



SMSA
Race Management Training

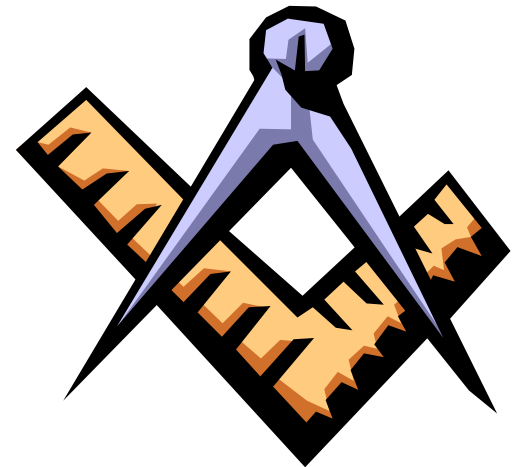
Anchoring the Race Committee Boat

- - -

Setting a Square Line



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Topics

- The Effects of Wind & Current
- Considerations Before Anchoring
- Start/Finish Line Length
- How to Arrange a Square Line
- Importance of a Square Line
- Tips for Setting a Square Line



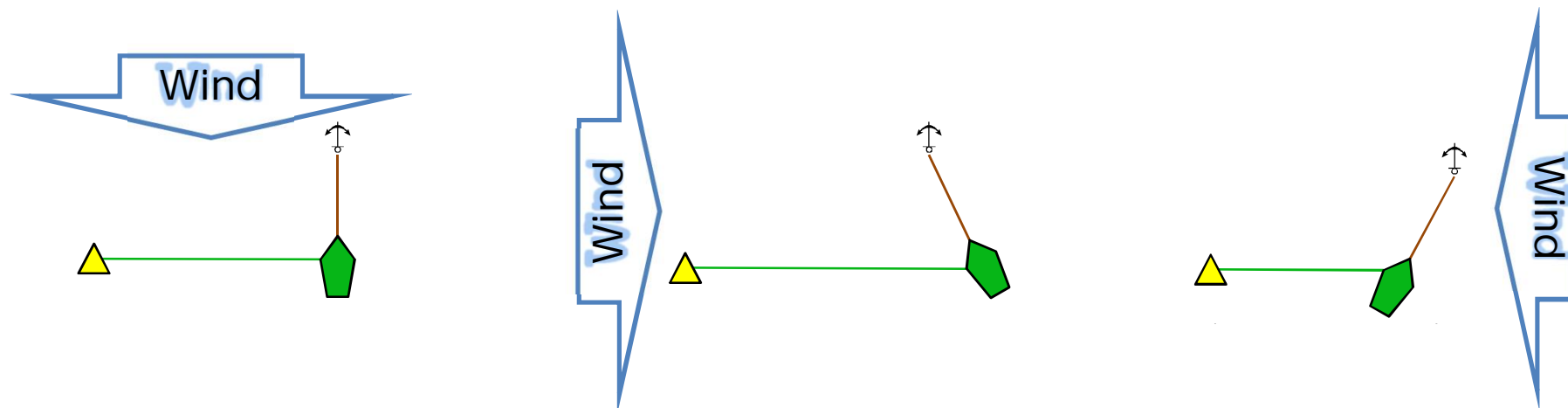
The Effects of Wind & Current

- Your ability to anchor the RC boat in the desired location will impact several areas
 - Sight line to the pin
 - Whether or not the start/finish line is square
 - Location of the RC boat anchor rode relative to the course



The Effects of Wind & Current

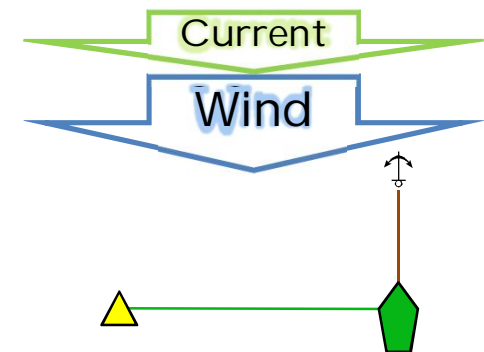
- Minimal current means the RC boat will be influenced more by the wind direction





The Effects of Wind & Current

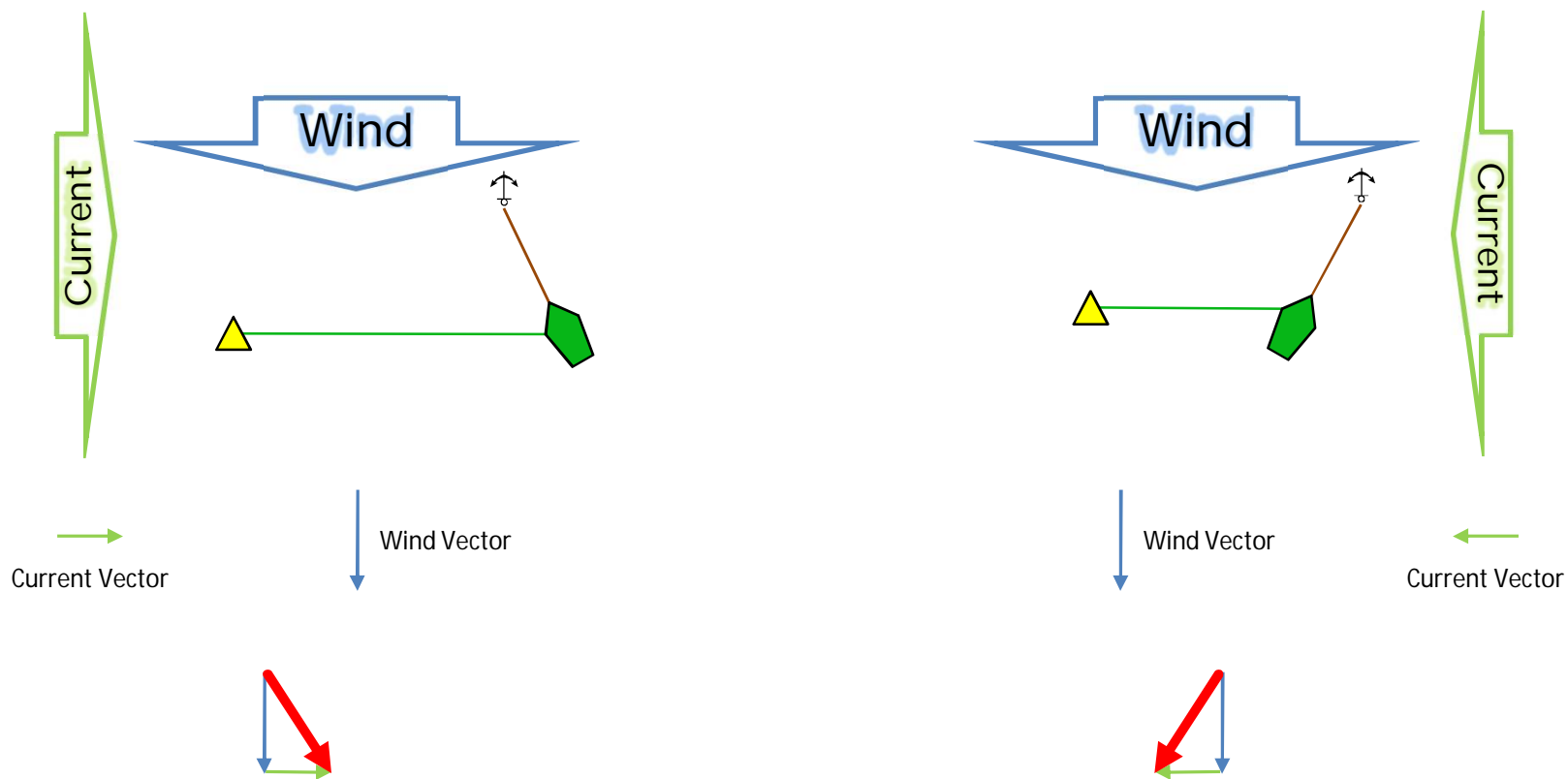
- However, when the current is stronger, the situation changes...
- We, as RC, are forced to consider anchoring the boat in terms of vector math
- This is an easy task when the current & the wind align with each other





The Effects of Wind & Current

- Things get trickier when the current & the wind do not align with each other

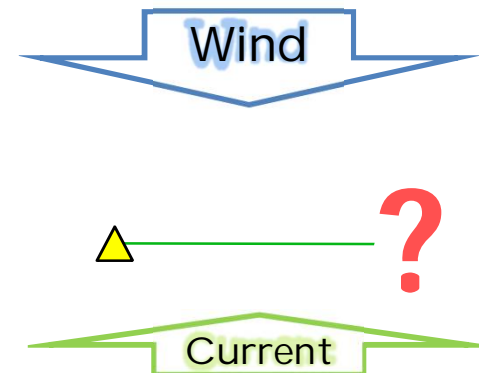




The Effects of Wind & Current

- What happens when the current & the wind are against each other?
- How will the RC boat lie at anchor?

Quite frankly, your guess is as good as mine in this situation





Considerations Before Anchoring

- How deep is the water? And, how much scope will be needed?
- What are the wind & current conditions?
- Is the wind expected to increase or decrease while you are anchored?
- Is the tide expected to change while you are anchored?
- Has there been a significant amount of rain in the preceding week?
 - If so, you may be faced with an ebb tide, regardless of what the tide charts show



Start Line Length

- How long should you make the Start/Finish line?
 - US Sailing-recommended “rule of thumb”
 - 1.0-1.5 times the aggregate length of the largest class

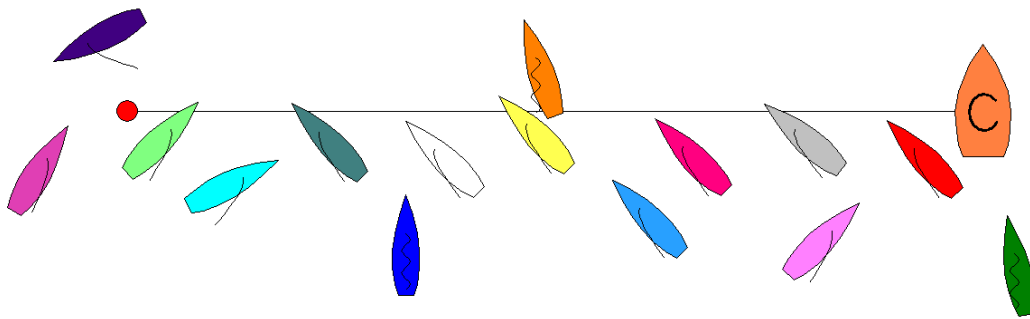
1.0x Aggregate	1.5x Aggregate
Light Air Flat Seas Displacement Hull Boats	Heavy Air Rough Seas High Performance Boats

Aggregate = The summed length of all boats in a specified class



Start Line Length

- Considerations:
 - A line that is too short will lead to recalls & the potential for lots of rules infractions
 - A line that is too long will exaggerate any lack of squareness present in the configuration
 - You usually will not know how many boats will be competing in a race/class until after setting the start
 - Therefore, you must make a “best guess of” the expected turnout



In this scenario, the start line is too short – regardless of the wind & sea conditions



Finish Line Length

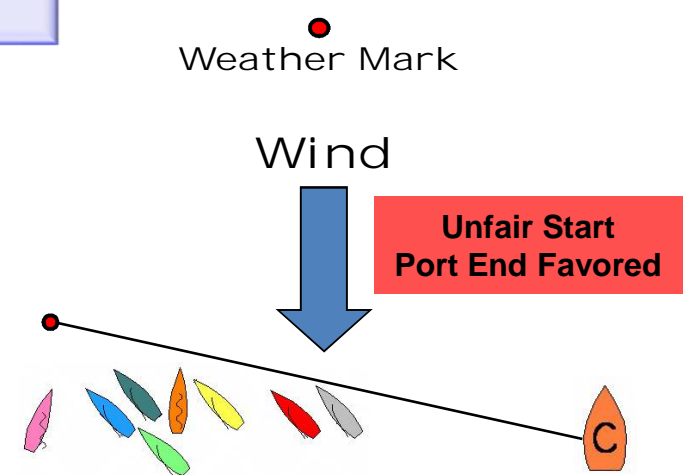
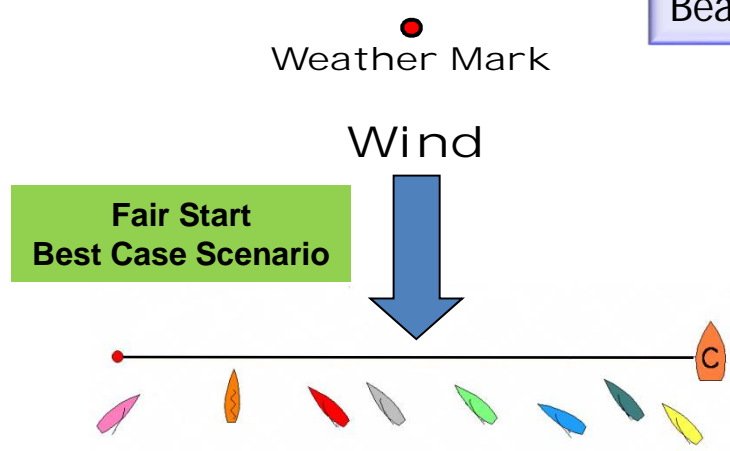
- In most cases, the start line remains the finish line
 - Usually not an issue since there are no one-design fleets
 - Generally, adequate boat spacing results from differences throughout the PHRF handicap band
- Executing a “shorten course” is the most common instance where race committee considers finish line length
- Considerations:
 - A line that is too short may lead to an unsafe situation for both competitors & race committee as boats jockey for room
 - A line that is too long will make it more difficult to identify a boat – or cluster of boats – at the far end of the line
 - Without resetting, errors in the squareness of the start line will be repeated for the finish line



How to Arrange a Square Line

- When the wind is perpendicular to the weather mark, the start line set up is straightforward
 - $\text{Bearing}_{(\text{RC} \rightarrow \text{Pin})}^{\circ} = \text{Wind Axis}^{\circ} - 90^{\circ}$

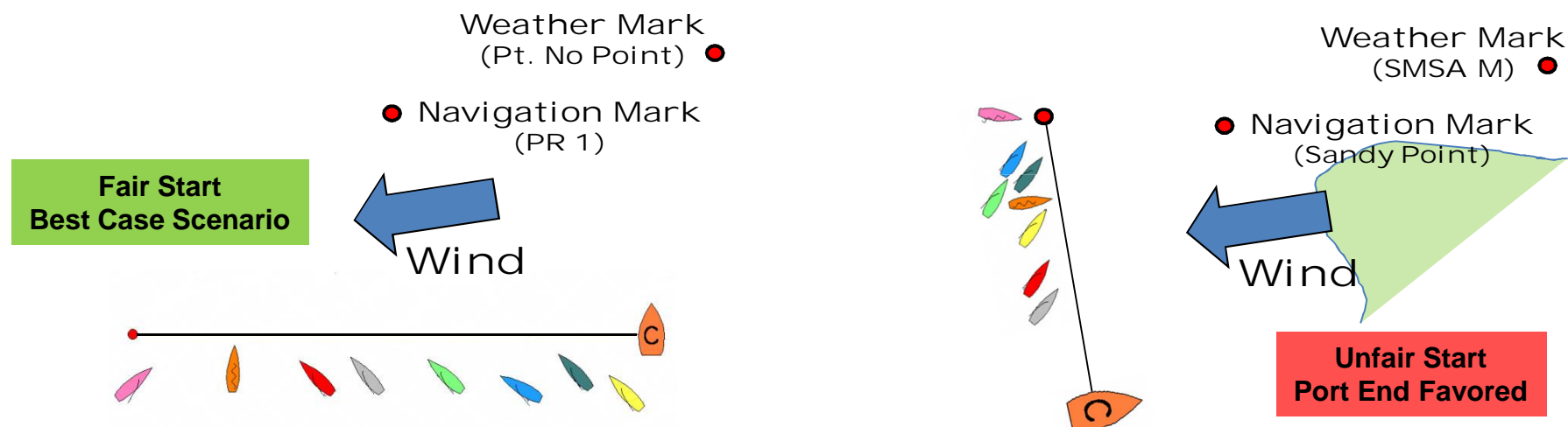
Assume the wind is from 165°
 $\text{Bearing}_{(\text{RC} \rightarrow \text{Pin})}^{\circ} = 165^{\circ} - 90^{\circ}$
 $\text{Bearing}_{(\text{RC} \rightarrow \text{Pin})}^{\circ} = 75^{\circ}$





How to Arrange a Square Line

- More thought is required when the wind is not perpendicular to the weather mark
 - Set the start line square to the first mark of the course





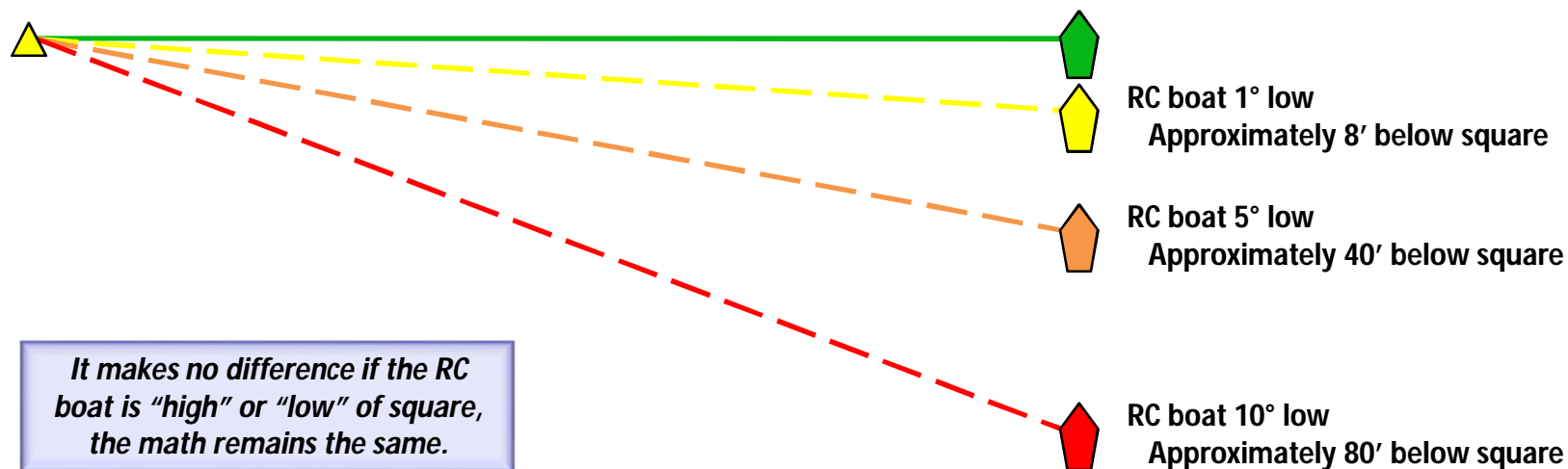
Importance of a Square Line

- One end will be favored over the other
 - It will be very difficult to identify the OCS boats when the majority are clumped at one end of the line – regardless of which end is favored
- The ability to provide a fair start for all competitors is compromised when a line is not square
 - The same concept is also true for finish lines



Importance of a Square Line

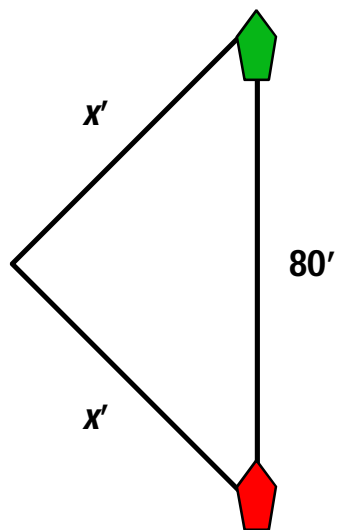
- Assume there are 12 boats with an average length of 30' in a start
 - Winds are steady at 12 knots with a moderate chop
 - You select a target start line length of 450'





Importance of a Square Line

- What does it mean if the RC boat is 10° off-square on a 450' starting line?
- A boat at the “wrong” end of the line will have to sail further than a boat at the “right” end of the line



$$x^2 + x^2 = 80^2$$

$$2x^2 = 6400$$

$$x^2 = 3200$$

$$x = 57'$$

*In this example, a boat will have to sail nearly **120'** just to “break even.”*



Importance of a Square Line

- Well, 120' doesn't sound too bad...

Time Required to Sail 120'					
Knots	6	5	4	3	2
feet/second	10.0	8.4	6.8	5.1	3.4
Time Required (seconds)	12	14	17	24	35

*** This assumes that **NO** time is lost during the tack ***

- What boat speed do you typically see coming off the start line on a Wednesday night race?



Tips for Setting a Square Line

- Work to understand how the boat will lie at anchor with respect to the wind & current
 - Arrive on station early
 - Allow the boat to drift, then determine the direction relative to the wind & current
 - Position the boat to allow changes in the angle by adjusting the anchor rode
 - Leave enough rode to drop back
 - Set enough rode to pull up, with breaking off the bottom



Tips for Setting a Square Line

- Adjust the anchor rode to improve the boat-to-pin angle
 - Let rode out
 - Drops the RC boat back
 - Increases the bearing angle to the pin
 - Take rode in
 - Brings the RC boat forward
 - Decreases the bearing angle to the pin
 - May be good for 5° up or down