

This course is an introduction to the auto sport of TSD (Time-Speed-Distance) Rallying.

(The following is quoted from "The Road Rally Handbook" by Clint Goss)

TSD rallies have become popular in North America because of the many people who enjoy driving. Most TSD rallies have a Novice Class designed for first-time competitors. The other classes, which allow varying amounts of rally equipment, provide keen competition for experienced rallyists. Many top competitors today began in Novice Class with no more than a speedometer of questionable accuracy, a wristwatch, and a hazy understanding of rally basics.

For the driver, there is the opportunity to use a skill which most people spend years developing, but which few ever get to hone or test. But, unlike other motor sports, the skill does not involve outright car performance. More muscle does not necessarily help, so there are no artificial factors of performance to plague the rules of rallying. In fact, the rules, which define the rally classes, tend to be quite simple and provide a level playing field for competition.

Another thing, which sets TSD rallying apart from other sports, is its unique team aspect. In no other sport does a pair of people need to work so closely together, yet do fundamentally different things. Of course, when a team first starts rallying, both driver and navigator are simply concentrating on staying on course. Beginning teams do the timing by feel or some very simple calculations. But as a team gains experience, the driver and navigator begin to take on specific tasks.

As the team's coordination continues to improve, so do its results. After a while, the team graduates to more difficult events where the course challenges them to their limits, not because of outright speed, but because of the frequency and difficulty of instructions, traps, or density of speed changes and timing problems. It is these events that can give a team a deep sense of satisfaction.

For all competitors, a rally provides a day, weekend, or week get-away, driving a course that often makes use of the most scenic roads of the area, and is usually followed by a social event to round out the weekend. Some say that a road rally is merely an excuse for a party!

In a Time-Speed-Distance Rally, the Route Instructions, in addition to information to keep a team on course, also give assigned speeds. These speeds are always legal, and often are below the posted speed limit. A TSD rally is a *competition of precision driving - it is not a race!*

The goal of a rally team is twofold: to stay on the prescribed course and to drive at exactly the given speed. The perfect team would be *on course, on time* at any given point along the route. To score teams against this goal, checkpoints are sprinkled throughout the course at unspecified locations. Each team is timed by a crew at the checkpoint (also called the control) and their time is compared against a perfect time (computed from the assigned speeds and exact distances measured before the event). Each team receives a score based on its time for that portion, or leg, of the course. For each fraction of a minute early or late, the team is given points. The team with the lowest total score for all the legs wins. However, each leg is independent: time late or early on one leg cannot be "made up" on subsequent legs.

What you will need to bring for a TSD event:

Equipment Required:

- Calculator-battery powered, not solar
- Clipboard
- Pens or pencils
- Stop watch or digital watch
- Notepad or paper for notes
- Flashlight or night light, if running a night rally
- Highlighter

Equipment Recommended:

- Safety Triangle*
- First Aid Kit*
- Tow Rope*
- Blanket
- Snacks and boxed beverages (no 7-11 on route)
- Gravol or Motion Sickness Medicine (optional)
- Toilet Paper (trust me on this one!)
- AMA Card (if you have one)
- Fire extinguisher rated 5BC or 10BC*
- Additional Headlights

* = *These items are required for most full TSD events*

Car preparation checklist for TSD event:

- Is car road worthy?
- Proper safety belts for all people in vehicle
- Operational horn
- Operational lights
- Operational windshield wipers
- Operational exhaust system
- Operational brakes
- Safe tires, including spare
- Windshield, extent of any damage allowed is at the discretion of the organizers
- Significant loose objects must be placed in trunk OR if kept in the passenger compartment, tied down adequately to hold in position during a possible rollover.
- No loose gas cans are allowed. Any added gas tanks must be vented to the outside.
- Roll bars and cages are encouraged, but only required in soft-top vehicles in Championship events.
- Additional lights on the front must be able to be turned off with one switch, leaving only the low beams operating.
- Auxiliary backup lights must have an interior warning light when on.
- No brake light kill switches are allowed.

Registration Information:

You should have the following ready for registration and inspection:

- Your driver's licence
- Vehicle registration
- Proof of insurance
- License plate number.
- Make, model, colour and year of your vehicle

These are just some additional information. The course will cover this stuff but here's a quick note for you to read.

At a full TSD rally event, here are sequences of events that may happen once you arrive:

1. When you arrive - You will register and confirm your entry. Sign the waiver.
2. Note any last minute changes or notes that the rally master may have posted.
3. Get the navigator to sync your stopwatch and/or digital watch to Rally Time.
4. Tech inspection may be done at this time – so Driver's be aware of the announcements.
5. Once you pass the tech – you will be given a form that is signed by the official and you will take this to the registrar and get assigned your car number.
6. You may or may not get the route book assigned to you at this time.
7. There may be a Driver's meeting – where the rally master will verbally update you on the event.
8. Have the Navigator go thru the whole route book and scan for “key” points. Good time to squeeze in some calculations (this will be covered in detail at the course).
9. Navigator will determine your “out time” based on your car number and route book instructions.
10. Drivers – please do not bother the navigator – they are as excited and as wired as you – they are focusing on the calculations and trying to make sense of the instructions – so do what ever they need to help them out – because, for the next 4-8 hours – they are going to be in CONTROL!
11. Go to the bathroom!!!
12. Make sure car is topped up with fluids (gas, washer fluid, oil, etc)
13. Secure all loose items in the driving cockpit.
14. Make sure Navigator is settled in comfortably in the passenger seat (yes – treat them very well!!)
15. OK – now that the navigator has determined when to leave – navigator will instruct the driver on how to get to the starting point and “zero” your odometer when you get there.
16. The first section of the TSD rally is usually what they call the “ODO Check” section. The instructions will give you LOTS of time to complete this section. The purpose of this section is so you can calibrate your Odometer to the rally master's Odometer readings. The formula is outlined as [Your Distance / Rally Distance = Odo Correction Factor] REMEMBER THIS NUMBER!!!!
17. Navigator's will now apply this “odo correction factor” to all the distances in the route book and come up with the corrected odo reading for your car!
18. Now you will be ready for the first stage of the TSD.

Three golden rules to a successful TSD rally (highest to lowest in priority):

- 1) Stay on the road
- 2) Stay on the course
- 3) Stay on time

Things to keep in mind:

- Competitors receiving any sort of traffic violation will automatically be disqualified from the event
- Teamwork is important – drivers listen to the navigator – after all, they have the route instructions.
- Drivers – keep both hands on the wheel and your eyes on the road – read the terrain and surface conditions and adjust your driving attitude accordingly.
- Drivers – be nice to your navigator – they will feed you and hand you drinks, as you need them.
- You are an ambassador of the sport – if you run into locals – BE POLITE and BE COURTEOUS.
- If you run into local law enforcement – just explain you are on a recreational navigational rally – if they have any questions, they can contact the organizers or the CSCC.
- Do not throw any pages of the route instruction away – inevitably – it will be the page you may need later (In afterthought - Do not throw any thing out the window – period.)
- If you get severely lost – do not worry about time – try to get back on course and continue to the next stage or cut straight back to base camp and report / call / leave message for rally master (meaning “check – in” so the organizer will not send out search party to look for you)
- Never assume you know where the organizer is taking you on their rally.
- MOST IMPORTANT: **HAVE FUN!!!!**

West Coast Rally Association - Navigators Sheet

Kms /Hour	Sec/ Km	Kms /Hour	Min/ Km	Cents	Sec	
19	189.5	19	3.158	0.02	1	<p style="text-align: center;">Time = $\frac{\text{Distance} \times 60}{\text{Average Speed}}$</p> <p style="text-align: center;">Odo Factor = $\frac{\text{Odo Distance}}{\text{Rally Distance}}$</p> <p style="text-align: center;">Odo Speed = Rally Speed x Factor</p> <p style="text-align: center;">Odo Distance = Rally Distance x Factor</p>
20	180.0	20	3.000	0.03	2	
21	171.4	21	2.857	0.05	3	
22	163.6	22	2.727	0.07	4	
23	156.5	23	2.609	0.08	5	
24	150.0	24	2.500	0.10	6	
25	144.0	25	2.400	0.12	7	<p style="text-align: center;">100th/minute = cents = seconds X 1.6667</p> <p style="text-align: center;">or</p> <p style="text-align: center;">use</p> <p style="text-align: center;">conversion from table at left</p> <p style="text-align: center;">Cents = Secs 0.38 cents = 23 seconds</p> <p style="text-align: center;">Secs = Cents 17 seconds = 0.28 cents</p>
26	138.5	26	2.308	0.13	8	
27	133.3	27	2.222	0.15	9	
28	128.6	28	2.143	0.17	10	
29	124.1	29	2.069	0.18	11	
30	120.0	30	2.000	0.20	12	
31	116.1	31	1.935	0.22	13	<p style="text-align: center;">Speed = Rate</p> <p style="text-align: center;">In Table to Left</p> <p style="text-align: center;">Sec/kilometer = find units/hour (avg speed) and use sec/unit as # of seconds to do each Km at the posted average speed</p> <p style="text-align: center;">Example Average speed = 50 Kph 50 Kph = 72 sec/kilometer each 1/10 kilometer takes 7.2 seconds - makes it easy to pencil in incrementals between instructions to keep driver on time</p> <p style="text-align: center;">Perfect time to travel</p> <p style="text-align: center;">0.00 avg speed = 45 Kmh 2.73 avg speed = 50 Kmh 4.14 avg speed = 60 Kmh 6.25 end of section</p> <p style="text-align: center;">Calcs</p> <p style="text-align: center;">Time = (distance X 60) / avg speed 3.640 = (0.00 - 2.73) x 60 / 45 1.692 = (4.14 - 2.73) x 60 / 50 2.110 = (6.25 - 4.14) x 60 / 60</p> <p style="text-align: center;">7.442 min = time to do 6.25 Kms 7.442 min = 00:07:27 (hh:mm:ss)</p>
32	112.5	32	1.875	0.23	14	
33	109.1	33	1.818	0.25	15	
34	105.9	34	1.765	0.27	16	
35	102.9	35	1.714	0.28	17	
36	100.0	36	1.667	0.30	18	
37	97.3	37	1.622	0.32	19	
38	94.7	38	1.579	0.33	20	
39	92.3	39	1.538	0.35	21	
40	90.0	40	1.500	0.37	22	
41	87.8	41	1.463	0.38	23	
42	85.7	42	1.429	0.40	24	
43	83.7	43	1.395	0.42	25	<p style="text-align: center;">Speed = Rate</p> <p style="text-align: center;">In Table to Left</p> <p style="text-align: center;">Sec/kilometer = find units/hour (avg speed) and use sec/unit as # of seconds to do each Km at the posted average speed</p> <p style="text-align: center;">Example Average speed = 50 Kph 50 Kph = 72 sec/kilometer each 1/10 kilometer takes 7.2 seconds - makes it easy to pencil in incrementals between instructions to keep driver on time</p> <p style="text-align: center;">Perfect time to travel</p> <p style="text-align: center;">0.00 avg speed = 45 Kmh 2.73 avg speed = 50 Kmh 4.14 avg speed = 60 Kmh 6.25 end of section</p> <p style="text-align: center;">Calcs</p> <p style="text-align: center;">Time = (distance X 60) / avg speed 3.640 = (0.00 - 2.73) x 60 / 45 1.692 = (4.14 - 2.73) x 60 / 50 2.110 = (6.25 - 4.14) x 60 / 60</p> <p style="text-align: center;">7.442 min = time to do 6.25 Kms 7.442 min = 00:07:27 (hh:mm:ss)</p>
44	81.8	44	1.364	0.43	26	
45	80.0	45	1.333	0.45	27	
46	78.3	46	1.304	0.47	28	
47	76.6	47	1.277	0.48	29	
48	75.0	48	1.250	0.50	30	
49	73.5	49	1.224	0.52	31	
50	72.0	50	1.200	0.53	32	
51	70.6	51	1.176	0.55	33	
52	69.2	52	1.154	0.57	34	
53	67.9	53	1.132	0.58	35	
54	66.7	54	1.111	0.60	36	
55	65.5	55	1.091	0.62	37	<p style="text-align: center;">Speed = Rate</p> <p style="text-align: center;">In Table to Left</p> <p style="text-align: center;">Sec/kilometer = find units/hour (avg speed) and use sec/unit as # of seconds to do each Km at the posted average speed</p> <p style="text-align: center;">Example Average speed = 50 Kph 50 Kph = 72 sec/kilometer each 1/10 kilometer takes 7.2 seconds - makes it easy to pencil in incrementals between instructions to keep driver on time</p> <p style="text-align: center;">Perfect time to travel</p> <p style="text-align: center;">0.00 avg speed = 45 Kmh 2.73 avg speed = 50 Kmh 4.14 avg speed = 60 Kmh 6.25 end of section</p> <p style="text-align: center;">Calcs</p> <p style="text-align: center;">Time = (distance X 60) / avg speed 3.640 = (0.00 - 2.73) x 60 / 45 1.692 = (4.14 - 2.73) x 60 / 50 2.110 = (6.25 - 4.14) x 60 / 60</p> <p style="text-align: center;">7.442 min = time to do 6.25 Kms 7.442 min = 00:07:27 (hh:mm:ss)</p>
56	64.3	56	1.071	0.63	38	
57	63.2	57	1.053	0.65	39	
58	62.1	58	1.034	0.67	40	
59	61.0	59	1.017	0.68	41	
60	60.0	60	1.000	0.70	42	
61	59.0	61	0.984	0.72	43	
62	58.1	62	0.968	0.73	44	
63	57.1	63	0.952	0.75	45	
64	56.3	64	0.938	0.77	46	
65	55.4	65	0.923	0.78	47	
66	54.5	66	0.909	0.80	48	
67	53.7	67	0.896	0.82	49	<p style="text-align: center;">Speed = Rate</p> <p style="text-align: center;">In Table to Left</p> <p style="text-align: center;">Sec/kilometer = find units/hour (avg speed) and use sec/unit as # of seconds to do each Km at the posted average speed</p> <p style="text-align: center;">Example Average speed = 50 Kph 50 Kph = 72 sec/kilometer each 1/10 kilometer takes 7.2 seconds - makes it easy to pencil in incrementals between instructions to keep driver on time</p> <p style="text-align: center;">Perfect time to travel</p> <p style="text-align: center;">0.00 avg speed = 45 Kmh 2.73 avg speed = 50 Kmh 4.14 avg speed = 60 Kmh 6.25 end of section</p> <p style="text-align: center;">Calcs</p> <p style="text-align: center;">Time = (distance X 60) / avg speed 3.640 = (0.00 - 2.73) x 60 / 45 1.692 = (4.14 - 2.73) x 60 / 50 2.110 = (6.25 - 4.14) x 60 / 60</p> <p style="text-align: center;">7.442 min = time to do 6.25 Kms 7.442 min = 00:07:27 (hh:mm:ss)</p>
68	52.9	68	0.882	0.83	50	
69	52.2	69	0.870	0.85	51	
70	51.4	70	0.857	0.87	52	
71	50.7	71	0.845	0.88	53	
72	50.0	72	0.833	0.90	54	
73	49.3	73	0.822	0.92	55	
74	48.6	74	0.811	0.93	56	
75	48.0	75	0.800	0.95	57	
76	47.4	76	0.789	0.97	58	
77	46.8	77	0.779	0.98	59	
78	46.2	78	0.769	1.00	60	