Cascade Sports Car Club
Road Rally School 2019

What is a Cascade road rally? (RRR inside cover)

Time-speed-distance (TSD) road rally – a rules-based game of precise timekeeping and navigational course following, held on open public roads. Cascade road rallies usually include “tricks and traps” (more on that later).

Organizers provide rules of the game (RRRs), a start location, a rally route (route instructions), timing stations (checkpoints), and an ending location.

An entry team consists of a vehicle, a driver, and a navigator.

Object: Complete the rally route on course and on time.

Getting ready (RRR 1)

- Read the rules.
- Prepare your vehicle (adequate fuel, clean windows, good tires).
- Prepare your team (roles, communication, clipboard, pens/pencils, timepiece).
- Arrive early at start location.
- Complete registration process. Sign insurance waiver.
- Synchronize your timepiece to official time. You will need to time yourself out from outmarkers and record your own arrival times as directed during the rally.
- Note official signs displayed near registrar.
- Affix car number on passenger side.
- Examine route instructions.
- Attend informational meeting.
- Drive to the outmarker about one minute before your start time. Zero your odometer. Depart at your start time by following the route instructions.

Odometer calibration (RRR 1.2)

The route instructions begin with an odometer calibration zone so you can "synchronize" your distance measuring device (odometer). Compare your odometer to official mileage so you'll know how to adjust speed and distance for your odometer. **NRI 1-10**

Checkpoints (RRR 1.3)

As you drive the rally route, you'll encounter checkpoints where the exact time that you pass the checkpoint sign will be recorded. The checkpoint sign marks the end of a timed section of the event – a leg.

Pull up to the control station beyond the checkpoint sign. Give your scorecard, and time declaration if any, to the control station. Your scorecard will be returned with your arrival time and next start time filled in. Carefully read and follow any instructions provided at the checkpoint. Time yourself out from the outmarker at your assigned start time.

Route Controls (RRR 1.4)

You may encounter route controls, which may be on course or off course. Your scorecard will be marked with any penalty points. Follow the instructions provided, including a pause for stopping at the control.

Do-It-Yourself Checkpoint (RRR 6.9)

At a DIYC, the end of the timed leg is at the sign referenced by the DIYC route instruction. Note the precise time you arrived at the referenced DIYC reference. Record that time as your end time for the leg just completed. Assign your next start time as exactly two minutes after your end time. **NRI 16**

Time declarations (RRR 1.7)

Sometimes you miss a sign or make a wrong turn. After regaining the course, please do not attempt warp speed to make up time. Your safety is more important than getting back on time. Estimate about how much time you lost and request a time declaration to adjust your score on this leg.

Scoring

Your score is a measure of how well you were able to drive the course exactly on time. Each hundredth of a minute that you arrive early or late on each leg is worth one penalty point. A perfect leg score is zero, arriving exactly on time. The maximum points per leg is 300. Lowest total score wins, like golf.

Car No.	Class
Date	

Driver	Club affiliation
Navigator	Club affiliation

	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5	Leg 6	Leg 7	R/C
Start leg								A
End leg								B
Elapsed time								C
Official time								D
Time difference								
Time allowance								
Penalty points								
							Total score	

Rev. 10/28/06 vas

TIME DECLARATION REQUEST*

Car No. | Leg No.

Delay occurred between NRI No. _____ and NRI No. _____

Amount of time declared (circle):

0.50 1.50 2.50 3.50 4.50 5.50 6.50 7.50 8.50 9.50 10.50

11.50 12.50 13.50 14.50 15.50 16.50 17.50 18.50 19.50

Driver or Navigator Signature: _____

*CSCC Road Rally Rules, Section 1.7

Staying on course

A TSD road rally is a contest of precision – being in exactly the right place at exactly the right time. The winner is the team most able to run the course in exactly the correct amount of time.

Rally survival tips:
1. **Stay on the road**
2. **Stay on course**
3. **Stay on time**

However, it will do you no good to be on time if you're not in the right place. Novice ralliers find most success by focusing on course following, and not worrying too much about staying on time.

Staying on the rally course requires a combination of accurately following the route instructions and accurately following the main road. To be a successful rallier, you need to know how to follow the route instructions, how to follow the main road, and when to do which.

Rally roads (RRR 2.2)

Cascade TSD road rallies are run on open public roads. Road surface may be paved or unpaved; you may be expected to recognize the difference. Do not consider private or dead-end roads to be valid rally roads.

Route instructions (RRR 4)

Route instructions may be written out plainly in words in sentences, cryptically encoded in abbreviations and defined terms, and/or drawn in diagrams and pictographs.

Route instructions tell you <u>what to do</u> and <u>where to do it</u>. (RRR 4.2, 4.3)

<u>What to do</u>:

- Deviations (RRR 4.5) – L, LEFT, R, RIGHT, S, STRAIGHT, TURN. A change in course off the main road (more on that soon). **NRI 2**
- CAST (RRR 6.5) – Change average speed to. **NRI 11**
- PAUSE (RRR 6.19) – **NRI 14**

<u>Where to do it</u>:

- Sign (RRR 5.1) – All CAPS, in quotation marks, exact as close as graphically reasonable. **NRI 11, NRI 15**
- Landmark (RRR 4.4) – Physical object identified by a sign. All CAPS, not in quotation marks, not in Glossary. **NRI 12**
- Official mileage (RRR 4.6) – **NRI 15**
- Term defined in Glossary (RRR 4.3) – Examples: STOP, SIGNAL, T. **NRI 2**

Types of route instructions (RRR 4.1)

- Numbered (NRI) – Complete in ascending numerical order.
- Note – Unnumbered route instruction, active from introduction until canceled. Independent of and may overlap NRIs. Executed each time the action point is encountered. **NRI 10, NRI 19**
- Supplemental – Usually provided at checkpoints. Complete in the order presented before resuming NRIs.

Rally route (RRR 2.1)

To follow the intended rally route, take the following actions in the order listed:

- Execute emergency directions provided by a rally official.
- Execute a supplemental route instruction provided at a control.
- Execute a note route instruction.
- Execute a numbered route instruction.
- Follow the main road.

Before you can finish first, first you must finish.

Main road (RRR 3)

In Cascade's TSD Road Rally world, a main road exists at every intersection. The main road is the rally route you would follow if you didn't have any route instructions. In fact, you can execute a route instruction containing a course directing action (aka deviation) only when it takes you off the main road (usually). There are exceptions to every rule, but this is how it usually works.[1]

Knowing where the main road goes at every intersection and knowing how to follow the route instructions are most critical to finishing any event. Before you can finish first, first you must finish. (Make sure they tell where the finish is before you leave the start.)

[1] Exceptions: Execute a deviation that follows the main road when the deviation is labeled MBCU. (RRR 6.14) Execute a deviation that follows the main road when the instruction is accompanied by official mileage. (RRR 4.6)

The main road is the single road leaving the intersection other than the one upon which the intersection was approached. To determine that single road leaving the intersection, apply the Main Road Determinants, in order, one at a time. If the first one doesn't define a single route leaving the intersection, then move to the next one.

Main Road Determinants (MRDs)

1. ONTO
2. TOWARD
3. PROTECTION
4. SURFACE
5. STRAIGHT AS POSSIBLE
6. LEFTMOST

Tricks and traps

What is a rally trap? A trap is a planned opportunity to earn penalty points.

A trap may take you on a planned off course route that rejoins the on course route. Or a trap may entice you into making incorrect speed changes or pauses. The penalty for falling for a trap could be as little as a small fraction of a minute or as great as a max for the leg.

Traps exist in the context of the rules for that event. For the following examples, the relevant rules are provided.

- Number switch (RRR 4.1)

  Rule: Complete numbered route instructions in ascending numerical order.

  Trap: The route instructions are out of order.

  Example: **NRI 23**

  To stay on course: Check the sequence of the route instruction numbers. To be sure, check them in reverse order.

- Spelling (RRR 5.2)

  Rule: When quoted, a sign will be exact with respect to spelling…

  Trap: The sign is quoted incorrectly.

  Example: **NRI 27**

  To stay on course: Make sure the sign matches the route instruction.

- Note instruction (RRR 4.1)

  Rule: Notes are independent of and may overlap NRIs.

  Trap: Although it looks like a mileage trap (watch for bikes next one mile), a note instruction can be executed during the one mile.

  Example: **NRI 17**

  To stay on course: Pay special attention to note instructions when active.

- Main road deviation (RRR 4.5)

  Rule: A deviation is a change in course off the main road.

  Trap: An apparent opportunity to execute an NRI containing a deviation follows the main road so can't be executed there.

  Examples: **NRI 13** and **NRI 29**

  To stay on course: At each intersection, determine where the main road goes. Then try to apply the NRI. If the NRI can't be executed there, follow the main road and continue looking for an opportunity to execute the NRI.

Extra credit:

- CAST down / CAST up (RRR 6.5)

  Rule: CAST – Change average speed to.

  Trap: Don't jump to a conclusion before carefully examining the instruction and thinking it through. You've fallen for the trap if you assume that, after decreasing your speed by 100%, increasing your speed by 100% will restore you to your original speed.

  Example:

  52. R at STOP. CAST 40.

  53. At "MAIN" reduce your speed by 100% for 0.25 minutes, then increase your speed by 100% for 0.25 minutes, then CAST 45.

  To stay on course: Reduce your speed by 100% which is zero, so you stop and pause for 0.25 minutes. Increasing zero by 100% is still zero, so you pause another 0.25 minutes. Then you leave at a speed of 45.

More traps:

- CAST at first STOP. CAST at second STOP. (RRR 4.1, last paragraph)

- DIYC at "STOP" then R.
  DIYC at STOP then R.

- TURN at CROSSROAD. (RRR 6.6)

- TURN at SIDEROAD (at crossroad). (RRR 6.22)

Trap hints – Some terms that alert you to a possible trap:

- OR (RRR 6.18) – An instruction containing an OR may be there to support two routes, one on course and one off course.

- ITIS (If There Is Such) (RRR 6.12) – An ITIS instruction may be executed or maybe not, depending on which route you took or on your interpretation of the instructions.

- TURN (RRR 6.29) – Why not just say L or R instead of TURN? Because maybe on course will approach the intersection from one side while off course will approach from the other side. Heads up!

Staying on time

Why calculate?

- To be more accurate.
- To improve your score.
- Anything else is just a guess.

Strategies for staying on time

- Drive SOP accurately
- Drive SOP while manually calculating (RRR 7.4.2)
- More accurate distance measures with distance-measuring device interfaced with vehicle or distance measuring GPS odometer
- More accurate TSD calculations using electronic calculator or laptop (no direct odo interface)
- Rally computer (est $1,000) or laptop with direct odo interface
- GPS app (est $6) – same functionality as rally computer with less cost and more ease of use

Odometer correction factor (RRR 7.4.1)

Use the following formulas to adjust your speed to correct for any difference between your vehicle's odometer and Official Miles.

Odometer correction factor = Your odometer miles / Official Miles
Corrected speed = CAST X Odometer correction factor

Example: Your odometer miles = 9.1, Official Miles = 10.00, CAST 45
Odometer correction factor = 9.1 / 10 = 0.91
Corrected speed = 45 X 0.91 = 41 mph

If your odometer miles are <u>less</u> than Official Miles, you must drive <u>slower</u>.
If your "odo" is <u>greater</u> than Official, you must drive <u>faster</u> to stay on time.

TSD timekeeping (RRR 7.4.2)

Use the following formula to calculate precisely how long it should take to travel a specific distance at a specific average speed. If you calculate and log interval times and keep track of cumulative time, then you you'll know exactly what time it should be (or should have been) when you pass a specific reference. Compare your actual arrival time with your calculated perfect time to find out how far ahead or behind you were at that point. Slow down or speed up as needed, and start calculating your next reference.

Time = (60 X **D**istance) / **S**peed

Example: CAST 30 next 2 miles
Time = (60 X 2) / 30
Time = 4 minutes

Example: CAST 45 next 1.4 miles
Time = (60 X 1.4) / 45
Time = 1.87 minutes

GPS Apps

Needs GPS sensor – on cell phone or tablet
Better accuracy with external GPS sensor (10X resolution of cell phone)

Bluetooth sensor that connects to Hall Effect sensor driven off vehicle wheel (compared to GPS)

Odometer calibration function to calibrate GPS app

GPS measurement is reasonably consistent (vs to wheel driven which can be affected by external conditions and driving style)

Go to Playstore, download Richta Simple Rally Computer (small fee)

Future of Rally Scoring

Rally app – App set up by rallymaster ahead of time with checkpoint GPS locations and official leg times. App loaded to contestant's device times contestants when they pass checkpoint locations. Checkpoints may be hidden, with timing based on GPS location. App checks your location every second against all possible checkpoint locations. May portend end of rallying in hundredths, change to seconds, since current rallymaster apps score in seconds.