

Instructions for LasApps Software

The Concept:

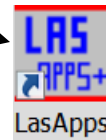
- LasApps is a petrophysical software package with its focus on pre-interpretation tasks.
- This software uses a batch process so that hundreds of files can be processed at one time.
- The original files are never modified except if the results are saved in the same directory as the original ones. For reasons of safety ALWAYS SAVE RESULTING FILES TO A NEW DIRECTORY.
- In the batch process, any file that encounters errors will be skipped and a copy of the original file will be put into the “C:\LasApps\FaultyFile” directory. Error descriptions are documented in the file “C:\LasApps\LasApps.log”. This file can also be viewed from the menu item “View/Events Log”.
- At the end of each process, a list of the successfully completed files is posted in the menu item “View/List of Active Files”. These files become the input to the next selected process or, if no further processes are required, the results can be saved. A list of the files that failed the process can be found in the menu item “View/List of Faulty Files”.

Example #1: Repairing LAS files for common errors and unwrapping any LAS files where the data section is in 'wrapped' format.

This example will take two LAS files, run it through a standard process to fix commonly occurring errors, and then unwarp any LAS files that have data sections in wrapped mode.

Step#1:

Open the LasApps software by selecting the icon



or by selecting the start button/“all programs”, and selecting the program “LasApps”. The software, when started, will look like Figure #1.

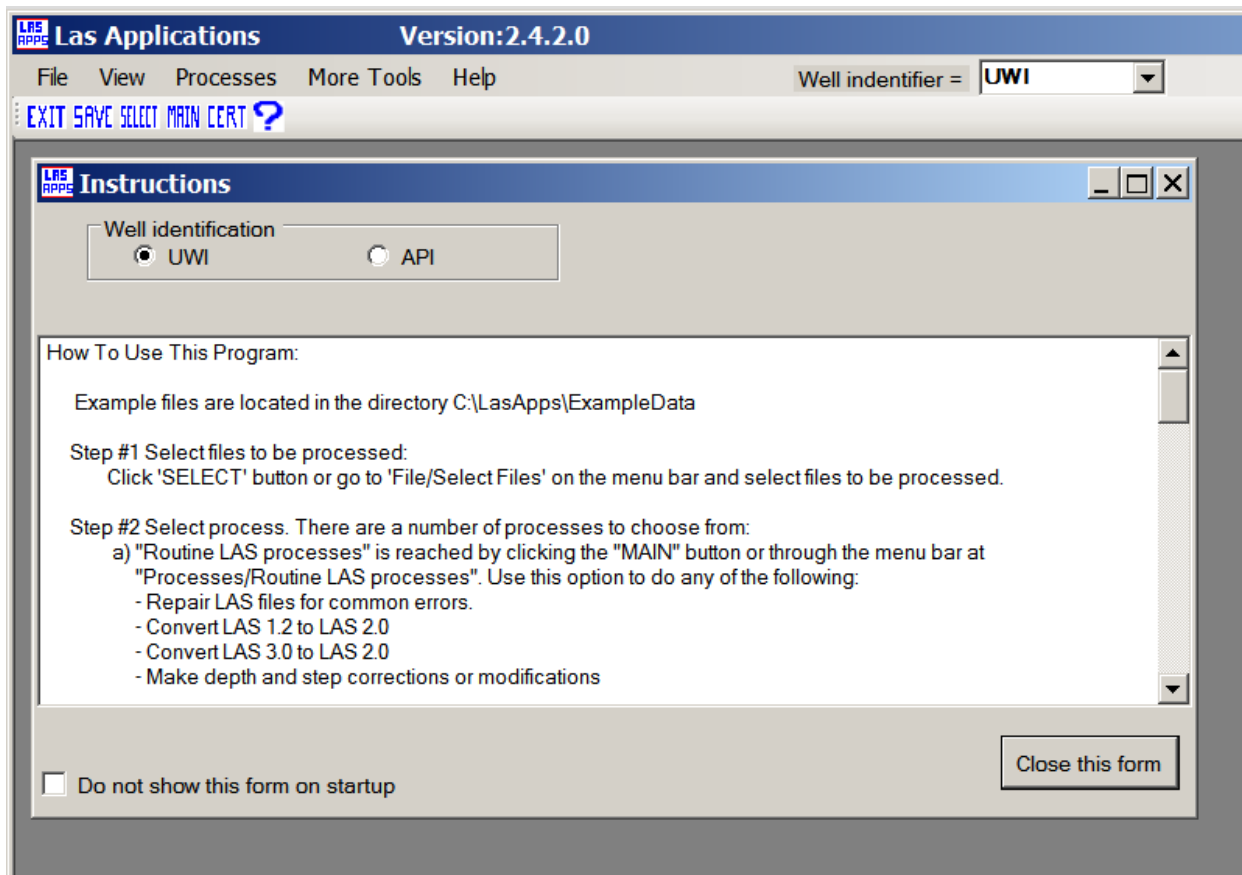


Figure #1: Screen shot of LasApps at startup.

Step#2:

The first item that needs to be addressed is the 'well identifier'. A number of the software routines require knowledge about the well identifier being used. Canada uses a unique well identifier ("UWI") and the United States uses an 'API' number as their well identifier. Areas outside Canada and the United States should select 'UWI'.

At the top of the main form or at the top of the 'Instructions' form select the appropriate well identifier for your area. The "Instructions" form provides some basic instructions. If it is not needed, it can be closed with the button located in the bottom right corner of the form.

Step#3:

Input files are selected with the "Select" button (top left side of LasApps form) or by selecting the menu item "File/Select Files". The form shown in Figure #2 will appear. Select the desired files to be processed. In this example we chose two files from the "C:\LasApps\ExampleData\Routine" directory. Click the continue button (bottom right of form) to proceed. The form will then close in preparation for the next step.

To view a list of the files selected for processing, go to the menu item "View/List of Active Files" (see Figure #3).

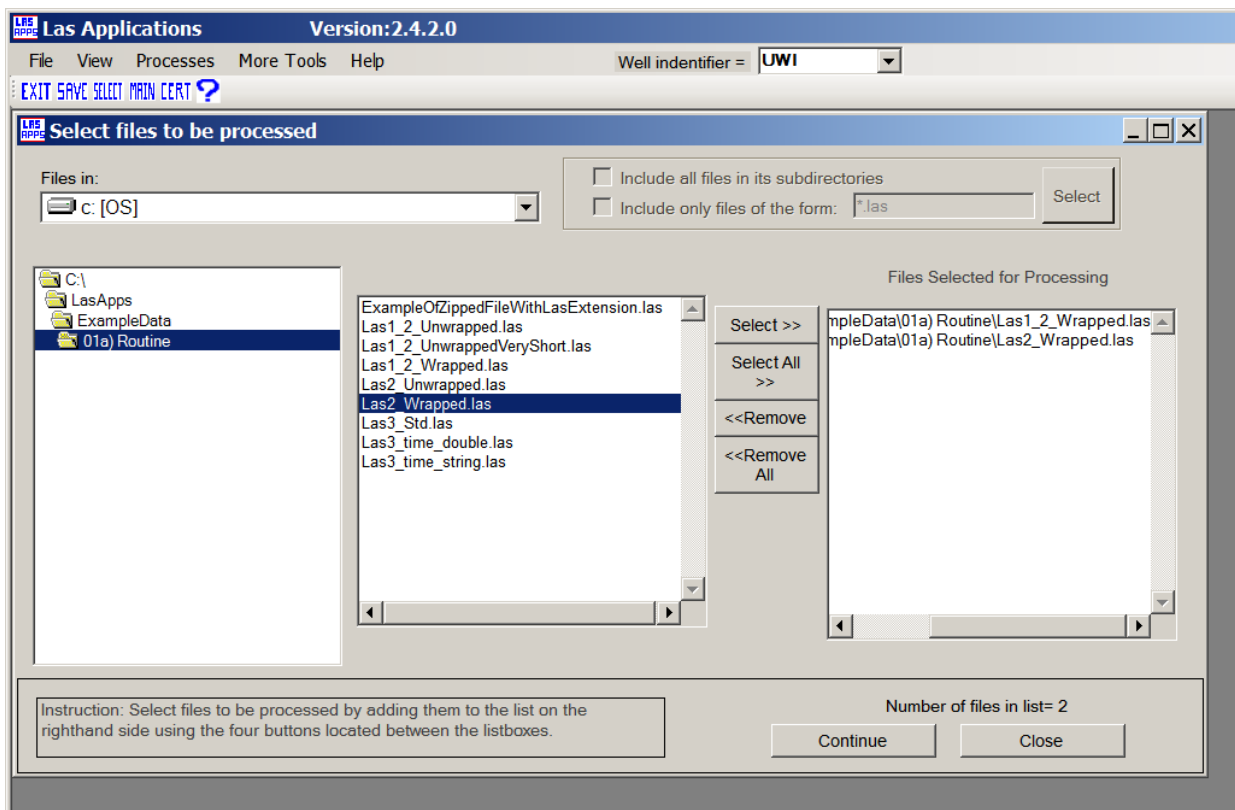


Figure #2: The form used to select files to be processed. In this example we chose 'Las1_2_Wrapped.las' and 'Las2_Wrapped.las' for processing.

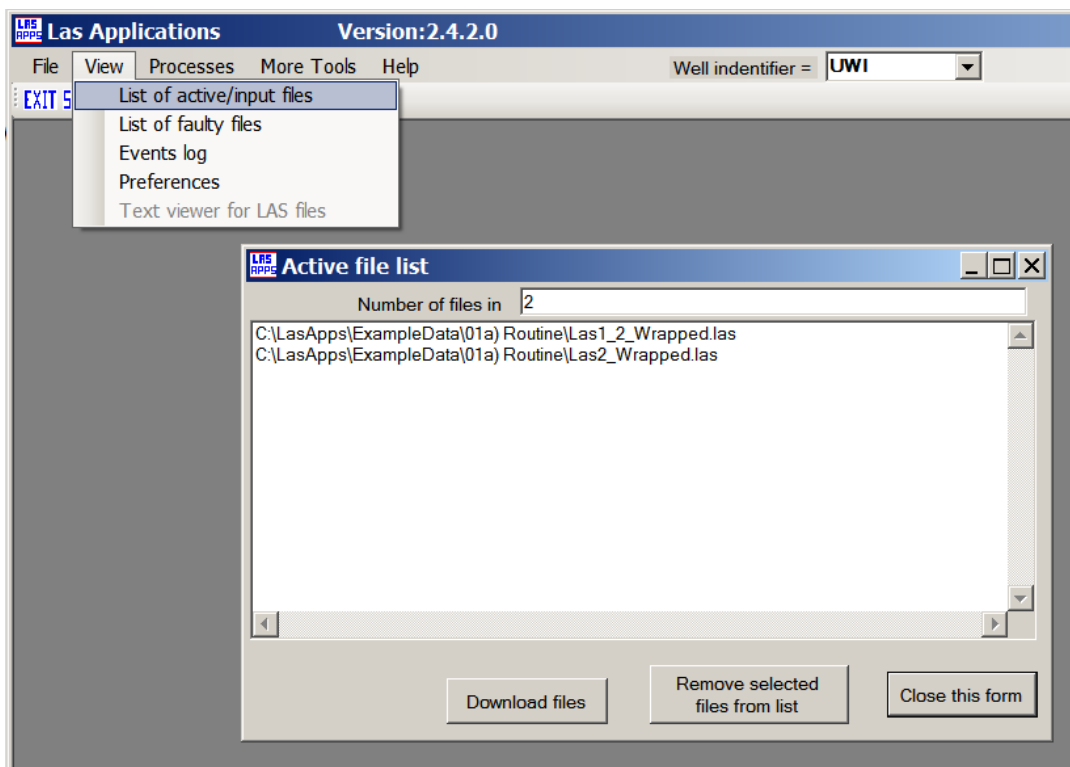


Figure #3: A display of the 'Active file list'. These are the files that have been selected for processing.

Step #4:

Select the menu item "Processes/Routine LAS processes". This will open up a new form (Figure #4). A number of process options are displayed, any number of which can be selected by entering a check mark in the box at the left side of the form.

- The "Repair LAS/txt files" process corrects LAS files for a number of commonly encountered errors.
- The "Depth and step related items" provides the ability to fix start, stop, step errors as well as the ability to change the step interval.
- The "Set depth direction" process will set the data of the input files in either ascending or descending order.
- The "Unwrap" and "Wrap" processes will either wrap or unwrap the data sections of LAS files.
- The "Convert depths" process will convert the depth to either feet or metres.

In this example we have selected:

- 'Repair LAS/txt files'
- 'Unwrap LAS 2.0 and LAS 1.2 files'

Click on the 'Continue' button at the bottom right to begin the processing. A small form will appear that monitors the progress of the software (Figure #5). When the processing is complete, this form will say "done".

The screenshot shows the 'Routine LAS processes' dialog box within the 'Las Applications' software interface. The main window title is 'Las Applications Version:2.4.2.0'. The 'Processes' menu is open, showing 'Routine LAS processes' and 'Certify (Check LAS files for errors)'. The 'Well identifier' is set to 'UWI'. The dialog box contains the following options:

- Repair LAS/txt files
 - Remove blank lines and non-printable chars (only for files with extension 'las' and 'txt')
 - Convert Unix line endings to PC/Windows endings
 - Convert LAS 1.2 to LAS 2.0
 - Convert LAS 3.0 to LAS 2.0 (Note: Non-numerical information in the log data section will be lost.)
- Depth and step related items
 - Check start depth and step on all files and fix as needed
 - Set depth step on all LAS files to:
 - Automatic filter (recommended) Custom filter of steps (must be odd number)
- Set depth direction
 - Descending, positive step, top to bottom
 - Ascending, negative step, bottom to top
- Unwrap LAS 2.0 and LAS 1.2 files
- Wrap LAS 2.0 and LAS 1.2 files (Note: Files with less than 5 curves will not be wrapped)
- Convert depths
 - feet to metres
 - metres to feet
- Delete unnecessary temp files in 'C:\LasApps\Temp'

Buttons for 'Continue' and 'Close' are located at the bottom right of the dialog.

Figure #4: Form used for routine LAS processes.

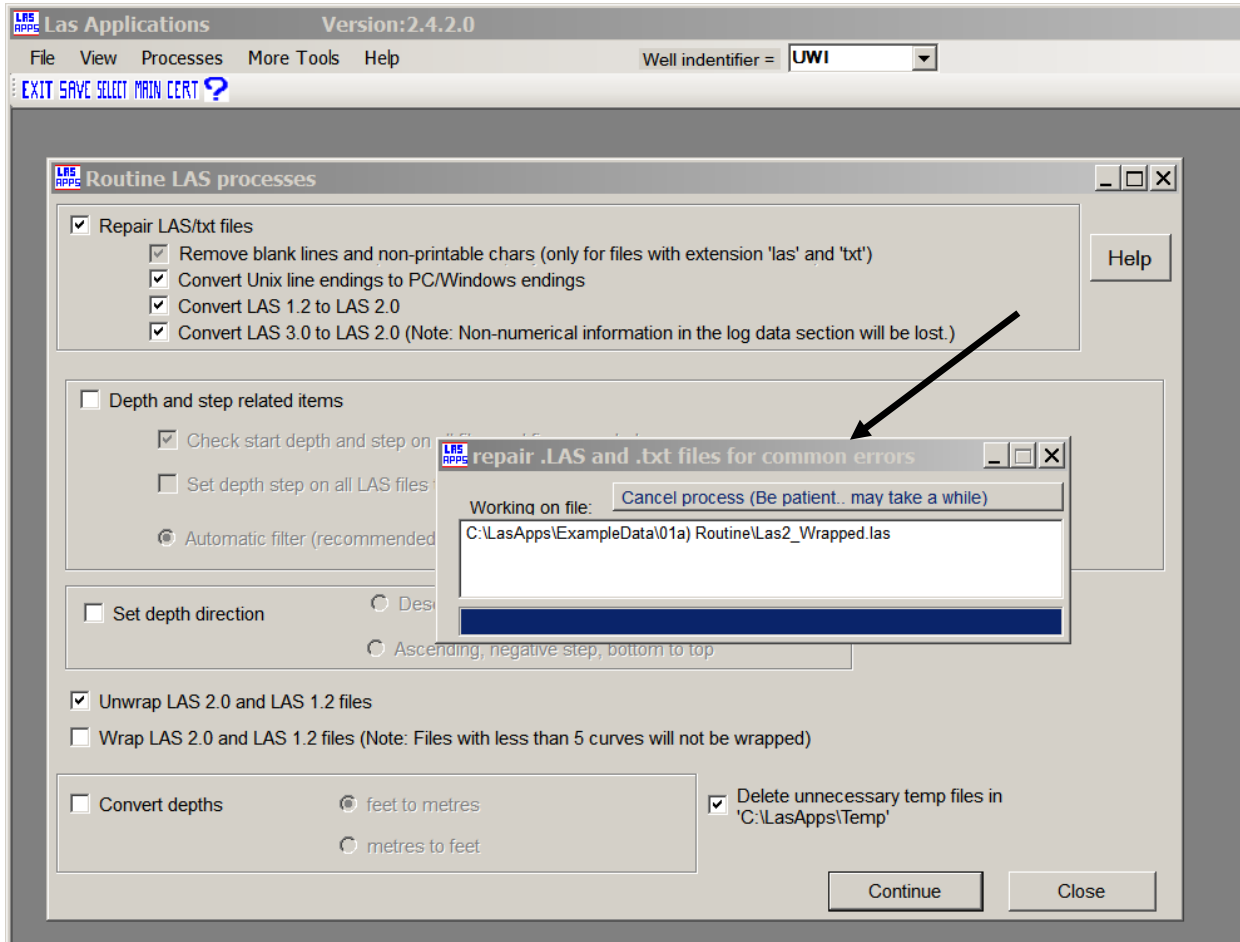


Figure #5: Progress monitor (arrow) shown on top of 'Routine LAS processes' form.

Step #6:

The processing is now done (click the 'ok' button in the small form that says 'done').

- The 'Routine LAS processes' form can now be closed (button located at the bottom right of the form).
- The menu item 'View/List of active files' will list the files that were successfully completed.
- The menu item 'View/List of faulty files' will list the files that could not be processed.
- The menu item 'View/Events log' provides a detailed list of the steps taken and errors encountered during processing.

Step #7:

If all went as planned, the results should comply with the LAS standard. We can verify this by running the 'Certify' program located at the menu item 'Processes/Certify (Check LAS files for errors)' as shown in figure #6. A left mouse click on the 'continue' button will begin the certify process. When done, and if no errors were encountered a form will indicate all went well (Figure # 7). If errors were encountered, a form will indicate "...Errors were encountered ..." (Figure # 8). These forms can be closed.

The remaining form should be the 'Events log' (Figure # 9) which describes the processes followed and errors encountered. In the event that this form was closed, it is located under the menu item 'View/Events log'.

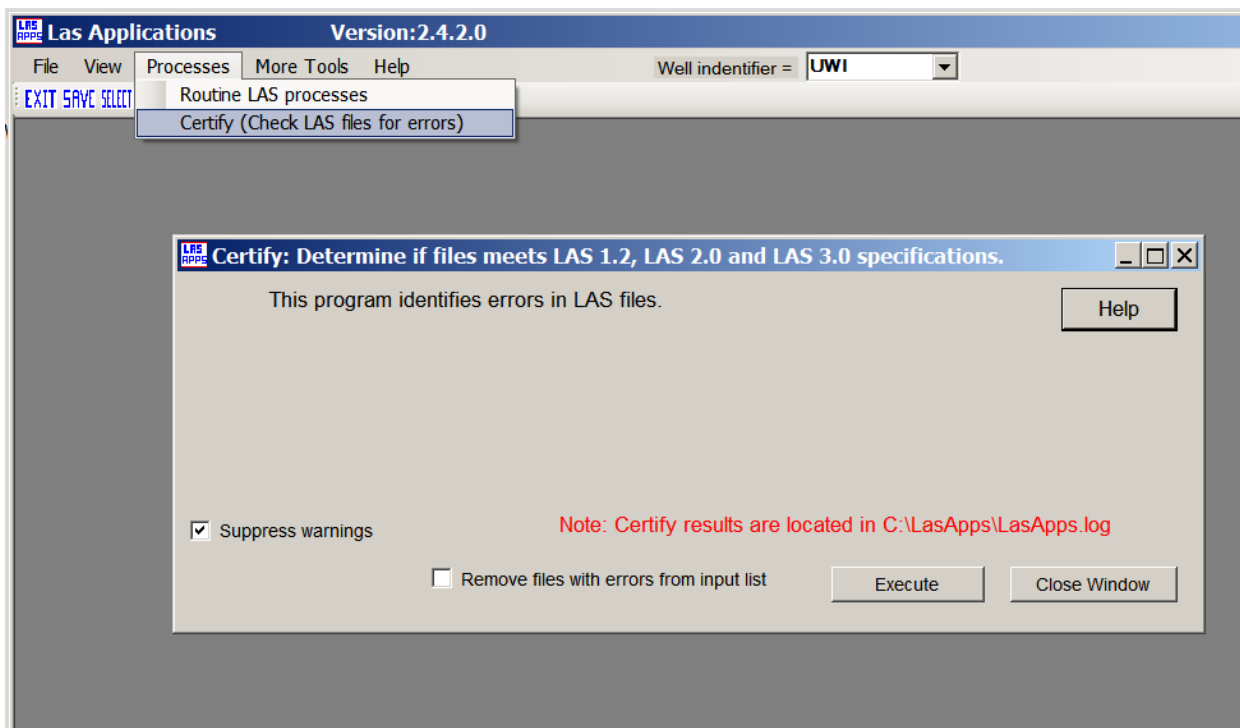


Figure #6: The 'Certify' form used to determine if the input files meet the LAS standards.

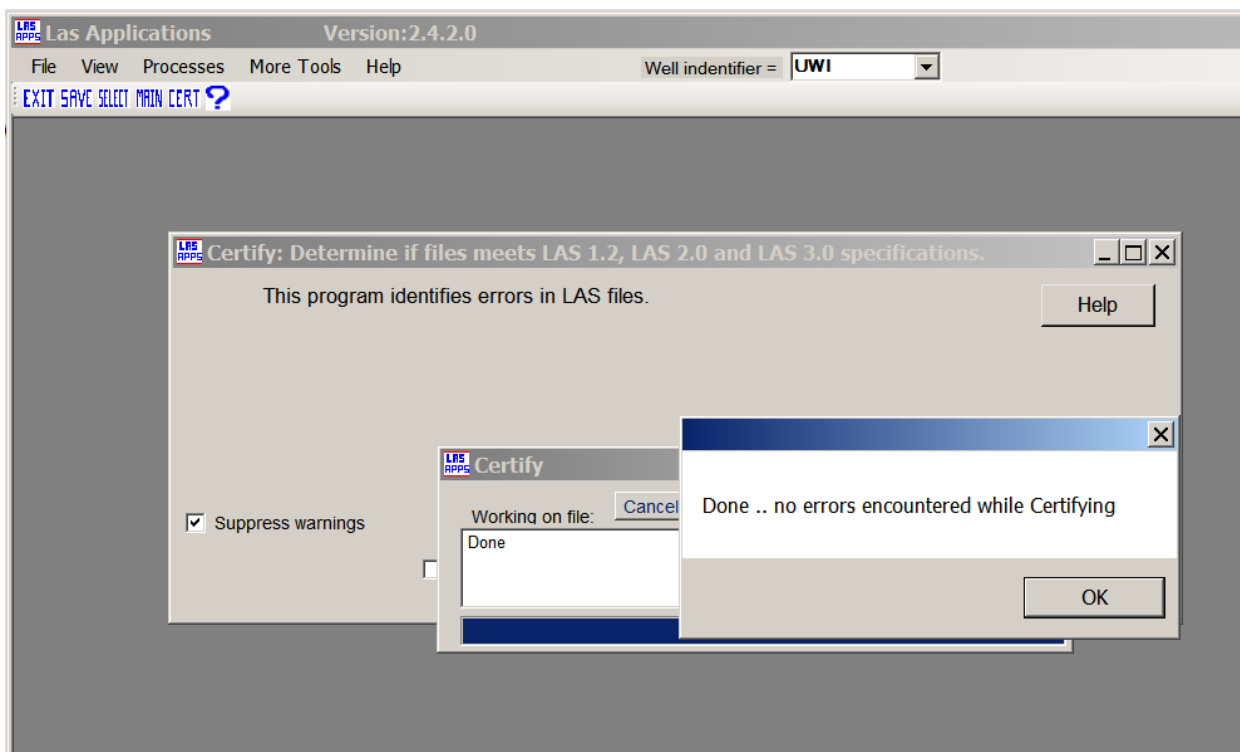


Figure #7: The results that will display if the 'Certify' program found no errors.

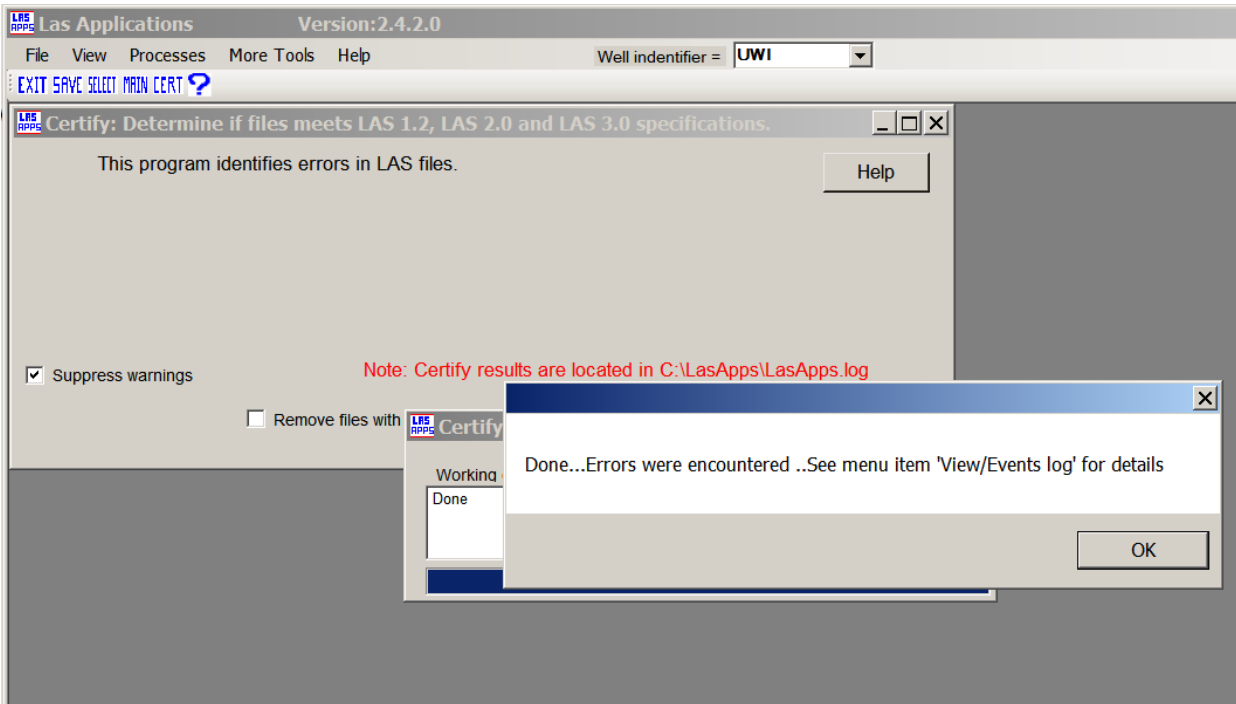


Figure #8: The display if errors were found during the 'Certify' process.

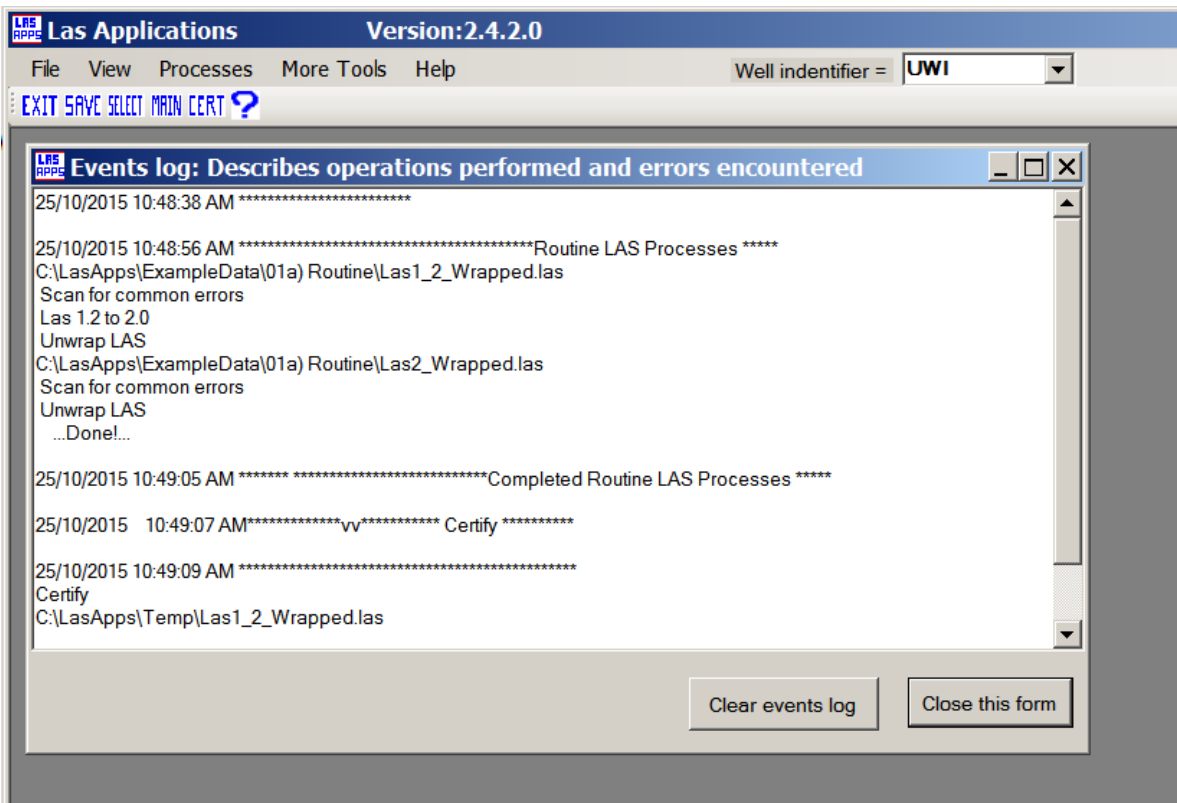


Figure #9: The 'Events log' is a processing record (includes error descriptions).

Step#8:

We can now save the results by selecting the menu item “File/Save As” (Figure #9).

IMPORTANT!

The resulting files names are the same as the original files, therefore ALWAYS create a new directory to avoid overwriting issues.

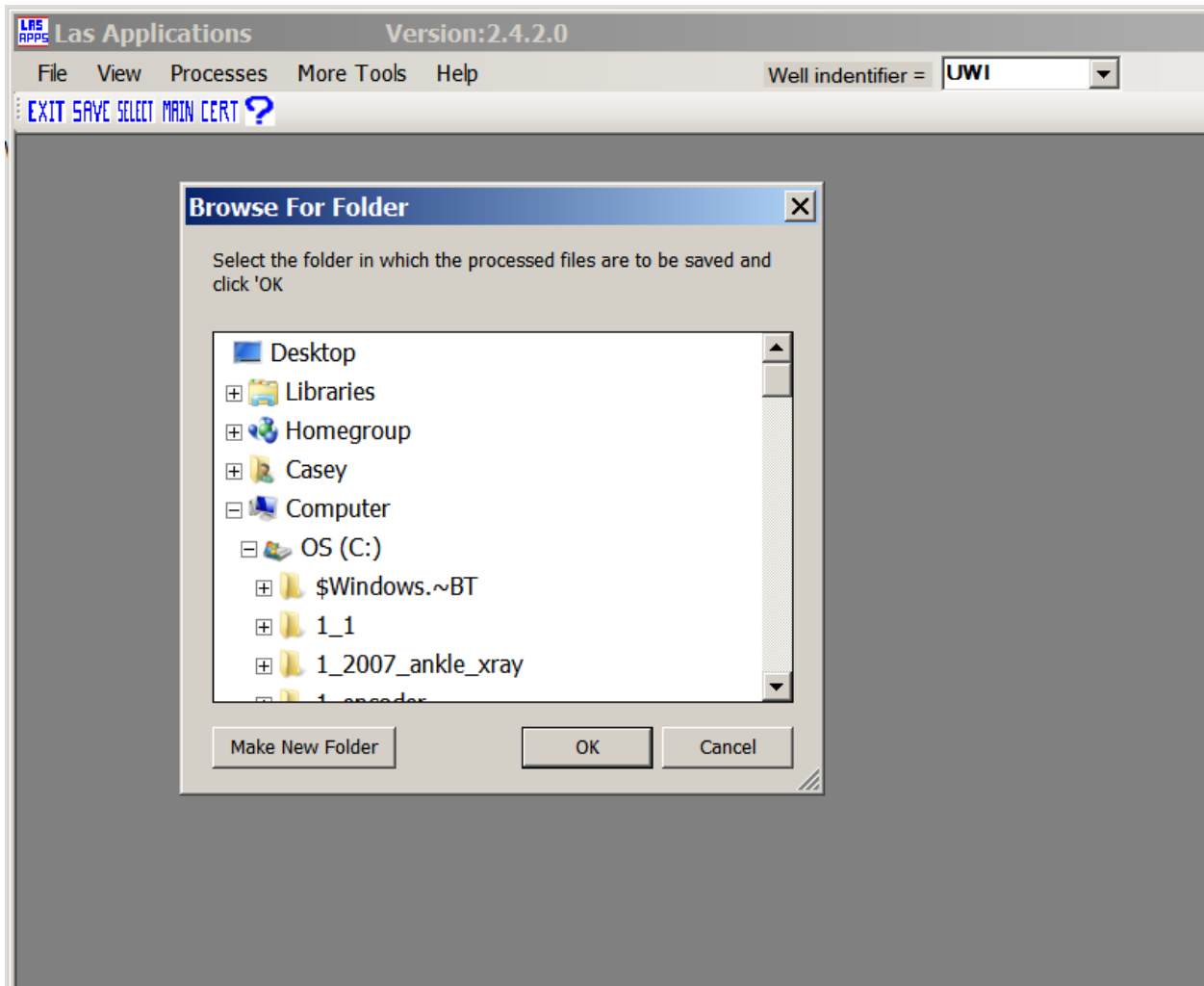


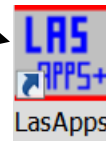
Figure #10: The “Save” form. ALWAYS save the resulting files to a new directory to avoid overwriting issues.

Example #2: Modifying the LAS header:

This example will demonstrate how to extract an API well number from the file name and copy it to the 'API' line of the LAS file. This is similar to extracting a Canadian UWI number from a file name and copying it to the UWI line.

Step#1:

Open the LasApps software by selecting the icon



or by selecting the start button/"all programs", and selecting the program "LasApps". The software, when started, will look like Figure #11.

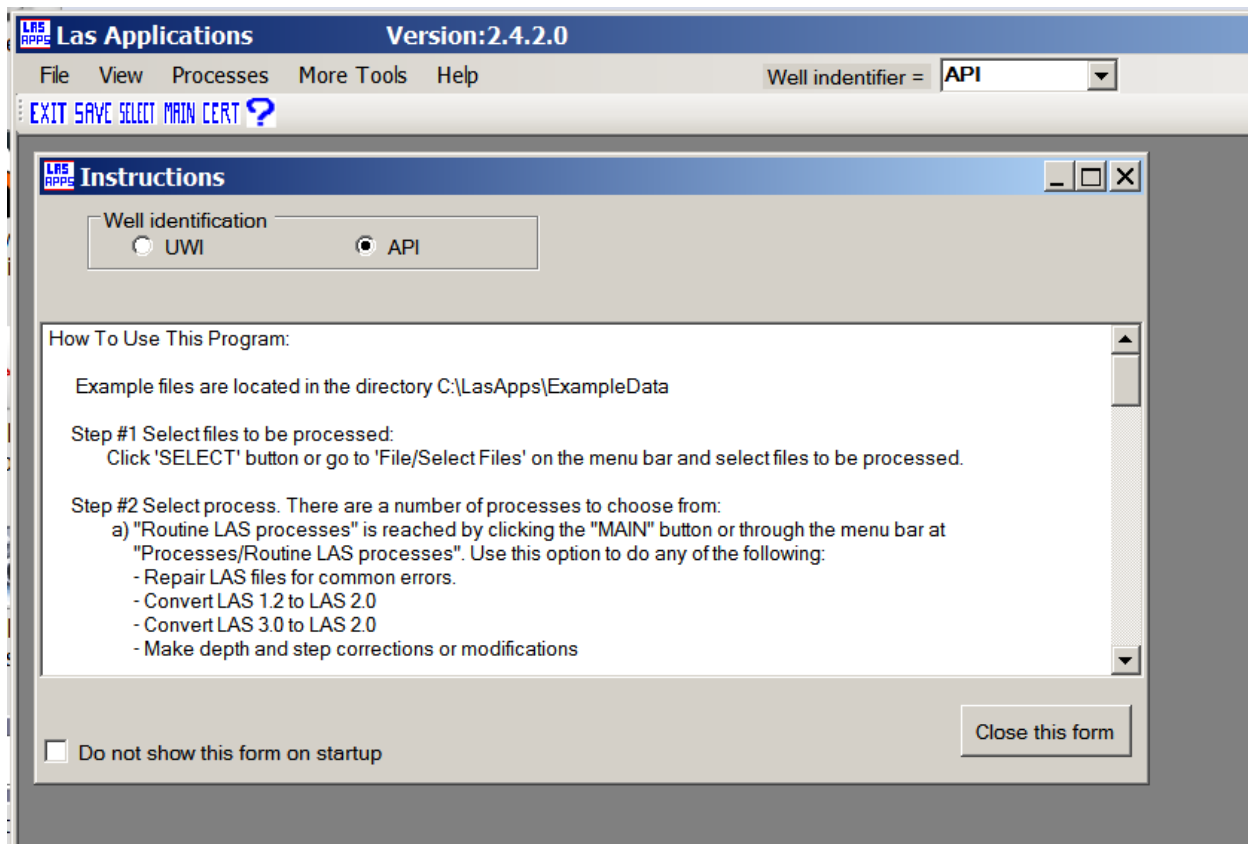


Figure #11: Screen seen when LasApps is opened.

Step#2:

The first item that needs to be addressed is the 'well identifier'. A number of the software routines require knowledge about the well identifier being used. Canada uses a unique well identifier ("UWI") and the United States uses an 'API' number as their well identifier. Areas outside Canada and the United States should select 'UWI'.

At the top of the main form or at the top of the 'Instructions' form select the appropriate well identifier for your area. In this example we selected "API".

The "Instructions" form provides some basic instructions. If it is not needed, it can be closed with the button located in the bottom right corner of the form.

Step#3:

Input files are selected with the button marked "Select" (top left side of LasApps form) or by selecting the menu item "File/Select Files". The form shown in Figure #12 will appear. For this example, we selected the file 'C:\LasApps\ExampleData\09h)CopyApi_fromFileName_toHeader\0517120960000_FinalData.las'. Select the file in that directory and then select the "continue" button (bottom right of form). The form will then disappear.

To view a list of the files selected for processing, go to the menu item "View/List of Active Files" (see Figure #13).

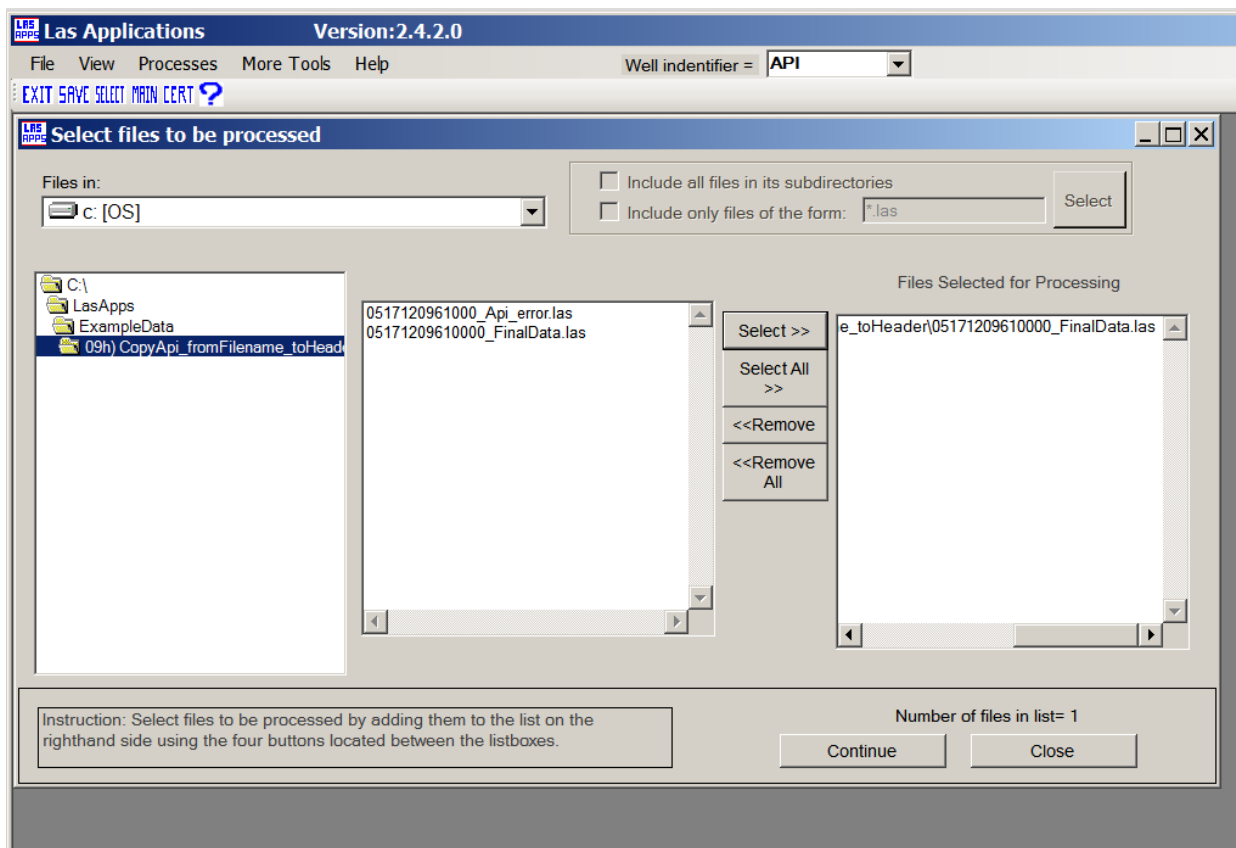


Figure #12: The form used to select file to be processed.

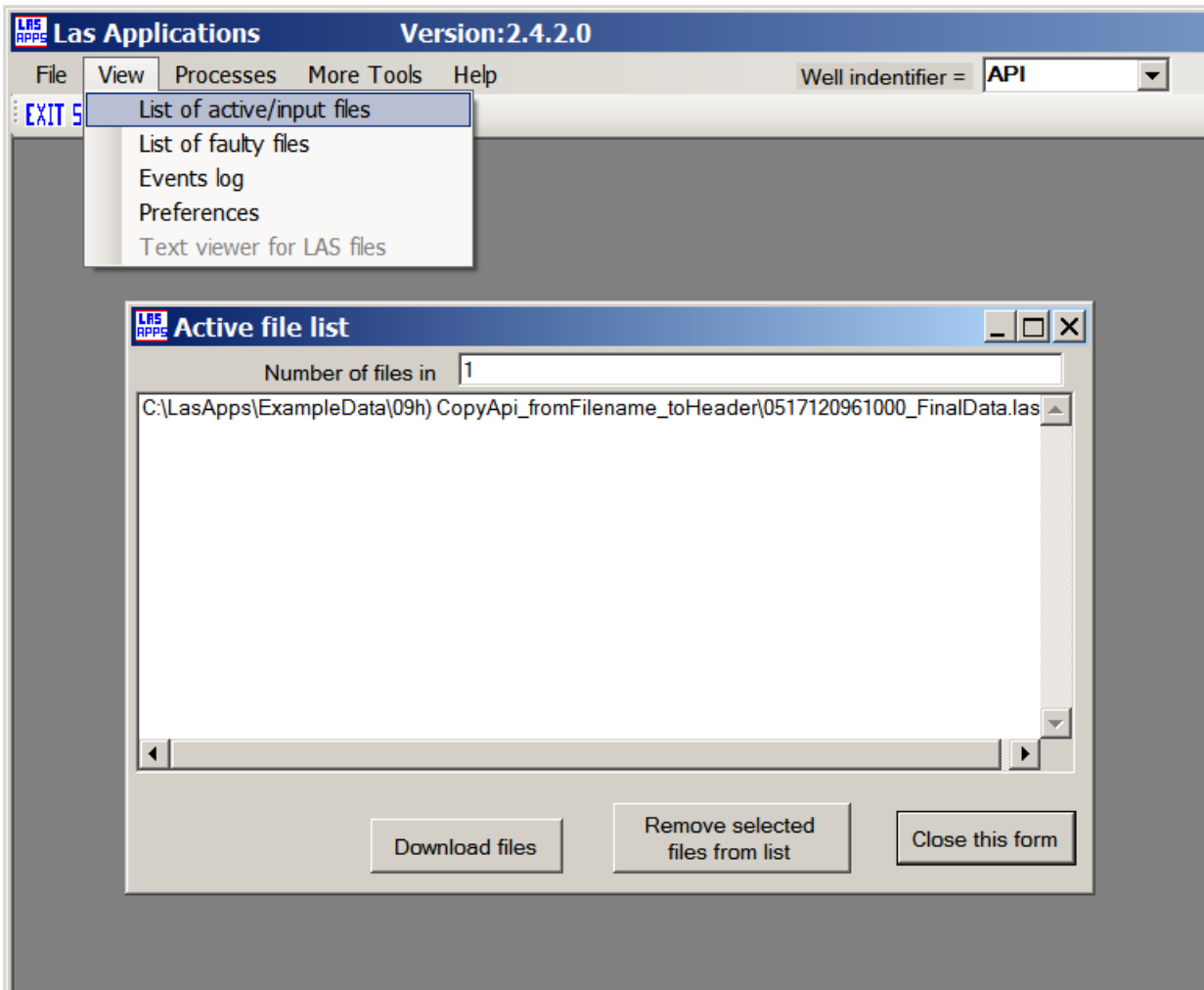


Figure #13: List of active files. This is the file that will be processed.

Step#4:

Select the menu item “More Tools/Other/Modify LAS Header” as shown in Fig #14 and a form will appear as shown in Fig #15. This form will be used to modify the LAS header.

The form has three options:

- 1) Copy a value in the LAS heading to another line
- 2) Find and replace text in the LAS heading
- 3) Get API/UWI from file name and add to API/UWI line in LAS header. The well identifier selected to the right of the software menu will determine if the API or UWI option is enabled.

For this example, we will select the 'Get API number from filename and put in LAS file' and then click on the 'Continue' button. The “Done!” message box will appear when the process is done. The API well number will now exist on the API line of the LAS header.

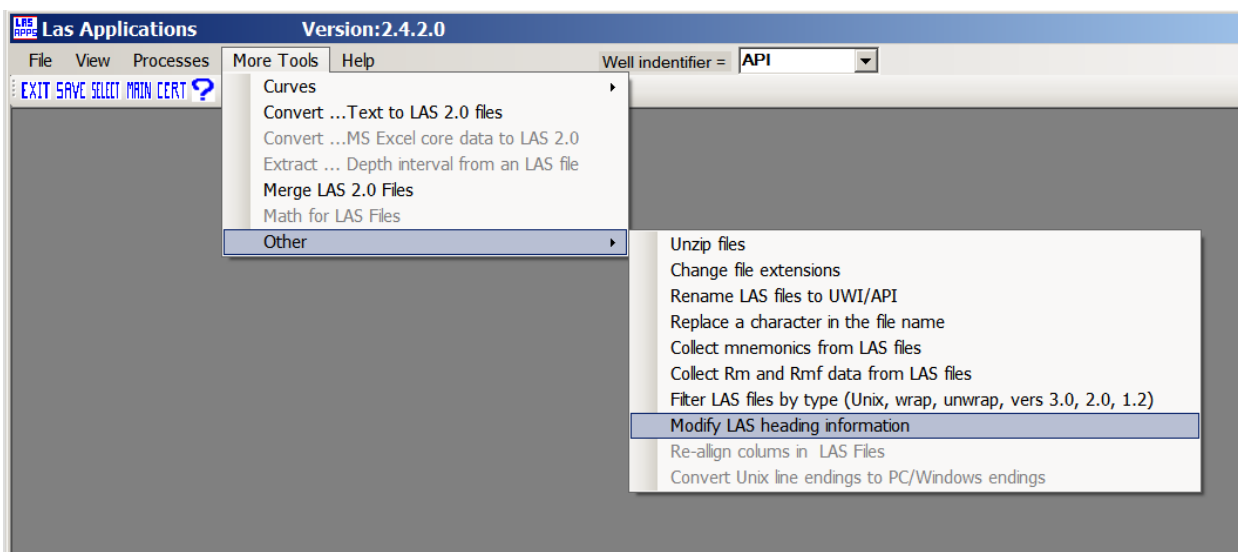


Figure #14: Select menu item 'More Tools/Modify LAS heading info'

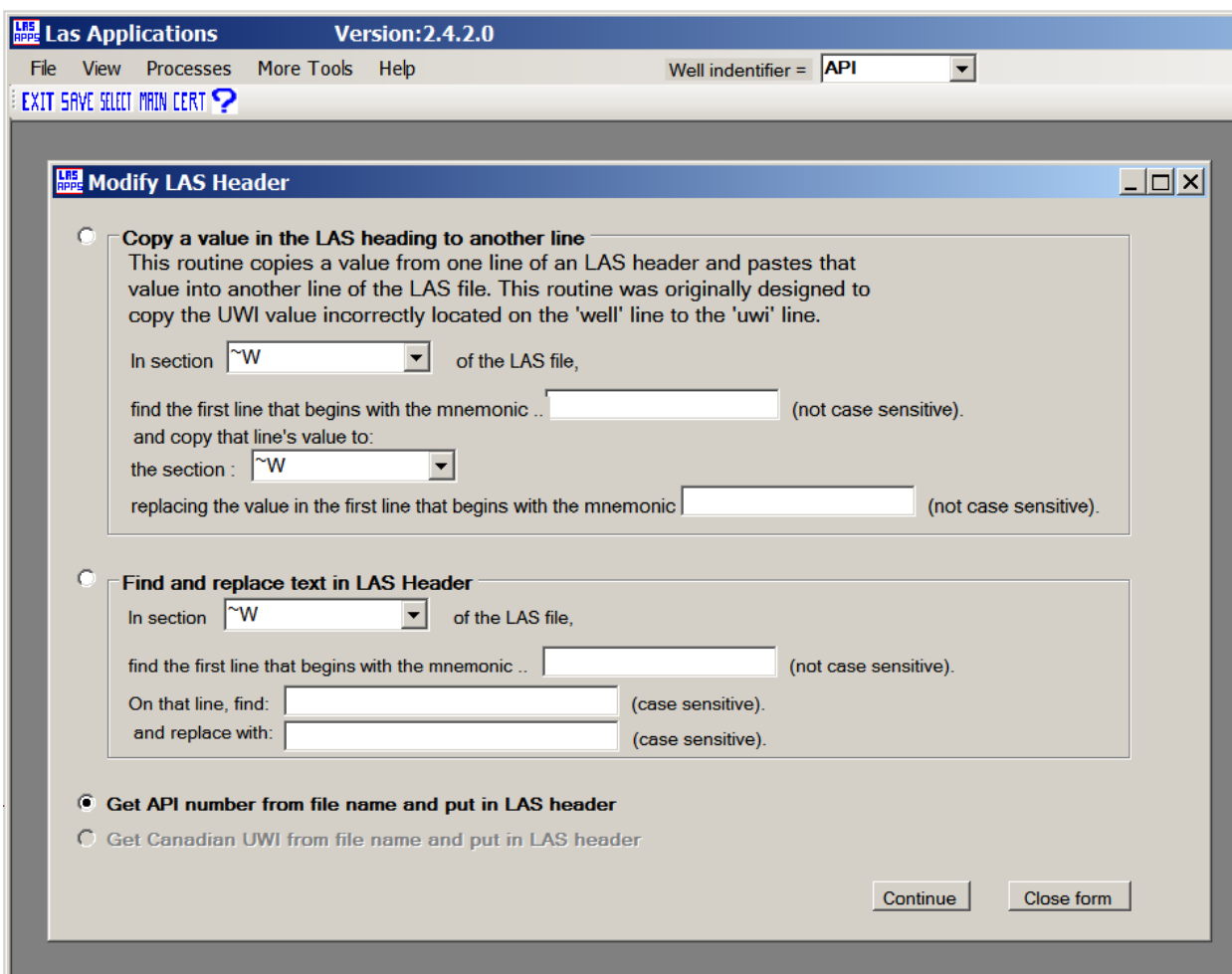


Figure #15: Form to modify LAS heading info has three options.

Step #5:

If for some reason one wishes to add an API number to the “UWI” line, this can now be done by selecting “Copy a value in the LAS header to another line” (Figure #16) and clicking on the "Continue' button.

Las Applications Version:2.4.2.0
File View Processes More Tools Help Well identifier = API

EXIT SAVE SELECT MAIN CERT ?

Modify LAS Header

Copy a value in the LAS heading to another line
This routine copies a value from one line of an LAS header and pastes that value into another line of the LAS file. This routine was originally designed to copy the UWI value incorrectly located on the 'well' line to the 'uwi' line.

In section of the LAS file,
find the first line that begins with the mnemonic .. (not case sensitive).
and copy that line's value to:
the section :
replacing the value in the first line that begins with the mnemonic: (not case sensitive).

Find and replace text in LAS Header
In section of the LAS file,
find the first line that begins with the mnemonic ..
On that line, find: (case sensitive).
and replace with: (case sensitive).

Get API number from file name and put in LAS header
 Get Canadian UWI from file name and put in LAS header

Continue Close form

Figure #16: Copying a value from the API line to the UWI line

Step#6:

The form “Modify LAS Header” can now be closed (bottom right corner) and we can save the results by selecting the menu item “File/Save As” (Figure #17).

IMPORTANT!

The resulting files names are the same as the original files, therefore ALWAYS create a new directory to avoid overwriting the original files.

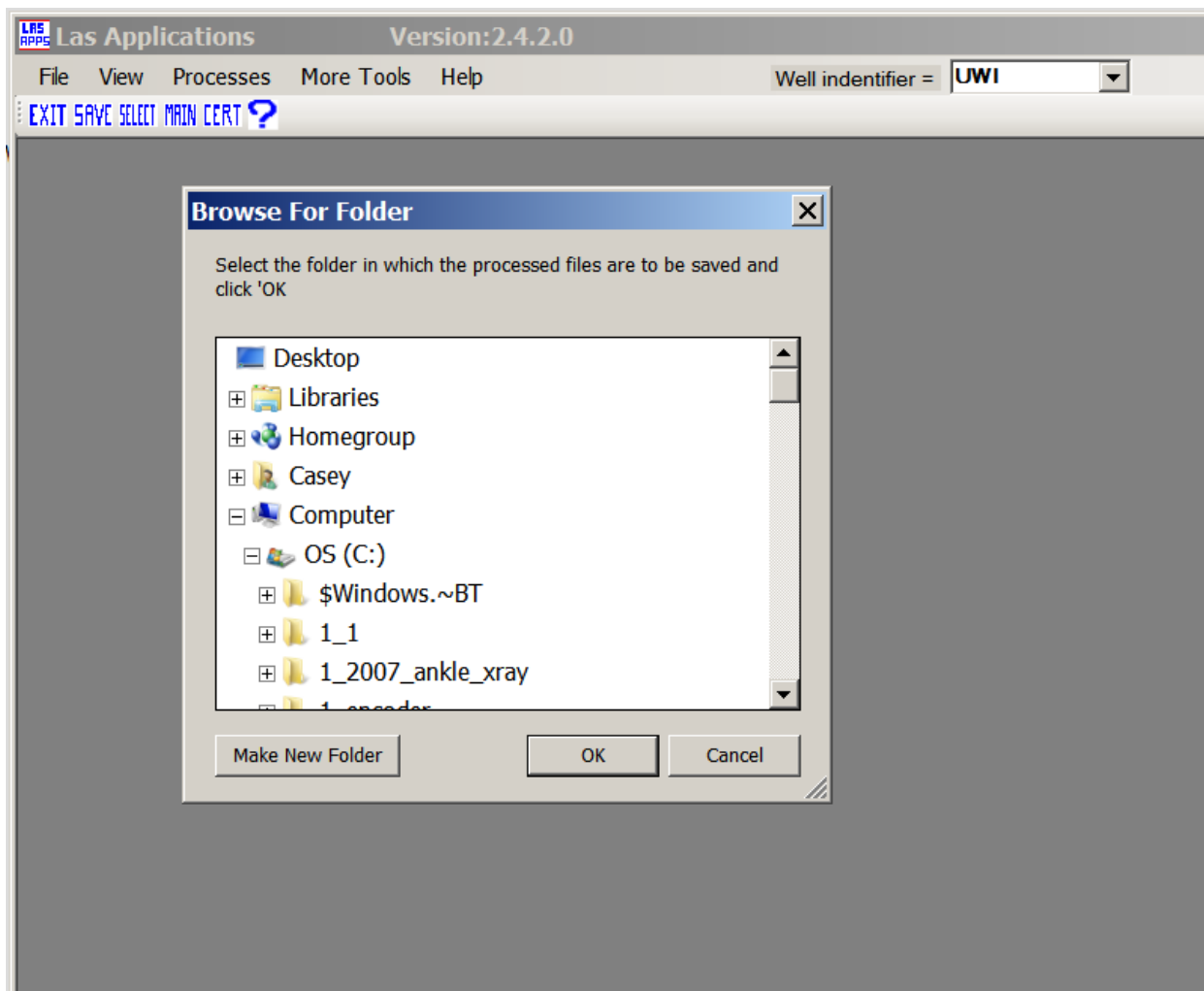


Figure #17: The “Save” form. ALWAYS save the resulting files to a new directory to avoid overwriting issues.