004 W 991
               THAN :::::::::::::::::::::::::::::::::::::::::::::::::  001380 20 004 W 990
                    TIME3 :::::::::::::::::::::::::::::::::::::::::::  001380 25 005 W 000
                          OR ::::::::::::::::::::::::::::::::::::::::  001380 31 002 W 999
                             EQUAL ::::::::::::::::::::::::::::::::::  001380 34 005 W 991
                                   TIME3 ::::::::::::::::::::::::::::  001380 40 005 W 000
                                        ) :::::::::::::::::::::::::::  001380 45 001   863  00
    NEXT SENTENCE                                             00139000
                                          THEN ::::::::::::::::::::::  001380 47 004 W 990  03
    NEXT ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001390 09 004 W 999  03
OTHERWISE                                                     00140000
         SENTENCE :::::::::::::::::::::::::::::::::::::::::::::::::::  001390 14 008 W 999
    MOVE FAILSWCH TO TRIPSWCH                                 00141000
OTHERWISE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001400 05 009 W 990
```

```
        MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001410 09 004 W 851  03
             FAILSWCH :::::::::::::::::::::::::::::::::::::::::::::::::::  001410 14 008 W 000
                      TO ::::::::::::::::::::::::::::::::::::::::::::::::  001410 23 002 W 999
        MOVE TIME1 TO TPLACE                                      00142000
                         TRIPSWCH :::::::::::::::::::::::::::::::::::::::  001410 26 008 W 000
        MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001420 09 004 W 851  03
             TIME1 ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001420 14 005 W 000
                   TO :::::::::::::::::::::::::::::::::::::::::::::::::::  001420 20 002 W 999
        WRITE OUT-LINE FROM FAIL3CON                              00143000
                      TPLACE ::::::::::::::::::::::::::::::::::::::::::::  001420 23 006 W 000
        WRITE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001430 09 005 W 990  03
              OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::  001430 15 008 W 000
                       FROM :::::::::::::::::::::::::::::::::::::::::::::  001430 24 004 W 999
        WRITE OUT-LINE FROM FAIL3CON1                             00144000
                            FAIL3CON ::::::::::::::::::::::::::::::::::::  001430 29 008 W 000
        WRITE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001440 09 005 W 990  03
              OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::  001440 15 008 W 000
                       FROM :::::::::::::::::::::::::::::::::::::::::::::  001440 24 004 W 999
        WRITE OUT-LINE FROM FAIL3CON2                             00145000
                            FAIL3CON1 :::::::::::::::::::::::::::::::::::  001440 29 009 W 000
        WRITE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001450 09 005 W 990  03
              OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::  001450 15 008 W 000
                       FROM :::::::::::::::::::::::::::::::::::::::::::::  001450 24 004 W 999
        MOVE TIME2 TO TPLACE                                      00146000
                            FAIL3CON2 :::::::::::::::::::::::::::::::::::  001450 29 009 W 000
        MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001460 09 004 W 851  03
             TIME2 ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001460 14 005 W 000
                   TO :::::::::::::::::::::::::::::::::::::::::::::::::::  001460 20 002 W 999
        WRITE OUT-LINE FROM FAIL3CON2                             00147000
                      TPLACE ::::::::::::::::::::::::::::::::::::::::::::  001460 23 006 W 000
        WRITE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001470 09 005 W 990  03
              OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::  001470 15 008 W 000
                       FROM :::::::::::::::::::::::::::::::::::::::::::::  001470 24 004 W 999
        MOVE TIME3 TO TPLACE                                      00148000
                            FAIL3CON2 :::::::::::::::::::::::::::::::::::  001470 29 009 W 000
        MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001480 09 004 W 851  03
             TIME3 ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001480 14 005 W 000
                   TO :::::::::::::::::::::::::::::::::::::::::::::::::::  001480 20 002 W 999
        WRITE OUT-LINE FROM FAIL3CON2.                            00149000
                      TPLACE ::::::::::::::::::::::::::::::::::::::::::::  001480 23 006 W 000
        WRITE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001490 09 005 W 990  03
              OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::  001490 15 008 W 000
                       FROM :::::::::::::::::::::::::::::::::::::::::::::  001490 24 004 W 999
                            FAIL3CON2 :::::::::::::::::::::::::::::::::::  001490 29 009 W 000
                                     . ::::::::::::::::::::::::::::::::::  001490 38 001   000
AFTER-THOUGHT.                                                    00150000
AFTER-THOUGHT :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001500 01 013 W 860  01
             . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001500 14 001   000
    EXAMINE A-POEM TALLYING ALL SPACES REPLACING BY "*"           00151000
    EXAMINE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001510 05 007 W 990  03
            A-POEM ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001510 13 006 W 000
                   TALLYING :::::::::::::::::::::::::::::::::::::::::::::  001510 20 008 W 999
                            ALL :::::::::::::::::::::::::::::::::::::::::  001510 29 003 W 990
                                SPACES ::::::::::::::::::::::::::::::::::  001510 33 006 W 999
                                       REPLACING ::::::::::::::::::::::::  001510 40 009 W 999  02
                                                 BY :::::::::::::::::::::  001510 50 002 W 999
                                                    "*" :::::::::::::::::  001510 53 003 L 864  00
    MOVE TALLY TO MY-COUNTER                                      00152000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001520 05 004 W 851  03
         TALLY ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001520 10 005 W 999
               TO :::::::::::::::::::::::::::::::::::::::::::::::::::::::  001520 16 002 W 999
    MOVE LINE1 OF A-POEM TO OUT-LINE WRITE OUT-LINE               00153000
                  MY-COUNTER ::::::::::::::::::::::::::::::::::::::::::::  001520 19 010 W 000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001530 05 004 W 851  03
         LINE1 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001530 10 005 W 000
               OF :::::::::::::::::::::::::::::::::::::::::::::::::::::::  001530 16 002 W 990
                  A-POEM ::::::::::::::::::::::::::::::::::::::::::::::::  001530 19 006 W 000
                         TO :::::::::::::::::::::::::::::::::::::::::::::  001530 26 002 W 999
                            OUT-LINE ::::::::::::::::::::::::::::::::::::  001530 29 008 W 000
                                     WRITE ::::::::::::::::::::::::::::::  001530 38 005 W 990  03
    MOVE LINE2 OF A-POEM TO OUT-LINE WRITE OUT-LINE               00154000
                                           OUT-LINE :::::::::::::::::::::  001530 44 008 W 000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001540 05 004 W 851  03
         LINE2 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001540 10 005 W 000
               OF :::::::::::::::::::::::::::::::::::::::::::::::::::::::  001540 16 002 W 990
                  A-POEM ::::::::::::::::::::::::::::::::::::::::::::::::  001540 19 006 W 000
                         TO :::::::::::::::::::::::::::::::::::::::::::::  001540 26 002 W 999
                            OUT-LINE ::::::::::::::::::::::::::::::::::::  001540 29 008 W 000
                                     WRITE ::::::::::::::::::::::::::::::  001540 38 005 W 990  03
    EXAMINE A-POEM TALLYING ALL "*".                              00155000
                                           OUT-LINE :::::::::::::::::::::  001540 44 008 W 000
```

```
EXAMINE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001550 05 007 W 990  03
        A-POEM ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001550 13 006 W 000
               TALLYING :::::::::::::::::::::::::::::::::::::::::::::  001550 20 008 W 999
                        ALL :::::::::::::::::::::::::::::::::::::::::  001550 29 003 W 990
                            "*" :::::::::::::::::::::::::::::::::::::  001550 33 003 L 864  00
                               . ::::::::::::::::::::::::::::::::::::  001550 36 001   000
IF TALLY = MY-COUNTER                                         00156000
IF ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001560 05 002 W 999  03
   TALLY ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001560 08 005 W 999
         = ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001560 14 001 W 997  00
    MOVE "OK" TO OUT-LINE WRITE OUT-LINE                      00157000
           MY-COUNTER :::::::::::::::::::::::::::::::::::::::::::::::  001560 16 010 W 000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001570 09 004 W 851  03
         "OK" :::::::::::::::::::::::::::::::::::::::::::::::::::::::  001570 14 004 L 864  00
              TO ::::::::::::::::::::::::::::::::::::::::::::::::::::  001570 19 002 W 999
                 OUT-LINE :::::::::::::::::::::::::::::::::::::::::::  001570 22 008 W 000
                          WRITE :::::::::::::::::::::::::::::::::::::  001570 31 005 W 990  03
OTHERWISE                                                     00158000
                                OUT-LINE ::::::::::::::::::::::::::::  001570 37 008 W 000
    MOVE "BAH" TO OUT-LINE WRITE OUT-LINE.                    00159000
OTHERWISE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001580 05 009 W 990
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001590 09 004 W 851  03
         "BAH" ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001590 14 005 L 864  00
               TO :::::::::::::::::::::::::::::::::::::::::::::::::::  001590 20 002 W 999
                  OUT-LINE ::::::::::::::::::::::::::::::::::::::::::  001590 23 008 W 000
                           WRITE ::::::::::::::::::::::::::::::::::::  001590 32 005 W 990  03
                                 OUT-LINE :::::::::::::::::::::::::::  001590 38 008 W 000
                                         . ::::::::::::::::::::::::::  001590 46 001   000
EXAMINE A-POEM TALLYING ALL "E"                               00160000
EXAMINE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001600 05 007 W 990  03
        A-POEM ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001600 13 006 W 000
               TALLYING :::::::::::::::::::::::::::::::::::::::::::::  001600 20 008 W 999
                        ALL :::::::::::::::::::::::::::::::::::::::::  001600 29 003 W 990
                            "E" :::::::::::::::::::::::::::::::::::::  001600 33 003 L 864  00
PERFORM THREE-LINES                                           00161000
PERFORM :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001610 05 007 W 990  03
EXAMINE A-POEM TALLYING UNTIL FIRST "."                       00162000
        THREE-LINES :::::::::::::::::::::::::::::::::::::::::::::::::  001610 13 011 W 000
EXAMINE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001620 05 007 W 990  03
        A-POEM ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001620 13 006 W 000
               TALLYING :::::::::::::::::::::::::::::::::::::::::::::  001620 20 008 W 999
                        UNTIL :::::::::::::::::::::::::::::::::::::::  001620 29 005 W 999
                              FIRST :::::::::::::::::::::::::::::::::  001620 35 005 W 999
                                    "." ::::::::::::::::::::::::::::: 001620 41 003 L 864  00
PERFORM THREE-LINES                                           00163000
PERFORM :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001630 05 007 W 990  03
EXAMINE A-POEM TALLYING LEADING "R"                           00164000
        THREE-LINES :::::::::::::::::::::::::::::::::::::::::::::::::  001630 13 011 W 000
EXAMINE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001640 05 007 W 990  03
        A-POEM ::::::::::::::::::::::::::::::::::::::::::::::::::::::  001640 13 006 W 000
               TALLYING :::::::::::::::::::::::::::::::::::::::::::::  001640 20 008 W 999
                        LEADING :::::::::::::::::::::::::::::::::::::  001640 29 007 W 999  02
                                "R" :::::::::::::::::::::::::::::::::  001640 37 003 L 864  00
PERFORM THREE-LINES                                           00165000
PERFORM :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001650 05 007 W 990  03
MOVE 2 TO I                                                   00166000
        THREE-LINES :::::::::::::::::::::::::::::::::::::::::::::::::  001650 13 011 W 000
MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001660 05 004 W 851  03
     2 ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001660 10 001 N 000
       TO :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001660 12 002 W 999
EXAMINE A-NUMBER(I) TALLYING ALL 1                            00167000
          I :::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001660 15 001 W 000
EXAMINE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  001670 05 007 W 990  03
        A-NUMBER ::::::::::::::::::::::::::::::::::::::::::::::::::::  001670 13 008 W 000
                ( :::::::::::::::::::::::::::::::::::::::::::::::::::  001670 21 001   000
                 I ::::::::::::::::::::::::::::::::::::::::::::::::::  001670 22 001 W 000
                  ) :::::::::::::::::::::::::::::::::::::::::::::::::  001670 23 001   863  00
                    TALLYING ::::::::::::::::::::::::::::::::::::::::  001670 25 008 W 999
                             ALL ::::::::::::::::::::::::::::::::::::  001670 34 003 W 990
PERFORM THREE-LINES                                           00168000
                                 1 ::::::::::::::::::::::::::::::::::  001670 38 001 N 990
    PERFORM :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001680 05 007 W 990  03
    EXAMINE A-NUMBER(I) TALLYING LEADING 0 REPLACING BY 2.        00169000
            THREE-LINES :::::::::::::::::::::::::::::::::::::::::::::::::: 001680 13 011 W 000
    EXAMINE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001690 05 007 W 990  03
            A-NUMBER ::::::::::::::::::::::::::::::::::::::::::::::::::::: 001690 13 008 W 000
                    ( :::::::::::::::::::::::::::::::::::::::::::::::::::: 001690 21 001   000
                     I ::::::::::::::::::::::::::::::::::::::::::::::::::: 001690 22 001 W 000
                      ) :::::::::::::::::::::::::::::::::::::::::::::::::: 001690 23 001   863  00
                        TALLYING ::::::::::::::::::::::::::::::::::::::::: 001690 25 008 W 999
                                 LEADING ::::::::::::::::::::::::::::::::: 001690 34 007 W 999  02
                                         0 ::::::::::::::::::::::::::::::: 001690 42 001 N 999
                                           REPLACING ::::::::::::::::::::: 001690 44 009 W 999  02
                                                     BY :::::::::::::::::: 001690 54 002 W 999
                                                        2 :::::::::::::::: 001690 57 001 N 000
                                                         . ::::::::::::::: 001690 58 001   000
THREE-LINES.                                                      00170000
THREE-LINES :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001700 01 011 W 860  01
           . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001700 12 001   000
    ADD TALLY TO MY-COUNTER.                                      00171000
    ADD :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001710 05 003 W 990  03
        TALLY :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001710 09 005 W 999
              TO ::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001710 15 002 W 999
                 MY-COUNTER :::::::::::::::::::::::::::::::::::::::::::::: 001710 18 010 W 000
                           . ::::::::::::::::::::::::::::::::::::::::::::: 001710 28 001   000
    MOVE TALLY TO OUT-LINE WRITE OUT-LINE                         00172000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001720 05 004 W 851  03
         TALLY ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001720 10 005 W 999
               TO :::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001720 16 002 W 999
                  OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::: 001720 19 008 W 000
                           WRITE ::::::::::::::::::::::::::::::::::::::::: 001720 28 005 W 990  03
    MOVE MY-COUNTER TO OUT-LINE WRITE OUT-LINE.                   00173000
                                 OUT-LINE :::::::::::::::::::::::::::::::: 001720 34 008 W 000
    MOVE ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001730 05 004 W 851  03
         MY-COUNTER :::::::::::::::::::::::::::::::::::::::::::::::::::::: 001730 10 010 W 000
                    TO ::::::::::::::::::::::::::::::::::::::::::::::::::: 001730 21 002 W 999
                       OUT-LINE :::::::::::::::::::::::::::::::::::::::::: 001730 24 008 W 000
                                WRITE :::::::::::::::::::::::::::::::::::: 001730 33 005 W 990  03
                                      OUT-LINE ::::::::::::::::::::::::::: 001730 39 008 W 000
                                              . :::::::::::::::::::::::::: 001730 47 001   000
THE-END.                                                          00174000
THE-END :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001740 01 007 W 860  01
       . ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001740 08 001   000
    IF TRIPSWCH EQUAL FAILSWCH OR MY-COUNTER NOT EQUAL 125        00175000
    IF ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001750 05 002 W 999  03
       TRIPSWCH :::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001750 08 008 W 000
                EQUAL :::::::::::::::::::::::::::::::::::::::::::::::::::: 001750 17 005 W 991
                      FAILSWCH ::::::::::::::::::::::::::::::::::::::::::: 001750 23 008 W 000
                               OR :::::::::::::::::::::::::::::::::::::::: 001750 32 002 W 999
                                  MY-COUNTER ::::::::::::::::::::::::::::: 001750 35 010 W 000
                                             NOT ::::::::::::::::::::::::: 001750 46 003 W 990
                                                 EQUAL ::::::::::::::::::: 001750 50 005 W 991
        WRITE OUT-LINE FROM FAILCON                               00176000
                                                       125 ::::::::::::::: 001750 56 003 N 000
        WRITE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001760 09 005 W 990  03
              OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::: 001760 15 008 W 000
                       FROM :::::::::::::::::::::::::::::::::::::::::::::: 001760 24 004 W 999
    OTHERWISE                                                     00177000
                            FAILCON :::::::::::::::::::::::::::::::::::::: 001760 29 007 W 000
        WRITE OUT-LINE FROM SUCCESS.                              00178000
    OTHERWISE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001770 05 009 W 990
        WRITE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001780 09 005 W 990  03
              OUT-LINE ::::::::::::::::::::::::::::::::::::::::::::::::::: 001780 15 008 W 000
                       FROM :::::::::::::::::::::::::::::::::::::::::::::: 001780 24 004 W 999
                            SUCCESS :::::::::::::::::::::::::::::::::::::: 001780 29 007 W 000
                                   . ::::::::::::::::::::::::::::::::::::: 001780 36 001   000
    CLOSE PRINT-FILE.                                             00179000
    CLOSE :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001790 05 005 W 990  03
          PRINT-FILE ::::::::::::::::::::::::::::::::::::::::::::::::::::: 001790 11 010 W 000
                    . :::::::::::::::::::::::::::::::::::::::::::::::::::: 001790 21 001   000
    STOP RUN.                                                     00180000
    STOP ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001800 05 004 W 990  03


         RUN ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001800 10 003 W 999
            . :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::: 001800 13 001   000
```

LCP debugging

This section is Diagnosis, Modification, and Tuning Information.

To help you debug LCPs, CCCA can generate trace output for:

- All LCPs, using the **Generate tokenization listing** option on Conversion Options panel 1 (see “Setting conversion options” on page 19)
- Specific LCPs, using the Delete/Debug LCPs panel (see “Deleting LCPs and activating/deactivating debugging for LCPs” on page 71)

The following pages show example trace output generated by the OTHERWISE LCP and EXAMINE LCP.

This output should be used in conjunction with the LCP Compiler output.

The columns of the trace output are described below.

***CONVER**
The identifier in the LCP's *CONVER statement.

***DATE**
The date the LCP was last compiled (in the format MMDDYY).

TOKEN-TEXT
Indicates for each statement the current token or element.

LCP STMT
Number of statement given by the compiler.

LCP OPCODE
Operation code. See Appendix F, “List of LCP functions,” on page 187 for a list of LCP functions and their operation codes.

ID FILE
File used by the LCP:

TOKEN
CHANGE
WORK-*nn*
RECORD
FILE
KEY

These files are described in “LCP functions” on page 91 and “Manipulating files” on page 101.

RT Return code after reading or writing the files.

RV Internal use.

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -              SAMPLE RUN                17 APR 1998 19:10:10        PAGE    1
*CONVER:OTHERWISE         *TEXT:REPLACE OTHERWISE BY ELSE                                              *DATE:041598
101703
                              LCP   LCP      ID                                                                         -CODE-
TOKEN-TEXT                    STMT  OPCODE   FILE    *... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7  RT RV

OTHERWISE                        3  IFEQA
OTHERWISE                        4  IFEQA
OTHERWISE                        6  IFEQA
OTHERWISE                        8  MOVE
OTHERWISE                        9  RP
                                             CHANGE  001150056     04ELSE                            01  Y
                                             CHANGE  001150055                                           Y
OTHERWISE                       10  MOVE
OTHERWISE                       11  EDMSG
                                             CHANGE  001150053     00OTHERWISE REPLACED BY ELSE          YABJ602100
OTHERWISE                       12  GOTO
```

```
 5648-B05 V2R1   - IBM COBOL CONVERSION AID -              SAMPLE RUN                17 APR 1998 19:10:10        PAGE    3
*CONVER:EXAMINE          *TEXT:CHANGE EXAMINE BY INSPECT                                               *DATE:041598
100540
                              LCP   LCP      ID                                                                         -CODE-
TOKEN-TEXT                    STMT  OPCODE   FILE    *... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7  RT RV

EXAMINE                         10  IFEQA
EXAMINE                         11  IFEQA
EXAMINE                         13  IFEQA
EXAMINE                         15  MOVE
EXAMINE                         16  MOVE
EXAMINE                         17  MOVE
EXAMINE                         18  GTPRT
                                             TOKEN   00138014001 000 00.                              NP
.                               19  SPLN
                                             CHANGE  001380148                                      Y
.                               20  MOVE
.                               21  GTNXT
                                             TOKEN   00139005007W990 03EXAMINE                        YP
EXAMINE                         21  GTNXT
                                             TOKEN   00139013006W000 00A-POEM                         YP
A-POEM                          22  BYID
                                             TOKEN   00139020008W000 00TALLYING                       YP
TALLYING                        23  IFEQA
TALLYING                        24  MOVE
TALLYING                        25  GTPRT
                                             TOKEN   00138014001 000 00.                              NP
.                               26  MOVE
.                               27  SF
                                             CHANGE  001380148     18MOVE ZERO TO TALLY                0005N
.                               28  MOVE
.                               29  EDMSG
                                             CHANGE  001380143     00TALLY IS INITIALIZED                   ABJ601800
.                               30  MOVE
.                               31  MOVE
.                               32  MOVE
.                               33  MOVE
.                               34  MOVE
.                               35  MVLCP
.                               36  MOVE
.                               37  GOTO
.                               40  GTNXT
                                             TOKEN   00139005007W990 03EXAMINE                        YP
EXAMINE                         41  MOVE
EXAMINE                         42  RP
                                             CHANGE  001390056     07INSPECT                         01  Y
                                             CHANGE  001390055                                           Y
EXAMINE                         43  MOVE
EXAMINE                         44  EDMSG
                                             CHANGE  001390053     00EXAMINE REPLACED BY INSPECT         YABJ601900
EXAMINE                         45  GTNXT
                                             TOKEN   00139013006W000 00A-POEM                         YP
A-POEM                          46  BYID
                                             TOKEN   00139020008W000 00TALLYING                       YP
TALLYING                        47  IFEQA
TALLYING                        48  PRFTH
TALLYING                        53  MOVE
TALLYING                        54  INAF
```

```
*CONVER:EXAMINE          *TEXT:CHANGE EXAMINE BY INSPECT                                                *DATE:041598
100540
                               LCP   LCP      ID                                                                           -CODE-
TOKEN-TEXT                     STMT  OPCODE   FILE    *... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7  RT RV

                                              CHANGE  001390208     05TALLY                            01  Y
TALLYING                         55  MOVE
TALLYING                         56  INAF
                                              CHANGE  001390208     03FOR                              01  Y
TALLYING                         57  GTNXT
                                              TOKEN   00139029003W990   ALL                           YP
ALL                              58  MOVE
ALL                              59  MOVE
ALL                              60  IFEQA
ALL                              66  GTNXT
                                              TOKEN   00139033006W000 00SPACES                        YP
SPACES                           67  PRFTH
SPACES                          123  IFEQA
SPACES                          124  IFEQA
SPACES                          125  IFEQA
SPACES                          135  GOTO
SPACES                          154  EXIT
SPACES                           68  MOVE
SPACES                           69  MOVE
SPACES                           70  GTNXT
                                              TOKEN   00139040009W999 02REPLACING                     YP
REPLACING                        71  IFEQA
REPLACING                        73  IFEQA
REPLACING                        83  IFEQA
REPLACING                        84  MOVE
REPLACING                        85  MOVE
REPLACING                        86  INAF
                                              CHANGE  001390408     03ALL                              01  Y
REPLACING                        87  MOVE
REPLACING                        88  MOVE
REPLACING                        89  INAF
                                              CHANGE  001390408     06SPACES                           01  Y
REPLACING                        90  GTNXT
                                              TOKEN   00139050002W000 00BY                            YP
BY                               90  GTNXT
                                              TOKEN   00139053003L000 00"*"                           YP
"*"                              91  PRFTH
"*"                             123  IFEQA
"*"                             135  GOTO
"*"                             154  EXIT
"*"                              93  EXIT
"*"                              49  GOTO
"*"                              51  GOTO
```

```
*CONVER:EXAMINE           *TEXT:CHANGE EXAMINE BY INSPECT                                         *DATE:041598
100540
                               LCP   LCP      ID                                                                       -CODE-
TOKEN-TEXT                     STMT  OPCODE   FILE    *... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7  RT RV

EXAMINE                          10  IFEQA
EXAMINE                          11  IFEQA
EXAMINE                          13  IFEQA
EXAMINE                          15  MOVE
EXAMINE                          16  MOVE
EXAMINE                          17  MOVE
EXAMINE                          18  GTPRT
                                              TOKEN   00142044008W000 00OUT-LINE                       YP
OUT-LINE                         19  SPLN
                                              CHANGE  001420448                                      Y
OUT-LINE                         20  MOVE
OUT-LINE                         21  GTNXT
                                              TOKEN   00143005007W990 03EXAMINE                        YP
EXAMINE                          21  GTNXT
                                              TOKEN   00143013006W000 00A-POEM                         YP
A-POEM                           22  BYID
                                              TOKEN   00143020008W000 00TALLYING                       YP
TALLYING                         23  IFEQA
TALLYING                         24  MOVE
TALLYING                         25  GTPRT
                                              TOKEN   00142044008W000 00OUT-LINE                       YP
OUT-LINE                         26  MOVE
OUT-LINE                         27  SF
                                              CHANGE  001420448     18MOVE ZERO TO TALLY              0005Y
OUT-LINE                         28  MOVE
OUT-LINE                         29  EDMSG
                                              CHANGE  001420443     00TALLY IS INITIALIZED                 ABJ601800
OUT-LINE                         30  MOVE
OUT-LINE                         31  MOVE
OUT-LINE                         32  MOVE
OUT-LINE                         33  MOVE
OUT-LINE                         34  MOVE
OUT-LINE                         35  MVLCP
OUT-LINE                         36  MOVE
OUT-LINE                         37  GOTO
OUT-LINE                         40  GTNXT
                                              TOKEN   00143005007W990 03EXAMINE                        YP
EXAMINE                          41  MOVE
EXAMINE                          42  RP
                                              CHANGE  001430056     07INSPECT                         01  Y
                                              CHANGE  001430055                                           Y
EXAMINE                          43  MOVE
EXAMINE                          44  EDMSG
                                              CHANGE  001430053     00EXAMINE REPLACED BY INSPECT         YABJ601900
EXAMINE                          45  GTNXT
                                              TOKEN   00143013006W000 00A-POEM                         YP
A-POEM                           46  BYID
                                              TOKEN   00143020008W000 00TALLYING                       YP
TALLYING                         47  IFEQA
TALLYING                         48  PRFTH
TALLYING                         53  MOVE
TALLYING                         54  INAF
```

```
*CONVER:EXAMINE           *TEXT:CHANGE EXAMINE BY INSPECT                                        *DATE:041598
100540
                               LCP   LCP      ID                                                                     -CODE-
TOKEN-TEXT                     STMT  OPCODE   FILE    *... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7  RT RV

                                              CHANGE  001430208     05TALLY                          01  Y
TALLYING                         55  MOVE
TALLYING                         56  INAF
                                              CHANGE  001430208     03FOR                            01  Y
TALLYING                         57  GTNXT
                                              TOKEN   00143029003W990   ALL                         YP
ALL                              58  MOVE
ALL                              59  MOVE
ALL                              60  IFEQA
ALL                              66  GTNXT
                                              TOKEN   00143033003L000 00"*"                         YP
"*"                              67  PRFTH
"*"                             123  IFEQA
"*"                             135  GOTO
"*"                             154  EXIT
"*"                              68  MOVE
"*"                              69  MOVE
"*"                              70  GTNXT
                                              TOKEN   00143036001 000 00.                           NP
.                                71  IFEQA
.                                72  GOTO
.                                93  EXIT
.                                49  GOTO
.                                51  GOTO
```

Appendix I. Maintaining CCCA under MVS

This chapter describes how to re-install CCCA and how to apply service updates to CCCA. To use the maintenance procedures effectively, you should have already installed CCCA and any required products.

In addition, this chapter describes how to remove CCCA.

Re-installing CCCA

The action required here depends on the circumstance. If you want to re-install and you did not use the SMP/E ACCEPT command then use a SMP/E APPLY REDO command. However, if you did use the SMP/E ACCEPT command, then the product should be deleted before installing again. For more information refer to "Removing CCCA" on page 258.

Applying service updates

You might need to apply maintenance or service updates to CCCA periodically.

What you receive

If you report a problem with CCCA to your IBM Support Center, you will receive a tape containing one or more APARs or PTFs that have been created to solve your problem.

You might also receive a list of prerequisite APARs or PTFs, which should have been applied to your system before applying the current service. These prerequisite APARs or PTFs, might relate to CCCA or any other licensed product you have installed, including MVS.

To help you understand the service process, the following overview familiarizes you with applying service for CCCA.

Checklist for applying service

Table 8 lists the steps and associated SMP/E commands for installing corrective service on CCCA. You can use Table 8 as a checklist.

Table 8. Summary of steps for installing service on CCCA

Step	Description	SMP/E Command
__ 1	Prepare to install service.	
__ 2	Receive service.	RECEIVE
__ 3	Accept previously applied service. (optional)	ACCEPT
__ 4	Apply service.	APPLY
__ 5	Test service.	
__ 6	Accept service.	ACCEPT

Step 1. Prepare to install service

Before you start applying service:

1. Create a backup copy of the current CCCA. Save this copy of CCCA until you have completed installing the service and you are confident that the service runs correctly.
2. Research each service tape through the IBM Support Center for any errors and/or additional information. Note all errors on the tape that were reported by APARs and apply the applicable fixes.

Step 2. Receive the service

Receive the service using SMP/E RECEIVE command. This can be done from the SMP/E dialogs in ISPF or using a batch job.

Step 3. Accept applied service (optional)

Accept any service you applied earlier but did not accept, if you are satisfied that the earlier service is not causing problems in your installation. This can be done from the SMP/E dialogs in ISPF or using a batch job. Accepting the earlier service allows you to use the SMP/E RESTORE command to return to your current level if you encounter a problem with the service you are currently applying. This can be done from the SMP/E dialogs in ISPF or using a batch job.

Step 4. Apply the service

Apply the service using SMP/E APPLY command. You should use the SMP/E APPLY command with the CHECK operand first. Check the output; if it shows no conflict, rerun the APPLY without the CHECK option. This can be done from the SMP/E dialogs in ISPF or using a batch job.

Step 5. Test the service

Thoroughly test your updated CCCA. Do not accept a service update until you are confident that it runs correctly.

In the event of a serious problem, you can restore the backup copy of CCCA.

Step 6. Accept the service

Accept the service using SMP/E ACCEPT command. You should use the SMP/E ACCEPT command with the CHECK operand first. Check the output; if it shows no conflict, rerun the ACCEPT without the CHECK option. This can be done from the SMP/E dialogs in ISPF or using a batch job.

Removing CCCA

To delete CCCA, you must:

- Make sure no other products depend on it.
- Use a dummy function SYSMOD to delete it.
- Receive, apply and accept the dummy function, and run the UCLIN to delete the SYSMOD entries for the deleted function and the dummy function.

Edit and submit job ABJDEL0 to delete CCCA. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You receive message `GIM39701W` because the dummy function SYSMOD has no elements. The SMP/E RECEIVE command returns a return code of 4. If any USERMODs have been applied then the SMP/E

APPLY command issues a `GIM44502W` message indicating USERMOD changes will be lost with a return code of 4. Both these warning messages can be ignored.

The target and distribution libraries can now be deleted.

Reporting a problem with CCCA

Report any difficulties with this product to your IBM Support Center. In the United States, if an APAR is required, submit the data to the location identified in the *Field Engineering Programming System General Information* manual (PSGIM), G229-2228, as being responsible for the failing component.

Table 9 identifies the component ID (COMP ID) for CCCA.

Table 9. Component IDs

FMID	COMP ID	Component Name	REL
H09F210	5648B0500	COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM	210

Obtaining service information

Preventive Service Planning (PSP) information is continually updated as fixes are made available for problems. Check with your IBM Support Center or use either Information/Access or SoftwareXcel Extended to see whether there is additional PSP information you need. To obtain this information, specify the following UPGRADE and SUBSET values: CCCA210 and H09F210.

Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Licensees of this program who wish to have information about it for the purpose of enabling (1) the exchange of information between independently created programs and other programs (including this one) and (2) the mutual use of the information that has been exchanged, should contact:

IBM Corporation
J46A/G4
555 Bailey Avenue
San Jose, CA
95141-1003
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

Programming interface information

This book primarily documents information that is NOT intended to be used as Programming Interfaces of COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM.

This book also documents intended Programming Interfaces that allow the customer to write programs to obtain the services of COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM. This information is identified where it occurs by an introductory statement to a chapter or section.

Trademarks

Bibliography

IBM COBOL for OS/390 & VM

Compiler and Run-Time Migration Guide, GC26-4764
Programming Guide, SC26-9049
Language Reference, SC26-9046

Related Publications for OS/390 & VM

- **Language Environment®**
  Programming Guide, SC28-1939
  Programming Reference, SC28-1940

IBM COBOL for MVS & VM

Compiler and Run-Time Migration Guide, GC26-4764
Programming Guide, SC26-4767
Language Reference, SC26-4769

Related Publications for MVS & VM

- **Language Environment**
  Programming Guide, SC26-4818
  Programming Reference, SC26-3312

Enterprise COBOL for z/OS & OS/390

Migration Guide, GC27-1409
Language Reference, SC27-1408
Programming Guide, SC27-1412

Other publications

VM/ESA

Application Development Guide, SC24-5450
Application Development Reference, SC24-5451
Command Reference, SC24-5461
User's Guide, SC24-5460

CICS/ESA

Application Programming Guide, SC33-1169
Application Programming Reference, SC33-1170

Softcopy Publications for OS/390, MVS, and VM

The following collection kits contain IBM COBOL or related product publications.

MVS Collection, SK2T-0710
OS/390 Collection, SK2T-6700
VM Collection, SK2T-2067

Index

Printed in USA

SC26-9400-03