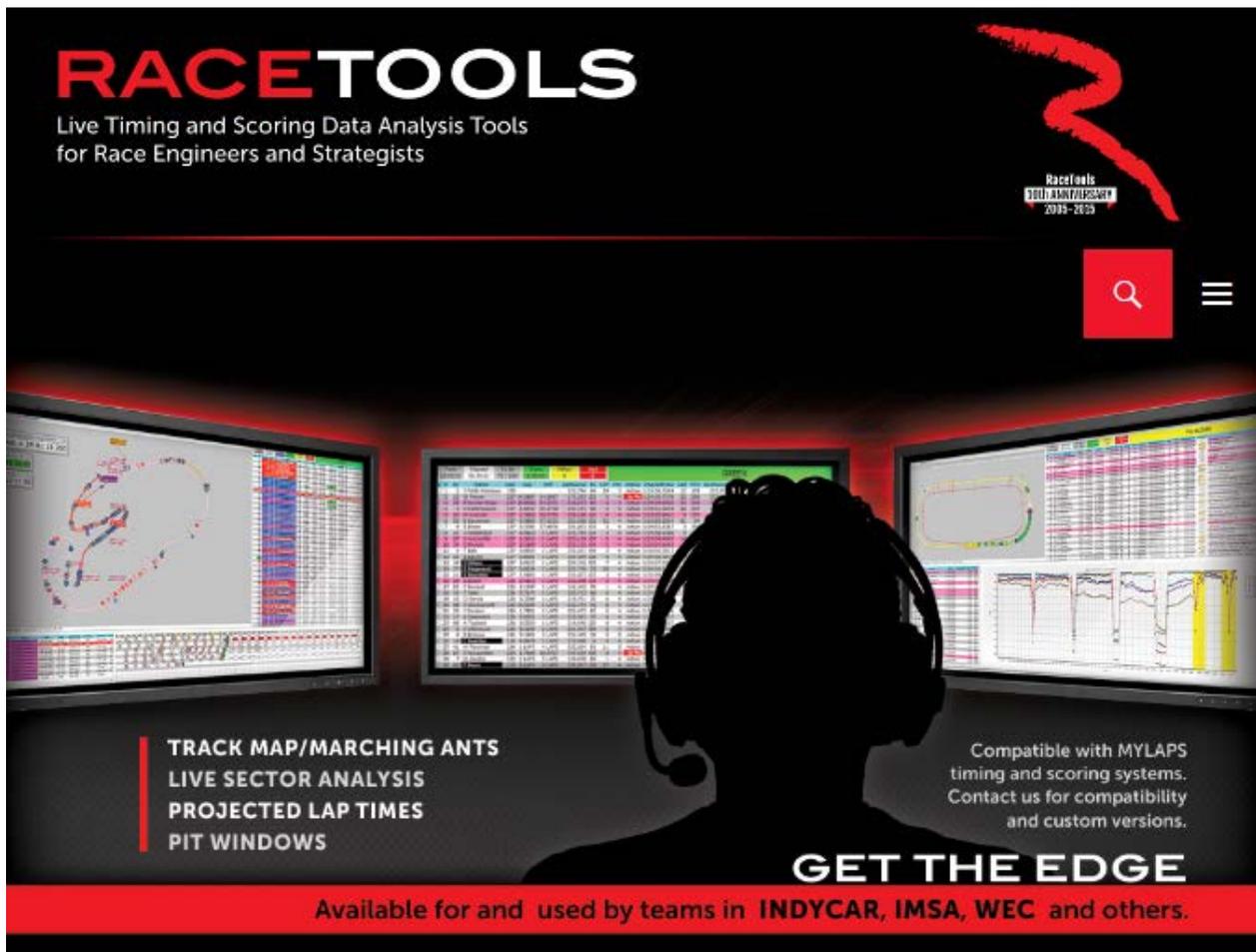


RACETOOLS USER'S MANUAL

V3.17



RACETOOLS
Live Timing and Scoring Data Analysis Tools
for Race Engineers and Strategists

RaceTools
2009-2019

TRACK MAP/MARCHING ANTS
LIVE SECTOR ANALYSIS
PROJECTED LAP TIMES
PIT WINDOWS

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Available for and used by teams in **INDYCAR, IMSA, WEC** and others.

The image shows a person wearing a headset in a control room, looking at three large monitors displaying race data. The left monitor shows a track map with colored lines representing cars. The middle monitor shows a table of race data. The right monitor shows a graph of lap times. The background is dark with red lighting accents.

RaceTools is a software package designed to efficiently summarize timing data provided by the sanctioning series' pit lane real time data feed. It allows for easy tracking of cars on track, summaries of performance indices, real-time lap performance and projections, and strategy management. There are also additional features designed to aid the user with summarization of session and race performance. In addition, the software is highly user configurable to allow for analysis and formatting tailored to the users specific display needs.

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Introduction

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RaceTools is a software package designed to efficiently summarize timing data provided by the sanctioning series' pit lane real time data feed. It allows for easy tracking of cars on track, summaries of performance indices, real-time lap performance and projections, and strategy management. There are also additional features designed to aid the user with summarization of session and race performance. In addition, the software is highly user configurable to allow for analysis and formatting tailored to the users specific display needs.

The screenshot displays the RaceTools software interface. At the top, it shows the application title: "RaceTools T&S Analysis Module (IMSa eRMON) - Daytona Race (RMON)[livetiming.net NOT CONNECTED]". Below the title bar, there are menu options: "File", "PopUps", "Layout", "Options", "Replay (50318/419374 - 12%)", "Help", and "Minimize".

The main interface is divided into several sections:

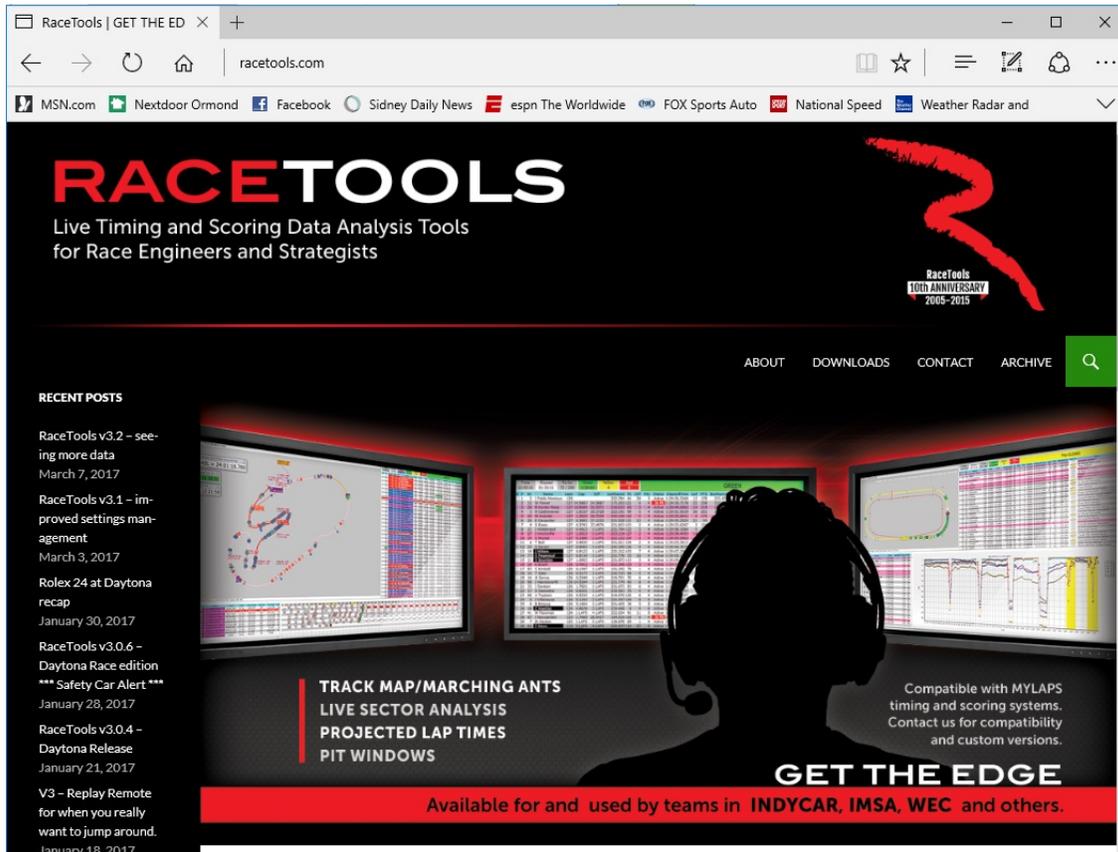
- Track Map:** A circular track diagram with various sectors labeled (e.g., S167, S168, S169, S170, S171, S172, S173, S174, S175, S176, S177, S178, S179, S180, S181, S182, S183, S184, S185, S186, S187, S188, S189, S190, S191, S192, S193, S194, S195, S196, S197, S198, S199, S200). A green flag is shown at the top of the track.
- Driver List Table:** A table with columns: "Time", "Elapsed", "To Go", "Green", "Yellow", "Red", "GREEN". The table lists drivers with their names, lap times, and status. The first few rows are:

Time	Elapsed	To Go	Green	Yellow	Red	GREEN										
16:50:15	02:19:22	7:35 / 6:57	1:59:29	6 L	0											
1	31	P	1	Seb Morris	74	2:18:50.577	0.000	---	1:57.045	68	132.052	1:39.321	3	59	15	Active
2	5	P	2	Christian Fittipaldi	74	2:18:54.226	3.249	3.249	1:57.002	69	132.121	1:39.636	3	59	15	Active
3	10	P	3	Jeff Gordon	74	2:19:06.829	15.852	12.603	1:36.909	20	132.248	1:39.416	3	59	15	Active
- Pit Board:** A grid showing pit stop data for various drivers. The columns represent pit stop numbers (32, 37, 42, 47, 52, 57, 62, 67, 72, 77, 82, 87, 92, 97, 102, 107, 112, 117, 122, 127). The rows represent drivers. The first few rows are:

Nr	Name	Total	Fuel	Wextf(#Rq)	Stop N	Pit Tin	
1	31	Seb Morris	4:03.662	5.8 g	81 (38)	59(15)	1:29.2
2	5	Christian Fittipaldi	4:04.657	5.8 g	81 (38)	59(14)	1:31.6
3	10	Jeff Gordon	3:58.722	5.8 g	81 (37)	59(15)	1:29.9

Downloading the Software

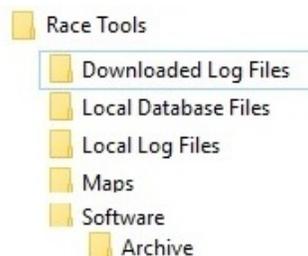
The software is available for download at <http://racetools.com>. Click the link for 'Downloads'. This page contains links to download the software for: IMSA, IndyCar, MRTI, and WEC.



The software can be placed wherever the user determines is best, but a structure similar to that outlined below would place the software into the RaceTools\Software folder. Once downloaded, the file needs to be “unzipped” in order to extract the software. The unzipped .exe file should be placed in the RaceTools\Software folder. Only one file will typically be generated by the unzipping process.

Suggested Initial File Structure

In order to streamline the installation of the software and downloading of associated files, an initial file structure similar to the following should be set up.



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This initial structure allows for efficient management of files used for and created by the software. Below is a guide for the use for each folder.

- Downloaded Log Files – This folder is used to store files that are downloaded post session/event from <http://results.imsa.com/>
- Local Database Files – This folder provides a location to save the database files that are created locally by the software from the incoming data stream (setup explained later in manual)
- Local Log Files – This folder provides a location to save the log files that are created locally by the software from the incoming data stream (setup explained later in manual)
- Maps – This folder is the local archive of maps that will be used for the season. Maps are available at <http://racetools.com/maps/> or provided via email when updates are required
- Software – This is the location the RaceTools software will be downloaded to and run from.
- Archive – This folder provides a place to keep previous versions of the software, leaving them available for use if needed.

NOTE: You may want to create an 'Event' folder for each event, in your 'Documents' Library, where you can store files specific to each event.

With the new season, a lot of teams are reinstalling RaceTools and upgrading to Windows 10. This has caused some users to get file access errors when running RaceTools from the 'Program Files' or 'Program Files (x86)' folder as Windows' UAC restricts access to the program folder. The recommended place to store user data files is the AppData folder.

With RaceTools v3.0.3, we now support both the old style running and saving settings in the program folder or the new style separating the program and data files into the Program Files and AppData folders. If you are running RaceTools from a folder not within the Program Files or Program Files (x86) folder, then RaceTools will continue to read and save the data and configuration files in the same folder as the application. This makes it easy to run multiple versions with its own configuration or copy the configuration from one system to another. I usually run RaceTools from a folder in the Documents folder.

If you choose to run RaceTools from the Program Files or Program Files (x86) folder, then RaceTools will read and save the configuration and data files from and to the ProgramData ↪ AppData folder. This should eliminate the file access errors that Windows generates for trying to save to the Program Files folder.

This does mean that if you are running RaceTools from the Program Files folder, you may need to reconfigure some of the settings that did not get migrated to the AppData folder. You should only have to do this once.

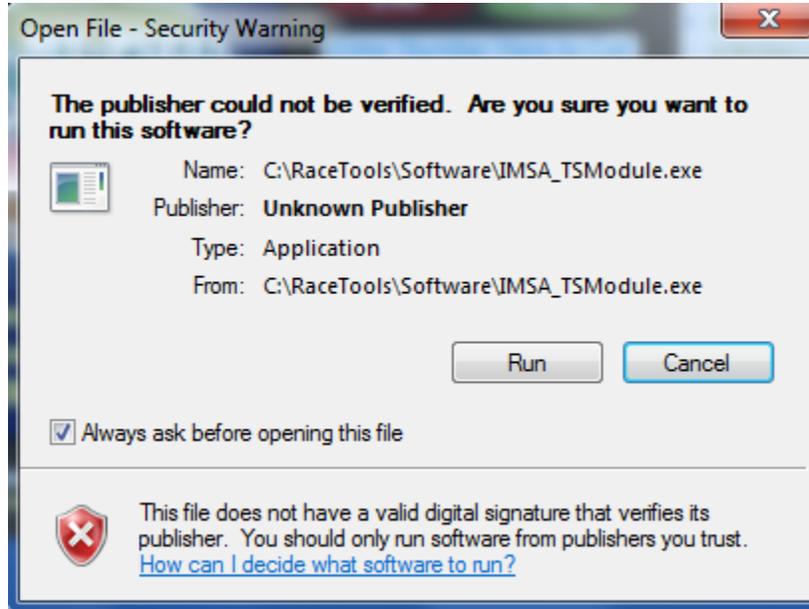
First Time Use

The software works like any other executable file on a computer, simply double click the icon/file (or select the file and hit the "Enter" key) and the program will load.

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Note that a shortcut on the desktop is the easiest method to load the software. Simply right click the executable file and select "Create Shortcut" or ("Send to Desktop") and place this on the desktop or location of choice.

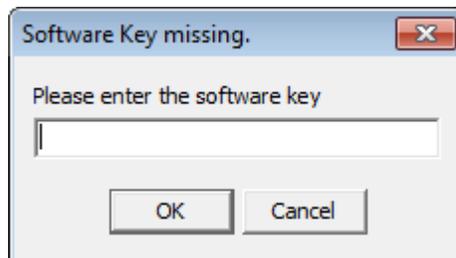
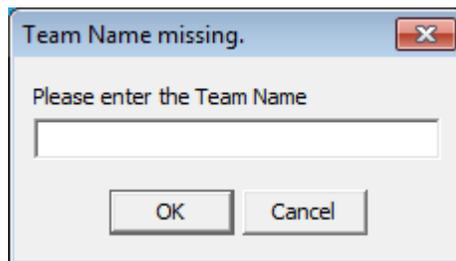
On some computers, the user may be prompted with an "Open File – Security Warning".



It is best to de-select the check box for "Always ask before opening this file" so that this prompt does not appear each time the software is loaded. Select "Run" in the window.

Before the software fully loads a track map needs to be selected and the user license information entered. If a track map is not available or needed, this step can be skipped.

A prompt for the Team Name and Software Key will come up automatically the first time the software is loaded. This will not be seen again until the license expires or new software is loaded from a new file location.



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- The 'Team Name' and 'Software Key' will be provided by the developer when the team has obtained the license to use the software. It is suggested that a text file be created with the team name and software key. This can be stored in the Race Tools main directory for access in case of issue or for distribution to other team members.
- Before the software fully loads a track map needs to be selected and the user license information entered. If a track map is not available or needed, this step can be skipped. The track map can be loaded at any time.
- Once these initial steps are completed, the software should load and be ready for use.

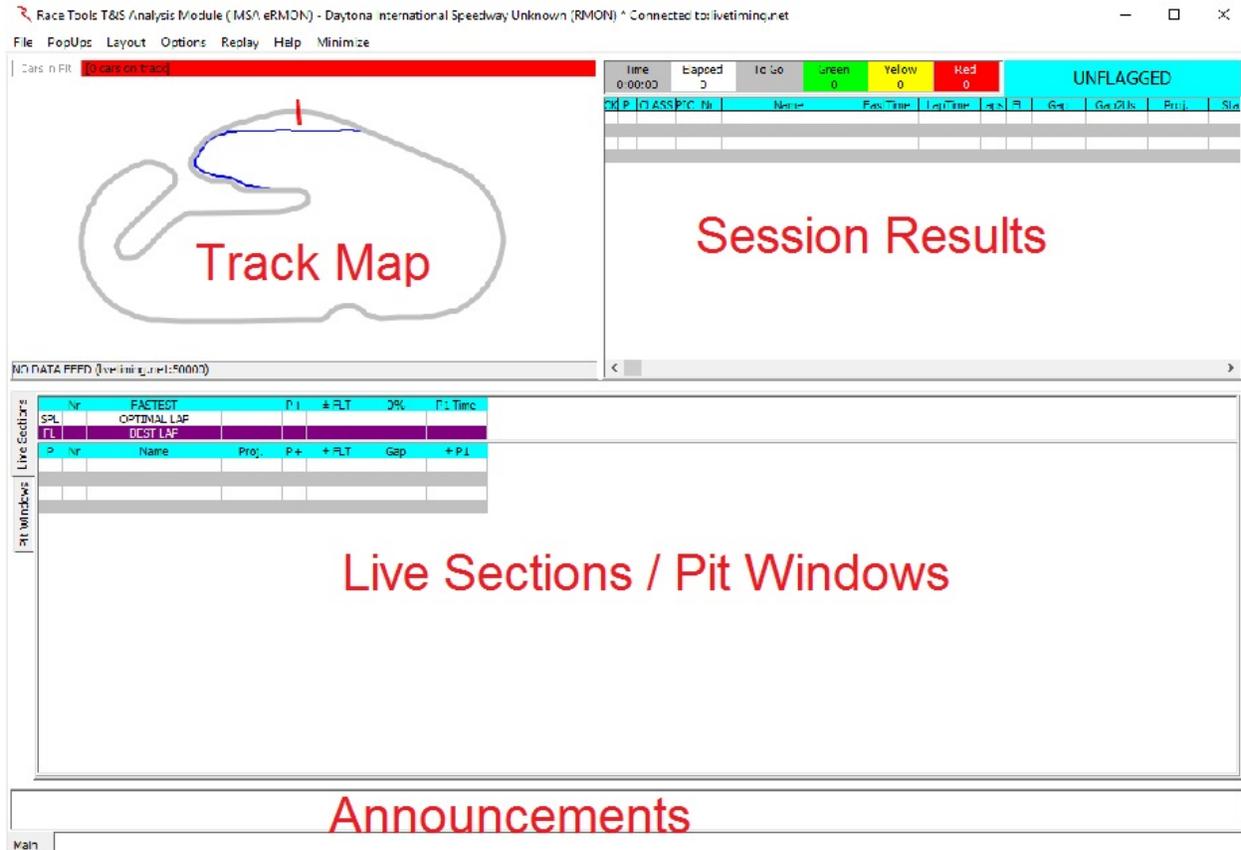


Note that a shortcut on the desktop is the easiest method to load the software. Simply right click the executable file and select "Create Shortcut" or "Send to Desktop" and place this on the desktop or location of choice.

Note: Some menu items are not applicable and will not be available in series that do not have multiple classes running together and do not have multiple drivers per car.

Software and Window Layout

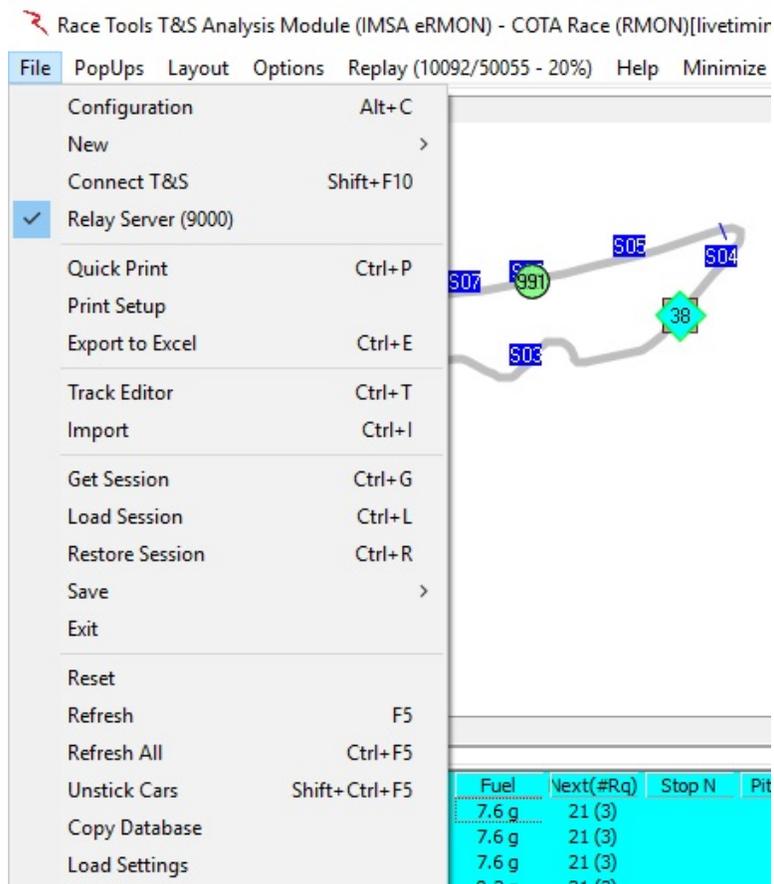
The layout consists of 4 distinct windows under the typical dropdown menus at the top left. The four windows will be referred to as the [Track Map](#), [Session Results](#), [Live Sections/Pit Windows](#), and Announcements windows. Each section is labeled below.



Each section has its own distinct menus that can be accessed via right click. These will be explained later in the manual.

File

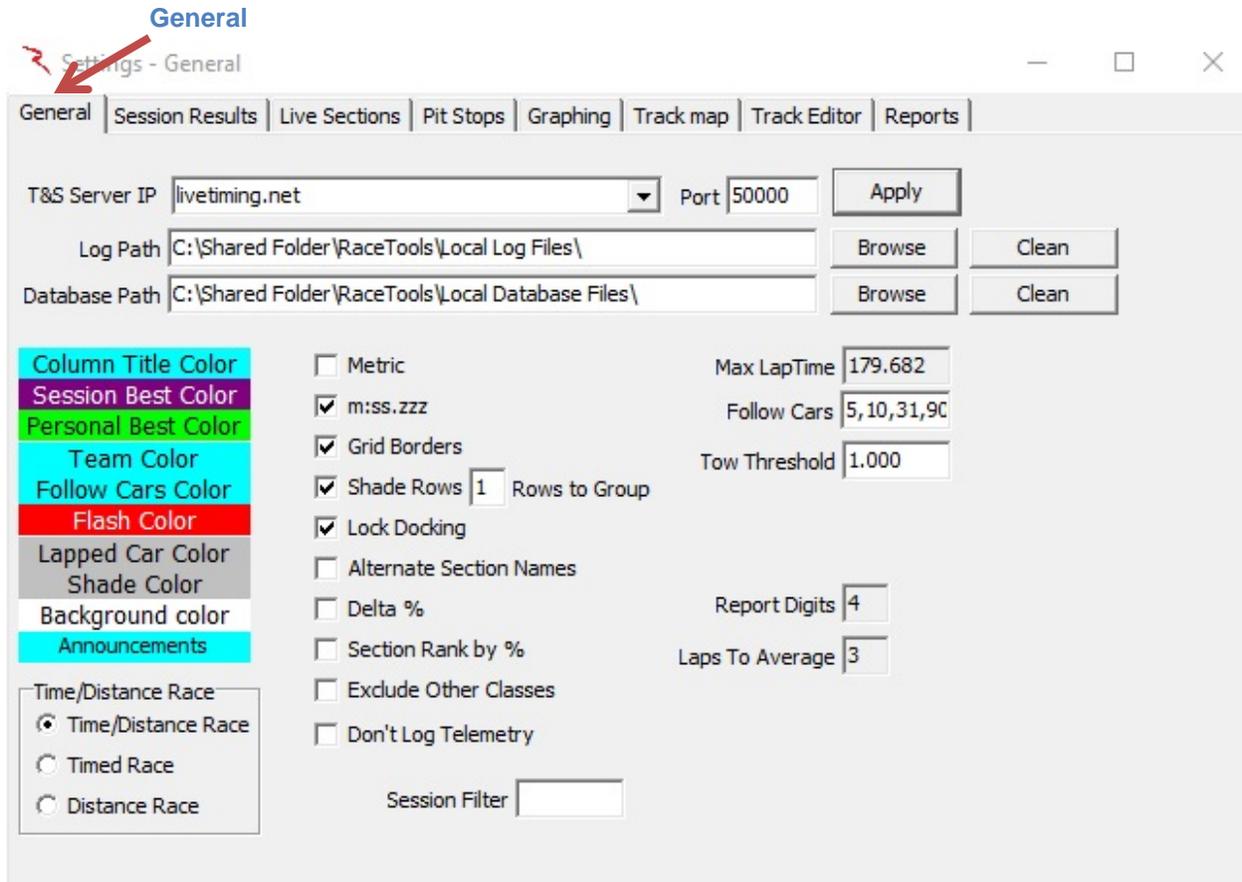
Clicking the "File" button opens a Menu with numerous functions.



Configuration (Alt+C)

- To access the configuration settings for the software, select File → Configuration.
- The downloaded software should be configured to function with the current pit lane timing feed settings. **NOTE: THE IP ADDRESS AND PORT NUMBER WILL BE DIFFERENT FOR EACH SERIES.** Check with the 'Timing & Scoring' provider for your series to confirm the proper settings.
- NOTE: Hovering the mouse over an item will, in most cases, produce a screen tip with help on using the item.

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- T&S Server IP – IP address or hostname of Timing and Scoring data feed.
- Port – Port number of Timing and Scoring data feed.
- Log Path – Where to save log or replay files. Used to replay sessions.
- Database Path – Where to store database or session files (used to reload sessions)
- Clean – Clean will delete old log files, and old session files.

In addition to setting the IP and port, the location of the software created log and database files can be set. When the software receives information from the pit lane timing feed, a log file that can be used for replay is automatically created and stored in the folder you specify. In addition, a database file is also created. This database file can also be loaded with the software, but does not allow for replay. This will be explained in more detail later. Simply set the location by browsing to the appropriate folder(s).

The Column Title Color, Session Best Color, Personal Best Color, Team Color, Follow Cars Color, Flash Color, Lapped Car Color, Shade Color, Background Color, and Announcements color and font can be set by simply double-clicking the text of the desired parameter. Note that the parameter text in the configuration menu shows the current color configuration. Upon action, a color prompt will appear. Select the desired settings and press "OK".



Example of color selection dialogs

- Column Title Color – the background color of the column headings for the Session Results and the Live Sections.
- Session Best Color – Used to highlight times that are P1 or Better.
- Personal Best Color – Used to highlight times that are personal best or better.
- Team Color – the color that the specified team car and corresponding rows of data will be colored for easy recognition (first car in the team cars list).
- Follow Cars Color – Used to highlight cars that are in the Follow Cars list.
- Flash Color – Used to highlight team car that needs to pit.
- Lapped Car Color – Used to highlight Lap/Gap fields of lapped cars during a race.
- Shade Color – Used to Shade even rows when Shade Rows option is enabled. Odd numbered rows use the background color.
- Background Color – Used to set the Application background color.
- Announcements – Announcements area changes to this color when new announcements are received.

The remaining parameters allow setting formatting or calculation thresholds.

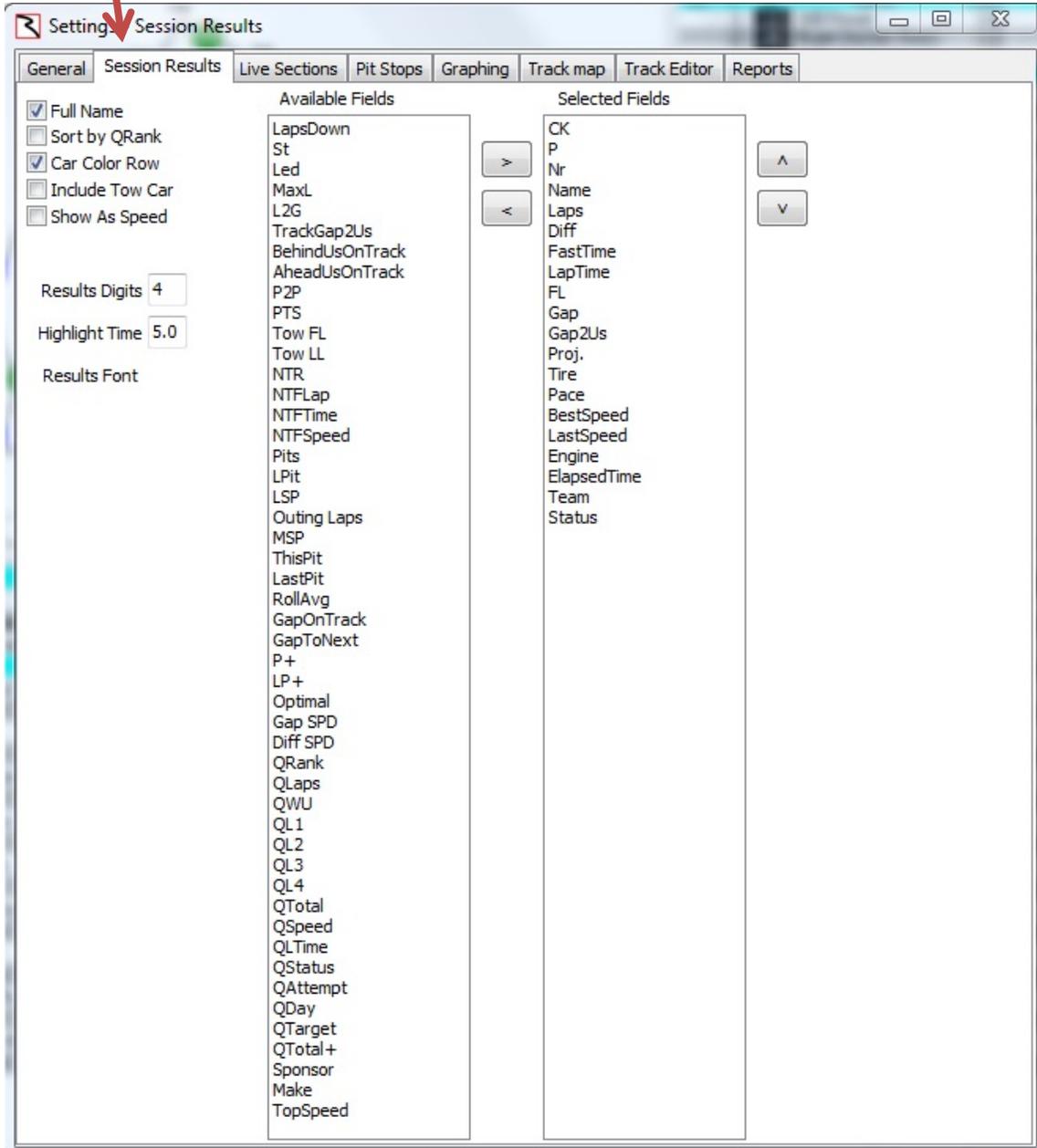
- Metric – Display distances and speeds in Metric (Km, Kph) instead of imperial units (mile, mph).
- m:ss:zzz – Display times in minutes and seconds (m:ss:zzz) instead of just seconds (s.zzz).
- Grid Borders – Draw lines to separate rows and columns in tables.
- Shade Rows – Shade even/odd rows in tables. Set Shade Color for even rows.
- Rows to Group – Number of rows to group for shading.

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- Lock Docking – Disable docking and undocking.
- Alternate Section Names – Use user defined section names in place of standard section names.
- Delta % - Display Deltas as % instead of time or speed. Setting used in F1 – Best Splits and F4 – Best Lap reports.
- Section Rank by % - Rank Section Time Delta by % instead of time lost. Applies to Fastest Splits Summary and Track Map Analysis color coding. Default Rank by time shows where you are losing the most time, while Rank by % shows which sections you are most off the pace, regardless of the time lost.
- Exclude Other Classes – Exclude other classes when calculating session best times. Reports use class leader instead of overall leader for comparisons.
- Session Filter – Only process data for the specified session. Clear to disable filter.
- Max LapTime – Used to filter out slow laps from average calculations. Laptimes above Max Laptime are ignored for average laptime calculations.
- Follow Cars – Highlight comma delimited list of cars in reports. First car listed is the Team Car; others are highlighted in the reports using the Follow Cars Color.
- Tow Threshold – Seconds behind previous car to use to classify if the lap was tow assisted.
- Report Digits – Precision to display in reports.
- Laps To Average – Number of laps to use to calculate the Average Laptime used for calculating Laps To Go.

Session Results

The fields in the right side display in the “Session Results” portion of the program display. Cars are displayed in order of their standings in the session. You can add or subtract fields and arrange them in the order you prefer.



- Full Name – Display First and Last Name instead of First Initial and Last Name.
- Sort By QRank – Show competitors in Qualifying Rank order, overriding the default order.
- Car Color Row – Use Defined Car Color if available.
- Include Tow Car – Include car providing Tow in TowFL and TowLL columns.

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- Show As Speed – Show times as Speed for fields that don't have corresponding Speed Columns, i.e. Pace, Proj and Q Lap time/speeds.
- Results Digits – Precision to display times in Results table.
- Highlight Time – Time in seconds to highlight a S/F crossing. Set to zero to disable.
- Results Font – Double Click to set the Results Font.
- [Click here](#) to see a list of the available fields and their descriptions, not all of which are applicable depending on the series, session type and track type.
- Click on the field in the program window to get a more detailed description of the field.

The screenshot displays the RaceTools T&S Analysis Module interface. On the left is a track map with numbered sectors. The main area shows a live leaderboard table with columns for Class, Driver Name, Laps, Elapsed Time, Diff, Gap, Fast Time, Best Speed, Lap Time, S/F, and Pit. A context menu is open over the table, listing various actions like 'Edit Column', 'Copy to Clipboard', and 'Find Car'. A red arrow points from the 'Find Car' option in the menu to the 'Find Car' button in the context menu.

Class	Driver Name	Laps	Elapsed Time	Diff	Gap	Fast Time	Best Speed	Lap Time	S/F	Pit	
10	Jordan Taylor	365	30:51:28.537	0.000	---	1:36.394	164	1:32.954	1:38.105	26	541
5	Christian Fitzpatrick	365	30:51:37.017	8.480	8.480	1:36.269	165	1:33.127	1:38.492	27	541
90	Rene Rast	365	30:52:05.034	34.497							
4	Luis Felipe Derani	363	20:52:23.869	2L							
66	Joey Hand	359	30:52:39.783	6L							
62	James Calado	359	30:52:39.996	6L							
3	Antonio Garcia	359	30:52:40.997	6L							
88	Billy Johnson	359	30:52:41.786	6L							
89	Harry Tindnell	359	30:52:41.803	6L							
111	Rita Werner	359	30:52:43.888	6L							
11	Nicolas Lejeune	358	30:51:46.691	7L							
12	Alexander Sims	357	30:51:13.743	7L							
13	Kevin Estre	357	30:52:54.305	6L							
14	Tom Dyer	356	30:51:58.129	6L							
15	Mikhael Beeche	354	30:52:03.169	1L							
16	James French	349	30:52:59.701	16L							
17	Eric Curran	343	30:51:42.322	22L							
18	Mario Farnbacher	342	30:51:15.776	22L							
19	Sam Bird	342	30:51:23.201	22L							
20	Robin Liddell	342	30:51:28.053	22L							
21	Tom Dyer	342	30:51:28.113	22L							
22	Christopher Mies	342	30:51:28.568	23L							
23	Katherine Leece	342	30:51:38.037	23L							
24	Manuel Frensch	342	30:52:46.373	23L							
25	Daniel Morad	341	30:51:32.806	24L							
26	Jesse Krohn	340	30:49:52.133	24L							
27	Erino Gennaro Lo	340	30:52:11.055	25L							
28	Frank Montecalvo	338	30:51:32.206	26L							
29	Spencer Pigot	338	30:12:36.405	26L							

- Find Car - If you need to quickly find a car in the leaderboard or on track, you can quickly (and temporarily) set it as the 'TeamCar'. Select the 'Find Car' menu option (CTRL+F) and enter the Car Number that you want to set as the 'TeamCar'. This will highlight the car in all the reports including the track map.
- Enter Car numbers separated by a comma (11,54,65). The first car number will be the 'Team Car'.

Find Car ✕

Enter Car Number to Find

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Time	Elapsed	To Go	Green	Yellow	Red	GREEN
10:32:12	00:15:11	*388 / 375*	15:10	0	0	

CK	P	CLASS	PIC	Nr	Name	FastTime	LapTime	Proj	Gap2Us
34		GTD	1	007	James Davison	2:04.744	2:05.806	5.185	-12.740
36		GTD	2	22	Leh Keen	2:04.827	2:06.306	4.744	-10.280
37		GTD	3	33	Ben Keating	2:05.022	2:06.268	5.070	-9.954
38		GTD	4	63	Alessandro Balzan				190
39		GTD	5	23	Ian James				119
40		GTD	6	555	Maurizio Mediani				100
41		GTD	7	27	Andrew Davis				

Clicking Nr field:
 SHIFT+Click will toggle the car as the Team Car. Previously selected cars will be retained as 'Follow Cars'. If a car was already selected, it will be deselected.
 CTRL+SHIFT+Click will clear the Team Car and Follow Car list.
 CTRL+Click will allow you to set the Car Color.
 Double Click brings up the TimeCard.

Find Car (CTRL+F) quickly selects a car as the Team Car, highlighting it in all reports and the track map.

Find Car Ctrl+F

Enhancements:

- When replaying a logfile, the Replay menu displays the progress (lines read / lines total - % complete). This helps provide feedback on whether the replay is in progress, paused or not active.
- 'Flip with Track Map' option added to Session Results popup menu to swap the positions of the track map and the Session Results.
- You can quickly select the 'Team Car' and add it to the Follow Cars list by SHIFT+Clicking the line in the Session Results table or use the 'Find Car' menu (CTRL+F, or type a numeric key with the Session Results table selected). The last car selected is added or moved to the front of the Follow Cars list (making it the primary team car to highlight on the track map and analysis). If the car was previously selected it is moved to the front of the list. To clear all of the cars from the list, enter an 'X' in the Find Car requestor. This allows you to quickly find a car in the results and/or on the track map.
- **Custom Fields in Session Results table:**
 - To bring more information to the main program window, I'm adding some custom fields that you can manually enter into the column field by using the Insert Column or Edit Column options. I consider these 'works in progress', but you will be able to add:
 1. Section Times/Speeds by entering the section name. If the field is defined as a speed trap, then it will be displayed as SPEED. Otherwise it will be displayed as time.
 2. Best Lap Section Times by entering 'BL_'+<sectionname> (i.e. 'BL_S01'). This will display the section time for the competitor's best lap.

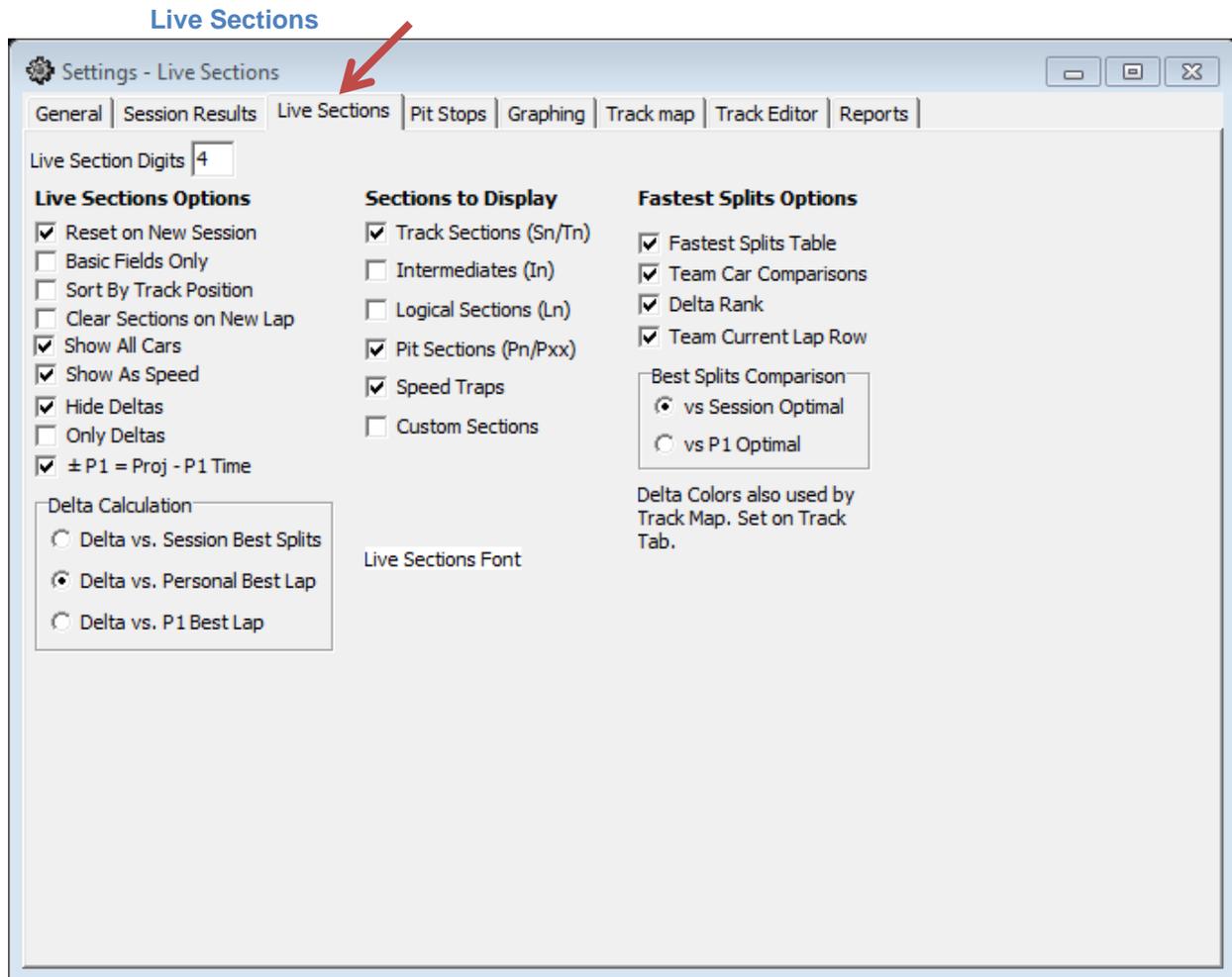
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- 3. Best Splits Section Time by entering 'BS_'+<sectionname> (i.e. 'BS_S01'). This will display the best section time for the competitor.
 - 4. Best Lap Section Time Delta by entering 'BLD_'+<sectionname> (i.e. 'BLD_S01'). For the class leader, it will display the Best Lap Section time. For all others, it will display the delta to the class leader, which may be greater than (longer time, slower) or less than zero (shorter time, faster).
 - 5. Best Splits Section Time Delta by entering 'BSD_'+<sectionname> (i.e. 'BSD_S01'). For the class leader, it will display the Best Section time. For all others, it will display the delta to the class leader, which may be greater than (longer time, slower) or less than zero (shorter time, faster).
 - 6. Previous Rank by entering 'PR'. This will display the competitor's rank at the last S/F crossing and is used to highlight improvements (P column green) or decline (P column red) in position.
- **Heat Map:**
 - To make it easier to identify faster/slower section times, the Section Time Delta fields defined above are color coded when the 'Heat Map' option is enabled. The colors below are subject to change.

The screenshot displays the RaceTools software interface. The main window shows a session results table with columns for Time, Laps, S/F, P, and various section times. A settings menu is open, showing the 'Heat Map' option checked. Three callout boxes provide additional information:

- Top Callout:** "New custom fields are being added to the Session Results table. They include section times, best lap section times and best section times. Just enter a section name as the column title to display the section time for the current lap (or latest lap), add a 'BL_' to the beginning of section name to display the Best Lap section time, 'BS_' for the Best Splits section time, 'BLD_' for the Best Lap Section Time Delta (versus the class leader), and 'BSD_' for the Best Splits Section Time Delta (versus the class leader) to display even more information in the Session Results table."
- Bottom Left Callout:** "For Race sessions, position changes at the S/F line are highlighted in the 'P' field."
- Bottom Right Callout:** "The Heat Map option applies color highlights to the BLD and BSD values to color code relative times/speeds, with different colors used for +/- 0.5%, 1%, 2%, 5% and 10% deltas."

There are now two 'Refresh' options. The default Refresh (F5) option refreshes the data, sorting the competitors, leaderboard, etc. but no longer resizes the Session Results columns. To auto resize the Session Results columns (and do a data refresh) you now need to use the Refresh All (CTRL+F5) option.



Live Sections Options

- **Reset on New Session** – Reset columns on new session. Automatically adjusts for any changes in track configuration between sessions.
- **Basic Fields Only** – Only display a subset of the Live Sections Columns.
- **Sort By Track Position** – List competitors based on track position instead of rank.
- **Clear Sections on New Lap** – Clear section times with each new lap instead of keeping old section times visible. Current section times underlined in blue if disabled.
- **Show All Cars** – Show all cars even if a subset is selected.
- **Show As Speed** – Show as speed instead of time. (Especially useful for Oval track races.)
- **Hide Deltas** – Hide section Delta columns.
- **Only Deltas** – Show only Delta times, hide section times.

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- $\pm P1 = \text{Proj} - P1 \text{ Time}$ – Calculate $\pm P1$ using projected laptime instead of comparing time to line versus P1's best lap.
- Delta vs. Session Best Splits – Select type of Delta to display.
- Delta vs. Personal Best Lap – Select type of Delta to display.
- Delta vs. P1 Best Lap – Select type of Delta to display. Also applies to how Live Sections are highlighted, compared to best laps or best splits.

Sections to Display

- Track Sections (Sn/Tn) – Display physical track sections. Use Track Editor to view/edit section types.
- Intermediates (In) – Display Intermediate track sections (grouped physical sections to reduce the number of sections to analyze). Use Track Editor to view/edit section types.
- Logical Sections (Ln) – Display Logical Sections. Use Track Editor to view/edit section types.
- Pit Sections (Pn/Pxx) – Display Pit Lane sections. Use Track Editor to view/edit section types.
- Speed Traps – Display speed traps. Use Track Editor to view/edit section types.
- Custom Sections – Display user defined sections. Use Track Editor to view/edit section types.

Fastest Splits Options

- Fastest Splits Table – Display Fastest Splits summary above Live Sections table.
- Team Car Comparisons – Display Team Car rows in Fastest Splits Summary Table.
- Delta Rank – Display Team Car's Optimal and Fast Lap delta and rank for each section.
- Team Current Lap Row – Display Team Car's current lap section deltas versus comparison lap.
- Best Splits Comparison – vs. Session Optimal – vs. P1 Optimal – Define Best Splits to display, either the session's optimal lap or P1's optimal lap.

NOTE: The top of the Live Sections table has been enhanced with more analysis information. The top three rows are for the 'Best Splits' (SPL), with the top row being the Optimal Lap (best splits for all competitors in session if the vs Session Optimal option is selected) or Best Splits for P1 (if the 'vs P1 Optimal' is selected). The second row is the team car's optimal lap information. The section times are deltas Row 1. The third row is the Section Rank and % lost or gained, just like in the track maps. These also support the same color coding as the track maps to highlight the sections where the most time is lost. If you do not want these sections highlighted, set $\Delta R1 = \Delta R2 = \Delta R3 = \Delta R$.

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The next three rows are for the 'Fast Lap' (FL), with the first row (Row 4) being the session's fastest lap, the second row is the team car's fastest lap, and the third row is the team's section rank and % time lost or gained.

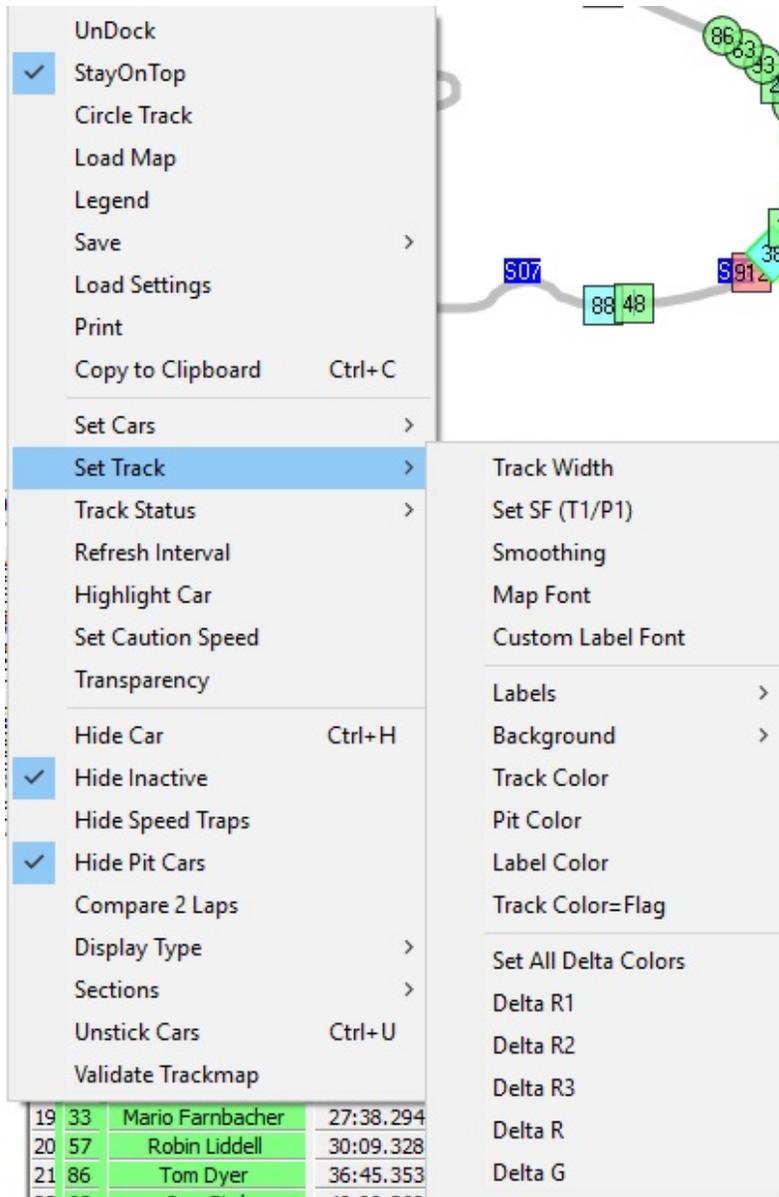
The last row is the 'Live Section' for the team car. It is almost identical to the Live Sections table below except that we display the section deltas instead of section times and section deltas are highlighted green if the section is faster than the team's best lap.

You can hide the Rank (% Loss) rows (Rows 3 and 6) with the popup menu 'Hide Delta Rank' option. If no team cars are selected, the Team and Rank rows (Rows 2, 3, 5, 6, and 7) will be hidden. You can hide the whole top table using the main menu Options/Hide Fastest Splits option.

The screenshot displays the RaceTools interface. On the left, a 'Live Sections' table shows data for the fastest lap (SPL) and the team's fastest lap (FL). The main table lists competitors with columns for position (P), number (Nr), name, time, and project (Proj). A context menu is open over the table, listing various options such as 'Reset Columns', 'Reset Section Columns', 'Show Column As Speed', 'Hide Column', 'Freeze Columns', 'Hide Competitor', 'Track Sections (Sn/Tn)', 'Intermediates (In)', 'Logical Sections (Ln)', 'Pit Sections (Pn/Pxx)', 'Speed Sections (SPn)', 'Custom Sections', 'Basic Fields Only', 'Reset on NewSession', 'Show All Cars', 'Exclude Other Classes', 'Classes', 'Show as Speed', 'Hide Deltas', 'Only Deltas', 'ClearSectionsOnNewLap', 'Hide Sections', 'Live Sections By Track Position', '± P1 = Proj - P1 Time', 'Delta vs BestSplits', 'Delta vs Best Lap', and 'Delta vs P1 Lap'. The 'Show All Cars' option is checked. At the bottom, an error message reads 'Error in Position: 68 Init/Start Message Received'.

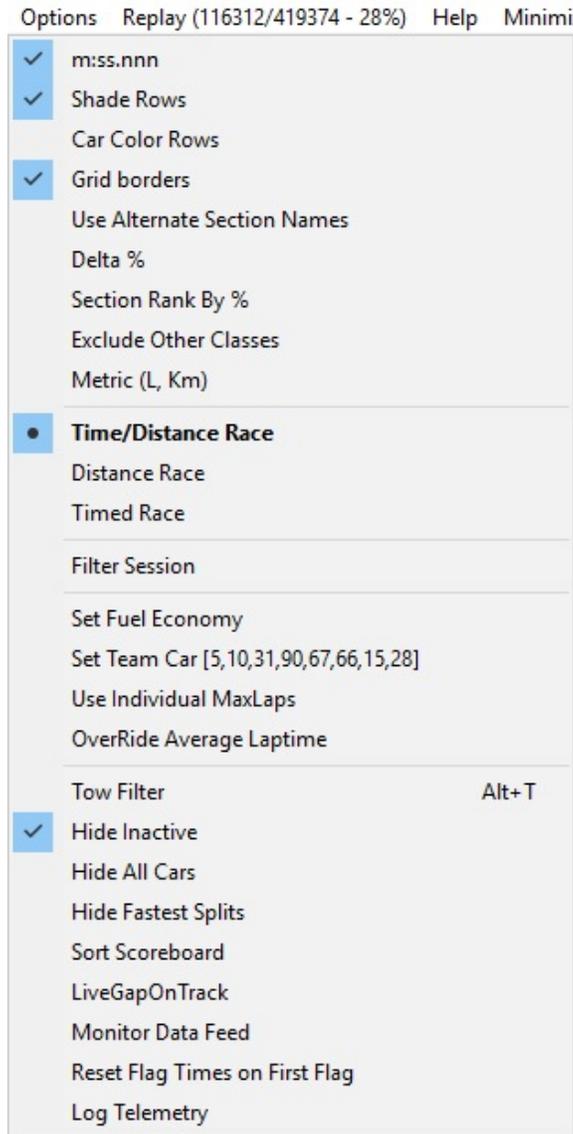
In the example, I have selected Car 10 (click the 'CK' column in the Session Results table for the car and an 'X' will mark the selected cars) and disabled the 'Show All Cars' popup menu option. Note that if no cars are selected, the 'Show All Cars' will be enabled which means at the start of each session, before cars are in the table, the 'Show All Cars' will be re-enabled since no cars can be selected. This allows you to reduce the height of the window if you only want to see section data for your own car(s).

You set these colors with the new DeltaR1, DeltaR2, DeltaR3, DeltaR and DeltaG menu items found on the Track Map popup menu. The 'Set All Delta Colors' option prompts for all 5 colors consecutively if you want to review or change all of them.

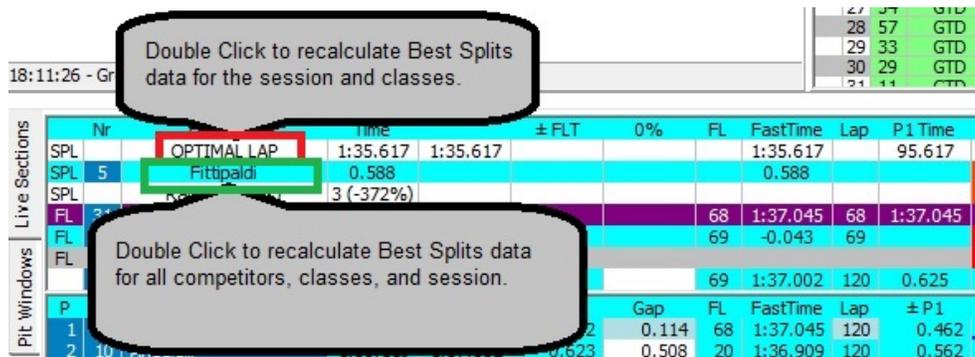


You can hide the top section completely with the 'Hide Fastest Splits' menu option in the 'Options' dropdown menu, shown below.

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You can force RaceTools to recalculate the BestSplits (optimal lap) for all competitors and classes by double clicking the 'Optimal Lap' label in the Fastest Splits table. This may be required if class numbers change during a session which sometimes occurs during qualifying.



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Pit Stops

Settings - Pit Stops

General | Session Results | Live Sections | **Pit Stops** | Graphing | Track map | Track Editor | Reports

draw All Pitstops
 draw Tire Type
 draw Pit Lap #
 Show All Cars
 Zoom In
 Use Individual Max Laps
 Over Ride Average Lap Time
 Average Lap Time
 Minimum Pit Stop Time
 Pit Stop Digits
 Pit Stop Font

Fuel Economy

Green 4.5500 MPG 0.782 g/Lap 21.60 laps/tank
 Yellow 8.0000 MPG 0.445 g/Lap 37.98 laps/tank

Track Length Miles Duration
 Race Laps -0.9 stops Laptime 00:00:00
 Pace Laps Pit Time
 Capacity Gallons Laptime 00:00:00
 Laps 0 Laps

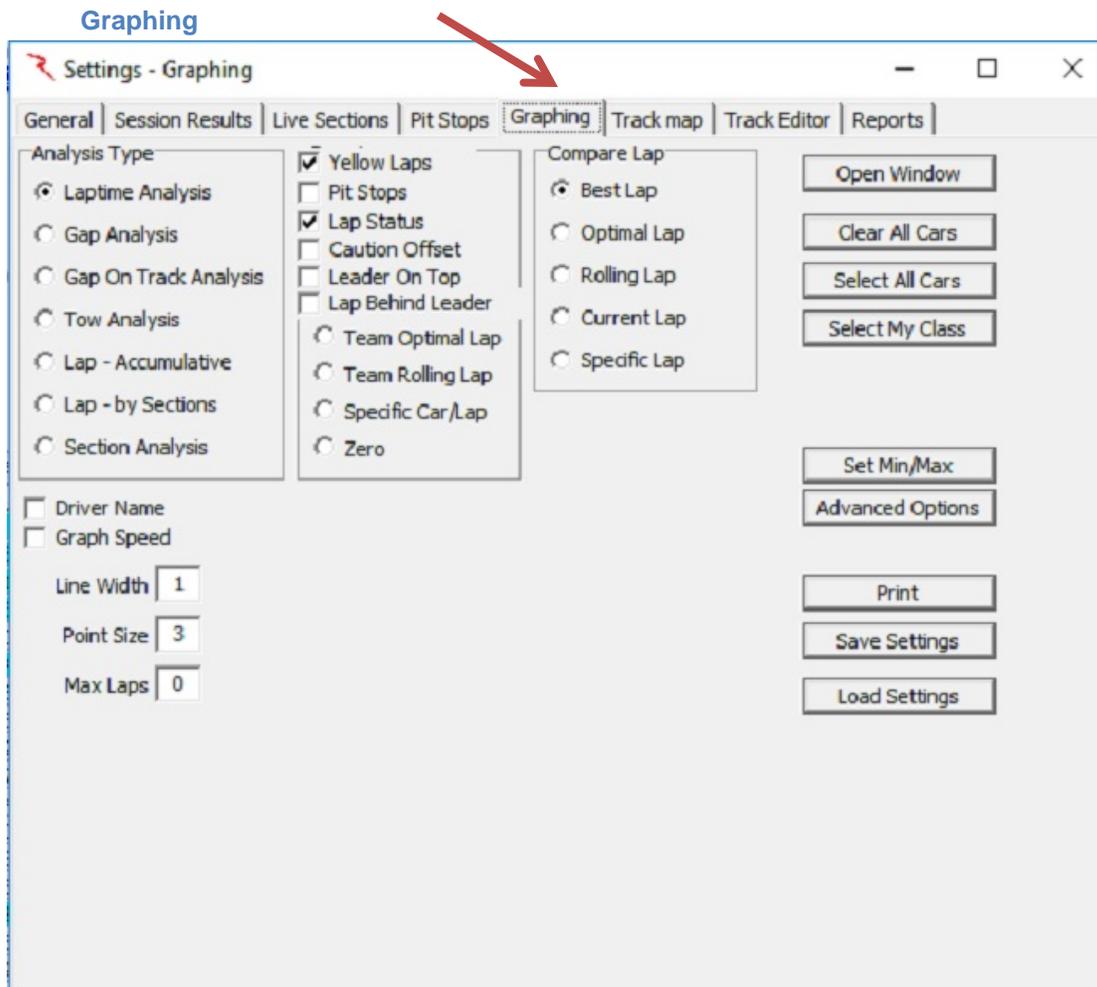
CLS	Car	Driver	(mpg)	(mpg)	Capacity
P	2	Dalziel	4.55	8.00	20.80
GTL	3	Garcia	4.55	8.00	23.50
GTL	4	Milner	4.55	8.00	23.50
P	5	Albuquerque	4.55	8.00	16.90
PC	8	Falb	4.55	8.00	16.90
P	10	Taylor	4.55	8.00	16.90
GTD	11	Ineichen	4.55	8.00	25.10
P	13	Buemi	4.55	8.00	16.90
GTD	14	Pruett	4.55	8.00	24.80
GTD	15	Hawksworth	4.55	8.00	24.80
GTD	16	Sandberg	4.55	8.00	25.10
GTD	18	Gdovic	4.55	8.00	25.10
GTL	19	Farfus	4.55	8.00	28.50

Double Click the car number to set custom car color.
 Edit individual fuel economy values

- Draw All Pit Stops – Render all pit stops in Pit Stop Window graph.
- Draw Tire Type – Render Tire Type for each stint.
- Draw Pit Lap # - Render Lap Pitted instead of Car Number for each pit stop.
- Show All Cars – Show All Competitors even if a subset is selected.
- Zoom In – Only include laps 1 ½ pit windows before and 2 pit windows after the Team Car's current lap. Useful for endurance races with many pit stops.
- Use Individual Max Laps – Use individual Max Laps (laps to go) to calculate pit windows instead of the leader's Max Laps/Laps to Go.
- Over Ride Average Lap Time – Use custom average lap time to calculate TEAM Laps To Go (and pit windows) instead of rolling Green Lap average. Only applicable for times sessions.

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- Average Lap Time – Average Lap Time to use instead of the Rolling Green Lap Average when 'Over Ride Average Lap Time' is enabled. Used for calculating Laps to Go and Pit Windows. Double click to reset to current Rolling Average.
- Minimum Pit Stop Time – Set minimum pit lane time for a stop. Pit times below this threshold are treated as a drive through and the fuel counter is not reset. This value is used in the Pit Lane Monitor Countdown display (for events that require a minimum pit stop time) and to exclude 'invalid' or 'non-service' pit stops from Pit Window calculations.
- Pit Stop Digits – Number of digits to display for pit stop times.
- Green MPG – Green Lap Fuel Economy.
- Yellow MPG – Yellow Lap Fuel Economy.
- **g/lap** – Amount of fuel used per Green Lap.
- **g/lap** – Amount of fuel used per Yellow Lap.
- **laps/tank** – Number of Green Laps possible per tank of fuel.
- **laps/tank** – Number of Yellow Laps possible per tank of fuel.
- Track Length Miles – Track Length. Will be updated via data feed where available.
- Race Laps – Distance of race in laps.
- Pace Laps – Number of Pace Laps. Used to calculate fuel used.
- Capacity Gallons – Car fuel tank capacity. Used to determine laps per tank and pit windows.
- Duration – Duration of race for Timed races. Used to calculate pit windows before the race.
- **Laptime** 00:00:000 – Average Green laptime. Used to calculate pit windows before the race.
- **Pit Time** – Time lost for pit stop. Used to calculate pit windows before the race.
- **Laptime** 00:00:000 – Average Yellow laptime. Used to calculate pit windows before the race.
- **Laps** – Number of Yellow laps anticipated. Used to calculate pit windows before the race.
- Calc – Calculate Pit Windows based on entered values. Used before the race to calculate pit windows.
- Reset – Apply Fuel Economy to all cars in the list, set as default.
- Save – Apply and Save Fuel Economy changes.



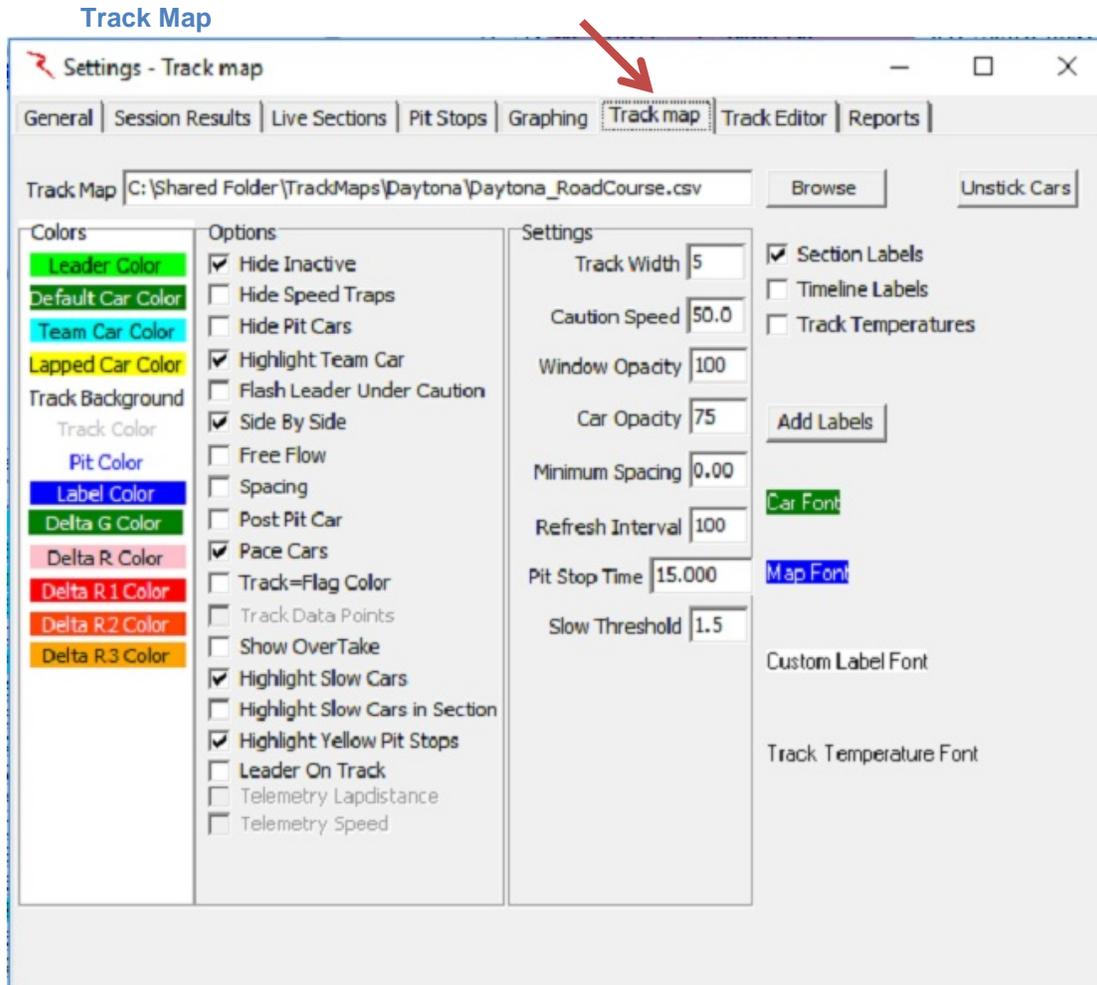
Analysis Type – Select from the list the type of graph you would like to create.

- Laptime Analysis
- Gap Analysis
- Gap On Track Analysis
- Tow Analysis
- Lap- Accumulative
- Lap – by Sections
- Section Analysis

- Driver Name – Display Driver Name in the legend.
- Graph Speed – Graph Speed instead of Time.
- Yellow Laps – Render Yellow Laps with a yellow line.
- Pit Stops – Render Pit Stops with red line/point.

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- Lap Status – Render Lap Status (Yellow Laps) in background to identify caution laps.
- Vs. Time Of Day – Use TOD for x axis instead of lap number.
- Exclude Tow – Exclude Tow Laps from analysis.
- Sort By Time – Render times sorted by time instead of lap number or TOD.
- Open Window – Open Graph Popup Window.
- Clear All Cars – Clear all cars from graph. Use to reset car selection.
- Select All Cars – Select all cars to analyze.
- Select My Class – Select all cars in my class to analyze.
- Set Min/Max – Set Y axis maximum and minimum values.
- Advanced Options – Open [Chart Editor](#) to access advanced Chart properties.
- Print – Print Graph.
- Save Settings – Save Advanced Graph properties to a file.
- Load Settings – Load Advanced Options settings previously saved with Save Settings.



- Track Map – Use the Browse button to find and load the Track Map.
- Colors – Double click on the items in the list to select or change the color of the selected item. Items are rendered in these colors on the Track Map.
- Hide Inactive – Hide Inactive cars (cars that have not had a line crossing for more than 3 laps. Hide Inactive option does not remove the car from the results or analysis, just from the track map and running order. The car's status will be set to '(Active)' to differentiate it from 'Active'. The will still be visible in the session results table and all of the reports.
- Hide Speed Traps – Don't render Speed Traps.
- Hide Pit Cars – Don't render cars in Pit Lane.
- Highlight Team Car – Render Team Car opaque and flash outline to help quickly identify the Team Car on the Track Map.
- Flash Leader Under Caution – Flash leader Car outline to help quickly identify the leader during a caution.

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- Side By Side – Render 3 cars wide on Track Map. Useful on ovals when cars are running close together.
- Free Flow – Allow projected track positions to pass cars between timelines. Used in RIS version.
- Spacing – Render cars with a gap between cars to help identify cars close together.
- Post Pit Car – Draw where Team Car will be after a pit stop. The marker is rendered Pit Stop Time behind the Team Car.
- Pace Cars – Include Pace Car if available.
- Track =Flag Color – Render Track in the same color as the Flag.
- Track Data Points – Don't clear trackmap between updates. Leaves a trail of cars.
- Show Over Table – Highlight cars (Green with Red outline) when 'OverTake' activated.
- Track Width – Width of track outline.
- Caution Speed – Default caution speed. Calculate track position using this speed when under caution.
- Window Opacity – Window opacity when track is undocked.
- Car Opacity – Render car with transparency. Useful for being able to see below the other cars when cars are running close together. 100=opaque, 0=invisible.
- Minimum Spacing – Minimum space between cars rendered on track.
- Refresh interval – Interval in ms between trackmap updates. Default in 100ms (10Hz).
- Pit Stop Time – Time lost due to pit stop, including inlap, pit stop, and outlap compared to a regular lap. Used to draw the Post Pit Car.
- Slow Threshold – Threshold for cars slow in completing a section.
- Section Labels – Show section labels on track map.
- Timeline Labels – Show timeline labels on track map.
- Add Labels – Add Custom Labels to track map. Use to number corners or other features.
- Car Font – Double Click to set Car Number Font for track map.
- Map Font - Double Click to set Map Standard Label Font used for section and time line labels for track map.

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- Custom Label Font – Double Click to set Map Custom Label font.

The screenshot displays the RaceTools Track Map application. The main window shows a track layout with various colored markers (blue, green, red, yellow) representing different track features or cars. A context menu is open on the right side, listing various options such as UnDock, StayOnTop, Circle Track, Load Map, Legend, Save, Load Settings, Print, Copy to Clipboard, Set Cars, Set Track, Track Status, Refresh Interval, Highlight Car, Set Caution Speed, Transparency, Hide Car, Hide Inactive, Hide Speed Traps, Hide Pit Cars, Compare 2 Laps, Hide Borders, Display Type, Sections, Unstick Cars, and Validate Trackmap. The menu is currently showing the 'Legend' option selected.

Time	Weight	Position	Order	Time	Weight	Position	Order	Time	Weight	Position	Order
6:59.959	13.1 g	180 (24)	151	1:07	16	180	107	16	180	107	16
6:41.198	7.2 g	173 (22)	140	1:15	16	180	107	16	180	107	16
7:49.967	10.6 g	177 (19)	139	1:20	16	180	107	16	180	107	16
8:59.387	15.0 g	183 (22)	151	57.	16	180	107	16	180	107	16
8:58.829	6.6 g	172 (33)	150	1:26	16	180	107	16	180	107	16
7:23.783	6.4 g	172 (23)	140	1:14	16	180	107	16	180	107	16
12:32.277	15.4 g	182 (22)	151	1:06	16	180	107	16	180	107	16
10:37.748	15.3 g	180 (33)	150	1:15	16	180	107	16	180	107	16

Track Editor

Track Editor – In the event that a supplied track .csv file needs modification, or of the user desires to apply aliases to the track sections, the track editor can be used to change editable parameters such as distances, Start/Finish Codes, min split times, split numbers, etc. See example of Daytona below. Note that at some road/street courses, the Finish, Start, and/or Pit Control lines might not be •SF••SFP• for some practice and qualifying sessions. Confirm Control Lines with the track map.

TL	Distance	Track	Pit	Activ
T1	0	T1	N	Y
P1	0	T1	Y	Y
T2	22512	T2	N	Y
P2	22512	T2	Y	Y
T3	64752	T3	N	Y
T4	92976	T4	N	Y
T5	110832	T5	N	Y
T6	128532	T6	N	Y
T7	145656	T7	N	Y
T8	162792	T8	N	Y
T9	180276	T9	N	Y
TA	198084	TA	N	Y
TB	213480	TB	N	Y
PB	213480	TB	Y	Y
TC	214920	TC	N	Y

SEC	ALIAS	START	END	Length	MinTime	PHY	LOG	SPD	PIT	INT	CUS
S01	S01	T1	T2	22512	5.1160	Y					
IL	IL	T1	PB	225562	51.2640		Y				
LAP	LAP	T1	P1	225562	51.2640		Y				
S02	S02	T2	T3	42240	9.6000	Y					
OL	OL	P2	T1	225562	51.2640		Y				
S03	S03	T3	T4	28224	6.4150	Y					
S04	S04	T4	T5	17856	4.0580	Y					
S05	S05	T5	T6	17700	4.0230	Y					
S06	S06	T6	T7	17124	3.8920	Y					
S07	S07	T7	T8	17136	3.8950	Y					
S08	S08	T8	T9	17484	3.9740	Y					
S09	S09	T9	TA	17808	4.0470	Y					
S10	S10	TA	TB	15396	3.4990	Y					
S11	S11	TB	TC	1440	0.3270	Y					
SPI	SPI	TB	TC	1440	0.3270			Y			
PIT	PIT	PB	P2	34594	7.8620				Y		
S12	S12	TC	T1	10642	2.4190	Y					

- Name – Track Name, updated with data feed when available.
- Venue -Venue Name, updated with data feed when available.
- Track Length (miles) - Track Length, updated with data feed when available.
- Tow Timelines – Tow Timelines, updated with data feed when available.
- Track TimeLine and Section tables are updated with data feed when available. You will use information from these tables to fill in the boxes under Control Lines and Special Sections. This is very Important since this data will be used in compiling various reports and graphs.
- Finish (SF) – Finish Line label. VERY IMPORTANT.

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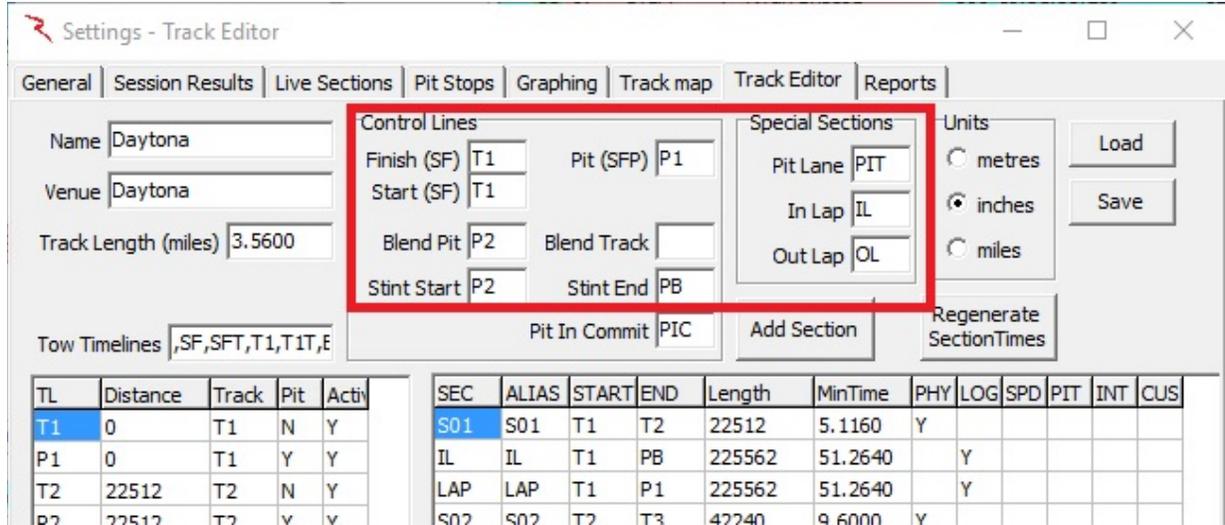
- Start (SF) – Start Line label, usually the same as Finish Line unless there is a remote start line.
- Blend Pit – Pit Lane Blend Line.
- Stint Start – Stint Start Line.
- Pit (SFP0 – Pit Lane S/F Line. If Pit Lane does not cross SF Line, use SF line.
- Blend Track – Track Blend Line.
- Pit Lane – Pit Lane Section from Pit-In to Pit-Out. See section table for details.
- In Lap – In Lap section from SF to Pit-In. See section for details.
- Out Lap – Out Lap Section from Pit-Out to SF line.
- Units – Units to use in Timeline and Section tables.
- Add Section – Add Custom Section. Group Physical Sections into other sections for analysis.
- Regenerate Section Times – Recalculate all section times using line crossing data. Automatically called when adding or deleting sections.
- Load – Load track configuration.
- Save – Save and apply track configuration.

NOTE: The Track Configuration for IMSA should always be Finish (SF) = 'T1', Pit (SFP) = 'P1', Start (SF)='T1', Pit Lane='PIT', In Lap='IL', and Out Lap='OL'.

Long Beach Track Map Notes

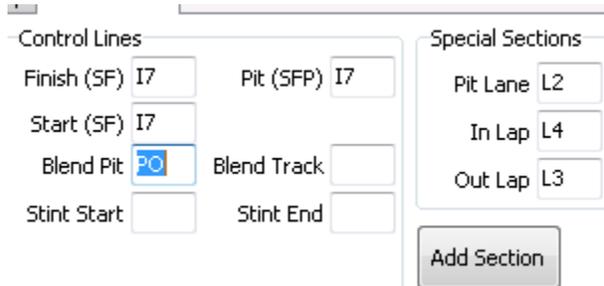
IMSA teams should use the LongBeach_IMSA track map. Make sure the Track Definition is set up correctly. Specifically, make sure that the SF/SFP lines are set to T1 and P1 respectively and that the Pit Section is 'PIT', the In Lap is 'IL' and the Out Lap is 'OL'.

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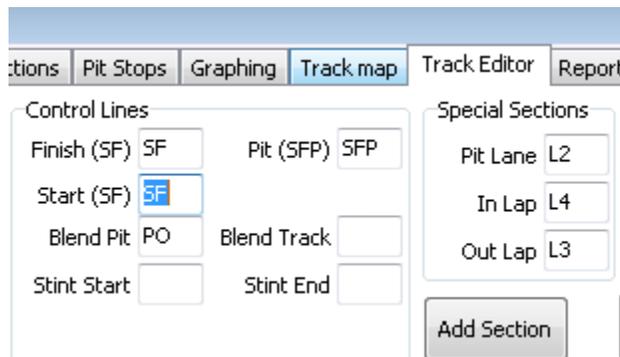


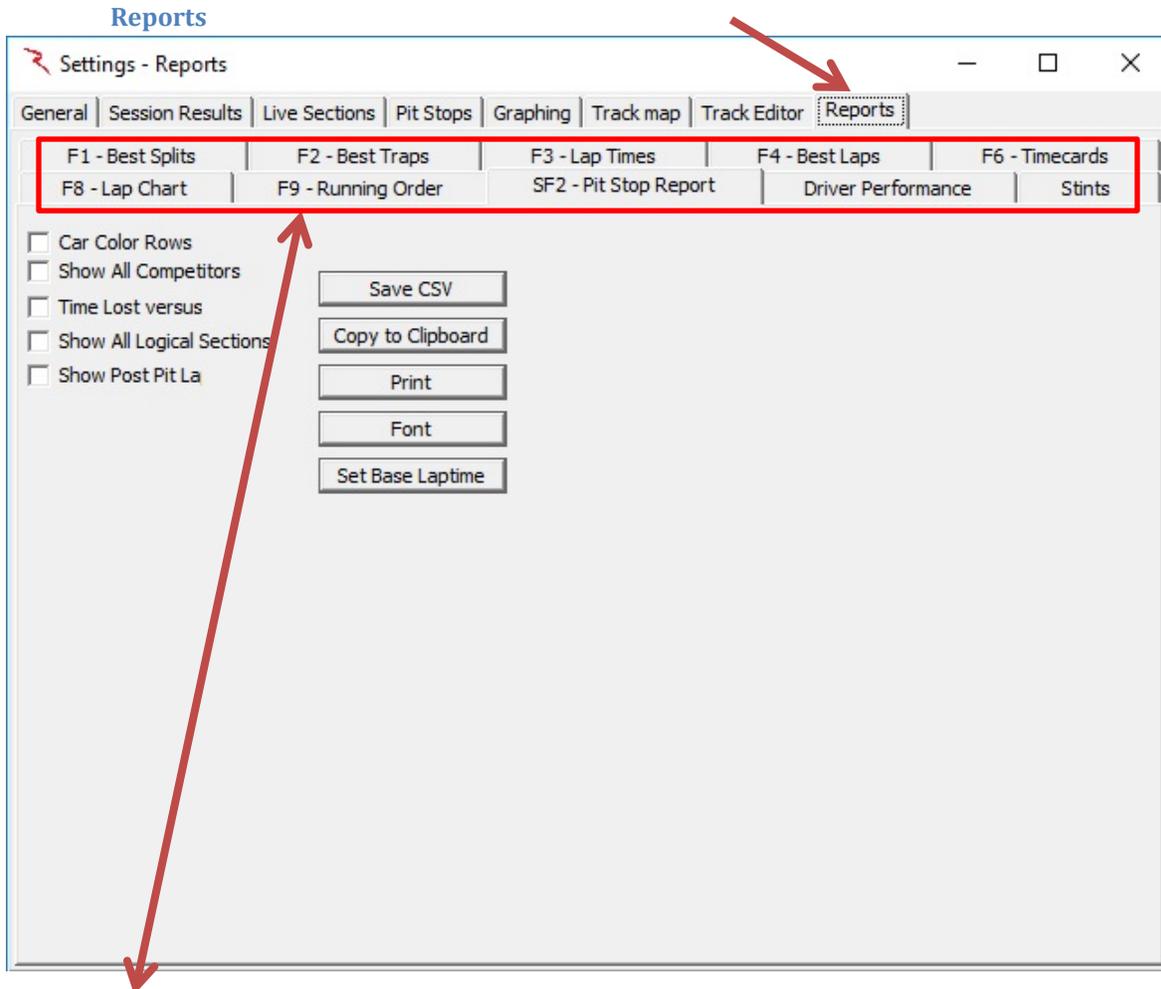
INDYCAR teams should use the LongBeach_PQ map for Practice/Qualifying sessions and the Long Beach map for the final practice and race. The SF/SFP line should be I7/I7 for the PQ map and SF/SFP for the race map. The Pit Section is 'L2', In Lap is 'L4' and Out Lap is 'L3'.

IndyCar (and Mazda Road To Indy) teams **Practice** and **Qualifying** Configuration



IndyCar (and Mazda Road To Indy) teams **Race** and **Final Practice** Configuration





The Reports Tab contains multiple options for Reports that can be printed or saved to a file.

- F1 – Best Splits
- F2 – Best Traps
- F3 – Lap Times
- F4 – Best Laps
- F6 – Timecards
- F8 – Lap Chart
- F9 – Running Order
- SF2 – Pit Stop Analysis
- Driver Performance
- Stints

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F1 - Best Splits

F1 - Driver Best Splits Lap Analysis (RMON at 23:58:16.000)

Pos	Nr	Class	Driver	Theoretical	Delta	FL-OL	S01	Delta	R01	S02	Delta	R02	S03	Delta	R03	S04	Delta	R04	S05	Delta	R05	S06
1	51	GTD	Maurizio Mediani										24.195	5.79								
2	5	P	Filipe Albuquerque	1:35.839	95.839	0.430	10.286	0.065	4	21.569	0.017	3	18.397	0.00								
3	10	P	Max Angelelli	1:35.911	95.911	0.483	10.328	0.107	10	21.552	0.000	1	18.547	0.15								
4	10	P	Ricky Taylor	1:35.963	95.963	0.791	10.233	0.012	2	21.701	0.149	11	18.536	0.13								
5	31	P	Seb Morris	1:36.097	96.097	0.948	10.324	0.103	9	21.644	0.092	7	18.510	0.11								
6	31	P	Eric Curran	1:36.170	96.170	0.623	10.373	0.152	11	21.652	0.100	8	18.435	0.03								
7	10	P	Jordan Taylor	1:36.295	96.295	0.585	10.403	0.182	15	21.560	0.008	2	18.664	0.26								
8	5	P	Joao Barbosa	1:36.306	96.306	0.844	10.379	0.158	12	21.629	0.077	5	18.592	0.19								
9	31	P	Dane Cameron	1:36.329	96.329	0.816	10.387	0.166	13	21.635	0.083	6	18.516	0.11								
10	31	P	Michael Conway	1:36.450	96.450	0.868	10.303	0.082	7	21.671	0.119	9	18.508	0.11								
11	5	P	Christian Fittipaldi	1:36.507	96.507	0.495	10.437	0.216	17	21.571	0.019	4	18.549	0.15								
12	22	P	Brendon Hartley	1:36.815	96.815	1.017	10.407	0.186	16	21.909	0.357	14	19.000	0.60								
13	13	P	Neel Jani	1:36.920	96.920	0.520	10.221	0.000	1	21.872	0.320	12	18.582	0.18								
14	10	P	Jeff Gordon	1:37.021	97.021	0.622	10.511	0.290	21	21.699	0.147	10	18.743	0.34								
15	81	P	Ben Hanley	1:37.218	97.218	0.724	10.321	0.100	8	21.903	0.351	13	18.768	0.37								
16	81	P	Nicolas Lapierre	1:37.302	97.302	0.605	10.255	0.034	3	21.928	0.376	15	18.709	0.31								
17	13	P	Sebastien Buemi	1:37.392	97.392	0.597	10.295	0.074	5	22.005	0.453	17	18.692	0.29								
18	85	P	Stephen Simpson	1:37.874	97.874	0.668	10.295	0.074	6	22.059	0.507	18	18.727	0.33								
19	85	P	Mathias Beche	1:37.941	97.941	0.806	10.390	0.169	14	21.985	0.433	16	18.827	0.43								
20	81	P	Loic Duval	1:38.070	98.070	0.672	10.496	0.275	20	22.254	0.702	25	18.960	0.56								
21	2	P	Scott Sharp	1:38.115	98.115	1.443	10.611	0.390	31	22.125	0.573	20	19.069	0.67								
22	13	P	Stephane Sarrazin	1:38.191	98.191	0.410	10.450	0.229	18	22.180	0.628	23	18.811	0.41								
23	2	P	Ryan Dalziel	1:38.281	98.281	0.954	10.520	0.299	23	22.099	0.547	19	18.934	0.53								
24	90	P	Renger Van Der Zand	1:38.300	98.300	1.406	10.610	0.389	30	22.316	0.764	29	19.167	0.77								
25	70	P	Joel Miller	1:38.667	98.667	0.979	10.478	0.257	19	22.278	0.726	26	19.119	0.72								
26	55	P	Jonathan Bomarito	1:38.763	98.763	0.694	10.605	0.384	29	22.309	0.757	27	19.049	0.65								
27	90	P	Rene Rast	1:38.815	98.815	0.368	10.632	0.411	34	22.164	0.612	21	19.067	0.67								
28	85	P	Misha Goloberg	1:38.904	98.904	0.803	10.556	0.335	26	22.175	0.623	22	19.184	0.78								
29	52	P	Tom Kimber-Smith	1:38.925	98.925	0.466	10.576	0.355	27	22.312	0.760	28	19.196	0.79								
30	52	P	Jose Gutierrez	1:39.112	99.112	0.709	10.605	0.384	28	22.421	0.869	33	19.220	0.82								
31	90	P	Marc Goossens	1:39.167	99.167	0.570	10.660	0.439	35	22.410	0.858	32	19.197	0.80								
32	85	P	Chris Miller	1:39.293	99.293	0.639	10.534	0.313	24	22.469	0.917	37	19.039	0.64								
33	55	P	Spencer Pigot	1:39.294	99.294	0.675	10.511	0.290	22	22.518	0.966	39	19.067	0.67								
34	70	P	James Hinchcliffe	1:39.335	99.335	0.392	10.738	0.517	40	22.389	0.837	30	19.209	0.81								
35	22	P	Johannes van Overbeek	1:39.387	99.387	0.256	10.555	0.334	25	22.250	0.698	24	19.332	0.93								
36	70	P	Tom Long	1:39.551	99.551		10.702	0.481	38	22.424	0.872	34	19.447	1.05								
37	22	P	Bruno Senna Lali	1:39.733	99.733	0.688	10.614	0.393	32	22.449	0.897	36	19.082	0.68								
38	52	P	RC Emerson	1:39.837	99.837	0.489	10.719	0.498	39	22.396	0.844	31	19.347	0.95								
39	2	P	Luis Felipe Derani	1:40.340	100.340	0.802	10.618	0.397	33	22.496	0.944	38	19.094	0.697	28	7.161	0.449	41	5.919	0.410	43	5.488
40	52	P	Michael Guersch	1:40.602	100.602	1.063	11.054	0.833	74	22.440	0.888	35	19.647	1.250	77	7.028	0.316	38	5.201	0.192	35	5.387

- Hide Column – Hide a column.
- Show All Columns – Show all the columns.
- Hide Deltas – Hide Section Delta Columns.
- Hide Section Rank – Hide Section Rank columns.
- Hide Section Times – Hide Section Time Columns.
- Custom Sections – Include Custom Sections.
- Standard Sections – Include Standard Sections.
- Show All Competitors – Show All Competitors even if a subset is selected.
- Show By Drivers – Display by drivers.
- Driver Ratings - Include All Driver Ratings in report.
- Exclude Other Classes – Exclude classes other than Team Car class.
- Classes – Show classes.

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- Vs P1 – Vs Position 1 Splits.
- Average Times – Compare average best section times (top x section times) to filter out one-of section times.
- Best Rolling Lap – Compare Best Rolling Lap instead of Optimal Lap.
- Show As Speed – Show section times as speed.
- Car Color Rows – Shade Rows using specified Car colors.
- Ignore InLap Section Times – Ignore InLap section times.
- Heat Map - Section Time Delta fields are color coded.
- Print – Opens the Print dialog so you can select where to print the report.
- Save CSV – Opens a Save As dialog window so you can name the file and select where to save it.
- Copy To Clipboard – Copies the report to the Clipboard.
- Copy Image To Clipboard – Copies the report image to the Clipboard.
- Set Font – Opens a dialog window where you can select a font for the report.
- Refresh - Refresh the data.
- Close – Close the report.

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F2 - Best Traps

F2 - Driver Trap Speeds [RMON at 23:58:16.000]

P	Nr	Class	Driver	Best Time	SPI	Delta	R	Rating
1	10	P	Ricky Taylor	1:36.754	196.207	-1.422	5	
1	10	P	Jeff Gordon	1:37.643	196.678	-0.950	3	
1	10	P	Max Angelelli	1:36.394	196.207	-1.422	6	
1	10	P	Jordan Taylor	1:36.880	195.270	-2.358	11	
2	5	P	Joao Barbosa	1:37.150	195.737	-1.891	9	
2	5	P	Christian Fittipaldi	1:37.002	195.737	-1.891	10	
2	5	P	Filipe Albuquerque	1:36.269	197.628	0.000	1	
3	90	P	Marc Goossens	1:38.737	191.612	-6.017	31	
3	90	P	Renger Van					
3	90	P	Rene Rast					
4	2	P	Scott Sharp					
4	2	P	Ryan Dalziel					
4	2	P	Luis Felipe					
5	66	GTLM	Joey Hand					
5	66	GTLM	Dirk Mueller					
5	66	GTLM	Sebastien E					
6	911	GTLM	Patrick Pilet					
6	911	GTLM	Dirk Werner					
6	911	GTLM	Frederic Ma					
7	62	GTLM	Toni Vilander					
7	62	GTLM	James Calam					
7	62	GTLM	Giancarlo F					
8	3	GTLM	Jan Magnu					
8	3	GTLM	Antonio Ga					
8	3	GTLM	Mike Rocke					
9	69	GTLM	Andy Priaul					
9	69	GTLM	Tony Kana					
9	69	GTLM	Harry Tink					
10	912	GTLM	Kevin Estre					
10	912	GTLM	Richard Lie					

Print Ctrl+P

Save CSV Ctrl+S

Copy to Clipboard Ctrl+C

Copy Image To Clipboard Shift+Ctrl+C

Close F2

Refresh F5

Show Pit Traps

Show All

Show By Drivers

Engine

Driver Ratings >

Car Color Rows

Exclude Other Classes

Classes >

Set Font

Sort By Time

- Print – Opens the Print dialog so you can select where to print the report.
- Save CSV – Opens a Save As dialog window so you can name the file and select where to save it.
- Copy To Clipboard – Copies the report to the Clipboard.
- Copy Image To Clipboard – Copies the report image to the Clipboard.
- Close – Close the report.
- Refresh - Refresh the data.
- Show Pit Traps – Include Pit Lane Speed Traps.

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- Show All - Show All Competitors even if a subset is selected.
- Show By Drivers – Display by drivers.
- Engine –
- Driver Ratings
- Car Color Rows – Shade Rows using specified Car colors.
- Exclude Other Classes - Exclude classes other than the 'Team Car' class.
- Classes - Select the class to display.
- Set Font – Opens a dialog window where you can select a font for the report.
- Sort By Time - Sort the report by best time.

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F3 - Lap Times

F3 - Lap Times per Driver [RMON at 1:10:17.000]

RANK	1	2	3	4	5	6	7	8	9	10	11	12
Time/Car	31	10	5	13	22	85						38
00:01:36												
00:03:12												
00:04:47	1:41.879	1:43.319	1:41.427	1:42.922	1:46.835	1:44.913						1:52
00:06:23	1:38.497	1:38.884	1:38.409	1:38.968	1:39.763	1:39.681						1:45
00:07:59	1:37.797	1:38.281	1:37.729	1:38.363	1:39.165	1:39.349						1:43
00:09:35	1:37.556	1:37.667	1:37.536	1:37.862	1:38.576	1:38.915						1:44
00:11:11	1:40.922	1:39.471	1:40.987	1:40.610	1:40.130	1:41.253						1:46
00:12:46												
00:14:22	3:36.793	3:37.146	3:35.791	3:38.070	3:36.380	3:35.770						3:16
00:15:58												
00:17:34	3:23.229	3:22.309	3:24.646	3:20.744	3:17.201	3:17.808						3:14
00:19:10	1:39.629	1:39.659	1:39.462	1:40.304	1:41.139	1:40.928						1:44
00:20:45	1:37.761	1:37.878	1:37.922	1:38.220	1:38.684	1:38.751						1:43
00:22:21	1:37.516	1:37.526	1:37.150	1:37.839	1:38.569	1:38.562						1:43
00:23:57	1:37.145	1:37.218	1:37.360	1:37.594	1:38.255	1:38.572						1:43
00:25:33	1:37.591	1:37.291	1:37.565	1:38.024	1:39.084	1:39.143						1:43
00:27:08	1:38.945	1:39.247	1:39.032	1:38.861	1:42.345	1:40.504						1:43
00:28:44	1:37.724	1:37.440	1:37.698	1:37.681	1:37.901	1:38.542						1:43
00:30:20	1:37.986	1:39.336	1:37.959	1:39.885	1:38.607	1:39.462						1:43
00:31:56	1:40.746	1:39.968	1:40.751	1:38.970	1:39.903	1:40.355						1:43
00:33:32	1:38.958	1:41.175	1:39.774	1:40.291	1:42.590	1:41.651						1:43
00:35:07	1:38.924	1:38.274	1:39.955	1:38.699	1:40.333							1:43
00:36:43	1:37.662	1:37.813	1:37.777	1:38.519	1:42.123	1:40.333						1:43
00:38:19	1:37.227	1:36.909	1:37.312	1:37.440	1:39.185	1:39.988						1:44
00:39:55	1:38.259	1:38.095	1:37.476		1:40.567	1:39.957						1:43
00:41:31		1:39.511		1:52.399	1:38.531	1:52.966						1:44
00:43:06	2:26.832		2:28.795	2:38.496	1:52.957							1:46
00:44:42	2:02.367	2:26.246	2:02.450	1:40.030		2:45.813						1:59
00:46:18	1:40.713	2:04.590	1:41.618	1:40.839	2:40.411	1:41.301						2:31
00:47:54	1:38.652	1:40.786	1:39.167	1:38.716	1:40.217	1:40.209						1:44
00:49:30	1:38.902	1:39.184	1:38.616	1:38.300	1:39.401	1:40.373						1:44
00:51:05	1:38.615	1:39.006	1:39.581	1:39.430	1:40.257	1:40.479						1:44
00:52:41	1:38.033	1:37.726	1:37.598		1:39.270	1:41.242						1:45
00:54:17	1:37.604	1:38.048	1:38.312	1:38.402	1:39.227	1:39.789						1:45
00:55:53	1:37.828			1:40.479	1:38.976	1:42.244						1:45
00:57:29	1:40.062	1:37.955	1:38.598	1:38.229	1:42.143	1:40.982						1:44
00:59:04		1:37.871	1:38.422	1:39.456	1:40.414	1:40.774						>

Section Analysis

- Show All
- Exclude Other Classes
- Classes >
- Sort By LapTimes
- Vs. Laps Alt+L
- Time Of Day
- Show as Speed Alt+S
- Show Averages Alt+A
- # Laps To Average
- Tow Filter Alt+T
- Highlight Tow Laps Ctrl+T
- Highlight P2P Laps Alt+P
- Set Highlight Color
- Stint Averages
- 1/100th (s.nn)
- Car Color Rows
- Set Font
- Invalidate Lap
- Auto Size
- Manual Update
- Copy To Clipboard Ctrl+C
- Copy Graphic To Clipboard Shift+Ctrl+C
- Save CSV Ctrl+S
- Print Ctrl+P
- Close F3
- Refresh F5

- Section Analysis – Compare Section times instead of lap times. Select section to compare below.
- Show All - Show All Competitors even if a subset is selected.
- Exclude Other Classes - Exclude classes other than the 'Team Car' class.
- Classes - Select the class to display.
- Sort By Lap Times – Display results Sorted by Lap Times, overrides vs Laps and ElapsedTime order.
- vs Laps – Display Results sorted by Lap Number, overrides default ElapsedTime order.
- Time Of Day – Display results referenced by Time of Day (instead of ElapsedTime).
- Show As Speed – Show Section Times as speed.

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- Show Averages – Show Averages Summary Table.
- # Laps To Average - Number of laps to use to calculate the Average Lap Time. Default is all or 100% of laps. Enter in either laps or % of laps.
- Tow Filter – Filter out Tow Laps.
- Highlight Tow Laps – Highlight Tow Laps with red text.
- Highlight P2P Laps – Highlight PushToPass Laps.(IndyCar Only)
- Set Highlight Color – Set the color for the highlights.
- Stint Averages – Display Stint Average lap times instead of Pit Lap Time.
- 1/100th (s:nn) – Display laptimes to 1/100th of a second.
- Car Color Rows – Shade Rows using specified Car colors.
- Set Font – Opens a dialog window where you can select a font for the report.
- Invalidate Lap
- Auto Size
- Manual Update
- Copy To Clipboard – Copies the report to the Clipboard.
- Copy Graphic To Clipboard – Copies the report image to the Clipboard.
- Save CSV – Opens a Save As dialog window so you can name the file and select where to save it.
- Print – Opens the Print dialog so you can select where to print the report.
- Close – Close the report.
- Refresh - Refresh the data.

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F4 - Best Laps

F4 - Best Lap Analysis [RMON at 2:39:53.000]

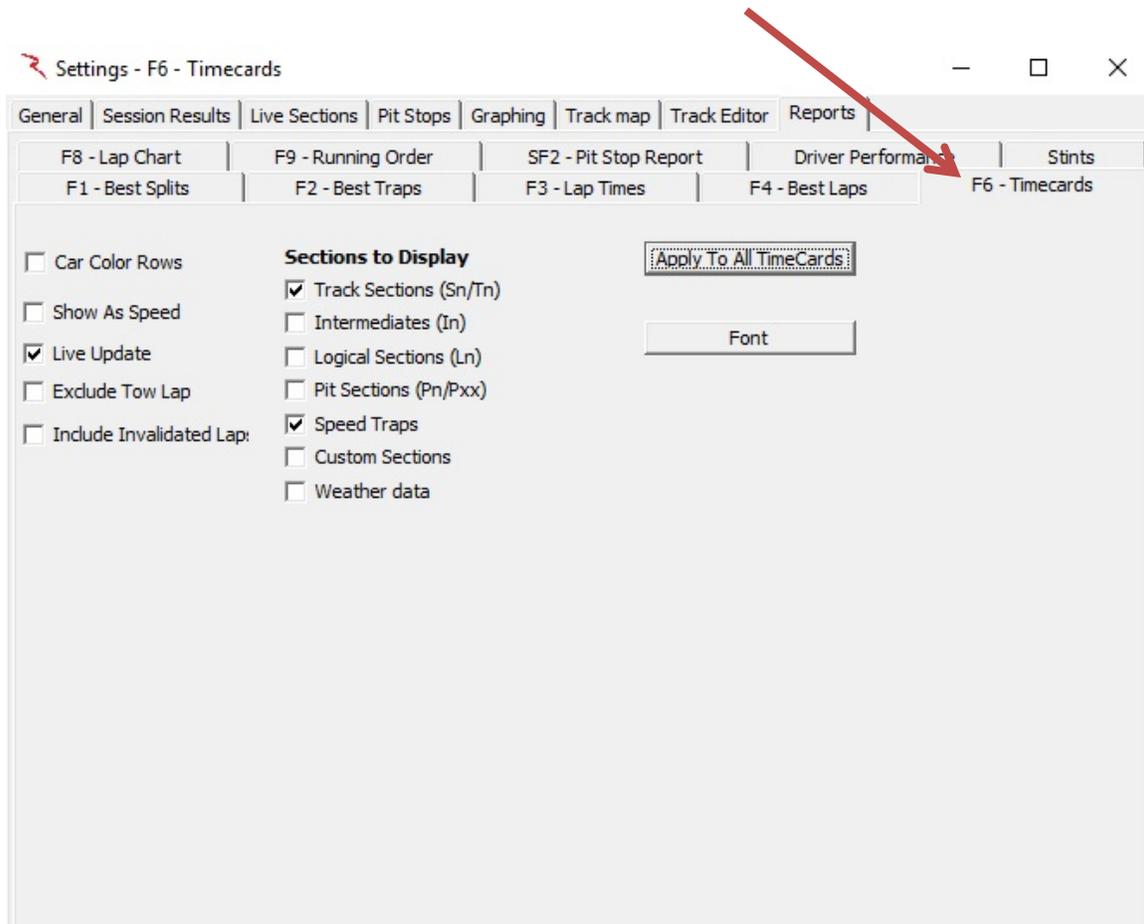
P	No	Class	Driver	BestTime	Delta	S01	Delta	R01	S02	Delta	R02	S03	Delta	R03	S04	Delta	R04
1	31	P	Seb Morris	1:37.045		10.324	0.000	2	21.644								
2	5	P	Christian Fittipaldi	1:37.002		10.457	0.133	7	21.571								
3	10	P	Ricky Taylor	1:36.909		10.383	0.059	3	21.701								
4	55	P	Jonathan Bomarito	1:39.457	2.412	10.639	0.315	10	22.484								
5	81	P	Nicolas Lapierre	1:37.907	0.862	10.406	0.082	5	21.928								
6	22	P	Brendon Hartley	1:37.832	0.787	10.432	0.108	6	21.909								
7	90	P	Renger Van Der Zand	1:39.706	2.661	10.722	0.398	13	22.426								
8	85	P	Stephen Simpson	1:38.542	1.497	10.387	0.063	4	22.185								
9	70	P	Joel Miller	1:39.646	2.601	10.478	0.154	8	22.421								
10	2	P	Ryan Dalziel	1:39.235	2.190	10.641	0.317	11	22.125								
11	66	GTLM	Joey Hand	1:43.539	6.494	10.911	0.587	18	23.136								
12	62	GTLM	James Calado	1:43.805	6.760	11.124	0.800	26	23.173								
13	67	GTLM	Richard Westbrook	1:43.385	6.340	10.809	0.485	14	23.132								
14	69	GTLM	Tony Kanaan	1:43.453	6.408	10.689	0.365	12	23.191								
15	3	GTLM	Jan Magnussen	1:44.167	7.122	10.950	0.626	20	23.232								
16	68	GTLM	Stefan Mucke	1:43.610	6.565	10.876	0.552	16	23.237								
17	4	GTLM	Tommy Milner	1:44.040	6.995	10.880	0.556	17	23.297								
18	912	GTLM	Kevin Estre	1:43.979	6.934	10.859	0.535	15	23.253								
19	38	PC	Patricio O'Ward	1:42.716	5.671	10.931	0.607	19	22.849								F5
20	19	GTLM	Bill Auberlen	1:44.247	7.202	11.026	0.702	22	23.355								
21	88	PC	Sean Rayhall	1:43.569	6.524	11.089	0.765	25	23.009								
22	911	GTLM	Patrick Pilet	3:28.722	1:51.677	11.040	0.716	23	23.437								
23	20	PC	Buddy Rice	1:43.322	6.277	11.044	0.720	24	22.973								
24	8	PC	Chris Cumming	1:44.298	7.253	11.185	0.861	28	23.038								
25	29	GTD	Jules Gounon	1:47.313	10.268	11.396	1.072	37	24.075								
26	73	GTD	Norbert Siedler	1:47.347	10.302	11.493	1.169	42	23.863								
27	96	GTD	Jens Klingmann	1:47.742	10.697	11.468	1.144	40	23.926								
28	63	GTD	Alessandro Balzan	1:47.079	10.034	11.357	1.033	33	23.838								
29	50	GTD	Gunnar Jeannette	1:47.883	10.838	11.510	1.186	44	24.094								
30	11	GTD	Mirko Bortolotti	1:47.095	10.050	11.410	1.086	39	24.076								
31	57	GTD	Matt Bell	1:48.059	11.014	11.517	1.193	47	24.079								
32	15	GTD	Austin Cindric	1:48.554	11.509	11.630	1.306	50	24.205								
33	93	GTD	Andy Lally	1:47.760	10.715												
34	86	GTD	Jeff Segal	1:47.796	10.751	11.511	1.187	45	24.182								
35	33	GTD	Ben Keating	1:48.497	11.452	11.515	1.191	46	24.220								
36	54	GTD	Nic Jonsson	1:47.835	10.790	11.952	1.628	54	24.126								
37	75	GTD	Boris Said	1:48.036	10.991	11.345	1.021	31	24.156								
38	26	PC	Johnny Mowlem	1:43.588	6.543	11.020	0.696	21	22.953								

- Hide Column – Hide a column.
- Show All Columns – Show all the columns.
- Hide Deltas – Hide Section Delta Columns.
- Hide Section Times – Hide Section Time Columns.
- Hide Section Rank – Hide Section Rank columns.
- Show As Speed – Show section times as speed.
- Custom Sections – Include Custom Sections.
- Standard Sections – Include Standard Sections.
- Trap Speed Sections –
- Show All Cars – Show All Competitors even if a subset is selected.

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- Show By Drivers – Display by drivers.
- Driver Ratings - Include All Driver Ratings in report..
- Refresh - Refresh the data.
- Autosize
- Delta vs Best Section Time
- Car Color Rows – Shade Rows using specified Car colors.
- Exclude Other Classes – Exclude classes other than Team Car class.
- Classes – Show classes.
- Set Font – Opens a dialog window where you can select a font for the report.
- Invalidate Fast Lap
- Heat Map - Section Time Delta fields are color coded.
- Print – Opens the Print dialog so you can select where to print the report.
- Save CSV – Opens a Save As dialog window so you can name the file and select where to save it.
- Copy To Clipboard – Copies the report to the Clipboard.
- Copy Graphic To Clipboard – Copies the report image to the Clipboard.
- Close – Close the report.

F6 - Timecards



- Car Color Rows – Shade rows using specified Car colors.
- Show As Speed – Show section times as speed.
- Live Update – Update automatically after each lap.
- Exclude Tow Lap – Exclude Tow Laps.
- Include Invalidated Laps – Include Invalidated Laps.
- Sections To Display – Click the box(es) below to select the sections to display.
- Apply To All TimeCards – Apply settings to all Time Cards.

NOTE: To view a time Card, go to the 'PopUps' menu and select 'Time Card' (F6).

F8 - Lap Chart

Lap Chart [RMON at 2:40:21.000]

Car#	XX	Lap	000-XXXX	0:00.000	Gap	000	0:00.000																		
			00:00:00.000			000	0:00.000																		
P		64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	
1		31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	10	31	31	31
2		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	31	5	5	5
3		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
4		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5		55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
6		81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
7		22	22	22	22	22	22	22	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
8		90	90	90	90	90	90	90	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
9		85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
10		38	38	38	38	38	38	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
11		66	66	66	66	66	70	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66
12		62	62	62	62	70	66	38	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
13		3	3	3	70	62	62	62	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67
14		88	67	67	3	3	3	67	3	69	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
15		67	70	70	67	67	67	3	69	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
16		69	69	69	69	69	69	69	69	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
17		68	88	68	68	68	68	68	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
18		70	68	88	4	4	4	4	912	912	912	912	912	912	912	912	912	912	912	912	912	912	912	912	912
19		4	4	4	88	8	8	912	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
20		8	8	8	8	912	912	8	911	911	911	911	911	911	911	911	911	911	911	911	911	911	911	911	911
21		912	912	912	912	19	911	911	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
22		19	19	19	19	911	19	19	38	38	38	38	88	88	88	88	88	88	88	88	88	88	88	88	911
23		911	911	911	911	88	88	88	88	88	88	88	8	20	20	20	20	20	20	20	20	20	20	20	20
24		26	26	26	26	26	20	20	20	20	20	20	20	8	8	8	8	8	8	8	8	8	8	8	8
25		20	20	20	20	20	26	26	26	26	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
26		29	29	29	29	29	29	29	29	29	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73

- Use Class Colors – Display Class Colors if assigned.
- Exclude Other Classes – Exclude classes other than Team Car class.
- Classes – Show classes.
- Car Colors – Display Car Colors if assigned.
- Highlight MouseOver Car – Hover the mouse over a car number to highlight that car's position on each lap.
- Print – Opens the Print dialog so you can select where to print the report.
- Copy To Clipboard – Copies the report to the Clipboard.

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- Save CSV – Opens a Save As dialog window so you can name the file and select where to save it.
- Copy Image To Clipboard – Copies the report image to the Clipboard.
- Close – Close the report.
- Set Font – Opens a dialog window where you can select a font for the report.

As always, be aware that the software relies on the data and if there are interruptions in the data feed or other issues, the reports may have errors. Always double check the information and make sure you understand.

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F9 – Running Order

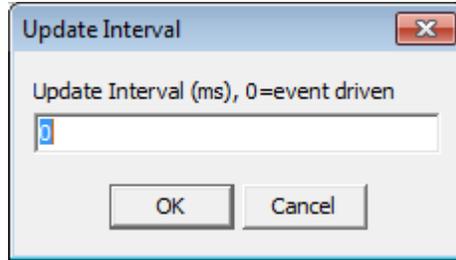
The screenshot shows the 'Running Order' window with a table of race data and a context menu. The table has columns for #, Gap, Lap, Line, Elapsed, P, Nr, CLS, PIC, LSP, and LD. The context menu includes options like Undo, Pause, Show Details, Gap2Us, Driver Name, Highlight Gap, Highlight Lead Lap, Highlight Pass Around, Live Rank, Shaded Rows, Hide Inactive, Post Pit Car, Highlight Laps Since Pit, LSP Thresholds, Exclude Other Classes, Include Class Leaders, Classes, Exclude Emergency (E) Cars, Font, Refresh Rate, Save CSV, Print, Close, Refresh, Reset Columns, Copy Data to Clipboard, Copy Image To Clipboard, and Dock to Main.

#	Gap	Lap	Line	Elapsed	P	Nr	CLS	PIC	LSP	LD
1	0.617	87	T3	2:40:08.839	1	31	P	1	3	0
2	3.831	81	T3	2:40:12.670	35	54	GTD	11	23	0
3	0.520	81	T3	2:40:13.190	36	33	GTD	12	24	0
4	1.058	84	T3	2:40:14.248	17	4	GT	7	24	0
5	9.469	81	T2	2:40:00.269	37	26	PC	5	7	2
6	0.981	84	T2	2:40:01.250	18	912	GT	8	25	0
7	1.071	87	T2	2:40:02.321	2	5	P	2	3	0
8	52.387	86	P2	2:40:06.481	4	55	P	4	0	1
9	5.073	79	T2	2:40:07.394	44	18	GTD	19	8	2
10	0.228	84	T2	2:40:07.622	19	38	PC	1	13	0
11	0.497	81	T2	2:40:08.119	38	991	GTD	13	24	0
12	0.198	81	T2	2:40:08.317	39	23	GTD	14	17	0
13	2.380	77	T2	2:40:10.697	47	13	P	11	17	10
14	4.827	83	P2	2:40:11.308	22	911	GT	10	0	1
15	0.787	85	T2	2:40:11.484	8	85	P	8	3	2
16	3.937	81	T2	2:40:15.421	40	46	GTD	15	23	0
17	4.545	86	T2	2:40:19.966	5	90	P	5	2	1
18	2.142	84	T1	2:40:11.182	20	19	GT	9	24	0
19	0.000	79	T1	2:40:15.130	45	48	GTD	20	14	2
20	6.096	86	TC	2:40:18.249	3	10	P	3	1	0
21	0.404	74	TC	2:40:18.653	48	61	GTD	22	16	6
22	0.692	82	TC	2:40:19.345	23	8	PC	3	6	1
23	0.232	48	TC	2:40:19.577	53	52	P	12	1	38
24	18.203	81	T8	2:40:20.451	25	29	GTD	1	28	0
25	1.179	81	T7	2:40:11.728	26	73	GTD	2	24	0
26	1.541	80	T7	2:40:13.269	42	51	GTD	17	19	1
27	1.270	85	T7	2:40:14.539	6	81	P	6	0	1
28	3.718	85	T7	2:40:18.257	7	22	P	7	0	1
29	0.330	81	T7	2:40:18.587	27	96	GTD	3	24	0
30	6.758	84	T6	2:40:19.458	10	2	P	10	5	2
31	0.876	81	T6	2:40:20.334	28	63	GTD	4	24	0
32	0.853	81	T5	2:40:14.893	29	50	GTD	5	24	0
33	2.949	81	T5	2:40:17.842	30	11	GTD	6	24	0
34	0.694	84	T5	2:40:18.536	11	66	GT	1	25	0
35	0.170	81	T5	2:40:18.706	31	57	GTD	7	24	0
36	3.229	84	T4	2:40:14.281	12	62	GT	2	25	0
37	0.326	83	T4	2:40:14.607	21	88	PC	2	14	0
38	3.243	84	T4	2:40:17.850	13	67	GT	3	25	0
39	3.885	84	T3	2:40:02.049	14	69	GT	4	25	0
40	1.195	81	T3	2:40:03.244	32	15	GTD	8	24	0
41	0.779	80	T3	2:40:04.023	43	28	GTD	18	24	1
42	0.448	81	T3	2:40:04.471	33	93	GTD	9	24	0
43	1.296	78	T3	2:40:05.767	46	27	GTD	21	21	3
44	0.289	84	T3	2:40:06.056	15	3	GT	5	25	0

- Undo (Ctrl+Z) – Undo the previous action.
- Pause (P) - Pauses the updating of the Running Order window, Can be used to Freeze the field when a Yellow is displayed.
- Show Details (D) – this shows the timing line and time information, as shown in the right of the two figures in the popup description above.
- Gap2Us (G) – Gap from the Leader to the 'Team Car'.

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- Driver Name (N) – Display the driver name'.
- Highlight Gap (X.XXXX) – highlights gaps on track relative to the input gap. Gaps less than the input will be background highlighted in red and gaps in between the input and (input + 1 second) will be background highlighted yellow. If left to 0.0000, no special formatting is applied.
- Highlight Lead Lap (Alt+L) – Highlight 'Lead Lap' cars.
- Highlight Pass Around (Alt+P) – Highlight pass around cars.
- >Pass Around Color – Set the color for Pass Around cars.
- >Highlight –
 - Cautions Only
 - Team Class Only
- Lap Down AFTER Caution - .
- Live Rank (L) – Updates rank at each timeline crossing.
- Shaded Rows – Shades even numbered rows.
- Hide Inactive – Hide inactive cars. Hide Inactive option does not remove the car from the results or analysis, just from the track map and running order. The car's status will be set to '(Active)' to differentiate it from 'Active'. The will still be visible in the session results table and all of the reports.
- Post Pit Car – Highlights the car before and after the Post Pit Car.
- Highlight Laps Since Pit – Highlights the laps since pit column.
- LSP Thresholds - Values less than threshold will be highlighted in red as likely to pit. Set the threshold for the selected class.
- Exclude Other Classes – Exclude classes other than the 'Team Car' class.
- Classes – Allows the user to select the classes to display.
- Exclude Emergency (E) Cars – Don't show Emergency cars.
- Font – changes the font of the report.
- Refresh Rate – changes the refresh rate of the popup. By default, the report is updated based on the occurrence of an event (timing line activity).



- Save CSV – (Ctrl+S) – creates a .csv file for the data contained in the report for use with other programs
- Print – (Ctrl+P) – opens print window to print report
- Close – (F9) – closes the window. The window can also be closed via the “X” in the upper right corner.
- Refresh – (F5) – refreshes the data in the report to reflect changes in the received data.
- Reset Columns - Reset the columns.
- Copy to Clipboard – (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Copy Image to Clipboard – (Shift+Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Dock To Main - Dock to the Right of the main program window..

The Running Order report has been updated to reflect the elimination of the Lap Down Wave By rule. The LD@Y field is no longer available. To help identify pass-around cars, under caution, all cars between the safety car and their class leader have their ‘P’ and ‘LD’ fields highlighted in Red.

#	Nr	Gap	Lap	Line	Elapsed	P	PIC	CLS	LSP	LD	
1	SC1	165.055	1	T2	4:02:12.212	58	0		0	0	
2	70	0.954	86	T2	4:02:13.166	58	14	P	26	0	
3	31	1.058	93	T2	4:02:14.227	26	12	P	7	0	
4	6	0.621	96	T2	4:02:14.745	10	10			0	
5	65	0.762	90	T2	4:02:15.607	52	25	GTD	8	0	
6	44	0.825	91	T2	4:02:16.432	15	15	GTD	19	0	
7	2	1.362	82	T2	4:02:17.354	52	16	P	22	0	
8	009	2.143	90	T2	4:02:19.937	53	24	GTD	10	0	
9					4:02:20.444	6	6	P	23	0	
10					4:02:20.951	373	54	PC	4	0	
11					4:02:21.458	774	22	3	PC	22	0
12					4:02:21.965	388	57	13	P	8	0
13					4:02:22.472	789	7	7	P	19	0
14					4:02:22.979	862	44	16	GTD	29	0
15					4:02:23.486	388	8	8	P	22	0
16					4:02:23.993	127	55	25	GTD	7	0
17					4:02:24.500	769	45	17	GTD	22	0
18					4:02:25.007	164	23	4	PC	20	0
19	35	1.598	91	T1	4:02:17.762	46	18	GTD	26	0	
20	54	1.574	94	T1	4:02:19.336	24	5	PC	13	0	
21	0	1.340	83	T1	4:02:20.676	50	15	P	9	0	
22	64	1.937	91	T1	4:02:22.613	36	9	GTD	12	0	
23	90	1.548	96	TC	4:02:17.694	9	9	P	12	0	
24	555	1.896	91	TC	4:02:19.590	38	11	GTD	2	0	
25	87	0.708	92	TC	4:02:20.298	27	6	PC	16	0	
26	49	0.621	90	TC	4:02:20.919	48	19	GTD	21	0	
27	33	1.979	90	TB	4:02:22.008	49	20	GTD	4	0	
28					4:02:22.515	39	12	GTD	17	0	
29					4:02:23.022	13	3	GT	32	0	
30					4:02:23.529	40	13	GTD	29	0	
31					4:02:24.036	19	8	GT	33	0	
32					4:02:24.543	41	10	GT	18	0	
33					4:02:25.050	50	21	GTD	13	0	
34					4:02:25.557	14	4	GT	27	0	
35					4:02:26.064	15	5	GT	30	0	
36	18	1.274	85	TA	4:02:18.701	59	26	GTD	34	0	
37	55	0.360	94	TA	4:02:19.061	21	9	GT	22	0	
38	007	0.674	90	T	4:02:19.735	51	22	GTD	26	0	
39	3	0.343	95	T	4:02:20.078	16	6	GT	29	0	
40	556	0.895	91	A	4:02:20.973	42	14	GTD	2	0	
41	56	0.369	95	TA	4:02:21.342	17	7	GT	28	0	
42	5	0.497	97	T9	4:02:00.290	1	1	P	0	0	
43	10	3.360	97	T9	4:02:03.650	4	4	P	0	0	
44	42	6.171	97	T9	4:02:09.821	3	3	P	0	0	
45	78	0.818	97	T9	4:02:10.639	2	2	P	0	0	
46	08	1.048	95	T9	4:02:11.687	18	1	PC	0	0	
47	02	0.569	97	T9	4:02:12.256	5	5	P	0	0	
48	7	32.358	94	T7	4:02:17.520	20	2	PC	0	0	
49	1	35.092	65	PB	2:01:18.544	64	17	P	-1	0	
50	07	122.772	62	PB	2:38:38.869	65	18	P	-1	0	
51	52	95.965	90	PB	2:48:51.162	47	7	PC	-1	0	
52	72	167.068	91	PB	4:01:42.959	32	5	GTD	-1	0	
53	63	3.538	91	PB	4:01:51.815	33	6	GTD	-1	0	
54	22	1.332	91	PB	4:02:09.097	34	7	GTD	-1	0	
55	81	2.189	91	PB	4:02:11.286	35	8	GTD	-1	0	
56	91	4.679	95	PB	4:02:15.965	11	1	GT	-1	0	
57	71	1.729	91	PB	4:02:17.694	37	10	GTD	-1	0	
58	911	2.693	95	PB	4:02:20.387	12	2	GT	-1	0	
59	09	3.344	25	P1	47:56.520	66	9	PC	0	0	
60	27	15.871	82	P1	2:40:22.799	61	27	GTD	0	0	
61	58	136.901	92	P1	4:01:59.751	28	1	GTD	0	0	
62	73	0.601	92	P1	4:02:00.352	29	2	GTD	0	0	
63	30	2.067	92	P1	4:02:02.419	30	3	GTD	0	0	
64	19	14.983	78	P1	4:02:17.402	63	28	GTD	1	0	
65	23	4.438	92	P1	4:02:21.840	31	4	GTD	0	0	

There are now two 'Refresh' options. The default Refresh (F5) option refreshes the data, sorting the competitors, leaderboard, etc. but no longer resizes the Session Results columns. To auto resize the Session Results columns (and do a data refresh) you now need to use the Refresh All (CTRL+F5) option.

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Class Color: To change a 'Class' color, open the 'Running Order' (F9) window. Click on a class name you want to change. A color selection window will open where you can choose the color you want for that class.

The screenshot shows the 'Running Order' window with a table of race data. A 'Color' dialog box is open, allowing the user to select a color for a class. A red arrow points from the text above to the 'CLS' column in the table.

#	Gap	Lap	Line	Elapsed	P	Nr	CLS	PIC	LSP	.D
1	18.839	608	T9	22:23:40.400	1	5	P	1	5	0
2	1.109	608	T8	22:23:35.281	2	10	P	2	5	0
3	2.431	608	T8	22:23:37.712	3	90	P	3	16	0
4	0.577	590	T8	22:23:38.289	15	13	P	6	5	18
5	11.146	602	T7	22:23:40.078	5	66	GT	1	4	0
6	0.065	602	T7	22:23:40.143	6	3	GT	2	4	0
7	1.110	588	T7	22:23:41.253	16	31	P	7	13	20
8	0.050	602	T6	22:23:36.027	7	62	GT	3	4	0
9	0.449	574	T6	22:23:36.476	30	67	GT	10	4	28
10	1.156	551	T6	22:23:37.632	34	20	PC	3	4	39
8	69	GT	4	4	0					
3	9	911	GT	5	4	0				
9	10	68	GT	6	4	0				
4	18	33	GTD	1	4	0				
3	38	52	P	11	18	73				
4	19	93	GTD	2	4	0				
5	20	57	GTD	3	4	0				
2	21	29	GTD	4	4	0				
0	22	22	P	8	9	23				
4	23	86	GTD	5	4	0				
8	46	70	P	12	2182					
0	26	48	GTD	8	4	4				
8	4	2	P	4	11	1				
7	39	15	GTD	15	4	50				
5	24	28	GTD	6	4	0				
0	12	19	GT	8	3	1				
2	17	4	GT	9	3	16				
7	35	98	GTD	13	4	41				
5	31	991	GTD	12	4	13				
1	40	11	GTD	16	11	53				
0	27	96	GTD	9	4	6				

Color selection dialog box showing a grid of basic colors and custom colors. The 'CLS' column in the table is highlighted in blue, and a red arrow points to it from the text above.

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SF2 – Pit Stop Report

Pit Stops 5 10 15 28 31 66 67 90

P	Car	Class	Driver	Stop	BaseLap	InLap	PitLane	OutLap	Total	Average	TimeLost	Plan	ToPit	Out
26	90	P	Marc Goossens	1	1:39.744	1:40.741	1:33.855	1:40.117						
3	31	P	Dane Cameron	1	1:38.259	1:37.401	1:17.075	1:34.723						F5
4	5	P	Joao Barbosa	1	1:37.476	1:39.412	1:17.198	1:34.635						Ctrl+P
1	10	P	Ricky Taylor	1	1:39.511	1:39.859	1:15.123	1:35.854						Ctrl+S
32	28	GTD	Daniel Morad	1	1:48.278	1:49.668	2:21.000	1:45.232						Ctrl+C
15	66	GTLM	Joey Hand	1	1:45.039	1:45.299	1:18.529	1:38.630						Shift+Ctrl+C
35	15	GTD	Austin Cindric	1	1:49.553	1:49.376	1:29.706	1:44.773						Shift+F2
14	67	GTLM	Richard Westbrook	1	1:45.774	1:45.198	1:19.307	1:38.787						
11	90	P	Marc Goossens	2	1:41.620	1:41.259	1:18.933	1:31.776						
3	31	P	Dane Cameron	2	1:37.977	1:38.756	1:17.311	1:28.762						
2	10	P	Ricky Taylor	2	1:37.709	1:39.369	1:13.897	1:29.809						
1	5	P	Joao Barbosa	2	1:39.175	1:37.862	1:15.487	1:29.140						
1	10	P	Ricky Taylor	3	4:10.847	3:40.180	1:29.702	2:51.351						
3	5	P	Joao Barbosa	3	4:09.828	3:39.431	1:31.972	2:50.770						
2	31	P	Seb Morris	3	4:07.831	3:39.717	1:29.276	2:51.053						
18	66	GTLM	Joey Hand	2	3:31.130	3:25.179	1:13.632	2:46.971						
20	67	GTLM	Richard Westbrook	2	3:28.733	3:19.553	1:17.775	2:43.503						
36	15	GTD	Austin Cindric	2	3:22.533	3:17.623	1:31.714	2:40.272						
48	28	GTD	Carlos de Quesad	2	3:20.031	3:21.317	1:40.172	2:23.543						
9	90	P	Marc Goossens	3	2:53.202	2:00.469	1:49.597	1:45.761						
2	31	P	Seb Morris	4	1:38.927	1:39.824	1:15.694	1:28.362						
3	5	P	Christian Fittip	4	1:41.098	1:40.208	1:19.528	1:29.914						
7	90	P	Renger Van Der Z	4	1:40.733	1:41.929	1:23.846	1:31.763						
3	10	P	Jeff Gordon	4	1:39.955	1:43.284	1:17.460	1:36.662						
18	66	GTLM	Joey Hand	3	1:44.934	1:43.746	1:18.530	1:38.679						
13	67	GTLM	Ryan Briscoe	3	1:44.495	1:43.512	1:17.934							
42	28	GTD	Jesse Lazare	3	1:49.335	1:51.184	1:33.535							
30	15	GTD	Austin Cindric	3	1:49.375	1:50.805	1:36.231							

- Set Base Laptime – Sets the BaseLap to the leaders' previous lap laptime.
- Refresh (F5) – while the popup will typically automatically update while the session is in progress, it may occasionally be required to •Refresh• the window to reflect the most current data.
- Print (Ctrl+P) – opens print window to print the report.
- Save CSV (Ctrl+S) - creates a .csv file for the data contained in the report for use with other programs.
- Copy To Clipboard (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Copy Image To Clipboard (Shift+Ctrl+C) – Copy the image to clipboard.
- Close (F2) – closes the window. The window can also be closed via the •X• in the upper right corner.
- TimeLost vs Leader – Display time lost vs the leader.
- Hide Column – Hide a column.
- Reset Columns – Reset columns and widths.
- Show All Logical Sections –
- Show Pre-Pit Laptimes

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- Show Post-Pit Laptimes
- Show All Cars
- Add Pit Stop At Checker
- Exclude Other Classes – Exclude classes other than the 'Team Car' class.
- Classes
- Car Color Rows – Display car color if defined.
- Save Layout
- Load Layout
- Set Font
- Exclude Empty PITLANE stops - Eliminates the extra false pit stops without a valid pitlane section time. This eliminates false pitlane timeline crossings. **Do Not execute while cars are in Pit Lane or valid pit stops might be deleted.**

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Driver Performance

The screenshot shows the 'Driver Performance' window with a table of driver data. A context menu is open over the table, listing various actions such as 'Hide Column', 'Reset Columns', 'Show All Cars', 'Driver Ratings', 'Exclude Other Classes', 'Classes', 'Car Color Rows', 'Set # Laps To Compare', 'Set Font', 'Update Car List', 'Refresh', 'Save CSV', 'Copy To Clipboard', 'Print', 'Save layout', 'Load Layout', and 'Close'.

P	Car	Driver	Class	Rating	Laps	GL	FastTime	Top 3	Top 10
1	10	Ricky Taylor	P		82	71	1:36.909	1:37.134	1:37.387
2	10	Jeff Gordon	P		69	67	1:37.643	1:37.728	1:38.118
3	10	Max Angelelli	P		70	57			
4	10	Jordan Taylor	P		49	41			
5	11	Mirko Bortolotti	GTD		27	24			
6	11	Rolf Ineichen	GTD		109	98			
7	11	Christian Engelhart	GTD		78	61			
8	11	Ezequiel Perez Companc	GTD		40	33			
9	13	Neel Jani	P		60	55			
10	13	Sebastien Buemi	P		88	77			
11	13	Stephane Sarrazin	P		86	74			
12	13	Nick Heidfeld	P		25	19			
13	14	Scott Pruett	GTD		53	50			
14	15	Austin Cindric	GTD		86	78			
15	15	Robert Alon	GTD		61	50			
16	15	Jack Hawksworth	GTD		76	65			
17	15	Dominik Farnbacher	GTD		30	23			
18	16	Jeroen Mul	GTD		5	4			
19	16	Corey Lewis	GTD		43	33			
20	16	Brett Sandberg	GTD		32	32			
21	18	Emmanuel Anassis	GTD		86	76			
22	18	Zach Claman	GTD		42	36			
23	18	Brandon Gdovic	GTD		54	43			
24	18	Anthony Massari	GTD		67	53			
25	19	Bill Auberlen	GTLM		77	67	1:44.247	1:44.494	1:44.670
26	19	Bruno Spengler	GTLM		52	47	1:44.690	1:44.880	1:45.149
27	19	Alexander Sims	GTLM		60	49	1:44.556	1:44.611	1:44.734
28	19	Augusto Farfus	GTLM		73	62	1:53.380	1:53.786	1:54.615

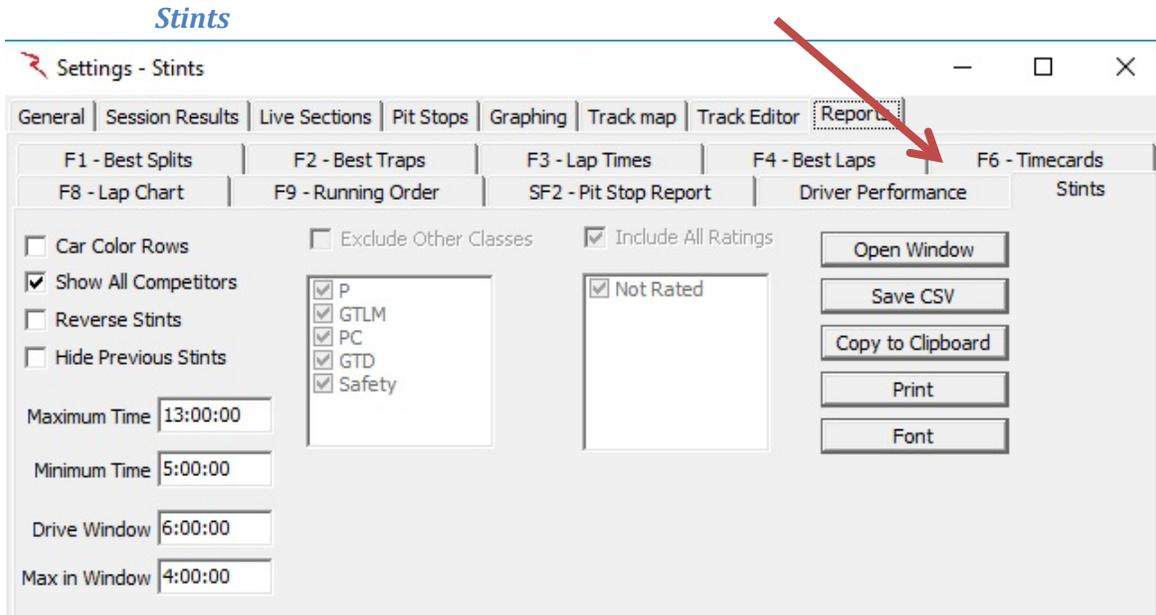
- Hide Column – Hide the selected column.
- Reset Columns – Unhide hidden columns.
- Show All Cars - Show All Competitors even if a subset is selected.
- Driver Ratings – Show driver ratings (if available).
- Exclude Other Classes – Exclude classes other than the 'Team Car' class.
- Classes – Choose the classes to display.
- Car Color Rows – Shade rows using specified Car color.
- Set # of Laps To Compare - 1st Laps To Compare – Number of top laps to average. First set. 2nd Laps To Compare – Number of top laps to average. Second Set.
- Set Font – Set the font for the report.
- Update Car List – (F6) Update the list of cars to display in the report.

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- Refresh – (F5) Refresh the data in the report.
- Save CSV – (Ctrl+S) Save the report to a csv file.
- Copy to Clipboard –(Ctrl+C) Copy the report to the clipboard for use in another program.
- Print – (Ctrl+P) Print the report.
- Save Layout – Save the current layout.
- Load Layout – Load a saved layout.
- Close – (Ctrl+F4) Close the window.

NOTE: Click on any field title to sort by that field.

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- The Stint report is also available under the PopUps menu

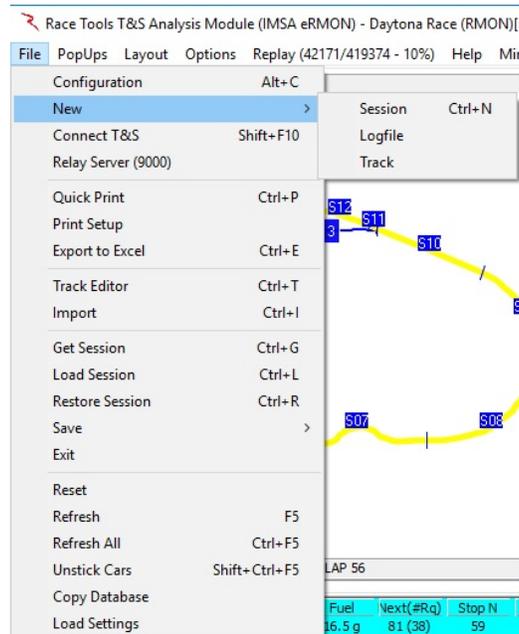
Car	Driver	TOD_IN	TOD_OUT	Elapsed_IN	Elapsed_OUT	Lap_IN	Lap_OUT	InRank	OutRank	Laps	Average	GL
15	Austin Cindric	14:30:53.122	15:22:57.376		52:04.254	0	27	48	40	28	1:56.237	23
15	Austin Cindric	15:24:27.082		53:33.960								1
28	Carlos de Quesada	15:25:01.445		54:08.323								
31	Dane Cameron	14:30:53.122	15:10:43.269		39:50.14							
31	Dane Cameron	15:12:00.344		41:07.222								
28	Daniel Morad	14:30:53.122	15:22:40.445		51:47.32							
5	Joao Barbosa	14:30:53.122	15:10:46.252		39:53.15							
5	Joao Barbosa	15:12:03.450		41:10.328								
66	Joey Hand	14:30:53.122	15:22:51.822		51:58.70							
66	Joey Hand	15:24:10.351		53:17.229								
90	Marc Goossens	14:30:53.122	14:59:36.824		28:43.70							
90	Marc Goossens	15:01:10.679		30:17.557								
67	Richard Westbrook	14:30:53.122	15:24:50.940		53:57.81							
67	Richard Westbrook	15:26:10.247		55:17.125								
10	Ricky Taylor	14:30:53.122	15:12:27.398		41:34.27							
10	Ricky Taylor	15:13:42.521		42:49.399								

- Refresh – (F5) Refresh the data in the report.
- Print (Ctrl+P) – Print the report.
- Save CSV – (Ctrl+S) Save the report to a csv file.
- Copy Image to Clipboard – (Shift+Ctrl+S) Copy image to clipboard.

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- Copy To Clipboard – (Ctrl+C) Copy the report to the clipboard for use in another program.
- Close – (Shift+F2) Close the report.
- Hide Column – Hide the selected column.
- Reset Columns – Unhide hidden columns.
- Save Layout – Save the current layout.
- Load Layout – Load a saved layout.
- Set Font – Set the font for the report.
- Include Follow Cars – Include the other cars you are following.
- Exclude empty PITLANE Stops – Exclude short or erroneous pit stops.
- Delete Stint – Delete a stint.
- Edit Stint – Edit a stint.
- Insert Stint – Insert a stint.

New



Session (Ctrl+N)

- Session - removes previously processed data and creates a new session in the same Log file.

Logfile

- Logfile - creates a new Log file with distinct file name.

Track

- Track - clears the track definition which will be replaced on the next \$T track message.

Connect T&S (Shift+F10)

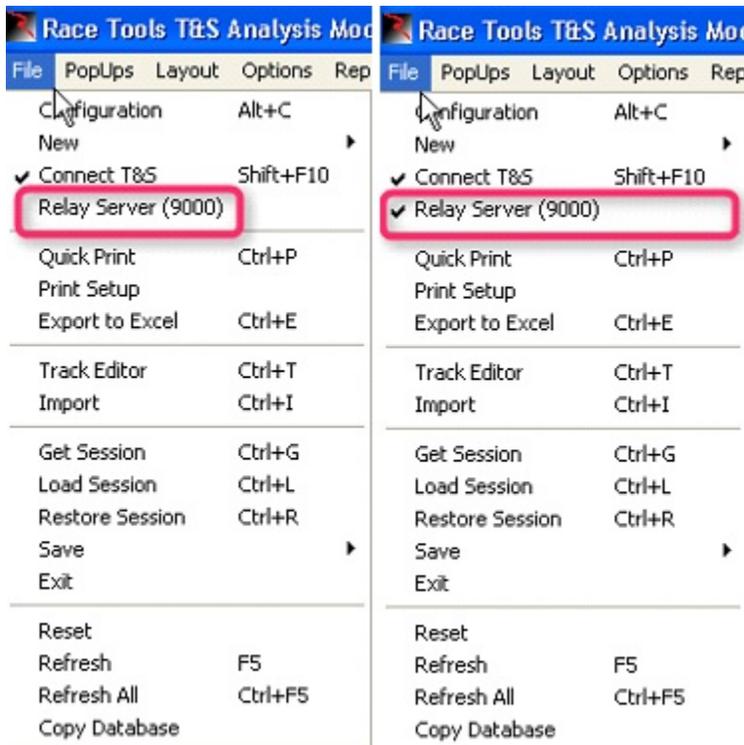
- Connect T&S (Shift+F10) – Connects software to timing feed. Indicator will show up with connection status at the top of the Track Map window.

Relay Server

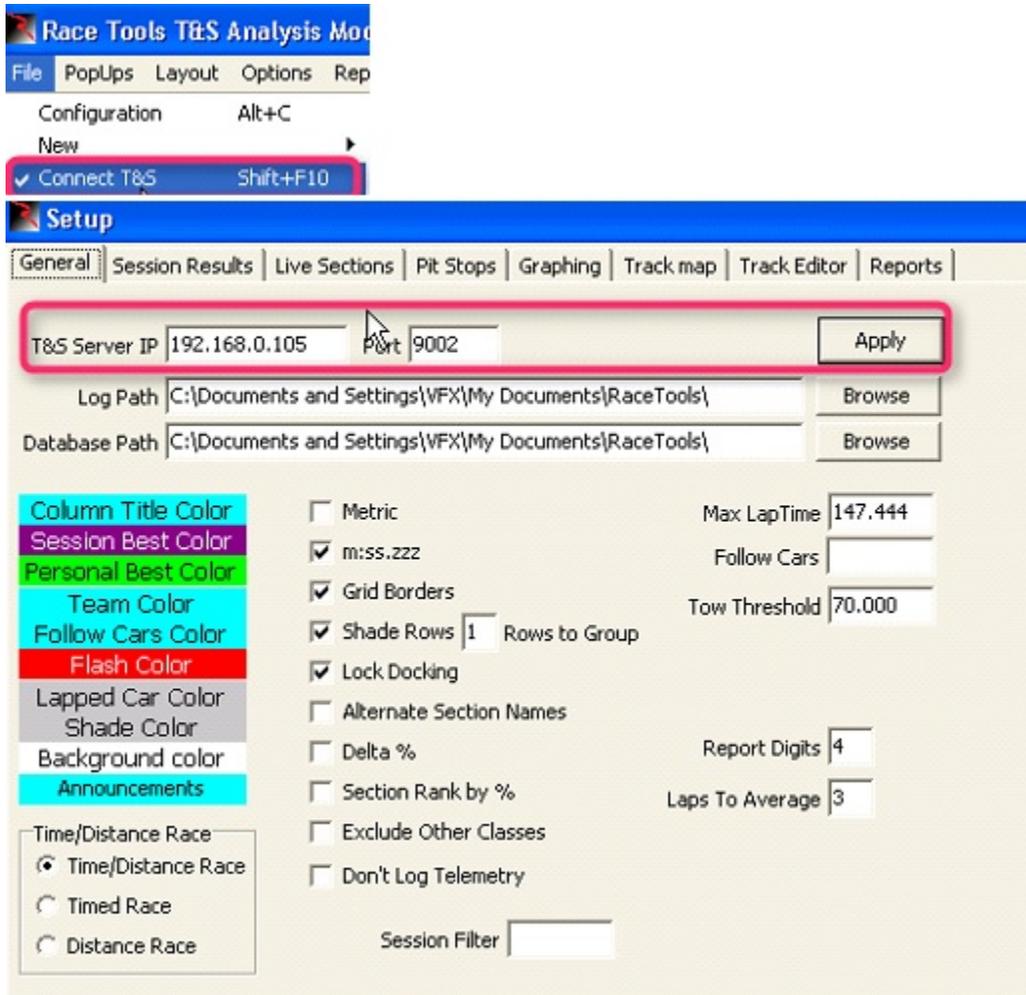
- Some new timing and scoring systems limit the number of connections each team can have to the timing and scoring feed. This means that teams must limit their use of the timing data to one system, pay for additional connections, or find a way to distribute the data stream to multiple clients.
- Fortunately RaceTools has a built in Relay Server which will allow you to distribute one data feed to as many clients as you'd like. You can mix different versions of RaceTools with the Relay Server as it only relays the data it receives, but the Get Session function to get a snapshot of a session is version dependent.

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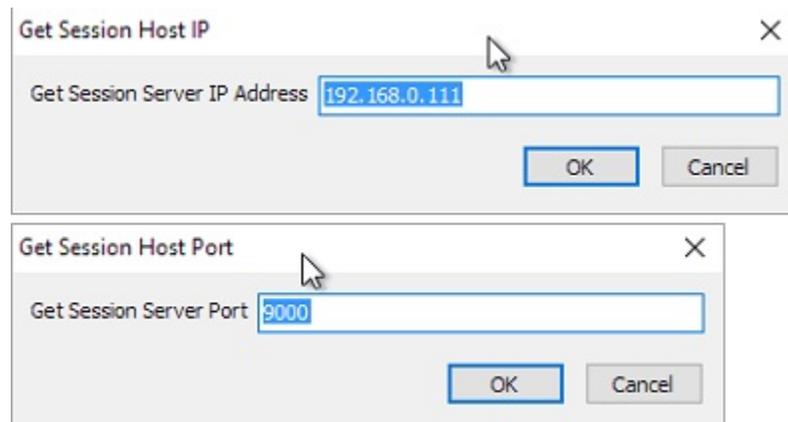
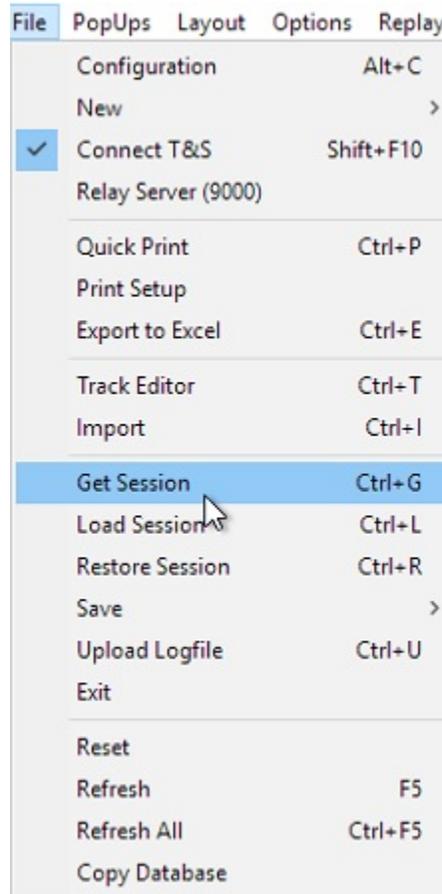
- Relay Server was included in a major update to RaceTools in version 2.56. It was added to address the connection restrictions in the WEC data feed, but this feature is also useful for non-WEC users.
- The Relay Server redistributes the data stream from one instance of RaceTools to other copies of RaceTools. This can be used to reduce network traffic to the data source, limit the number of machines connected to the pit lane network, or to synchronize clients in a replay scenario (such as for learning the software) without using another tool like IPBroadcaster.
- Enabling the Relay Server in RaceTools is very easy. Just go to the main program File menu and select Relay Server. You will be prompted to confirm or change the IP address to listen to (enter 0.0.0.0 to accept connections on any IP address, or a specific IP address if you wish to restrict access to a single IP address on that machine) and port to listen for connections on. This combination is what other clients will connect to. A checkmark beside the option means the Relay Server is active. In this case it will listen for requests on port 9000.



- Connecting to the Relay Server is the same as connecting to the Pit Lane server. You can either directly specify or connect to the T&S feed using the File menu Connect T&S, or use the Configuration window to specify the T&S Server IP and Port. For the IP address, enter the IP address of the Relay Server. For the Port, use the Listen port specified when you enabled or configured the Relay Server (9000 in this example). Clients connected to the Relay Server will get a copy of whatever the Relay Server receives.



- **Get Session** One big advantage of the Relay Server is that not only can the Relay Server distribute the incoming data feed (thereby reducing network traffic between the pit stand and the T&S server) it can also share whatever data it has already captured for the session. This means that if the Relay Server has been running since the start of the session and a client connects mid-session, it can get a snapshot of everything up to that point and then continue with the live data as if it had been connected the whole time. This feature was added in version 2.75
- You don't have to get the live data feed from the Relay Server for this feature to work. You can still be connected to the pit lane T&S server, but the transition from archive to live data might be a little less smooth, depending on how far you are into the race.
- To request a Session Snapshot, use the file menu 'Get Session' (CTRL+G) from the main program window. Enter the IP address and port number of the Relay Server.



- The current status and log of GetSession requests are displayed in the Announcement line and Message window, Once the Get Session request is complete, the client will have an exact copy of data that the Relay Server has and will proceed with the live data from the T&S connection.

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The screenshot shows the RaceTools interface with the following components:

- Track Map:** A circular track diagram with numbered sectors (01-32) and colored pit stops.
- Driver List Table:**

Time	Elapsed	To Go	Green	Yellow	Red	Overall Status
14:53:32	00:22:43	7838 / 84%	20:43	0L	0	GREEN
- Announcement Line:** A text area at the bottom of the driver list showing session details.
- Data Table:** A table with columns for driver number, name, lap time, and other performance metrics.

Callouts in the image provide the following information:

- "Status of GetSession request is displayed in the Announcement line." (pointing to the bottom of the driver list)
- "GetSession requests are logged in the Announcements/Messages window." (pointing to the bottom of the data table)

- Caveats**

There is one main caveat to the Get Session function; the Relay Server and clients need to be running compatible versions of RaceTools. Because the data being sent is an exact copy of the in-memory data, any changes in how or what data is logged will make two versions incompatible. I will try to limit these changes and note them when necessary, but it means you cannot run v2.77 as the server and v2.79 as the client, or vice versa.
- Recommendations**

I recommend that you run a copy of RaceTools on the pit stand with the Relay Server enabled at all times (before the first session until the end of the last session) to capture the data. I would minimize the user interaction on this machine to keep it as stable as possible, perhaps using it to display the track map and basic results. This will make sure that there is a copy of the current session available to other copies of RaceTools as needed. Ideally this would be a machine that stays at the pitstand. It doesn't have to be portable or very powerful. It should have enough storage to log all of the sessions and be kept on all day.
- The client RaceTools can connect to the pit lane T&S server or the Relay Server for the live feed, but if you need to start or restart RaceTools after a session has started, you can use the Get Session command to get a snapshot of the current session.

Quick Print (Ctrl+P)

- Quick Print – Allows set up of multiple reports to print at the same time.
- Select the reports to be printed (described in “Popups” section).
- Select font size and grouping options for maps and reports, grouping makes sure certain reports/maps are grouped on a single page (typically the Best Lap and Split Maps are grouped, All Lap Times Per Driver gets its own page(s), and Best Lap Times, Best Split Times, and Best Speed Traps are grouped together).
- Setup the printer/writer (and orientation) to be used for the reports.

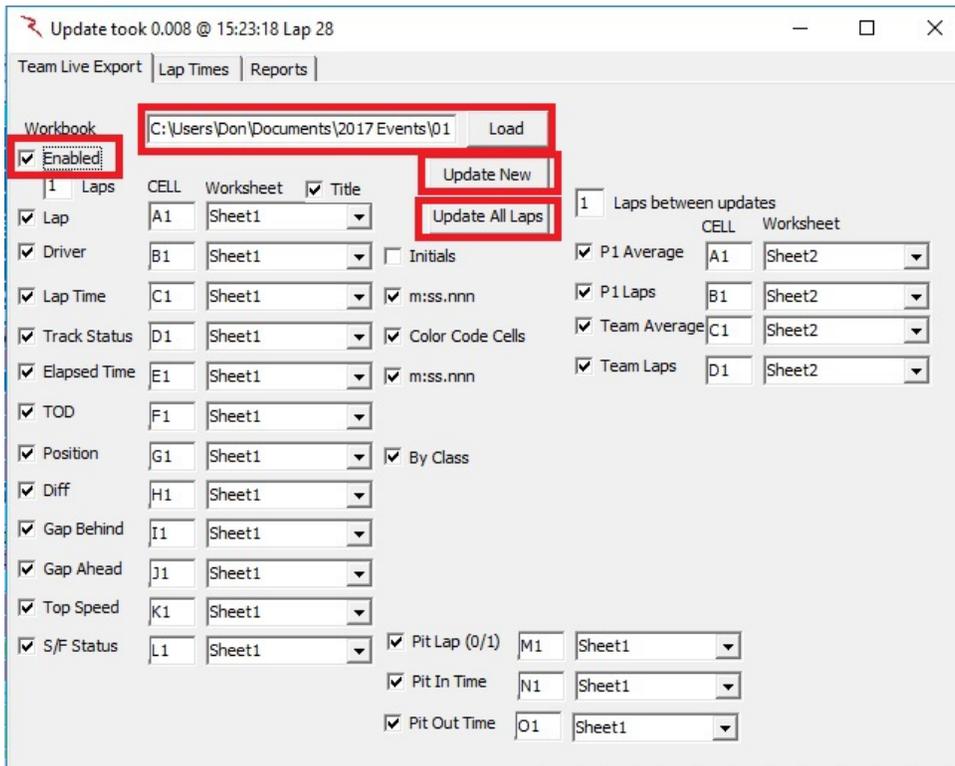
Print Setup

- Print Setup – allows for specification of top, bottom, left, and right margins. These may need to be modified to insure that grouped prints display properly

Export to Excel (Ctrl+E)

- This option allows the user to configure specific reports in Excel to be used for further analysis. This is very flexible so the user can design spreadsheets to fit his particular needs.

Live Export



- Workbook – Input the location and name of the spreadsheet where you want to store the data. (You must first create the workbook with Excel and save it in your desired location.)

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- Enabled – Check this box to enable the live export of data to the spreadsheet.
- Laps – Laps between updates (1 equals update every lap).
- Lap – Check the box to export the lap number.
- Driver – Check the box to export the Driver Name.
- Lap Time – Check the box to export the Lap Time.
- Track Status – Check the box to export the track Flag Status.
- Elapsed Time – Check the box to export the session Elapsed Time.
- TOD – Check the box to export the Time of Day.
- Position – Check the box to export the Position. Check the “By Class” box to show ‘Position in Class’.
- Gap Behind – Check the box to export the Gap Behind the next car.
- Gap Ahead – Check the box to export the Gap Ahead of the next car.

Under the column “CELL” you input the Cell in the spreadsheet where you want the data placed, and under “Worksheet” you select the name of the worksheet you want to use. Other checkboxes on this window allow you to create a spreadsheet showing average lap times for P1 and your car with projected laps based upon those average lap times.

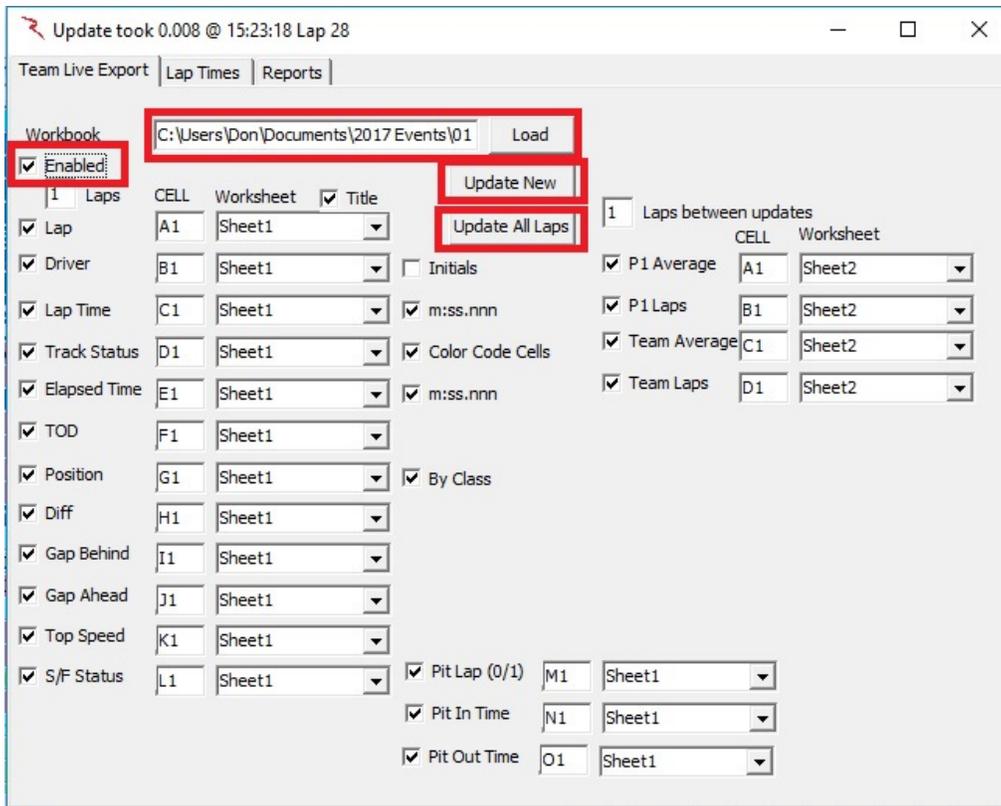
Lap Times

RaceTools has the ability to log laptimes for multiple competitors with the addition of the Lap Times tab in the Excel Export module. The Lap Times Export works with the Team Live Export (formerly named Live Export) tab as they share the same Workbook, Enabled checkbox and Update New and Update All Laps buttons. The Lap Times export is an extension of the Live Export function.

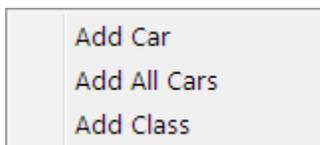
As before, you must first select and Load a workbook by either double clicking on the workbook text box or the Load button.

The ‘Enabled’ checkbox sets whether the worksheet should be updated in real time based on the team car’s SF crossings. The Laps text box below it allow you to decrease the frequency of the updates in case the laptimes are short and you need time to work with the worksheet without the software trying to update the fields. The Update New button manually updates the worksheet with any new lap data. The Update All Laps button manually updates the worksheet with all lap data, which can be useful if there were holes in the spreadsheet due to the spreadsheet being busy during an update attempt.

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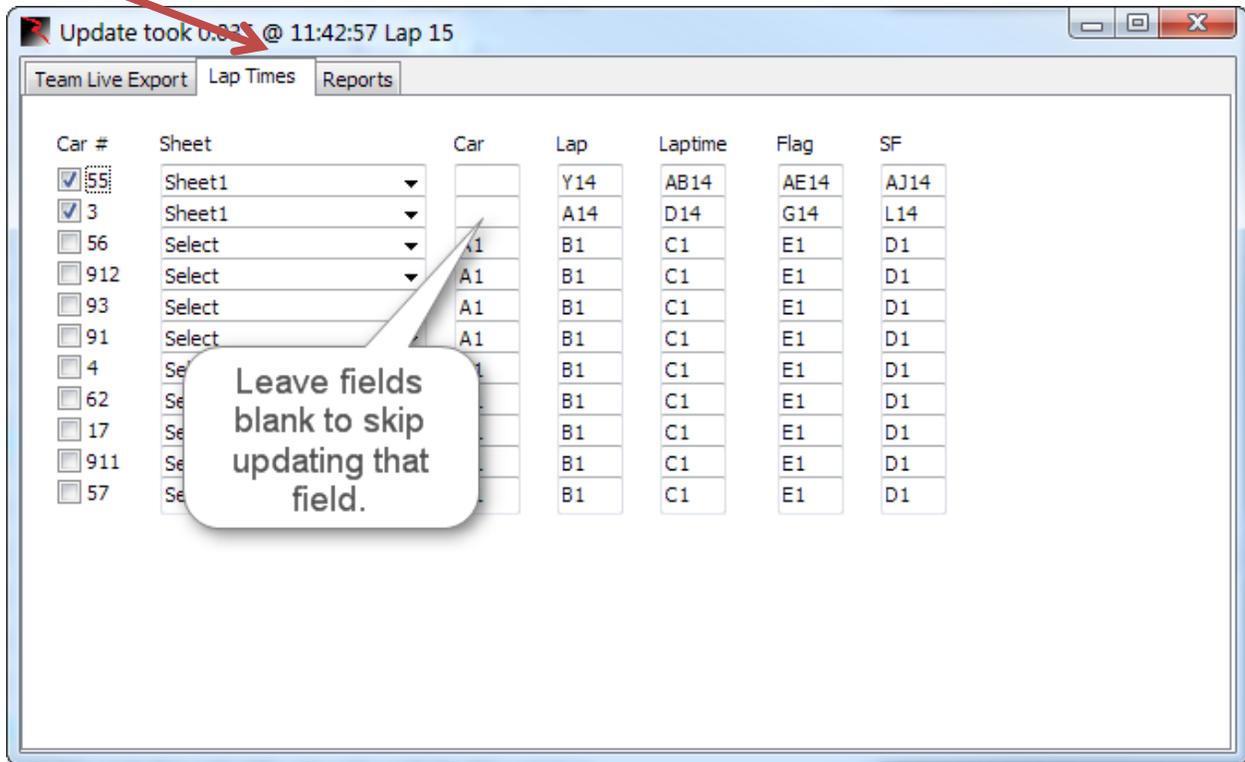
To add cars to the list, click on the “Lap Times” tab, and then right click in the open area to reveal the “Add Car” options. You can use the Add Car option (adds one car at a time), Add All Cars option (adds the current list of competitors to the list) or Add Class (adds cars with a specified Class Name to the list).



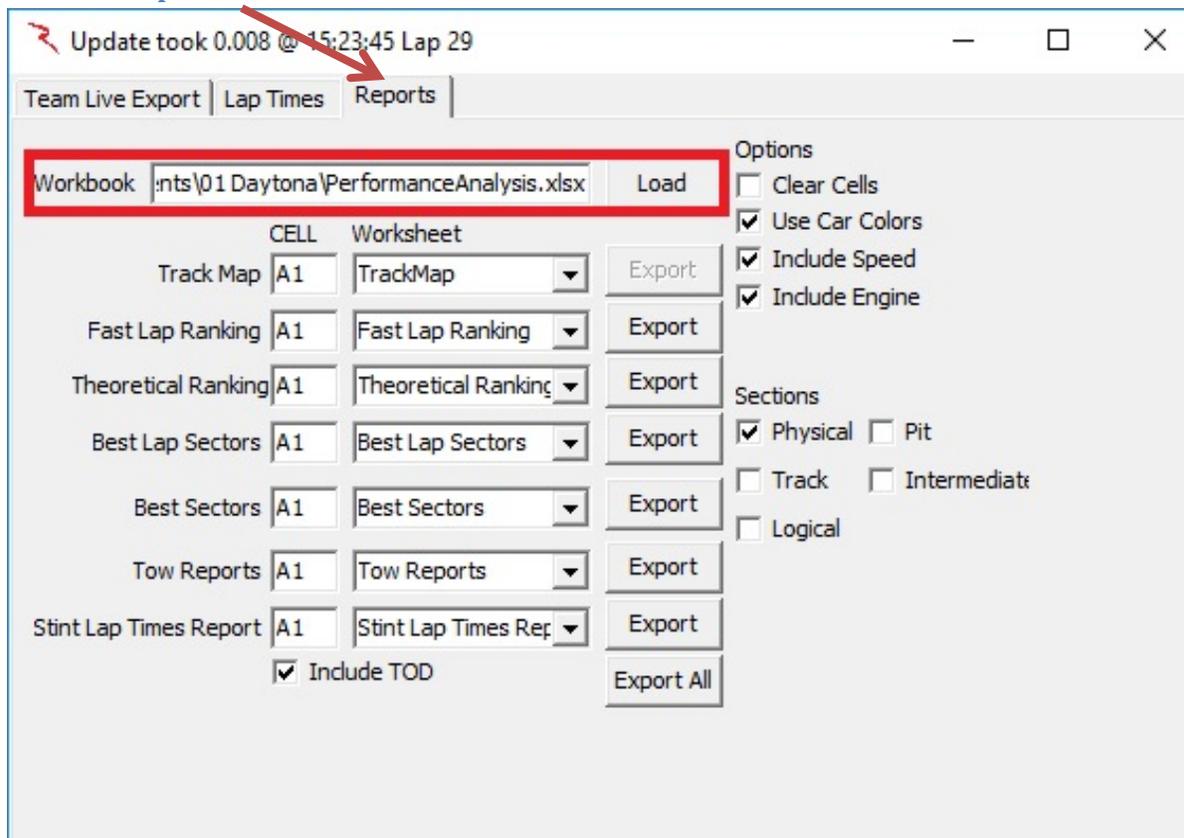
Once the car number has been added to the list, you can set the Sheet (which spreadsheet to update), and cell locations. (You might want to use a different sheet for each car.) The Cell values are for lap 0 (which is never populated) in the Column+Row format. In the example below, Car 55's Lap, Laptime, Flag and SF crossing status will be filled in on the 'Sheet1' tab of the workbook, with Lap 1 being filled in on row 15 (14+1), with the Lap value in the 'Y' column, Laptime in the 'AB' column, Flag in the 'AE' column and the crossing status (either 'T' for Track or 'P' for Pit) in the 'AJ' column. The Car Number will not be populated as it is blank.

Cars 56, 912, etc. will not be updated because they are not selected and also because their 'Sheet' field is not populated with a valid sheet name.

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Reports



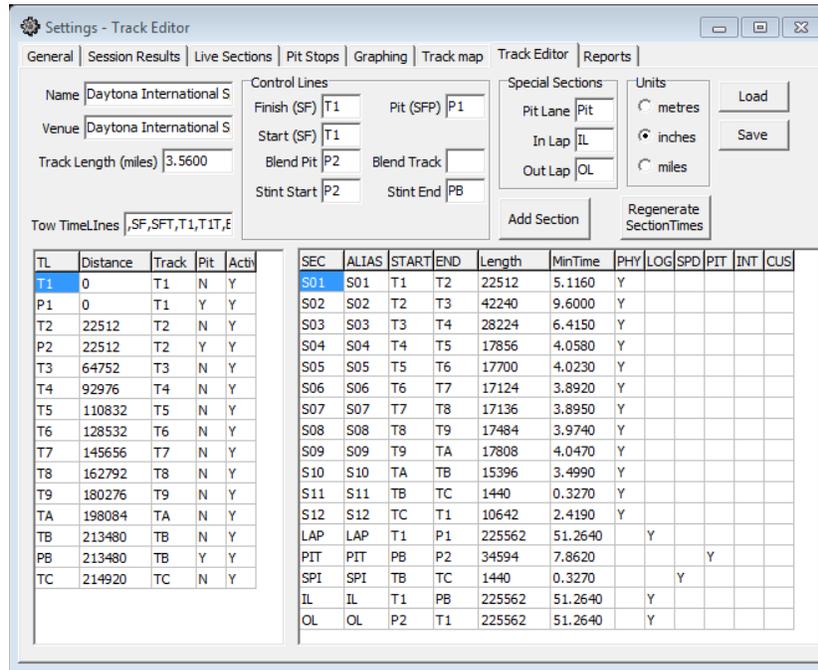
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- Workbook – Enter the location and name of the workbook where you want to store the report. (You must first create the workbook with Excel, name the specific worksheets, and save it in your desired location. The worksheets must be created before you can select them.)
- Track Map – Exports the Track Map. Select the beginning cell and name the worksheet.
- Fast Lap Ranking – Exports the fast lap for each car and ranks them in order of fast time.
- Theoretical Ranking – Ranks the cars by their theoretical best lap time.
- Best Lap Sectors – Shows each car with their best time in each section. Under “Sections” you can check which type sections to include in the report.
- Best Sectors – Lists each section with each car’s best time in that section.
- Tow Reports – Displays the Tow Report.
- Stint Lap Times Report –
- Export – You can export each report individually or use the Export All button to export all the reports.

Under the column “CELL” you input the Cell in the spreadsheet where you want the data placed, and under “Worksheet” you input the name of the worksheet you want to use.

Track Editor (Ctrl+T)

- Track Editor – In the event that a supplied track .csv file needs modification, or of the user desires to apply aliases to the track sections, the track editor can be used to change editable parameters such as distances, Start/Finish Codes, min split times, split numbers, etc. See example of Daytona below. Note that at some road/street courses, the Finish, Start, and/or Pit Control lines might not be “SF•SFP” for some practice and qualifying sessions. Confirm Control Lines with the track map.



- Name – Track Name, updated with data feed when available.
- Venue -Venue Name, updated with data feed when available.
- Track Length (miles) - Track Length, updated with data feed when available.
- Tow Timelines – Tow Timelines, updated with data feed when available.
- Track TimeLine and Section tables are updated with data feed when available. You will use information from these tables to fill in the boxes under Control Lines and Special Sections. This is Very Important since this data will be used in compiling various reports and graphs.
- Finish (SF) – Finish Line label. VERY IMPORTANT.
- Start (SF) – Start Line label, usually the same as Finish Line unless there is a remote start line.
- Blend Pit – Pit Lane Blend Line.
- Stint Start – Stint Start Line.
- Pit (SFP0 – Pit Lane S/F Line. If Pit Lane does not cross SF Line, use SF line.

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- Blend Track – Track Blend Line.
- Pit Lane – Pit Lane Section from Pit-In to Pit-Out. See section table for details.
- In Lap – In Lap section from SF to Pit-In. See section for details.
- Out Lap – Out Lap Section from Pit-Out to SF line.
- Units – Units to use in Timeline and Section tables.
- Add Section – Add Custom Section. Group Physical Sections into other sections for analysis.
- Regenerate Section Times – Recalculate all section times using line crossing data. Automatically called when adding or deleting sections.
- Load – Load track configuration.
- Save – Save and apply track configuration.

NOTE: The Track Configuration for IMSA should always be Finish (SF) = 'T1', Pit (SFP) = 'P1', Start (SF)='T1', Pit Lane='PIT', In Lap='IL', and Out Lap='OL'.

- **Long Beach Track Map Notes**
- **IMSA teams should use the LongBeach_IMSA track map.** Make sure the Track Definition is set up correctly. Specifically, make sure that the SF/SFP lines are set to T1 and P1 respectively and that the Pit Section is 'PIT', the In Lap is 'IL' and the Out Lap is 'OL'.

The screenshot shows the 'Setup' window for Sebring International Raceway. The 'Control Lines' section is highlighted with a red box, showing the following configuration:

- Finish (SF): T1
- Pit (SFP): P1
- Start (SF): T1
- Blend Track: (empty)
- Stint Start: (empty)
- Stint End: (empty)

The 'Special Sections' section shows the following configuration:

- Pit Lane: PIT
- In Lap: IL
- Out Lap: OL

Below the configuration are two tables:

TL	Distance	Track	Pit	Activ
T1	0	T1	N	Y
P1	0	T1	Y	Y
T2	15035	T2	N	Y
P2	15035	T2	Y	Y
T3	27269	T3	N	Y
T4	71819	T4	N	Y
T5	97267	T5	N	Y
T6	145193	T6	N	Y
T7	203248	T7	N	Y
T8	204740	T8	N	Y
T9	224715	T9	N	Y
TA	228091	TA	N	Y
PA	228091	TA	Y	Y

SEC	ALIAS	START	END	Length	MinTime	PHY	LOG	SPD	PIT	INT	CUS
S01	S01	T1	T2	15035	3.4170	Y					
S02	S02	T2	T3	12234	2.7800	Y					
S03	S03	T3	T4	44550	10.1250	Y					
S04	S04	T4	T5	25448	5.7840	Y					
S05	S05	T5	T6	47926	10.8920	Y					
S06	S06	T6	T7	58055	13.1940	Y					
S07	S07	T7	T8	1492	0.3390	Y					
S08	S08	T8	T9	19975	4.5400	Y					
S09	S09	T9	TA	3376	0.7670	Y					
S10	S10	TA	T1	6372	1.4480	Y					
LAP	LAP	T1	P1	234463	53.2870		Y				
PIT	PIT	PA	P2	21407	4.8650				Y		
SP5	SP5	T7	T8	1492	0.3390			Y			
SPI	SPI	T9	TA	3376	0.7670			Y			
IL	IL	T1	PA	236966	53.8560		Y				
OL	OL	P2	T1	236966	53.8560		Y				

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- **INDYCAR** teams should use the LongBeach_PQ map for Practice/Qualifying sessions and the Long Beach map for the final practice and race. The SF/SFP line should be I7/I7 for the PQ map and SF/SFP for the race map. The Pit Section is 'L2', In Lap is 'L4' and Out Lap is 'L3'.

- **IndyCar** (and Mazda Road To Indy) teams Practice and Qualifying Configuration

The screenshot shows a configuration window with two main sections: "Control Lines" and "Special Sections".

Control Lines:

- Finish (SF): I7
- Pit (SFP): I7
- Start (SF): I7
- Blend Pit: PO (highlighted)
- Blend Track: [empty]
- Stint Start: [empty]
- Stint End: [empty]

Special Sections:

- Pit Lane: L2
- In Lap: L4
- Out Lap: L3

An "Add Section" button is located at the bottom right of the Special Sections area.

- **IndyCar** (and Mazda Road To Indy) teams Race and Final Practice Configuration

The screenshot shows a configuration window with a tabbed interface at the top: "Conditions", "Pit Stops", "Graphing", "Track map" (selected), "Track Editor", and "Report".

Control Lines:

- Finish (SF): SF
- Pit (SFP): SFP
- Start (SF): SF (highlighted)
- Blend Pit: PO
- Blend Track: [empty]
- Stint Start: [empty]
- Stint End: [empty]

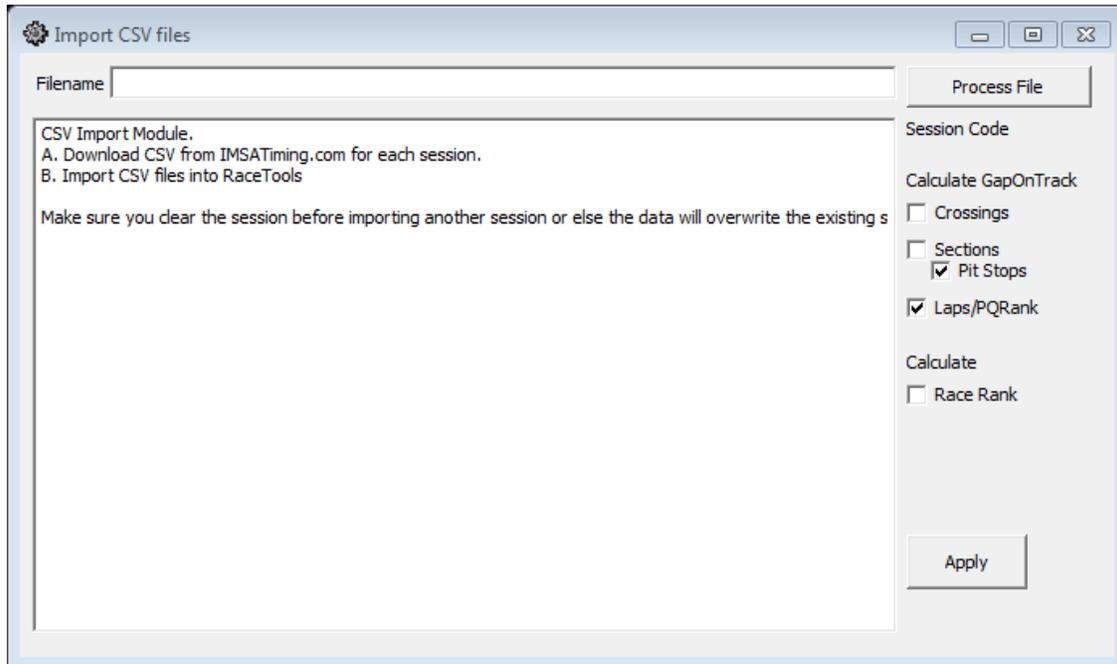
Special Sections:

- Pit Lane: L2
- In Lap: L4
- Out Lap: L3

An "Add Section" button is located at the bottom right of the Special Sections area.

Import (Ctrl+I)

- You can import a .csv file into RaceTools.
- Download the .csv file from <http://results.imsa.com/> for each session.
- Import the .csv file into RaceTools



Get Session (Ctrl+G)

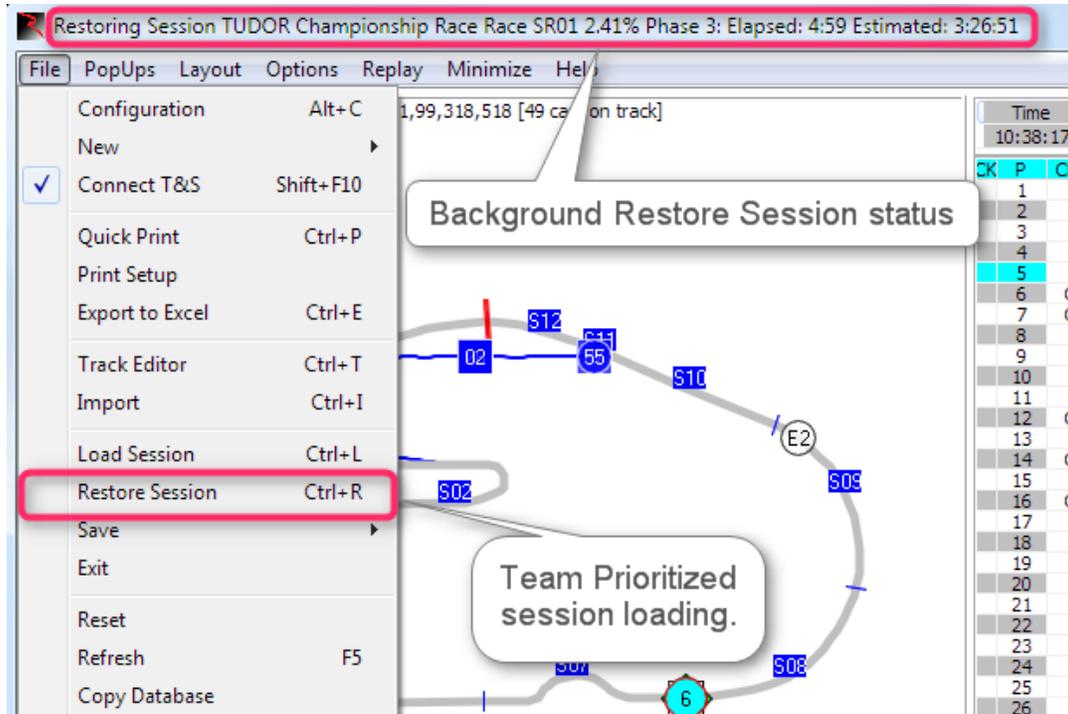
- Get a Session Snapshot from the Relay Server. See [Relay Server](#) for details.

Load Session (Ctrl+L)

- Load Session – Loads a database file (.abs extension), which immediately loads an entire sessions results, not requiring replay.

Restore Session (CTRL+R)

- An optimized version of the Load Session function to recover quickly from a restart mid-session. Use this instead of Load Session if you need to restart the software mid-race. As soon as the software reloads, hit CTRL+R (or File/Restore Session from the main menu) and load the session file (*.abs) of the current session.
- Loads the stint times for all competitors (takes only a few seconds), then loads the lap times and section times for the team car, followed by all of the other cars. This means that the full details of the team car will be available within a couple of minutes including all drive times (stints), lap times, section times, pit stops, etc. The rest of the data will be restored in the background. It might take a couple of hours for a full 24 hour race, but at least you will be back up and running with as much of the team data as possible as soon as possible and the software is operational while the details are loaded in the background.



Save

Save csv

- Save CSV (deprecated) – saves all lap data for all competitors as CSV file. Use the Time Card (F6) Save CSV (CTRL+S) for a more detailed log of crossings.

Save Session (Ctrl+S)

- Save the current session.

Save Settings

- Save Settings – saves user settings selected for displays and setup.

Exit

- Exit – initiates shutdown of software, prompts user to quit Race Tools by clicking "OK". Cancel if do not want to close Race Tools.

Reset

- Reset – resets some internal counters and flags, use when an error is thrown by the program and the tables stop updating. Reset attempts to restart the updates without having to restart the application.

Refresh (F5)

- Refresh (F5) - The default Refresh (F5) option refreshes the data, sorting the competitors, leaderboard, etc. but does not longer resize the Session Results columns.

Refresh All (Ctrl+F5)

- Refresh All – To auto resize the Session Results columns (and do a data refresh) you now need to use the Refresh All (CTRL+F5) option.

Unstick Cars (Shift+Ctrl+F5)

- Unstick Cars - Start cars moving again if they have stopped moving.

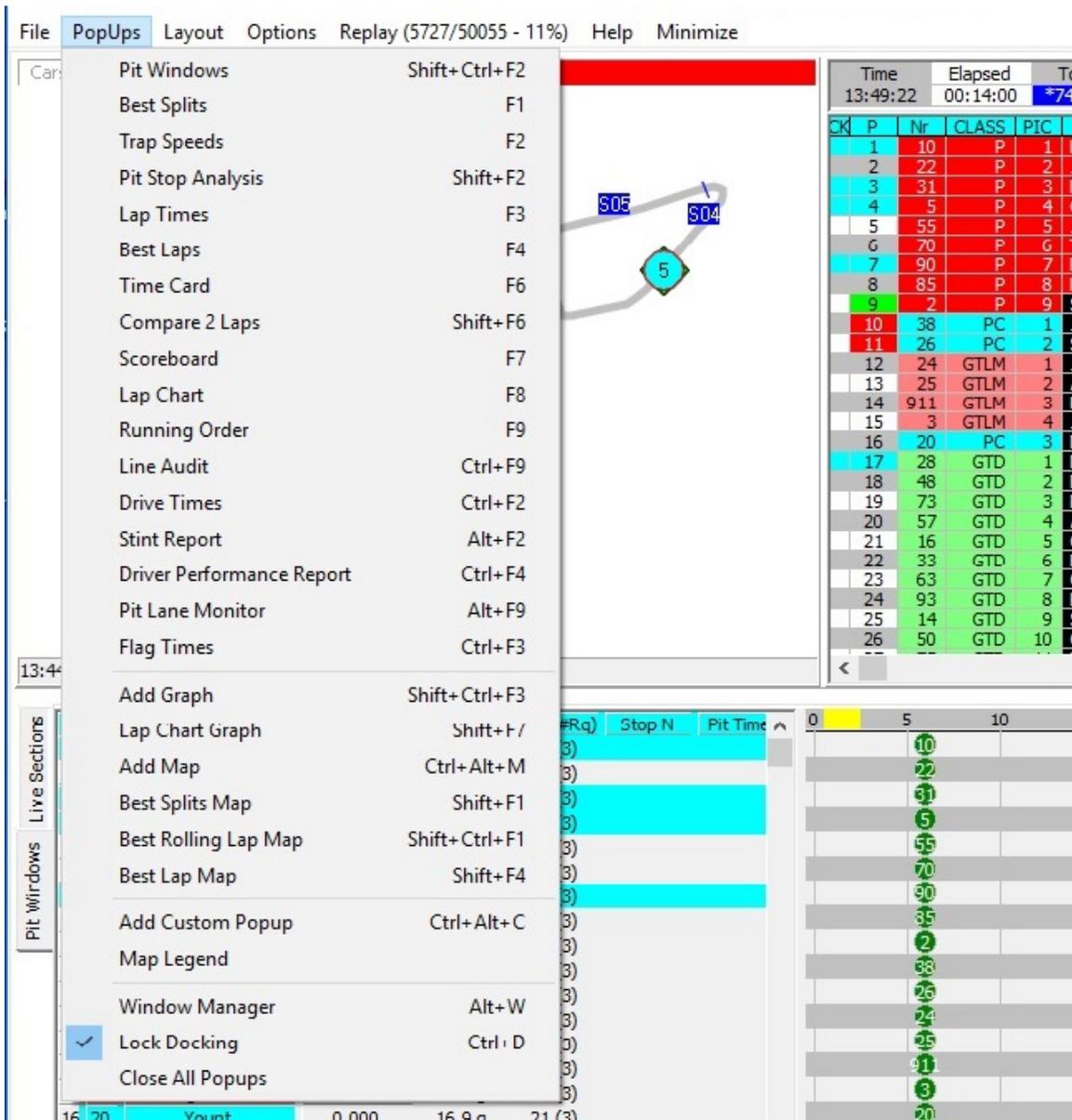
Copy Database

- Makes a copy of the Database.

Load Settings

- Load Settings - With increased use of the docking features of the software, especially with the ability to have multiple track maps and graphs, the need for better management of configuration settings became obvious. With the change in v3 of saving configuration files to the %appdata% folder when running the executable out of the %program files% folder, There needed to be a way for you to restore the settings from v2.
- V3.0.10 adds a 'Load Settings' menu to the main program menu to load the program settings from any configuration file. This is most useful when migrating from version 2 to version 3 as the location of the configuration files may have changed, depending on where you run the software from. If you run RaceTools from the Program Files or Program Files (x86) folder, version 3 of RaceTools stores and loads the configuration from the AppData folder as recommended by Microsoft. It no longer saves to the Program Files folder as this folder is protected by the operating system and users were having problems closing the software and/or restoring their previous configuration when starting the software. If you run RaceTools from another folder, RaceTools will continue to save/restore the configuration from the same folder. With the 'Load Settings' menu, you can now load the configuration from a different folder. If you save or close the software, RaceTools will save the settings to the default folder which is the RaceTools program folder if not the windows program folder, or the AppData folder if the RaceTools program folder is in the Windows Program Folder (i.e. c:\Program Files or c:\Program Files (x86)).
- V3.1.0 now saves and restores any extra maps and/or graphs that you may have added. Previously you would have to re-add the maps and/or graphs each time you launched the software, but now RaceTools will remember how many maps/graphs you added and restore them when you start the software.

PopUps



Note: Some menu items are not applicable and will not be available in series that do not have multiple classes running together and do not have multiple drivers per car.

Pit Windows (Shift+Ctrl+F2)

- Pit Window – Opens the 'Pit Window' display in the lower part of the screen.

NOTES ON [DOCKING](#) GRAPHS AND REPORTS:

- Notes on Docking graphs and reports are found in the [Appendix](#).

Best Splits (F1)

F1 - Best Splits Analysis [PR01 at 8:48:17.000]

Pos	Nr	Class	Driver	Theoretical	Delta	FL-OL	S01	Delta	R01	S02	Delta	R02	S03	Delta	R03	S04	Delta	R04	S05
1	5	P	Joao Barbosa	1:38.694	-0.486	0.486	10.467	0.000	1	22.296	0.071	3	19.171	0.246	6	7.015	0.009	4	5.711
2	10	P	Jordan Taylor	1:39.246	0.066	0.757	10.565	0.098	3	22.389	0.164	8	19.256	0.331	11	7.010	0.004	3	5.714
3	9	P	Brian Frisselle	1:39.521	0.341	0.309	10.838	0.371	15	22.329	0.104	4	19.241	0.316	8	7.052	0.046	9	5.727
4	02	P	Marino Franchitti	1:39.495	0.315	0.839	10.723	0.256	18	22.328	0.124	5	19.255	0.340	14	7.035	0.029	6	5.732
5	90	P	Richard Westbrook	1:39.540	0.360	0.644	10.663	0.19	18	22.328	0.124	5	19.255	0.340	14	7.006	0.000	1	5.725
6	01	P	Scott Pruett	1:40.052	0.872	0.937	10.829	0.36	19	22.328	0.124	5	19.255	0.340	14	7.026	0.020	5	5.692
7	60	P	Oswaldo Negri Jr	1:39.863	0.683	0.807	10.646	0.17	10	7.093	0.087	10	5.779						
8	78	P	Sebastian Saverda	1:39.785	0.605	0.922	10.670	0.20	17	7.039	0.033	7	5.734						
9	6	P	Klaus Graf	1:40.044	0.864	1.199	10.488	0.02	4	7.198	0.192	16	5.918						
10	911	GTLM	Nick Tandy	1:44.529	5.349	1.079	11.178	0.71	34	7.598	0.592	38	6.135						
11	912	GTLM	Patrick Long	1:44.426	5.246	1.198	11.082	0.61	30	7.594	0.588	37	6.155						
12	3	GTLM	Antonio Garcia	1:44.664	5.484	1.012	11.075	0.60	28	7.632	0.626	43	6.152						
13	56	GTLM	John Edwards	1:45.053	5.873	1.210	11.091	0.62	36	7.647	0.641	47	6.184						
14	55	GTLM	Bill Auberlen	1:45.140	5.960	1.298	11.074	0.60	33	7.625	0.619	42	6.135						
15	93	GTLM	Jonathan Bomarito	1:44.284	5.104	1.172	11.151	0.68	27	7.593	0.587	34	6.129						
16	4	GTLM	Tommy Milner	1:44.128	4.948	1.273	11.010	0.54	26	7.545	0.539	26	6.083						
17	54	PC	James Gue	1:42.764	3.584	0.846	10.945	0.47	22	7.379	0.373	19	6.111						
18	25	PC	Tom Kimber-Smith	1:42.844	3.664	1.118	10.988	0.52	13	7.427	0.421	24	6.072						
19	7	PC	Alex Popow	1:42.808	3.628	1.447	10.796	0.32	9	7.439	0.433	25	6.117						
20	87	PC	Gaston Kearby	1:42.975	3.795	1.158	10.970	0.50	15	7.419	0.413	23	6.164						
21	63	GTD	Lorenzo Case	1:47.038	7.858	1.050	11.619	1.15	46	7.643	0.637	46	6.111						
22	57	GTLM	Nic Jonsson	1:46.028	6.848	1.064	11.371	0.90	37	7.662	0.656	48	6.210						
23	22	GTD	Leh Keen	1:47.726	8.546	1.040	11.743	1.27	43	7.663	0.657	49	6.159						
24	48	GTD	Matthew Bell	1:46.677	7.497	0.910	11.601	1.13	40	7.606	0.600	40	6.117						
25	555	GTD	Jeff Segal	1:46.561	7.381	0.740	11.553	1.08	39	7.563	0.557	28	6.046						
26	30	GTD	Christina Nielsen	1:47.522	8.342	0.815	11.639	1.17	45	7.689	0.683	54	6.149						
27	556	GTD	Terry Borcheller	1:47.379	8.199	1.665	11.610	1.14	54	7.562	0.556	27	6.069						
28	38	PC	Julio Campos	1:43.073	3.893	1.020	11.094	0.62	12	7.418	0.412	22	6.109						
29	23	GTD	Marco Holzer	1:47.871	8.691	0.805	11.679	1.21	48	7.691	0.685	55	6.192						
30	33	GTD	Emmanuel Collard	1:48.081	8.901	1.234	11.683	1.21	47	7.693	0.687	56	6.207						
31	58	GTD	Madison Snow	1:47.712	8.532	1.144	11.791	1.32	55	7.642	0.636	45	6.126						
32	45	GTD	Spencer Pumpelly	1:46.414	7.234	0.895	11.526	1.05	41	7.588	0.582	33	6.100						
33	44	GTD	Andy Lally	1:48.208	9.028	0.680	11.755	1.28	58	7.695	0.689	59	6.173						
34	007	GTD	James Davison	1:46.780	7.600	0.809	11.610	1.14	42	7.570	0.564	29	6.077						
35	72	GTD	Mika Salo	1:46.092	6.912	1.425	11.648	1.18	57	7.575	0.569	30	6.070						
36	73	GTD	Kevin Estre	1:47.981	8.801	0.457	11.717	1.25	51	7.696	0.690	60	6.184						
37	35	GTD	Seth Neiman	1:47.999	8.819	0.756	11.814	1.34	52	7.616	0.610	41	6.131						
38	94	GTD	Markus Palttala	1:47.831	8.651	0.833	11.684	1.21	44	7.694	0.688	58	6.230						
39	08	PC	Conor Daly	1:42.301	3.121	1.708	10.891	0.424	17	22.900	0.675	22	19.164	0.239	5	7.341	0.335	17	5.982
40	71	GTD	Craig Stanton	1:48.150	8.970	0.887	11.820	1.353	62	24.580	2.355	61	20.732	1.807	50	7.687	0.681	53	6.176

Right Click Menu – Shows different options you can select for this report.

- Hide Column – allows the user to hide any selected column. The column must be underneath the right click. This can be done by right-clicking anywhere in the column
- Show All Columns – makes all columns visible and formats column widths to be identical. This typically makes all data in the popup visible without scrolling laterally.
- Hide Deltas – hides comparative deltas for each section listed.
- Hide Section Rank – hides comparative rank for each section listed.
- Hide Section Times – hides section times.
- Custom Sections – Display Custom sections (if defined).
- Standard Sections – Display Standard sections.

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- Show All Competitors – enabled by default, or if no competitors are selected (checked) in the Session Results table. Displays all of the competitors in the session. If it's disabled, the report only displays the competitors selected in the Session Results table.
- Show By Drivers – Sort by Driver Name.
- Exclude Other Classes – Exclude classes other than 'Team Car' class.
- Classes – Select classes to display.
- Vs P1 – Compare to P1.
- Average Times – Displays Average times instead of Best Times.
- Best Rolling Lap – The best complete lap, using any time line as the start/finish line of the lap. This is useful to find the best lap completed, regardless of the location of the S/F line.
- Show As Speed – Display speed instead of Time.
- Car Color Rows – formats the rows to the color applied to each individual car in the car color dialog (accessible by Ctrl+Left Click on the car number in the Session Results window).
- Print (Ctrl+P) – opens print window to print report.
- Save CSV (Ctrl+S) - creates a .csv file for the data contained in the report for use with other programs.
- Copy To Clipboard (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Set Font – sets the font and font size for the table.
- Refresh (F5) – while the popup will typically automatically update while the session is in progress, it may occasionally be required to •Refresh• the window to reflect the most current data.
- Close (F1) – closes the window. The window can also be closed via the •X• in the upper right corner.

Trap Speeds (F2)

P	Nr	Class	Driver	Best Time	SPI	Delta	R	Rating
1	10	P	Ricky Taylor	1:36.754	196.207	-1.422	5	
1	10	P	Jeff Gordon	1:37.643	196.678	-0.950	3	
1	10	P	Max Angelelli	1:36.394	196.207	-1.422	6	
1	10	P	Jordan Taylor	1:36.880	195.270	-2.358	11	
2	5	P	Joao Barbosa	1:37.150	195.737	-1.891	9	
2	5	P	Christian Fittipaldi	1:37.002	195.737	-1.891	10	
2	5	P	Filipe Albuquerque	1:36.269	197.628	0.000	1	
3	90	P	Marc Goossens	1:39.737	191.612	-6.017	31	
3	90	P	Renger Van					
3	90	P	Rene Rast					
4	2	P	Scott Sharp					
4	2	P	Ryan Dalziel					
4	2	P	Luis Felipe					
5	66	GTLM	Joey Hand					
5	66	GTLM	Dirk Mueller					
5	66	GTLM	Sebastien E					
6	911	GTLM	Patrick Pilet					
6	911	GTLM	Dirk Werner					
6	911	GTLM	Frederic Ma					
7	62	GTLM	Toni Vilander					
7	62	GTLM	James Calaf					
7	62	GTLM	Giancarlo F					
8	3	GTLM	Jan Magnu					
8	3	GTLM	Antonio Ga					
8	3	GTLM	Mike Rocke					
9	69	GTLM	Andy Priaul					
9	69	GTLM	Tony Kana					
9	69	GTLM	Harry Tinc					
10	912	GTLM	Kevin Estre					
10	912	GTLM	Richard Lie					

Print Ctrl+P

Save CSV Ctrl+S

Copy to Clipboard Ctrl+C

Copy Image To Clipboard Shift+Ctrl+C

Close F2

Refresh F5

Show Pit Traps

Show All

Show By Drivers

Engine

Driver Ratings >

Car Color Rows

Exclude Other Classes

Classes >

Set Font

Sort By Time

Right Click Menu reveals options available for this display.

- Print (Ctrl+P) – opens print window to print the report.
- Save CSV (Ctrl+S) - creates a .csv file for the data contained in the report for use with other programs.
- Copy To Clipboard (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Copy Image To Clipboard (Shift+Ctrl+C) – Copy the image to clipboard.
- Close (F2) – closes the window. The window can also be closed via the •X• in the upper right corner.

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- Refresh (F5) – while the popup will typically automatically update while the session is in progress, it may occasionally be required to •Refresh• the window to reflect the most current data.
- Show Pit Traps – Display Pit traps if available.
- Show All – Displays all of the competitors in the session.
- Show by Drivers – Sort by Driver Name.
- Engine – Display Engine if available.
- Driver Ratings – Display driver rankings if available.
- Car Color Rows – formats the rows to the color applied to each individual car in the car color dialog (accessible by Ctrl+Left Click on the car number in the Session Results window).
- Exclude Other Classes – Exclude classes other than 'Team Car' class.
- Classes – Select classes to display.
- Set Font – sets the font and font size for the table.
- Sort By Time – Sort by Best Time.

Pit Stop Analysis (Shift+F2)

- The Pit Stop Analysis (Shift+F2) report provides the InLap, PitLane, and OutLap times for each pit stop. The total is the sum of the three, which is normally equal to two laps, but if the pit lane does not intersect the S/F line, the total is actually equal to one lap. The BaseLap can be set to the leaders' previous lap laptime (as indicated in the popup menu), the competitors' previous laptime (default), or a user configured laptime (Set Base Laptime). The Base Lap is used to determine the TimeLost. The TimeLost is the difference between the equivalent number of base lap laptimes and the sum of the InLap, PitLane, and OutLap times (total). The report shows the track status when the car entered the pits, the rank at the start of the InLap, the rank at the end of the OutLap, the ElapsedTime at PitIn, the GapOnTrack is actually the Gap at the PitIn Line. The LSP is the Laps Since Pit or number of laps in the stint. The GL and YL are the number of Green Laps and Yellow Laps in the stint. A lap must start and end under Green to qualify as a Green Lap. The FuelUsed is calculated using the number of GreenLaps x Green Lap Fuel Economy + Yellow Laps x Yellow Lap Fuel Economy. If the calculated Fuel Used is more than the capacity of the Fuel Tank, then the Fuel Economy numbers being used are wrong and should be adjusted. Note that you will need to refresh (F5) the report to get the most current information. The report is not automatically updated.

P	Car	Class	Driver	Stop	BaseLap	InLap	PitLane	OutLap	Total	Average	TimeLost	Flag	InRank	OutRank	ElapsedTime	CsInRank	CsOutRank	InDriver
30	15	GTD	Robert Alon	4	2:20.541	3:15.447	1:41.985	2:18.918	7:16.350	3:28.175	2:35.268	Y	34	34	3:33:53.992	11	11	Robert Alon
38	28	GTD	Michael de Quesa	4	2:38.008	1:53.175	1:57.882	1:45.029	5:36.086	2:48.043						15	15	Michael de Quesa
5	90	P	Rene Rast	6	1:41.261	1:42.299	1:19.056	1:31.707	4:33.062	2:16.531						5	5	Renger Van Der Z
3	31	P	Eric Curran	6	1:38.524	1:39.091	1:15.439	1:30.369	4:24.899	2:12.450						2	3	Eric Curran
1	10	P	Max Angelelli	7	1:38.671	1:39.547	1:14.182	1:29.595	4:23.324	2:11.662						1	1	Max Angelelli
3	5	P	Christian Fittip	7	1:38.658	1:43.144	1:16.678	1:29.615	4:29.437	2:14.719						2	3	Filipe Albuquerque
31	15	GTD	Robert Alon	5	1:49.471	1:50.226	1:33.665	1:47.540	5:11.431	2:35.716						9	13	Robert Alon
10	66	GTLM	Dirk Mueller	5	1:45.136	1:45.384	1:18.073	1:38.899	4:42.366	2:21.178						1	2	Dirk Mueller
10	67	GTLM	Ryan Briscoe	5	1:44.508	1:43.403	1:20.164	1:40.797	4:44.364	2:22.182						1	3	Scott Dixon
37	28	GTD	Michael de Quesa	5	1:49.356	1:51.892	1:30.019	1:41.945	5:03.856	2:31.928						12	14	Michael Christen
4	90	P	Rene Rast	7	1:41.008	1:41.202	1:23.390	1:45.570	4:50.122	2:25.061						4	5	Rene Rast
3	31	P	Eric Curran	7	1:37.082	1:49.745	1:15.814	1:47.835	4:53.394	2:26.697						2	3	Eric Curran
2	10	P	Max Angelelli	8	3:45.426	3:17.013	1:25.241	2:23.344	7:05.598	3:32.799						1	2	Max Angelelli
3	5	P	Filipe Albuquerque	8	3:14.325	3:12.818	1:23.555	2:24.097	7:00.470	3:30.235						2	3	Filipe Albuquerque
31	15	GTD	Robert Alon	6	3:07.497	2:55.375	1:41.451	2:11.197	6:48.023	3:24.012						12	13	Jack Hawksworth
2	10	P	Max Angelelli	9	3:52.703	4:07.623	1:42.337	3:02.797	8:52.757	4:26.378						1	2	Jordan Taylor
3	31	P	Eric Curran	8	3:51.725	4:07.162	1:52.100	2:53.627	8:52.889	4:26.445						2	3	Michael Conway
1	5	P	Filipe Albuquerque	9	3:50.355	4:06.334	1:34.336	3:07.435	8:48.105	4:24.053						3	1	Filipe Albuquerque
32	28	GTD	Michael Christen	6	4:10.726	3:50.615	1:31.575	2:32.060	7:54.250	3:57.125						8	11	Carlos de Quesad
35	15	GTD	Jack Hawksworth	7	4:10.851	3:47.811	1:29.769	2:29.073	7:46.653	3:53.327						12	12	Jack Hawksworth
11	66	GTLM	Dirk Mueller	6	4:08.692	3:43.601	1:15.542	2:32.714	7:31.857	3:45.929						1	2	Sebastien Bourda
13	67	GTLM	Scott Dixon	6	4:08.798	3:42.470	1:15.876	2:32.004	7:30.350	3:45.175						3	3	Scott Dixon
5	90	P	Rene Rast	8	2:58.162	1:57.233	1:38.512	1:57.885	5:33.630	2:46.815						4	4	Rene Rast
3	5	P	Filipe Albuquerque	10	3:20.633	3:15.575	1:16.873	2:18.681	6:51.129	3:25.565						1	2	Filipe Albuquerque
2	31	P	Michael Conway	9	3:19.904	3:14.611	1:14.901	2:20.993	6:50.505	3:25.252						3	3	Michael Conway
16	66	GTLM	Sebastien Bourda	7	3:01.206	3:12.957	1:13.233	2:16.764	6:42.954	3:21.477						2	8	Sebastien Bourda
35	15	GTD	Jack Hawksworth	8	3:44.671	3:13.287	1:31.460	1:57.054	6:41.801	3:20.901						12	13	Jack Hawksworth
15	67	GTLM	Scott Dixon	7	1:57.882	2:05.100	1:10.802	1:49.658	5:05.560	2:32.780						2	7	Scott Dixon
33	28	GTD	Carlos de Quesad	7	2:01.754	2:24.743	1:20.095	1:58.181	5:43.019	2:51.510						10	13	Carlos de Quesad
3	10	P	Jordan Taylor	10	1:56.962	2:00.942	1:14.063	1:48.556	5:03.561	2:31.780	1:09.637	Y	1	3	5:58:40.230	1	3	Jordan Taylor

- InDriver field has been added to Pit Stop Report to display the driver that exited pit lane after the pit stop. If you don't see the InDriver column, right click the report and select the 'Reset Columns' menu to reset the report columns to display all of the selected fields. To preserve this layout, select the Save layout menu item. If you don't want this or any other column to be displayed, right click the column title and select 'Hide Column'. Remember to 'Save layout' after making any changes.
- Set Base Laptime – Sets the BaseLap to the leaders' previous lap laptime.
- Refresh (F5) – while the popup will typically automatically update while the session is in progress, it may occasionally be required to Refresh the window to reflect the most current data.

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- Print (Ctrl+P) – opens print window to print the report.
- Save CSV (Ctrl+S) - creates a .csv file for the data contained in the report for use with other programs.
- Copy To Clipboard (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Copy Image To Clipboard (Shift+Ctrl+C) – Copy the image to clipboard.
- Close (F2) – closes the window. The window can also be closed via the •X• in the upper right corner.
- TimeLost vs Leader – Display time lost vs the leader.
- Hide Column – Hide a column.
- Reset Columns – Reset columns and widths.
- Show All Logical Sections –
- Show Pre-Pit Laptimes
- Show Post-Pit Laptimes
- Show All Cars
- Add Pit Stop At Checker
- Exclude Other Classes – Exclude classes other than the 'Team Car' class.
- Classes
- Car Color Rows – Display car color if defined.
- Save Layout
- Load Layout
- Set Font
- Exclude Empty PITLANE stops - Eliminates the extra false pit stops without a valid pitlane section time. This eliminates false pitlane timeline crossings. **Do Not execute while cars are in Pit Lane or valid pit stops might be deleted.**

Another useful tool is the Pit Windows display. The Pit Windows tab displays projected and completed pit stop information. The left hand side shows the amount of fuel in the car (this is a calculated value, not from the team's telemetry) and the lap they need to pit by in blue. The right side of the tab displays the pit windows. The projections rely on setting the appropriate Fuel Economy for each car. At the start of the race, the projected pit windows are displayed. The cars are colored RED if they are in the pits, which is the default at the start of the race.

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Race Tools T&S Analysis Module (IMSA eRMON) - Daytona Race (RMON)[livetime.net NOT CONNECTED]

File PopUps Layout Options Replay (23833/419374 - 6%) Help Minimize

Cars in Pit: 14:46:07: 00:15:14 (7:11 Y time) LAP 6

Time	Elapsed	To Go	Green	Yellow	Red
15:25:07	00:54:14	0:51:08	47:05	1:1	0

CL	Car	Driver	Laps	Elapsed	Diff	Gap	FastTime	PL	BestSpeed	LapTime	Pits	LPI	ISF	Status	Gap%
1	11	Dalziel	30	54:12.292	0.000	---	1:37.145	11	133.927	1:37.520	1	22	8	Active	5.539
2	5	Joao Barbosa	29	52:39.855	5.391	---	1:37.150	10	131.920	1:38.312	1	22	7	Active	0.148
3	10	Ricky Taylor	29	52:40.003	5.539	0.148	1:36.909	20	132.246	1:38.046	1	23	6	Active	0.000

No	Name	Total	Fuel	Best(4%)	Step N	Pit Time	
1	31	Cameron	1:17.075	10.6 g	43 (40)	22	1:17.07
2	5	Barbosa	1:17.198	11.4 g	43 (40)	22	1:17.19
3	10	Taylor	1:15.123	12.2 g	44 (40)	23	1:15.12

14:46:07 - GreenFlag at: 00:15:14 (7:11 Y time) LAP 6

14:46:07 - GreenFlag at: 00:15:14 (7:11 Y time) LAP 6

14:38:57 - YellowFlag at: 00:08:04 (8:04 G time) LAP 4

Init:Rstart:Mechanic:Disabled

You can access the Fuel Economy table by double clicking on the Pit Stop table. You can set global Green and Yellow Fuel Economy numbers and apply them with the Reset button. You can edit the mpg figures for each competitor individually in the table. You should Save these so they will be used the next time the program is launched.

Settings - Pit Stops

General | Session Results | Live Sections | Pit Stops | Graphing | Track map | Track Editor | Reports

draw All Pitstops

draw Tire Type

draw Pit Lap #

Show All Cars

Zoom In

Use Individual Max Laps

Over Ride Average Lap Time

Average Lap Time: 100.584

Minimum Pit Stop Time: 0.00

Pit Stop Digits: 4

Pit Stop Font

Fuel Economy

Green: 4.5500 MPG, 0.782 g/Lap, 21.60 laps/tank

Yellow: 8.0000 MPG, 0.445 g/Lap, 37.98 laps/tank

Track Length: 3.560 Miles, Duration: 24:00:01, Calc

Race Laps: 0, -0.9 stops, Laptime: 0:00:00, 00:00:00

Pace Laps: 2, Pit Time: 15.000, Laptime: 0:00:00, 00:00:00

Capacity: 16.9 Gallons, Laps: 00, 0 Laps

CLS	Car	Driver	(mpg)	(mpg)	Capacity
P	2	Dalziel	4.55	8.00	20.80
GTU	3	Garcia	4.55	8.00	23.50
GTU	4	Milner	4.55	8.00	23.50
P	5	Albuquerque	4.55	8.00	16.90
PC	8	Falb	4.55	8.00	16.90
P	10	Taylor	4.55	8.00	16.90
GTD	11	Ineichen	4.55	8.00	25.10
P	13	Buemi	4.55	8.00	16.90
GTD	14	Pruett	4.55	8.00	24.80
GTD	15	Hawksworth	4.55	8.00	24.80
GTD	16	Sandberg	4.55	8.00	25.10
GTD	18	Gdovic	4.55	8.00	25.10
GTU	19	Farfus	4.55	8.00	28.50

Reset

Save

After pit stops are taken, the pit windows are updated.

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Race Tools T&S Analysis Module (IMSAs eRMON) - Daytona Race (RMON)[livetime.net NOT CONNECTED]

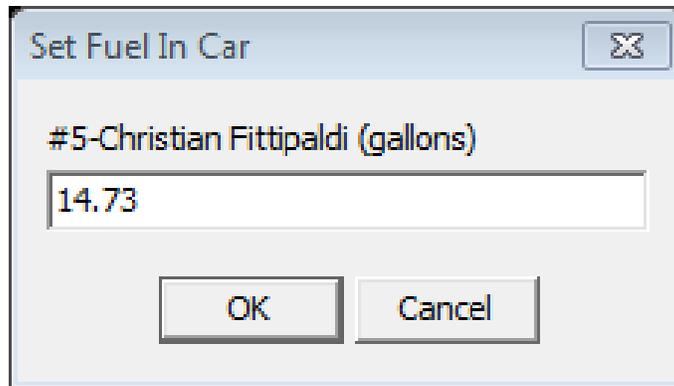
File PopUps Layout Options Replay (33737/419374 - 8%) Help Minimize

The screenshot displays the RaceTools interface with three main components:

- Track Map:** A circular track diagram with numbered pit stops (e.g., 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30) and various colored flags indicating race status.
- Data Table:** A table with columns for Car #, Name, Class, Time, Elapsed, To Go, Green, Yellow, Red, and various performance metrics. The top row shows a green flag for car #10.
- Pit Stop Table:** A table with columns for Car #, Name, Total, Fuel, Vol (RR), Stop N, and Pit Time. It lists pit stops for cars like Taylor, Barbosa, Cameron, Jani, Miller, Brown, Dalziel, Bomarito, Gossens, Goldberg, Hedman, O'Ward, and Mes.

At the bottom, there are status indicators for GreenFlag (00:15:14 (7:11 Y time) LAP 6) and YellowFlag (00:08:04 (8:04 G time) LAP 4).

Note that the software assumes a full fill any time a car goes through pit lane. If this is not the case, you can adjust the amount of fuel in the car by clicking on the car number in the Pit Stop table. This brings up the Set Fuel In Car dialog box which allows you to set how much fuel you think is in the car at this time. If they short fueled or did not refuel at all, you would decrease this number accordingly.



Lap Times (F3)

- Lap Times (F3) – Lists the lap times for each competitor in the session. By default, lap times are listed by session time. Lap times can also be listed by competitor completed laps, lap times, or Time Of Day. Results are listed left to right by session rank. Out Laps are highlighted in red while fastest laps for each competitor are highlighted in green. This report is applicable to all session types.

F3 - Lap Times per Driver [RMON at 1:10:17.000]

RANK	1	2	3	4	5	6	7	8	9	10	11	12
Time/Car	31	10	5	13	22	85						38
00:01:36												
00:03:12												
00:04:47	1:41.879	1:43.319	1:41.427	1:42.922	1:46.835	1:44.913						1:52
00:06:23	1:38.497	1:38.884	1:38.409	1:38.968	1:39.763	1:39.681						1:45
00:07:59	1:37.797	1:38.281	1:37.729	1:38.363	1:39.165	1:39.349						1:43
00:09:35	1:37.556	1:37.667	1:37.536	1:37.862	1:38.576	1:38.915						1:44
00:11:11	1:40.922	1:39.471	1:40.987	1:40.610	1:40.130	1:41.253						1:46
00:12:46												
00:14:22	3:36.793	3:37.146	3:35.791	3:38.070	3:36.380	3:35.770						3:16
00:15:58												
00:17:34	3:23.229	3:22.309	3:24.646	3:20.744	3:17.201	3:17.808						3:14
00:19:10	1:39.629	1:39.659	1:39.462	1:40.304	1:41.139	1:40.928						1:44
00:20:45	1:37.761	1:37.878	1:37.922	1:38.220	1:38.684	1:38.751						1:43
00:22:21	1:37.516	1:37.526	1:37.150	1:37.839	1:38.569	1:38.562						1:43
00:23:57	1:37.145	1:37.218	1:37.360	1:37.594	1:38.255	1:38.572						1:43
00:25:33	1:37.591	1:37.291	1:37.565	1:38.024	1:39.084	1:39.143						1:43
00:27:08	1:38.945	1:39.247	1:39.032	1:38.861	1:42.345	1:40.504						1:43
00:28:44	1:37.724	1:37.440	1:37.698	1:37.681	1:37.901	1:38.542						1:43
00:30:20	1:37.986	1:39.336	1:37.959	1:39.885	1:38.607	1:39.462						1:43
00:31:56	1:40.746	1:39.968	1:40.751	1:38.970	1:39.903	1:40.355						1:43
00:33:32	1:38.958	1:41.175	1:39.774	1:40.291	1:42.590	1:41.651						1:43
00:35:07	1:38.924	1:38.274	1:39.955	1:38.699	1:40.333							1:43
00:36:43	1:37.662	1:37.813	1:37.777	1:38.519	1:42.123	1:40.333						1:43
00:38:19	1:37.227	1:36.909	1:37.312	1:37.440	1:39.185	1:39.988						1:44
00:39:55	1:38.259	1:38.095	1:37.476		1:40.567	1:39.957						1:43
00:41:31		1:39.511		1:52.399	1:38.531	1:52.966						1:44
00:43:06	2:26.832		2:28.795	2:38.496	1:52.957							1:46
00:44:42	2:02.367	2:26.246	2:02.450	1:40.030		2:45.813						2:31
00:46:18	1:40.713	2:04.590	1:41.618	1:40.839	2:40.411	1:41.301						1:44
00:47:54	1:38.652	1:40.786	1:39.167	1:38.716	1:40.217	1:40.209						1:44
00:49:30	1:38.902	1:39.184	1:38.616	1:38.300	1:39.401	1:40.373						1:44
00:51:05	1:38.615	1:39.006	1:39.581	1:39.430	1:40.257	1:40.479						1:44
00:52:41	1:38.033	1:37.726	1:37.598		1:39.270	1:41.242						1:45
00:54:17	1:37.604	1:38.048	1:38.312	1:38.402	1:39.227	1:39.789						1:45
00:55:53	1:37.828			1:40.479	1:38.976	1:42.244						1:44
00:57:29	1:40.062	1:37.955	1:38.598	1:38.229	1:42.143	1:40.982						1:45
00:59:04		1:37.871	1:38.422	1:39.456	1:40.414	1:40.774						1:44

Additional options accessed by right click are listed below.

- Section Analysis – Display times for a particular section. Check this item, and then right click again to select a section.
 - Select Section.
- Show All - selects all competitors. The report can be run for only selected competitors if this feature is not selected. Drivers can be selected by clicking in the •CK• check box in the Session Results window (an •x• will appear). When selected drivers are changed, the report might need to be refreshed.
- Exclude Other Classes - Exclude classes other than the 'Team Car'.
- Classes – Displays Classes in session.

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- Sort By LapTimes – sorts the competitor data by lap time, ascending order.
- Vs. Laps (Alt+L) – sorts the data by the lap number.
- Time of Day – sorts the data by time of day.
- Show as Speed (Alt+S) – shows lap performance as speed, most useful for oval events.
- Show Averages (Alt+A) – adds analysis of average lap time and summarizes the best laps at the top of the report. This is quite useful for sessions that contain many laps by each competitor or span a long period of time (like open test sessions).
- # Laps To Average

 F3 - Lap Times per Driver [RMON at 24:29:46.000]

RANK	1	2	3	4	5
Car #	14	73 (3.37)	59 (7.48)	54 (12.12)	22 (12.63)
AVERAGE	1:53.961	1:57.931	2:03.170	2:09.678	2:10.431
CAR #	5	10	31	13	22
FASTTIME	1:36.269	1:36.394	1:36.793	1:37.440	1:37.832
Time/Car	10	5	90	2	66
G Avg	1:47.704	1:48.325	1:50.028	1:51.434	1:53.050
Y Avg	2:43.244	2:50.161	2:28.890	2:28.165	2:29.346
02:17:24	1:38.769	1:39.743	1:40.484	1:40.384	1:43.715
02:18:59	1:38.688	1:37.529	1:41.520	1:39.235	1:43.998
02:20:33	1:40.638	1:39.636	1:39.888	1:39.766	1:45.817
02:22:08	1:39.416	1:39.079	1:39.886	1:41.007	1:44.250

- Tow Filter (Alt+T) – eliminates laps from the report that are classified as 'tow' laps. If a car is within the Tow Threshold of another competitor at any timing line, the lap is considered a tow lap. This feature is most useful for oval events. Remember that the Tow Threshold is set in the File -> Configuration menu.
- Highlight Tow Laps (Ctrl+T) – this feature changes the font color of laps that are considered 'tow' laps. The color of the font changes to the user selected color to indicate a lap that was completed under a tow.
- Highlight P2P Laps (Alt+P) – Highlights PushToPass Laps.
- Set Highlight Color – sets the font color for the tow lap highlight.
- Stint Averages – when this option is selected, the out laps that are background highlighted in red change from lap time to the average lap time of the previous stint.
- 1/100 (s.nn) – reduces the resolution of the lap time/speed to 2 decimal places instead of the Report Digits.
- Car Color Rows – formats the rows to the color applied to each individual car in the cars color dialog.

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- Set Font – sets the font and font size for the table.
- Invalidate Lap
- Auto Size - auto sizes the column width to the data contained within it and the window to the data of the report
- Manual Update -
- Copy to Clipboard (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Copy Graphic to Clipboard (Shift+Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Save as CSV (Ctrl+S) – creates a .csv file for the data contained in the report for use with other programs.
- Print (Ctrl+P) – opens print window to print report.
- Close (F3) – closes the window. The window can also be closed via the •X• in the upper right corner.
- Refresh (F5) – while the popup will typically automatically update while the session is in progress, it may occasionally be required to •Refresh• the window to reflect the most current data.
- Note that double clicking on a car number in the Lap Time report opens the time card for that competitor. An example time card is below. The time card shows lap time, lap speed, segment, trap, and track condition data for the selected driver.

Time Card 5

P	Car	Class	PIC	Driver	Lap	LapTime	Statu	Speed	Flag	S01	S02	S03	S04	S05	S06	S07	S08
1	5	P	1	Filipe Albuquerque	220	1:47.460	T	119.263	G	11.848	24.718	22.129	7.285	5.767	5.459	10.232	6.361
1	5	P	1	Filipe Albuquerque	221	1:47.639	T	119.065	G	11.806	25.163	22.160	7.055	5.704	5.433	10.312	6.354
1	5	P	1	Filipe Albuquerque	222	1:47.352	T	119.383	G	12.163	24.712	21.607	7.056	5.715	5.411	10.710	6.351
2	5	P	2	Filipe Albuquerque	223	2:49.332	P	75.686	G	12.265	24.824	22.019	7.427	6.209	7.341	12.874	9.305
2	5	P	2	Filipe Albuquerque	224	2:14.451	T	95.321	G			23.600	7.302	5.828	5.643	11.087	6.473
1	5	P	1	Filipe Albuquerque	225	1:51.571	T	114.869	G	12.929	25.355	21.945	7.126	5.816	5.775	12.260	6.530
1	5	P	1	Filipe Albuquerque	226	1:47.459	T	119.264	G	11.874	24.673	21.721	7.097	5.756	5.536	10.558	6.446
1	5	P	1	Filipe Albuquerque	227	1:50.005	T	116.504	G	12.203	24.707	22.289	7.260	5.769	5.681	11.769	6.559
1	5	P	1	Filipe Albuquerque	228	1:57.280	T	109.277	G	12.582	26.461	24.095	7.429	5.856	5.503	14.493	6.958
1	5	P	1	Filipe Albuquerque	229	1:49.715	T	116.812	G	12.284	25.590	22.301	7.124	5.764	5.532	10.863	6.453
1	5	P	1	Filipe Albuquerque	230	1:49.515	T	117.025	G	12.458	25.003	22.309	7.131	5.737	5.450	11.174	6.533
1	5	P	1	Filipe Albuquerque	231	1:50.664	T	115.810	G	12.357	25.278	22.058	7.135	5.748	5.514	12.205	6.565
1	5	P	1	Filipe Albuquerque	232	1:48.314	T	118.323	G	11.999	25.197	21.947	7.142	5.762	5.469	10.725	6.407
1	5	P	1	Filipe Albuquerque	233	1:51.594	T	114.845	G	12.521	27.567	21.989	7.119	5.751	5.514	10.910	6.527
1	5	P	1	Filipe Albuquerque	234	1:48.644	T	117.963	G	12.142	25.516	21.984	7.204	5.744	5.497	10.473	6.375
1	5	P	1	Filipe Albuquerque	235	1:49.803	T	116.718	G	12.081	24.891	21.841	7.217	5.757	5.924	11.739	6.599
1	5	P	1	Filipe Albuquerque	236	1:48.420	T	118.207	G	12.293	24.987	21.760	7.264	5.742	5.475	10.723	6.398
1	5	P	1	Filipe Albuquerque	237	1:47.994	T	118.673	G	11.985	24.750	22.134	7.273	5.796	5.504	10.374	6.411
1	5	P	1	Filipe Albuquerque	238	1:49.094	T	117.477	G	12.228	24.820	21.379	7.117	5.731	5.641	11.901	6.527
1	5	P	1	Filipe Albuquerque	239	1:49.923	T	116.591	G	12.141	25.815	22.417	7.209	5.754	5.612	10.690	6.466
2	5	P	2	Filipe Albuquerque	240	3:27.244	P	61.840	G	12.015	24.918	21.832	7.141	5.748	5.507	11.477	9.667
2	5	P	2	Joao Barbosa	241	2:24.918	T	88.436	G			25.419	7.438	5.816	6.102	12.451	6.721

Best Laps (F4)

- Best Laps (F4) – displays the timed best lap driven by each competitor. Also displays the segment times, ranks, and deltas for each competitor.

F4 - Best Lap Analysis [RMON at 8:20:03.000]

P	No	Class	Driver	BestTime	Delta	S01	Delta	R01	S02	Delta	R02	S03	Delta	R03	S04	Delta	R04	S05	Delta	R05	S06	Delta	R06	S07	Delta	R07		
1	10	P	Max Angelelli	1:36.394		10.373	0.000	3	21.641	0.000	2	18.598	0.000	4	6.765	0.000	2	5.596	0.000	3	5.214	0.000	2	8.724	0.000			
2	22	P	Brendon Hartley	1:37.832	1.438	10.432	0.059	6	21.909	0.268	4	19.051	0.453	8	6.919	0.154	4											
3	90	P	Rene Rast	1:39.183	2.789	10.633	0.260	10	22.228	0.587	9	19.068	0.470	9	7.025	0.260	12											
4	5	P	Filipe Albuquerque	1:36.269		10.323	-0.050	2	21.587	-0.054	1	18.397	-0.201	1	6.754	-0.011	1											
5	2	P	Ryan Dalziel	1:39.235	2.841	10.641	0.268	12	22.125	0.484	7	19.049	0.451	7	6.994	0.229	9											
6	85	P	Stephen Simpson	1:38.542	2.148	10.387	0.014	4	22.185	0.544	8	18.727	0.129	6	7.013	0.248	11											
7	31	P	Eric Curran	1:36.793	0.399	10.443	0.070	7	21.692	0.051	3	18.435	-0.163	2	6.778	0.013	3											
8	55	P	Jonathan Bomarito	1:39.457	3.063	10.639	0.266	11	22.484	0.843	12	19.135	0.537	10	6.997	0.232	10											
9	62	GTLM	Giancarlo Fisichella	1:43.654	7.260	10.992	0.619	20	23.167	1.526	20	19.426	0.828	21	7.560	0.795	21											
10	19	GTLM	Bill Auberlen	1:44.247	7.853	11.026	0.653	23	23.355	1.714	27	19.574	0.976	25	7.586	0.821	25											
11	66	GTLM	Dirk Mueller	1:43.522	7.128	10.917	0.544	17	23.150	1.509	19	19.192	0.594	11	7.588	0.823	26											
12	3	GTLM	Antonio Garcia	1:43.979	7.585	11.078	0.705	25	23.254	1.613	24	19.387	0.789	19	7.583	0.818	23											
13	912	GTLM	Kevin Estre	1:43.979	7.585	10.859	0.486	15	23.353	1.712	26	19.411	0.813	20	7.610	0.845	29											
14	911	GTLM	Frederic Makowiecki	1:43.964	7.570	10.919	0.546	18	23.221	1.580	22	19.383	0.785	18	7.583	0.818	24											
15	69	GTLM	Tony Kanaan	1:43.453	7.059	10.689	0.316	13	23.191	1.550	21	19.265	0.667	14	7.566	0.801	22											
16	68	GTLM	Stefan Mucke	1:43.610	7.216	10.876	0.503	16	23.237	1.596	23	19.324	0.726	15	7.591	0.826	27											
17	67	GTLM	Richard Westbrook	1:43.385	6.991	10.809	0.436	14	23.132	1.491	18	19.437	0.839	22	7.529	0.764	18											
18	38	PC	Patricio O'Ward	1:42.716	6.322	10.931	0.558	19	22.849	1.208	13	19.372	0.774	17	7.265	0.500	14											
19	13	P	Neel Jani	1:37.440	1.046	10.256	-0.117	1	21.976	0.335	6	18.582	-0.016	3	6.936	0.171	5										F5	
20	81	P	Nicolas Lapierre	1:37.907	1.513	10.406	0.033	5	21.928	0.287	5	18.709	0.111	5	6.945	0.180	6											
21	26	PC	Johnny Mowlem	1:43.588	7.194	11.020	0.647	22	22.953	1.312	15	19.639	1.041	27	7.360	0.595	17											
22	20	PC	Buddy Rice	1:43.322	6.928	11.044	0.671	24	22.973	1.332	16	19.345	0.747	16	7.246	0.481	13											
23	93	GTD	Andy Lally	1:47.760	11.366							20.424	1.826	36	7.777	1.012	49											
24	86	GTD	Jeff Segal	1:47.796	11.402	11.511	1.138	47	24.182	2.541	46	20.428	1.830	38	7.742	0.977	45											
25	96	GTD	Jesse Krohn	1:47.457	11.063	11.483	1.110	44	23.967	2.326	34	20.559	1.961	44	7.712	0.947	37											
26	28	GTD	Michael Christensen	1:47.757	11.363	11.568	1.195	50	24.145	2.504	44	20.560	1.962	45	7.722	0.957	40											
27	15	GTD	Jack Hawksworth	1:48.412	12.018	11.659	1.286	53	24.452	2.811	52	20.939	2.341	54	7.716	0.951	38											
28	57	GTD	Matt Bell	1:47.932	11.538	11.427	1.054	41	24.080	2.439	39	20.618	2.020	49	7.833	1.068	54											
29	54	GTD	Nic Jonsson	1:47.705	11.311	11.626	1.253	52	24.236	2.595	49	20.623	2.025	50	7.668	0.903	32											
30	33	GTD	Jeroen Bleekemolen	1:47.828	11.434	11.478	1.105	42	24.083	2.442	40	20.611	2.013	48	7.725	0.960	42											
31	63	GTD	Alessandro Balzan	1:47.079	10.685	11.357	0.984	32	23.838	2.197	29	20.328	1.730	32	7.716	0.951	39											
32	11	GTD	Mirko Bortolotti	1:47.095	10.701	11.410	1.037	40	24.076	2.435	38	20.428	1.830	37	7.737	0.972	43										Ctrl+P	
33	29	GTD	Jules Gounon	1:47.313	10.919	11.396	1.023	38	24.075	2.434	37	20.317	1.719	31	7.774	1.009	48										Ctrl+S	
34	50	GTD	Shane Van Gisbergen	1:47.488	11.094	11.368	0.995	35	23.932	2.291	32	20.499	1.901	41	7.722	0.957	41										Ctrl+C	
35	991	GTD	Wolf Henzler	1:47.753	11.359	11.544	1.171	49	24.115	2.474	42	20.435	1.837	39	7.695	0.930	34										Ctrl+C	
36	48	GTD	Madison Snow	1:48.355	11.961	11.478	1.105	43	24.521	2.880	54	20.824	2.226	53	7.789	1.024	51										Shift+Ctrl+C	
37	23	GTD	Pierre Kaffer	1:47.298	10.904	11.342	0.969	31	23.947	2.306	33	20.200	1.602	29	7.742	0.977	44										F4	

Right-Click menu shows available options for this report.

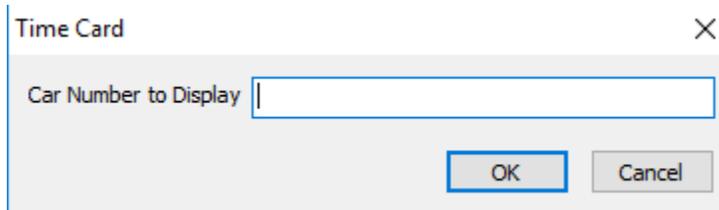
- Hide Column – allows the user to hide any selected column. The column must be selected before right clicking. This can be done by clicking anywhere in the column.
- Show All Columns – makes all columns visible and formats column widths to be identical. This typically makes all data in the popup visible without scrolling laterally.
- Hide Deltas – hides comparative deltas for each parameter listed.
- Hide Section Times – hides section times.
- Hide Section Rank – hides comparative rank for each section listed.
- Show As Speed – for this report, only the lap time and deltas show as speed, segments are still displayed as time. This is most useful for oval events where the performance index is speed.
- Custom Sections – Display Custom Sections.
- Standard Sections – Display standard sections.
- Trap Speed Sections – Display trap speed sections.

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- Show All Cars – selects all competitors. The report can be run for only selected competitors if this feature is not selected. When selected drivers are changed, the report might need to be refreshed.
- Show By Drivers – Sort by Driver.
- Driver Ratings.
- Refresh (F5) – while the popup will typically automatically update while the session is in progress, it may occasionally be required to •Refresh• the window to reflect the most current data.
- Autosize – auto sizes the column width to the data contained within it and the window to the data of the report.
- Delta vs. Best Section Time – this compares the section times to the best of the session rather than that of the fastest lap.
- Car Color Rows – formats the rows to the color applied to each individual car in the cars color dialog.
- Exclude Other Classes – Excludes classes other than the 'Team Car' class.
- Classes – Displays the classes in the current session.
- Set Font – sets the font and font size for the table.
- Invalidate Fast Lap – Allows the user to invalidate the fastest lap for a competitor.
- Heat Map - To make it easier to identify faster/slower section times, the Section Time Delta fields are color coded when the 'Heat Map' option is enabled.
- Print (Ctrl+P) – opens print window to print report.
- Save as CSV – (Ctrl+S) – creates a .csv file for the data contained in the report for use with other programs.
- Copy to Clipboard – (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Copy Graphic to Clipboard – (Shift+Ctrl+C) – copy the graphic to the clipboard for direct pasting into other programs.
- Close (F4) – closes the window. The window can also be closed via the •X• in the upper right corner.

Time Card (F6)

- Time Card (F6) – RaceTools' TimeCard report can display the lap and section times for one or more cars within a session. You can call up a time card in many different ways. You can double click on a competitor in the Session Results, Best Splits, Best Trap, Best Lap, or Lap Times tables to bring up the Time Card for that competitor. That's a quick and easy way to see more detailed information for a specific competitor. You can also use the Popups menu (F6) to open a time card report and if you leave the list of cars empty, the time card will include all cars.
- Leave the list of car numbers to display empty to include all cars.



Time Card 5

P	Car	Class	PIC	Driver	Lap	LapTime	Status	Speed	Flag	S01	IL
4	5	P	4	Christian Fittip	1	2:16.643	T	89.576	Y		
4	5	P	4	Christian Fittip	2	3:38.720	T	55.962	Y	2.888	
4	5	P	4	Christian Fittip	3	3:24.627	T	59.816	G	3.254	
4	5	P	4	Christian Fittip	4	2:02.165	T	100.192	G	1.349	
4	5	P	4	Christian Fittip	5	1:59.841	T	102.135	G	1.344	
4	5	P	4	Christian Fittip	6	1:59.929	T	102.060	G	1.348	
4	5	P	4	Christian Fittip	7	2:00.143	T	101.879	G	1.346	
4	5	P	4	Christian Fittip	8	1:59.844	T	102.133	G	1.347	
4	5	P	4	Christian Fittip	9	1:59.867	T	102.113	G	1.351	
4	5	P	4	Christian Fittip	10	2:00.699	T	101.409	G	1.348	
4	5	P	4	Christian Fittip	11	2:00.500	T	101.577	G	1.350	
4	5	P	4	Christian Fittip	12	2:01.105	T	101.069	G	1.341	
4	5	P	4	Christian Fittip	13	2:03.131	T	99.406	G	1.335	
3	5	P	3	Christian Fittip	14	2:02.134	T	100.218	G	1.334	
3	5	P	2	Christian Fittip	15	2:02.388	T	100.010	G	1.340	
3	5	P	3	Christian Fittip	16	2:03.312	T	99.260	G	1.330	
3	5	P	3	Christian Fittip	17	2:00.837	T	101.293	G	1.339	
3	5	P	3	Christian Fittip	18	2:01.263	T	100.938	G	1.333	
3	5	P	3	Christian Fittip	19	2:01.252	T	100.947	G	1.338	
3	5	P	3	Christian Fittip	20	2:01.823	T	100.474	G	1.335	
3	5	P	3	Christian Fittip	21	2:01.420	T	100.807	G	1.337	
3	5	P	3	Christian Fittip	22	2:52.452	P	70.976	G	1.340	1:5
3	5	P	3	Joao Barbosa	23	2:10.332	T	93.914	G		
2	5	P	2	Joao Barbosa	24	2:01.608	T	100.651	G	1.358	
2	5	P	2	Joao Barbosa	25	2:22.179	T	86.089	Y	1.354	
2	5	P	2	Joao Barbosa	26	3:48.018	T	53.680	Y	3.077	

Pit Window	Car	Driver	Lap	LapTime	Status	Speed	Flag	S01	IL
6	38	O'Ward	2:59.819	2.8 g		52	50.995		
7	3	Garcia	2:00.271	-3.7 g	72 (1)	45	56.037		
8	25	Sims	2:32.974	-5.4 g	72 (1)	44	57.218		
9	26	Boulle	3:20.787	5.2 g		54	31.487		
10	24	Edwards	3:43.602	-3.7 g	72 (1)	45	56.166		
11	911	Pilet	3:33.728	-3.3 g	68 (1)	45	54.463		
12	66	Hand	6:10.068	9.5 g		57	54.412		66
13	33	Bleekemolen	2:08.972	-3.5 g	70 (1)	43	1:03.90		
14	63	Balzan	2:00.615	-5.1 g	70 (1)	42	1:00.37		
15	75	Vautier	3:41.727	-2.2 g	70 (1)	45	1:12.72		
16	48	Sellers	2:06.771	-4.6 g	65 (1)	42	59.933		
17	96	Klingmann	2:01.960	-6.7 g	63 (1)	40	59.745		
18	50	Jeannette	2:12.536	-3.9 g	66 (1)	43	1:06.65		
19	28	Jaminet	2:15.791	-4.4 g	70 (1)	43	1:05.35		
20	73	Bergmeister	2:07.693	-1.5 g	68 (1)	45	1:02.33		
21	14	Karam	2:14.975	-3.9 g	66 (1)	43	1:03.26		

Refresh	F6
Update Car List	
Print	Ctrl+P
Save CSV	Ctrl+S
Copy To Clipboard	Ctrl+C
Copy Image To Clipboard	Shift+Ctrl+C
Close	Esc
Hide Column	
Reset Columns	
Compare 2 Laps	Shift+F6
All Sections	
<input checked="" type="checkbox"/> Track Sections (Snn)	
Track Trap Sections (Tnn)	
Pit Sections (Pnn)	
Logical Sections (Ln)	
Intermediate Sections (In)	
Custom Sections	
Weather (Temp/Humidity)	
Live Update	
Show as Speed	
Exclude Tow Laps	
Include Invalidated Laps	
Show All Cars	
Car Color Row	
Include Session Summary	
Custom Query	
Top Laps Filter	
P2P Laps	
Non-P2P Laps	
Green Laps	
Non-Green Laps	
Save layout	
Load Layout	
Set Font	

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- Refresh – (F6) – refreshes the data in the report if the car list has changed or to reflect changes in the received data
- Update Car List – allows the user to change the competitor data in the report. More than one competitor's information can be displayed in the report. Leaving the selection window blank shows all users, otherwise, enter as ##,##,##,# to select individual entries. You can also enter list of car numbers as ## ## ##, separated by spaces.
- Print – (Ctrl+P) – opens print window to print report.
- Save CSV – (Ctrl+S) – creates a .csv file for the data contained in the report for use with other programs.
- Copy to Clipboard – (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Copy Image to Clipboard – (Shift+Ctrl+C) - copy the image to the clipboard.
- Close – (Esc) – closes the window. The window can also be closed via the •X• in the upper right corner.
- Hide Column – allows user to hide a selected column. Note that the column title that the mouse is on when the right click is done is the column that will be hidden.
- Reset Columns – resets the report to show all columns and all information contained within the column, even if previously hidden.
- Compare 2 Laps – (Shift+F6) – Compare Laps of 2 cars at a given elapsed time into the race. (hh:mm:sss)
- All Sections – Display all sections.
- Track Sections (Tnn) – Display Track Sections.
- Track Trap Sections (Tnn) – Display Track Speed Trap sections.
- Pit Sections (Pnn) – Display Pit Sections (if available).
- Logical Sections (Ln) – Display Logical sections (if defined).
- Intermediate Sections (In) – Display Intermediate sections (if defined)
- Custom Sections – Display Custom sections (if defined).
- Weather (Temp/Humidity) – Display Weather (if available).
- Live Update – links the report to the incoming timing data to be automatically updated. If this option is not selected, only the data received prior to opening the report will be displayed (refresh updates the data).
- Show as Speed – shows the timing information as speed for lap and segment information.

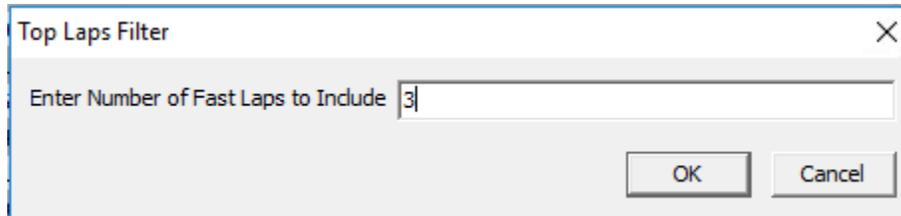
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- Exclude Tow Laps – excludes laps categorized as ‘tow’ laps by thresholds set in the Configuration menu.
- Include Invalidated Laps – includes laps in the report which have been invalidated for any reason (shortcut the course, yellow flag, and rules infraction, etc.).
- Show All Cars – displays information for all cars in the session. Update Car List to select individual competitors again.
- Car Color Row – formats the rows to the color applied to each individual car in the cars color dialog.
- Include Session Summary
- Custom Query – *Description follows below*
- Top Laps Filter – Set number of top laps to filter.
- P2P Laps – Push-to-Pass Laps (IndyCar only)
- Non P2P Laps – Non Push-to-Pass Laps (IndyCar only)
- Green Laps – Display laps run under Green Flag conditions.
- Non-Green Laps – Display laps run under Non-Green Flag conditions.
- Save Layout – allows user to save a customized report, including column formatting and removal of columns.
- Load Layout – loads the saved report layout when selected. Use Reset Columns to return the report to default layout.
- Set Font – Set the font for the report.

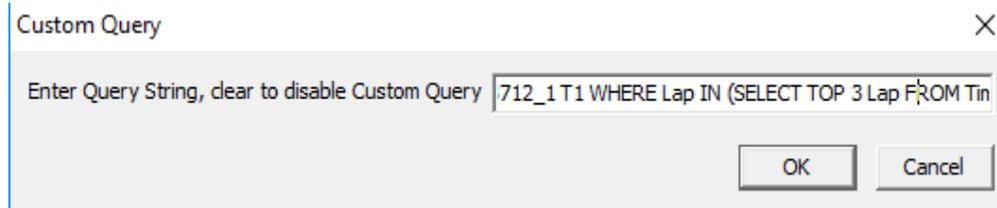
Custom Query

- Once you have a time card report, you can customize the laps to include in the report using the Custom Query feature. This feature is under development and considered in beta. I will work in making it work better, but it offers some extra control over what can be a larger amount of information.
- You can filter the report to include only the Top, P2P (IndyCar only), non-P2P (IndyCar only), Green or non-Green Laps. Selecting one of these options will build a custom Query string that will be executed against the records in the time card report.

For instance, if you only want to include the Top 3 Laps for each competitor, you can select the Top Laps Filter and you will be prompted for the number of laps to include. Enter ‘3’ and hit OK.



RaceTools will build a Query String that only includes the top 3 laps for each car. If you don't need to change the query, just hit OK when prompted.



RaceTools will apply the following query to the time card table (TimeCard_3712_1 table name will be replaced based on the underlying TimeCard table used for the report).

```
SELECT * FROM TimeCard_3712_1 T1 WHERE Lap IN (SELECT TOP 3 Lap FROM TimeCard_3712_1 T2 WHERE T1.Car=T2.Car ORDER BY LapTime)
```

If you want to include the Top 3 Laps for each driver (rather than car), you can change the Query to:

```
SELECT * FROM TimeCard_3712_1 T1 WHERE Lap IN (SELECT TOP 3 Lap FROM TimeCard_3712_1 T2 WHERE T1.Driver=T2.Driver ORDER BY LapTime)
```

Note that this process is designed to be used as a post-session tool as the Custom Query will not be retained when the results are updated and filtering using the query is very time consuming. You can refine the Query by selecting the Custom Query menu to edit the current Query String.

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- Refresh – (F5) – refreshes the data in the report to reflect changes in the received data.
- Edit Column – allows user to change the timing parameter of a selected column. Right click on the column to change, and select parameter from the drop down menu.
- Insert Column – inserts a column at the point of the right click, then select the desired quantity from the drop down list.
- Delete Column – removes the selected column from the report. Note that the column title that the mouse is on when the right click is done is the column that will be deleted.
- Full Screen – Expand the display to fill the screen.
- Results Font – sets the font of the text in the report.
- Session Font – sets the font of the text in the report.
- Top Row (X) – This feature lists the position that is the top row in the report, for example Top Row (0) shows all competitors, while Top Row (5) shows only positions 5+. User will be prompted to input highest position to be displayed when feature is selected. Note that this is useful when there are many competitors and the window needs to be a specific size.
- Apply To All –
- Background Color – changes the background color of the report to the selected color.
- Print – (Ctrl+P) – opens print window to print report.
- Save CSV – (Ctrl+S) – creates a .csv file for the data contained in the report for use with other programs.
- Save Fields – Save the selected fields to a file.
- Load Fields – Load fields from a saved file.
- Copy Fields From Session Results – Copy the fields from the 'Session Results' window. You modify the 'Scoreboard' window using the 'Insert Column' and 'Delete Column' functions.
- Copy to Clipboard – (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Close – closes the window. The window can also be closed via the •X• in the upper right corner.
- Auto Display Mode – Displays a Pre-formatted scoreboard.
- Autosize – Auto sizes the window to the data that is contained in it.
- Show All Cars – by default the report is set to show all cars. If this option is not selected, then only the cars that have been selected in the "CK• column of the Session Results table will be displayed in the report. If you change this setting, you may have

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to refresh the report. Note that if no individual competitors are selected and Show All Cars is not selected, all cars will still be displayed.

- Shade Rows – this shades every other row grey in order to help distinguish between the rows.
- Grid Borders – this puts borders on every “cell” to distinguish the data.
- Hide Borders – hides the borders of the window to decrease the footprint.
- ShowAsSpeed – This changes the QTotal, QWU, QL1, QL2, QL3, and QL4 oval qualifying fields to display speed instead of time.
- Exclude Other Classes – Excludes classes other than the ‘Team Car’ class.
- Classes – Allows selection of specific classes.
- Reset Column Widths – Reset the column widths.

Lap Chart (F8)

Lap Chart – (F8) – most useful for race sessions, this report is similar to the “Race Lap Chart• report. It displays the position of each competitor for each lap of the race, track condition (background yellow for yellow flag), and pit stops laps (framed with a blue box). In addition, clicking on a specific cell, for instance lap 170 car 02 as shown below, gives lap time, gap to car in front, gap to leader, and time of race the lap was completed.

The screenshot shows a window titled "Lap Chart [RMON at 2:40:21.000]". The window contains a table with columns for Car#, XX, Lap, 000-XXXX, 0:00.000, Gap, 000, 0:00.000, and 000 0:00.000. The table displays data for 26 cars (P, 1-26) across 26 laps. A context menu is open over the cell for Car 2, Lap 170, showing options like "Use Class Colors", "Exclude Other Classes", "Classes", "Car Colors", "Highlight MouseOver Car", "Print", "Copy to Clipboard", "Save CSV", "Copy Image To Clipboard", "Refresh", "Auto Size", "Close", and "Set Font".

Car#	XX	Lap	000-XXXX	0:00.000	Gap	000	0:00.000	000	0:00.000																
P		64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	
1		31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	10	31	31	31
2		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	31	5	5	5
3		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
4		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5		55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
6		81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
7		22	22	22	22	22	22	22	22	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
8		90	90	90	90	90	90	90	90	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
9		85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
10		38	38	38	38	38	38	38	38	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
11		66	66	66	66	66	66	66	66	70	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66
12		62	62	62	62	62	62	62	62	70	66	38	62	62	62	62	62	62	62	62	62	62	62	62	62
13		3	3	3	3	3	3	3	3	70	62	62	62	62	67	67	67	67	67	67	67	67	67	67	67
14		88	67	67	3	3	3	3	67	3	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
15		67	70	70	67	67	67	3	69	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
16		69	69	69	69	69	69	69	69	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
17		68	88	68	68	68	68	68	68	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
18		70	68	88	4	4	4	4	4	912	912	912	912	912	912	912	912	912	912	912	912	912	912	912	912
19		4	4	4	88	8	8	8	8	912	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
20		8	8	8	8	8	8	8	8	912	912	8	911	911	911	911	911	911	911	911	911	911	911	911	911
21		912	912	912	912	19	911	911	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
22		19	19	19	19	911	19	19	38	38	38	38	88	88	88	88	88	88	88	88	88	88	88	88	911
23		911	911	911	911	88	88	88	88	88	88	88	8	20	20	20	20	20	20	20	20	20	20	20	20
24		26	26	26	26	26	20	20	20	20	20	20	20	20	8	8	8	8	8	8	8	8	8	8	8
25		20	20	20	20	20	26	26	26	26	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
26		29	29	29	29	29	29	29	29	29	29	29	73	73	73	73	73	73	73	73	73	73	73	73	73

Additional options available by right click are listed.

- Use Class Colors – Display classes in colors.
- Exclude Other Classes – Exclude classes other than ‘Team Car’ class.
- Classes – Select Classes to display.
- Car Colors – Display car colors (if defined).
- Highlight MouseOver Car – The car will be highlighted on all laps when the mouse is over it. You can quickly see a car’s position throughout the race.
- Print – (Ctrl+P) – opens print window to print report.

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- Copy to Clipboard – (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Save CSV – (Ctrl+S) – creates a .csv file for the data contained in the report for use with other programs.
- Copy Image to Clipboard – (Shift+Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Refresh – (F5) – refreshes the data in the report to reflect changes in the received data.
- Autosize – Auto sizes the window to the data that is contained in it.
- Close – (F8) - Closes the window. The window can also be closed via the “X” in the upper right corner.
- Set Font – Set the font for this display.

Running Order (F9)

- Running Order – (F9) – most useful for race sessions, this report shows the actual running order and gaps on track for the lap. While the Session Results window and Scoreboard show position at SF, this report shows position relative to the most recent timing line. The report shows car number, gap to car directly in front, lap currently working, and scored position (SF). If the option to Show Details is selected, timing line and time information is included as well (shown below). Additionally, the report shows track condition by background highlight color and pit stops with car number cells (and pit timing line) framed in a blue box.

#	Gap	Lap	Line	Elapsed	P	Nr	CLS	PTC	LSP	LD
1	0.217	293	T9	9:40:12.538	1	10	P	1	20	0
2	4.843	282	T8	9:40:10.909	19	13	P	9	1	11
3	3.174	268	T8	9:40:14.083	39	46	GTD	17	7	7
4	6.699	272	T7	9:40:08.247	36	23	GTD	14	8	3
5	1.124	224	T7	9:40:09.371	46	52	P	11	4	69
6	1.134	274	T7	9:40:10.505	31	11	GTD	9	5	1
7	8.429	284	T6	9:40:12.688	11	62	GT	3	8	0
8	2.296	284	T5	9:40:08.605	12	3	GT	4	7	0
9	-0.041	275	T5	9:40:12.658	29	63	GTD	7	9	0
10	4.094	264	T5	9:40:12.699	41	4	GT	10	28	20
11	2.166	274	T4	9:40:06.907	32	50	GTD	10	6	1
12	3.380	277	T4	9:40:10.287	22	26	PC	3	14	6
13	2.277	275	T4	9:40:12.564	30	54	GTD	8	7	0
14	0.117	292	T4	9:40:12.681	3	5	P	3	16	1
15	4.005	284	T3	9:39:53.336	13	67	GT	5	7	0
16	0.313	293	T3	9:39:53.649	2	22	P	2	17	0
17	0.562	269	T3	9:39:54.211	38	96	GTD	16	6	6
18	0.248	287	T3	9:39:54.459	8	55	P	8	15	6
19	1.682	276	T3	9:39:56.141	23	93	GTD	1	8	0
20	7.307	284	T3	9:40:03.448	14	911	GT	6	9	0
21	6.045	284	T3	9:40:09.493	15	912	GT	7	8	0
22	2.304	274	T3	9:40:11.797	33	48	GTD	11	19	2
23	4.659	274	T2	9:39:48.122	34	991	GTD	12	12	2
24	3.139	258	T2	9:39:51.261	44	61	GTD	21	13	18
25	0.422	284	T2	9:39:51.683	16	19	GT	8	10	0
26	2.595	276	T2	9:39:54.278	24	57	GTD	2	18	0
27	1.736	288	T2	9:39:56.014	6	31	P	6	17	5
28	0.996	284	T2	9:39:57.010	17	68	GT	9	8	0
29	0:01.431	276	P2	9:39:58.007	25	28	GTD	3	0	0
30	4.024	273	T2	9:40:01.034	35	15	GTD	13	19	3
31	0.569	235	T2	9:40:01.603	45	98	GTD	22	23	41
32	0.521	278	T2	9:40:02.124	21	20	PC	2	10	5
33	0.268	276	T2	9:40:02.392	26	29	GTD	4	13	0
34	1.200	270	T2	9:40:03.592	37	18	GTD	15	7	6
35	7.231	196	T2	9:40:10.823	48	8	PC	5	9	87
36	3.384	291	T2	9:40:14.207	5	2	P	5	19	2
37	0.907	264	T1	9:40:02.457	42	75	GTD	19	9	12
38	1.052	285	T1	9:40:03.509	9	66	GT	1	10	0
39	1.183	266	T1	9:40:04.692	40	27	GTD	18	11	10
40	13.155	275	TC	9:40:14.767	27	86	GTD	5	4	0
41	0.133	259	TB	9:40:14.407	43	21	GTD	20	3	16
42	3.669	283	TA	9:40:12.666	18	38	PC	1	15	0
43	2.792	284	T9	9:40:09.335	10	69	GT	2	8	0

- The Running Order report has been updated to reflect the elimination of the Lap Down Wave By rule. The LD@Y field is no longer available. To help identify pass-

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around cars, under caution, all cars between the safety car and their class leader have their 'P' and 'LD' fields highlighted in Red.

#	Nr	Gap	Lap	Line	Elapsed	P	PIC	CLS	LSP	LD
1	3C1	165.055	1	T2	4:02:12.212	68	0		0	0
2	70	0.954	86	T2	4:02:13.166	58	14	P	26	0
3	31	1.058	93	T2	4:02:14.224	26	12	P	7	0
4	6	0.621	96	T2	4:02:14.745	10	10	P	1	0
5	65	0.762	90	T2	4:02:16.607	52	23	GTD	8	0
6	44	0.825	91	T2	4:02:16.432	45	15	GTD	19	0
7	2	1.362	82	T2	4:02:17.744	62	16	P	22	0
8	009	2.143	90	T2	4:02:19.937	53	24	GTD	10	0
9	10	0.444	90	T2	4:02:20.444	6	6	P	23	0
10	373	0.373	90	T2	4:02:20.844	54	8	PC	4	0
11	774	0.774	90	T2	4:02:21.618	22	3	PC	22	0
12	388	0.388	90	T2	4:02:22.006	57	13	P	8	0
13	789	0.789	90	T2	4:02:22.795	7	7	P	19	0
14	862	0.862	90	T2	4:02:23.657	44	16	GTD	29	0
15	388	0.388	90	T2	4:02:24.519	8	8	P	22	0
16	127	0.127	90	T2	4:02:25.381	55	25	GTD	7	0
17	769	0.769	90	T2	4:02:26.243	45	17	GTD	22	0
18	164	0.164	90	T2	4:02:27.105	23	4	PC	20	0
19	35	1.598	91	T1	4:02:17.762	46	18	GTD	26	0
20	54	1.574	94	T1	4:02:19.336	24	5	PC	13	0
21	0	1.340	83	T1	4:02:20.676	60	15	P	9	0
22	64	1.937	91	T1	4:02:22.613	36	9	GTD	12	0
23	90	1.548	96	TC	4:02:17.694	9	9	P	12	0
24	555	1.896	91	TC	4:02:19.590	38	11	GTD	2	0
25	87	0.708	92	TC	4:02:20.298	27	6	PC	16	0
26	49	0.621	90	TC	4:02:20.919	48	19	GTD	21	0
27	33	1.979	90	TB	4:02:22.008	49	20	GTD	4	0
28	102	0.102	90	T2	4:02:23.922	39	12	GTD	17	0
29	13	0.13	90	T2	4:02:24.836	13	3	GT	32	0
30	40	0.4	90	T2	4:02:25.750	40	13	GTD	29	0
31	19	0.19	90	T2	4:02:26.664	19	8	GT	33	0
32	41	0.41	90	T2	4:02:27.578	41	10	GT	18	0
33	50	0.5	90	T2	4:02:28.492	50	21	GTD	13	0
34	14	0.14	90	T2	4:02:29.406	14	4	GT	27	0
35	15	0.15	90	T2	4:02:30.320	15	5	GT	30	0
36	18	1.274	85	TA	4:02:18.701	59	26	GTD	34	0
37	55	0.360	94	TA	4:02:19.061	21	9	GT	22	0
38	007	0.674	90	T2	4:02:19.735	51	22	GTD	26	0
39	3	0.343	95	T2	4:02:20.078	16	6	GT	29	0
40	556	0.895	91	TA	4:02:20.973	42	14	GTD	2	0
41	56	0.369	95	TA	4:02:21.342	17	7	GT	28	0
42	5	0.497	97	T9	4:02:00.290	1	1	P	0	0
43	10	3.360	97	T9	4:02:03.650	4	4	P	0	0
44	42	6.171	97	T9	4:02:09.821	3	3	P	0	0
45	78	0.818	97	T9	4:02:10.639	2	2	P	0	0
46	08	1.048	95	T9	4:02:11.687	18	1	PC	0	0
47	02	0.569	97	T9	4:02:12.256	5	5	P	0	0
48	7	32.358	94	T7	4:02:17.520	20	2	PC	0	0
49	1	35.092	65	PB	2:01:18.544	64	17	P	-1	0
50	07	122.772	62	PB	2:38:38.869	65	18	P	-1	0
51	52	95.965	90	PB	2:48:51.162	47	7	PC	-1	0
52	72	167.068	91	PB	4:01:42.959	32	5	GTD	-1	0
53	63	3.538	91	PB	4:01:51.815	33	6	GTD	-1	0
54	22	1.332	91	PB	4:02:09.097	34	7	GTD	-1	0
55	81	2.189	91	PB	4:02:11.286	35	8	GTD	-1	0
56	91	4.679	95	PB	4:02:15.965	11	1	GT	-1	0
57	71	1.729	91	PB	4:02:17.694	37	10	GTD	-1	0
58	911	2.693	95	PB	4:02:20.387	12	2	GT	-1	0
59	09	3.344	25	P1	4:56:56.520	66	9	PC	0	0
60	27	15.871	82	P1	2:40:22.799	61	27	GTD	0	0
61	58	136.901	92	P1	4:01:59.751	28	1	GTD	0	0
62	73	0.601	92	P1	4:02:00.352	29	2	GTD	0	0
63	30	2.067	92	P1	4:02:02.419	30	3	GTD	0	0
64	19	14.983	78	P1	4:02:17.402	63	28	GTD	1	0
65	23	4.438	92	P1	4:02:21.840	31	4	GTD	0	0

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- The calculations for the LD/Laps Down field have been updated so the LD/Laps Down field is more consistently updated at each time line.
- This is a calculated field and it's not as simple as one would think if we want it to be accurate at each timeline instead of the more traditional calculation at the S/F line. It is not simply Class Leader Laps – Competitor Laps. That's true at the S/F line, and many scoring systems will put cars a lap down as soon as the leader crosses the S/F line, even though they might not be a lapped car. They just haven't finished their lap yet. RaceTools calculates and displays the Diff and Laps Down fields respecting not just the Laps Completed field, but also when they crossed the S/F line relative to the leader.
- To make the Laps Down field reflect changes at each timeline adds another layer of complexity. It now needs to track how far each car is into the lap and when they crossed each timeline, relative to the class leader.
- Sometimes the data looks 'funny' but it is actually accurate. For instance, if you look at the example below, the cars above the class leader (Car 33) have the Laps Down being equal to Leader Laps – Laps -1 because they are actually ahead of the leader in the lap (and between the overall leader and their leader). What is less obvious is the Laps Down value for the cars below the class leader that have not completed their lap. These also have their Laps Down field being the Leader Laps – Laps -1 and not Leader Laps – Laps.

#	Nr	Gap	Lap	Line	Elapsed	P	PIC	CLS	LSP	LD
1	73	10.945	61	T5	2:15:15.162	36	15	GTD	2	0
2	93	10.846	61	T4	2:15:11.046	35	14	GTD	0	0
3	27	11.119	60	T4	2:15:22.165	41	20	GTD	9	1
4	23	4.428	61	T3	2:15:01.368	37	16	GTD	3	0
5	57	26.907	61	T2	2:15:22.551	38	17	GTD	1	0
6	33	5.445	62	T1	2:15:22.104	22	1	GTD	1	0
7	46	0.889	61	T1	2:15:22.993	39	18	GTD	3	1
8	28	1.744	61	TA	2:15:21.973	23	2	GTD	28	0
9	18	1.368	60	T9	2:15:21.813	40	19	GTD	24	1
10	29	1.251	61	T8	2:15:12.434	24	3	GTD	6	0
11	16	7.361	61	T8	2:15:19.795	25	4	GTD	10	0
12	50	5.090	61	T6	2:14:56.047	26	5	GTD	1	0
13	11	1.977	61	T6	2:14:58.024	27	6	GTD	10	0
14	15	1.417	61	T6	2:14:59.441	28	7	GTD	8	0
15	54	5.575	59	T6	2:15:05.016	42	21	GTD	4	2
16	14	1.543	61	T6	2:15:06.559	29	8	GTD	9	0
17	86	7.265	61	T6	2:15:13.824	30	9	GTD	15	0
18	96	1.447	61	T6	2:15:15.271	31	10	GTD	6	0
19	75	1.346	61	T6	2:15:16.617	32	11	GTD	3	0
20	63	9.513	61	T5	2:15:00.806	33	12	GTD	1	0
21	48	0.465	61	T5	2:15:01.271	34	13	GTD	2	0

- There are now two 'Refresh' options. The default Refresh (F5) option refreshes the data, sorting the competitors, leaderboard, etc. but no longer resizes the Session Results columns. To auto resize the Session Results columns (and do a data refresh) you now need to use the Refresh All (CTRL+F5) option.

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As always, be aware that the software relies on the data and if there are interruptions in the data feed or other issues, the reports may have errors. Always double check the information and make sure you understand.

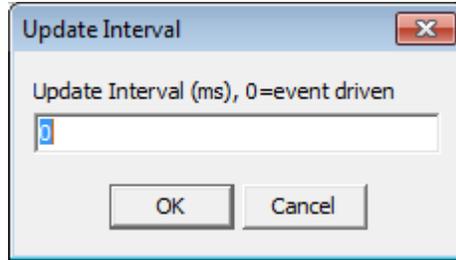
Right clicking reveals the following options for the Running Order popup:

#	Gap	Lap	Line	Elapsed	P	Nr	CLS	PIC	LSP	LD
1	0.617	87	T3	2:40:08.839	1	31	P	1	3	0
2	3.831	81	T3	2:40:12.670	35	54	GTD	11	23	0
3	0.520	81	T3	2:40:13.190	36	33	GTD	12	24	0
4	1.058	84	T3	2:40:14.248	17	4	GT	7	24	0
5	9.469	81	T2	2:40:00.269	37	26	PC	5	7	2
6	0.981	84	T2	2:40:01.250	18	912	GT	8	25	0
7	1.071	87	T2	2:40:02.321	2	5	P	2	3	0
8	52.387	86	P2	2:40:06.481	4	55	P	4	0	1
9	5.073	79	T2	2:40:07.394	44	18	GTD	19	8	2
10	0.228	84	T2	2:40:07.622	19	38	PC	1	13	0
11	0.497	81	T2	2:40:08.119	38	991	GTD	13	24	0
12	0.198	81	T2	2:40:08.317	39	23	GTD	14	17	0
13	2.380	77	T2	2:40:10.697	47	13	P	11	17	10
14	4.827	83	P2	2:40:11.308	22	911	GT	10	0	1
15	0.787	85	T2	2:40:11.484	8	85	P	8	3	2
16	3.937	81	T2	2:40:15.421	40	46	GTD	15	23	0
17	4.545	86	T2	2:40:19.966	5	90	P	5	2	1
18	2.142	84	T1	2:40:11.182	20	19	GT	9	24	0
19	0.000	79	T1	2:40:15.130	45	48	GTD	20	14	2
20	6.096	86	TC	2:40:18.249	3	10	P	3	1	0
21	0.404	74	TC	2:40:18.653	48	61	GTD	22	16	6
22	0.692	82	TC	2:40:19.345	23	8	PC	3	6	1
23	0.232	48	TC	2:40:19.577	53	52	P	12	1	38
24	18.203	81	T8	2:40:20.451	25	29	GTD	1	28	0
25	1.179	81	T7	2:40:11.728	26	73	GTD	2	24	0
26	1.541	80	T7	2:40:13.269	42	51	GTD	17	19	1
27	1.270	85	T7	2:40:14.539	6	81	P	6	0	1
28	3.718	85	T7	2:40:18.257	7	22	P	7	0	1
29	0.330	81	T7	2:40:18.587	27	96	GTD	3	24	0
30	6.758	84	T6	2:40:19.458	10	2	P	10	5	2
31	0.876	81	T6	2:40:20.334	28	63	GTD	4	24	0
32	0.853	81	T5	2:40:14.893	29	50	GTD	5	24	0
33	2.949	81	T5	2:40:17.842	30	11	GTD	6	24	0
34	0.694	84	T5	2:40:18.536	11	66	GT	1	25	0
35	0.170	81	T5	2:40:18.706	31	57	GTD	7	24	0
36	3.229	84	T4	2:40:14.281	12	62	GT	2	25	0
37	0.326	83	T4	2:40:14.607	21	88	PC	2	14	0
38	3.243	84	T4	2:40:17.850	13	67	GT	3	25	0
39	3.885	84	T3	2:40:02.049	14	69	GT	4	25	0
40	1.195	81	T3	2:40:03.244	32	15	GTD	8	24	0
41	0.779	80	T3	2:40:04.023	43	28	GTD	18	24	1
42	0.448	81	T3	2:40:04.471	33	93	GTD	9	24	0
43	1.296	78	T3	2:40:05.767	46	27	GTD	21	21	3
44	0.289	84	T3	2:40:06.056	15	3	GT	5	25	0

- Undo (Ctrl+Z) – Undo the previous action.
- Pause – (P) - Pauses the updating of the Running Order window, Can be used to Freeze the field when a Yellow is displayed.

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- Show Details – (D) – this shows the timing line and time information, as shown in the right of the two figures in in the popup description above.
- Gap2Us (G) – Gap from the Leader to the 'Team Car'.
- Driver Name (N) – Display the driver name'.
- Highlight Gap (X.XXXX) – highlights gaps on track relative to the input gap. Gaps less than the input will be background highlighted in red and gaps in between the input and (input + 1 second) will be background highlighted yellow. If left to 0.0000, no special formatting is applied.
- Highlight Lead Lap (Alt+L) – Highlight 'Lead Lap' cars.
- Highlight Pass Around (Alt+P) – Highlight pass around cars.
- >Pass Around Color – Set the color for Pass Around cars.
- >Highlight –
 - Cautions Only
 - Team Class Only
- Lap Down AFTER Caution - .
- Live Rank (L) – Updates rank at each timeline crossing.
- Shaded Rows – Shades even numbered rows.
- Hide Inactive – Hide inactive cars. Hide Inactive option does not remove the car from the results or analysis, just from the track map and running order. The car's status will be set to '(Active)' to differentiate it from 'Active'. The will still be visible in the session results table and all of the reports.
- Post Pit Car – Highlights the car before and after the Post Pit Car.
- Highlight Laps Since Pit – Highlights the laps since pit column.
- LSP Thresholds - Values less than threshold will be highlighted in red as likely to pit.
- Exclude Other Classes – Exclude classes other than the 'Team Car' class.
- Classes – Allows the user to select the classes to display.
- Font – changes the font of the report.
- Refresh Rate – changes the refresh rate of the popup. By default, the report is updated based on the occurrence of an event (timing line activity).



- Save CSV – (Ctrl+S) – creates a .csv file for the data contained in the report for use with other programs
- Print – (Ctrl+P) – opens print window to print report
- Close – (F9) – closes the window. The window can also be closed via the “X” in the upper right corner.
- Refresh – (F5) – refreshes the data in the report to reflect changes in the received data.
- Reset Columns - Reset the columns.
- Copy to Clipboard – (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Copy Image to Clipboard – (Shift+Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Dock To Main - Dock to the Right of the main program window.

Line Audit (Ctrl+F9)

RaceTools offers many different ways to view the available data. It sometimes gets complicated, but that's the price of being flexible and customizable to the many users of the software. It seems everyone wants something slightly different.

If all you want is the Pit In and Pit Out times for either your team car or all cars, you can use the **Time Line Audit** popup.

Click on the timeline button to select that timeline to monitor. If you want to see two or more timelines at once, select the Add Monitor from the popup menu (right click). If you only want to see your team car, enable the 'Team Car Only' filter.

The screenshot shows the 'Time Line Audit' window with two data tables. The left table is titled 'PB' and the right table is titled 'P2'. Both tables have columns for TOD, ElapsedTime, SectionTime, Car, Lap, Line, Delta, and Flag. The data rows show various pit stop events with corresponding times and car numbers.

T1	P1	T2	P2	T3	T4	T5	T6	T7	T8	T9	TA	TB	PB	TC	PB			T1	P1	T2	P2	T3	T4	T5	T6	T7	T8	T9	TA	TB	PB	TC	P2		
TOD	ElapsedTime	SectionTime	Car	Lap	Line	Delta	Flag									TOD	ElapsedTime	SectionTime	Car	Lap	Line	Delta	Flag												
26:14:19.629	11:43:26.507		13	340	PB	1:15.283	G									26:14:49.891	11:43:56.769		70	170	P2	17.676	G												
26:14:20.137	11:43:27.015		90	349	PB	0.508	G									26:15:42.886	11:44:49.764		90	350	P2	52.995	G												
26:15:06.277	11:44:13.155		85	341	PB	46.140	G									26:15:49.955	11:44:56.833		13	341	P2	7.069	G												
26:15:17.217	11:44:24.095		11	330	PB	10.940	G									26:16:29.766	11:45:36.644		85	342	P2	39.811	G												
26:16:06.077	11:45:12.955		88	254	PB	48.860	G									26:16:48.241	11:45:55.119		11	331	P2	18.475	G												
26:18:14.768	11:47:21.646		81	340	PB	2:08.691	G									26:17:40.355	11:46:47.233		88	255	P2	52.114	G												
26:18:18.269	11:47:25.147		22	325	PB	3.501	G									26:19:42.419	11:48:49.297		22	326	P2	2:02.064	G												
26:19:45.896	11:48:52.774		55	346	PB	1:27.627	G									26:20:05.723	11:49:12.601		81	341	P2	23.304	G												
26:22:20.343	11:51:27.221		5	352	PB	2:34.447	G									26:21:12.358	11:50:19.236		55	347	P2	1:06.635	G												
26:24:08.013	11:53:14.891		52	284	PB	1:47.670	G									26:23:43.170	11:52:50.048		5	353	P2	2:30.812	G												
26:27:16.415	11:56:23.293		28	335	PB	3:08.402	G									26:25:36.487	11:54:43.365		52	285	P2	1:53.317	G												
26:27:30.830	11:56:37.708		31	350	PB	14.415	G									26:28:52.302	11:57:59.180		28	336	P2	3:15.815	G												
26:28:24.188	11:57:31.066		20	341	PB	53.358	G									26:28:53.802	11:58:00.680		31	351	P2	1.500	G												
26:29:16.735	11:58:23.613		54	333	PB	52.547	G									26:30:07.525	11:59:14.403		20	342	P2	1:13.723	G												
26:33:02.800	12:02:09.678		26	340	PB	3:46.065	G									26:30:57.476	12:00:04.354		54	334	P2	49.951	G												
26:35:54.076	12:05:00.954		4	331	PB	2:51.276	G									26:34:11.703	12:03:18.581		26	341	P2	3:14.227	G												

- Add Monitor – Add a monitor window to monitor another timeline.
- Delete Monitor – Delete an added monitor window.
- Save Layout – Save the layout to a file.
- Load Layout – Load a saved layout from a file.
- Team Car Only – Display data for the Team Car only. ('Set Team Car' in the Options menu.)
- Copy Data to Clipboard – (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Copy Image to Clipboard – (Shift+Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Clear Data - Clear the data in the window.
- Stay On Top - Keep this window on top of other windows.

Drive Times Report (Ctrl+F2)

- Complements the Stint Report
- Displays the information required by IMSA for logging Drive Times for each driver.
- As with the other reports, you can change the sort order by clicking on the column title. The default is by Driver Name so that they are grouped by Driver, but you can change it to sort by Lap or any other column.
- The Drive Times report now properly uses the race start time as the start of the race rather than the first team car crossing.

Car	Driver	Class	TotalTime	TimeToMax	TimeToMin	TimeInWin	LastStint
10	Jeff Gordon	P	2:04:34	10:55:26	2:55:26	4:00:00	20:00:01
10	Jordan Taylor	P	1:40:35	11:19:25	3:19:25	4:00:00	20:00:01
10	Max Angelelli	P	4:01:03	8:58:56	58:56	2:14:27	20:00:01
10	Ricky Taylor	P	4:24:06	8:35:54	35:54	1:21:08	20:00:01
11	Christian Engelhart	GTD	2:49:48	10:10:11	2:10:11	4:00:00	20:00:01
11	zequiel Perez Compan	GTD	1:58:29	11:01:31	3:01:31	4:00:00	20:00:01
11	Mirko Bortolotti	GTD	3:54:41	9:05:19	1:05:19	54:56	20:00:01
11	Rolf Ineichen	GTD	3:31:38	9:28:21	1:28:21	4:00:00	20:00:01
13	Neel Jani	P	4:03:41	8:56:18	56:18	1:45:32	20:00:01
13	Nick Heidfeld	P	2:06:41	10:53:19	2:53:19	4:00:00	20:00:01
13	Sebastien Buemi	P	2:49:50	10:10:10	2:10:10	3:51:21	20:00:01
13	Stephane Sarrazin	P	2:50:43	10:09:16	2:09:16	4:00:00	20:00:01
14	Scott Pruett	GTD	1:37:10	11:22:50	3:22:50	4:00:00	20:00:01
15	Austin Cindric	GTD	3:56:18	9:03:41	1:03:41	2:49:16	20:00:01
15	Dominik Farnbacher	GTD	2:01:45	10:58:14	2:58:14	4:00:00	20:00:01
15	Jack Hawksworth	GTD	2:43:00	10:17:00	2:17:00	4:00:00	20:00:01
15	Robert Alon	GTD	1:59:42	11:00:18	3:00:18	4:00:00	20:00:01
16	Brett Sandberg	GTD	1:04:15	11:55:45	3:55:45	4:00:00	20:00:01
16	Corey Lewis	GTD	5:58:14	7:01:45	58:15	4:00:00	20:00:01
16	Jeroen Mul	GTD	4:33:00	8:26:59	26:59	4:00:00	20:00:01

Hide Column

Reset Columns

Show All Cars

Driver Ratings >

By Driver and Car

Exclude Other Classes

Classes >

Reverse Stints

Hide Previous Stints

Show Hours

Times in TOD

Project Time in Window

Last Window

TotalTime w/ms

Car Color Rows

Set Font

Set Maximum Time (13h)

Set Minimum Time (5h)

Set Drive Window (6h)

Set Max in Window (4h)

Refresh F5

Save CSV Ctrl+S

Copy To Clipboard Ctrl+C

Save layout

Load Layout

Print Ctrl+P

Close Ctrl+F2

Clean Duplicates

Exclude Red Times

Menu settings:

These are my recommended settings for the Drive Times report.

Some are based on personal preference.

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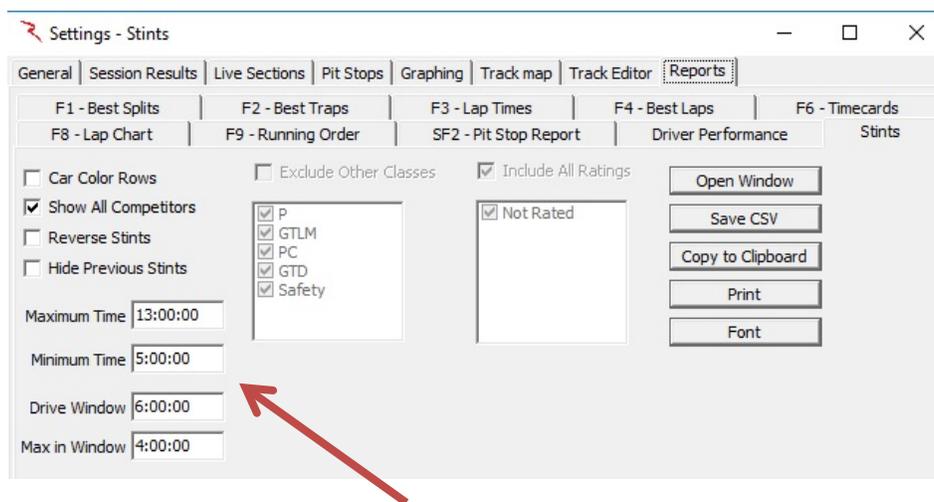
- **Show All Cars** is optional. If you only want to see your team drivers, uncheck this option.

Some are recommended.

- **Reverse Stints** displays the stints in reverse chronological order so that the current or latest stint is on the left, closer to the rest of the current information and more likely to be visible instead of on the right hand side of the table where it might be off-screen if there are a number of stints for the driver.
- You can select the **'Hide Previous Stints'** option if you only want to see the current or latest stint for each driver.
- **Project Time in Window** takes into account drive time that may roll out of the 6 hour window while the driver is in the car. Without this option, the report only looks at the last 6 hours to calculate how much drive time is available to the driver if he is currently in the car or if he were to get into the car. If the driver was in the car 4-6 hours ago, some of that drive time may expire while the driver is in the car therefore increasing the amount of drive time available. I recommend keeping this option selected.
- **Last Window** should be enabled near the end of the race (last 5-6 hours) to determine when a driver can get into the car and be able to drive to the end of the race.

Some are required.

- **By Driver and Car** is only relevant for drivers who drive multiple cars. Selecting this treats the driver/car combination as a unique, independent set rather than including drive times for a particular driver regardless of the car he was driving in.
- Make sure you set the Maximum Time, Minimum Time, Drive Window (6 hours) and Max in Window (4 hours) as appropriate for the race.



NOTE: Drive time limits may also be set in the File → Configuration → Reports → Stints window

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Car	Driver	Class	TotalTime	TimeToMax	TimeToMin	TimeInWin	LastStint	Stint_1_In	Stint_1_Out	Status
11	Mirko Bortolotti	GTD	4:39:18	8:20:41	20:41	4:00:00	20:00:01	11:45:55.119	13:20:54.555	COMPLETED
85	Misha Goikhberg	P	3:50:50	9:09:10	1:09:10	3:01:38	20:00:01	16:13:14.381		RUNNING
13	Neel Jani	P	4:03:41	8:56:18	56:18	4:00:00	20:00:01	11:44:56.833	12:25:58.810	COMPLETED
54	Nic Jonsson	GTD	3:53:56	9:06:04	1:06:04	4:00:00	20:00:01	12:00:04.354	12:14:50.389	COMPLETED
38	Nicholas Boulle	PC	3:47:26	9:12:34	1:12:34	4:00:00	20:00:01	12:27:25.929	14:10:31.136	COMPLETED
13	Nick Heidfeld	P	2:06:41	10:53:19	2:53:19	4:00:00	20:00:01	9:36:56.576	10:06:52.525	COMPLETED
81	Nicolas Lapierre	P	6:06:41	6:53:18	-1:06:42	4:00:00	20:00:01	8:19:17.431	14:33:34.305	COMPLETED
73	Norbert Siedler	GTD	56:58	12:03:01	4:03:01	4:00:00	20:00:01	5:52:46.565	2:49:45.411	COMPLETED
4	Oliver Gavin	GTLM	5:52:38	7:07:22	-52:38	1:24:02	20:00:01	5:52:46.565	2:49:45.411	RUNNING
68	Olivier Pla	GTLM	6:32:12	6:27:48	-1:32:12	1:16:35	20:00:01	5:52:46.565	2:49:45.411	COMPLETED
86	Oswaldo Negri Jr.	GTD	6:03:20	6:56:40	-1:03:20	18:00	20:00:01	5:52:46.565	2:49:45.411	COMPLETED
27	Paolo Ruberti	GTD	2:28:26	10:31:33	2:31:33	4:00:00	20:00:01	5:52:46.565	2:49:45.411	COMPLETED
38	Patricio O'Ward	PC	4:29:11	8:30:48	30:48	4:00:00	20:00:01	5:52:46.565	2:49:45.411	COMPLETED
73	Patrick Lindsey	GTD	1:49:54	11:10:05	3:10:05	4:00:00	20:00:01	54:53.860	1:51:22.118	COMPLETED
54	Patrick Long	GTD	1:54:12	11:05:47	3:05:47	4:00:00	20:00:01	45:16.477	6:30:46.822	COMPLETED
911	Patrick Pilet	GTLM	5:36:33	7:23:26	-3:23:26	4:00:00	20:00:01	59:29.439	13:20:30.207	RUNNING
98	Paul Dalla Lana	GTD	3:12:47	9:47:12	1:47:12	4:00:00	20:00:01	09:11.698	17:11:22.973	COMPLETED
98	Pedro Lamy	GTD	3:51:20	9:08:39	1:08:39	4:00:00	20:00:01	03:35:29.426	16:07:40.283	COMPLETED
51	Peter Mann	GTD	1:05:22	11:54:37	3:54:37	4:00:00	20:00:01	51:08.605	1:56:31.398	COMPLETED
23	Pierre Kaffer	GTD	6:06:09	6:53:50	-1:06:10	1:18:53	20:00:01	14:25:50.982	15:15:16.112	COMPLETED
27	Raffaele Giammaria	GTD	3:24:20	9:35:39	1:35:39	2:10:03	20:00:01	15:19:44.953	16:18:11.151	COMPLETED
52	RC Enerson	P	5:13:04	7:46:55	-13:05	1:17:27	20:00:01	15:19:57.267	16:57:15.167	COMPLETED
8	Remo Ruscitti	PC	5:24:27	7:35:33	-24:27	1:21:32	20:00:01	14:23:52.058	15:59:13.878	COMPLETED
90	Rene Rast	P	5:44:36	7:15:23	-44:37	4:00:00	20:00:01	13:59:27.387	14:20:57.916	COMPLETED
90	Renger Van Der Zande	P	4:08:08	8:51:52	51:52	3:52:39	20:00:01	17:04:14.693	10:56:04.929	RUNNING
912	Richard Lietz	GTLM	6:10:53	7:49:06	-1:10:54	1:15:27	20:00:01	15:16:17.340		RUNNING
67	Richard Westbrook	GTLM	3:57:37	9:37:32	1:02:22	4:00:00	20:00:01	8:20:28.858	9:24:00.373	COMPLETED
10	Ricky Taylor	P	5:22:43	7:37:17	-22:43	3:01:23	20:00:01	16:12:59.176		RUNNING
51	Rino Mastronardi	GTD	1:27:44	11:32:15	3:32:15	4:00:00	20:00:01	8:58:20.576	3:28:02.799	COMPLETED
15	Robert Alon	GTD	4:59:47	8:00:13	13	4:00:00	20:00:01	5:52:46.565	2:49:45.411	RUNNING
8	Robert Wickens	PC	2:49:52	10:10:07	2:10:07	4:00:00	20:00:01	4:15.621		COMPLETED
61	Roberto Pamanini	GTD	2:02:44	10:57:15	2:57:15	4:00:00	20:00:01	10:27.18		COMPLETED
57	Robin Liddell	GTD	3:35:10	9:24:49	1:24:49	4:00:00	20:00:01	3:35:12.115	4:27:52.314	COMPLETED
11	Rolf Ineichen	GTD	3:31:38	9:28:21	1:28:21	4:00:00	20:00:01	3:35:12.115	4:27:52.314	COMPLETED
61	Rolf Ineichen	GTD	2:06:29	10:53:30	2:53:30	3:19:23	20:00:01	16:38:09.079	16:32:45.553	RUNNING
67	Ryan Briscoe	GTLM	6:02:31	6:57:28	-1:02:32	4:00:00	20:00:01	12:13:53.469	13:54:22.916	COMPLETED
2	Ryan Dalziel	P	6:49:57	6:10:02	-1:49:58	2:09:33	20:00:01	16:58:28.502	16:57:11.387	RUNNING

Driver can enter car (Start Last Sting) at 20:00:01 and drive to the end of the race.

Only 18 minutes remain in the 4/6 drive window.

Green Status and Total Time means the driver is currently in the car on track.

- Hide Column – allows the user to hide any selected column. The column must be underneath the right click. This can be done by right-clicking anywhere in the column
- Reset Columns – makes all columns visible and formats column widths to be identical. This typically makes all data in the popup visible without scrolling laterally.
- Show All Cars – Display drive times for all cars.
- Driver Ratings
- By Driver and Car – Useful if a driver drives more than one car.
- Exclude Other Classes – Exclude classes other than 'Team Car' class.
- Classes – Select classes to display.

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- Custom Sections – Display Custom sections (if defined).
- Reverse Stints – Display latest stints first.
- Hide Previous Stints - .
- Show Hours
- Times In TOD – Display times in Time Of Day.
- Project Time in Window – Display projected time in Drive Time window.
- Last Window – Display time driver can enter the car and drive to the end of the race.
- Total Time w/ms - .
- Car Color Rows – formats the rows to the color applied to each individual car in the car color dialog (accessible by Ctrl+Left Click on the car number in the Session Results window).
- Set Font – sets the font and font size for the table.
- Set Maximum Time () – Set maximum drive time in the race.
- Set Minimum Time () – Set minimum drive time for the race.
- Set Drive Window () – Set the drive window.
- Set Max in Window () – Set maximum drive time within the drive window.
- Refresh (F5) – while the popup will typically automatically update while the session is in progress, it may occasionally be required to •Refresh• the window to reflect the most current data.
- Save CSV (Ctrl+S) - creates a .csv file for the data contained in the report for use with other programs.
- Copy To Clipboard (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Save Layout – Save a layout.
- Load Layout – Load a saved layout.
- Print (Ctrl+P) – opens print window to print report.
- Close (F1) – closes the window. The window can also be closed via the •X• in the upper right corner.
- Clean Duplicates
- Exclude Red Times

Stint Report (Alt+F2)

Stint Times

Car	Driver	TOD_IN	TOD_OUT	Elapsed_IN	Elapsed_OUT	Lap_IN	Lap_OUT	InRank	OutRank	Laps	Average
5	Joao Barbosa	14:30:53.122	15:10:46.252							23	1:51.023
5	Joao Barbosa	15:12:03.450	15:49:43.672							23	1:41.618
5	Joao Barbosa	15:50:59.159	16:18:37.249							14	2:03.693
5	Christian Fittipaldi	16:20:09.221	17:04:37.066							24	1:55.212
5	Christian Fittipaldi	17:05:56.594	17:42:16.563							22	1:42.623
5	Christian Fittipaldi	17:43:37.797	18:00:42.776							8	2:24.458
5	Christian Fittipaldi	18:02:53.078	18:46:20.688							24	1:51.992
5	Filipe Albuquerque	18:47:37.366	19:20:24.554							18	1:53.240
5	Filipe Albuquerque	19:21:48.109	20:03:30.508							20	2:09.156
5	Filipe Albuquerque	20:05:04.844	20:14:48.487							3	3:47.347
5	Filipe Albuquerque	20:16:05.360	20:57:21.037							21	2:01.537
5	Filipe Albuquerque	20:58:40.558	21:47:09.489							24	2:04.704
5	Filipe Albuquerque	21:48:29.408	22:20:02.836							17	1:57.158
5	Joao Barbosa	22:21:42.682	22:25:36.173							2	3:00.903
5	Joao Barbosa	22:27:42.601	22:44:46.905							7	2:35.346
5	Joao Barbosa	22:46:17.740	23:38:13.000							26	2:04.022
5	Joao Barbosa	23:39:36.746	00:27:01.178							25	1:57.116
5	Joao Barbosa	00:28:23.909	01:27:13.138							26	2:18.987
5	Christian Fittipaldi	01:28:39.182	02:22:20.343							26	2:07.131
5	Christian Fittipaldi	02:23:43.170	02:56:48.845							15	2:07.192

Refresh	F5
Print	Ctrl+P
Save CSV	Ctrl+S
Copy Image to Clipboard	Shift+Ctrl+C
Copy To Clipboard	Ctrl+C
Close	Shift+F2
Hide Column	
Reset Columns	
Save layout	
Load Layout	
Set Font	
Include Follow Cars	
Exclude empty PITLANE stops	
Delete Stint	
Edit Stint	
Insert Stint	

- Refresh – (F5) Refresh the data in the report.
- Print (Ctrl+P) – Print the report.
- Save CSV – (Ctrl+S) Save the report to a csv file.
- Copy Image to Clipboard – (Shift+Ctrl+S) Copy image to clipboard.
- Copy To Clipboard – (Ctrl+C) Copy the report to the clipboard for use in another program.
- Close – (Shift+F2) Close the report.
- Hide Column – Hide the selected column.
- Reset Columns – Unhide hidden columns.
- Save Layout – Save the current layout.
- Load Layout – Load a saved layout.
- Set Font – Set the font for the report.
- Include Follow Cars – Include the other cars you are following.
- Exclude empty PITLANE Stops – Exclude short or erroneous pit stops.
- Delete Stint – Delete a stint.
- Edit Stint – Edit a stint.
- Insert Stint – Insert a stint.

Driver Performance Report (Ctrl+F4)

P	Car	Driver	Class	Rating	Laps	GL	FastTime	Top 3	Top 10
1	10	Ricky Taylor	P		82	71	1:36.909	1:37.134	1:37.387
2	10	Jeff Gordon	P		69	67	1:37.643	1:37.728	1:38.118
3	10	Max Angelelli	P		70	57			
4	10	Jordan Taylor	P		49	41			
5	11	Mirko Bortolotti	GTD		27	24			
6	11	Rolf Ineichen	GTD		109	98			
7	11	Christian Engelhart	GTD		78	61			
8	11	Ezequiel Perez Compagno	GTD		40	33			
9	13	Neel Jani	P		60	55			
10	13	Sebastien Buemi	P		88	77			
11	13	Stephane Sarrazin	P		86	74			
12	13	Nick Heidfeld	P		25	19			
13	14	Scott Pruett	GTD		53	50			
14	15	Austin Cindric	GTD		86	78			
15	15	Robert Alon	GTD		61	50			
16	15	Jack Hawksworth	GTD		76	65			
17	15	Dominik Farnbacher	GTD		30	23			
18	16	Jeroen Mul	GTD		5	4			
19	16	Corey Lewis	GTD		43	33			
20	16	Brett Sandberg	GTD		32	32			
21	18	Emmanuel Anassis	GTD		86	76			
22	18	Zach Claman	GTD		42	36			
23	18	Brandon Gdovic	GTD		54	43			
24	18	Anthony Massari	GTD		67	53			
25	19	Bill Auberlen	GTLM		77	67	1:44.247	1:44.494	1:44.670
26	19	Bruno Spengler	GTLM		52	47	1:44.690	1:44.880	1:45.149
27	19	Alexander Sims	GTLM		60	49	1:44.556	1:44.611	1:44.734
28	19	Augusto Farfus	GTLM		73	62	1:53.380	1:53.786	1:54.615

Hide Column

Reset Columns

Show All Cars

Driver Ratings ▶

Exclude Other Classes

Classes ▶

Car Color Rows

Set # Laps To Compare

Set Font

Update Car List F6

Refresh F5

Save CSV Ctrl+S

Copy To Clipboard Ctrl+C

Print Ctrl+P

Save layout

Load Layout

Close Ctrl+F4

- Hide Column – Hide the selected column.
- Reset Columns – Unhide hidden columns.
- Show All Cars - Show All Competitors even if a subset is selected.
- Driver Ratings – Show driver ratings (if available).
- Exclude Other Classes – Exclude classes other than the 'Team Car' class.
- Classes – Choose the classes to display.
- Car Color Rows – Shade rows using specified Car color.
- Set # of Laps To Compare - 1st Laps To Compare – Number of top laps to average. First set. 2nd Laps To Compare – Number of top laps to average. Second Set.
- Set Font – Set the font for the report.

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- Update Car List – (F6) Update the list of cars to display in the report.
- Refresh – (F5) Refresh the data in the report.
- Save CSV – (Ctrl+S) Save the report to a csv file.
- Copy to Clipboard – (Ctrl+C) Copy the report to the clipboard for use in another program.
- Print – (Ctrl+P) Print the report.
- Save Layout – Save the current layout.
- Load Layout – Load a saved layout.
- Close – (Ctrl+F4) Close the window.

NOTE: Click on any field title to sort by that field.

Pit lane Monitor (Alt+F9)

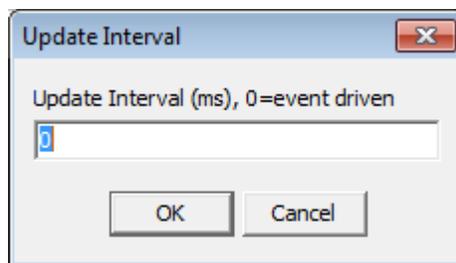
This report shows the time when each car crosses a scoring line (Pit-In, Pit S/F, Pit-Out) in the Pits.

#	Nr	Driver	Gap	Lap	Line	Elapsed	P	CLS	PitIn	PitOut	CountDown
1	24	John Edwards	6.275	16	PB	1:17:18.751	34	11 GT	1:17:18.751	3:13:51	-3:13:51
2	59	Harald Proczyk	198.984	62	PB	2:07:10.711	52	25 GTD	2:07:10.711	2:23:59	-2:23:59
3	8	John Falb	3.979	106	PB	3:34:13.721	47	5 PC	3:34:13.721	56:56	-56:56
4	51	Maurizio Mediani	103.386	106	PB	4:13:03.475	48	22 GTD	4:13:03.475	18:07	-18:07
5	SC1		127.973	1	P1	3:40:50.401	0	0 Safety	3:40:52.506	50:37	-50:37
6	29	Jules Gounon	41.979	137	P1	4:29:55.315	25	2 GTD	4:29:41.419	1:29	-1:29
7	93	Katherine Legge	4.131	137	P1	4:30:26.812	26				
8	10	Max Angelelli	0.308	147	T2	4:31:03.970	1				
9	31	Eric Curran	1.616	147	T2	4:31:06.730	2				
10	5	Filipe Albuquerque	2.187	146	T9	4:31:10.590	3				
11	90	Rene Rast	1.753	145	T2	4:30:57.264	4				
12	81	Loic Duval	3.534	144	T6	4:31:07.440	5				
13	22	Johannes van Overbeek	6.709	144	T3	4:31:05.176	6				
14	2	Scott Sharp	1.002	143	T5	4:31:07.270	7				
15	85	Chris Miller	10.196	143	T2	4:30:52.235	8				
16	67	Ryan Briscoe	1.371	142	T9	4:31:06.866	9				
17	66	Dirk Mueller	69.045	142	P2	4:30:50.209	10				
18	55	Spencer Pigot	0.712	142	T3	4:30:58.467	11				
19	3	Antonio Garcia	8.291	142	P2	4:30:58.500	12				
20	38	Nicholas Boulle	0.876	142	T2	4:30:58.140	13				
21	4	Marcel Fassler	5.522	142	T2	4:31:03.662	14				
22	68	Billy Johnson	1.145	142	T1	4:31:09.877	16				
23	69	Harry Tinncknell	-0.007	142	T1	4:31:09.985	17				
24	69	Harry Tinncknell	-0.007	142	T1	4:31:09.985	17				
25	19	Alexander Sims	2.973	141	TA	4:31:06.458	19				
26	911	Frederic Makowiecki	3.140	140	T3	4:30:55.671	20				
27	88	James Dayson	3.277	139	T7	4:31:08.143	21				
28	20	Chapman Ducote	0.867	139	T1	4:31:03.415	22				
29	70	Tom Long	0.694	138	T1	4:31:07.952	23				
30	54	Nic Jonsson	0.674	137	T8	4:31:06.298	24				
31	96	Maxime Martin	5.753	137	T1	4:31:01.960	27				
32	63	Sam Bird	0.588	137	T1	4:31:02.548	28				
33	50	Jane Van Gisbergen	2.380	137	T1	4:31:05.795	29				
34	33	Jeroen Bleekemolen	0.214	137	T1	4:31:08.732	30				
35	57	Lawson Aschenbach	0.115	137	T1	4:31:09.992	31				
36	57	Lawson Aschenbach	0.115	137	T1	4:31:09.992	31				

- Undo (Ctrl+Z) – Undo the previous action.
- Pause – (P) - Pauses the updating of the Running Order window, Can be used to Freeze the field when a Yellow is displayed.
- Show Details – (D) – this shows the timing line and time information, as shown in the right of the two figures in in the popup description above.

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- Driver Name (N) – Display the driver name'.
- Shaded Rows – Shades even numbered rows.
- Hide Inactive – Hide inactive cars. Hide Inactive option does not remove the car from the results or analysis, just from the track map and running order. The car's status will be set to '(Active)' to differentiate it from 'Active'. The will still be visible in the session results table and all of the reports.
- Sort By Pit In Time - Sort by time at pit in.
- Exclude Other Classes –(X) Exclude classes other than the 'Team Car' class.
- Classes – Allows the user to select the classes to display.
- Show All Cars – Display pit stops for all cars.
- Font – changes the font of the report.
- Refresh Rate – changes the refresh rate of the popup. By default, the report is updated based on the occurrence of an event (timing line activity).



- Save CSV – (Ctrl+S) – creates a .csv file for the data contained in the report for use with other programs
- Copy to Clipboard – (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Copy Image to Clipboard – (Shift+Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Print – (Ctrl+P) – opens print window to print report
- Close – (F9) – closes the window. The window can also be closed via the "X" in the upper right corner.
- Refresh – (F5) – refreshes the data in the report to reflect changes in the received data.
- Reset Columns - Reset the columns.
- Minimum Pit Stop Time - Set the minimum pit stop time
- PitBox To Pit Out Time -

Flag Times (Ctrl+F3)

- Displays the times the various flags were displayed.

The screenshot shows a window titled "Flag Times" with a table of race data. A context menu is open over the table, listing various actions and their keyboard shortcuts.

IDX	SessionCode	TrackStatus	TOD	ElapsedTime	Leader	LeaderLap	GreenTime	GreenLaps	YellowTime	YellowLaps
1		Green	12/30/1899	-1		0	1	0	0	0
2		Yellow	12/30/1899	0		0	1	0	3:18	0
3		Green	1/27/2017 12:14:46 PM	3:17		0				
4		Yellow	1/27/2017 12:54:49 PM	40:02	15	20				
5		Green	1/27/2017 1:06:56 PM	52:09	99	23				
6		Yellow	1/27/2017 1:34:54 PM	1:20:07	15	38				
7		Green	1/27/2017 1:48:05 PM	1:33:18	12	42				
8		Yellow	1/27/2017 2:46:29 PM	2:31:42	12	71				
9		Green	1/27/2017 3:08:06 PM	2:53:19	69	76				
10		Yellow	1/27/2017 3:24:35 PM	3:09:48	77	85				
11		Green	1/27/2017 3:45:33 PM	3:30:46	15	90				
12		Yellow	1/27/2017 4:03:31 PM	3:48:44	12	100				
13		Green	1/27/2017 4:10:49 PM	3:56:02	12	101				
14		Checkered	1/27/2017 4:14:49 PM	4:00:02	12	104				

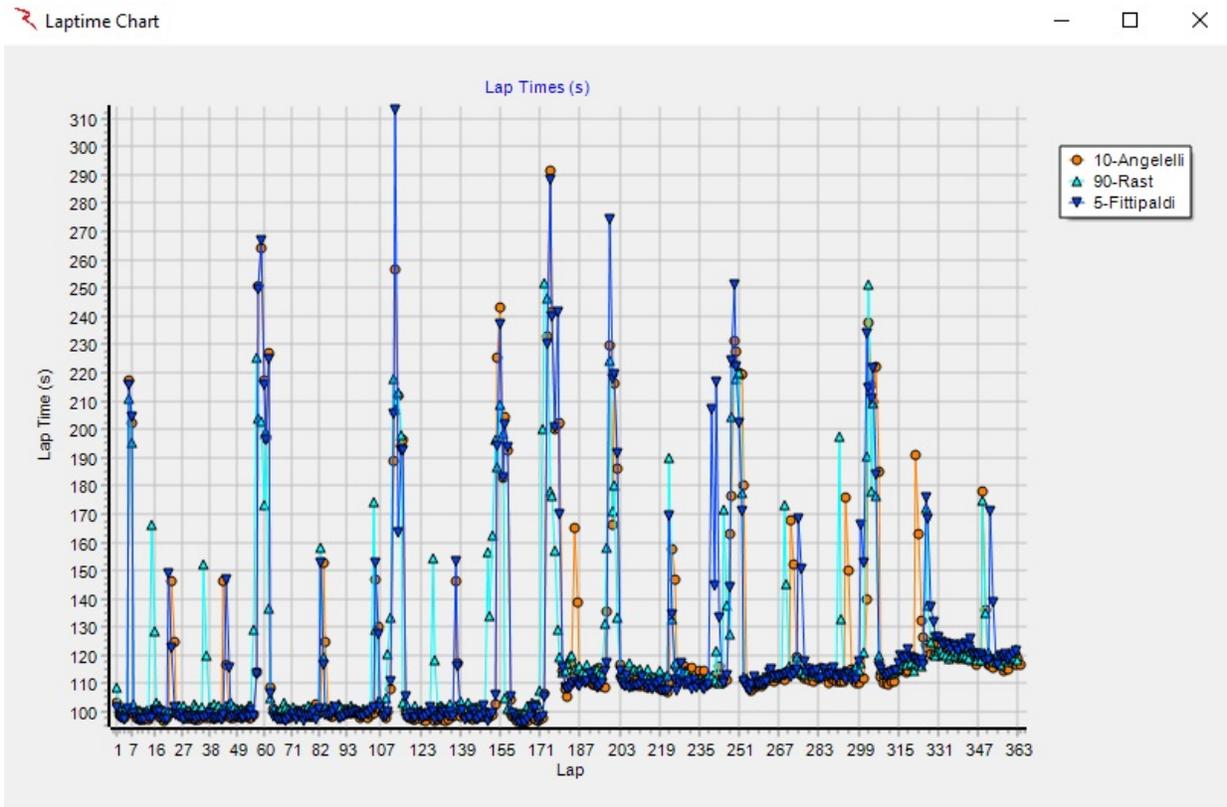
The context menu includes the following items:

- Refresh (F5)
- Print (Ctrl+P)
- Save CSV (Ctrl+S)
- Copy To Clipboard (Ctrl+C)
- Copy Image To Clipboard (Shift+Ctrl+C)
- Close (Shift+F2)
- Hide Column
- Reset Columns
- Save layout
- Load Layout
- Set Font

- Refresh – (F5) – refreshes the data
- Print – (Ctrl+P) – opens print window to print report
- Save CSV – (Ctrl+S) – creates a .csv file for the data contained in the report for use with other programs
- Copy to Clipboard – (Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Copy Image to Clipboard – (Shift+Ctrl+C) – copy the data contained in the report to the clipboard for direct pasting into other programs.
- Close – (Shift+F2) Close the window.
- Hide Column – Hide the selected column.
- Reset Columns – Unhide hidden columns.
- Save Layout – Save the current layout.
- Load Layout – Load a saved layout.
- Set Font – sets the font and font size for the table.

Add Graph (Shift+Ctrl+F3)

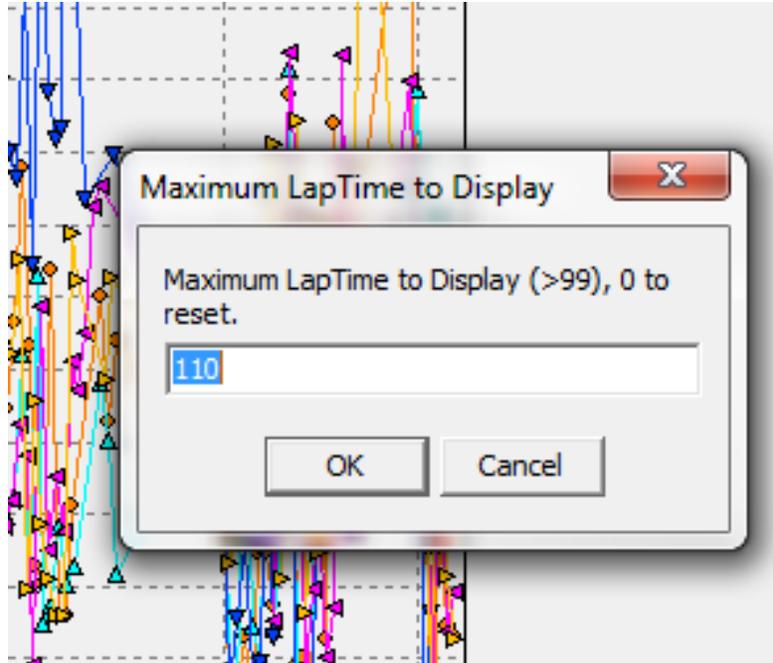
- Laptime Graph – (Shift+Ctrl+F3) – shows the lap times in graphical format for all/selected competitors against laps or time of day. Also contains the Gap analysis graph for race scenarios.



In its simplest format, this graph displays the lap times for the user to be able to gage the performance of the competitors graphically in real time. For P&Q sessions, this means versus time of day or lap, for races this means either against the time of day, lap, or a gap analysis.

When the graph is first selected, no information will typically be displayed. If by chance the user preselected cars by clicking in the "CK" column of the session results display, these cars will show up in the graph. To select all cars, either 'select' all cars in the "CK" column of the session results display or right click on the graph and enable the 'Select All Cars' option. Selected entries can only be selected in the "CK" column. Use the "Clear All Cars" right click option to clear all cars before selecting entries or simply deselect unwanted entries after selecting all cars.

The range may not be set properly because it will likely make the maximum for the y-axis equal to the longest lap, pit time included (autoscale). So for P&Q the scale will be very large. Simply click the Y- axis, to bring up the quick prompt for the maximum lap time/speed to display. Input the appropriate value, the scaling will change accordingly based on the user input and fastest lap time/speed.



The graph can be changed from the time of day to lap or gap analysis scaling on the x-axis and is quite useful at this stage.

The colors of the competitor data series are randomly assigned by the software unless the car colors have already been set (Ctrl+left click on competitor number in the Session Results window).

In order to access the more sophisticated features of the report, an additional menu is available via right click and even greater control is available by left clicking on the legend of the plot.

Options available from right clicking on the Laptime Analysis graph are listed below.

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The screenshot displays the RaceTools interface. At the top, a red bar shows 'Pit 24,59,51 [48 cars on track]'. Below this is a track map with various colored lines and markers. A 'Laptime Chart' is shown below the track map, plotting 'Lap Time (s)' on the y-axis (100 to 300) against 'Lap' on the x-axis (1 to 300). The chart shows multiple data series for different cars, with some points highlighted in yellow. Below the chart is a table of driver performance data:

86	Oswaldo Negri Jr.	23:46.183	23.3 g	387 (9)	350	1:36
29	Jeffrey Schmidt	22:48.887	19.9 g	383 (11)	350	1:40
11	Mirko Bortolotti	21:38.952	6.2 g	365 (11)	330	1:31
57	Lawson Aschenbach	20:16.091	16.4 g	379 (11)	343	1:34
63	Christina Nielsen	19:48.740	18.2 g	381 (11)	345	1:36
93	Mark Wilkins	20:06.700	23.7 g	388 (9)	351	1:21
50	Shane Van Gisbergen	23:03.747	21.3 g	385 (10)	351	1:28
28	Daniel Morad	22:08.376	9.5 g	369 (12)	335	1:35
48	Brian Sellers	20:27.552	21.4 g	391 (11)	349	1:29

At the bottom of the interface, there are status messages: '41 - YellowFlag at: 12:46:48 (9:42 G time) LAP 375', '00 - GreenFlag at: 12:37:07 (18:53 Y time) LAP 370', and '18 - YellowFlag at: 12:18:15 (2:01:03 G time) LAP 366'. On the right side, a settings menu is open, showing options like 'Laptime Analysis', 'Gap Analysis', 'Lap Status', and 'Copy Data to Clipboard'.

- Laptime Analysis – this sets the graph to be the lap time analysis. With Laptime Analysis, the performance index is plotted on the graph vs time of day or lap number.
- Gap Analysis – this sets the graph to be the gap analysis. With Gap Analysis, the gap on track relative to the selected baseline is graphed vs lap number. Note that the right click menu will change from that explained here when this option is selected.
- Gap On Track Analysis –
- Lap Analysis (Accumulative) –

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- Lap Analysis (Section) – Lap Analysis by section.
- Section Analysis – Display a specific section analysis.
- Weather – Display weather information if available.
- Graph Speed – this changes the performance index to lap speed for the graph.
- When this is selected, Y-axis scaling may need to be changed.
- vs Time Of Day – changes X-axis scaling from lap based to time of day.
- vs Elapsed Time – changes X-axis scaling from lap based to elapsed time.
- Exclude Tow – removes laps determined to be 'tow' laps from the plot.
- Sort By LapTimes – sorts the laps by each competitor from fastest to slowest. Y-axis scaling may need to be changed.
- Max Laps – sets the max number of laps to display for each competitor. Deselect the option to remove the filter.
- Lock Scale – Lock the scale of the chart.
- Clear All Cars – removes all selected cars from the plot.
- Select All Cars – adds all cars in the session to the plot.
- My Class () – Displays info on the cars in the 'Team Car' class.
- Synchronize Car List
- Yellow Laps – formats the graph to color the data points and connecting lines yellow for laps flagged as yellow.
- Pit Stops – formats the graph to color the data points and connecting lines red for in and out laps of pit stops.
- Lap Status – formats the graph to color the entire column yellow for a yellow lap when lap number is the x-axis parameter.
- Driver Name – Displays the Driver Name.
- Make – Displays the make.
- Include Out Of Range - Displays the Out of range times.

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- Gap At Each Line - Displays the gap at each timeline.
- Line Width – sets the line width that connects the data points in the plot.
- Point Size – changes the point size for the data points on the graph.
- [Chart Editor](#) – Allows the user to format the graph, extract data, print, etc. See the appendix for an explanation of the options.
- Set Min/Max – Set the Maximum and Minimum lap times for the chart to display.
- Print – opens print window to print report.
- Save Settings – Save the Chart settings to a file.
- Load Settings – Load saved chart settings from a file.
- Copy Data To Clipboard – (Ctrl+C) Copy the data in the chart to the clipboard for use in another program.
- Copy Image To Clipboard – (Shift+Ctrl+C) Copy the data in the chart to the clipboard for use in another program.
- Save CSV – Save the data in the graph to a .csv file for further analysis with another program.
- Edit
- Test

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Gap Analysis is an available option in the list above. This feature will change the analysis mode for the report to a gap on track comparison for strategic purposes. When the graph is changed to Gap Analysis mode, the options available in the right click menu change, as shown below.

The screenshot displays the RaceTools T&S Analysis Module interface for the Daytona Race (RMON). The top menu includes 'PopUps', 'Layout', 'Options', 'Replay (229041/419374 - 55%)', 'Help', and 'Minimize'. A status bar indicates 'rs in Pit: 24,59,51 [48 cars on track]'. The track map shows various sectors (S01-S08) and pit stops (P01-P03). The 'Gap Analysis' section is active, showing a graph titled 'Gap Analysis vs. Lap Leader' with 'Gap' on the y-axis (0-280) and 'Lap' on the x-axis (1-300). The graph plots data for several cars, with vertical yellow lines indicating pit stops. A right-click context menu is open, listing various analysis options. 'Gap Analysis' is selected, and other options include 'Laptime Analysis', 'Gap On Track Analysis', 'Lap Analysis (Accumulative)', 'Lap Analysis (Section)', 'Section Analysis', 'Weather', 'vs Time Of Day', 'vs ElapsedTime', 'Lock Scale', 'vs Lap Leader', 'vs Current Leader', 'vs Car #0', 'vs Average Lap', 'Clear All Cars', 'Select All Cars', 'My Class (P)', 'Synchronize Car List', 'Add Virtual Car', 'Lap behind leader', 'Ambient Temp', 'Track Temp', 'Barometric Pressure', 'Humidity', 'Wind Speed', 'Wind Direction', 'Leader On Top', 'Yellow Laps', 'Pit Stops', 'Lap Status', 'Driver Name', 'Make', 'Include Out Of Range', 'Gap At Each Line', 'Line Width', 'Point Size', 'Chart Editor', 'Set Min/Max', 'Print', and 'Save Settings'.

Car #	Driver	Time	g	352 (12)	318	1:25
24	Shane van Gisbergen	21:35.671	3.3 g	352 (12)	318	1:25
25	Katherine Legge	18:45.438	5.7 g	355 (11)	318	1:33
26	Mirko Bortolotti	21:38.952	12.0 g	363 (12)	330	1:31
27	Christina Nielsen	19:48.740	24.0 g	378 (11)	345	1:38
28	Lawson Aschenbach	20:16.091	22.2 g	376 (12)	343	1:34
29	Daniel Morad	22:08.376	15.3 g	366 (12)	335	1:38

- **Laptime Analysis** – this sets the graph to be the lap time analysis. With Laptime Analysis, the performance index is plotted on the graph vs time of day or lap number.
- **Gap Analysis** – this sets the graph to be the gap analysis. With Gap Analysis, the gap on track relative to the selected baseline is graphed vs lap number. Note that the right click menu will change from that explained here when this option is selected.
- **Gap On Track Analysis** –

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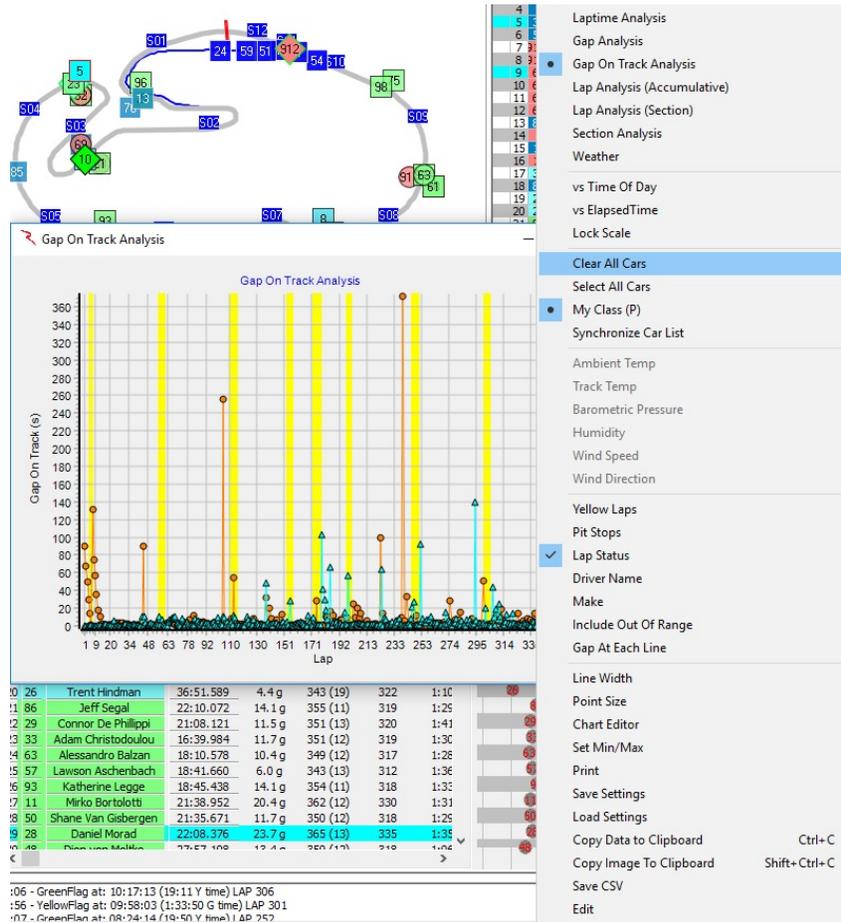
- Lap Analysis (Accumulative) –
- Lap Analysis (Section) – Lap Analysis by section.
- Section Analysis – Display a specific section analysis.
- vs Time Of Day – Displays the gap in time of day.
- vs Elapsed Time – Displays the gap in Elapsed time.
- Max Laps
- Lock Scale – Lock the scale of the chart.
- Vs Lap Leader – Displays the gap to the lap leader.
- vs Current Leader – Displays the gap to the Current Leader.
- vs Car # – Displays the gap to a Specific Car.
- vs Average Lap – Displays the gap to and Average Lap.
- Clear All Cars – Clear all cars from the graph.
- Select All Cars – Select All cars for display on the graph.
- Select My Class – Display the cars in the 'Team Car' class.
- Synchronize Car List
- Add Virtual Car –
- Lap Behind Leader – Displays Laps down status.
- Leader On Top – Inverts the graph to show the leader on top.
- Yellow Laps – Highlight the cars 'Yellow' flag laps.
- Pit Stops – Highlight the cars 'Pit Stops' in the chart.
- Lap Status – Displays the 'Track Condition' on the chart.
- Driver Name – Display the 'Driver Name' in the legend.
- Make – Display the 'Make' in the legend.
- Include Out Of Range – Include Out Of Range cars.
- Gap At Each Line – Display gap at each timeline.
- Line Width – Adjust line width on the graph.
- Point Size – Adjust the point size for the cars in the graph.

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- [Chart Editor](#) – Opens the Chart Editor window. See Appendix for description.
- Set Min/Max – Set Minimum and Maximum gaps to display in the graph.
- Print – Opens the Print dialog window for printing.
- Save Settings – Save settings to a file.
- Load Settings – Load settings from a file.
- Copy Data To Clipboard – (Ctrl+C) Copy data to the Clipboard for insertion in another program.
- Copy Image To Clipboard – (Shift+Ctrl+C) Copy image to the Clipboard for insertion in another program.
- Save CSV – Save data to a csv file for use in another program.
- Edit
- Test
- Stay On Top – Keep graph on top of other windows.
- Hide Borders – Hide borders in the graph

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Another available graph is the Gap On Track Analysis. The list of right click options is shown below.



- Laptime Analysis – this sets the graph to be the lap time analysis. With Laptime Analysis, the performance index is plotted on the graph vs time of day or lap number.
- Gap Analysis – this sets the graph to be the gap analysis. With Gap Analysis, the gap on track relative to the selected baseline is graphed vs lap number. Note that the right click menu will change from that explained here when this option is selected.
- Gap On Track Analysis –
- Lap Analysis (Accumulative) –
- Lap Analysis (Section) – Lap Analysis by section.
- Section Analysis – Display a specific section analysis.
- vs Time Of Day – Displays the gap in time of day.

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- vs Elapsed Time – Displays the gap in Elapsed time.
- Max Laps
- Lock Scale – Lock the scale of the chart.
- Clear All Cars – Clear all cars from the graph.
- Select All Cars – Select All cars for display on the graph.
- My Class – Display the cars in the 'Team Car' class.
- Yellow Laps – Highlight the cars 'Yellow' flag laps.
- Pit Stops – Highlight the cars 'Pit Stops' in the chart.
- Lap Status – Displays the 'Track Condition' on the chart.
- Driver Name – Display the 'Driver Name' in the legend.
- Make
- Include Out Of Range – Include Out Of Range cars.
- Gap At Each Line
- Line Width – Adjust line width on the graph.
- Point Size – Adjust the point size for the cars in the graph.
- [Chart Editor](#) – Opens the Chart Editor window. See Appendix for description.
- Set Min/Max – Set Minimum and Maximum gaps to display in the graph.
- Print – Opens the Print dialog window for printing.
- Save Settings – Save settings to a file.
- Load Settings – Load settings from a file.
- Copy Data To Clipboard – (Ctrl+C) Copy data to the Clipboard for insertion in another program.
- Copy Image To Clipboard – (Shift+Ctrl+C) Copy image to the Clipboard for insertion in another program.
- Save CSV – Save data to a csv file for use in another program.
- Stay On Top – Keep chart on top of other windows.
- Hide Borders

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Another available graph is the Lap Analysis (Accumulative). The list of right click options is shown below.

The screenshot displays the RaceTools interface. At the top, a track map shows a yellow race line with various sections labeled (e.g., 804, 801, 24, 59, 51, 1.3, 51C, 29, 5, 43, 50C). Below the track map is the 'Lap Analysis' window. The main graph is titled 'Lap Analysis - Lap Diff at line vs. Distance into Lap P1 Best Lap vs. Best Lap'. The y-axis is 'Delta Time to timeline (s)' ranging from 0 to -5.5. The x-axis is 'Lap Distance (Section/TimeLine)' with markers T1 through TE. Two data series are plotted: a blue line with triangle markers and an orange line with circle markers. Below the graph is a table of driver data:

Driver	Time	Delta	Gap	Order	Order	
13	Sebastian Buemi	45:19.876	6.3 g	387 (15)	359	1:3
85	Mathias Beche	30:40.038	18.0 g	402 (12)	375	1:1
19	Alexander Sims	24:30.279	27.6 g	414 (8)	377	1:1
38	Nicholas Boule	22:55.077	6.3 g	385 (15)	357	1:1
81	Nicolas Lapierre	48:29.426	15.1 g	396 (15)	373	2:0
20	Buddy Rice	24:44.136	15.1 g	393 (15)	370	1:2
26	Trent Hindman	39:26.135	15.1 g	391 (15)	368	1:2
29	Jeffrey Schmidt	22:48.887	15.0 g	388 (10)	350	1:4
33	Mario Farnbacher	19:28.625	24.5 g	400 (10)	366	1:0
57	Robin Liddell	21:36.930	23.5 g	398 (10)	366	1:2
50	Shane Van Gisbergen	24:10.364	24.5 g	400 (10)	366	1:0
93	Mark Wilkins	21:19.736	26.9 g	403 (9)	366	1:1
11	Ezequiel Perez Compagno	23:19.791	23.8 g	399 (10)	366	1:4
63	Christina Nielsen	22:32.421	24.0 g	399 (10)	366	2:4
86	Oswaldo Negri Jr.	27:05.294	26.9 g	403 (9)	366	3:1
28	Michael de Quesada	23:34.290	22.8 g	397 (10)	366	1:2

Below the table, there are status messages: '17:41 - YellowFlag at: 12:46:48 (9:42 G time) LAP 375', '18:00 - GreenFlag at: 12:37:07 (18:53 Y time) LAP 370', and '19:08 - YellowFlag at: 12:18:15 (2:01:03 G time) LAP 366'. To the right of the graph is a context menu with the following options: Lap Analysis, Gap Analysis, Gap On Track Analysis, Lap Analysis (Accumulative), Lap Analysis (Section), Select Base Lap, Select Lap, Section Analysis, Weather, Graph Speed, vs Time Of Day, vs ElapsedTime, Lock Scale, Clear All Cars, Select All Cars, My Class (P), Synchronize Car List, Ambient Temp, Track Temp, Barometric Pressure, Humidity, Wind Speed, Wind Direction, Driver Name, Make, Include Out Of Range, Gap At Each Line, Line Width, Point Size, Chart Editor, Set Min/Max, Print, Save Settings, Load Settings, Copy Data to Clipboard (Ctrl+C), Copy Image To Clipboard (Shift+Ctrl+C), Save CSV, and Edit. The 'Lap Analysis (Accumulative)' option is currently selected.

- Laptime Analysis – this sets the graph to be the lap time analysis. With Laptime Analysis, the performance index is plotted on the graph vs time of day or lap number.
- Gap Analysis – this sets the graph to be the gap analysis. With Gap Analysis, the gap on track relative to the selected baseline is graphed vs lap number. Note that the right click menu will change from that explained here when this option is selected.
- Gap On Track Analysis –
- Lap Analysis (Accumulative) –
- Lap Analysis (Section) – Lap Analysis by section.
- Section Analysis – Display a specific section analysis.

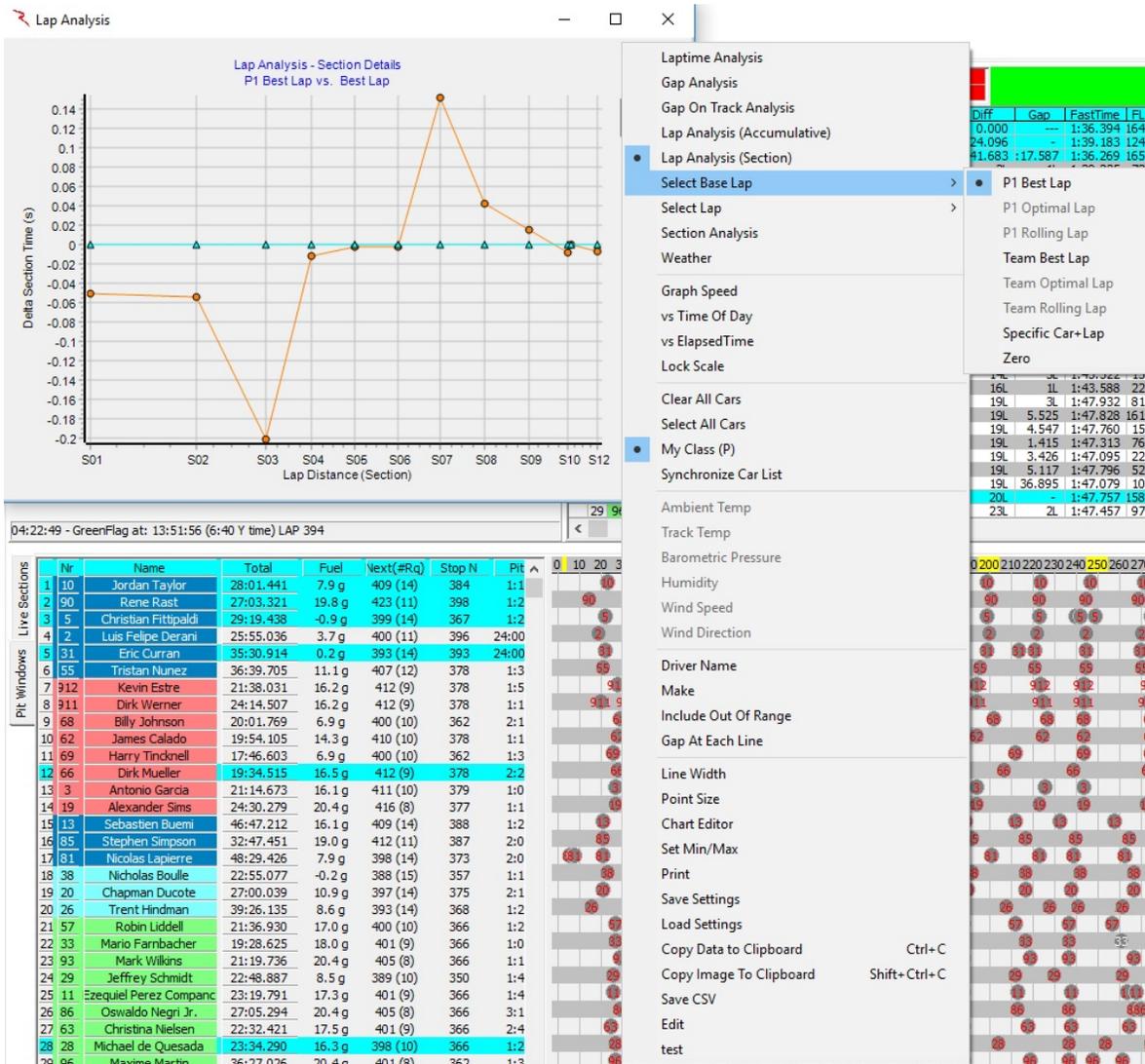
- Select Base Lap
 - P1 Best Lap
 - P1 Optimal Lap
 - P1 Rolling Lap
 - Team Best Lap
 - Team Optimal Lap
 - Team Rolling Lap
 - Specific Car + Lap
 - Zero
- Select Lap
 - Best Lap
 - Optimal Lap
 - Rolling Lap
 - Current Lap
 - Select Lap
- Section Analysis - .
- Graph Speed – Displays the Speed on the chart.
- vs Time Of Day – Displays the gap in time of day.
- vs Elapsed Time – Displays the gap in Elapsed time.
- Lock Scale – Lock the scale of the chart.
- Clear All Cars – Clear all cars from the graph.
- Select All Cars – Select All cars for display on the graph.
- My Class – Display the cars in the 'Team Car' class.
- Driver Name – Display the 'Driver Name' in the legend.
- Include Out Of Range – Include Out Of Range cars.
- Line Width – Adjust line width on the graph.
- Point Size – Adjust the point size for the cars in the graph.
- [Chart Editor](#) – Opens the Chart Editor window. See Appendix for description.

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- Set Min/Max – Set Minimum and Maximum gaps to display in the graph.
- Print – Opens the Print dialog window for printing.
- Save Settings – Save settings to a file.
- Load Settings – Load settings from a file.
- Copy Data To Clipboard – (Ctrl+C) Copy data to the Clipboard for insertion in another program.
- Copy Image To Clipboard – (Shift+Ctrl+C) Copy image to the Clipboard for insertion in another program.
- Save CSV – Save data to a csv file for use in another program.
- Stay On Top – Keep chart on top of other windows.
- Hide Borders

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Another available graph is the Lap Analysis (Section). The list of right click options is shown below.



- Lapttime Analysis – this sets the graph to be the lap time analysis. With Lapttime Analysis, the performance index is plotted on the graph vs time of day or lap number.
- Gap Analysis – this sets the graph to be the gap analysis. With Gap Analysis, the gap on track relative to the selected baseline is graphed vs lap number. Note that the right click menu will change from that explained here when this option is selected.
- Gap On Track Analysis –
- Lap Analysis (Accumulative) –
- Lap Analysis (Section) – Lap Analysis by section.

- Section Analysis – Display a specific section analysis.
- Select Base Lap
 - P1 Best Lap
 - P1 Optimal Lap
 - P1 Rolling Lap
 - Team Best Lap
 - Team Optimal Lap
 - Team Rolling Lap
 - Specific Car + Lap
 - Zero
- Select Lap
 - Best Lap
 - Optimal Lap
 - Rolling Lap
 - Current Lap
 - Select Lap
- Section Analysis - .
- Graph Speed – Displays the Speed on the chart.
- vs Time Of Day – Displays the gap in time of day.
- vs Elapsed Time – Displays the gap in Elapsed time.
- Lock Scale – Lock the scale of the chart.
- Clear All Cars – Clear all cars from the graph.
- Select All Cars – Select All cars for display on the graph.
- My Class – Display the cars in the 'Team Car' class.
- Driver Name – Display the 'Driver Name' in the legend.
- Make
- Include Out Of Range – Include Out Of Range cars.
- Gap At Each Line

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- Line Width – Adjust line width on the graph.
- Point Size – Adjust the point size for the cars in the graph.
- [Chart Editor](#) – Opens the Chart Editor window. See Appendix for description.
- Set Min/Max – Set Minimum and Maximum gaps to display in the graph.
- Print – Opens the Print dialog window for printing.
- Save Settings – Save settings to a file.
- Load Settings – Load settings from a file.
- Copy Data To Clipboard – Copy data to the Clipboard for insertion in another program.
- Copy Image To Clipboard – (Shift+Ctrl+C) Copy image to the Clipboard for insertion in another program.
- Save CSV – Save data to a csv file for use in another program.
- Stay On Top
- Hide Borders

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Another available graph is the Section Analysis. The list of right click options is shown below

The screenshot displays the RaceTools interface. At the top left is a track map with sections labeled S01 through S12. Below it is the 'Section Time Chart' for S06, showing 'Section Time (s)' on the y-axis (6 to 26) and 'Lap' on the x-axis (2 to 395). The chart shows data points for various cars across multiple laps. Below the chart is a table of driver data:

14	13	Sebastien Buemi	46:47.212	8.8 g	412 (14)	388	1:2
15	85	Stephen Simpson	32:47.451	11.7 g	414 (12)	387	2:0
16	81	Nicolas Lapierre	48:29.426	1.3 g	400 (14)	373	2:0
17	38	Kyle Masson	27:04.208	16.9 g	418 (14)	397	1:2
18	20	Chapman Ducote	28:20.621	16.0 g	415 (14)	393	1:2
19	31	Michael Conway	37:12.322	16.9 g	415 (14)	394	24:26
20	33	Mario Farnbacher	20:45.314	25.4 g	422 (9)	389	1:1
21	57	Robin Liddell	22:56.624	24.4 g	421 (9)	389	1:1
22	93	Mark Wilkins	22:39.714	27.8 g	425 (8)	389	1:1
23	11	Ezequiel Perez Compagnon	24:43.217	24.7 g	421 (9)	389	1:2
24	86	Oswaldo Negri Jr.	28:22.688	27.8 g	425 (8)	389	1:1
25	29	Jeffrey Schmidt	26:06.544	24.8 g	421 (9)	390	45
26	28	Michael de Quesada	23:34.290	9.3 g	401 (10)	366	1:2
27	63	Matteo Cressoni	24:06.622	23.1 g	418 (9)	384	1:3
28	26	Trent Hindman	39:26.135	4.7 g	393 (15)	368	1:2
29	99	Wolf Henzler	26:44.721	8.9 g	398 (10)	362	1:3
30	66	Maxime Martin	26:37.036	12.5 g	404 (9)	387	2:0

At the bottom left, there are three lines of text: '04:43:11 - YellowFlag at: 14:12:18 (20:23 G time) LAP 404', '04:22:49 - GreenFlag at: 13:51:56 (6:40 Y time) LAP 394', and '04:16:10 - YellowFlag at: 13:45:17 (4:16 G time) LAP 393'. On the right side, a context menu is open, listing options such as 'Laptime Analysis', 'Gap Analysis', 'Section Analysis', and 'Lap Status'. The 'Section Analysis' option is currently selected.

- Laptime Analysis – this sets the graph to be the lap time analysis. With Laptime Analysis, the performance index is plotted on the graph vs time of day or lap number.
- Gap Analysis – this sets the graph to be the gap analysis. With Gap Analysis, the gap on track relative to the selected baseline is graphed vs lap number. Note that the right click menu will change from that explained here when this option is selected.
- Gap On Track Analysis –
- Lap Analysis (Accumulative) –

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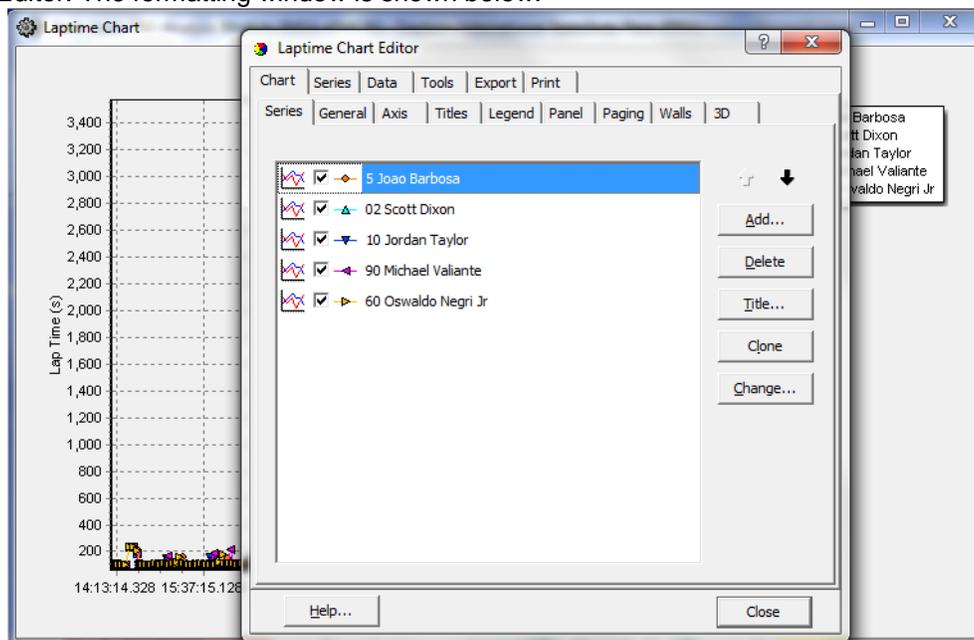
- Lap Analysis (Section) – Lap Analysis by section.
- Section Analysis – Display a specific section analysis.
- Select Section
 - S01 – Section 1
 - S02 – Section 2
 - S03 – Section 3
 - S04 – Section 4
 - S05 – Section 5
 - S06 – Section 6
 - S07 – Section 7
 - S08 – Section 8
 - S09 – Section 9
 - S10 – Section 10
 - S11 – Section 11
 - S12 – Section 12
 - Lap – Section Complete lap
 - PIT – Section pits
 - SPI – Speed Section
 - IL – In-Lap
 - OL – Out-Lap
- Graph Speed – Display speeds on the chart instead of times.
- Exclude Tow – Exclude Tow laps.
- Lock Scale – Lock the scale of the chart.
- Clear All Cars – Clear all cars from the graph.
- Select All Cars – Select All cars for display on the graph.
- My Class – Display the cars in the 'Team Car' class.
- Lap Status – Displays the 'Track Condition' on the chart.
- Driver Name – Display the 'Driver Name' in the legend.
- Make
- Include Out Of Range – Include Out Of Range cars.
- Gap At Each Line
- Line Width – Adjust line width on the graph.
- Point Size – Adjust the point size for the cars in the graph.
- [Chart Editor](#) – Opens the Chart Editor window. See Appendix for description.
- Set Min/Max – Set Minimum and Maximum gaps to display in the graph.

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- Print – Opens the Print dialog window for printing.
- Save Settings – Save settings to a file.
- Load Settings – Load settings from a file.
- Copy Data To Clipboard – Copy data to the Clipboard for insertion in another program.
- Copy Image To Clipboard – (Shift+Ctrl+C) Copy image to the Clipboard for insertion in another program.
- Save CSV – Save data to a csv file for use in another program.
- Stay On Top
- Hide Borders

Note that on all graphs a competitor can be selected by clicking on the data series. This highlights the series for easier recognition. If it is desired to highlight more than one driver, then Ctrl+left click on additional series.

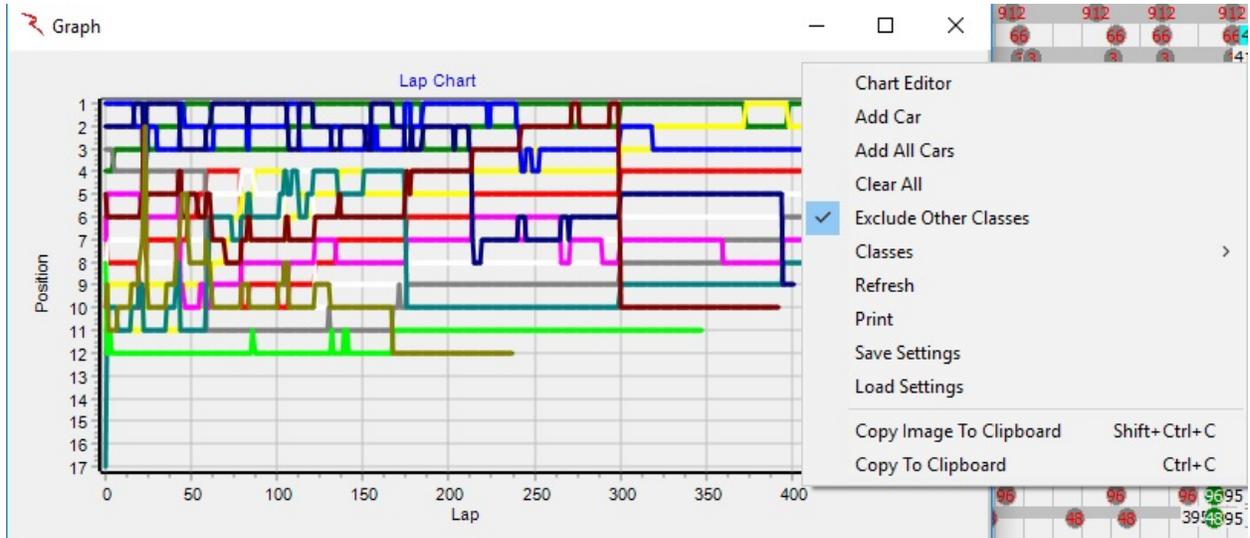
[Chart Editor](#) - There are many options available for the graphs, including formatting, printing, copying data, exporting, and other tools. These are accessed by right clicking on the graph and selecting Chart Editor. The formatting window is shown below.



There are six different categories of options; Chart, Series, Data, Tools, Export, and Print. A quick overview of the categories and submenus is necessary to outline all of the possibilities available. Because of the multitude of options available, this feature tree will be located in the [Appendix](#) of the manual.

Lap Chart Graph (Shift+F7)

- Lap Chart Graph – (Shift+F7) – This chart allows you to create a graph tracking the position of the cars you choose. Right clicking the chart reveals various options for configuring your graph.



- [Chart Editor](#) – opens the same chart editor available in the Laptime Graph. Allows the user to format the graph, extract data, print, etc. See the appendix for an explanation of the options.
- Add Car – allows user to add selected cars to the chart. Input the desired competitors in the form of •9,12,11,6• (comma delimited) or •9 12 11 6• (space delimited).
- Add All Cars – adds all cars completing a lap in the session to the chart.
- Clear All – removes all cars from the chart.
- Exclude Other Classes – Exclude classes other than the 'Team Car' class.
- Classes - Allows the user to select the classes to display.
- Refresh – refreshes the data in the chart to show most recently received results.
- Print – opens the print menu for printing the graph.
- Save Settings – Save settings to a file.
- Load Settings – Load saved settings from a file.
- Copy Image To Clipboard – (Shift+Ctrl+C) Copy image to the Clipboard for insertion in another program.
- Copy To Clipboard – (Ctrl+C) Copy to the Clipboard for insertion in another program.

Add Map (Ctrl+Alt+M)

- Add Map – Add another track map to the window.
- The example below shows the 'Highlight slow cars in section' feature.

A car that takes longer than expected to complete a section will be highlighted with a flashing Black/Red text on Yellow/White background.

The screenshot shows a track map with several cars represented by colored circles and diamonds. A settings menu is open, showing various options. The 'Highlight Slow Cars in Section' option is highlighted with a red box. Below the menu, a data table is visible, showing lap times for various cars.

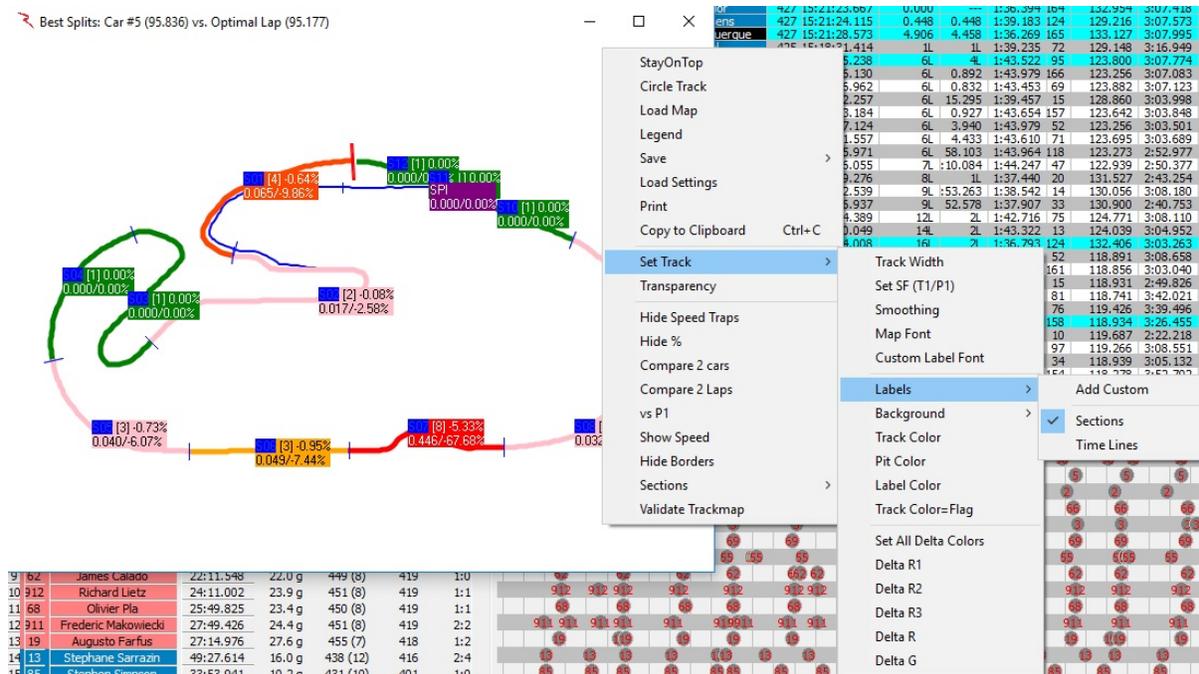
30	40	50	60	70	80	90	100	110	120
32	45	52	65	72	85	92		112	
32	45	52	65	72	85	92		112	
32	45	52	65	72	85	92		112	

250	260	270	280	290	300	310	320	330
252	272	292	312	332				
252	272	292	312	332				
252	272	292	312	332				

- Use the File → Configuration → Track Map tab Setting (Slow Threshold) to fine tune when a car should be highlighted as being slow in section.

Best Splits Map (Shift+F1)

- Best Splits Map – (Shift+F1) – this map shows the best splits and traps of the team car (set at Options -> Set Team Car [X]) versus the best splits of the rest of the entrants (optimal lap). Splits in green reflect the team car being best in that section.
- The Analysis Maps have extra information in the session labels. The first line contains the Section Name, the Section Rank and the Section Delta %. The second line contains the Section Delta and % loss or gain.
- The Section Rank is the rank of each section time compared to the other competitors. The % Loss or Gain is the Section Delta / Lap Delta, which highlights the relative amount of time lost or gained for each section. Note that the Lap Delta is the sum of time lost and gained and that the sum of the deltas equals 100%. This means that if there is a mixture of both time lost and gained in a lap, the percentages are of the lap delta, not the 'time lost' / 'total time lost' or 'time gained' / 'total time gained', but the key is the relative percentages which can highlight which sections your car is losing the most time. To help highlight this further, there are now color codes for the top 3 time lost sections referred to as DeltaR1 (Red), DeltaR2 (Blue), and DeltaR3 (Purple). The other time lost sections are highlighted with the DeltaR (Orange) color. The time gained sections are highlighted with the DeltaG (Green) color.



Each splits/traps information label can be moved by left clicking and on the split/trap label and dragging. The track map can also be rotated in 45 degree steps by double clicking in the window.

See the 'Enhanced Analysis Maps' section of the Appendix for more information.

Many options are available via right click on the popup window.

- StayOnTop – forces the map to stay on top of all other applications running on the computer, even when Race Tools is minimized.

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- Circle Track – loads a circular track to display the data on. Useful if a track map is not available for some reason.
- Load Map – allows user to load the applicable map for the data.
- Save – extends to reveal additional options.
- Image – opens menu to save popup as a bitmap file.
- Settings – allows user to save user defined settings such as fonts, track width, etc.
- Print – opens print window to print report.
- Set Track – extends to reveal additional options.
 - Track Width – opens dialog box to change track width which will be used when the track map is next updated.
 - Set S/F – sets the timing line used as the SF during the session. Typically set within track map, but some circumstances require the timing line to be set differently if timing lines fail or change and an updated track map is not available.
 - Smoothing – allows user to manipulate “smoothness” of track map rendering. Lower number increases the number of points to use.
 - Map Font – sets the font for the section deltas and labels.
 - Custom Label Font – sets the font for custom labels (custom labels are created in the next menu).
 - Labels – extends to reveal additional options.
 - Add Custom – creates custom map labels. Move the custom labels in the undocked map.
 - Sections – shows section labels.
 - Time Lines – shows time line labels.
 - Background – extends to reveal additional options.
 - Color – changes the background color of the map.
 - Image – allows an image to be used as the background for the map.

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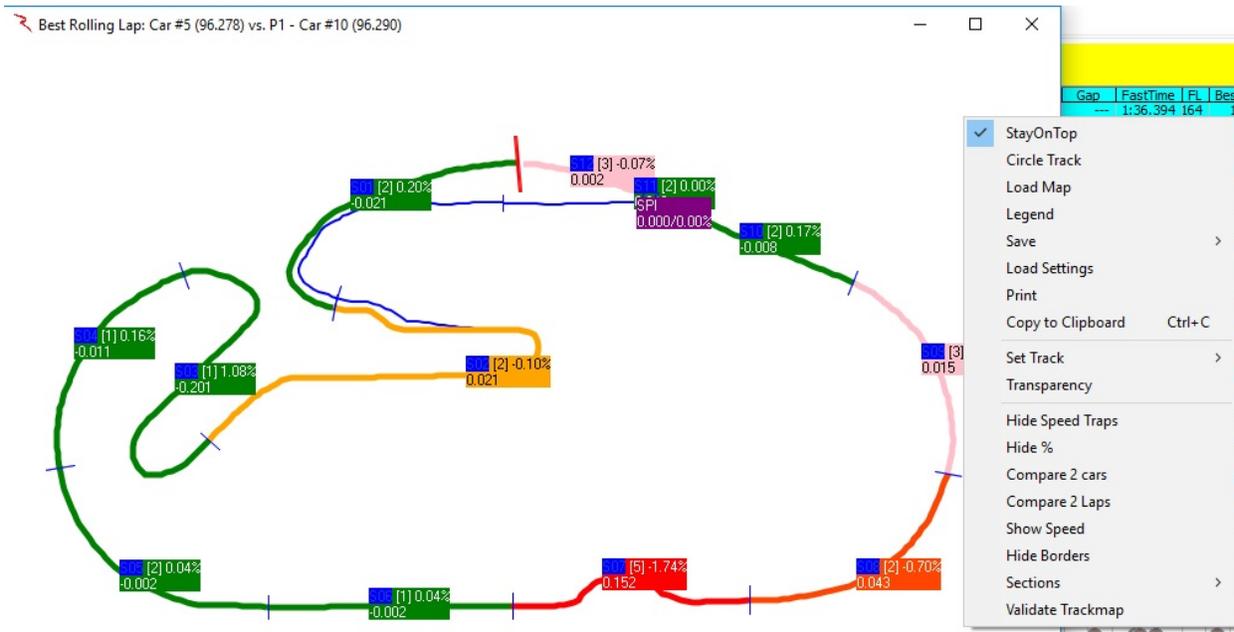
- Clear Image – removes loaded image from background of map.
- Track Color – sets the color of the track rendering (only refreshes if map size is changed or rotated).
- Pit Color – sets the color of the pit lane.
- Label Color – sets the background color of the segment labels on the map.
- Track Color = Flag – changes the track color to reflect the track condition – yellow, green, red.
- Set All Delta Colors – Set all the Delta colors.
- Delta R1 – Set Color for **Delta R1 (default Red)**. (Most Time Lost Section)
- Delta R2 – Set Color for **Delta R2 (default Blue)**. (2nd Most Time Lost Section)
- Delta R3 – Set Color for **Delta R3 (default Purple)**. (3rd Most Time Lost Section)
- Delta R – Set Color for **Delta R (default Orange)**. (Other Time Lost Sections)
- Delta G - Set Color for **Delta G (default Green)**. (Time Gained Sections)
- Transparency – this sets the transparency of the window. Remember that the report can be set to “Stay On Top”, and the transparency will allow the report to be seen as well as the program running behind it. 100% is the default transparency, completely opaque.
- Hide Speed Traps – Hide the Speed Trap Section.
- Hide % – this hides the % performance index for the section deltas (the % is simply the percentage of the selected drivers delta to the fastest split time for that section, can be “+” or “-”).
- Compare 2 Cars – allows the user to compare 2 Cars rather than the “team car” to the optimal lap. The user will be prompted to input the two car numbers to compare. To reset the compare to the default optimal lap comparison, simply select the option again to uncheck it.
- Compare 2 Laps – allows the user to compare 2 laps of selected cars rather than the “team car” to the Best Lap, Rolling Lap, or Optimal Lap. The user will be prompted to input the two car numbers and select Best Lap, Rolling Lap, or Optimal Lap to compare. To reset the compare to the default optimal lap comparison, simply select the option again to uncheck it.

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- vs P1 – Compare to P1.
- Show Speed – changes the performance index to speed. This is most useful for ovals.
- Hide Borders – hides the borders of the window to decrease the footprint.
- Sections – Standard or Custom.
 - Standard – Display Standard sections.
 - Custom – Display Custom sections (if defined).
- Validate Track Map - As a special note if the track map is messed up, you can force a redraw by CTRL+Left Clicking the map to force a refresh.

Best Rolling Lap Map (Shift+Ctrl+F1)

- Best Rolling Lap Map – (Shift+Ctrl+F1) – this track map compares the team's best rolling lap (the best complete lap, using any time line as the start/finish line of the lap. This is useful to find the best lap completed, regardless of the location of the S/F line, with P1's best rolling lap, if the best rolling lap data is available.



See the ['Enhanced Analysis Maps'](#) section of the Appendix for more information.

- StayOnTop – forces the map to stay on top of all other applications running on the computer, even when Race Tools is minimized.
- Circle Track – loads a circular track to display the data on. Useful if a track map is not available for some reason.
- Load Map – allows user to load the applicable map for the data.
- Legend
- Save – extends to reveal additional options.
 - Image – opens menu to save popup as a bitmap file.
 - Settings – allows user to save user defined settings such as fonts, track width, etc.
- Print – opens print window to print report.
- Set Track – extends to reveal additional options.

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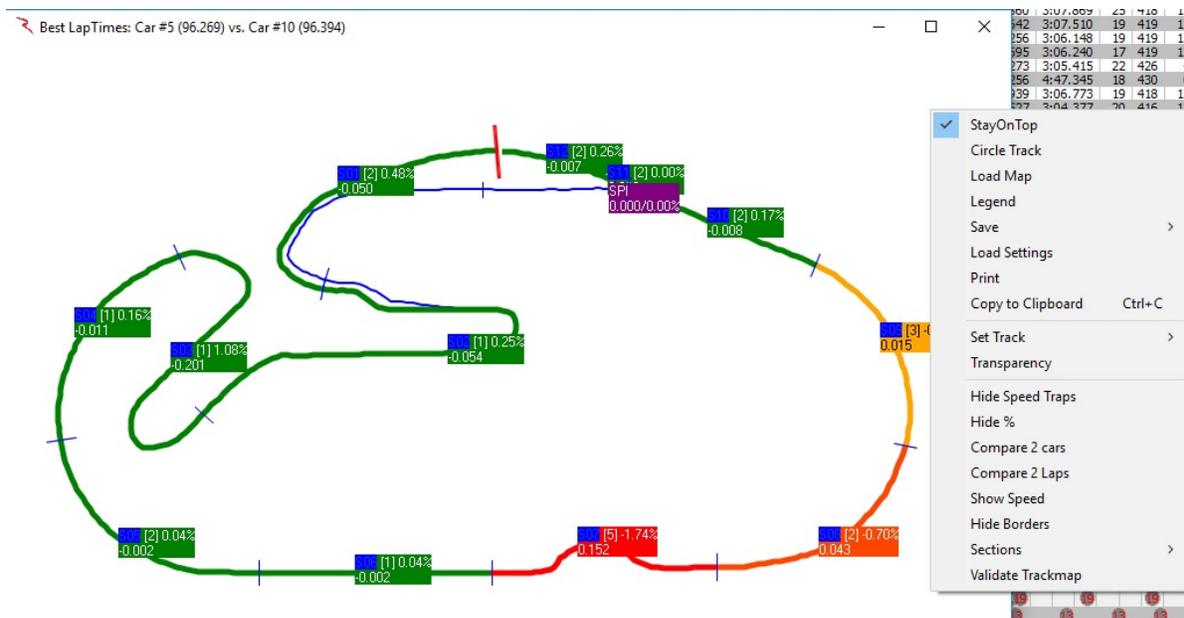
- Track Width – opens dialog box to change track width which will be used when the track map is next updated.
- Set S/F – sets the timing line used as the SF during the session. Typically set within track map, but some circumstances require the timing line to be set differently if timing lines fail or change and an updated track map is not available.
- Smoothing – allows user to manipulate “smoothness” of track map rendering. Lower number increases the number of points to use.
- Map Font – sets the font for the section deltas and labels.
- Custom Label Font – sets the font for custom labels (custom labels are created in the next menu).
- Labels – extends to reveal additional options.
 - Add Custom – creates custom map labels. Move the custom labels in the undocked map.
 - Sections – shows section labels.
 - Time Lines – shows time line labels.
- Background – extends to reveal additional options.
 - Color – changes the background color of the map.
 - Image – allows an image to be used as the background for the map.
 - Clear Image – removes loaded image from background of map.
- Track Color – sets the color of the track rendering (only refreshes if map size is changed or rotated).
- Pit Color – sets the color of the pit lane.
- Label Color – sets the background color of the segment labels on the map.
- Track Color = Flag – changes the track color to reflect the track condition – yellow, green, red.
- Set All Delta Colors – Set all the Delta colors.
- Delta R1 – Set Color for **Delta R1 (default Red)**. (Most Time Lost Section)

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- Delta R2 – Set Color for **Delta R2 (default Blue)**. (2nd Most Time Lost Section)
- Delta R3 – Set Color for **Delta R3 (default Purple)**. (3rd Most Time Lost Section)
- Delta R – Set Color for **Delta R (default Orange)**. (Other Time Lost Sections)
- Delta G - Set Color for **Delta G (default Green)**. (Time Gained Sections)
- Transparency – this sets the transparency of the window. Remember that the report can be set to “Stay On Top”, and the transparency will allow the report to be seen as well as the program running behind it. 100% is the default transparency, completely opaque.
- Hide Speed Traps – Hide the Speed Trap Section.
- Hide % – this hides the % performance index for the section deltas (the % is simply the percentage of the selected drivers delta to the fastest split time for that section, can be “+” or “-”).
- Compare 2 Cars – allows the user to compare 2 Cars rather than the “team car” to the optimal lap. The user will be prompted to input the two car numbers to compare. To reset the compare to the default optimal lap comparison, simply select the option again to uncheck it.
- Compare 2 Laps – allows the user to compare 2 laps of selected cars rather than the “team car” to the Best Lap, Rolling Lap, or Optimal Lap. The user will be prompted to input the two car numbers and select Best Lap, Rolling Lap, or Optimal Lap to compare. To reset the compare to the default optimal lap comparison, simply select the option again to uncheck it.
- Show Speed – changes the performance index to speed. This is most useful for ovals.
- Hide Borders – hides the borders of the window to decrease the footprint.
- Sections – Standard or Custom.
 - Standard – Display Standard sections.
 - Custom – Display Custom sections (if defined).
- Validate Track Map - As a special note if the track map is messed up, you can force a redraw by CTRL+Left Clicking the map to force a refresh.

Best Lap Map (Shift+F4)

- Best Lap Map – (Shift+F4) – this track map displays the team's best lap.



See the ['Enhanced Analysis Maps'](#) section of the Appendix for more information.

- StayOnTop – forces the map to stay on top of all other applications running on the computer, even when Race Tools is minimized.
- Circle Track – loads a circular track to display the data on. Useful if a track map is not available for some reason.
- Load Map – allows user to load the applicable map for the data.
- Legend
- Save – extends to reveal additional options.
 - Image – opens menu to save popup as a bitmap file.
 - Settings – allows user to save user defined settings such as fonts, track width, etc.
- Print – opens print window to print report.
- Set Track – extends to reveal additional options.
 - Track Width – opens dialog box to change track width which will be used when the track map is next updated.

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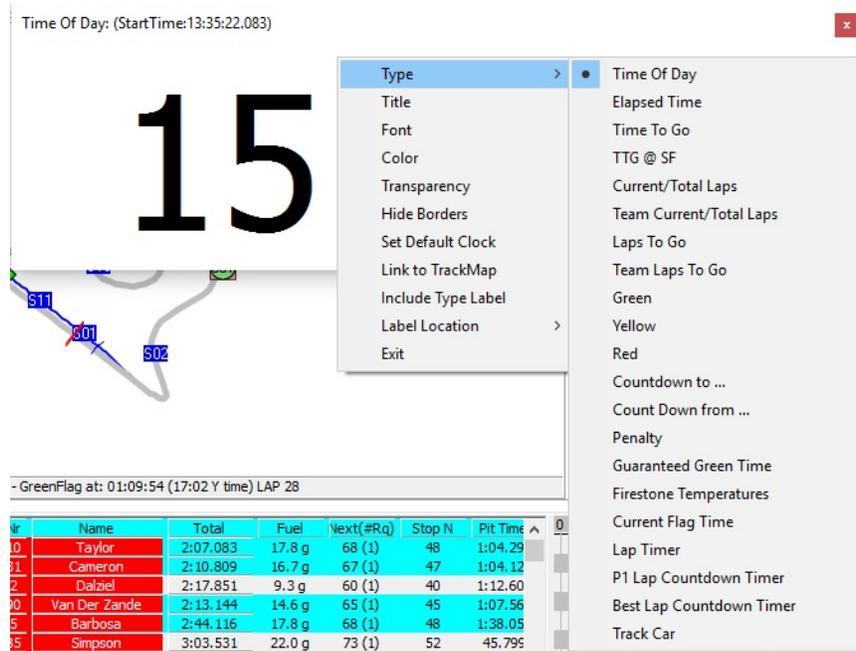
- Set S/F – sets the timing line used as the SF during the session. Typically set within track map, but some circumstances require the timing line to be set differently if timing lines fail or change and an updated track map is not available.
- Smoothing – allows user to manipulate “smoothness” of track map rendering. Lower number increases the number of points to use.
- Map Font – sets the font for the section deltas and labels.
- Custom Label Font – sets the font for custom labels (custom labels are created in the next menu).
- Labels – extends to reveal additional options.
 - Add Custom – creates custom map labels. Move the custom labels in the undocked map.
 - Sections – shows section labels.
 - Time Lines – shows time line labels.
- Background – extends to reveal additional options.
 - Color – changes the background color of the map.
 - Image – allows an image to be used as the background for the map.
 - Clear Image – removes loaded image from background of map.
- Track Color – sets the color of the track rendering (only refreshes if map size is changed or rotated).
- Pit Color – sets the color of the pit lane.
- Label Color – sets the background color of the segment labels on the map.
- Track Color = Flag – changes the track color to reflect the track condition – yellow, green, red.
- Set All Delta Colors – Set all the Delta colors.
- Delta R1 – Set Color for **Delta R1 (default Red)**. (Most Time Lost Section)
- Delta R2 – Set Color for **Delta R2 (default Blue)**. (2nd Most Time Lost Section)

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- Delta R3 – Set Color for **Delta R3 (default Purple)**. (3rd Most Time Lost Section)
- Delta R – Set Color for **Delta R (default Orange)**. (Other Time Lost Sections)
- Delta G - Set Color for **Delta G (default Green)**. (Time Gained Sections)
- Transparency – this sets the transparency of the window. Remember that the report can be set to “Stay On Top”, and the transparency will allow the report to be seen as well as the program running behind it. 100% is the default transparency, completely opaque.
- Hide Speed Traps – Hide the Speed Trap Section.
- Hide % – this hides the % performance index for the section deltas (the % is simply the percentage of the selected drivers delta to the fastest split time for that section, can be “+” or “-”).
- Compare 2 Cars – allows the user to compare 2 Cars rather than the “team car” to the optimal lap. The user will be prompted to input the two car numbers to compare. To reset the compare to the default optimal lap comparison, simply select the option again to uncheck it.
- Compare 2 Laps – allows the user to compare 2 laps of selected cars rather than the “team car” to the Best Lap, Rolling Lap, or Optimal Lap. The user will be prompted to input the two car numbers and select Best Lap, Rolling Lap, or Optimal Lap to compare. To reset the compare to the default optimal lap comparison, simply select the option again to uncheck it.
- Show Speed – changes the performance index to speed. This is most useful for ovals.
- Hide Borders – hides the borders of the window to decrease the footprint.
- Sections – Standard or Custom.
 - Standard – Display Standard sections.
 - Custom – Display Custom sections (if defined).
- Validate Track Map - As a special note if the track map is messed up, you can force a redraw by CTRL+Left Clicking the map to force a refresh.

Add Custom Pop-Up (Ctrl+Alt+C)

- Add Clock – (Ctrl+Alt+C) – adds a clock to the interface. Clocks are used to display session information in a larger format, and in a user determined location. When the feature is selected, a large clock displaying the current time of day will appear in the Race Tools window. This clock can be moved to any location on the screen and be sized to any size. The text will automatically resize as the window size is changed.



Once the clock is added, the type of clock can be selected. It is best practice to choose the type of clock before determining location and formatting size. To choose the clock type, right click in the background of the clock window. Note that certain clocks will also have a background color representative of the current track status.

The options for clock type are explained below.

- Time of Day – displays timing and scoring broadcasted time of day.
- Elapsed Time – displays the broadcasted elapsed time from the start of the current session/race.
- Time To Go – displays the time to go in the current session/race (note time to go will display for a race session even if not timed race, this is done based on inputs of Pit/Lap calculator or broadcast value from timing and scoring, use with caution).
- TTT @ SF – displays the time to go (TTG) when the session leader crosses the start finish line. This is typically most useful for timed races, allowing the user to calculate remaining laps based on the leaders timing data.

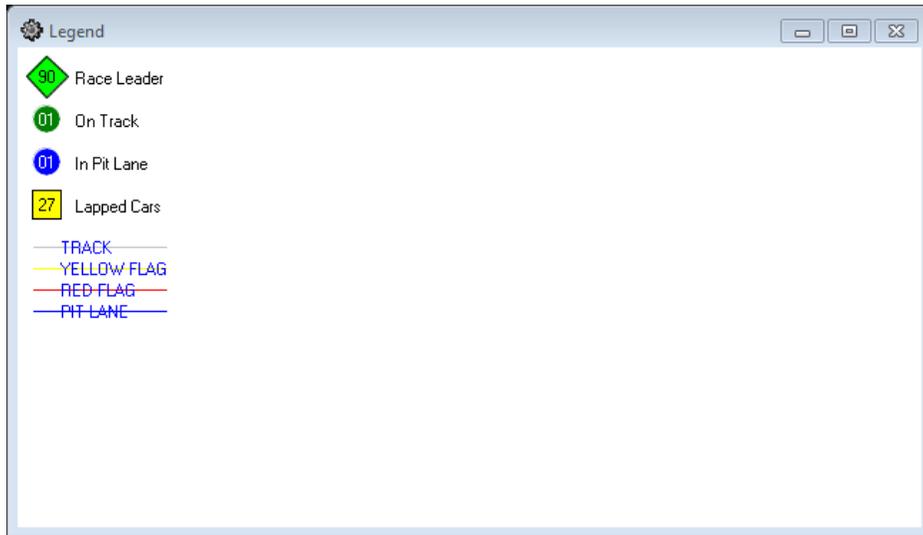
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- Current/Total Laps – for races, displays the current lap the leaders are working and the total laps for the race (will reflect the calculated number of laps if the race becomes a timed race, must select timed race in Options menu).
- Laps To Go – displays the laps to go in the race. This will show the calculated laps remaining if “Timed Race” is selected in the Options.
- Green – total time of session that has been flagged as “green”.
- Yellow – total time of session that has been flagged as “yellow”.
- Red – total time of session that has been flagged as “red”.
- Countdown to ... – allows the user to specify a time to countdown to. Enter the time in the format “11:12:53 AM”. The user will be prompted to change the title of the clock after the time has been entered.
- Count Down from ... – starts a countdown timer for the user. Input the time to count-down from in the format ‘hh:mm:ss.xxx’. The user will be prompted to change the title of the clock after the time has been set.
- Penalty – creates a user set up penalty clock. The clock is defined in the same manner as the “Count Down from” clock. The clock title automatically changes to display the time the penalty clock was started.
- Firestone Temperatures – displays the logged Firestone air and track temperatures (in Fahrenheit) as well as the time the temperature were logged. (IndyCar version)

Other right-click options available for the clock feature are:

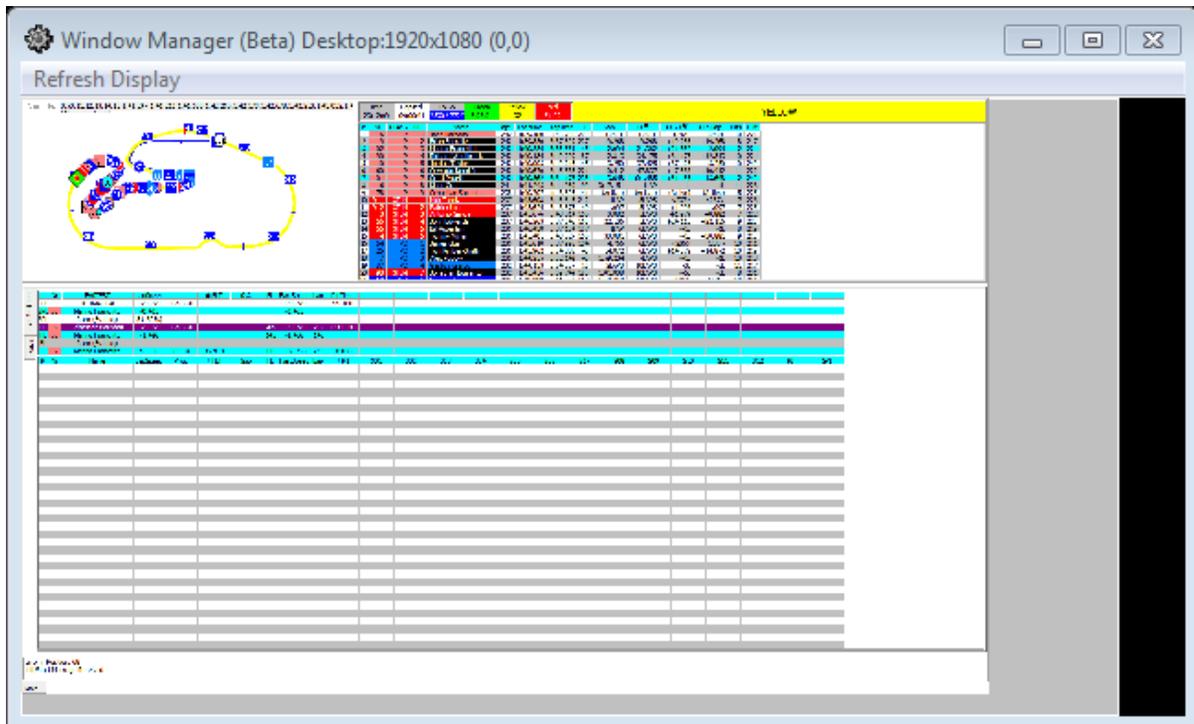
- Title – change the title of the clock.
- Font – change the font of the clock. Note that changing the font will change the size of the clock and that the font will increase in size if the clock size is increased (doesn't lock the font size).
- Color – change the background color of the clock (not applicable to clocks that display track condition color, like the elapsed time clock).
- Transparency – sets the transparency of the clock (100% is opaque).
- Hide Borders – allows user to hide the borders of the clock. Note that the clock cannot be moved with borders hidden.
- Set Default Clock – sets the currently selected clock type as the default clock. All subsequently added clocks will be of this type.
- Exit – closes the clock window. Can also be closed with the “X” in the upper right corner (if not hidden).

Map Legend



Display the legend of items shown on the track map.

Window Manager (Alt+W)

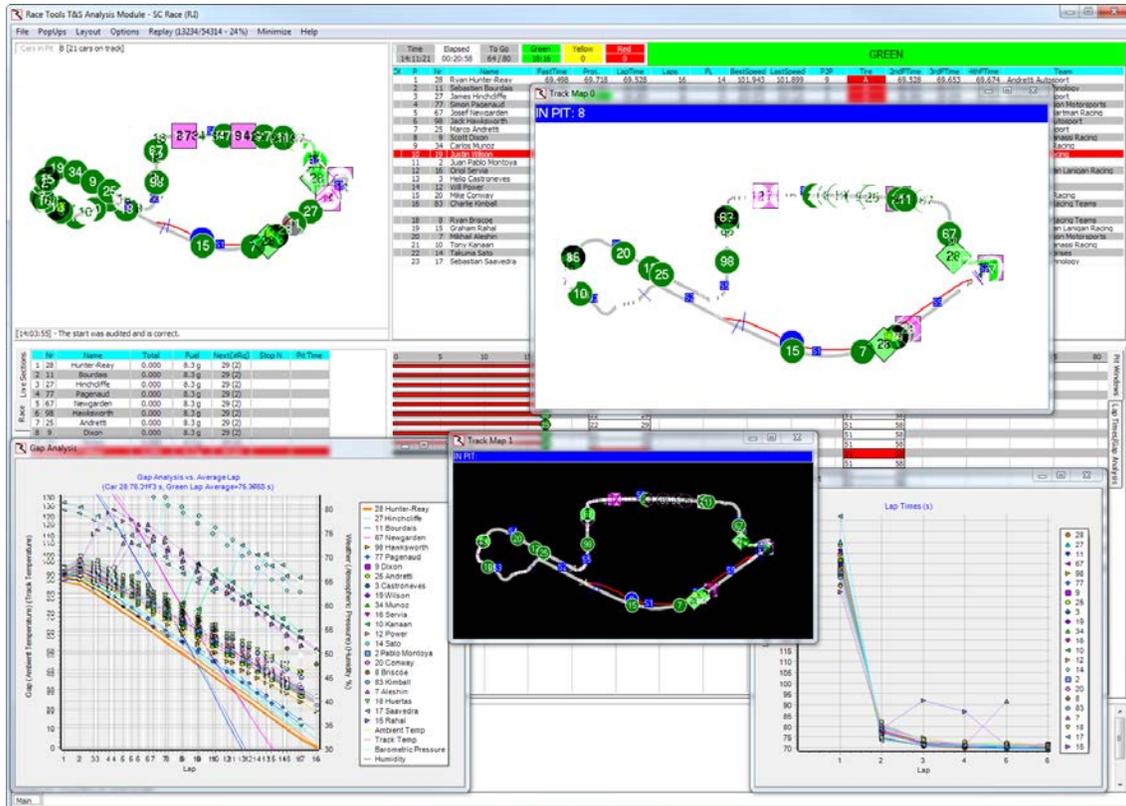


Manages the placement of various windows displayed.

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Lock Docking (Ctrl+D)

- [Lock Docking](#) (see details on docking in the [Appendix](#))– allows the user to dock or undock the map from the Race Tools software. The docked location is always the upper left corner of the software, while the undocked Track Map can be placed anywhere, including extended displays, as well as be resized.
- RaceTools has the ability to have multiple graphs and maps open.
- You can add Graphs and Maps using the Add Graphs and Add Maps menus.



Close All Popups

- Close All Popups – Closes all popup windows.

Layout

RaceTools allows you to save and restore custom layouts with quick links to predefined, commonly used layouts. Specifically, there are quick links to Race, Qualifying and Practice layouts. IndyCar versions get to choose Road versus Oval layouts. These custom layouts use a special file naming template: **<application name>_<SessionType>_<TrackType>.ini**.

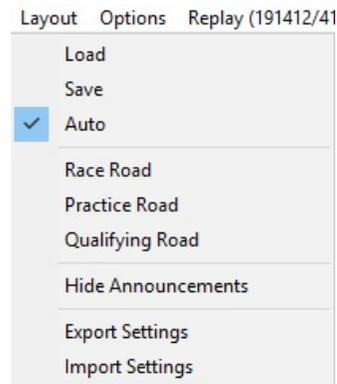
<application name> is the name of the program, usually INDYCAR_TSMModule, IMSA_TSMModule, MRTI_TSMModule or WEC_TSMModule.

<SessionType> is either 'Race', 'Qualifying' or 'Practice'

<TrackType> is either 'Road' or 'Oval' (for INDYCAR and MRTI versions).

i.e. *'IMSA_TSMModule_PracticeRoad.ini'* is the filename for the Practice Layout for the IMSA version of RaceTools. *'INDYCAR_TSMModule_QualifyingOval.ini'* is the filename for the Oval Qualifying Layout for the INDYCAR version of RaceTools. *'WEC_TSMModule_RaceRoad.ini'* is the Race Layout for the WEC version of RaceTools.

Once you have organized the layout of the software to your satisfaction, select the **Layout/Save** option to save the layout to a file. You can name it anything you'd like or use the above file naming convention to make it the default layout for the different session types. To transfer the layout to other computers on your team, just copy the .ini file(s) to each machine where they can be loaded and modified.



Load

- Load – Load a saved layout.

Save

- Save – Save a layout.

Auto

- Auto – If you select this option, RaceTools will automatically load the correct layout when the session changes.

Race Oval

- Race Oval – Oval track Race layout.

Race Road

- Race Road – Road Course Race layout.

Practice Oval

- Practice Oval – Oval track Practice layout.

Practice Road

- Practice Road – Road Course Practice layout.

Qualifying Oval

- Qualifying Oval – Oval track Qualifying layout.

Qualifying Road

- Qualifying Road – Road course Qualifying layout.

Hide Announcements

- Hide Announcements – Hide the announcements window.

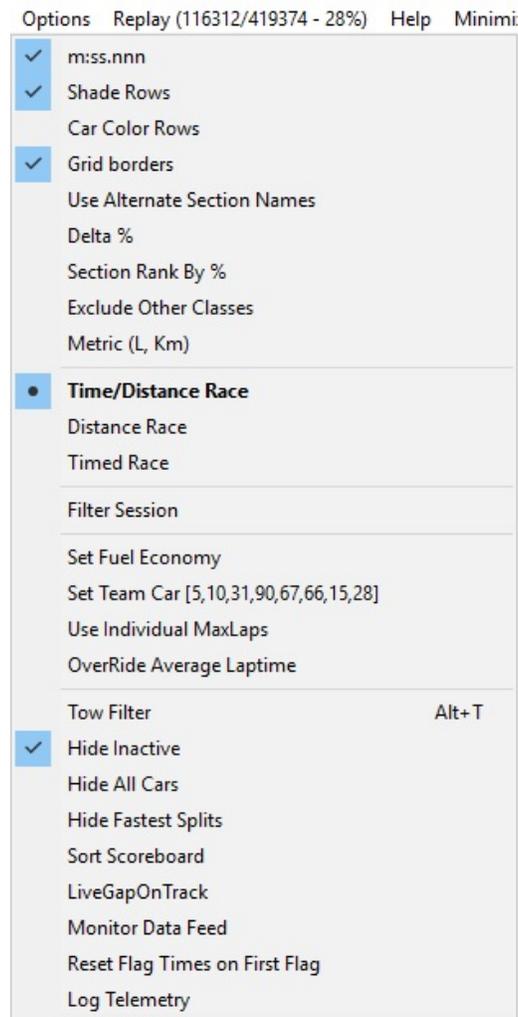
Export Settings

- Export Settings – Package application settings files into a zip file to easily export them to another instance or machine

Import Settings

- Import Settings – Import application settings from a zip file

Options



Mm:ss:nnn

- mm:ss.nnn - changes the lap time performance index from 'ss.nnn' to 'mm:ss.nnn' when this feature is selected (example 64.1255 vs 1:04.1255)

Shade Rows

- Shade Rows - formats the Session Results and Live Sections window to alternate shading between rows of data, by default the shading is white and grey

Car Color Rows

- Car Color Rows - if colors have been assigned to cars (Ctrl+left click on the car number in the Session Results window, the numbers and marching ants will be the assigned color) already, then the rows of the cars with assigned colors will be formatted to that background color. If car colors need changed, either select the entrant again and change colors or manipulate the file "CarColors" in the root menu. If color

codes are known, it may prove easier to set colors for all entrants in this file rather than setting in the software.

Grid Borders

- Grid Borders - adds or removes borders from the tables in the Session Results and Live Sections windows.

Use Alternate Section Names

- Use Alternate Section Names - Use alternate section names (if defined).

Delta %

- Delta % - Displays the Delta as percentage.

Section Rank by %

- Section Rank by % - Displays the Section Rank as percentage.

Exclude Other Classes

- Exclude Other Classes - Exclude classes other than 'Team Car' class.

Metric (L, Km)

- Metric (L, Km) - Change distances to Metric values.

Time/Distance Race

- Time/Distance Race - for race sessions, this sets the race type to the hybrid of Time/Distance. In this mode, the race distance will be determined by the maximum time duration or total laps for the race whichever is reached first. The information is available in the data stream and will be calculated automatically. The software uses the leaders' last three green laps to project the maximum number of laps possible with the time remaining and compares it with the number of laps to go for a distance race and displays the lower of the two in the To Go field.

Distance Race

- Distance Race - sets the race type to Distance, resulting is a set number of laps needing to be completed, as set by the Pit/Lap Calculator or the data feed.

Timed Race

- Timed Race - sets the race type to timed, resulting in a variable number of race laps based on race time remaining and average lap time calculations.

Filter Session

- Filter Session - places a filter on data stream parser to only process the data from the desired session. This feature is most useful for situations where one session is interrupted for another session (like practice with qualifying during Indy 500 qualifying days, can filter out the qualifying session).

Set Fuel Economy – Pit/Lap Calculator

- Set Fuel Economy - Pit/Lap Calculator – not a report, rather a setup menu for the real time pit window analysis contained in the Live Sections/Pit Windows window (accessible by selecting the “Pit Windows” tab on the left of the window). Parameters required are shown below in the popup window. Note that this is identical to the menu available under Options -> Set Fuel Economy.

CLS	Car	Driver	(mpg)	(mpg)	Capacity
P	0	Alexander Rossi	4.20	8.00	20.00
P	1	David Brabham	4.20	8.00	20.00
P	2	Johannes van Over	4.20	8.00	20.00
GTL	3	Jan Magnussen	4.20	8.00	20.00
GTL	4	Tommy Milner	4.20	8.00	20.00
P	5	Sebastian Bourdais	4.20	8.00	20.00
P	6	Klaus Graf	4.20	8.00	20.00
PC	7	Issac Tutumlu	4.20	8.00	20.00
PC	8	Sam Bird	4.20	8.00	20.00
P	9	Brian Frisselle	4.20	8.00	20.00
P	01	Jamie McMurray	4.20	8.00	20.00
P	02	Kyle Larson	4.20	8.00	20.00
P	07	Tristan Nunez	4.20	8.00	20.00

Pressing the Calc button applies the input information to the calculations in the analysis. The Reset button resets all entrants' economies to those input at the top of the window. Note that individual economies can be set to reflect the abilities of drivers/teams to be able achieve better/worse economies.

- *Some of the information required for this menu comes across the timing stream, such as laps, track length, etc. It is always good policy to check the information and apply numbers as seen fit by the user.*

Set Team Car [X]

- Set Team Car [X] - sets the competitor that will be considered the team car and have any applicable analysis and formatting applied to it. Enter the competitor car number in the pop up menu. Examples of reports and formatting affected by this setup parameter are the Best Splits/Lap Maps, row formatting, and team color among other things. You can enter more than one car number by entering them as a comma delimited string (i.e. "2,3,4"). The first car number will be treated as the team car for

comparative analysis and be highlighted with the team color, the other car numbers will be highlighted with the highlight color.

Use Individual MaxLaps

Override Average Laptime

Tow Filter (Alt+T)

- Tow Filter – Filters out tow assisted laps based upon the Tow Threshold setting.

Hide Inactive

- Hide Inactive - sets cars that have not crossed a timeline within one lap time as (inactive) and hides it from the track map. Hide Inactive option does not remove the car from the results or analysis, just from the track map and running order. The car's status will be set to '(Active)' to differentiate it from 'Active'. The will still be visible in the session results table and all of the reports.

Hide All Cars

- Hide All Cars - Hide all cars on the track map.

Hide Fastest Splits

- Hide Fastest Splits – Hide the fastest splits from the 'Live Sections' window.

Check Control Line

- Adjust Control Line (S/F) for Practice/Qualifying or Race. (IndyCar)

Sort Scoreboard

- Sort The Scoreboard.

LiveGapOnTrack

- Show Live Gap on Track.

Monitor Data Feed

- Monitor Data Feed

Reset Flag Times on First Flag

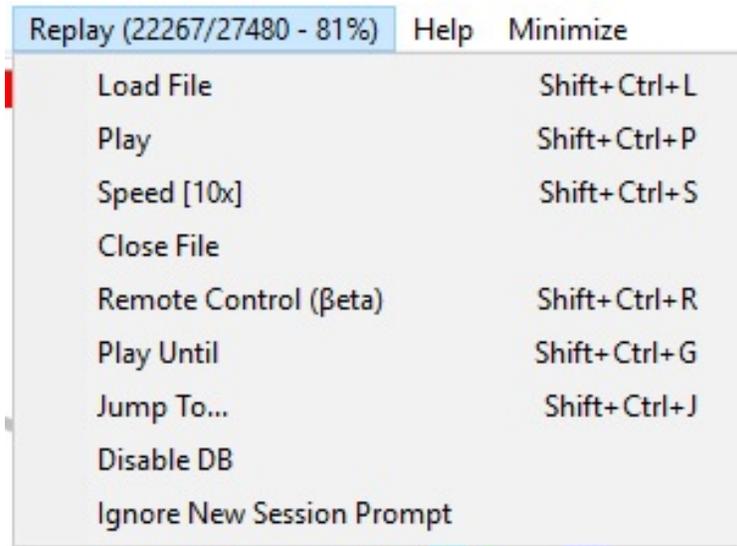
- Reset Flag Times on First Flag is to help track the Guaranteed Minimum Green Flag time for qualifying. Because the Qualifying session is one long session with multiple groups, and the Minimum Green Time is for each group, we need to reset the Flag Times at the start of each group. The Reset Flag Times on First Flag option clears the flag times when a session goes from Checkered, Unflagged (Warm), or Cold to Green, Yellow or Red. You can manually reset the Flag Times by double clicking on the 'Green' flag time in the Session Results table.

Log Telemetry

- Log Telemetry if available.

Replay

- The Race Tools software can utilize downloaded (<http://results.imsa.com/>) or local log files for replay. This feature acts as an emulator and the software behaves exactly as if it was receiving a real time telemetry feed. The Replay menu contains the following options:



Load File (Shift+Ctrl+L)

- Load File –accesses the “Open Replay Menu” and allows the user to open a desired replay file. Simply navigate to the location of either the downloaded log file or to the local log file directory as set up in the configuration menu.

Play/Pause (Shift+Ctrl+P)

- Play/Pause –starts and controls the progress of the replay.

Speed [1x] (Shift+Ctrl+S)

- Speed [1x] – sets the replay speed of the file. This can be set from 1-50 times the actual speed.

Close File

- Close File – Close the replay file.

Remote Control (beta) (Shift+Ctrl+R)

- Remote Control - Currently in beta, this interface will allow you to pause, rewind or jump ahead to any point in time that the software has in memory. You can load the session into memory using the traditional replay feature, or load a previously saved session using the Load Session feature. Once a session is in memory, you can use

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the slider to go to a point in time and then hit the play button to play back the session either forwards or backwards. Jumping to point in time takes less than a second, so you can quickly find the point in the session you are looking for. You can use the Jump To button to go to a specific elapsed time.

- Note that the Replay Remote is still a beta feature so please use it with caution. The previous Relay option still exists and is useful even with the new Replay Remote feature as a way to get data into the system. You can only use Replay Remote on session data in memory, so you may need to replay a session into memory first before you can take advantage of the new features.

TRIC[livetiming.net NOT CONNECTED]

[REPLAY] precedes the current track status to indicate that you are in REPLAY mode, and not viewing the latest results.

Time	Elapsed	To Go	Green	Yellow	Red
11:15:42	2:19	411 / 412	2:19	0 L	0

[REPLAY] GREEN

OK	P	CLASS	PIC	Nr	Status	Name	Laps	Diff	Gap	CLSDiff	CLSGap	LapTime	FastTime	Fl	Gap2Us	Proj.	BestSpeed	LastSpeed	Elap
1	P	1	60	Active	Olivier Pla	1	0.000	---	<<412>	<<412>	1:15.291	1:15.291	1	-36.358	200.275	192.176	192.176		
2	P	9	55	Active	Tristan Nunez	1	1.066	1.066	297L	-55L	1:16.357	1:16.357	1	-35.292	198.335	187.527	187.527		
3	P	4	31	Active	Dane Cameron	1	2.433	1.367	+14.258	+2.513	1:17.724	1:17.724	1	-33.925	198.166	194.166	194.166		
4	P	6	70	Active	Tom Long	1	3.427	0.994	10L	-9L	1:18.718	1:18.718	1	-32.931	198.233	193.367	193.367		
5	P	5	5	Active	Christian Fittipaldi	1	4.075	0.648	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
6	P	7	90	Active	Ryan Dalziel	1	4.479	0.40	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
7	P	2	2	Active	Johannes van Overbeek	1	5.116	0.63	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
8	P	8	0	Active	Katherine Legge	1	5.935	0.8	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
9	P	3	10	Active	Ricky Taylor	1	8.455	2.5	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
10	PC	6	8	Active	Alex Popow	1	9.562	1.1	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
11	PC	2	38	Active	Kenton Koch	1	10.006	0.4	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
12	PC	1	52	Active	Robert Alon	1	10.269	0.2	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
13	PC	7	7	Active	Stefano Coletti	1	10.537	0.2	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
14	PC	3	85	Active	Chris Miller	1	10.813	0.2	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
15	PC	5	20	Active	Tommy Drissi	1	11.681	0.8	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
16	PC	4	88	Active	Mark Kvamme	1	12.872	1.1	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
17	GTLM					1	28.024	15.1	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
18	GTLM					1	28.688	0.66	---	---	1:19.266	1:19.266	1	-32.393	197.736	192.406	192.406		
19	GTLM					1	29.011	0.323	<-398>	<-398>	1:44.302	1:44.302	1	-7.347	186.870	179.942	179.942		
20	GTLM					1	29.660	0.649	47L	-22L	1:44.951	1:44.951	1	-6.698	186.816	157.414	157.414		
21	GTLM					1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
22	GTLM					1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
23	GTLM					1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
24	GTLM					1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
25	GTLM	10	911	Active	Nick Tandy	1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
26	GTLM	9	25	Active	Bill Auberlen	1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
27	GTD					1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
28	GTD					1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
29	GTD					1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
30	GTD					1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
31	GTD					1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
32	GTD					1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
33	GTD					1	30.005	0.345	15L	61L	1:45.206	1:45.206	1	-6.252	186.811	183.436	183.436		
34	GTD	12	16	Active	Corey Lewis	1	37.332	0.284	-35L	-15L	1:52.623	1:52.623	1	0.97	179.894	173.897	173.897		
35	GTD	8	27	Active	Paolo Ruberti	1	37.613	0.281	-2L	+40.572	1:52.904	1:52.904	1	1.255	179.119	171.886	171.886		
36	GTD	11	96	Active	Bret Curtis	1	37.613	0.281	-2L	+40.572	1:52.904	1:52.904	1	1.255	179.119	171.886	171.886		
37	GTD	1	44	Active	John Potter	1	37.613	0.281	-2L	+40.572	1:52.904	1:52.904	1	1.255	180.729	82.939	82.939		
38	GTD	5	97	Active	Michael Marsal	1	37.613	0.281	-2L	+40.572	1:52.904	1:52.904	1	1.255	180.729	82.939	82.939		

The new Replay Remote (currently in Beta) allows you to jump to any point in a session (in memory) using the bottom slider or Go To button. The software displays the results at that point in time including the pit windows, lap count, lap time(s), fast lap, track map, etc.

The Live button quickly puts RaceTools back to Live Mode, displaying the latest results.

The '>' play button starts and stops the replay.

The bottom slider indicates where you are in the session, based on how much data is in memory. You can move it to jump to a point in time.

The top slider indicates the playback speed which can even be negative to go backwards.

Replay Remote (Beta)

Live Go To

> SPEED -1

No Line Crossing Found for Car #62 @ 11:46:45.477

0 10 20 30 40 50 60 70 80 90 100 110 120 130

270 280 290 300

Play Until (Shift+Ctrl+G)

- Play Until – Play until is used to pause the playback at a designated stop point. This is helpful if you want to do analysis up to a certain point, or from a certain point. You can set the Play Until option to automatically pause the replay so you can leave the computer and come back to it at the point in the session you've entered. Enter the Elapsed Time (h:mm:ss), Lap (n), or flag ('G','Y','K','R','C') to pause replay.

Jump To (Shift+Ctrl+J)

- Jump To – Jump to a selected time, time of day, or flag to start the replay. It is designed for when you don't care about the data before a certain point in time and want to quickly jump to a point in the session and analyze data from that point forward.

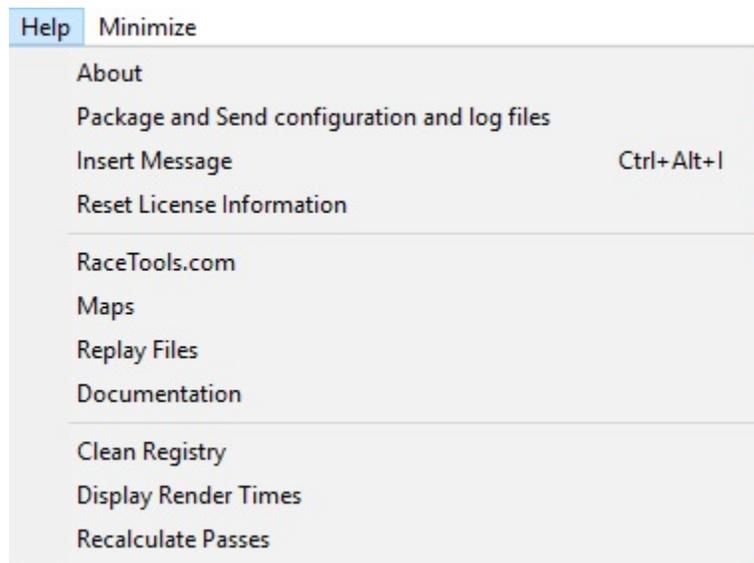
Disable DB

- Disable DB – Disable DB is a feature to disable logging the replay file to the ABS file. This helps speed up playback.

Ignore New Session Prompt

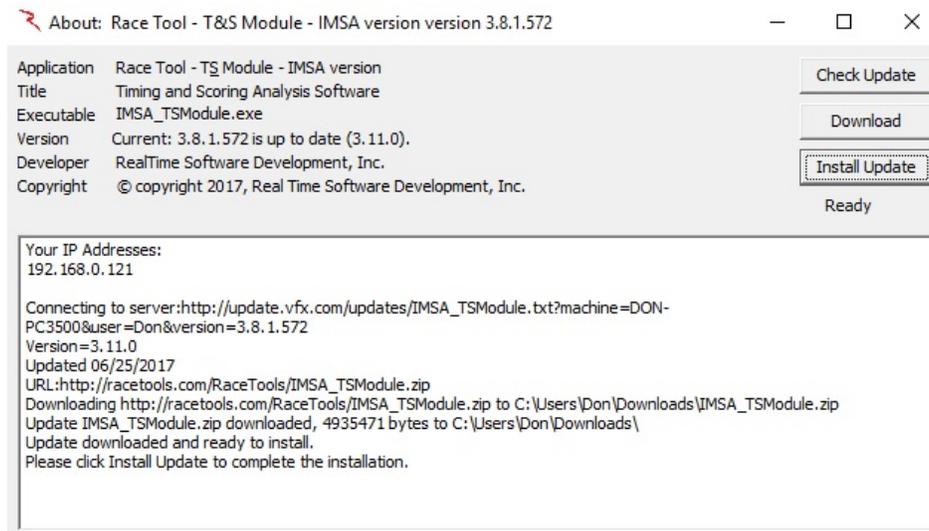
- Ignore the 'New Session' prompt. During replay, you may want to ignore a new session prompt.

Help



About

- RaceTools is updated frequently, probably too frequently for many of you. To help you keep up to date with the latest version, I've integrated the Update function into the software so that you don't have to leave the software to check and get the latest version. The About window is also more descriptive and readable. To get the latest version of the software, click on Check Update, Download, and then Install Update. The software will take care of the details and replace the current copy with the updated version.
- You can check for Updates and download the new version using the About/Update feature within RaceTools, or download it from http://racetools.com/racetools/imsa_tsmodule.zip



Package and Send configuration and log files

- Package and Send the configuration and log files to the developer.

Insert Message (Ctrl+Alt+I)

- Insert a message in the LogFile.

Reset License Information

- Reset the License information.

RaceTools.com

- Go To RaceTools.com – Requires an internet connection.

Maps

- Maps – Takes you to the developers' web site for the latest map updates.

Replay Files

- Replay Files – Takes you to the IMSA results web site where you can download the replay files.

Documentation

- Documentation – Takes you to the RaceTools web site for the User's Manual.
- Clean Registry –
- Display Render Times -
- Recalculate Passes -

Minimize

Minimize To Desktop

- This menu option minimizes the application to the desktop. Rather than minimizing to the taskbar, it instead minimizes the program to the minimal footprint allowed by the header of the program. The reason you might want to minimize to the desktop rather than the taskbar is to keep elements associated with the application visible. For instance, all of the popup reports and clocks are tied to the program window. Minimizing the application to the taskbar also minimizes the popup reports and clocks. Minimizing the application to the desktop keeps any popup reports and/or clocks open.



Appendix

Working With Docking

When the software launches, the 'Lock Docking' option is enabled so you won't accidentally dock/undock reports. Any previously docked reports will appear in their docked state. **To dock or undock a report, you must first disable the 'Lock Docking' option in the 'PopUps' dropdown menu.** With 'Lock Docking' selected, you cannot dock or undock any popups.

Docking is done by dragging the popup window to the area that you want to dock to. There are three areas you can dock to (dock sites).

Dock Site 1. You can dock to another report (creating a window to store a number of popup reports in a tab) by dragging one popup window into the other. The tabs are along the bottom of the popup window.

The screenshot shows the RaceTools interface with a data table. A yellow callout box is overlaid on the table, containing the following text:

Dock Site 1 - any popup can become a Dock Host. Drag one popup report into another to create a tabbed window of popups. Tabs appear on the bottom left of the host popup.

P	No	Class	Driver	BestTime	Delta	S01	Delta	R01	S02	Delta	R02	S03	Delta	R03	S04	Delta	R04	S05	Delta	R05	S06
1	10	P	Max Angelelli	1:36.394		10.373	0.000	3	21.641	0.000	2	18.598	0.000	4	6.765	0.000	2	5.596	0.000	3	5.214
2	90	P	Rene Rast	1:39.183	2.789	10.633	0.260	10	22.228	0.587	9	19.068	0.470	9	7.025	0.260	12	5.828	0.232	12	5.431
3	5	P	Filipe Albuquerque	1:36.269		10.323	-0.050	2	21.587	-0.054	1	18.397	-0.201	1	6.754	-0.011	1	5.594	-0.002	2	5.212
4	2	P	Ryan Dalziel	1:39.235	2.841	10.641	0.268	12	22.125	0.484	7	19.049	0.451	7	6.994	0.229	9	5.808	0.212	11	5.434
5	31	P	Eric Curran	1:36.793	0.399	10.443	0.070	7	21.692	0.051	3	18.435	-0.163	2	6.778	0.013	3	5.589	-0.007	1	5.263
6	55	P	Jonathan Bomarito	1:39.457	3.063	10.639	0.266	11	22.484	0.843	12	19.135	0.537	10	6.997	0.232	10	5.761	0.165	9	5.341
7	911	GTLM	Frederic Makowiecki	1:43.964	7.570	10.919	0.546	18	23.221	1.580	22	19.383	0.785	18	7.583	0.818	24	6.206	0.610	26	5.723
8	912	GTLM	Kevin Estre	1:43.970	7.576	10.850	0.486	15	23.353	1.712	26	19.411	0.813	20	7.610	0.845	20	6.203	0.607	25	5.744
9	66	GTLM	Dirk Mueller	1:43.970	7.576	10.850	0.486	15	23.353	1.712	26	19.411	0.813	20	7.610	0.845	20	6.203	0.607	25	5.744
10	85	P	Stephen Simpson	1:43.970	7.576	10.850	0.486	15	23.353	1.712	26	19.411	0.813	20	7.610	0.845	20	6.203	0.607	25	5.744
11	62	GTLM	Giancarlo Fisichella	1:43.979	7.585	11.078	0.705	25	23.254	1.613	24	19.387	0.789	19	7.583	0.818	23	6.203	0.607	24	5.710
12	68	GTLM	Stefan Mucke	1:44.247	7.853	11.026	0.653	23	23.355	1.714	27	19.574	0.976	25	7.586	0.821	25	6.253	0.657	37	5.810
13	69	GTLM	Tony Kanaan	1:43.453	7.059	10.689	0.316	13	23.191	1.550	21	19.265	0.667	14	7.566	0.801	22	6.207	0.611	27	5.747
14	13	P	Neel Jani	1:37.440	1.046	10.256	-0.117	1	21.976	0.335	6	18.582	-0.016	3	6.936	0.171	5	5.717	0.121	5	5.336
15	3	GTLM	Antonio Garcia	1:43.979	7.585	11.078	0.705	25	23.254	1.613	24	19.387	0.789	19	7.583	0.818	23	6.203	0.607	24	5.710
16	19	GTLM	Bill Auberlen	1:44.247	7.853	11.026	0.653	23	23.355	1.714	27	19.574	0.976	25	7.586	0.821	25	6.253	0.657	37	5.810
17	38	PC	Patricio O'Ward	1:42.716	6.322	10.931	0.558	19	22.849	1.208	13	19.372	0.774	17	7.265	0.500	14	6.073	0.477	13	5.640
18	81	P	Nicolas Lapierre	1:37.907	1.513	10.406	0.033	5	21.928	0.287	5	18.709	0.111	5	6.945	0.180	6	5.742	0.146	6	5.364
19	20	PC	Buddy Rice	1:43.322	6.928	11.044	0.671	24	22.973	1.332	16	19.345	0.747	16	7.246	0.481	13	6.138	0.542	14	5.757
20	26	PC	Johnny Mowlem	1:43.588	7.194	11.020	0.647	22	22.953	1.312	15	19.639	1.041	27	7.360	0.595	17	6.169	0.573	18	5.763
21	86	GTD	Jeff Segal	1:47.796	11.402	11.511	1.138	47	24.182	2.541	46	20.428	1.830	38	7.742	0.977	45	6.302	0.706	47	5.812
22	33	GTD	Jeroen Bleekemolen	1:47.828	11.434	11.478	1.105	42	24.083	2.442	40	20.611	2.013	48	7.725	0.960	42	6.285	0.689	44	5.834
23	29	GTD	Jules Gounon	1:47.313	10.919	11.396	1.023	38	24.075	2.434	37	20.317	1.719	31	7.774	1.009	48	6.350	0.754	54	5.788
24	11	GTD	Mirko Bortolotti	1:47.095	10.701	11.410	1.037	40	24.076	2.435	38	20.428	1.830	37	7.737	0.972	43	6.216	0.620	28	5.720
25	63	GTD	Alessandro Balzan	1:47.079	10.685	11.357	0.984	32	23.838	2.197	29	20.328	1.730	32	7.716	0.951	39	6.261	0.665	39	5.808
26	93	GTD	Andy Lally	1:47.760	11.366							20.424	1.826	36	7.777	1.012	49	6.284	0.688	43	5.774
27	57	GTD	Matt Bell	1:47.932	11.538	11.427	1.054	41	24.080	2.439	39	20.618	2.020	49	7.833	1.068	54	6.280	0.684	42	5.735
28	28	GTD	Michael Christensen	1:47.757	11.363	11.568	1.195	50	24.145	2.504	44	20.560	1.962	45	7.722	0.957	40	6.226	0.630	32	5.729
29	50	GTD	Shane Van Gisberge	1:47.488	11.094	11.368	0.995	35	23.932	2.291	32	20.499	1.901	41	7.722	0.957	41	6.294	0.698	45	5.825
30	48	GTD	Madison Snow	1:48.355	11.961	11.478	1.105	43	24.521	2.880	54	20.824	2.226	53	7.789	1.024	51	6.262	0.666	40	5.701
31	991	GTD	Wolf Henzler	1:47.753	11.359	11.544	1.171	49	24.115	2.474	42	20.435	1.837	39	7.695	0.930	34	6.260	0.664	38	5.826
32	67	GTD	Dickson Kwiatkowski	1:48.385	12.001	10.800	0.496	14	23.133	1.401	18	19.437	0.820	23	7.590	0.764	18	6.150	0.553	17	5.667

At the bottom of the window, there are two tabs: "F4 - Best Lap Analysis" and "F2 - Driver Trap Speeds".

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Dock Site 2. You can dock to the main program windows' full screen area by dragging a popup to the top half of the main program window.

Dock Site 2 - popups dragged to the top half of the main program window will be docked to the whole window and the tabs will appear at the bottom of the window.

Cl	Pi	Nr	CLASS	IPC	Name	Laps	ElapsedTime	Diff	Gap	FastTime	FL	BestSpeed	LapTime	Pits		
X	1	10	P	1	Ricky Taylor	308	10:19:09.264	0.000				136.394	164	132.954	1:52.611	15
X	2	5	P	2	Joao Barbosa	307	10:19:13.090	1L	1L	1:36.269	165	133.127	1:56.058	17		
X	3	90	P	3	Renger Van Der Zande	306	10:17:20.933	1L	3.901	1:39.183	124	129.216	2:56.673	14		
4	2	2	P	4	Ryan Dalziel	305	10:17:18.366	2L		1:39.235	72	129.148	3:02.310	14		
5	31	1	P	51	Dane Cameron	302	10:17:17.279	5L	2L	1:36.793	124	132.406	3:02.938	15		
6	55	5	P	6	Jonathan Bomarito	302	10:17:34.346	5L	17.067	1:39.457	15	128.860	2:34.905	18		
7	85	7	P	7	Misha Gokhberg	301	10:17:17.872	6L		1:38.542	14	130.056	3:02.927	14		
8	22	2	P	8	Brendon Hartley	299	9:52:42.003	(Active)	(Active)	1:37.832	36	131.000	2:07.495	15		

Nr	Name	Total	Fuel	Next(#Rq)	Stop N	Pit T	
1	10	Ricky Taylor	21:01.917	7.6 g	317 (21)	294	1:33
2	5	Joao Barbosa	25:10.189	13.1 g	323 (21)	300	1:22
3	90	Renger Van Der Zande					
4	2	Ryan Dalziel					
5	31	Dane Cameron					
6	55	Jonathan Bomarito					
7	85	Misha Gokhberg	22:55.836	12.4 g	316 (18)	289	1:55
8	22	Brendon Hartley	22:07.398	20.8 g	325 (17)	299	1:20
9	66	Joey Hand	14:13.761	23.1 g	328 (14)	297	1:17
10	69	Tony Kanaan	14:50.750	23.1 g	328 (14)	297	1:15
11	62	Giancarlo Fisichella	15:50.274	21.7 g	326 (15)	297	1:13
12	67	Ryan Briscoe	17:09.041	23.1 g	328 (14)	297	1:11

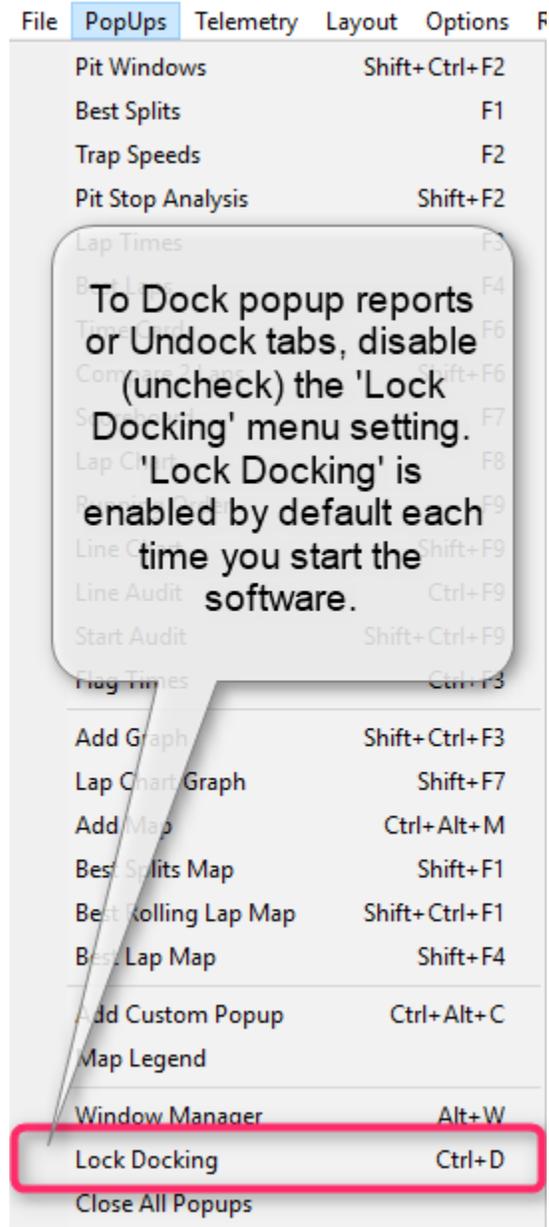
Dock Site 3 - popups dragged to the Live Sections/Pit Windows portion of the window will be docked to the lower portion of the main window. Tabs will appear on the lower left.

Dock Site 3. You can dock to the lower portion (Live Sections/Pit Windows tab) of the main program window by dragging a popup to the lower portion.

Undocking is done by dragging the tab out of the window (on to the desktop) or to another dock site.

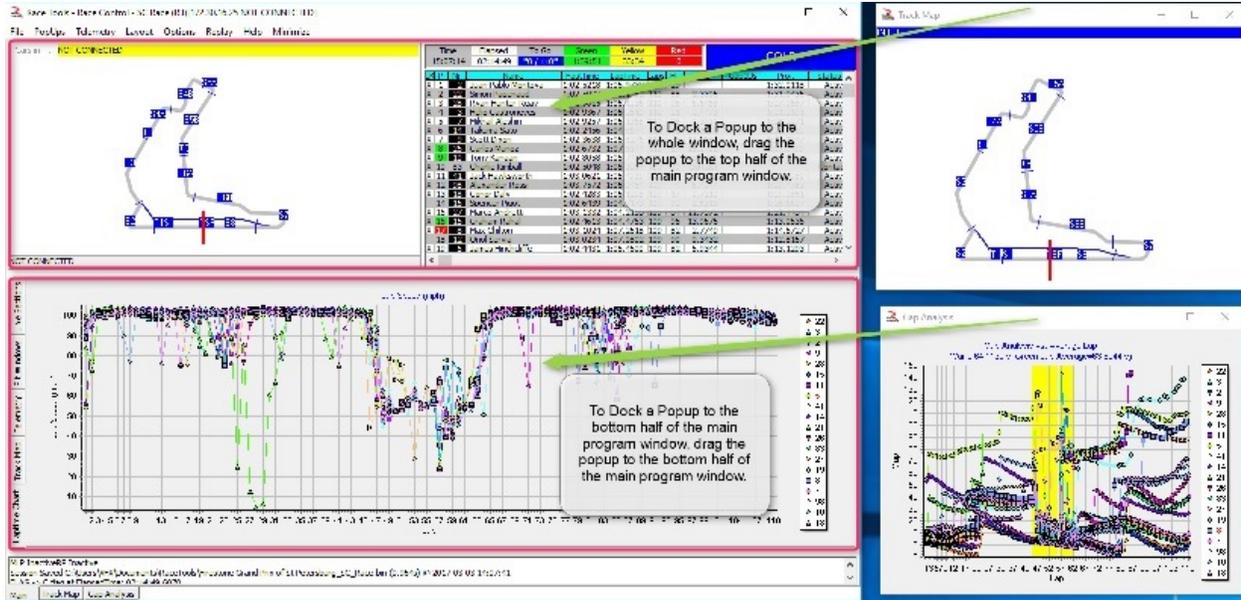
To return to the default main window tabs, (Main tab, Pit Windows tab for race sessions, Live Sections tab for non-Race sessions), hit the HOME key. This is useful if you have a lot of reports docked to the main program window and need to quickly return to the main results window (track map, session results).

To modify the docked/undocked status of the reports, first disable the 'Lock Docking' setting in the PopUps menu. The 'Lock Docking' setting is enabled when the software starts so you have to disable it before you dock or undock windows.

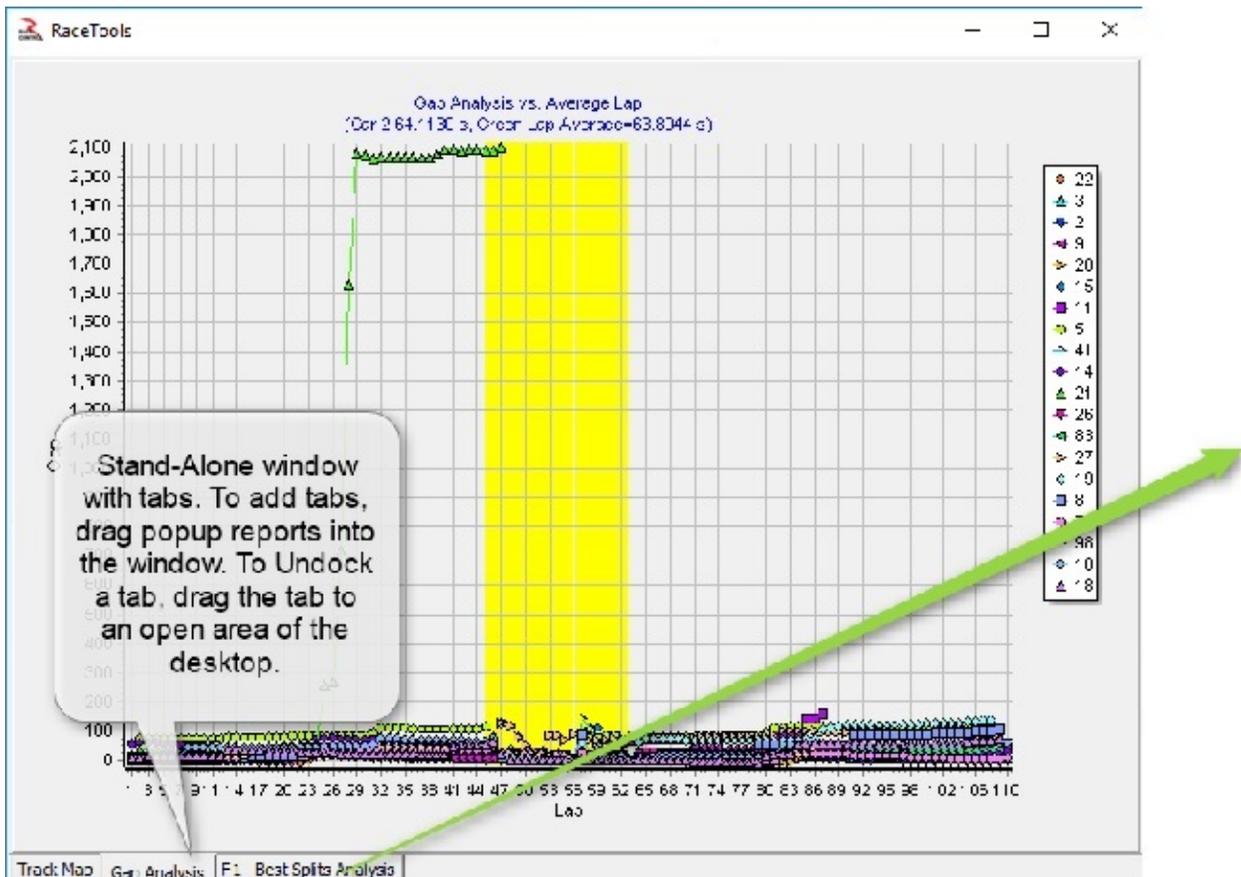


To dock a window, drag the title bar of the window to one of the dock sites. Dock sites are the main program window or one of the popup windows. The main program window has two docking areas. Dragging a window into the top half of the window will create a tab on the main program window and dock it to the whole window. Dragging a window to the bottom half of the main program window will create a tab in to bottom half of the program window. Dragging a popup window into another popup will add a tab to the popup tabbed window. Only one such window can exist at a time so if you already have a tabbed window (more than one popup in a window) and you drag a popup into another popup, they will both be added to the tabbed window. You can thus have the main program window with multiple tabs and a separate tabbed window that holds multiple tabs.

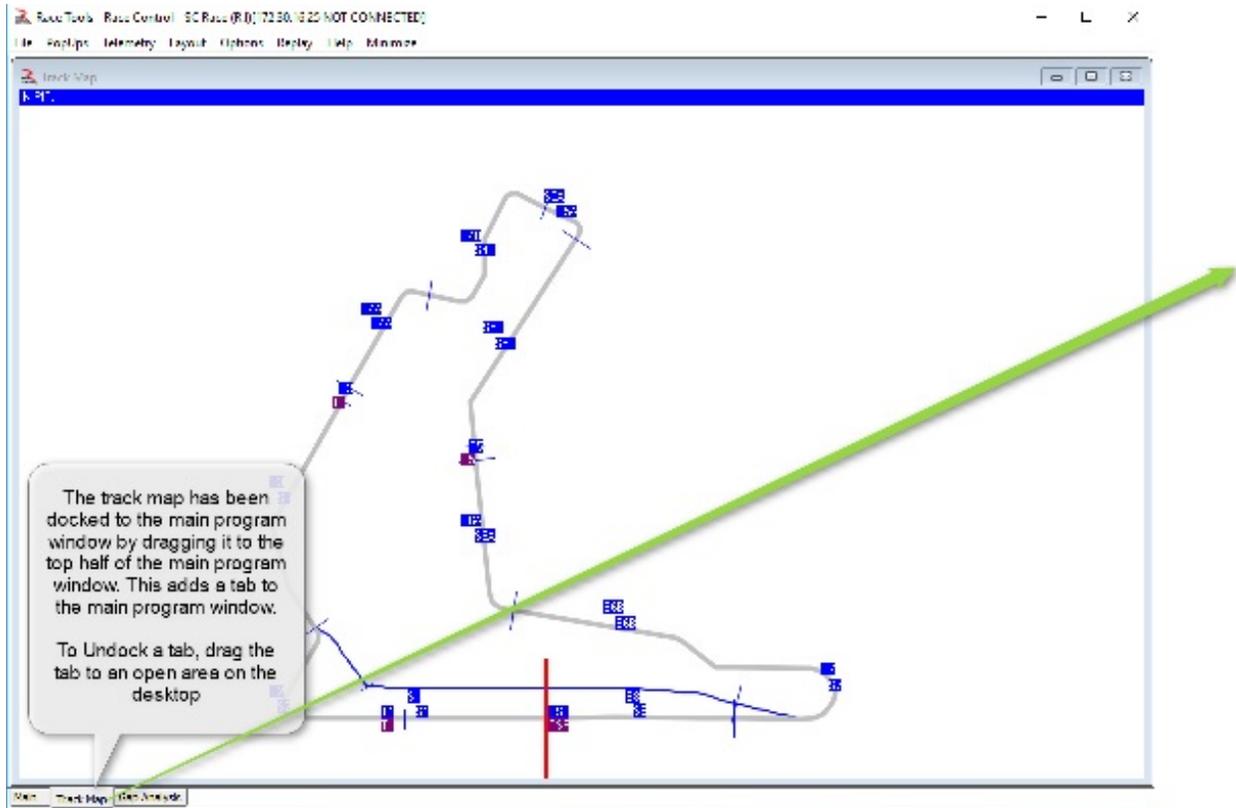
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To undock a tabbed report, drag the tab title to an open space on the desktop.



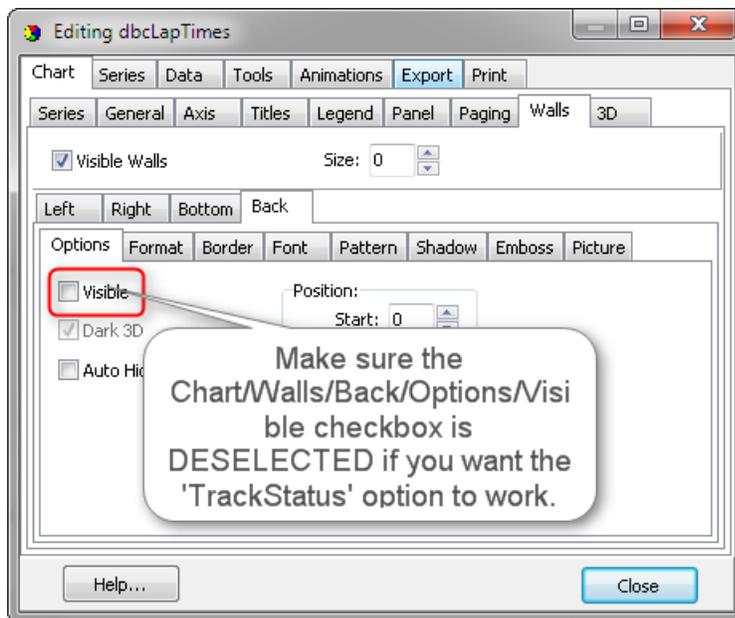
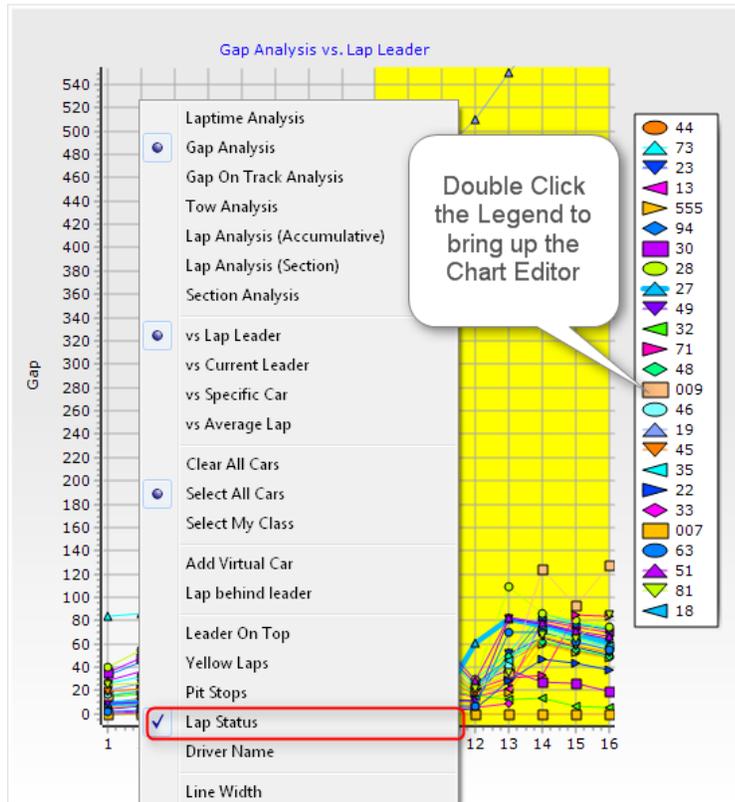
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When you are finished modifying the tabbed/undocked settings of the popups, re-enable the 'Lock Docking' setting to prevent accidentally docking/undocking reports.

Lap Status Highlighting in Graphs

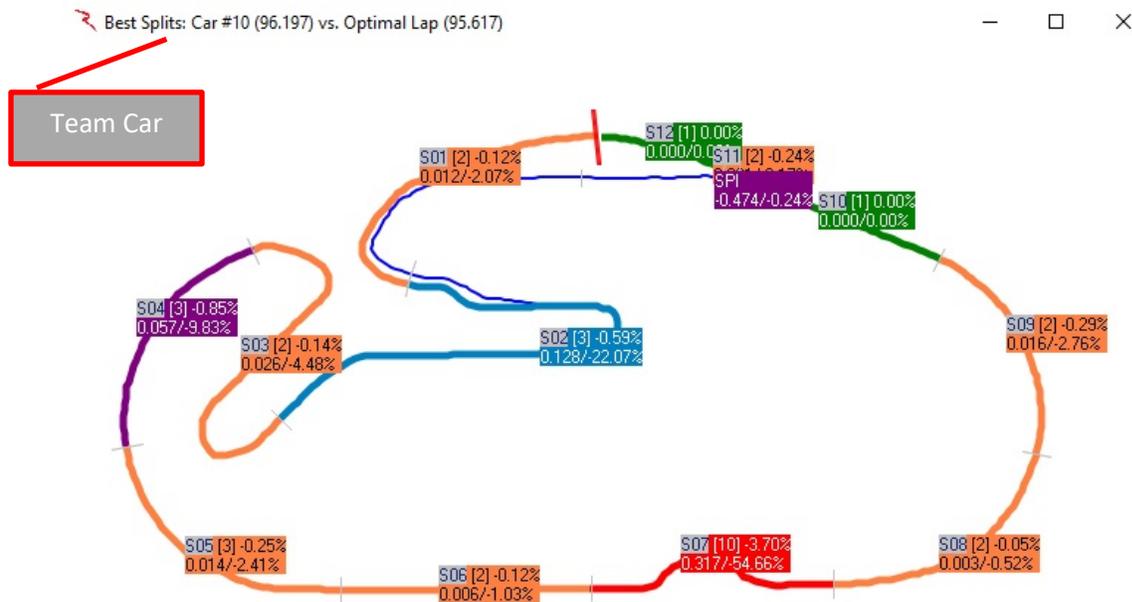
You can highlight caution laps in the Lap Times/Gap Analysis graph by selecting the 'Lap Status' menu option. If it does not display, check the 'Chart/Walls/Back/Options' tab of the Chart Editor and make sure the Back is NOT visible (unchecked). Note that using the Chart Editor is not recommended during a session as this can cause the software to hang.



Enhanced Analysis Maps

The [Analysis Maps](#) have extra information in the session labels. The first line contains the Section Name, the Section Rank and the Section Delta %. The second line contains the Section Delta and % loss or gain.

The Section Name, Delta and Delta % were in the previous versions. The Section Rank has been available in the popup reports (F1 – Best Splits Analysis, F4 – Best Lap Analysis) and is the rank of each section time compared to the other competitors. The % Loss or Gain is the Section Delta / Lap Delta, which highlights the relative amount of time lost or gained for each section. Note that the Lap Delta is the sum of time lost and gained and that the sum of the deltas equals 100%. This means that if there is a mixture of both time lost and gained in a lap, the percentages are of the lap delta, not the 'time lost' / 'total time lost' or 'time gained' / 'total time gained', but the key is the relative percentages which can highlight which sections your car is losing the most time. To help highlight this further, there are now color codes for the top 3 time lost sections referred to as **DeltaR1 (Red)**, **DeltaR2 (Blue)**, and **DeltaR3 (Purple)**. The other time lost sections are highlighted with the **DeltaR (Orange)** color. The time gained sections are highlighted with the **DeltaG (Green)** color.



Each splits/traps information label can be moved by left clicking and on the split/trap label and dragging. The track map can also be rotated in 45 degree steps by double clicking in the window.

DeltaR1 (Red) – Most time lost section

DeltaR2 (Blue) – 2nd most time lost section

DeltaR3 (Purple) – 3rd most time lost section

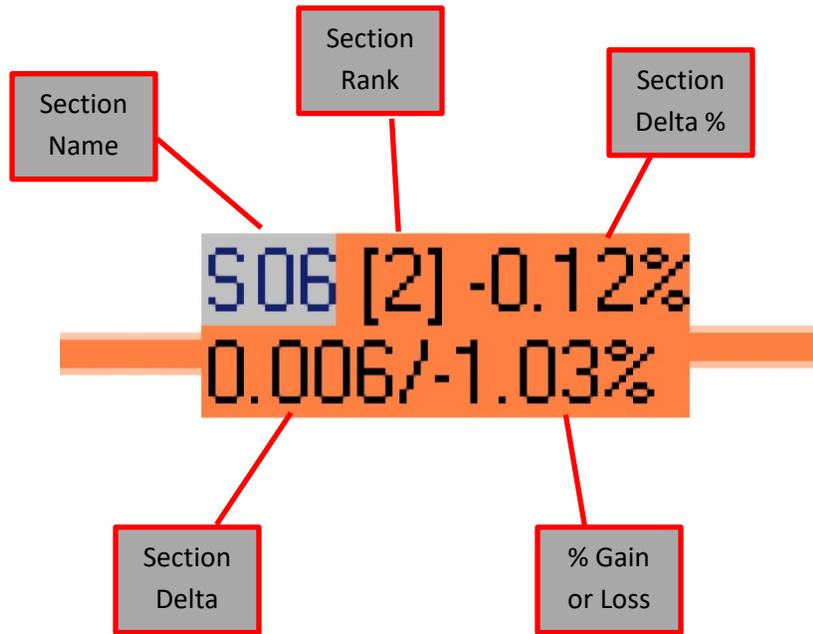
DeltaR (Orange) – other time lost sections

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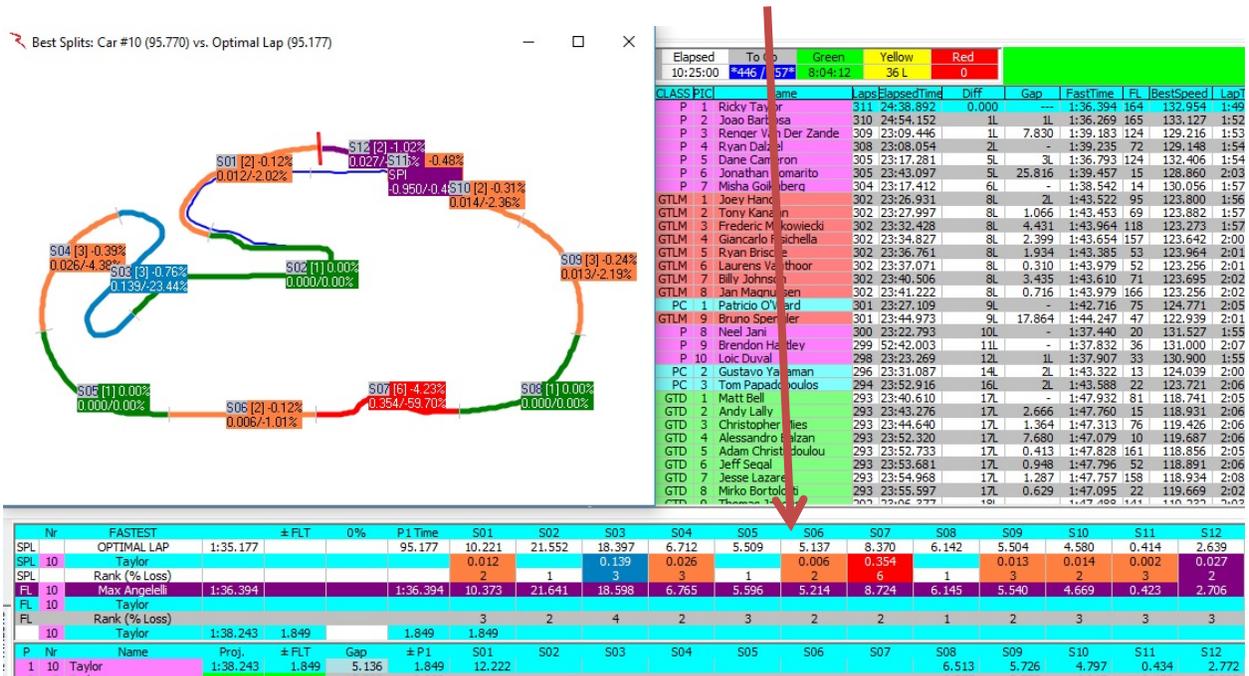
DeltaG (Green) – Time Gained sections

Default colors are shown above, but you can change them to suit your needs.

Below is a figure describing the information given in each of the labels on the various analysis maps.



The Delta color scheme is also used in the 'Live Sections' window as shown below.



Session Results Fields

- Here is a list of the available fields, not all of which are applicable depending on the series, session type and track type.
- Click on the field in the program window '[Session Results](#)' tab to get a detailed description of the field as shown below.

CK – Check box to select competitor for other reports.

P – Position

Nr – Car Number

Name – Driver Name

FL – Fast Lap

FastTime – Fast Lap Time

BestSpeed – Fast Lap Speed

LapTime – Last Lap Time

LastTime – Last Lap Time

Laps – Laps Completed

LastSpeed – Last Lap Speed

Pace – Last Lap Delta to P1

± FLT – Delta to Fast Lap Time

Gap – Delta to preceding car

Gap SPD – Delta in speed to preceding car

GapOnTrack – Delta to previous car on track, time behind previous car

GapToNext – Delta to next car on track, time ahead of next car

ElapsedTime – ElapsedTime of last S/F crossing

PTS – Points if race ended with current results

PTime – Previous Fast Lap Time

± PT – Delta to Previous Fast Lap Time

PIC – Place In Class

CLASS – Class Name

STINT – Elapsed Time of Current Stint

Diff – Delta to P1

Diff SPD – Delta to P1 in speed

Gap2Us – Gap to Team Car

Pits – Number of Pit Stops made

LSP – Laps Since Pit

LapsDown – Laps down to P1

OR – Overall Rank

BestTime – Best Overall Lap Time

Status – Competitor Status

St – Start Position

Led – Number of Laps Led

P2P – Push To Pass

Tire – Current Tire Type on Car

LPit – Lap of Last Pit Stop

Outing Laps – Visual display of laps since last pit

MSP – Distance since Pit Stop

ThisPit – Pit Lane time for current or latest pit stop

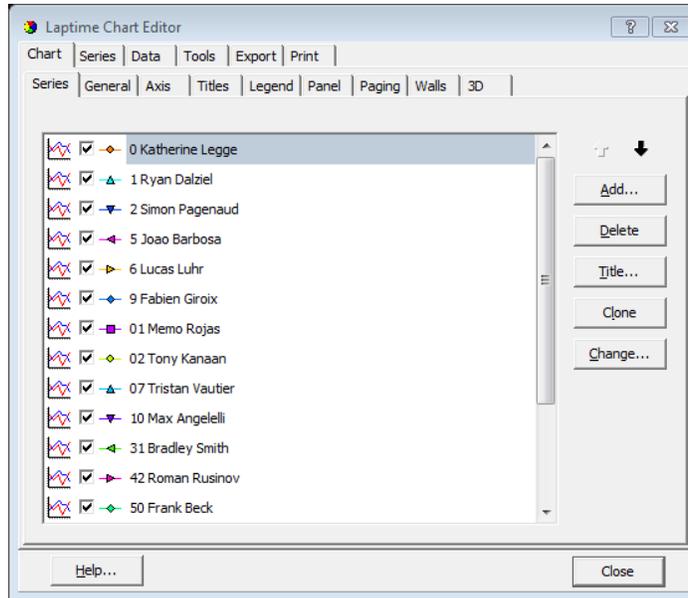
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LastPit – Pit Lane time for previous pit stop
QWU – Oval Qualifying Warm Up Lap Time/Speed
QL1 – Oval Qualifying Lap 1 Time/Speed
QL2 – Oval Qualifying Lap 2 Time/Speed
QL3 – Oval Qualifying Lap 3 Time/Speed
QL4 – Oval Qualifying Lap 4 Time/Speed
QTotal – Oval Qualifying Total Lap Times or Average Lap Speed
QLTime – Oval Qualifying Average Lap Time
QSpeed – Oval Qualifying Average Lap Speed
QStatus – Qualifying Status
QLaps – Number of Qualifying Laps Completed
QRank – Qualifying Rank
QAttempt – Oval Qualifying Attempt Number
QDay – Oval Qualifying Day of attempt
QTarget – Lap Time required to match each competitor for current qualifier
QTotal+ – Projected Qualifying Total Time or Average Speed
Tow FL – minimum Gap On Track for Fast Lap, used to gauge tow factor of Fast Lap
Tow LL – minimum Gap On Track for Last Lap, used to gauge tow factor of Last Lap
Proj. – Projected Lap Time/Speed
P+ – Projected Rank based on Projected Lap Time/Speed
NTFLap – Non-Tow Fast Lap
NTFTime – Non-Tow Fast Lap Time
NTFSpeed – Non-Tow Fast Lap Speed
NTR – Non-Tow Rank
Team – Team Name
Engine – Engine Supplier
MaxL – Maximum Laps possible for competitor based on Time Remaining/Leader Laps
L2G – Maximum Laps To Go for competitor based on Time Remaining/Leader Laps
RollAvg – Rolling Lap Average, average of last x number of laps
BP – Best Position in session
CLSDiff – Gap to class leader
CLSGap – Gap to previous car in class
Optimal – Optimal Lap Time
LP+ – Live Projected Rank, including Projected Lap Times of active competitors
TackGap2Us – Gap to team car on track
BehindUsOnTrack – time ahead of team car on track
AheadUsOnTrack – time behind team car on track

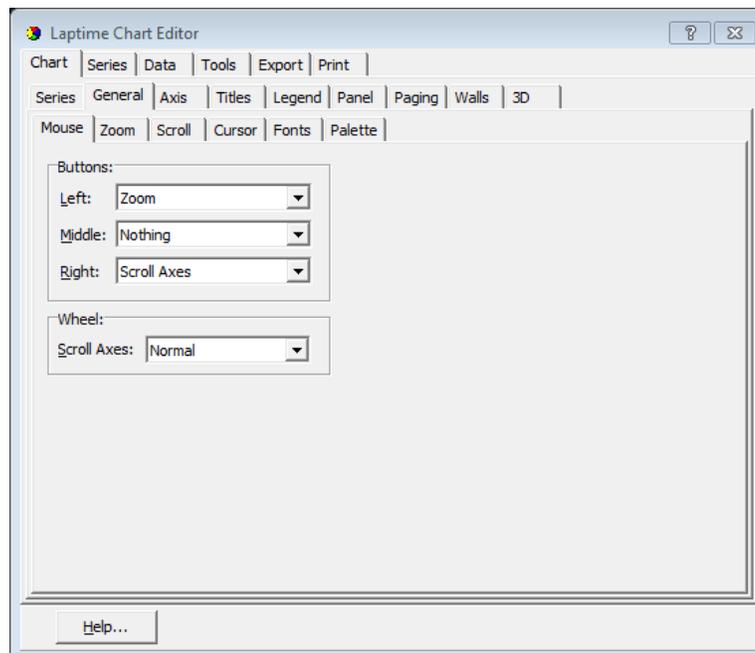
Chart Editor

Chart

- Series
 - Uncheck the box to remove a car (or cars) from the chart. Check the box to add a car back into the chart.



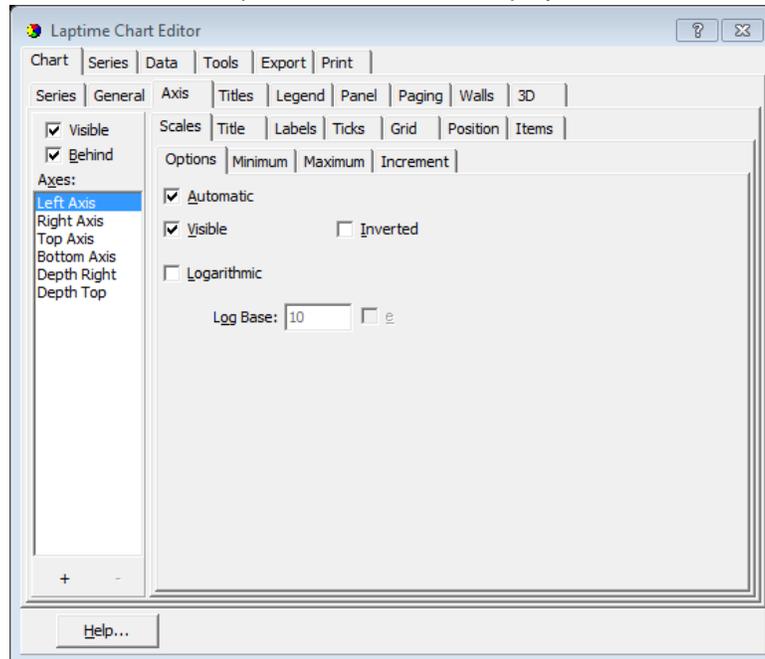
- General
 - This tab allows the user to set the mouse functions.



- Mouse – Define mouse button function.
- Zoom – Define the zoom options for the chart.
- Scroll – Define the scroll options to allow.
- Cursor – Define the cursor type.

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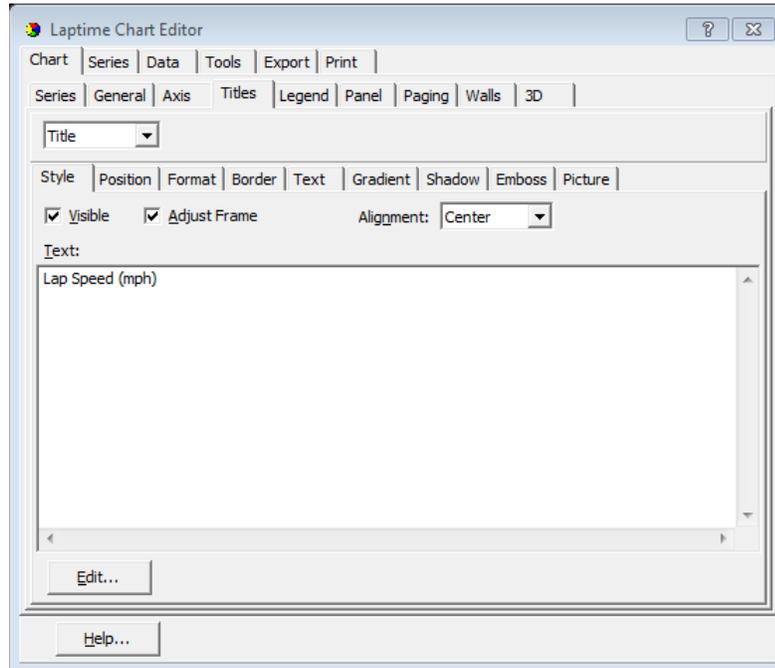
- Fonts – Set the fonts for items on the chart.
- Palette – Select the color palette for the chart items.
- Axis
 - This tab allows the user to set options on each axis displayed in the chart.



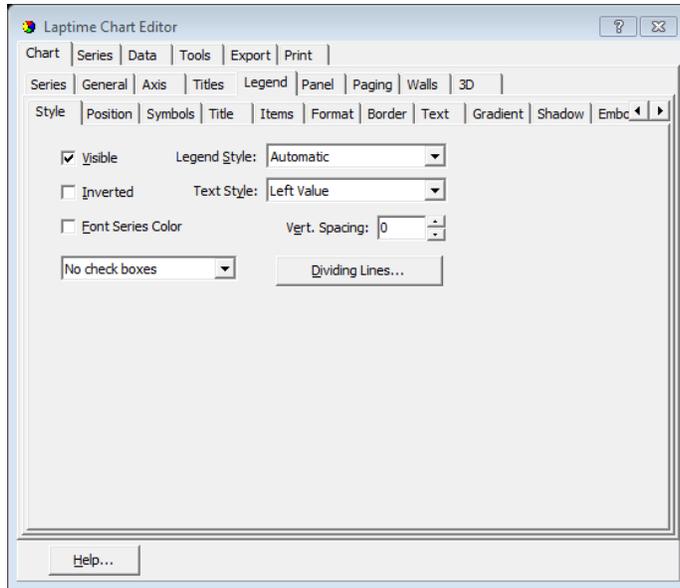
- Scales
 - Options – set Automatic, Visible, Inverted, Logarithmic options for each axis in the chart.
 - Minimum – Select Auto, or set a minimum for each axis.
 - Maximum – Select Auto, or set a maximum for each axis.
 - Increment – Change the increment for each axis.
 - Title
 - Style – Set the Title, Angle, and Size for each axis title.
 - Format – Adjust the format (look) of each axis.
 - Labels
 - Style – Select Visible, Multi-line, Round First, and Label on Axis, Alternate, Behind Grid options for each axis.
 - Format – Select the format for the values used in the chart.
 - Text – Select the font size and properties for each axis.
 - Ticks – Set the properties for the points on the chart.
 - Grid – Set the Grid properties for the each axis on the chart.
 - Position – Set position properties for each axis on the chart.
 - Items – Set the number of items for each axis. (Checking 'Automatic' will let the software show all data.)
-
- Titles

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This tab allows the user to Name the chart and adjust the format properties of the chart name.

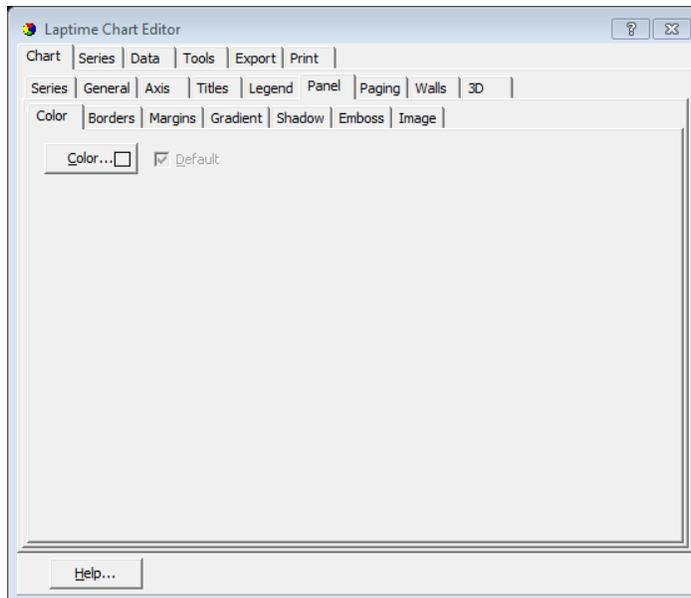


- Style
- Position
- Format
- Border
- Text
- Gradient
- Shadow
- Emboss
- Picture
- Legend
 - This tab allows the user to adjust the position and visibility properties of the chart Legend.



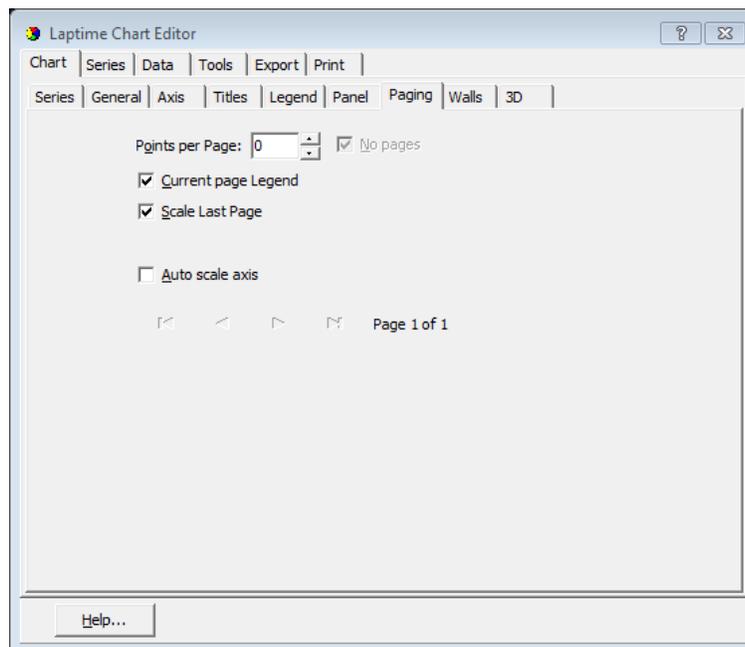
- Style
- Position
- Symbols
- Title
- Format
- Border
- Text
- Gradient
- Shadow
- Emboss
- Picture

- Panel



- Color

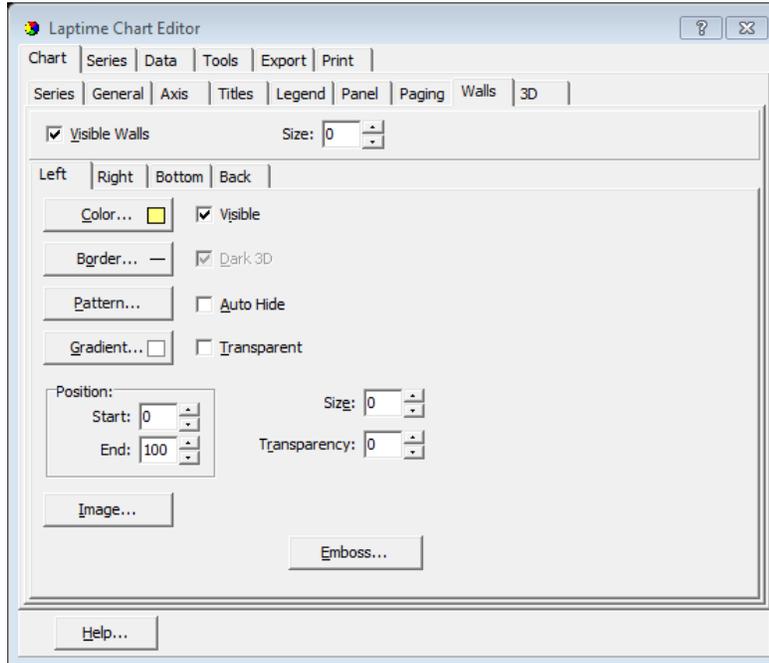
- Borders
 - Margins
 - Gradient
 - Shadow
 - Emboss
 - Image
-
- **Paging**
This tab allows page control for the chart.



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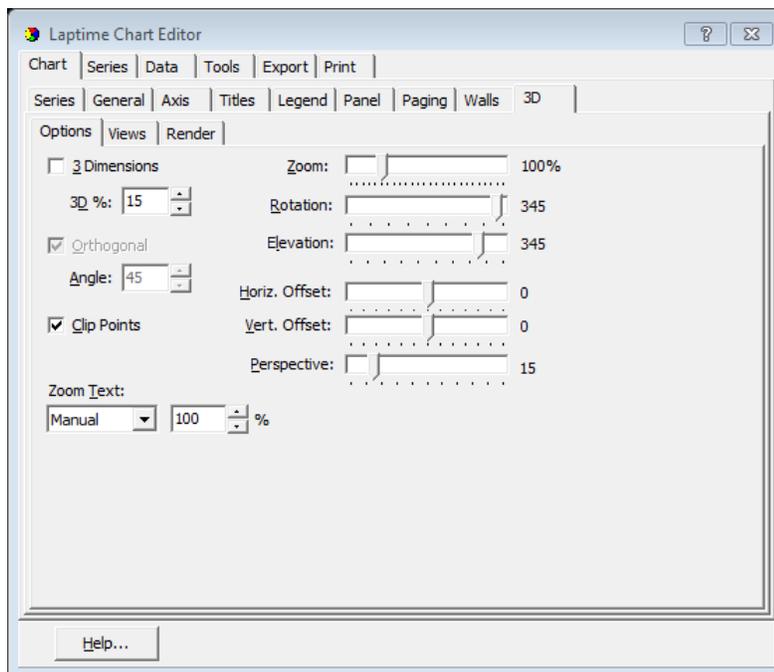
- Walls

Select color and visibility properties for the chart. This is used if you have selected the 3D chart option.



- Left
- Right
- Bottom
- Back

3D

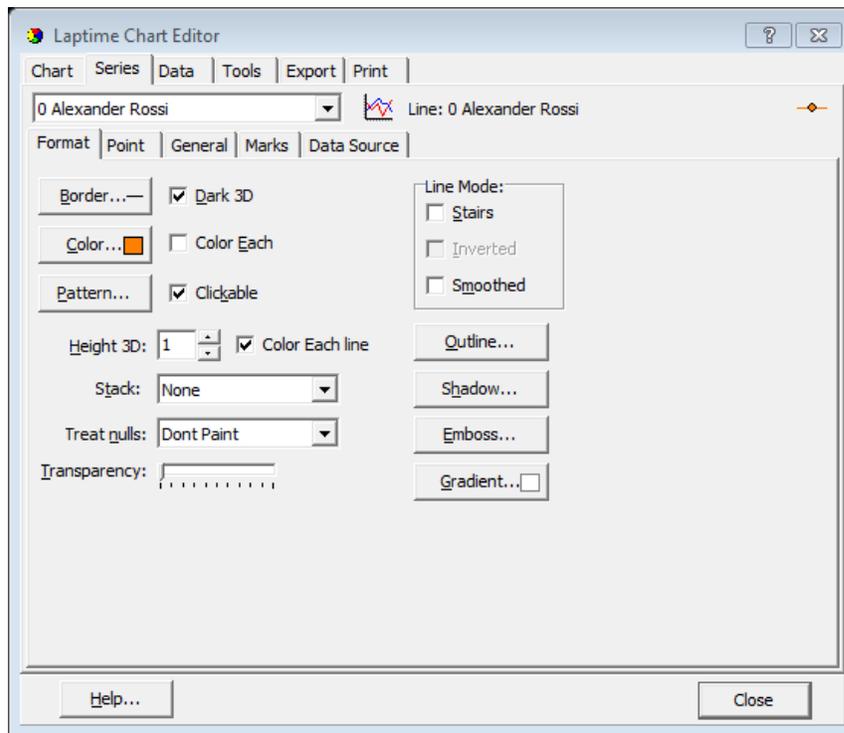


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- Options – Check the '3Dimensions' box to turn on the 3D chart, then adjust the various properties to get the visible effect you desire.
- Views
- Render

Series

The 'Series' tab reveals options for changing the line colors and other properties for each car.



- Format
- Point
- General
- Marks
- Data Source

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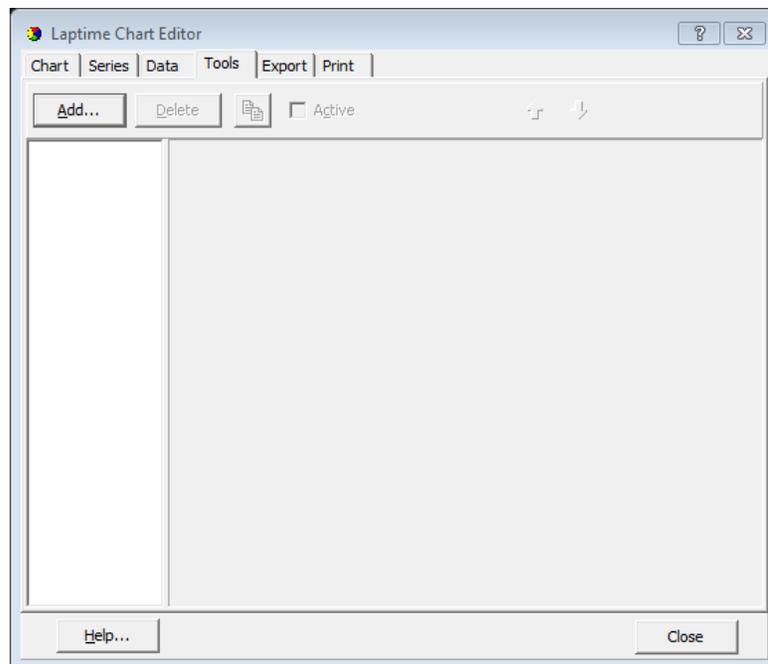
Data

The 'Data' tab displays the actual data points for each car.

# Text	X	Y	X	Y	X	Y
0 1	1	118.359	1	116.762	1	115.23
1 2	2	123.999	2	123.726	2	122.817
2 3	3	124.92	3	123.604	3	124.121
3 4	4	124.668	4	125.361	4	125.002
4 5	5	125.217	5	125.199	5	125.891
5 6	6	125.017	6	121.429	6	122.536
6 7	7	54.951	7	55.71	7	55.572
7 8	8	56.408	8	56.125	8	45.896
8 9	9	69.007	9	70.449	9	82.276
9 10	10	124.405	10	124.17	10	120.622
10 11	11	124.029	11	124.867	11	121.28
11 12	12	124.508	12	125.638	12	120.723
12 13	13	124.484	13	125.153	13	123.745
13 14	14	125.101	14	125.947	14	124.789
14 15	15	111.623	15	124.911	15	123.011
15 16	16	125.02	16	123.836	16	125.117
16 17	17	125.221	17	124.037	17	124.656
17 18	18	123.168	18	125	18	125.367

Tools

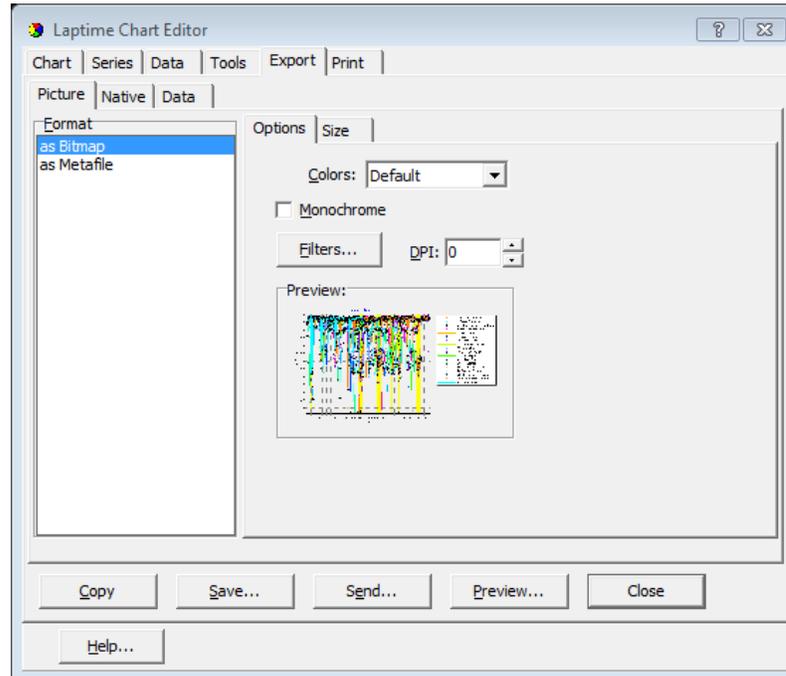
Various tools are available for modifying the chart.



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Export

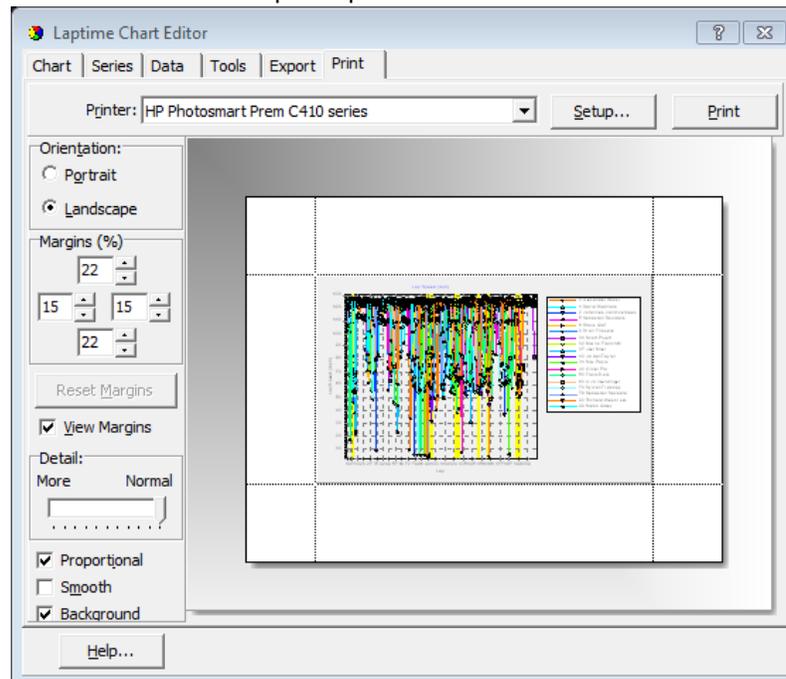
The 'Export' tab allows the user to export the graph in picture or data format.



- Picture – Select Bitmap or Metafile format.
- Native – Select Binary, Text, or XML.
- Data – Select the data format: Text, XML, HTML Table, or Excel.

Print

The 'Print' tab allows the user to set up and print the chart.



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