DIRIGO SOFTWARE, LLC

ACCIDENT RECONSTRUCTION PROFESSIONAL

MANUAL

December 2023 Edition

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16.11. <u>Force Majeure</u>. Each party's obligation (other than Licensee's obligation to pay Fees when due) shall be suspended during any period that the party is rendered incapable of performing by virtue of any criminal acts of third parties, war, viruses, acts of public enemies, severe weather conditions, utility failures, strikes or other labor disturbances, fires, floods, other natural disasters, other acts of God, unforeseeable acts of employees, telecommunication or interruption of Internet service, or any causes of like or different kind beyond any reasonable control of the party.

16.12. <u>Waiver</u>. The failure of either party to insist in any instance upon any payment or performance when due by the other party, shall not relieve such other party of any of its obligations with respect to such performance, or constitute a waiver of such party's right to insist upon the full and timely performance in the future of any of the other party's obligations under this Agreement.

16.13. <u>Counterparts</u>. This Agreement may be executed in counterparts, each of which will be deemed an original. This Agreement is intended for the sole and exclusive benefit of Dirigo Software and the Licensee and is not intended to benefit any third party.

ACTIVATION NOTES

While replacing a hard drive or upgrading your version of Windows may cause AR Pro to become deactivated, you can quickly become re-activated by following the Activation procedure listed elsewhere in this document. The numbers you will be emailing us will tell us that the hard drive is different, or the Operating System is different, but it will also tell us that the rest of the computer is the same. So, we will quickly issue you a new Activation Code to get your program back up and running without fear of losing a code.

Keep in mind, though, that you **do** need to deactivate AR Pro with us (using the procedure outlined elsewhere in this document) if any of the following occurs or is going to occur:

- You need/want to move AR Pro onto a different computer.

- You want/need to replace or upgrade more than one or two components in your computer, such as the processor, mother board, mother board BIOS, hard drive (whether replacing or reformatting), the CPU, or your version of Windows.

Failure to deactivate in either of these cases may result in a lost license and you may have to purchase the program again to activate it again. Also, UNINSTALLING AR PRO WILL <u>NOT</u> PROTECT YOUR ACTIVATION! **YOU MUST DEACTIVATE BEFORE UNINSTALLING AR PRO**.

RIGHT MOUSE BUTTON

Use your RIGHT mouse button all over the place. In different windows (and sometimes even over different controls and/or displays in a window), it will accomplish different things.

OPTIONS WINDOW

Become thoroughly familiar with the Options available to you in the Options window, and what they will do for you.

THE HELP FILE

USE THE HELP FILE!   It contains a lot of answers to your questions!

COPYING REPORTS TO THE CLIPBOARD

Only 1 Report may exist at a time in the clipboard. If you copy one Report and then immediately copy another Report right after it, you will overwrite the first Report (and lose the opportunity to paste the first Report into your word processing document). This is not a limitation of AR Pro, but of the Windows clipboard itself. Remember to paste your Reports into your document every time you copy them to the clipboard, and before copying another Report.

PROJECT MANAGER NOTES

The Project Manager in this program is designed to be a "vault" for the storage of all the formulas you run under a project. It contains some simple information about the accident involved for the Reconstruction.

GENERAL TIPS

We HIGHLY recommend running a screen resolution of at least 1920 x 1080 (HD). This makes running AR Pro much easier, as you will have more screen real estate to be able to see more at once.

SYSTEM REQUIREMENTS

64-bit version of Microsoft Windows 11, 10, 8/8.1, or a Mac running Windows 8 or greater, 2 GB of RAM (8GB or more is recommended), video monitor and card capable of at least 800 x 600 resolution (1920 x 1080 (HD) or better is recommended), approx. 123 MB of Hard Drive space, a Windows compatible mouse is recommended as is a Windows compatible printer for printed reports.

DEMO MODE:

You can run AR Pro in an uninhibited "evaluation mode" for 15 days, which starts the first time the program is run after installation.

INSTALLATION INSTRUCTIONS

This section will cover the installation of AR Pro.

To install our Accident Reconstruction Professional software from the web:

- **Shut down all other running programs.**
- Download your program(s) from our web site.
- Run the downloaded installation file. If you have admin rights on the computer you are installing to, the program will be installed for all users. If you do not have admin rights on the computer, the program will be installed for the current user, only.
- The files will now be installed onto your hard drive. After file installation all necessary icons will be created on the desktop and in the Start menu system.
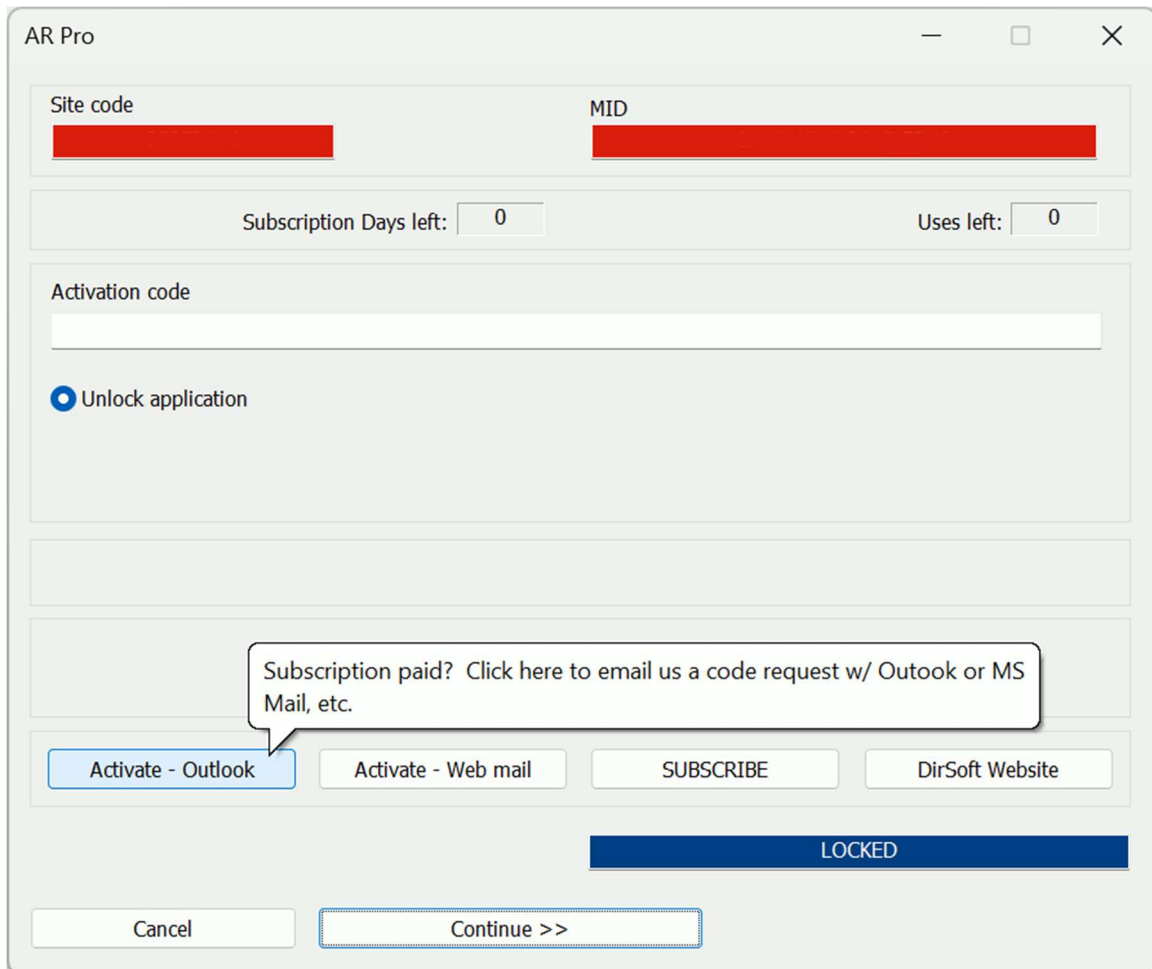
ORDERING AR PROFESSIONAL

To order an AR Professional license, you may order a subscription from the secure online store on our web site with most any credit/debit/purchase card. We do accept purchase orders from U.S. police agencies for subscriptions.

ACTIVATING AR PRO

To activate AR Pro, you <u>must</u> have already paid for a subscription. To activate a program that has been subscribed to and is in "DEMO", "EVALUATION", or "LOCKED" mode:

==If you have an email program installed on your computer (Outlook, Microsoft Mail, Thunderbird, etc.) AND use it for your email==, please fill in your name, Dept./Co., and the state you are from in the email that appears when you click the "Activate - Outlook" button at program startup.

please follow the instructions that appear when you hover over the "Activate – Web mail" button and copy and paste the Site and MID codes from the red blocks in the window that appears upon starting AR Pro into an email and send those to us.

To activate your program with the code you received via e-mail, it is best to copy and paste the long code from your e-mail message into the "Activation Code" input on the activation screen. This will help to prevent a mistake in typing in the code. If you make a mistake, however, simply re-type in the code until the program accepts it.
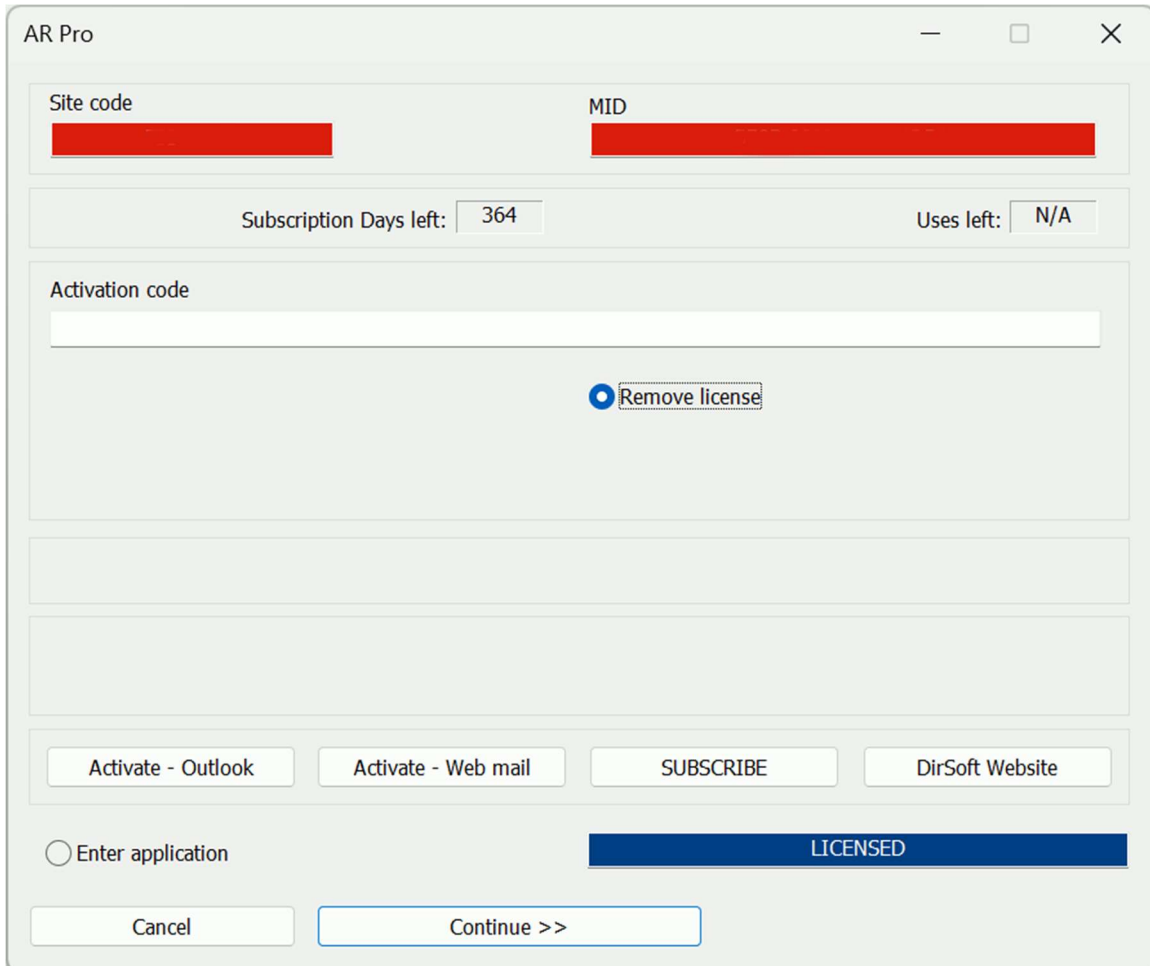
Also:
- If you wind up going past the expiration of the activation code the software will cease to run.
- We will **not** accept phone calls to activate your AR Pro program. You **must** perform the activation in the manner described above.

DEACTIVATING AR PRO

The deactivation process was created in the event you are going to purchase another computer and you want to move AR Pro onto the new computer, or you are upgrading or changing your computer's components. Please note that you can only deactivate an ACTIVATED copy of AR Pro.

To deactivate your activated program, press and hold the Ctrl key on your keyboard and then restart AR Pro. This will make the Protection Screen show up upon program startup. Once that screen is up, please do the following:

- Select the small button labeled "Remove license".
- Press the "Continue >>" button.
- You will be asked "License will be permanently removed from this computer! Do you want to continue?" Press the Yes button to deactivate your program.

- You will be shown a "Removal Code".

<mark>If you have an email program installed on your computer (Outlook, Microsoft Mail, Thunderbird, etc.)</mark>, AND use it for your email, please fill in your name, Dept./Co., and the state you are from in the email that appears when you click the "Report - Outlook" button at program startup.
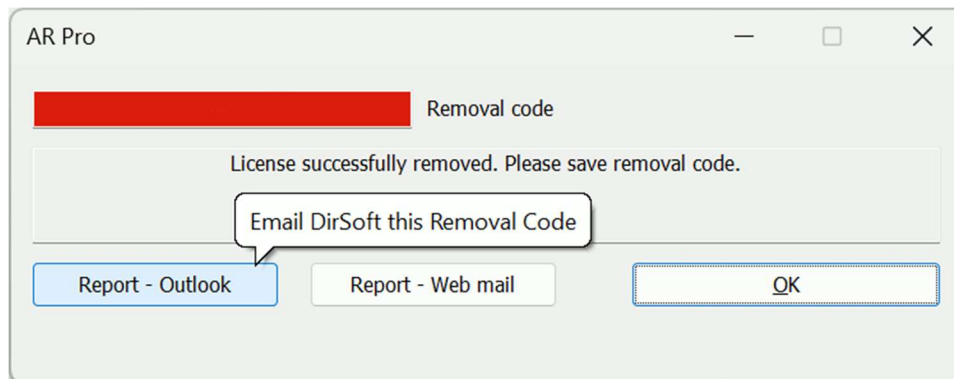
<mark>If you use a browser for your email (Gmail, Hotmail, Outlook.com, etc.)</mark>, please follow the instructions that appear when hovering over the "Report - Web mail" button and copy and paste the Removal Code from the red block into an email and send it to us.
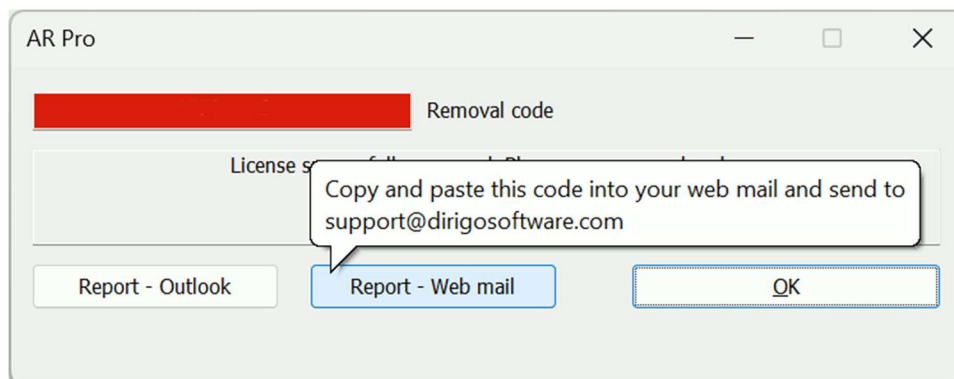
WARNING: Failure to report this Removal Code to us will negate us giving you back an Activation Code in our records for use on another computer. In other words, you'll be throwing away an activation code.

By deactivating (and reporting your Removal Code to Dirigo Software) you will be given back one Activation Code in our records for possible future use.

PROGRAM CONVENTIONS

The following items remain the same throughout the program:

- The TAB key will cycle you through each input box in a left to right, top to bottom order.

- All ACCEL/DRAG FACTORs must be entered with a zero or period (.) before the number (example 0.86, not 86).

- You cannot use the Calc, Print, Copy, or Preview buttons until all required input data has been input.

- In every formula, the answer is truncated to the number of digits to the right of the decimal point that you've selected (1 to 6, and **4 places are highly recommended**).

- This program assumes that you are an Accident Reconstructionist. This program will not teach you how to be a Reconstructionist but is designed to be a mainstream tool in helping a Reconstructionist with his or her job.

- This program also assumes that you have a certain amount of knowledge and ability with Microsoft Windows. Should you need assistance in working with Windows, your Windows manual and Help file should provide you with ample instruction.

DEFINITIONS

The following are the definitions for the letters used in the formulas for Accident Reconstruction Pro:

SYMBOL	MEANING
a	acceleration/deceleration rate
C	chord (ft or M)
Cir	circumference (ft or M)
D,d	distance (ft or M)
D_L	lateral distance (ft or M)
e	Superelevation (%)
e, CoR	Coefficient of Restitution
E	energy
F	force (lbs or kg)
f	acceleration/deceleration factor
f_s	lateral acceleration factor
g	gravity (32.2 fps² or 9.81 mps²)
H	height
h	height (or offset in tangent offset equation)
Ke	kinetic energy (foot-pounds)
L	length
M	middle ordinate
M	Mass
m	grade (%)
P	Momentum (lbs-mph or kg-kph)

Pr	propensity to roll	
π	pi, a constant with a numerical value of 3.14159	
r	rise	
R	radius (ft or M)	
n	percentage of braking (%)	
S	speed (mph or kph)	
t	time (seconds)	
Tw	track width	
μ	mu, coefficient of friction (always level surface, 100% braking)	
V	velocity (fps or mps)	
V_o	initial velocity	
V_1	speed of Vehicle #1 (mph or kph) at impact	
V_2	speed of Vehicle #2 (mph or kph) at impact	
V_3	speed of Vehicle #1 (mph or kph) after impact	
V_4	speed of Vehicle #2 (mph or kph) after impact	
W_1	weight (lbs or kg) of Vehicle #1	
W_2	weight (lbs or kg) of Vehicle #2	
W	weight (pounds or kilograms)	
Wk	work (foot-pounds)	
θ	theta (departure angle for Vehicle #1)	
ϕ	phi (departure angle for Vehicle #2)	
ψ	psi (approach angle for Vehicle #2)	
α	alpha (approach angle of Vehicle #1, always 0°)	
β	beta (subtraction of Vehicle #2's departure angle from its approach	
Δ	delta (change in)	
NOTE 1	The subscript n indicates that the variable to which it is attached	
	can theoretically occur an unlimited number of times.	

TUTORIAL
The purpose of this tutorial is not to teach accident reconstruction. Obviously, if you are using this program, you already know how to reconstruct an accident.

The tutorial sets up a basic scenario for an accident. The tutorial will show you how to use *Accident Reconstruction Professional* to calculate the desired data and print a report that contains the results of those calculations and pertinent information about the accident scene.

The best way to use this tutorial is to enter the information into the formulas as you are reading this (print this tutorial out by pressing the Print button) and reconstruct the accident by following the steps outlined below.

Scenario
The accident takes place in the afternoon a few days after a windstorm. It involves one vehicle on a straight road that is covered in some parts by sand. The road is a divided four-lane asphalt roadway.

The Reconstructionist used a drag sled to calculate the drag factor for the road. Since the vehicles' skid was on asphalt, then on sand, and then on asphalt, three drag factors are needed to obtain the minimum speed (two factors for the dry road and one for the sand covered road).

Other pertinent information:

Veh: Blue, 1998 Dodge Ram Club Cab Short Bed, 4x4.
Veh Reg.: BR549 (Maine)
Veh VIN: 3G123456789123456

Skid 1: 45.0 feet (13.71 meters).
Skid 2: 25.0 feet (7.62 meters).
Skid 3: 15.0 feet (4.57 meters).

Reconstructionist: You.
Rank/Title: Your Rank/Title
Department/Company: Your Department or Company.
Troop or Division: Your Troop or Division

Investigating Officer Name: John Riggs.
Rank/Title: Sergeant
Department: Anytown Police Department.
Phone #: 207-555-1995

Date of accident: Today.
Time of accident: 3:35 PM (1535 hrs.).
Route or Street: Rte. 201
City or Town: Hallowell
County: Kennebec
State/Province: Maine

Accident Type: Personal Injury
No Photos.
Weather: Sunny.
Temperature: Approx. 85° F.
Lighting: Bright sun & glare.
Posted speed limit: 45 MPH (72.4 KPH).
Non-Alcohol Related.
The investigating officer wants to know if the operator of the vehicle was traveling over the posted speed limit.

Reconstructing the Accident
We will calculate the minimum speed using a 30-pound (13.6 kgs) drag sled to compute the drag factor.

1. Open the Combined Speeds Formula (**FORMULAS | Speed | Combined Speeds**) and move it aside (so it will not interfere with the Minimum Speed formula that we open in the next step).

2. Select **FORMULAS | Speed | Minimum Speed [Slide to Stop]**. This will bring up the formula window needed to calculate the Minimum Speed.

With the Minimum Speed formula window:

Speed 1 - Enter 45.00 for the skid distance in feet (13.71 meters). Enter 0.83 for the Drag Factor (25.00 pounds (11.34 kgs) pull force divided by 30 pounds (13.6 kgs) drag sled). Press the Calc button. The Minimum Speed is calculated, and the results are shown in the Results Center. Notice how the Drag Factor and both speed in MPH (or KPH) and velocity in FPS (or MPS) are calculated and shown as answers. Now type the results into Speed #1 of the Combined Speed formula.

Speed 2 - Enter 25.00 for the skid in feet (7.62 meters). Enter 0.50 for the Drag Factor (15.00 pounds (6.8 kgs) pull force divided by 30 pounds (13.6 kgs) drag sled). Press Calc and type the results into Speed #2 of the Combined Speed formula.

Speed 3 - Enter 15.00 for the skid in feet (4.57 meters). Enter 0.83 for the Drag Factor (25.00 pounds (11.34 kgs) pull force divided by 30 pounds (13.6 kgs) drag sled). Press the Calc button and type the results into Speed #3 of the Combined Speed formula.

3. Click the Calc button on the Combined Speeds formula to see the results.

4. Once the results are calculated, press the Print button with the mouse. (** *SHORTCUT* **:   You may also press the Print button right after inputting the information. In other words, if you know you are going to print the report, you can skip pressing the Calc button and press the Print button instead, as the calculations are still performed when the Print button is pressed). This starts the printing of the report.

Once the report has been printed, look at it. You will notice that all the information entered is in the report.

Print Preview
You may also print your report to the screen instead of the printer, by selecting the Preview button in the formula window. All the above for printing to the printer is the same for this function, except the report will wind up on the screen instead of your printer. However, with the report on the screen, you may print to your printer from the Print Preview window, also.

Copy to the Clipboard
You may also copy all the mathwork to the clipboard for insertion into your favorite Windows word processor. To use this feature:

1. Once you have entered your input information, you may press the Calc button, or as a SHORTCUT, press the Copy button to automatically calculate the results and copy them to the clipboard.
2. If you pressed the Calc button, press the Copy button.

3. Start your word processor program by pressing the Word Processor toolbar button (picture of a pencil), or right-click on your formula window and select Word Processor... from the popup menu that appears.

4. Choose the Insert or Paste command (or whatever command your word processor has) to copy the mathwork from the clipboard into your document.

Once the mathwork is in your document, you may proceed with the rest of your report as you see fit. When you save your report, you will automatically be saving the *Accident Reconstruction Pro* generated mathwork, as well.

Viewing the Formula(s)
To look at the formula(s) you are currently working with, press the Show button or click on the "Formula(s)" tab. Note that English or Metric version of the formula you are working with will show up automatically, depending on which mode you are in.

Incrementation
You will notice that with this formula, you can increment the Skid Distance you entered or the Drag Factor that was calculated. If you followed the above instructions exactly, the Current: value has the Skid Distance in it that you entered earlier (50.00 or 15.24). Let's say that you want to see what the Minimum Speed would be if we incremented the measured 50 feet (or 15.24 meters) in 1-foot (or 1-meter) increments, starting at 40 feet (12.19 meters) and ending at 59 feet (or 17.98 meters).

1. Press the TAB key until the 0.00 in the Increm. By: box is highlighted. Type 1 and press TAB.

2. Now the # Steps: is highlighted. Type in 20 (must be between 2 and 300) and press TAB again.

3. In the Start Point: box type 40, and then press the Calc button.

4. Press the "Full Results" tab at the top of the formula window.
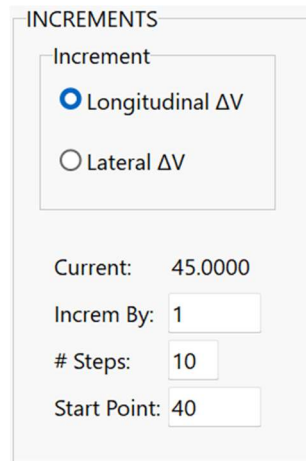
Notice how the blank spaces in the left column of the Increment Results grid are all replaced with the incrementation values (in this case, Skid Distance), and the right column has the Speed that those numbers calculate out to. The incrementation results are set up in a spreadsheet-like manner, for easy reading. Also notice that at the top of the left column, the title says Distance, to correspond with the fact that we are incrementing Distance. Had we incremented the Drag Factor, the column title would read Drag F.

If you would like your incrementation to print out with your printed report or be included with the copy to clipboard button, simply run the formula with increments. Now when you print or copy, the incrementation that we just calculated will print along with the regular report or be copied to the clipboard along with the mathwork.

Conclusion
That is all there is to reconstructing an accident with this program. ENJOY!

INCREMENTATION FEATURE

INCREMENTS

Increment

○ Longitudinal ΔV

○ Lateral ΔV

Current: 45.0000

Increm By: 1

Steps: 10

Start Point: 40

This feature of Accident Reconstruction Pro is designed to be the most flexible, informative, and useful incrementation feature you have ever seen before. It is also designed to be extremely easy to use. To increment any formula that has the incrementation feature:

- Upon pressing the Calc, Report, Copy or Preview buttons, the value in the "Current:" box will change from 0.00 to either the inputted or calculated information that you wish to increment, which is selected by you with the radio buttons in the small "Increment" box (in the above example, either Distance or Drag Factor). This value does not mean anything; it is merely a quick reference for you when you enter the other three incrementation parameters (you don't have to look all the way over to the left side of the dialog box to remember what you have for a current value).

- In the "Increm. By:" box enter the value that you wish to increment the current value. For example, if your current Distance is 170.00 feet, and you want to increment in steps of 5.00 feet, enter the 5.00 in this box.

- In the "# of Steps:" box, enter the number of calculations you want the incrementation to perform (the minimum is 2 steps, and the maximum is 300 steps).

- The next box is where the real power of this Accident Reconstruction Pro feature lies. You can enter any starting point that you wish: below the current value, at the current value, or even above the current value. Whatever number you enter in this box, that is where the calculations will start, and they will continue for the number of steps you entered above, up to a maximum of 300 calculations.

When finished entering the above necessary information, simply press the Calc button to have the program calculate the incrementation. The results will appear on the Full Results tab, which is set up spreadsheet style. The incrementation value in the left column calculates out to the value in the right column.

That is all there is to incrementing formula results in Accident Reconstruction Pro.

THE MAIN PROGRAM WINDOW
The following will assist you with the controls in the Main window of AR Pro.

Startup Guide
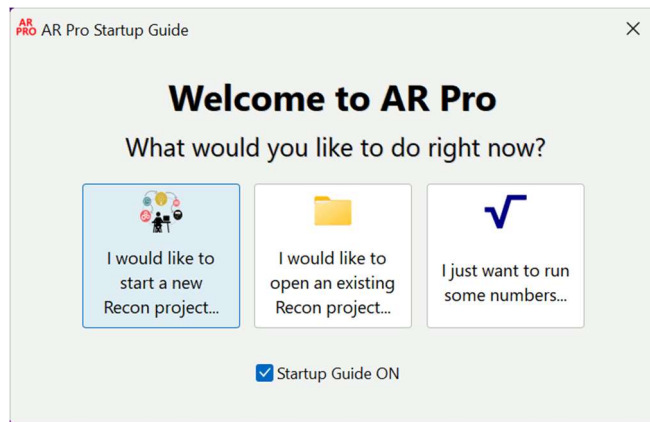
The Startup Guide is turned on when AR Pro is installed and is a sort of assistant to help folks get up and running quickly in the program. From this small window you can open a new project in the Project Manager, open an existing project in the Project Manager, or skip the Project Manager and just run formulas. You can also turn the Startup Guide off, so it will not start with the program.

Right-Click Menu
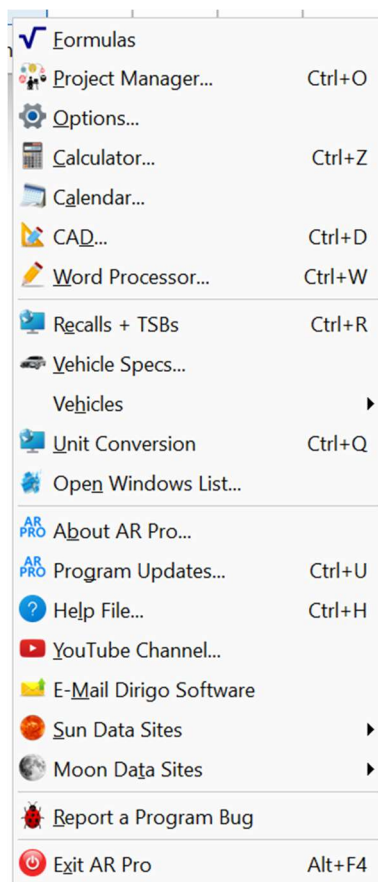
This popup menu appears when you right-click almost anywhere in the program. It contains shortcuts to many of the functions in the program and can be quite useful and quick to use throughout the program.

Window Mode
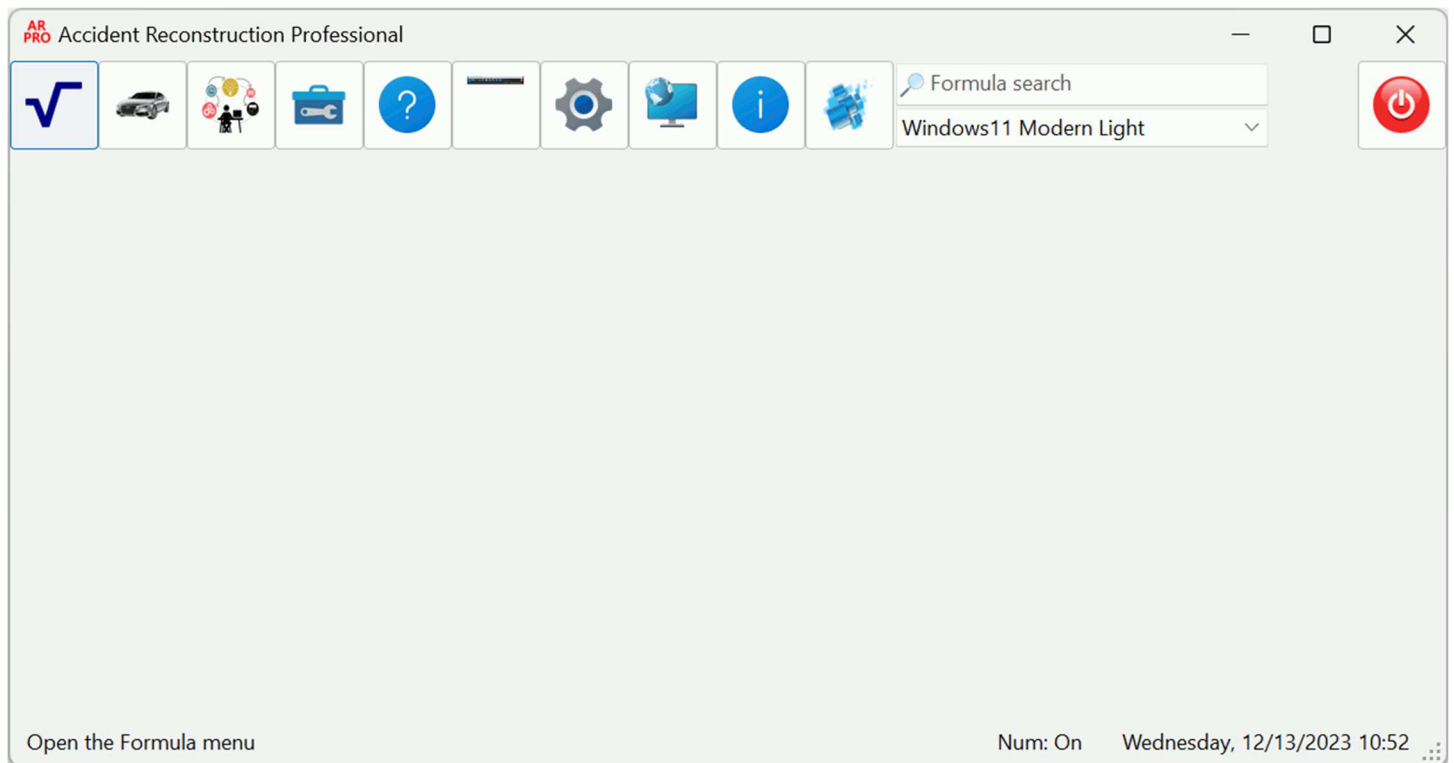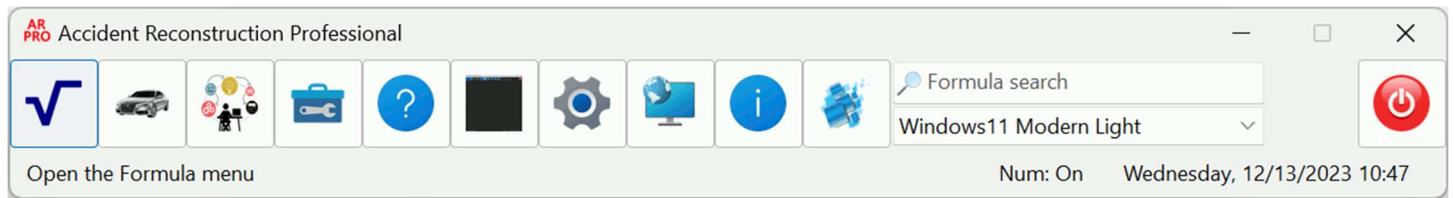
With the release of the Accident Reconstruction Professional Suite (version 16) and for the first time in the entire history of our AR Pro program (approx. 27.5 years at time of release), the user interface for all windows in the program have been updated to an entirely different style of window. Gone is the restriction of all program windows having to reside inside the main window. ALL windows can now exist anyplace on the desktop, to include across multiple monitors if a user has a multi-monitor setup. The pic on the top denotes AR Pro's new Toolbar Mode. The pic on the bottom shows it in Large Window mode (for those who still want a regular window for the program). You can toggle the window to whichever mode you want with a button on the toolbar. When the program opens the main window will show up in whichever state it was in when you closed the program. Most of the buttons on the toolbar open menus that are pertinent for the subject to the button that opened it, except for the Mode button, Options/About button, and the Exit button, which are direct actions.

Formula Search
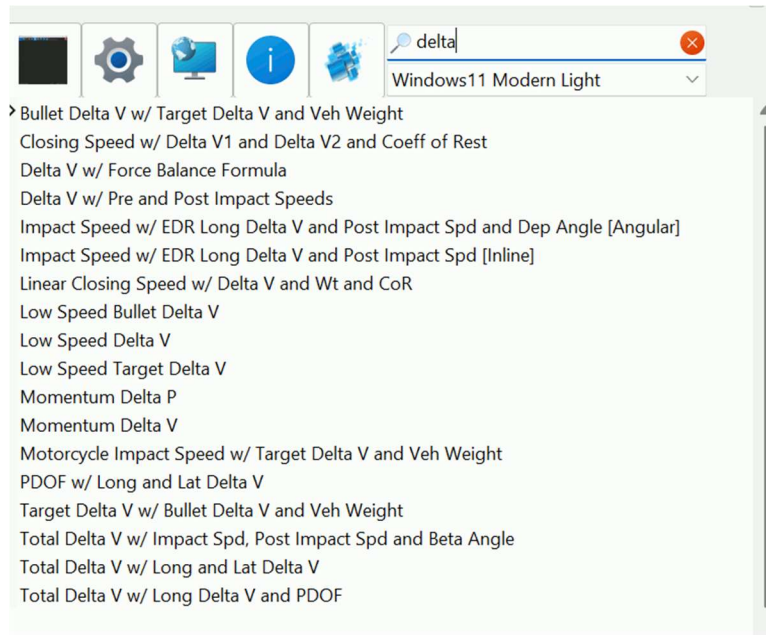
The Formula Search feature is an enormously powerful way of finding a formula to run. To find a formula click in the Formula Search box and type in what it is that you want to solve for, or you can enter what it is that you know and see what the program has for formulas that you can use with that information. In the above graphic I have typed in "delta", and the list shows the formulas in the program that solve for delta and/or contain delta as an input in a formula.

Some notes on this search function:

- A search term searches all the formulas and will limit the formula list to only those formulas that contain the search word or words.
- In the formula list the first word in the formula title is what the formula solves for. So, everything beginning with the word "Time" solves for time, "Dist" solves for distance, and "Speed" solves for speed, etc. Every term after that first term are inputs used to solve the formula.
- To help with keeping typing to a minimum some search terms were shortened. For instance, Distance is shortened to "dist". Acceleration or Deceleration Factor is either "af" or "df". Acceleration Rate is "a rate". Initial is "init" and Velocity is "vel". Average is shortened to "avg" and Lateral Acceleration Factor is "lat af". Most everything else is the full word (like "speed", "pedestrian", etc.). With a little use you will quickly learn how the formula terms are listed.
- Capitalization is not necessary and is ignored.
- As shown above, you separate multiple search terms with a comma. You can also use a space between the terms instead of a comma if you prefer.
- Once you find the formula you want in the list simply double-click it. This will simultaneously open your formula and clear the Search terms and close the formula list.
- To manually close the formula list and clear out the search term(s) click on the red "X" that appears to the right in the search term box once a letter has been typed in. This will also automatically happen if you select a different tab on the toolbar.

Open Windows List

Another cool feature in AR Pro is the Open Windows List:
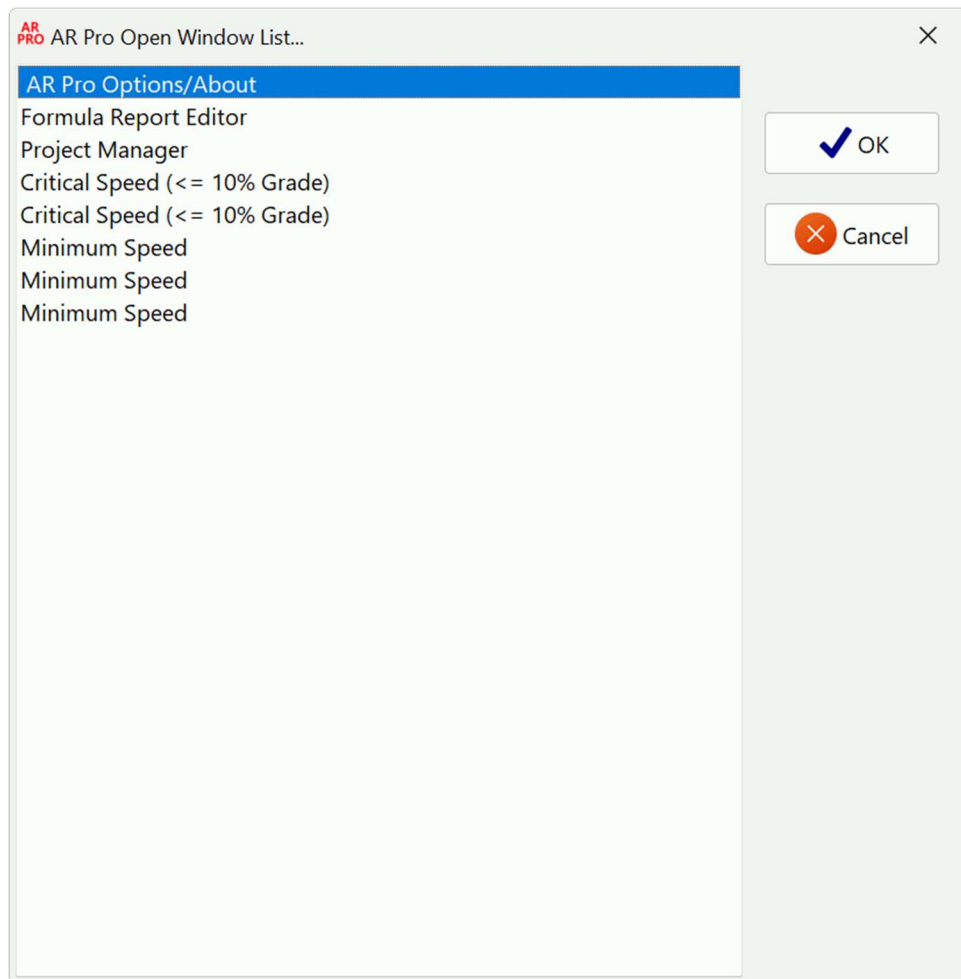
The open window list feature is a list of all currently open windows in AR Pro. This feature is invoked by the clicking the Windows button on the Control Car and selecting "Open" from the popup menu that appears, or by clicking on "Open Windows List…" in the popup menu that appears when you right-click pretty much anywhere in the program.

In a large and complicated reconstruction this feature can be a huge time saver by allowing you to quickly find a buried formula or the calculator or whatever else is open. Once found, you can either double-click the formula/window you want or select it and click the OK button.

Visual Styles
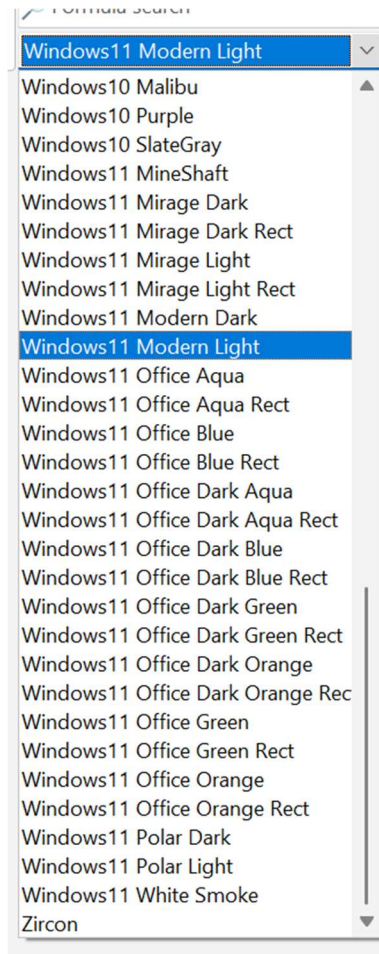
This function has also been moved back to the main program toolbar, so it is always available. Here you can select from many different High DPI enhanced visual styles for the program, which change the program colors, buttons, text, most everything that you see while using AR Pro. Go through them and choose what strikes your fancy!

THE FORMULA WINDOWS

This is an overview of a typical Formula window in AR Pro. Note that not every single formula looks exactly like the one below, but even the ones that look vastly different perform the same as any other formula in AR Pro.

Top of the window

Title - This is the current formula that is open.

Tabs - These are separate "pages" that contain their own information for you pertaining to the current formula. These include "Inputs" for you to input your raw data needed to calculate the formula. This page also shows the basic answers to the formula, a description of the formula, most have the ability to perform incrementation for inputs, as well as a place for some notes on this particular calculation (along with the ability to spell check those notes). It also contains buttons to perform functions that you might want to do with this formula, including calculating the formula, printing, previewing, copying the math to the clipboard, viewing the formula, opening

another copy of this formula, and opening the Help file. Another tab is the "Results". This tab will show all results for this calculation, including any incrementation (if performed). The next tab is "Formula(s)". This tab shows you the formula you are currently working with. Some formulas have another tab usually labeled "NOTES". This tab will contain vital information relating to the formula and should be looked at every time a formula containing notes is used in a reconstruction. The last tab can be in a formula is the Monte Carlo tab, where a user can perform a Monte Carlo Analysis for the formula they are currently working with.

Formula Inputs and Buttons

This section of the Formula window is for inputting the data needed to run the calculation. If you are unsure of what measurement is needed for a particular input (feet, inches, mph, etc.) simply hover the mouse pointer over the input and read the help hint that either pops up or is displayed at the bottom left of the main window.

This Input buttons section of the Formula window contains buttons to perform functions that you might want to do with this formula, including calculating the formula, printing, previewing, copying the math to the clipboard, viewing the formula, opening another copy of this formula, and opening the Help file, and Closing the formula. New for AR Pro is the "Add formula to current Project" button. Once you have successfully calculated a formula this button will appear on every formula in the program. This is the new and improved way to save your work in the newly updated Project Manager.

Increments

INCREMENTS

Increment

○ Longitudinal ΔV

○ Lateral ΔV

Current: 45.0000

Increm By: 1

Steps: 10

Start Point: 40

Most formulas, but not all, contain this section. This section of the formula is fully explained on page 22 of this manual.

Results

RESULTS

PDOF Angle (°):
18.4332

Resultant ΔV:
47.4341

This section of the Formula window shows the basic, quick answer(s) for the formula that you are running. For full and complete results, to include incrementation, you will need to go to the "Results" tab after calculating the formula.

Formula Description

Find the PDOF Angle
with EDR Longitudinal
and Lateral ΔV's

This section of the Formula window shows a quick description of what the current formula is about.

Calculation Notes

This section of the Formula window allows you to make notes about this calculation. Spell check is conveniently checked for you as you type. You can correct a misspelled word by right-clicking on the word (underlined in red) and selecting or inputting the correct word. You may also check a word in the thesaurus for a different word than what you are using by right-clicking on the word and selecting "Thesaurus" from the popup menu. Anything input in this section can also be included in the printed report.

Right-click menu
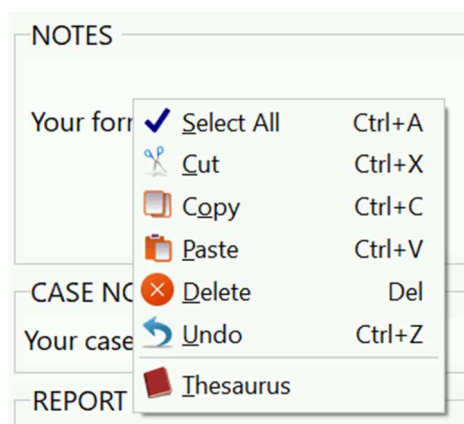
This popup menu will appear when you right-click while your cursor is over the Notes section of any formula. It contains shortcuts for functions that pertain to the text in the Notes section, to include using the thesaurus, copying, and pasting, etc.

Case No

This section of the Formula window allows you to add the case number that is either currently open in the Project Manager or that you are currently working on, if applicable. Spell check is conveniently checked for you as you type. You can correct a misspelled word by right-clicking on the word (underlined in red) and selecting or inputting the correct word, as well as checking the thesaurus for a different word than what you're using by selecting "Thesaurus". Anything input in this section can also be included in the printed report.
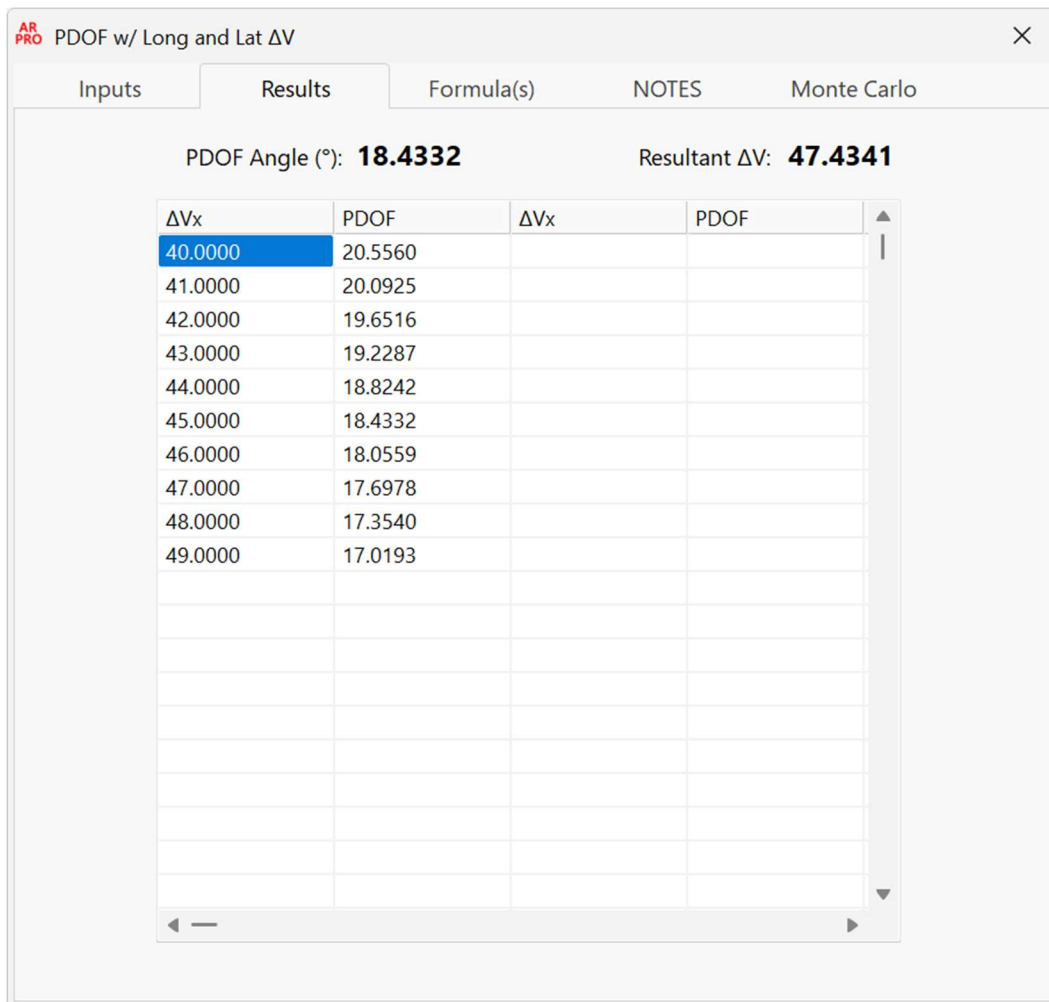
Report Footer

REPORT FOOTER
This is a space you can use of you want some text at the bottom of this formula report.

This section of the Formula window allows you to add whatever note you want to see at the bottom of the current formula's report. Spell check is conveniently checked for you as you type. You can correct a misspelled word by right-clicking on the word (underlined in red) and selecting or inputting the correct word, as well as checking the thesaurus for a different word than what you're using by selecting "Thesaurus". Anything input in this section can also be included in the printed report.

Full Results

This section of the Formula window allows you to see all results that the current formula calculated, including incrementation.

Formula(s)

AR PRO	PDOF w/ Long and Lat ΔV				✕
	Inputs	Results	Formula(s)	NOTES	Monte Carlo

$$\Theta = ArcTan(\Delta Vy \div \Delta Vx)$$
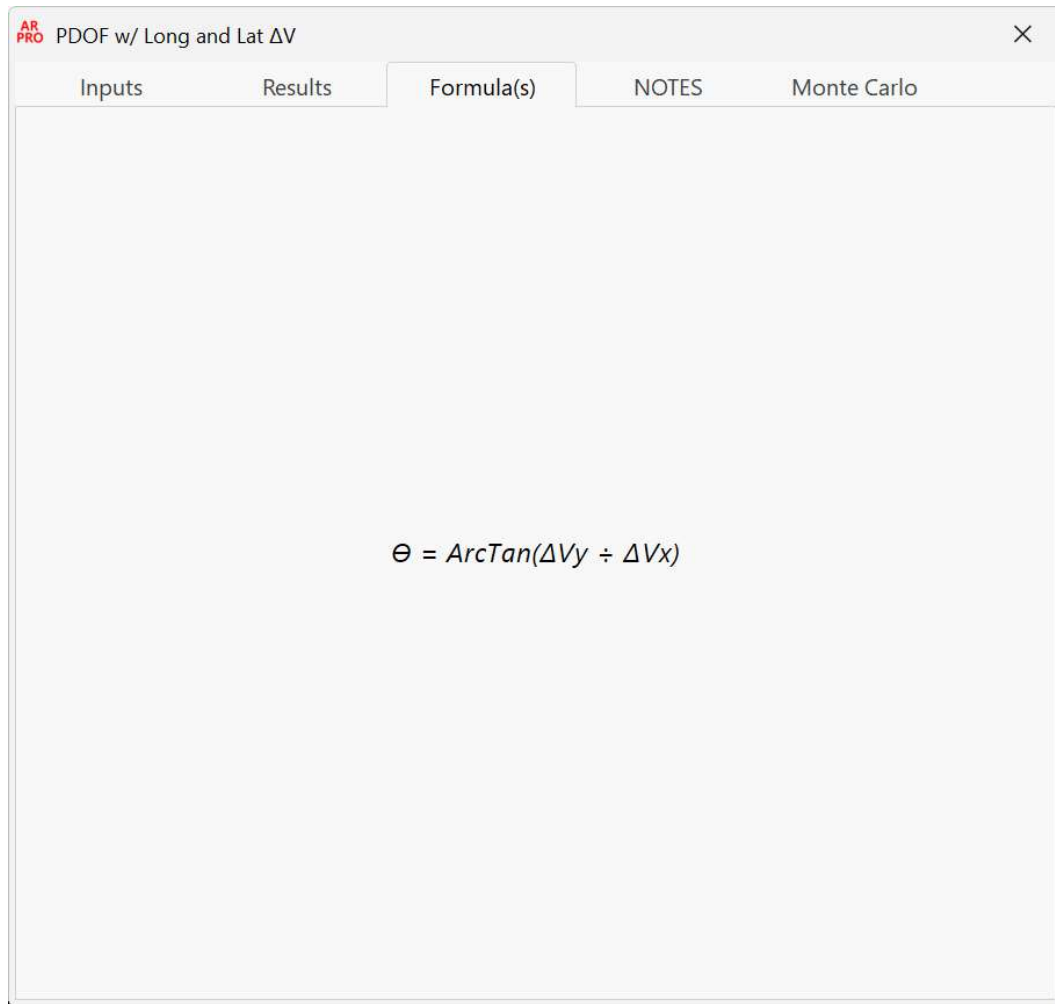
This section of the Formula window shows you the formula(s) that you are currently running.

Formula NOTES
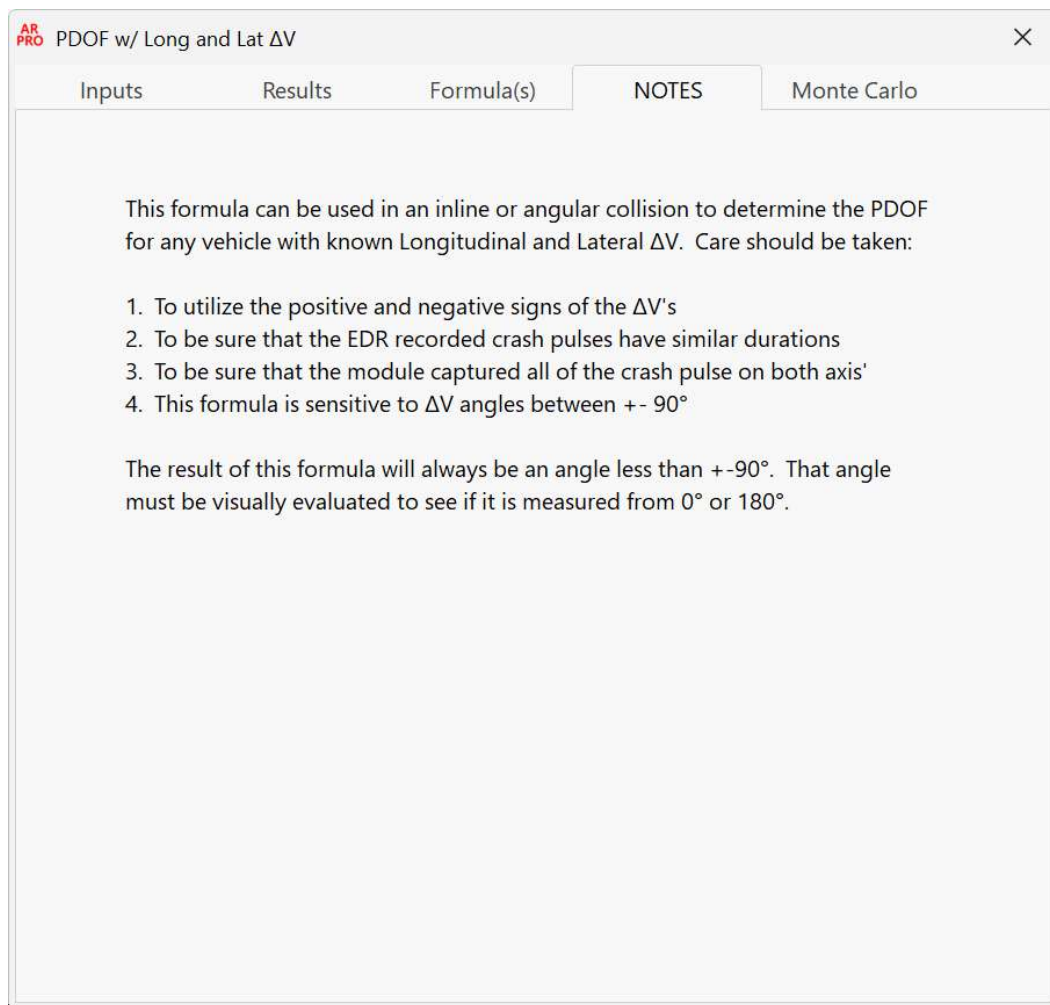
This section of the Formula window shows you vital information relating to the formula and should be looked at every time a formula containing notes is used in a reconstruction.

Formula Monte Carlo

This section of the Formula window allows you perform a Monte Carlo Analysis for the formula you are currently working with. This is a new feature in AR Pro as of Build 1000, and is a full-featured Monte Carlo Analysis, with 20,000 calculations for the randomly generated formula inputs that are used in the analysis. The inputs for the analysis are saved with the formula into the Project Manager for later retrieval, and the 20,000 calculations can also be saved to a CSV file for use in an Excel spreadsheet.

Formula Report Editor

The Report Editor window allows the user to modify his/her report by selecting fonts, adding a company or department logo or graphic to the report, as well as personalizing the report with the username, company or department name, etc.

Report Header Section

This section of options deals with the Header band of the formula report. This band optionally prints with every page of the report that is generated and subsequently printed or on just the first page.

To select a logo or other graphic that you would like to add to your reports click on the **Select...** button. This will bring up a standard File Open dialog or window (depending on your version of Windows). You need only to navigate to the logo or graphic that you wish to include in your reports and "open" it. **Note that only bmp's, jpg's, icons, and metafiles can be used for your logo or graphic.**

Upon "opening" your chosen logo or graphic, several things happen. First, your graphic is loaded into the large space designed for logos and graphics. Note that your graphic will automatically be sized to fit into the allotted space if your graphic is too large to fit in the space, normally. Some logos/images will need to be shrunk if the user wishes it to take up less space. This can be accomplished with Microsoft Paint or most any other graphics program. Also, the graphic that you have selected will automatically be copied to the "images" folder under the AR Pro folder on your computer. This is done to ensure that the graphic you want will always be available to your reports, which could be an issue if you selected a graphic on a network somewhere or the graphic gets otherwise moved or deleted from its original location. Once the graphic is loaded you may position the graphic wherever you would like it to be in the space allotted by clicking the **+** or **-** buttons in the Left and Top adjusters. Of course, the graphic and positioning of the graphic will be saved when you press the **Close** button and close the Editor window. To clear out the graphic and have an empty space you can press the **Clear** button.

The height of this section of the report will automatically be adjusted to accommodate whichever is the tallest, the image or the address information.

You can also set your information in the Address block. You can directly type in this block or right-click to bring up a menu to paste text and are free to include whatever information you need or want to include. You are also able to set the font by pressing the **Font** button under the block and justify the text to the left, center, or right.

Another neat feature is the "Open" button next to the address section. This button will open your current report graphic in MS Paint so that you can resize it or any other editing you may want to do with your graphic. If you wish to shrink your graphic so that it takes up less room at the top of your printed reports, you can do that with the "Resize" button in MS Paint, which is highlighted here:
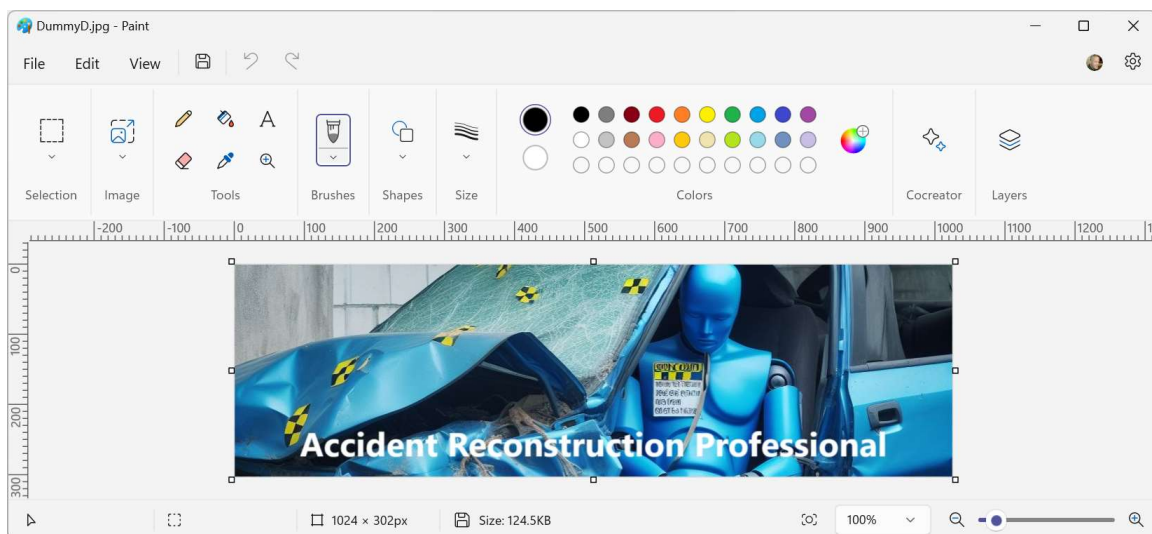
A new feature since the release of AR Pro 14 is the ability to place your text left, center, and right when you choose not to use a logo. Here, a logo and the text are in use, together:
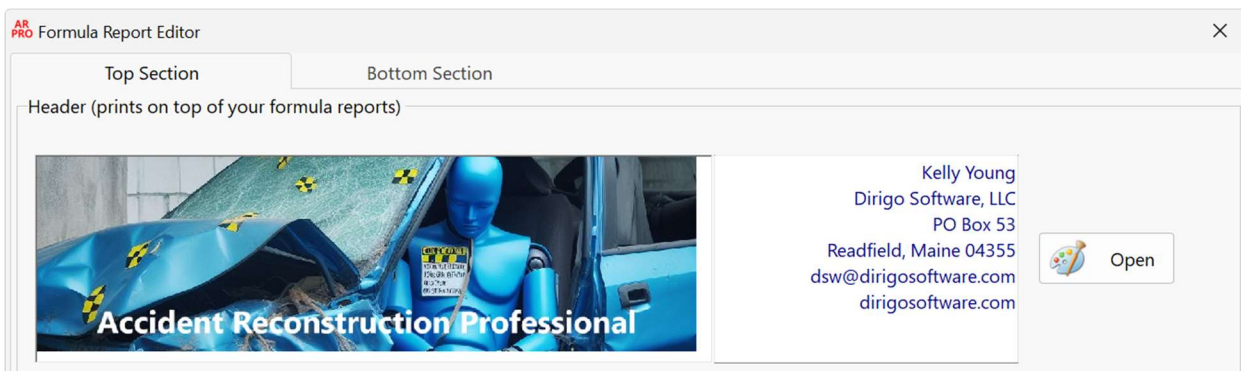
This presents a "normal" or most used header for a report......
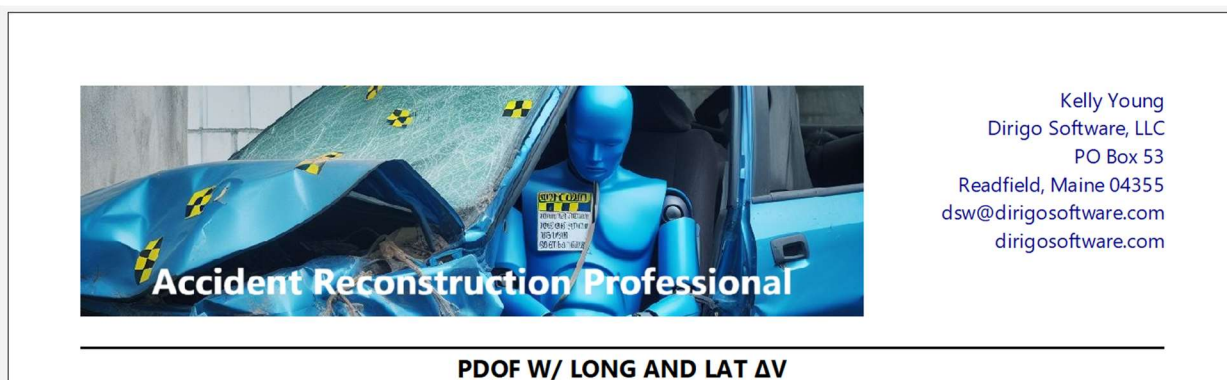
But if you skip having a logo you can have just your address info as the header. Here is no logo and the text aligned to the right....

Which gives you this for a report header....

Kelly Young
Dirigo Software, LLC
PO Box 53
Readfield, ME 04355
dsw@dirigosoftware.com
dirigosoftware.com

PDOF W/ LONG AND LAT ΔV

Have the text centered in a Report Editor.......

**Formula Report Editor**   ✕

| Top Section | Bottom Section |

Header (prints on top of your formula reports)

Kelly Young
Dirigo Software, LLC
PO Box 53
Readfield, ME 04355
dsw@dirigosoftware.com
dirigosoftware.com

Open

And that gives you this on your reports....

Kelly Young
Dirigo Software, LLC
PO Box 53
Readfield, ME 04355
dsw@dirigosoftware.com
dirigosoftware.com

PDOF W/ LONG AND LAT ΔV

And, of course, align the text to the left in a Report Editor....

Formula Report Editor   ✕

| Top Section | Bottom Section |

Header (prints on top of your formula reports)

Kelly Young
Dirigo Software, LLC
PO Box 53
Readfield, ME 04355
dsw@dirigosoftware.com
dirigosoftware.com

Open

And you have this on your reports....

Kelly Young
Dirigo Software, LLC
PO Box 53
Readfield, ME 04355
dsw@dirigosoftware.com
dirigosoftware.com

PDOF W/ LONG AND LAT ΔV
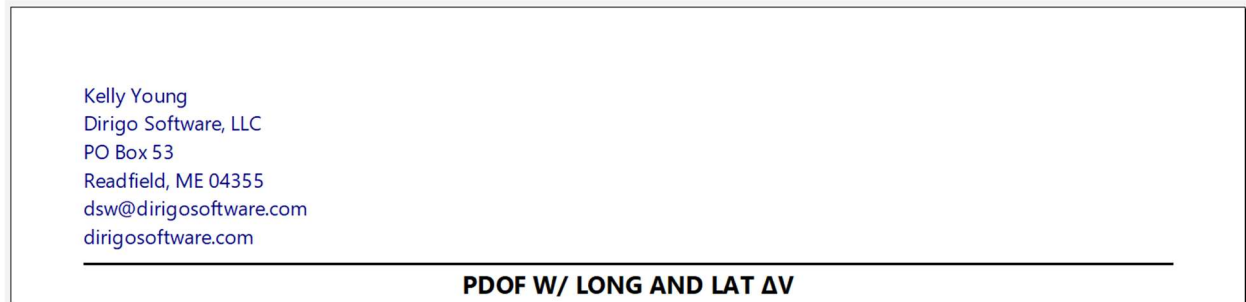
One very important note with this arrangement is that if you do have a logo, you will almost certainly have to keep the text aligned to the right or you may not see your text, at all. If your logo is small enough you may get away with centered text, however.

Other Sections

These are all the different sections of report you are requesting. To set the fonts for each of the sections you need only to press the **Font** button for each section and set it to your needs. You can also turn each section as well as some specific items on and off to suit your needs and taste.

Close Button

To close the Report Editor, click the Close button.

Test Report Button

This button will immediately create a test report that uses the Report Editor options you have set so you can see what your printed reports will look like, instantly. If you do not like something you have done you can close the preview and change the offending option. Then, when you are done, click the Test Report button again and see your changes.

THE PROJECT MANAGER

This is the "vault" where you keep all the formulas you run while in a project and can optionally also keep track of such things as: The accident date, time, weather conditions, Investigating Officer, vehicles, etc., as well as record all the formulas you run while in a project. Note that the Project Manager **MUST** be open while running any formulas you want to save in a project. But if you forget to open the Project Manager first, clicking on the new "Add formula to current Project" button in the formula windows will open it for you.

New for build 508 of AR Pro, the Project Manager window is now resizable to allow viewing more of the formulas that are saved in a project.

OPENING THE PROJECT MANAGER

To open the Project Manager window, click on the Projects button in the new Control Bar on the left of the AR Pro window and you will see the popup menu shown above. You can also right-click in the main program window and select "Project Manager..." from the popup menu, as well as the keyboard combination of [CTRL][O].

Going from top-to-bottom and left-to-right, let's go over the Project Manager:

PROJECT MANAGER DATABASE RECORDS

To work with the projects in the database, use the database Navigation bar (shown above). The symbols on the Navigation bar perform the following functions:

All arrows: Go to the first saved project, the previous project, the next project, and the last project in the database.

Check Mark: Update the project with the current information. If this button is grayed out, there is no information that has been changed, which means the current project does not require updating at the present time.

X: Cancel editing the current record in the database. If this button is grayed out, there is no information that has been changed, which means there is nothing to cancel at the present time.
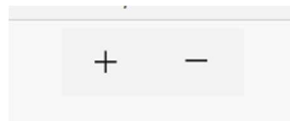
The two buttons at the top center of the General Info page perform the following functions:

+: Add a project. This will clear all inputs and allow you to add the information for a new project.

-: Delete a project. This will PERMANENTLY delete the current project (including any saved formulas, time logs, document and photo links, and project notes) from the database.

BUTTONS
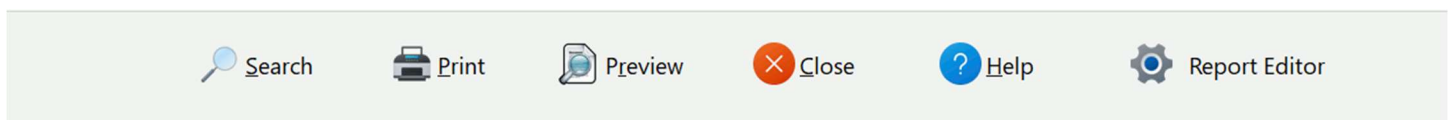
Search will allow you to search the Project Manager database for the project Name/Case No you are looking for.
Print will print the current Project Manager report (and optionally print all the formula reports in the current project) to your printer. See below for more info.
Preview will show what the current Project Manager report will look like when it is printed.
Close will save all your data and close the Project Manager.
Help will take you to the online AR Pro help file.
Report Editor will open the Project Manager Report Editor for quick and easy adjustments to your report.

PROJECT NAME/CASE NUMBER - This block is where you can keep track of which case number this reconstruction is for. This block will accept almost any character, up to 40 characters.   **Note that the only time you have access to this input is when you are adding a new project. All other times this field is disabled to prevent any changes to the Name/Number and therefore accidental orphaning of any/all saved formulas in the project.**

REPORT TITLE - This is where you will enter whatever you wish to be centered on the top of the report. Usually, this would be something generic like "Accident Reconstruction Report" or "Collision Reconstruction Report".
RECONSTRUCTIONIST INFORMATION - Enter the name, title, Dept., and Division of the Reconstructionist of this accident (presumably you).

PRIMARY INVESTIGATOR INFORMATION - Enter the name, title, Dept., and Phone number of the Investigating Officer of this accident.

RECON REPORT - The Project Manager now allows you to put a link to a recon report document with each project. You can link existing recon reports to existing projects, open a new recon report by opening your word processing program (and then creating a new document or opening your recon report template, etc.), as well as open the recon report that's been associated with your project, all with a click of the appropriate button that is to the right of the input.

Note that your recon report will NOT be shared or imported when sharing or importing a project with the Project Manager. This is simply a link to your report on your computer and does not become part of the Manager database. If you wish to send your report along with a project you will need to send it as a separate, accompanying document.

BUTTONS:
   Share... will allow you to save the current database record (with all formulas) to disk for sharing with others or for backup.
   Import... will allow you to import a previously saved project into your database.
   **Backup...** will allow you to back up your database to a location of your choice.

You can also print all the formula reports in the project you are currently on. To print the Project Manager report plus all the formula reports:
- It is recommended that you close all open windows in the program by clicking the "Close" button on the Main tab, then reopen the Project Manager and go to the project you want. This helps clear out the program workspace and give you room to clearly see the process that is about to take place.
- Click the "Print" button at the bottom of the Project Manager window.
- You will be asked if you want to also print all the formula reports in addition to the Project Manager report. Click the "Yes" button to print all the reports or "No" to print only the Project Manager report.
- The print dialog will appear for the Project Manager report. Here, you can change printers as well as set the number of copies of the report. It's important to note that if you click the "Cancel" button at this point the program will not only not print the Project Manager report but it will also abort printing ANY of the reports.
- If you click the "OK" button in the print dialog the Project Manager report will be sent to the printer.
- If you clicked "Yes" when asked about printing all formula reports, the first saved formula in your project will now open, precalculated, and the print dialog will appear again. Here again, you can change printers and the number of reports to print. If you want to print the formula report for that formula, click the "OK" button. If

you want to skip printing the report for this formula, click the "Cancel" button, instead. That will skip printing the report for that formula and immediately open the next formula saved in the project and the process repeats over and over until all formulas in the project have opened and given you the opportunity to print or not.

TIME LOG PAGE:

New as of build 700 of AR Pro, this page allows you to keep tabs on any and all time spent working on a project. This should be the FIRST thing you do when starting a new case/project, or continuing work on an existing case/project, especially if you are in the private sector. KEEP TRACK OF YOUR TIME WORKING ON THE CASE/PROJECT. It doesn't even have to be working in AR Pro for this to be useful. Working on an animation for a case? A report? An Excel spreadsheet? Whatever you do on a computer you can keep track of the time you spend working on anything using this Time Log function!
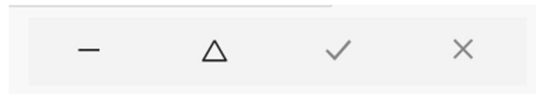
The navigation buttons will allow you to manipulate the Time Log database. The buttons in left to right order are:
   -:   Delete a log entry. This will PERMANENTLY delete the current log entry from the database.
   Up Arrow: This will allow you to edit any of the fields in the currently selected log entry.
   Check Mark: This will finalize any editing you've done in the currently selected log entry. If this button is grayed out, there is no information that has been changed, which means the current log entry does not require updating at the present time.
   X: Cancel editing the current log entry. If this button is grayed out, there is no information that has been changed, which means there is nothing to cancel at the present time.

The Time Log function can handle two types of inputs: A direct log addition to keep track of events external to AR Pro (case conversations, meetings, travel, phone calls, research, etc.) and a timed method that automatically keeps track of the time users work in AR Pro or other programs on your computer, as mentioned before.

- When users start working or continue to work on formulas for a case in AR Pro, a timer can be started at the beginning of case/project work and then stopped at the end of working on a case/project. The time involved can then be added to the log with the click of a button.

- Activity indicators that signal the timer is running is shown on the Time Log page in the Project Manager as well as on the status bar of the main program window to keep the user aware the clock is running.

- I've also added the ability to quickly stop the timer and automatically add the time into the log by clicking on the Activity Indicator on the main window. This will enable folks to quickly shut down the timer in the event of unexpected interruptions (phone calls, etc.).

- The timer will also automatically stop and add the time into the log if the Project Manager is closed as well if AR Pro is closed (because sometimes "stuff" happens).

Adding a direct log addition (usually this is for activity outside of using AR Pro, but can also be for activity in AR Pro, if desired):

- First, click on the "Create a new Log entry" button. This will enable most of the controls on the page as well as put the database into edit mode to allow a new entry in the database to be made.

- Then enter in a log entry title for this log file. This can be things such as "Phone call with client", "Begin Pre-impact formulas", or whatever suits the reason for this log entry.

- Next you can optionally add Log Notes for this entry, which would usually be expanding on the log title in whatever detail and way you wish.

- Next you can set the start date and time for this log entry.

- Then you can set the stop or end date and time for this entry.

- Once the above is finished you can click on the "Add Entry" button to add the information you've filled into the Time Log database.

- From here you can repeat this process as many times as necessary to log in your activities associated with working your project, as well as preview and/or print your Time Log.

Adding an automatic log addition (this is for when you are for working in AR Pro **or any other program on your computer for a case/project**):

- First, click on the "Create a new Log entry" button. This will enable most of the controls on the page as well as put the database into edit mode to allow a new entry in the database to be made.

- Then enter in a log entry title for this log file. This can be things such as "Phone call with client", "Begin Pre-impact formulas", or whatever suits the reason for this log entry.

- Next you can optionally add Log Notes for this entry, which would usually be expanding on the log title in whatever detail and way you wish.

- Next click on the "Start Timer" button. This will automatically fill in the "Start Date/Time" entry into that control as well as the open log entry, as well as starting the timer for your activity. A bright green activity indicator will start rotating on both the "Time Log" page as well as on the status bar of the main program window to indicate that the clock is running.

- When you are finished with whatever you are working on, the quickest/easiest way to stop the timer and add the log entry is to click on the rotating activity indicator in the status bar of the main AR Pro window. Alternatively, you can click on the "Stop Timer" button on the "Time Log" page and then the "Add Entry" button to finalize the log entry.

- From here you can repeat this process as many times as necessary to log in your activities associated with working your project, as well as preview and/or print your Time Log.

ACCIDENT INFORMATION PAGE:

ACCIDENT LOCATION - Enter the Street, Intersecting Street (if the accident occurred at an intersection), County, City, and State (or Province) of the accident here.

ACCIDENT OCCURRED - Enter the date and time of the accident to be reconstructed in a MM/DD/YYYY and

HH:MM format, or whatever format is needed in your region.

ACCIDENT TYPE - Select Property Damage, Personal Injury, or Fatal.

PHOTOS TAKEN - Select whether photos were taken of the accident scene, and if so, by whom.

ROAD CONDITIONS - Enter the road surface condition here (Snow Covered, Clear, etc.).

ROAD SURFACE - Enter the road surface type here (Asphalt, Gravel, etc.).

WEATHER CONDITIONS - Enter the weather conditions at the time of the accident (Clear and 72°, Light Snow, Heavy Rain, etc.).

SPEED LIMIT - Enter the speed limit of where the accident took place here.

ALCOHOL RELATED - Select whether alcohol can be considered a contributing factor to this accident.

VEHICLE/ITEM INFORMATION PAGE:

VEHICLE/ITEM SELECTION # 1 through 10 – Select or type in a general description of the Vehicle or Item that was involved in this collision, such as: Truck, Snowmobile, Pedestrian, etc.

VEHICLE/ITEM DESCRIPTION # 1 through 10 - Enter a description of each involved Vehicle or Item here (1998 Blue Dodge Ram 4x4 Pickup, etc.), up to a maximum of 80 characters.

PROJECT FORMULAS PAGE:

Here, a database is kept of every formula you've added to a Project. This saved formula list is now displayed in alphabetical order (as well as calculation notes and footer notes order). The Footer Notes are next to the formula name field to make it easier for users to select the correct formula they want/need. This is especially useful when you have many of the same formula saved in the project (like Minimum Speed, for example).

OPEN CURRENT FORMULA(S) – As you might expect, clicking on this button will open the current highlighted formulas in the database. You may now also open several formulas at the same time but holding down the Ctrl key on your keyboard, clicking on the formulas you wish to open, and then click this button. You can also double-click a formula to open it. To delete a formula from the database, you can press Ctrl+Delete keys on your keyboard or the "-" button on the database navigator.

OPEN ALL FORMULAS – Again, as you might expect, clicking on this will open ALL the formulas that have been saved under this project.

PROJECT FORMULA SEARCH - New in build 510 of AR Pro, this input allows you to search the formulas in a project by name. The highlight bar will move to the nearest formula matching what you type in the search input box.

FORMULA DATABASE NAVIGATION BAR - This small navigation bar next to the search input will quickly take you to the first saved formula, the previous saved formula, the next saved formula, the last saved formula, as well as deleting the currently highlighted saved formula. Note that you can also navigate through the formulas with your mouse wheel, as well as the page up and down keyboard keys, the arrow keys, as well as the Home and End keys.

DOUBLE-CLICK THE GRID – Double-clicking on the data grid will open the formula that you double-clicked on. Using Ctrl+Delete will delete the currently selected formula from the database.

DOCS/NOTES PAGE:

New since build 700, you can link any type of document you wish as well as any type of photo you wish to your case/project. There is also ample room (up to 2000 characters) for any notes that you want to record for your case/project.

Adding Document Links
To add a link to any type of document that you want, click on the "Add Document" button. This will open the file open window and start in your Documents folder. From there you can navigate to anywhere on your computer and network to select the document you want linked to your case/project. Once you find the document that you want you can either double-click the file to add it to your project or click on it once and then click the "Open" button in the lower right corner of the file open window. Repeat as necessary.

Once an entry is added to your project, double-clicking on the entry will open that document in whatever program is setup to run the document type you've started. Also, you can delete any of the documents from your project by clicking once on the document entry and then Ctrl+Del on your keyboard.

Adding Photo Links
To add a link to any type of photo that you want, click on the "Add Photo" button. This will open the file open window and start in your Documents folder. From there you can navigate anywhere on your computer and network to select the photo you want linked to your case/project. Once you find the photo that you want you
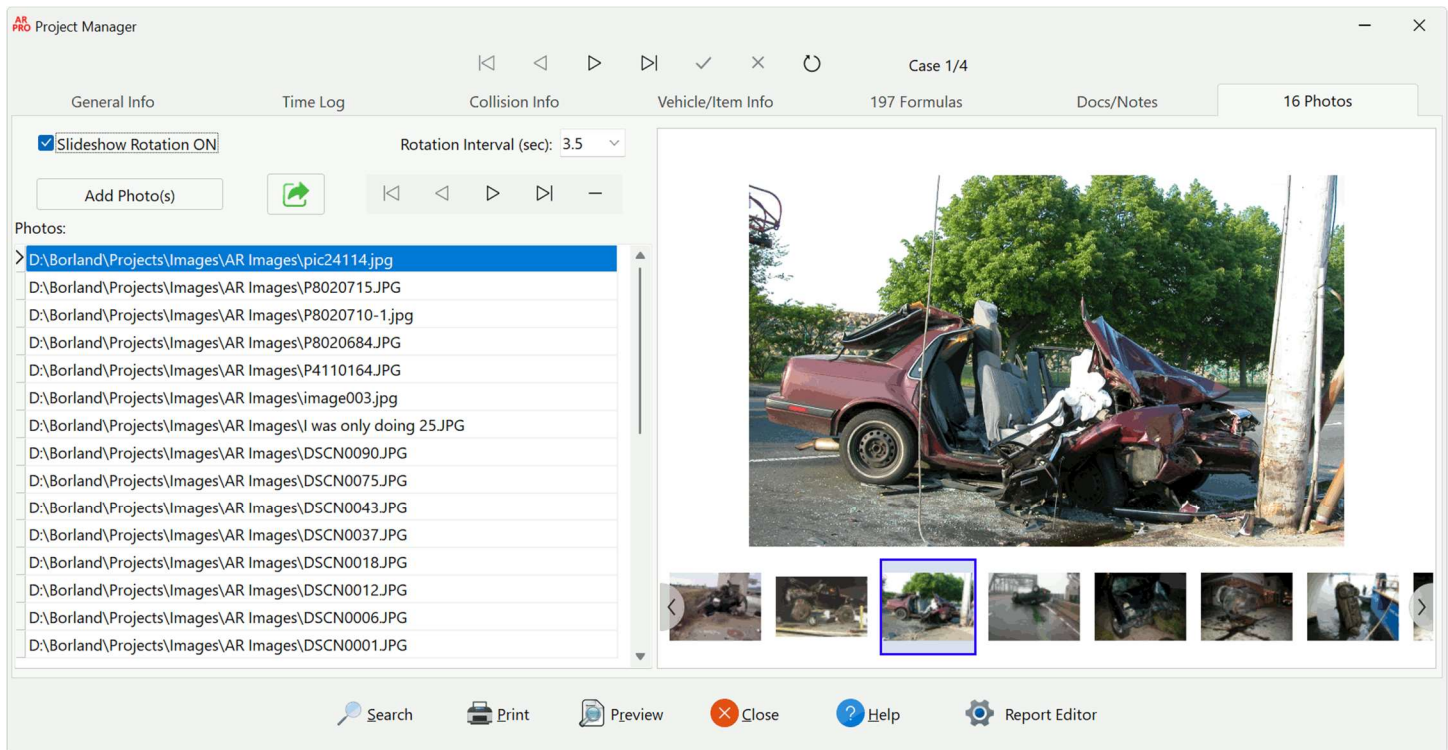
can either double-click the file to add it to your project or click on it once and then click the "Open" button in the lower right corner of the file open window. Repeat as necessary.

Once an entry is added to your project, double-clicking on the entry will open that photo in whatever program is setup to run the photo type you've started. Also, you can delete any of the photos from your project by clicking once on the photo entry and then Ctrl+Del on your keyboard.

Project Notes
Here you can enter any notes you want for your case/project, up to 2000 characters. This control does have automatic spell check, as well.

PHOTOS PAGE:

Adding Photo Links
To add a link to any type of photo that you want, click on the "Add Photo(s)" button. This will open the image file open window. You can navigate to anywhere on your computer and network to select the photo(s) you want linked to your case/project. Once you find the photo(s) that you want, you can either double-click the file to add it to your project or click on it/them once while holding the Ctrl key on your keyboard and then click the "Open" button in the lower right corner of the file open window. Repeat as necessary.

Once an entry is added to your project, double-clicking on the entry will open that photo in whatever program is setup to run the photo type you've started. Also, you can delete any of the photos from your project by clicking once on the photo entry and then Ctrl+Del on your keyboard or clicking on the "-" button on the database navigator next to the "Add Photo(s)" button.

The Photos page also now contains a slide show control that will cycle through all of the photos associated with the current project. You can control whether or not the slide show cycles through your photos by clicking on or off the "Slideshow Rotation ON" box. You can also control how long the slide show pauses between photos with

the "Rotation Interval (sec):" selection box. Both of these options are saved upon being set and the settings will persist every time AR Pro is used.

The button between the "Add Photo(s)" button and the Photo database navigator will allow users to save all the photos in the current project to a zip file. This will allow quick and easy sharing of the photos for discovery, sharing a project, etc.

Project Manager Report Editor

The Project Report Editor window allows the user to modify his/her report by selecting fonts, adding a company or department logo or graphic to the report, as well as personalizing the report with the username, company, or department name, etc.

Project Manager Report Editor

| Top Section | Bottom Section |

Report Details

REPTITLE

CASE NUMBER: CASENO   (Date)

Report Title text   Case Number/Date text   Case Number text
      Font   Font   Font

RECONSTRUCTIONIST INFORMATION

Name: RECNAME   Rank: RECTITLE
Department: RECDIV   Trp/Div/Loc: RECTROOP

Section Title text   Data Title text   Data text
      Font   Font   Font

☑ Print this section

☑ Print the date

☑ Print Reconist section

☑ Print Investigator section

☑ Print Collision Info section

☑ Print Colliding Items section

☑ Print Project Notes section

⊗ Close   ? Help   🔍 Test Report

Report Header Section

This section of options deals with the Header band of the project report. This band prints on the first page of the printed report, or optionally with every page of the report that is generated and subsequently printed.

To select a logo or other graphic that you would like to add to your reports click on the **Select...** button. This will bring up a standard File Open dialog or window (depending on your version of Windows). You need only to navigate to the logo or graphic that you wish to include in your reports and "open" it. **Note that only bmp's, jpg's, icons, and metafiles can be used for your logo or graphic.**

Upon "opening" your chosen logo or graphic, several things happen. First, your graphic is loaded into the large space designed for logos and graphics. Note that your graphic will automatically be sized to fit into the allotted space if your graphic is too large to fit in the space, normally. Some logos/images will need to be shrunk if the user wishes it to take up less space. This can be accomplished with Microsoft Paint or most any other graphics program. Also, the graphic that you have selected will automatically be copied to the "images" folder under the AR Pro folder on your computer. This is done to ensure that the graphic you want will always be available to your reports, which could be an issue if you selected a graphic on a network somewhere or the graphic gets otherwise moved or deleted from its original location. Once the graphic is loaded you may position the graphic wherever you would like it to be in the space allotted by clicking the **+** or **-** buttons in the Left and Top adjusters. Of course, the graphic and positioning of the graphic will be saved when you press the **Close** button and close the Editor window.

To clear out the graphic and have an empty space you can press the **Clear** button.

The height of this section of the report will automatically be adjusted to accommodate whichever is the tallest, the image or the address information.

You can also set your information in the Address block. You can directly type in this block or right-click to bring up a menu to paste text and are free to include whatever information you need or want to include. You are also able to set the font by pressing the **Font** button under the block and justify the text to the left, center, or right.

Other Sections

These are all the different sections of report you are requesting. To set the fonts for each of the sections you need only to press the **Font** button for each section and set it to your needs. You can also turn each section as well as some specific items on and off to suit your needs and taste.

Close Button

To close the Report Editor, click the Close button.

Test Report Button

This button will open the Project Manager window (if it's not already open) and create a test report that uses the Report Editor options you have set so you can see what your printed reports will look like, instantly. If you do not like something you have done you can close the preview and change the offending option. Then, when you are done, click the Test Report button again and see your changes.

THE OPTIONS WINDOW

FORMULAS:
Imperial Formulas - If checked, Imperial measurements will be used in all calculations in the formula windows. If you want to use Metric measurements, uncheck this option.

Show MPH (for UK and DE) - If checked, this will cause some formulas in the program to display an Imperial speed even when the program is running in Metric mode. This was added for the good folks in the UK and Germany, who do use MPH even though they are a metric nation.

Decimal Precision – Select the number of decimal places AR Pro will calculate out to (all during the calculations as well as the final answer) in its formulas. **Recommended precision is 4 decimal places**.

Recent Formulas – Select the maximum number of formulas you want to be listed on the "Most Recently Used Formula" list.

Drag Sled Weight - Default sled weight used in formula windows that have sled weights in the calculations. Enter the weight of the drag sled that you use in your reconstructions, if applicable.

Critical Speed - Here you can select the constant used in the Critical Speed, Critical Speed with Lateral Accel Factor, and 45° Vault formula – either 3.86 or 3.87.

FPS Calc's - Here you can select the constant used in converting MPH to FPS in formulas.

GENERAL:
These options are the general options for the entire application.

Sound at Startup ON - If checked, will enable the playing of the RECON.WAV sound file at program startup.

Auto Update ON - If checked, will enable AR Pro to check for program updates via the internet at program startup.

Startup Guide ON – This option allows a quick and easy guidance window to open at program startup to assist a new user or infrequent user get a project opened or not. This is on when AR Pro is installed.

For email, I use: - This option will tell AR Pro which type of email you use: an installed program (Microsoft Outlook, Microsoft Mail, Thunderbird, etc.), or a web-based email (Gmail, Hotmail, etc.). This information is used by the program to know if an email can be started (when an installed program is used) or whether the program shows a message stating that there is no way for a program to start an email with a web-based email site.

ToolTips ON - If checked, this turns the ToolTips on for the Toolbar buttons and for all window controls.

Backup Proj Mgr Database - If checked, this turns on the ability for the program to automatically back up your Project Manager database each time the Manager is closed. We *HIGHLY* recommend having this option on as it will save your data in the event of corruption or other cause of loss. We also *HIGHLY* recommend setting the backup location (the button directly next to this option) to some place that will be OFF SITE from where you physically are. This protects you from your computer being swapped out by IT, or stolen, and even in the event something catastrophic happens to the building you are in (such as fire, tornado, etc.). The next button over will perform a backup, now. Note that the program is initially set to put your Program Manager backup in the Public\Documents folder. Again, change it to some place off site (if you have Microsoft 365 you can use the documents folder of your OneDrive for safe, off-site storage). The last button initiates the "database recovery" routine to quickly and easily restore the Project database to a known good file.

Printer Setup – Here you can change the settings of the printer you use.

Spell Check Setup – Here you can change the settings of the spell checker.

TOOLS and PROGRAMS:
These options let you decide which tools to use during your Reconstruction.

Word Processor - This allows you to select an external word processor (such as *Word*, *WordPerfect*, etc.). The default when AR Pro ships out is the Windows WordPad program. To select a program you desire, press the "…" button next to the edit box and navigate your way to the EXE file that is your word processor program.

CAD/Drawing – This allows you to select the external Windows based CAD or drawing program you want to use for drawing accident scenes. The default program when AR Pro ships is the Windows Paint program. To select a program you desire, press the "…" button next to the edit box and navigate your way to the EXE file that is your CAD program.

Calculator - This allows you to select the built-in AR Pro Calculator or the Windows Calculator program when you press the Calculator button in the program.

REPORT EDITORS:
This section holds controls to allow the modification of the reports in AR Pro. These will be covered in detail elsewhere in this manual.

SET ICONS:
This area allows you to select what icons AR Pro will use for the menu icons that represent Dirigo Software programs and functions. This is an instant change as soon as you select what you want. Experiment with the selections that are available to see what you like.

THE ABOUT WINDOW
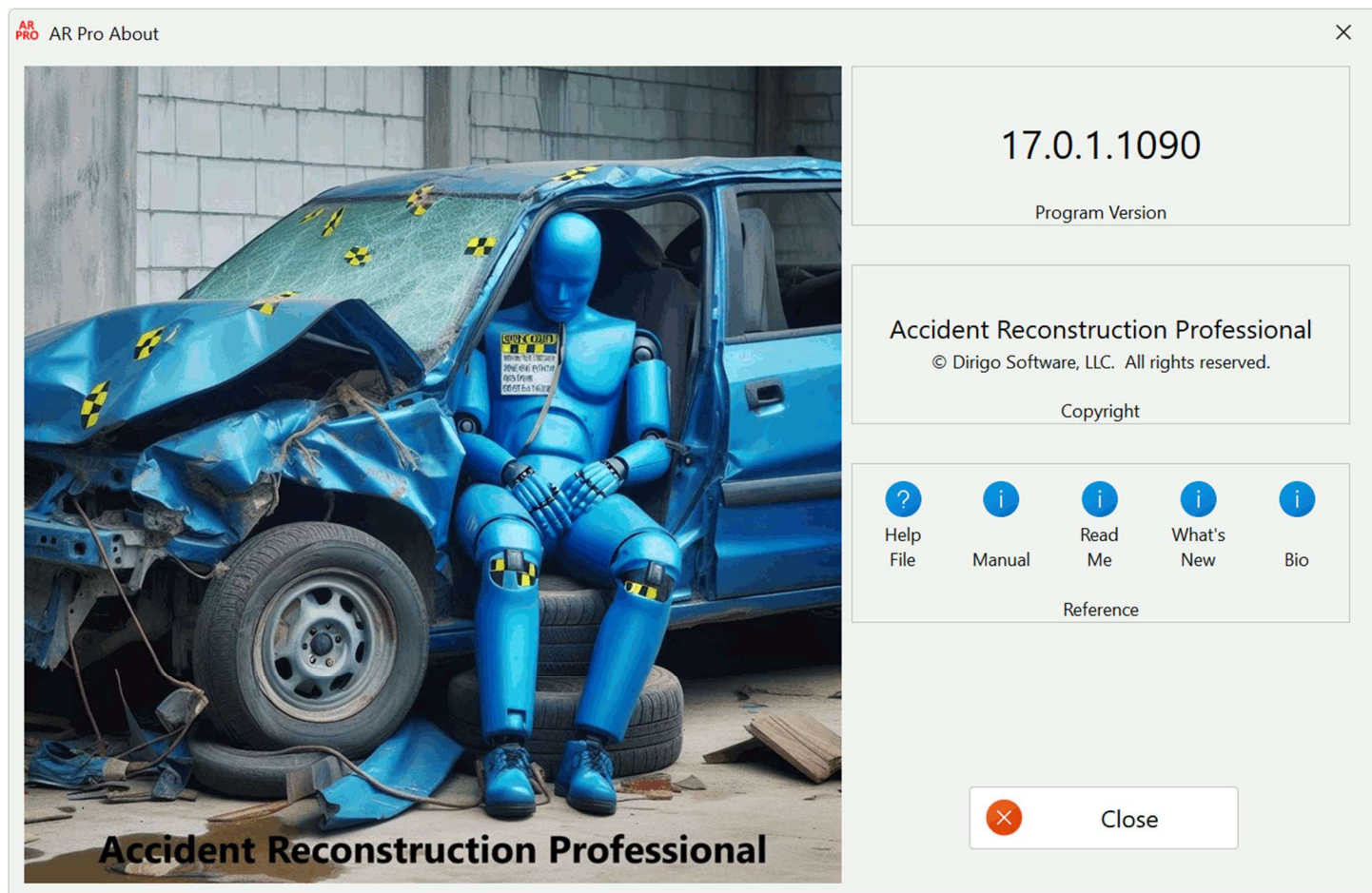
VERSION:
This shows you what version number is currently installed.

 COPYRIGHT*:*
This displays the copyright information for AR Pro.

REFERENCE:
This area allows you to start this online Help file, this manual, as well as the online Read Me file and Change Log file and show a short bio of the AR Pro programmer.

THE VEHICLE SPECIFICATIONS LOOKUP WINDOWS

The Vehicle Specifications windows are tables of vehicle makes listed by model year with specification information about each vehicle listed. These windows enable you to locate a vehicle by model year and retrieve the specification information about that vehicle.

The following information is listed in the **Canadian Vehicle Specs** table:

Curb Wt - The operational weight of the vehicle w/o driver, passengers or cargo.

Wheelbase - The distance from the center of the front axle to center of rear axle.

Track Width Front - The lateral distance between the center of the front wheels.

Track Width Rear - The lateral distance between the center of the rear wheels.

Overall Length - The distance from the center of the front to the center of the rear (not including bumpers on pickup trucks or rear mounted spare tires on SUV's).

Overall Width - The measurement at the widest part of the vehicle (excluding mirrors).

Overall Height - The distance from the ground to the highest point on vehicle (excluding antennas and roof racks).

A1 - Longitudinal distance between the center of the front bumper and the center of the base of the windshield.

B1 - Passenger Car - Longitudinal distance between the center of the rear bumper and the center of the base of the windshield.

B1 - Station Wagons and Vans - Longitudinal distance between the back- light top molding and the front door latch pillar.

B1 - Pick-Ups - Longitudinal distance between the rearmost projection and the front door latch pillar.

C1 - The maximum vertical height of the side glass.

D1 - Vertical distance between the base of the side glass and the lower edge of the rocker panel.

E1 - Distance between side rails or maximum width of top.
F1 - The front overhang.
G1 - The rear overhang.

The following information is listed in the **Expert Autostats® Lite** table:

Front Tire - The size of the front tires that come standard on the vehicle.
Rear Tire - The size of the rear tires that come standard on the vehicle.
Doors - Number of doors on the vehicle.
Body Style - The body style of the vehicle.
Drive Wheels - The drive train of the vehicle.
Wt Dist - The average published % of operational weight on the front and rear axles.
Curb Wt - The average published operational weight of the vehicle w/o driver, passengers or cargo.
Front Wt - The average published operational weight at the front axle of the vehicle.
Rear Wt – The average published operational weight at the rear axle of the vehicle.
Length - The published distance from the center of the front of the vehicle to the center of the rear of the vehicle.
Width - The published width at the widest part of the vehicle (excluding mirrors).
Height - The published distance from the ground to the highest point on vehicle.
Wheelbase – The published distance from the center of the front axle to the center of the rear axle.
Front Overhang - The distance from the center of front axle to the front of the vehicle.
Rear Overhang - The distance from the center of rear axle to the rear of the vehicle.
Front Track - The lateral distance between the center of the front wheels.
Rear Track - The lateral distance between the center of the rear wheels.
Front Bumper Ht - The distance from the ground to the top of the front bumper.
Rear Bumper Ht - The distance from the ground to the top of the rear bumper.
Grd to Windshield Base - Distance from the ground to the base of the windshield.
Center of Gravity - The calculated Center of Gravity height from the ground.
Stability Ratio - The calculated Rollover Stability Rating (in %).
Stability Track - The calculated wheel track at the front to rear of CG within the wheelbase.

Locating and Retrieving a Vehicles Specifications

When the window opens, the model year selected will default to the latest model year in the database. If you need to select a different model year, click on the Model Year list and select the year you are interested in. When you select a new year, the window will automatically update the screen.

Once the year has been selected, you can find the vehicle either by scrolling through the records or by entering the vehicles make in the Find Make control. The Find Make control performs an incremental search **as you type** in the letters.

Navigation Keys

The following is a list of keys that you can use to move through the records of the database.

Up/Left Arrow - Move up one record at a time.
Down/Right Arrow - Move down one record at a time.
Page Up - Moves up a page of records at a time.
Page Down - Moves down a page of records at a time.
Home - Go to the first record.
End - Go to the last record.

There are also navigation buttons at the top of the window. These buttons enable you to move forward, backward, first and last.

The buttons along the lower bottom of the Specifications windows allow you to view a legend of the Specifications labels, print a Specification Report on the currently selected (highlighted) vehicle, preview the Specification Report on the currently highlighted vehicle, and copy the Specification Report on the currently highlighted vehicle to the Windows Clipboard, Close the window, go to a short YouTube video about the Veh Specs windows on our YouTube channel, etc. In addition, clicking your right mouse button while over the grid portion of the window will produce a popup menu, this also has the same selections available to you.

Vehicle Specs Report Editor

The Vehicle Specs Report Editor window allows the user to modify his/her report by selecting fonts, adding a company or department logo or graphic to the report, as well as personalizing the report with the username, company or department name, etc.

Vehicle Specifications Report Editor

| Top Section | Bottom Section |

Report Details

REPTITLE

Model Year: **MYR**   (Date)

☑ Print Title section

☑ Print the date

Report Title text	Model Year/Date text	MYR Data text
Font	Font	Font

Imperial (weights in pounds and distances in inches):
Curb Weight: **CWE**   A1:   **A1E**

Section Title text	Data Title text	Data text
Font	Font	Font

✖ Close   ❓ Help   Test Report

Report Header Section

This section of options deals with the Header band of the report. This band prints with every page of the report that is generated and subsequently printed.

To select a logo or other graphic that you would like to add to your reports click on the **Select...** button. This will bring up a standard File Open dialog or window (depending on your version of Windows). You need only to navigate to the logo or graphic that you wish to include in your reports and "open" it. **Note that only bmp's, jpg's, icons, and metafiles can be used for your logo or graphic.**
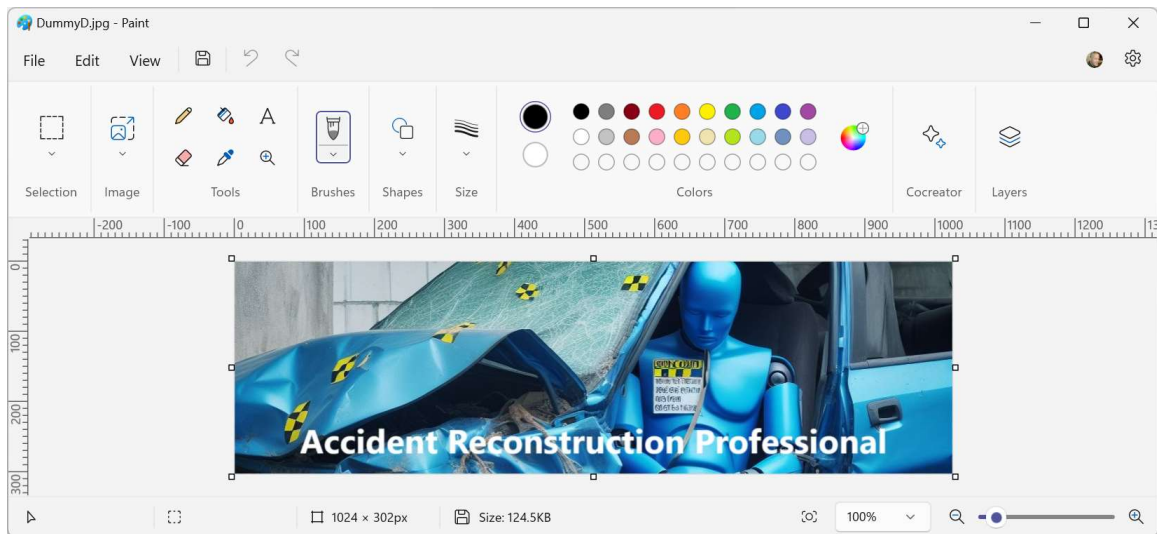
Upon "opening" your chosen logo or graphic, several things happen. First, your graphic is loaded into the large space designed for logos and graphics. Note that your graphic will automatically be sized to fit into the allotted space if your graphic is too large to fit in the space, normally. Some logos/images will need to be shrunk if the user wishes it to take up less space. This can be accomplished with Microsoft Paint or most any other graphics program. Also, the graphic that you have selected will automatically be copied to the "images" folder under the Recall folder on your computer. This is done to ensure that the graphic you want will always be available to your reports, which could be an issue if you selected a graphic on a network somewhere or the graphic gets otherwise moved or deleted from its original location. Once the graphic is loaded you may position the graphic wherever you would like it to be in the space allotted by clicking the **+** or **-** buttons in the Left and Top adjusters. Of course, the graphic and positioning of the graphic will be saved when you press the **Close** button and close the Editor window.

To clear out the graphic and have an empty space you can press the **Clear** button.

The height of this section of the report will automatically be adjusted to accommodate whichever is the tallest, the image or the address information.

You can also set your information in the Address block. You can directly type in this block or right-click to bring up a menu to paste text and are free to include whatever information you need or want to include. You are also able to set the font by pressing the **Font** button under the block and justify the text to the left, center, or right.

Another new feature is the "Open" button next to the address section. This button will open your current report graphic in MS Paint so that you can resize it or any other editing you may want to do with your graphic. If you wish to shrink your graphic so that it takes up less room at the top of your printed reports, you can do that with the "Resize" button in MS Paint, which is highlighted here:

Other Sections

These are all the different sections of report you are requesting. To set the fonts for each of the sections you need only to press the **Font** button for each section and set it to your needs. You can also turn each section as well as some specific items on and off to suit your needs and taste.

Close Button

To close the Report Editor, click the Close button.

Test Report Button

This button will open the Autostats Vehicle Specs window (if it's not already open) and create a test report that uses the Report Editor options you have set so you can see what your printed reports will look like, instantly. If you do not like something you have done you can close the preview and change the offending option. Then, when you are done, click the Test Report button again and see your changes.

PRINTING THE VEHICLE SPECIFICATIONS REPORT

You can print the highlighted vehicle's specifications by right clicking in the Vehicle Specifications Window, then selecting "Print This Vehicles' Spec Report..." from the popup menu.

THE PRINT PREVIEW WINDOW

The Print Preview window contains its own buttons and menu choices:

Zoom to Fit – Shows the entire page, no matter what zoom level or size of the window.
Zoom to Width – Shows the full width of the page, no matter what zoom level or size of the window.
100% - Shows the page at normal size, no matter what zoom level or size of the window.
First – Moves to the first page of the report.
Previous – Moves to the previous page of the report.
Next – Moves to the next page of the report.

Last – Moves to the last page of the report.
Select a Page – Gives you the ability to jump to whatever page you want in the report.
Copy - Copies the current page of the report to the Windows Clipboard.
Print Setup – Allows you to set up your printer.
Print - Prints the report.
Red X Button - Exits the preview window.

The preview window displays all the pages in the previewed report on the left side of the screen for a quick view of the report as well as easy navigation between pages.

TECHNICAL SUPPORT:
If you run into a problem that you cannot correct, please e-mail us at **support@dirigosoftware.com**