

How to use a GPS to set marks

- If you have a GPS with you, you are welcome to “play along”
- If you don't have a GPS, we will do a live demonstration using my GPS



How to use a GPS to set marks

- Everyone should own a handheld GPS.
 - Don't trust that the boat will have a GPS
 - Don't trust the boat GPS is setup properly
 - Not minutes
 - Not nautical miles
 - Don't trust that the you know how to use the boat GPS
 - It is very difficult learning curve unless you are familiar with the brand.
 - \$130 for a black and white screen Garmin GPS 73.
 - It will do everything you need (and then some)
 - Be sure to set the screen saver mode otherwise the battery will not last all day.



How to use a GPS to set marks

- Everything works off the course axis
 - You need to be able to quickly (and correctly) figure out the angles
 - 90, 180, 270 from the course axis
- Let's learn how to figure out the angles.
 - Demonstrate using Weems and Plath tool
 - Demonstrate using my watch
 - Demonstrate using piece of paper
- All of these are fast and accurate



How to use a GPS to set marks

Demonstration Time



How to use a GPS to set marks

- Let's learn how to ping a mark (or boat)
 - Demonstration using my GPS
 - Read the lat/lon from the GPS
 - Drive slowly past the mark you are pinging
 - Stick your arm out so the GPS is close to the mark/boat (but don't take your arm off)
 - Hold the GPS stationary as you drive slowly past the mark
 - Press the mark button on your GPS
 - Edit the name (or write down the number)
 - I normally use Signal Saturday or Sig Sat for the signal boat on Saturday
 - I normally use Windward Saturday or win sat for weather mark (add a 2 or 3 if you move the mark)
 - I normally use Gate Port or Left Gate for one gate.
 - Now you have a way to tell everyone where the mark was on every day one of a multi day event.
 - I typically delete all the old waypoints on the motor out to the NEXT regatta



How to use a GPS to set marks

- Setup to do a Dead drop
 - If you can not drop the marks cleanly and consistently, you will not be accurate
 - Anchor first, then let the anchor pull the chain and rode down
 - Is the rode free to run
 - Flak on deck
 - Anchor goes in first
 - Place the anchor into the water, do not “toss”
 - Danforth anchors need to be placed sideways so they do not “fly”
 - Don’t worry about current, in 50 feet and 3 knots the anchor will only move 12 feet
 - If there is a hockle on the drop, pull it all up and start again.
 - Let the rode run (help the rode run, don’t hinder the rode)
 - Consistency when deploying anchors is important
 - even more so at gates
 - watch for current changes if it is more than a few minutes between gate drops
 - Mark goes in last
 - Some people drop the mark as the last of the rode runs out



How to use a GPS to set marks

How to drive the boat

- Drive the boat (slowly when close) to the correct range and bearing
 - In big waves you should practice this a few times between wind readings
- Call out some distances to your crew
 - 200 yards, 200 feet, 100 feet, etc
- When you are close stay “stand by”, “stand by”, “stand by”
 - Loudly and clearly, you can get louder and faster the closer you are
- When you get to the point say “drop, drop, drop”
 - Loudly and clearly.
- Drive the boat (slowly when close) to the correct range and bearing



How to use a GPS to set marks

- Hardware
 - For gates, the anchor, chain and rode should be identical.
 - For offsets, the anchor, chain and rode should be close to the same length.
- Discuss/show how the rode moves in a circle
 - Lead weight on a string, one long, two short. Use key chain floats, get some lead weights for fishing. Use Marlow spool.



How to use a GPS to set marks

Weather mark placement

- Range and bearing from the signal boat
- Range and bearing from reference mark
 - your Race Officer may want something else, ask at the morning briefing.
- Get the lat/lon from
 - Other mark boat,
 - Someone on the signal boat
 - Having pinged the signal boat.
- Ping the mark as you start the drop
 - Busy if you are driving and pinging

Offset mark placement

- Drive 90 degrees to the course axis, plus or minus 10 degrees (depends on your fleet)
- 3 to 7 boat length (depends on the fleet and what a Judge thinks)
- I personally use 5+ boat lengths. (the math is easier).



How to use a GPS to set marks

Gate placement

- The Race Officer may want something other than those described
 - Ask at the morning briefing.
- Range and bearing from:
 - Signal boat
 - this is my favorite choice, then entire course is lined up from signal to windward to gates with the start on one side and the finish on the other using a LA2 course.
 - Midpoint of the start line.
 - A gate (looking upwind) in line with the signal boat (normally the right gate).
 - **Regardless of the reference point you are setting gates in a V shape from some point**
- Second gate set in relation to the first gate (this is my least favorite choice)
- Good gate setters are consistently less than 5 degrees and 10 feet off
 - When measuring using a laser range finder and handheld hockey puck compass



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The cheat sheet for setting gate with the J70 fleet (cosine if you want to do your own calculations)

distance from ref. NM	distance from ref. feet	boat length= J70	length of the leg	Left Gate Degree off axis	Right Gate Degree off axis	length of the leg
0.02	100	22.965	122.1	-35	35	122.1
0.03	200	22.965	211.9	-19	19	211.9
0.05	300	22.965	308.1	-13	13	308.1
0.07	400	22.965	406.1	-10	10	406.1
0.08	500	22.965	504.9	-8	8	504.9
0.10	600	22.965	604.1	-7	7	604.1
0.12	700	22.965	703.5	-6	6	703.5
0.13	800	22.965	803.1	-5	5	803.1
0.15	900	22.965	902.7	-4	5	902.7
0.16	1000	22.965	1002.5	-4	4	1002.5
0.18	1100	22.965	1102.2	-4	3	1102.2
0.20	1200	22.965	1202.0	-3	3	1202.0



How to use a GPS to set marks

The cheat sheet for setting gate with other fleets

300 feet from ref	boat length	length of the leg	Left Gate	Right Gate
	17.5	305	-10	10
	20	306	-11	12
J70	22.9	308	-12	13
J80	26.3	310	-15	15
	30	313	-17	17
	32.5	316	-18	19
J105	34.5	318	-18	19
	37.5	321	-21	21
J120	39.4	323	-22	23
	42.5	327	-22	23
	45	330	-24	25
	47.5	333	-26	26
	50	337	-27	27

600 feet from ref	boat length	length of the leg	Left Gate	Right Gate
	17.5	602	-5	5
	20	603	-6	6
J70	22.9	604	-6	7
J80	26.3	605	-7	8
	30	607	-8	9
	32.5	608	-9	10
J105	34.5	609	-10	10
	37.5	611	-11	11
J120	39.4	612	-11	11
	42.5	614	-12	12
	45	615	-12	13
	47.5	617	-13	14
	50	619	-14	15



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- Questions?
- Comments?

