

TIPS FOR NOVICE TSD RALLYISTS by Gary Starr (rev 3 –3/15/2018)

For TSD Rally Navigators:

1) Stay on course first!

- a) It is meaningless to keep time on the wrong road.
- b) Help your driver with course following. Four eyes are always better than two and it is to your advantage to stay on course also - if you don't believe this just think of the mess you will have with an off course timing exercise.
- c) Take as much time as necessary to figure out an intersection (eg. trap intersection on a course event) even if you must go down a minute - remember taking a time allowance is nearly always free. That is how you will learn and you will be amazed at how much faster you can figure out those types of intersections in the future. Remember this also (while you are stopped using up time to figure out the course): The only place you must be on time is at the control.

2) Keep a log:

- a) Write on the log only information needed to reconstruct the leg should you go off course (i.e. out time, CAST, speed change mileage, pauses). Do not write on the log calculations for periodic time checks or mileage turns.
- b) Keep the log simple and neat. Use scratch paper (or a special area on the log sheet) for miscellaneous calculations that do not belong on the log (e.g. periodic time checks, corrected mileage for turns, etc.).
- c) Many apps have their own log in which case it will keep one for you.

3) Timekeeping:

- a) The best/easiest thing is to use one of the new TSD rally Apps on your mobile device which also has GPS mileage and a real time clock (see list at end of this article). Or if you just need an accurate hundredths of a minute clock/watch you can use the CentWatch App for an iPhone, iPad, or iPod. Note you can also use your wrist watch for TOD out times (and start a leg watch from it) as these watches are highly accurate. Whatever you use for timekeeping, have a cheat sheet handy that summarizes how to use your method (what to do, when, and how) for when under pressure you get all flustered and can't remember any of it. Pick a 10 mile road, make up some instructions with speed changes, pauses, controls and go out and practice your timekeeping method weeks before the rally (don't wait until the day before)!!! Also make sure you practice both an off course excursion with timekeeping recovery and how to handle Time Allowances (personal

delays) with your timekeeping system. It WILL happen sooner or later so practice how to handle it now.

Note that a TA (Time Allowance) slip must be on the $\frac{1}{2}$ minute [eg. 0.50 min, 1.50 min, etc (or 30 seconds, 1:30, etc)]. This is so you don't arrive at the control line exactly at the same second as another rally car who didn't use a TA. Be careful, however, to not get mixed up if you take more than one TA on the same leg. Since the first must be on a $\frac{1}{2}$ minute, subsequent ones on the same leg must be on whole minutes so the resultant TA you hand in ends up being on the $\frac{1}{2}$ minute. Example: first is 0.50 minutes and next is 4.00 minutes, so $0.50 + 4.00 = 4.50$. It's very easy to make the mistake out on the course of using 4.50 minutes as the second one (since you're thinking TA's must be on $\frac{1}{2}$ minute intervals). Then $0.50 + 4.50 = 5.00$ and you just gave yourself 50 points (since that's not on a $\frac{1}{2}$ minute)!

- b) If your method/class requires distance information to be manually entered/incremented into calculating equipment (eg. SCCA class S or L), select an easy increment of mileage to do periodic time checks at (eg. every 1/2 mile or mile from the last speed change or control – and every 0.1 mile or less when approaching a control). Note: In 2018 SCCA changed class L to also allow any electronic app if the distance information is derived solely from GPS signals. With these “distance derived from GPS” apps, you no longer have to enter/increment any distance and they can even automatically display how early/late you are.
- c) When you're not trying to run exactly on time (eg. control is not imminent, in a free zone, etc), round off hundredths on time checks to make it easier. Your driver doesn't care in that situation if he's up 57 or 63 - just say up 60. When controls are imminent then you need to be exact.
- d) If you know between which 2 instructions the control is, but not where (no control mileage), run minutes early to the instruction before the control and stop. Then leave that point at the proper time (which you compute from the official mileage of that instruction, or your odo mileage if you have no official mileage there) and drive the CAST to the control. Note if the instruction is mileaged, you can figure all these out right after you receive the routes. Running those minutes early will allow you to slow down to take very twisty places at slow enough speeds so you won't risk going off the road (like in winter) as well as get by congested areas or unexpected things that take up time.
- e) If you know the mileage at the control there's a very clever and easy way to get good scores. Run minutes early to 0.5 mile before control and stop. Compute perfect control in-time from control mileage and subtract 1 minute. At that time, CAST 30 MPH all the way to the control. [30 MPH is 2 minutes/mile so going 0.5 mile should take 1 minute - which is when you leave your "stand-off" point (stand-off point is 0.5 mile before control)]. So going 30 MPH will not only make you arrive exactly on time but will also be slow enough to get you around twisty curves.

f) If you don't know where the control is then you are going to have to run on-time all the time where controls may be (and run early where controls can never be, like free zones, transits, odo check, and breaks). But use common sense. Don't ever drive so fast that you will go off the road. Going off the road and getting stuck (or worse) is FAR worse than getting a late penalty. And if the rules allow delays or a TA (Time Allowance) which nearly all rallies do, use them rather than driving too fast and risk going off the road. Also many R/M's purposely give you extremely twisty roads that you can't possibly keep up the CAST on just so you can enjoy them - then they give you a couple miles of straight after it so you can make up the time. Again, if in a free zone or transit, run early to cover these situations.

g) At breaks the first thing you need to do, before even getting out of the car, is figure out when to leave the break area to make it to the restart (and how far away the restart is). During break, both driver and navigator should keep an eye on the time but it is primarily the navigator's job. Refuel before going to break if needed.

4) **Control procedures:**

- a) Split your TOD watch at the inline. If the driver has to get out to go to the control car for the timing slip, give him the TOD in-time before he gets out. In-times are sometimes misread (or mixed up with another car's) and this will save valuable time if there is a discrepancy. Even if you don't have to leave the car, the in-time should be the first thing you check on the timing slip. Also write down your in-line odo reading on the critique or timing slip next to the official leg mileage.
- b) Immediately start preparations for the next leg: resetting odo's, watches, log, etc. You may not have much time when your driver gets back or when you arrive at the outmarker.
- c) Read everything on the critique or timing slip. Often there is info that you'll need on the next leg such as a new Cast, outmarker location, instruction working on, special instructions, etc.

5) **Miscellaneous:**

- a) Have a "rally bag" that you keep everything in (eg. 6-8 pencils, pens, 5 highlighter colors, sticky labels, paper, small scissors, routes centerboard, navigator clipboard, any unique mobile devices and GPS receivers for rallying, backup calculator (that has a working battery for night events), small light, duct tape, regular tape, bungee cords, Dramamine, Tums, etc). When you return home from the rally, immediately sharpen pencils and organize everything in the rally bag so it is all ready for the next event. Then all you have to do the day of the event is grab it and go as you know everything is already there!

TSD Rally Timekeeping equipment available:

Apple devices:

- App: "CentWatch" hundredths watch for iPhone, iPad, iPod - free
<https://itunes.apple.com/us/app/centwatch/id424471807?mt=8>
- App: "RallyOdoTimer" GPS twin odos for iPhone, iPad - free (C. Westberg)
<https://www.appannie.com/apps/ios/app/rallyodotimer/#>
- App: "Richta" for iPhone, iPad, iPod - \$10 (David Bireta)
iTunes App Store
- App: "Richta Rally Calculator" for iPhone, iPad, iPod, Android - \$10 (Rich Bireta)
<https://play.google.com/store/apps/details?id=com.Richta.Calculator&hl=en>
- App: "Richta Rally Checkpoint clock" for iPhone, iPad - \$1 (Rich Bireta)
<https://itunes.apple.com/us/app/checkpoint-clock/id549741037?mt=8>
- App: "GPS Rally Odometer" for iPhone, iPad - \$8 (Michael Young)
<http://www.msyapps.com/apps/gps.html>
- App: "GPS Rally Computer - SRC" (class L) for iPhone, iPad - \$10 (Michael Young)
<http://www.msyapps.com/apps/gpscomp.html>
- App: "TSD Rally Computer" for iPad - \$28 (Michael Young)
<http://www.msyapps.com/apps/rallycalc.html#sthash.PpkGZouu.dpuf>
- All Rally apps by Michael Young
<http://www.msyapps.com/>

Android devices:

- App: "Richta Rally Calculator" for iPhone, iPad, iPod, Android - \$10 (Rich Bireta)
<https://play.google.com/store/apps/details?id=com.Richta.Calculator&hl=en>
- App: "Richta TSD Rally Calculator Full Version" for Android - \$10 (Rich Bireta)
<https://www.amazon.com/Richta-Rally-Calculator-Full-Version/dp/B006SPMMIY>
- App: "Richta Rally Checkpoint clock" for Android - \$1 (Rich Bireta)
<https://play.google.com/store/apps/details?id=com.Richta.CheckpointClock&hl=en>
- App: "Richta Rally Computer" for Android - \$20 (Rich Bireta)
<https://play.google.com/store/apps/details?id=com.Richta.Computer&hl=en>
- App: "Richta Simple Rally Computer" (class L) for Android - \$6 (Rich Bireta)
<https://play.google.com/store/apps/details?id=com.richta.simplerallycomputer>
- App: "Richta Rally Odometer" for Android - \$5 (Rich Bireta)
<https://play.google.com/store/apps/details?id=com.Richta.Odometer>
- All Rally apps by Rich Bireta
<https://play.google.com/store/apps/developer?id=Rich%20Bireta&hl=en>
- Rabbit Regularity Rally (TSD) for Android – free but only in seconds
<https://play.google.com/store/apps/details?id=com.rabbit.nav&hl=en>

Other devices:

- "TSD Rally Runner" Tablet + GPS computer (scca class E/L) - \$200
<http://www.3peakengineering.com/motorsport/rally-computers/tsd-rally-runner/>
- Dual "external Bluetooth GPS receiver" for Apple and Android devices
<http://gps.dualav.com/explore-by-lifestyle/car/>
- Garmin Glo "external Bluetooth GPS receiver" for Apple and Android devices
<https://buy.garmin.com/en-US/US/shop-by-accessories/sensors/glo-/prod109827.html>

- Spark Electronics “GPS speed sensor” (pulse generator from GPS)
<http://www.rallycomputer.com/speed-sensors/gps-pulse-generator.html>
- Centrodyne Vehicle Speed Sensor (VSS) signal products
<http://store.centrodyne.com/store/Vehicle-Speed-Signal-Products-C11.aspx>
- Belmog rally instruments, clocks, sensors, accessories (Belgium)
http://www.belmog.com/index.php?route=product/category&path=59_111
- Fastime 500DM decimal minute stopwatch
<http://www.astopwatch.com/products/index.asp?product=fastime-500dm-16-491>
- Timewise Computers (this is the undisputed ultimate scca class E or L equipment – pricey)
<http://www.timewise.us/>
- Alfa (scca class E or L equipment - nowhere near quality of Timewise but way cheaper)
<http://www.rally.cc/>
- Brantz Rallymeters – hugely popular rally equipment in the U.K.
<https://www.brantz.co.uk/>

Old and obsolete equipment:

- “EZ Rally Timing” article (scca class S) using 4 function calculator (G. Starr):
 See eztiming.pdf here: <https://www.facebook.com/groups/twincityrallyclub/files/>
- Stevens Rally Indicator (rally circular slide rule for time calculations):
<http://sliderules.nl/mysliderules/detail/stevens-rally-indicator-model-25>
- Halda products:
<http://www.haldaman.com/>
- Guide to old rally equipment:
<http://www.specialstage.com/forums/archive/index.php/t-18082.html>
- Manuals for various older rally equipment:
<http://www.rallyracingnews.com/manuals/index.html>
- “The Road Rally Handbook” by Clint Goss, available in library ISBN 0-9632401-0-2:
 Can be seen here: <http://www.goss.com/catrrh.htm>
- “Rallying to Win” by Jean Calvin, available in library ISBN 0393600025:
 Can be seen here: <https://www.amazon.com/Rallying-Win-Complete-Guide-American/dp/0393600025>

For TSD Rally Drivers:

- 1) On TSD road rallies have the routes used for course following on the dash between driver and navigator so both can see them (so both can double check they are executed correctly and write any notes on them). I see many teams have them on the navigators lap which is the worst place - driver can't see them - what if navigator reads them wrong which WILL happen sometime? Also navigator is busy doing timekeeping. {This is not to say the navigator might not have his own set of routes in his lap to keep track of mileage error – just keep the main set used for course following on the dash where both can see them.} Use a clipboard or 1/4" plexiglass centerboard bungee corded to the dash defrost vents to hold the board. And for night events have a light mounted on the board. I also have popsicle sticks with Velcro on the back for main road determinants (for course rally) on my route board which work great. But use common sense. Obviously if you're on a brisk event where it's too dangerous for the driver to look down at the routes, then they need to be on the navigator's lap with him calling them out.
- 2) Drivers check off the route instructions yourself (not the navigator) to help you pay attention and not make mistakes (but navigator should watch to make sure the proper instruction is being worked on).
- 3) Highlight in different colors on the routes: speed changes, pauses, restarts, free zones, transit zones, quoted signs, onto's (if course rally).
- 4) On course rallies circle the onto's when they become active, X them off when you lose them.
- 5) Never go past the leading edge of an intersection that you're not sure of (eg. especially on a course rally) - always make sure you slow down enough to accomplish this - stop if necessary before the intersection, not in or past it. The biggest mistake and waste of time beginners do is driving through intersections and having to back up. This will take 5 times longer to do than if you had stopped before the intersection (not to mention very dangerous).
- 6) Remind your navigator during the leg when a speed change is about to be done - a smart navigator will appreciate this. Inform your navigator what you are thinking about the course and/or traps and when you are going to turn around. Call out loud where you are going and why at every intersection where you are doing an instruction or following the main road, so your navigator can follow your logic (e.g. "I'm following the main road Left at T" or "Main road is right by Protection so I'm going to do the instruction Left"). This will give your navigator the chance to disagree and save you an embarrassing backup or max. - remember you're a team and need to check each other - the smart driver knows this all too well!!! On course rallies call out all curve arrows (either partner) whether the curve arrow determinant is active or not [e.g. "Curve arrow right" or "Curve arrow doesn't count". This will help when you get to the intersection and see the back of a diamond shaped sign in your mirror (oh sh..) but then you remember your partner called it out so you don't have to go back - aren't navigators great who don't keep their heads down?].

- 7) Always bring to every rally: a wrist watch to synchronize with WWV or to the rally master clock (needed at breaks), any rally mileage/timekeeping equipment, GPS, pencils, centerboard, navigator clip board/lapboard, compass, a full size spare, interior lights if night event, and if a winter snow rally: real snow tires (not all-season), shovel, triangle/flares, 6V lantern, tow strap, x-bar lug wrench, extra warm clothes & mittens & boots. Disconnect passenger air bag if you have an object (eg. rally computer or centerboard) in front of it so it won't get blown into the navigator's face should it go off (my car has a connector just inside the glove box).
- 8) Go to the end of free zones ASAP without speeding or stopping. There's a reason they are free and you may get delayed in them.
- 9) Leave breaks and begin odo check early (at least 10 minutes minimum - there's ALWAYS something that you'll need extra time for). A restart point may be many miles away from the break which you also need to account for (look where it is in the routes before leaving car for break and know your restart time and distance). You also may get delayed on the way to the restart (traffic, accidents, etc). And re-fuel BEFORE you stop for your break. At lunch break don't order food that will take longer to get and eat than you have time for (eg. restaurant is crowded so food orders will take too long to even get the food, etc).
- 10) When you get to the control crew after the timing line, the first thing you do is verify the in-time they give you. Sometimes it's for another car or off by a minute. You don't want to have to go back to straighten it out. Draw a line across the routes where the control was along with control number. Record your mileage next to the OM on the critique/timing slip along with any delay/TA taken.
- 11) Get to the outmarker (or Begin Control Zone) quickly and setup (ie. don't hang around the control crew talking or drive too slowly on the way there). Sometimes it's miles away and you may not make your out time. Also occasionally finding the outmarker can be a problem so it's wise to note and measure the distance.
- 12) At outmarker:
 - a) Double check that your navigator has got things setup properly. He will thank you if they aren't and you sure don't want to mess up the leg before you've even started!
 - b) On course rallies, read the critique (description) of the leg to make sure you did it right for the same reasoning as the rallymaster intended before starting next leg. Precedence is set by the rallymaster, not you (and you may need this knowledge on later legs).
 - c) Driver fills out the scorecard while navigator is setting up next leg - the navigators got enough to do. This should be the last thing you do however, and ONLY if you have time (you can always fill it out at the end).