
AllMyPapers

AMPLIBTM

MICR Batch Manual

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Introduction

1. What is MICR Batch?

MICR Batch is a MICR code reading application created by All My Papers for processing entire folders, including sub-directories, containing thousands of check images. After processing, the output MICR codes are placed in a text file where the control of content and order makes it very simple for the results to be loaded into an indexed database. Since the individual fields of the MICR line are parsed, the output data file is a complete index into the check image including routing number, account number, check number and amount.

In addition, MICR Batch has the capability to verify Image Replacement Document (IRD) data by comparing MICR codes from an IRD text file against the codes found on the image files referenced by the IRD. During this process, an output text file is created that contains the MICR codes and filenames that were correctly verified. The input IRD text file can be derived from X9.37 files using the AllMyPapers X9PLIB product.

Another important feature of MICR Batch is that reformatted and repackaged image files can also be output along with the MICR data. This allows conversion from multi-image TIFF formats to new files as single image TIFFs, sorted front/back single multi-image TIFFs, and many other combinations. MICR Batch will also output PDF format files. MICR Batch fully supports color and grayscale check images for input and output

MICR Batch can be run from a command line, script file, or third-party application. All the parameters that have been setup interactively with the user interface are saved in an "INI" file. When called from an external environment, MICR Batch will use the control values set into the INI file to direct file processing. This feature allows MICR Batch to be easily integrated into larger workflow environments.

In summary, MICR Batch will accept as input a group of scanned check images and then read and parse the MICR data. The check images can then be reformatted and/or combined and moved to a new directory location. The parsed MICR data will be output into the ASCII data file in the order and with the content the user desires. This may include the file path for the reformatted check image. This ASCII file can then be easily loaded into a database used for check archiving and retrieval.

Installation

2. Installing MICR Batch

To install MICR Batch on your hard disk, simply double-click on the ZIP file MBATCH.ZIP. Extract the files into a temporary directory and then run SETUP.EXE. Following the installation defaults will place MICR Batch and AMPLIB files in:

C:\Program Files\AllMyPapers\MICR Batch

After installation is complete, select All My Papers->MICR Batch from the Windows Start menu or double-click on the MICR Batch desktop icon to start the program.

Quick Start

3. MICR Batch Quick Start

Upon entering the program, you will see the program menu and a scanned check image. Select Read Image under the MICR menu and the codes present on the image will be read and displayed in a dialog box. Compare the contents of the dialog box with what you see on the scanned check image for accuracy and confirm correct installation.

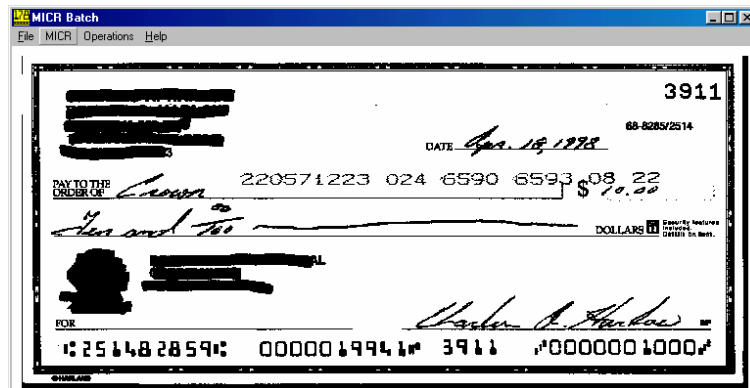


Figure 1 - MICR Batch Main Screen

MICR OCR

Scanning an entire folder of images is just as easy. Select Read Folder under the MICR menu and you will be shown a diagram of all the drives on your computer. It should have the same look and feel as Windows Explorer. Navigate to the folder you want to read just as you would in Explorer and highlight the folder. Clicking OK will now start MICR Batch reading images. As MICR Batch works through each file in the folder and subfolders, a dialog box is updated with the current directory, the current file, and any MICR codes found on that file.

MICR Batch is initialized at the factory to read TIFF files, but you can use the Processing Options dialog under the MICR menu to change which file types are active, whether subdirectories should be searched, where the results should be placed, MICR processing parameters, and much more.

MICR Verify/IRD Verify

To perform MICR Verify, the user must provide a file of image names and the associated MICR line value. See Appendix B for a sample of this format. Use the options menu to select the actual input file and output file name and locations. Then run the MICR Verify command. The output will contain two files; the .moc file and the .cmp file. The moc file contains the recommended result. The cmp file will have details on each check line that did not compare. This includes the OCR result, the input line and the voting result and how the vote was determined.

The IRD Verify results will vary substantially from the MICR Verify result because the requirements are very different. In the case of IRD Verify the following are not identified as miss compares:

- Missing amount field

- Incorrect EPC

- Missing dashes and on us codes.

In the case of IRD Verify, the reason for differences are as follows :
The amount value will be in the X9.37 record but will not generally be encoded on the check. The EPC code in the X9.37 record will replace whatever is on the check. The FED requires a 9 digit routing code in a X9.37 file but an IRD must duplicate the check contents. For all of these cases, the MOC file will have the expected results but no miss compare data appears in the CMP file.

Program Operation and Menus

4. MICR Batch Program Operation and Menus

This section describes the general operation of MICR Batch including a brief description of the functionality of each menu and dialog box option. MICR Batch can accept one command line parameter that specifies the name of the file to use for program initialization. If no command line parameter is present, the default file used will be MICRBATCH.INI. Initialization (.INI) files must exist in the current Windows working directory of the MICRBATCH.EXE application. If this file does not exist when MICR Batch starts, default parameters will be used in MICR Batch and a new MICRBATCH.INI will be created when the application exits. The format of the .INI file is described in more detail in Initialization File Format (Section 5).

If AutoRun=No or is not present in the .INI file, then MICR Batch will display its user interface, open the file CHECK.TIF for viewing in the client area, and operate with the usual Windows' mouse-driven point-and-click style approach.

If the AutoRun=Yes line is present in the .INI file, MICR Batch will enter into an automated file processing mode with a minimal user interface. This mode is useful for third-party programmers who want to use MICR Batch's features from within their own applications. Setting AutoNetProt=No, AutoIRDVerify=No, AutoMICRVerify=No, and AutoNSFRepair=No in the .INI file selects simple folder processing (see Section 4.2.2). AutoNetProt=Yes enables the Network Protocol described in Section 4.2.8. AutoIRDVerify=Yes enables IRD Verify processing as described in Section 4.2.5. AutoMICRVerify=Yes enables MICR Verify processing as described in Section 4.2.6. AutoNSFRepair=Yes enables NSF multi-image background filtering as described in Section 4.2.7. A typical way of calling MICR Batch from the Visual C++ environment is by using the ShellExecuteEx call. Visual Basic also has access to ShellExecuteEx.

4.1 File

This menu operates on files or scanned images displayed in the main viewing window of MICR Batch. This viewing window does not automatically resize itself to match the source image dimensions, so it is up to the user to adjust aspect ratios that are appropriate for the current image.

4.1.1 Open ...

This option presents a standard Windows file selection dialog box that enables the user to navigate through storage devices and folders on those devices. Once a file is selected, MICR Batch will attempt to open that file with the `ampLoadImage` API and then display it. MICR Batch supports the following file types: TIFF (multipage G4/G3), PDF (G4 and JPEG), JPEG (also known as JFIF), PCX (bilevel), and BMP.

Color check images may be displayed and processed in color by selecting the Color check box in the Native Bitmap Options group displayed in the Processing Options dialog box (see Section 4.2.10.28). In a similar way, use the Gray check box (see Section 4.2.10.27) if you want to process gray check images in their native gray format. In general, bilevel check processing is fastest with gray running a close second. If a bilevel check image is loaded with Gray selected as the native bitmap, check processing will be done as if Bilevel were selected. Similarly, if a gray check image is loaded with Color selected as the native bitmap, grayscale image processing algorithms will still be used to process the image.

Color and grayscale check images that are loaded into a native bitmap that has been selected to be Bilevel, will be thresholded with an advanced algorithm that preserves the MICR codes, check number, and other standard black printing on the check.

4.1.2 Save As ...

Displays a standard Windows file selection dialog box that allows the user to save the current image as a disk file. The default filename will be the same as the last filename used in Open

4.1.3 Paste Clipboard

If there is a DIB image already "pasted" to the clipboard, MICR Batch will load and display it in the program client area below the main menu according to the native bitmap selected: bilevel, gray, or color.

4.1.4 Twain Capture Image

This option enables MICR Batch to use TWAIN compatible devices like PC Cameras and scanners to input single images for viewing in the program. As the image is transferred, the color depth will be transformed to match the current native bitmap selected: bilevel, gray, or color. Most TWAIN compatible devices have their own user interface that acts as an intermediary to MICR Batch allowing selection of scanning parameters and scanned images.

4.1.5 Twain Select Source

Brings up the standard TWAIN dialog used to select between the currently active TWAIN devices installed on the computer.

4.1.6 Exit

Exits MICR Batch and saves all parameters in the same .INI file used when the program began. If no command line filename was used, the default file is MICR BATCH.INI located in the same directory as MICR BATCH.EXE.

4.2 MICR

This menu contains options that read MICR codes from images and also enables the selection of various parameters used during reading.

4.2.1 Read Image

This option causes MICR Batch to scan the image that is currently being displayed on the screen for MICR codes and to display the results in a dialog box. The codes will be read using AMPLIB parameters set in the Processing Options dialog described in Section 4.2.10. If there is an

error during processing, the error code and a brief description of the problem will be shown. If there were no MICR codes detected, the box will display the text "Results:" followed by blanks.

4.2.2 Read Folder

Brings up a standard Windows folder selection dialog similar to the left side of the Windows Explorer program. This dialog can be used to select a particular folder on a local or remote disk drive for MICR processing. Pressing OK will start the process of sequentially looking at all the files in that directory that match the extension and wildcards set up with the MICR Source File Filter (Section 4.2.10.2). The Sub-

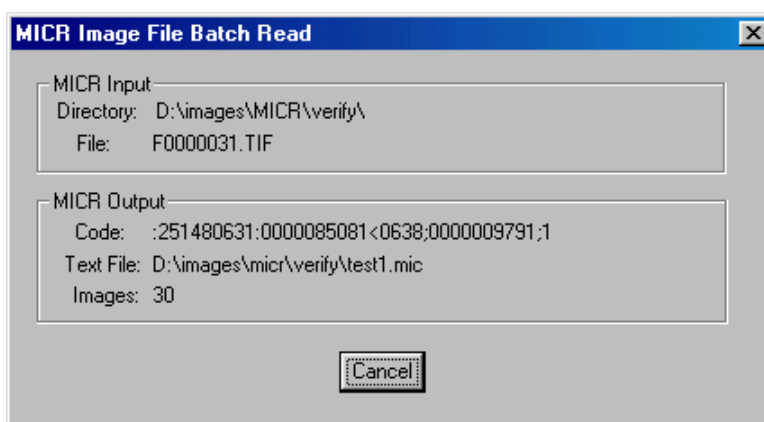


Figure 2 - Read Folder Progress Dialog Box

directories option (Section 4.2.10.5) controls whether subfolders will be traversed during processing. Output MICR codes will be placed in a text file specified by the MICR Batch Results File (Section 4.2.10.1). Pressing Cancel closes the folder dialog and returns you to the main program menu and current image.

While Read Folder is processing, a dialog box is presented that contains the following information: current directory, file being read, MICR code read from the last file, output pathname of the results text file, and the number of images read so far. After all the selected subdirectories have been read, a final dialog is presented that displays the elapsed time along with how many images and files were processed. Note that the number of images read may be larger than the number of files if multipage TIFF files were present.

4.2.3 Read Last Folder

This menu option performs the same function as Read Folder, but uses the last directory selected for the source of images. It is useful for rapidly repeating a batch operation with only a different set of parameters.

4.2.4 Read and Verify

This option displays a standard Windows file selection dialog filtered to display .MIC files. A .MIC file is a text file created by Read Folder (Section 4.2.2) with Subdirectories (Section 4.2.10.5) disabled, NoBlanks (Section 4.2.10.20) enabled, and MICR->ASCII Output File Format Options->Legacy selected. The net result is a file that consists of odd lines of filenames and even lines of raw MICR codes. Once a .MIC file is selected, MICR Batch will open it and read the filename on the first line and attempt to read it using the AMPLIB ampVoteMICRRepair API. If no directory is present in the filename, the directory specified in Verify Default Path (Section 4.2.10.3) will be used. The MICR codes on the second line will be used as input to ampVoteMICRRepair. MICR Batch will then read the image voting between the input MICR codes and what it "sees" on the image. The resulting codes are then written to the MICR Batch Results File specified in the Options dialog. More pairs of lines will be read from the .MIC file and go through this process until there are no more filenames available or until there is an error opening an image filename for reading. The .MIC input file should not have any multipage TIFF files because codes on sequential lines will throw off the odd/even line parsing Read and Verify performs.

As in Read Folder, Read and Verify presents a dialog box containing information about the current directory, file being read, last read MICR code, output pathname of the results text file, and the number of images read so far. Pressing Cancel on the dialog stops the process. After all the files specified in the .MIC file have been read, a final dialog is presented that displays the elapsed time along with how many images and files were processed. If any of the files were multipage TIFF files, only the first image in the file was processed. Consequently the number of images processed should equal the number of files processed.

4.2.5 IRD Verify


```
"D:\images\images\F00005.TIF", "          C2055702C
A072404786A          2176958318C B0000048579B", "No Match"
```

An additional CMP file is output in the same directory as the MOC that details those MICR codes that were read differently than the codes found in the MIC file. An example CMP file is shown in Appendix B along with a brief description of its format.

4.2.7 NSF Image Repair

Normalized Scanner Format Image Repair is designed to clean background patterns from a large group of images in a short amount of time. Source images are in a proprietary concatenated TIFF format file called an NSF Blob. A companion NSF file contains the name of the blob file along with pointers and lengths to all of the concatenated TIFF images embedded in the blob. NSF Image Repair prompts the operator for the name of the NSF pointer file and then proceeds to perform an image filtering operation on each image. This process outputs a resulting NSF Blob that contains the cleaned versions of all the images and an output NSF pointer file that points back into the cleaned images. The name of these output files is determined by file specified in the Processing Options dialog (4.2.10.1). The NSF format was created as a means to accelerate the handling of large groups of image files in PC environments where anti-virus software severely hinders overall throughput when writing many files to disk. Contact All My Papers for software that can be used to translate X9.37 files to and from the NSF format.

4.2.8 Read Network Protocol Image Folder

This option enables MICR Batch to become a MICR code reading image file server. Any application that follows the Xerox DocuCentre protocol (e.g. Seaport AutoScan) can act as an image source for MICR Batch. This means that several check scanners can be simultaneously feeding check images into a network subdirectory and that MICR Batch will be reading those images as they are produced. During processing, MICR Batch will display the progress dialog shown below and will continue processing check images until the Cancel button is pressed or optionally, when all the existing images have been processed.

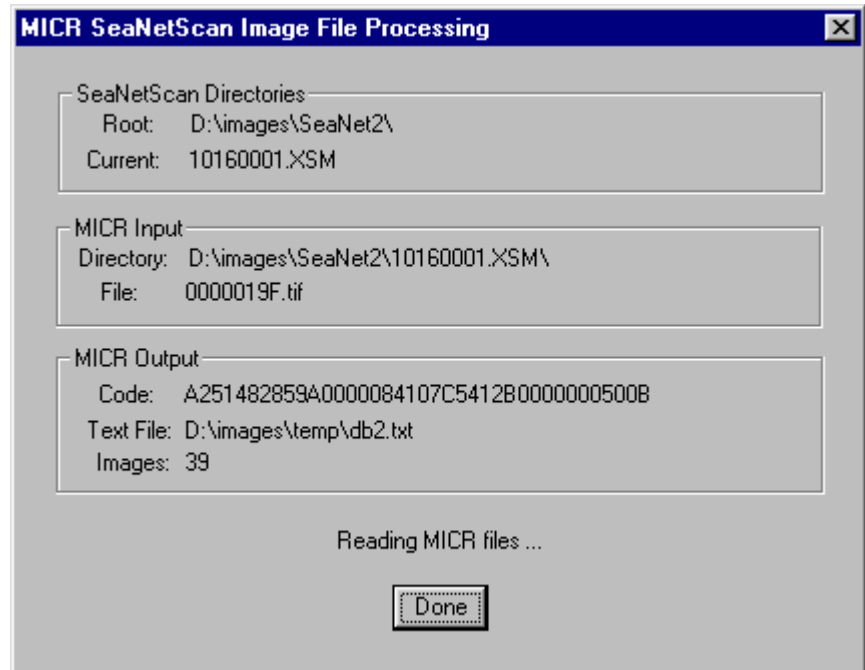


Figure 3 - Read Network Protocol Image Folder Progress Dialog Box

4.2.9 Network Protocol Options

This dialog controls the action of Read Network Protocol Image Folder (Section 4.2.6). The Network Protocol active directory may be selected by browsing or by directly entering the path in the edit field. Image subdirectories may be automatically deleted after the MICR codes are read by placing a check next to the first option. If the second option is checked, all valid image subdirectories will be processed and then the process will terminate back to the main MICR Batch menu. The last option selects AutoNetProt=Yes in the .INI file so that Network Protocol processing can be performed without user interaction if AutoRun = Yes.

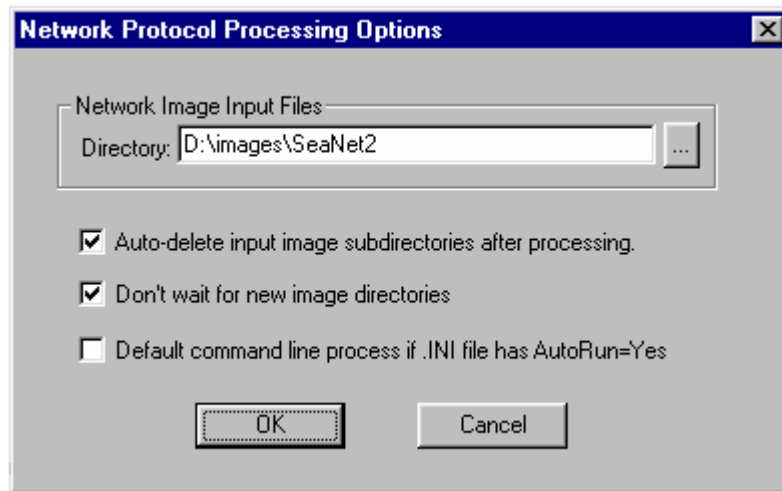


Figure 4 - Network Protocol Options Dialog Box

4.2.10 Processing Options ...

This dialog box controls the options that will be used by MICR Batch and in turn by AMPLIB during MICR code reading. It also controls which files will be read and how the MICR results will be saved to disk. A number of the checkbox items are directly linked to variables in the ampMICRINFO structure, which is documented in the MICR Parameters section of the AMPLIB manual. In general, each selection field in Processing Options has a directly related line in the .INI file.

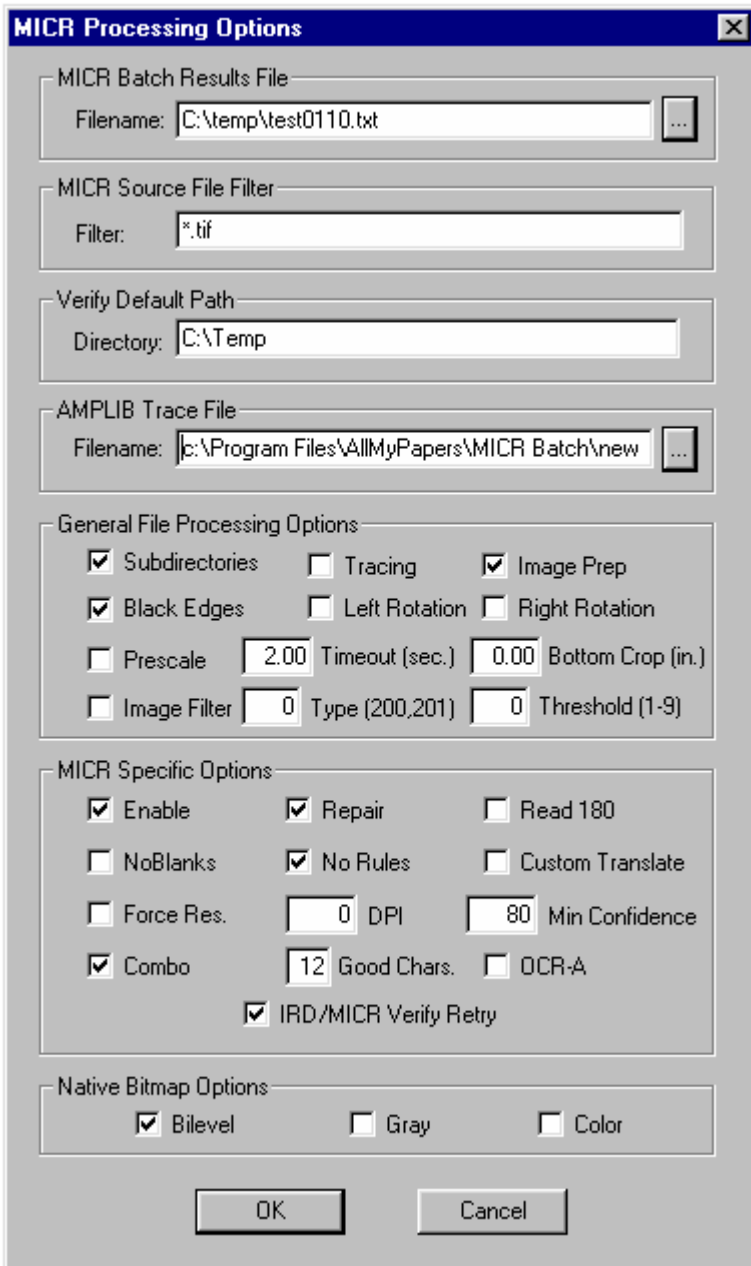


Figure 5 - Options Dialog Box

4.2.10.1 MICR Batch Results File

This editable field contains the location and name of the text file that will be used to hold MICR codes output from the Read Folder (Section 4.2.2), Read Last Folder (Section 4.2.3), Read and Verify (Section 4.2.4), IRD Verify (Section 4.2.5), MICR Verify (Section 4.2.6), and Read Network Protocol Image Folder (Section 4.2.8) menu options. The general format of the output text file for Read Folder and Read Last Folder is header information followed by front/back MICR data followed by footer information. The order of fields within each header, MICR data, or footer record is completely flexible and specified by the ASCII Output File Format Options dialog (Section 4.2.12). Each field can be delimited from neighboring field by any ASCII character, but usually the default value (comma) works well. Quotations or any other character may bracket Field data if desired. In addition, headers and footer may be completely suppressed if any MICR data is desired. Here are some lines from a sample Batch Results File:

```
"MICR Batch Test", "11/12/2002", "D:\images\SeaNet",
251480631, 0000335738, 1559, 32.13, Transcode, 11/01/2002, 1,
D:\images\SeaNet2\10160001.XSM\0000000F.tif, 2,
251480631, 0000335738, 1559, 32.13, Transcode, 11/01/2002, 3,
D:\images\SeaNet2\10160001.XSM\0000001F.tif, 4,
251482859, ,, 10.00, Transcode, 11/01/2002, 5,
D:\images\SeaNet2\10160001.XSM\0000002F.tif, 6,
251481342, 0000024813, 5698, ,, Transcode, 11/01/2002, 7,
D:\images\SeaNet2\10160001.XSM\0000003F.tif, 8,
"End of Batch Processing",
```

In this example, each input file is a multipage TIFF file containing front and back images of a single check. MICR Batch intelligently processes front/back image pairs, and if a check has been scanned backside first, will automatically switch images so that the side that has the MICR codes is processed first.

4.2.10.2 MICR Source File Filter

This field is used mainly to select the type of file extension (TIF, BMP, etc.) that will be used to screen input files during the Read Folder (Section 4.2.2) function. It can also be used to filter filenames as in the following examples:

- *.* - all files processed
- *.tif - only files with a .TIF extension are processed

000*.* - filenames must begin with 000 in order to be processed
000000???.tif - Only the first 99 numeric TIFF filenames are used

4.2.10.3 Verify Default Path

The path specified in this editable field is used during Read and Verify operations. If the filename specified in the .MIC file does not include a directory, then this path will be added to the filename before the file is loaded and the MICR codes read.

4.2.10.4 AMPLIB Trace File

AMPLIB trace files are useful to All My Papers technical support personnel to help diagnose imaging problems that occur infrequently or are otherwise difficult to debug. This editable field can be used to select the pathname for the text file where AMPLIB specific program information can be saved during MICR Batch execution. As MICR Batch executes, new AMPLIB trace information is appended to the end of the file building up a record of AMPLIB parameters associated with each AMPLIB program call made while tracing was activated. The Tracing check box (Section 4.2.10.6) is used to turn tracing on and off. As a general rule, it is best to keep tracing deactivated because the large amounts of information sent to a trace file can significantly decrease MICR throughput speed.

4.2.10.5 Subdirectories

This check box activates the processing of subfolders when the Read Folder (Section 4.2.2) or Read Last Folder (Section 4.2.3) menu option is used or if these operations are invoked from the command line using AutoRun=Yes (AutoNetProt=No, AutoIRDVerify=No, and AutoNSFRepair=No) in the initialization file.

4.2.10.6 Tracing

This check box activates and deactivates AMPLIB tracing as described in Section 4.2.10.4.

4.2.10.7 Image Prep

This option enables AMPLIB to intelligently scale, rotate, or deskew the incoming image in order to increase MICR reading accuracy.

4.2.10.8 Black Edges

The deskew portion of Image Prep (Section 4.2.10.7) can perform a better job removing the margins on tilted images surrounded by black if this option is selected.

4.2.10.9 Left Rotation

This option enables the counter-clockwise rotation of the image during Image Prep (Section 4.2.10.7).

4.2.10.10 Right Rotation

This option enables the clockwise rotation of the image during Image Prep (Section 4.2.10.7).

4.2.10.11 Prescale

Images that have been scanned at resolutions less than 150 DPI may benefit by this option which causes the horizontal and vertical resolution to be doubled prior to Image Prep (Section 4.2.10.7). Grayscale and color images are doubled with an interpolation algorithm.

4.2.10.12 Timeout

The number in this edit box sets the maximum number of seconds MICRBatch spend trying to read the MICR code on an image.

4.2.10.13 Bottom Crop (in.)

The number represents the fraction of an inch to ignore on the bottom of check images when doing MICR reading.

4.2.10.14 Image Filter

This check box performs an image processing operation to remove background pixel noise on the image prior to recognition.

4.2.10.15 Type (200, 201)

This number control the operation of the Image Filter. If Type 200 is selected, then the image is tested first and if found to have a large quantity of pixel noise, is then filtered. Type 201 does the image filter on every image whether it needs it or not.

4.2.10.16 Threshold (1-9)

The number controls the strength of the Image Filter. A value of 8 or 9 does a good job at cleaning up pixel noise. As a comparison, the menu item Operations->Filter->Background Noise performs an image filter of type 201 with a threshold of 9.

4.2.10.17 Enable

Reading the MICR information can be disabled by unselecting this option. MICR Batch can then be used for batch translation of image files from one format to another. For example, it may be desirable to translate a number of single image TIFF files into a single PDF multiimage file.

4.2.10.18 Repair

If any read errors are detected in the result data when this checkbox is set, then a temporary copy of the input image is repaired based on the results of the first read. The repaired image is then used for a second MICR read. The two MICR read results are then voted upon and the result of the vote is reported. When doing image repair and reprocess, the execution times will be about twice as long for images which have read errors in the first pass.

4.2.10.19 Read 180

If this checkbox is active and a MICR line cannot be detected on the bottom of the input image. A temporary copy of the image will then be created and rotated 180 degrees before attempting to perform another MICR read. The read of the original line will be considered unsuccessful if it has less than 4 valid characters and any unreadable characters.

4.2.10.20 NoBlanks

When selected, this check box suppresses extra blank characters from being inserted in the MICR output.

4.2.10.21 No Rules

When only a portion of a MICR line is available for reading, setting this checkbox will cause internal banking format rules to be ignored and a better accuracy read may result.

4.2.10.22 Custom Translate

This checkbox causes the normal MICR output characters (0-9, A, B, C, D, ' , * , N) to be translated to a new set of characters: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, '!', '!', '<', '=', '!', '* , g. This new set of characters can be redefined using the line Codes= in the .INI file (Section 5.2.17).

4.2.10.23 Force Res.

Normally, resolution data is contained in the image file being processed. It is used to locate MICR characters on the bottom 5/8 inch of the image. If the source image is from a camera, then the resolution information may not have been present at capture time. This may be compensated for by setting this checkbox and entering a new resolution at the DPI parameter (Section 4.2.10.21).

4.2.10.24 DPI

When Force Res. (Section 4.2.10.20) is active, this parameter should be set to a value that approximates the visual dots per inch of the image. For example, if the field of view of the image is 4 inches and the total resolution is 640 pixels, then DPI should be set to 640/4 or about 160.

4.2.10.25 Min Confidence

This input parameter describes the Minimum Confidence value that should be used to accept or reject a character. The value range is between 0 and 99 but the only reasonable values are between 80 and 90. Setting the value too high will reject characters that are read correctly. Setting the value too low will cause the acceptance of characters which are misreads or substitution errors.

The user must decide the best parameter value based on testing with their data set and with their set of needs. In general, good images do not cause substitution errors. It is corrupted images that cause problems. In all cases, a substitution error rate over a large data set is still expected to be a fraction of one percent. The following information is based on testing a wide range of images with AmpLib.

A Min Confidence of 80 is recommended for doing verification. It will generate some substitution errors on corrupted images but since it is being compared to another result, this effect is minimized.

A Min Confidence of 85 is recommended for general usage. This will reduce the substitution rate and only nominally reduce the read rate.

A Min Confidence of 89 is recommend for the lowest substitution error rate without dramatically reducing the read rate.

4.2.10.26 Combo

This option causes images to be read up to two times with the better result being used for output. The first read does not use Image Prep (even if selected) while the second read (if needed) will (if selected). If the first read yields no bad characters and a number of good characters greater than the amount entered in Good Chars. (4.2.10.24), then the MICR reading process is done and the results will be reported. Otherwise, the second read will be attempted and if the number of good characters for the second read exceeds the number of good characters

from the first read, then the results of the second read will be used. If the results of the second read were not superior to the first read, then the first read results will be used.

4.2.10.27 Good Chars.

This edit box establishes the criteria used in the Combo read mode (4.2.10.23) to determine if the results from the first attempt at reading MICR codes was sufficient.

4.2.10.28 OCR-A

This box turns off the MICR recognition engine and enables the OCR-A recognition engine and logic.

4.2.10.29 IRD/MICR Verify Retry

This box turns on the retry logic during IRD Verify and MICR Verify. If there is no initial match between the OCR engines and the input .MIC file, the retry logic will perform a series of image processing options like background filters and line filters in order to see if the new cleaner image will give a match. If the images being verified have significant pixel noise in the background, this option will improve overall recognition accuracy. The down side is that the extra image processing steps repeated over many images will take extra time and reduce throughput.

4.2.10.30 Bilevel

This parameter selects that the native bitmap format used for all MICR image processing will be binary. If a MICR check image is grayscale or color, it will be immediately thresholded to bilevel when read from the hard drive. All subsequent transformations and operations performed on that image will be done in the bilevel domain. If a color or grayscale image is currently displayed in the MICRBatch client area, selecting this option will convert the image to bilevel and cause the image to be refreshed.

4.2.10.31 Gray

This parameter selects that the native bitmap format used for MICR image processing will be 8-bit grayscale. This allows greater accuracy for deskew and other image processing operations when processing grayscale and color MICR images. If a MICR check image is color, it will be immediately converted to grayscale when read from the hard drive treating green as 59% of the intensity, red as 29%, and blue as 11%. Bilevel check images will continue to be processed as 1-bit images and will not benefit from the increased pixel depth. If a color image is currently displayed in the MICRBatch client area, selecting this option will convert the image to grayscale and cause the image to be refreshed changing the displayed colors to shades of gray. If a bilevel image is currently displayed, selecting Gray will force the image to grayscale, but there will not be a visual change of the image within the client area.

4.2.10.32 Color

This parameter selects 32-bit color as the native bitmap format that will be used for all MICR image processing. This allows greater accuracy for deskew and other image processing operations. If a MICR check image is bilevel or grayscale, it will be remain bilevel or grayscale when loaded. Some operations may be noticeably slower if color is selected rather than Gray or Bilevel.

4.2.11 Image Output File Options

This dialog box controls the generation of output image files during MICR processing. Output file formats include single or multiimage TIFF as well as PDF. Output images may be placed in a single output directory or sorted into new subdirectories using the Jobname dating schema. In this schema the first 2 characters of the subdirectory name are the month (01-12), the next 2 are the day (01-31), and the last 4 start at 0001 and are incremented each time a batch of files are processed. For example, if the image file output directory is c:\images and the date is January 15, then the third run of MICR processing would place check images in the subdirectory c:\images\01150003\. Filenames are always in 8.3 format where the extension is either TIF or PDF.

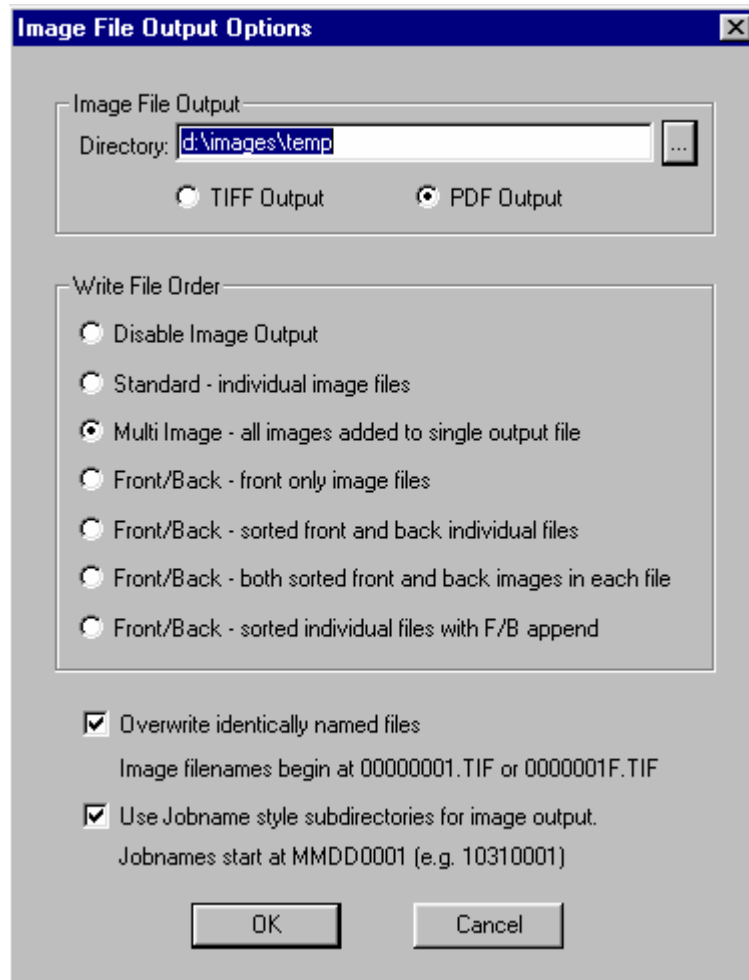


Figure 6 - Image File Output Options Dialog Box

MICR Batch can intelligently sort output check images according to their front/back order in the input image stream. If a check has been scanned accidentally with the back image first, MICR Batch can delay sending that image to the output stream until the front image that has valid MICR codes has been processed.

4.2.12 ASCII Output File Format Options

MICR Batch provides an extremely powerful environment in which to control the output order of textual information in the MICR Batch

Results File. This allows the direct importation of scanned check information into a variety of database applications. The main requirement is that the database can import comma (actually any ASCII character) delimited data.

MICR Batch supports data ordering for not only the front and back sides of the check, but also for two header records and a footer record. Fields within each record may be delimited with a comma or any other ASCII character. Entering a CR as a Field Delimiter will cause carriage returns to be used as delimiters. Field Enclosure brackets any field data with quotation marks or any other ASCII character. As long as a header, data, or footer record has at least one field selected, those selected field(s) will be output to a Results File and then terminated with a carriage return/line feed (CR/LF) pair of characters. If Total Fields is set to zero for a given record, then the CR/LF will be suppressed essentially eliminating the record from the output stream of data.

Empty fields (e.g. , ,) may be specified by setting Total Fields to a number higher than the number of actual fields needed and then setting gaps in the field Order where the empty fields are desired. Pressing the Clear button will set Total Fields to 0, the Field Delimiter to a comma, the Field Enclosure to quotation mark, and all other fields to blank.

Remember that the Total Fields needs to be set to a number greater or equal to the highest number used in the Order column. It is a good practice to always press Test Format before pressing Accept. The Output Order line will then be filled with characters that represent the data order pattern specified. It's always good to double-check this data order with the database field order so that proper data is passed in valid locations.

4.2.12.1 Headers

Shown below is the dialog box that controls the field ordering for the first header. In this simple example, all 8 fields are to be output in sequential order. Note that quotation marks will surround all fields.

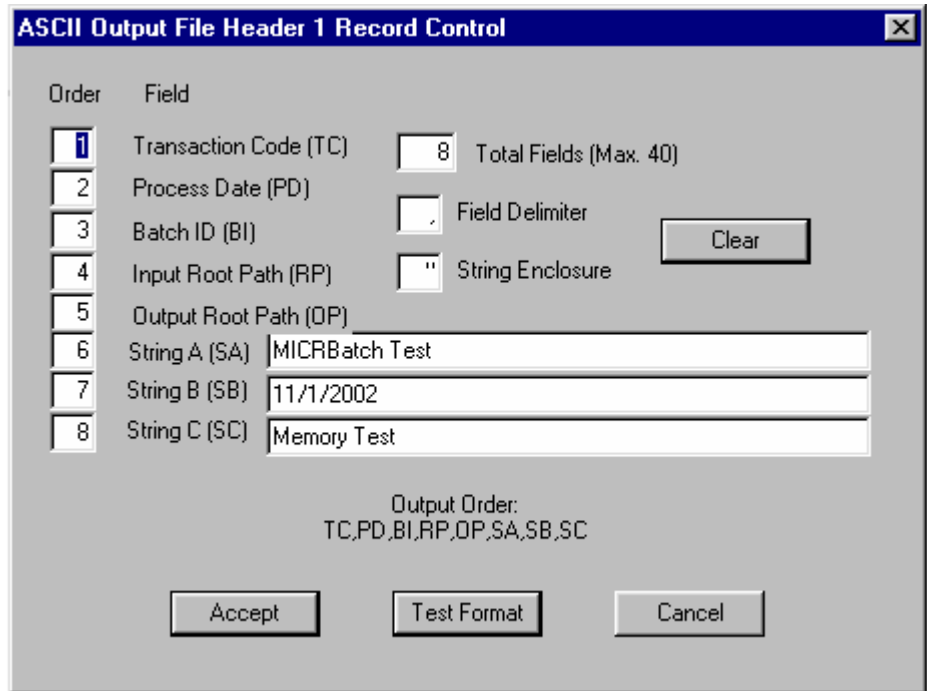


Figure 7 - Header 1 Dialog Box

The second header dialog is special in that the Transaction Code, Process Date, and Batch ID may be defined in the three edit fields at the bottom. These three parameters may be used in any of the header, data, or footer records. Show below is the Header 2 dialog with only three data fields selected for output. Note that no quotation marks will be used around data fields.

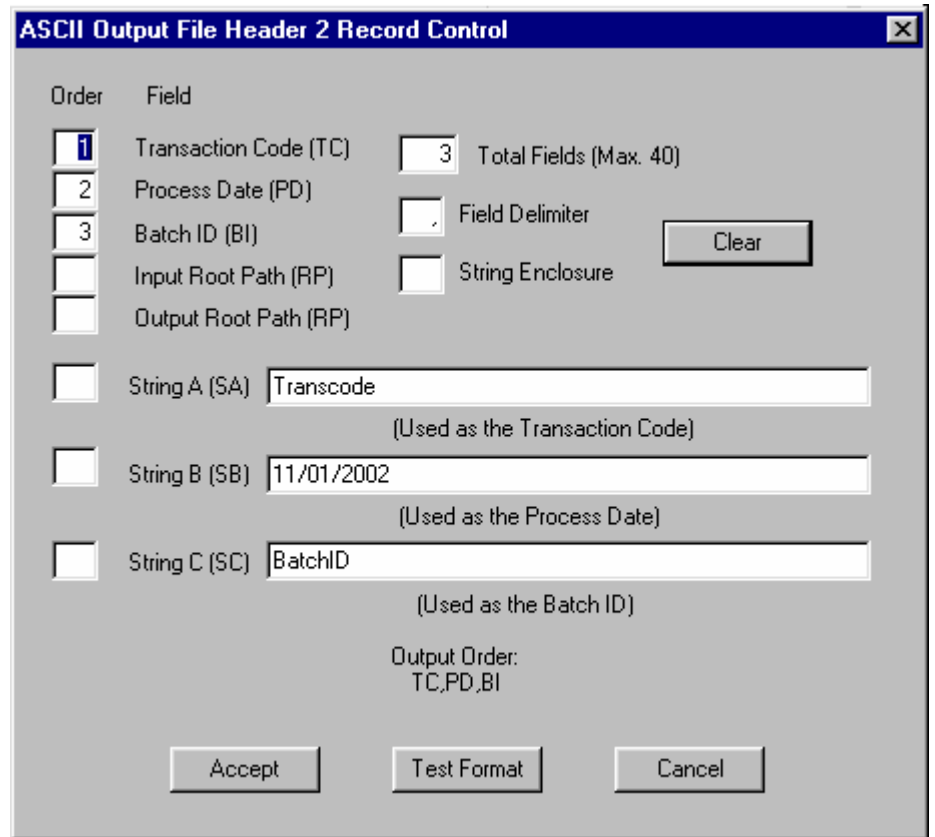


Figure 8 - Header 2 Dialog Box

4.2.12.2 Data

There are independent dialogs that control data ordering for the front and back check images. Shown below is the dialog that controls the data order for the front side of the check. It is set up as if Order Preset C has been pressed. Note the empty field at Order = 9.

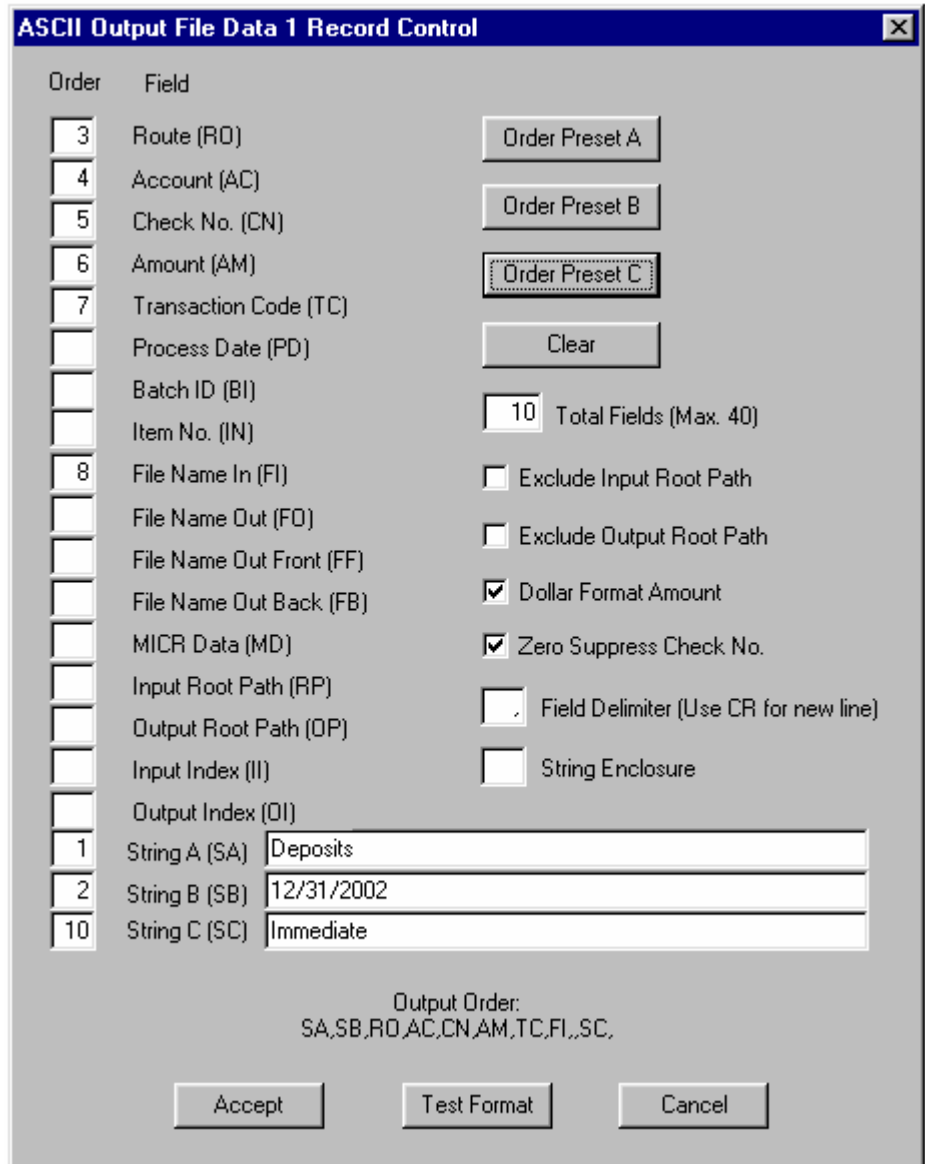


Figure 9 - Front Data Dialog Box

Special mention should be made of Exclude Input Root Path and Exclude Output Root Path. When checked, these two options cause only the filename (not the path) to be output for File Name In, File Name Out, File Name Out Front, and File Name Out Back. Complete pathnames can be quite lengthy, so this is a simple technique for reducing redundant information.

4.2.12.3 Footer

The dialog that controls the footer data record is shown below. In many instances no footer information is needed when importing MICR codes into a database. This can be selected easily by pressing Clear followed by Accept.

Order	Field
1	Transaction Code (TC)
2	Process Date (PD)
3	Batch ID (BI)
4	Item No. (IN)
5	Input Root Path (RP)
6	Output Root Path (OP)
7	String A (SA)
8	String B (SB)
9	String C (SC)

Total Fields (Max. 40): 9

Field Delimiter: ,

String Enclosure: "

String A (SA): Foot A Test

String B (SB): Foot B

String C (SC): Foot C

Output Order: TC,PD,BI,IN,RP,OP,SA,SB,SC

Figure 10 - Footer Dialog Box

4.2.13 Read Check.tif

This option causes MICR Batch to examine the file CHECK.TIF for MICR codes and display the results in a dialog box. As in the Section 4.2.1 Read Image command, the codes will be read using AMPLIB parameters set in the Processing Options dialog box. If there is an error during processing, the error code and a brief description of the problem will be shown. If there were no MICR codes detected, the box will display the text "Results:" followed by blanks. Read Check.tif is available as sample C source code for advanced developers who need an

example of how to use the AMPLIB API to directly read the MICR codes from an image file.

4.3 Operations

This menu has commands that may be used to perform image processing operations on the image currently displayed as well as obtain information concerning this image. These operations are included to help advanced users of MICR Batch select appropriate Processing Options for difficult check images by allowing them to visualize what is actually happening to the image before reading.

4.3.1 Image Info...

This option displays the dimensions, XY resolution, and pixel bit depth of the current image in a dialog box. Typical dimensions for a 200 dpi check image are 1216x578 pixels.

4.3.2 MICR Prep

This option uses the ampPrepMicr function in AMPLIB to process and replace the current image displayed. Either white or black edge options may be selected.

4.3.3 Rotate

These three suboptions allow the image to be rotated 90, 180, or 270 degrees counter clockwise. After rotation, the client area remains in its usual landscape orientation which sometimes makes the check image a little "squished" looking. This is only a display artifact and is not representative of the image in program memory.

4.3.4 Fill

These two suboptions allow the displayed image to be erased either to white or to black.

4.3.5 Invert

This option flips the image polarity so black becomes white and white becomes black.

4.3.6 Mirror

These suboptions allow the image to be flipped horizontally around the X-axis or vertically around the Y-axis. Performing an X-axis mirror followed by a Y-axis mirror operation accomplishes the same result as a 180 degree rotation.

4.3.7 Double Size

This menu option uses interpolation techniques to horizontally and vertically double the image size. There is generally little visual change to the displayed image because Windows automatically resizes the image when it is refreshes in the client area.

4.3.8 Filter

These menu options can be used to clean the current image of unwanted features such as borders, lines, and background noise patterns.

4.4 Help - About MICR Batch

This menu presents a dialog box containing the version number of the software and a telephone number for sales and technical support.

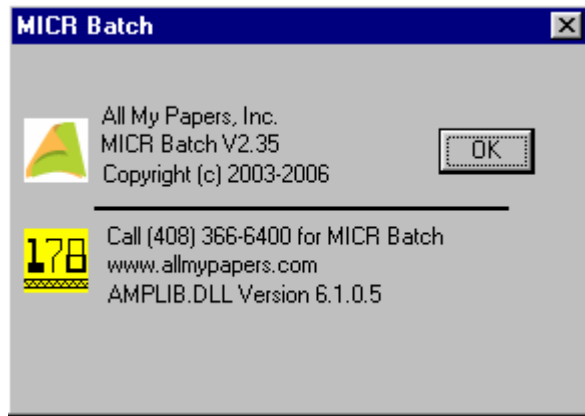


Figure 11 - About Dialog Box

Initialization File Format

5. Initialization File Format

MICR Batch loads an initialization (.INI) file when it starts. Lines of text in this file are used to initialize the check boxes and edit fields in the various dialogs (e.g. Processing Options - Section 4.2.10) as well as other program parameters. If the standard MICR BATCH.INI or command line initialization file is not found, or if there are syntax errors in the file itself, then default values will be assigned to each program option. When you exit, MICR Batch will write all of its current program values to disk as a new initialization file using either the standard filename or the one entered on the command line. The standard location for MICR BATCH.INI is:

```
C:\Program Files\AllMyPapers\MICR Batch
```

The .INI file consists of the major sections: [Files], [Settings], [Header1], [Header2], [Data1], [Data2], and [Footer]. The default value of each line in [Files] and [Settings] will now be described so that advanced users can edit the .INI file and modify parameters of interest such as AutoRun. The characters before the equal sign on each line describe a unique parameter name and the characters after the equal sign are the text equivalent of the parameter value.

5.1 [Files]

This section includes directories and filenames used by MICR Batch. If there is a default value, it will typically be shown on the same line as the parameter name unless there are space constraints.

5.1.1 - MICR=

This pathname is used to initialize the MICR Batch Results File editable field in the Options dialog box (Section 4.2.10.1). The default is:

MICR=C:\ProgramFiles\AllMyPapers\MICR Batch\MICR Batch.txt

5.1.2 - Filter=*.tif

This line initializes the MICR Source File Filter (Section 4.2.10.2) to scan for only TIFF files.

5.1.3 - Verify=

This line initializes the Verify Default Path (Section 4.2.10.3) which is used to locate filenames contained in .MIC files during Read and Verify (Section 4.2.3). An example would be:

Verify=d:\images\micr\verify

5.1.4 - Trace=

This line initializes where AMPLIB trace information will be saved for later debugging. The default is:

Trace=C:\ProgramFiles\AllMyPapers\MICR Batch\ampmicr.trc

5.1.5 - AutoDir=

This line contains the directory of the folder to begin batch reading from in the no user interface mode (AutoRun=Yes). There is no default, but the line follows the syntax AutoDir=PATHNAME.EXT. Only images with the matching three-letter extension (e.g. .BMP) will be processed. An example line would be:

AutoDir=D:\images*.tif.

5.1.6 - AutoVerifyFile=

This line contains the last MIC file processed using the user interface IRD Verify menu option. In batchmode (AutoRun = Yes, AutoIRDVerify=Yes or AutoMICRVerify=Yes), this line serves as a way the calling program can specify which MIC file to process. An example line would be:

AutoVerifyFile=D:\X9.37\FED\images\Fixed0001.mic

5.1.7 - AutoNSFRepairFile=

This line contains the last NSF file processed using the user interface NSF Image Repair menu option. In batchmode (AutoRun = Yes, AutoNSFRepair=Yes), this line serves as a way the calling program can specify which NSF file to process.

5.1.8 - ImageDir=

This is the directory that is displayed by the File->Open... dialog when first used. An example line would be:

ImageDir=D:\images

5.1.9 - MICDir=

This line contains the directory last used in Read and Verify (Section 4.2.4) to select a .MIC file. An example would be:

MICDir=d:\images\mic\verify

5.1.10 - NSFDir=

This line contains the directory last used in NSF Image Repair.

5.1.11 - WriteFileDir=

This line contains the directory last used for image file output (Section 4.2.10). An example would be:

WriteFileDir=d:\images\temp

5.1.12 - NetProtocolDir=

This line contains the directory last used in Read Network Protocol Image Folder (Section 4.2.6). An example would be:

NetProtocolDir=D:\images\SeaNet2

5.2 [Settings]

This section is devoted to flags, numeric values, and character strings. If there is a default value, it will typically be shown on the same line as the parameter name.

5.2.1 BitmapType=2

Checks the native bitmap format box used in processing and reading images in MICRBatch to be Bilevel (0 - Section 4.2.10.26), Gray (1 - Section 4.2.10.27), or Color (2 - Section 4.2.10.28).

5.2.2 Traverse=No

Selects and deselects the Subdirectories (Section 4.2.10.5) checkbox in the Options dialog box. Make Traverse=Yes if you want to process subfolders in batchmode (AutoRun=Yes, AutoNetProt=No, AutoNSFRepair=No).

5.2.3 AutoNetProt=No

If set to Yes, enables Network Protocol image file processing (Section 4.2.8) in batchmode (AutoRun=Yes, AutoIRDVerify=No, AutoMICRVerify=No, and AutoNSFRepair=No). When AutoNetProt, AutoIRDVerify, AutoMICRVerify, and AutoNSFRepair are disabled and AutoRun=Yes, the the image file processing described in Section 4.2.2 will be active in batchmode.

5.2.4 AutoIRDVerify=No

Enables and disables IRD Verify processing (Section 4.2.5) in batchmode (AutoRun=Yes, AutoNetProt=No, AutoMICRVerify=No, and AutoNSFRepair=No). When AutoNetProt, AutoIRDVerify, AutoMICRVerify, and AutoNSFRepair are all disabled and AutoRun = Yes, the the image file processing described in Section 4.2.2 will be active in batchmode.

5.2.5 AutoMICRVerify=No

Enables and disables MICR Verify processing (See Section 4.2.6) in batchmode (AutoRun=Yes, AutoNetProt=No, AutoIRDVerify=No, and AutoNSFRepair=No). When AutoNetProt, AutoIRDVerify, AutoMICRVerify, and AutoNSFRepair are all disabled and AutoRun = Yes, the the image file processing described in Section 4.2.2 will be active in batchmode.

5.2.6 AutoNSFRepair=No

When set to Yes, enables NSF Image Repair processing (Section 4.2.7) in batchmode provided AutoRun=Yes, AutoNetProt=No, AutoIRDVerify=No, and AutoMICRVerify=No. When AutoNetProt, AutoIRDVerify, AutoMICRVerify, and AutoNSFRepair are all disabled and AutoRun = Yes, the the image file processing described in Section 4.2.2 will be active in batchmode.

5.2.7 Trace=No

Selects and deselects the Tracing (Section 4.8.6) checkbox in the Processing Options dialog.

5.2.8 NoBlanks=No

Selects and deselects the NoBlanks (Section 4.2.10.20) checkbox in the Options dialog.

5.2.9 Enable=Yes

Turns on and off MICR reading as described in Enable (Section 4.2.10.17).

5.2.10 ImagePrep=Yes

Selects and deselects the ImagePrep (Section 4.2.10.7) checkbox in the Options dialog.

5.2.11 Prescale=No

Selects and deselects the Prescale (Section 4.2.10.11) checkbox in the Options dialog.

5.2.12 BlackEdge=No

Selects and deselects the Black Edges (Section 4.2.10.8) checkbox in the Options dialog.

5.2.13 Rotation=0

Selects and deselects the Left Rotation (Section 4.2.10.9) and Right Rotation (Section 4.2.10.10) checkboxes in the Options dialog. A Rotation value of zero will deselect both boxes. A value of -1 will select Left Rotate while a value of +1 will select Right Rotate.

5.2.14 Repair=No

Selects and deselects the Repair (Section 4.2.10.18) checkbox in the Options dialog.

5.2.15 Read180=No

Selects and deselects the Read 180 (Section 4.2.10.19) checkbox in the Options dialog.

5.2.16 Translate=No

Selects and deselects the Custom Translate (Section 4.2.10.22) checkbox in the Options dialog. If Translate=Yes, then Codes (Section 5.2.17) will be read if present.

5.2.17 Codes=

If Translate=Yes, then up to 17 characters following the equal sign are read into a translation table within MICR Batch and are used to represent the results of MICR read operations. "b" characters are interpreted as a blank character (" " - ASCII 32) as they are processed. The default is

```
Codes=0123456789;<=b@g
```

5.2.18 NoRules=No

Selects and deselects the No Rules (Section 4.2.10.21) checkbox in the Options dialog.

5.2.19 Legacy=No

Checks and unchecks the Legacy menu option MICR->ASCII Output File Format Options->Legacy.

5.2.20 MinConfidence=80

The number following the = sign is used to set the Min Confidence (Section 4.2.10.22) value shown in the Options dialog.

5.2.21 Timeout=2.00

The number following the = sign is used to set the Timeout edit box (Section 4.2.10.12) value shown in the Options dialog.

5.2.22 BotCrop=0.00

The value of BotCrop is the number of inches that will be temporarily be removed from an image before MICR processing.

5.2.23 ForceRes=No

Selects and deselects the Force Res (Section 4.2.10.20) checkbox in the Options dialog.

5.2.24 Resolution=200

Fills the DPI (Section 4.2.10.21) editable box with the number following the equal sign.

5.2.25 Combo=No

Selects and deselects the Combo (Section 4.2.10.23) checkbox in the Options dialog.

5.2.26 ComboChars=12

The number following the equal sign sets value in the Good Chars. edit box (Section 4.2.10.24).

5.2.27 OCR=No

This flag switches recognition engines from MICR (OCR=No) to OCR-A (OCR=Yes).

5.2.28 AutoRun=No

The No setting causes MICR Batch to enter the normal mode of pointing and clicking on user interface options. AutoRun=Yes will cause MICR Batch to bring up a minimal user interface along with a dialog box and then start processing image files according to the contents of the AutoDir=PATHNAME.EXT line in the .INI file (Section 5.1.5), AutoNetProt=Yes/No (Sections 5.2.3), AutoIRDVerify=Yes/No (Section 5.2.4), AutoMICRVerify=Yes/No (Section 5.2.5), and AutoNSFRepair=Yes/No (Section 5.2.6). When AutoNetProt, AutoIRDVerify, AutoMICRVerify, and AutoNSFRepair are all disabled and AutoRun = Yes, the the image file processing described in Section 4.2.2 will be active in batchmode. File information and MICR codes are written to the process dialog and the text file specified by MICR= as the files are read. When all the files have been processed the dialog box is automatically closed and MICR Batch exits.

5.2.29 WFOMode=0

Sets the Write File Order in the Image File Output Options dialog (Section 4.2.9). The value zero corresponds to Disable Image Output

5.2.30 WFOFile=0

Sets the type of image file to be produced (TIFF or PDF) in the Image File Output Options dialog (Section 4.2.9). The value zero corresponds to TIFF.

5.2.31 WFOverwrite=Yes

Determines whether existing output image files of the same name will be overwritten in the Image File Output Options dialog (Section 4.2.9).

5.2.32 NetProtAutoDel=Yes

Determines whether input image subdirectories will be erased after processing in the Network Protocol Options dialog (Section 4.2.7).

5.2.33 NetProtJobname=No

Determines whether output image file subdirectories using the Jobname schema will be created as described in the Image File Output Options dialog (Section 4.2.10).

5.2.34 NetProtNoWait=No

Determines whether Network Protocol processing will immediately cease after all images in input directories are processed (Yes) or if the process will continue indefinitely until the Cancel button is pressed (No) as described in the Network Protocol Options dialog (Section 4.2.7).

5.2.35 PrintSelective=No

Determines the format of MOC files during IRD Verify and MICR Verify operations initiated from the user interface or command line. If enabled, "No Print" ("No Match" for MICR Verify) will be output to the MOC files whenever the MICR codes on the image do not compare with the input MIC file codes. If not enabled, "Print" ("Match" for MICR Verify) will be output to the MOC file whether there is a match or not. PrintSelective cannot be changed via the MICRBatch user interface and can only be modified by editing MICRBATCH.INI directly.

5.2.36 PrintAlways=No

This flag only becomes meaningful during IRD Verify and MICR Verify operations if PrintSelective=No and will only have an effect when disabled (PrintAlways=No). If this is the case, any mismatch

between the MICR codes on an image and the respective codes in the MIC file will cause the MOC file to be deleted at the end of the IRD Verify or MICR Verify operation. This parameter cannot be changed via the MICRBatch user interface and can only be modified by editing MICRBATCH.INI directly.

5.2.37 FilterEnable=No

Determines the state of the check box that controls the image processing operation to remove background pixel noise on the image prior to recognition (see 4.2.10.14).

5.2.38 FilterType=

This number control the operation of the Image Filter. If Type 200 is selected, then the image is tested first and if found to have a large quantity of pixel noise, is then filtered. Type 201 does the image filter on every image whether it needs it or not (see 4.2.10.15).

5.2.39 FilterThresh=

The number controls the strength of the Image Filter. A value of 8 or 9 does a good job at cleaning up pixel noise. As a comparison, the menu item Operations->Filter->Background Noise performs an image filter of type 201 with a threshold of 9 (see 4.2.10.16).

5.2.40 VerifyRoutingSort=Yes

This flag only becomes meaningful during IRD Verify and MICR Verify operations. If Yes, it forces a check on the route field of the MICR line and if the ABA Routing number is valid for a check (e.g. Feds, FRB district, Thrift in district, Electronic, or Travelers Check) then the image will be processed normally. If not valid, then the MICR line will be transferred directly to the output .MOC file. VerifyRoutingSort cannot be changed via the MICRBatch user interface and can only be modified by editing MICRBATCH.INI directly.

5.2.41 VerifyBestOK=No

This flag turns on/off the IRD/MICR Verify Retry checkbox in the Processing Options dialog box (4.2.10.29). This checkbox controls whether extra image processing is performed during IRD Verify or MICR Verify in order to match the OCR engine results with the input MICR line from the .MIC file.

Appendix A

AMPLIB Error Codes

- 1 Could not allocate PC memory space. A local or global allocation failed that was needed to complete the requested operation.
- 3 Specified work image does not exist. No image by the given name can be located.
- 4 Name already in use.
- 6 Not a primary image. An alias image may not be used in this instance.
- 10 AMPLIB cannot support any more tasks. The maximum number of callers has already been reached.
- 11 Internal error. A software error has been detected in the AMPLIB system. Please report this to AllMyPapers Technical Support.
- 12 Image bounds exceeded. The requested DX, DY, X, Y values exceed the values allowed for this image, as given by MaxHeight and MaxWidth, or the requested sub-image lies outside of the current image dimensions.
- 13 Image metrics error. The requested sub-image lies outside of the current image dimensions.
- 14 Internal error calling the Windows API.
- 15 Bad handle passed to function. The given handle is incorrect or inappropriate for the function in question.
- 16 User interrupt. A function terminated because of an improper call.
- 19 AMP function call error. There is an error in the arguments passed to the function in question.
- 20 No size information. The image has not yet been loaded with any image data and thus has no dimensions.
- 21 No cross-board operations are allowed. You may not perform an operation where the source and destination image operands reside on different co-processors.
- 22 Incompatible image sizes. When a destination image is fixed size, the result image must be less than or equal to the size of the destination.
- 23 Bad file name. The file path name given is incorrect or cannot be opened.
- 24 I/O error. The I/O system reported an error during execution of this function.
- 25 Cannot open trace file.
- 26 An invalid compression type was given.

- 27 An internal TIFF operation failed. In the processing of the IFD list or header, some critical operation failed.
- 28 Required TIFF tag missing. The TIFF 6.0 Specification defines those tags which at a minimum must be present in all baseline TIFF files. One of those tags is missing.
- 29 Image organization not supported. Only 1 bit per pixel bi-level images are supported.
- 30 This system is unable to run AMPLIB. Call AllMyPapers Technical Support.
- 31 Unable to open the requested TIFF file. It may not be a TIFF file, or has an invalid header.
- 32 The requested image within a multi-image TIFF file is not in the image file directory of that TIFF file.
- 33 An error occurred while reading the TIFF IFD.
- 34 The KDY value given for Group 3 2d compression is invalid.
- 35 Assertion logic error. Some internal software data or pointer consistency has occurred.
- 36 No region has been selected to support the requested operation.
- 37 The number passed to the function is out of range.
- 40 The resolution value given is not valid.
- 41 The page size value given is not valid.
- 42 The operation type is not valid.
- 43 The mode given is not valid.
- 46 The scale ratio given is not valid for this operation.
- 47 One of the arguments passed to the function is invalid.
- 48 AMPLIB is unable to create the requested file. This is most likely due to an invalid path or some I/O permission error.
- 49 The margins are not legal for the page size.
- 51 No file specification was given and is required for this operation.
- 52 No index string was found in the file path name string.
- 53 Huge objects not supported yet.
- 54 The clipboard is empty.
- 55 General error. No detail available.
- 56 Download failure.
- 60 General printer failure.
- 62 A bad tag was found in a TIFF file.
- 64 An invalid TIFF header was detected.
- 65 Scaling while printing requires buffered print mode.
- 66 Source and destination images must be different.
- 67 The function in question timed out.
- 68 A callback function returned an error.
- 69 Application lockout.

- 70 This version of AMPLIB is not correct for this application.
- 71 An invalid file type was specified.
- 72 The image IX value must be a multiple of 32 for this operation.
- 73 The margins specified are not legal for this operation.
- 74 The requested TIFF tag already exists in the IFD list.
- 75 An invalid Optika header was detected.
- 76 The requested file format is unsupported in this mode.
- 83 No ensigns defined or allowed.
- 84 Bad MODCA RECID parameter
- 85 IBM MMR format not supported
- 86 Unsupported compression type
- 87 Decompression error
- 88 Unsupported MODCA or IOCA file format
- 89 Compression error
- 90 Thread already attached to DLL
- 91 Disk is full
- 92 File Access error
- 93 Too many files open
- 94 File exists
- 95 Bad file handle
- 96 No such file or directory
- 98 Thread not attached
- 101 No object data in image block
- 102 Can't find a needed DLL
- 103 Can't find entry point in DLL
- 104 License file fails security check
- 105 License check detected date rollback
- 106 License expired
- 107 License required for this feature
- 108 Image degenerated to dx=0 or dy=0
- 113 Software implementation only
- 114 Not an AmpLib PDF file
- 115 Error parsing PDF file
- 116 Missing files/files not loaded
- 117 License computer id error
- 118 Problem opening license file
- 119 Problem opening TWAIN device
- 120 Problem reading paper sensor on TWAIN device

- 121** Scanner Timeout
- 122** Not supported scanner
- 123** No image acquired while scanning
- 124** Failure during image warp
- 125** Failure during Data Matrix read
- 126** Invalid JBIG header
- 127** JBIG decompression problem
- 128** Failure while rotating image
- 129** CLICK count exhausted
- 130** No image content (image mostly all black or white)

Sample MICR Verify .MIC Input

```
"d:\All My Papers\Test\02175.TIF", "C123*00011266CA21127*515A870*219444*0CB0004888956B"  
"d:\All My Papers\Test\02470.TIF", "*****1*A8990038850C0989B0000030071B"
```

The MIC file contains the file name containing the check image and the contents of the MICR line from the check scanner. In this example, the default translation table is used. It has the following correlation:

*	unknown character
A	Routing code
B	Amount code
C	On us code
D	Dash code

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