Anchoring Tips and Techniques for Racers and Cruisers

Eric Brinsfield

BBSA Training Session #1

@ Deadline Brewing Project

Agenda

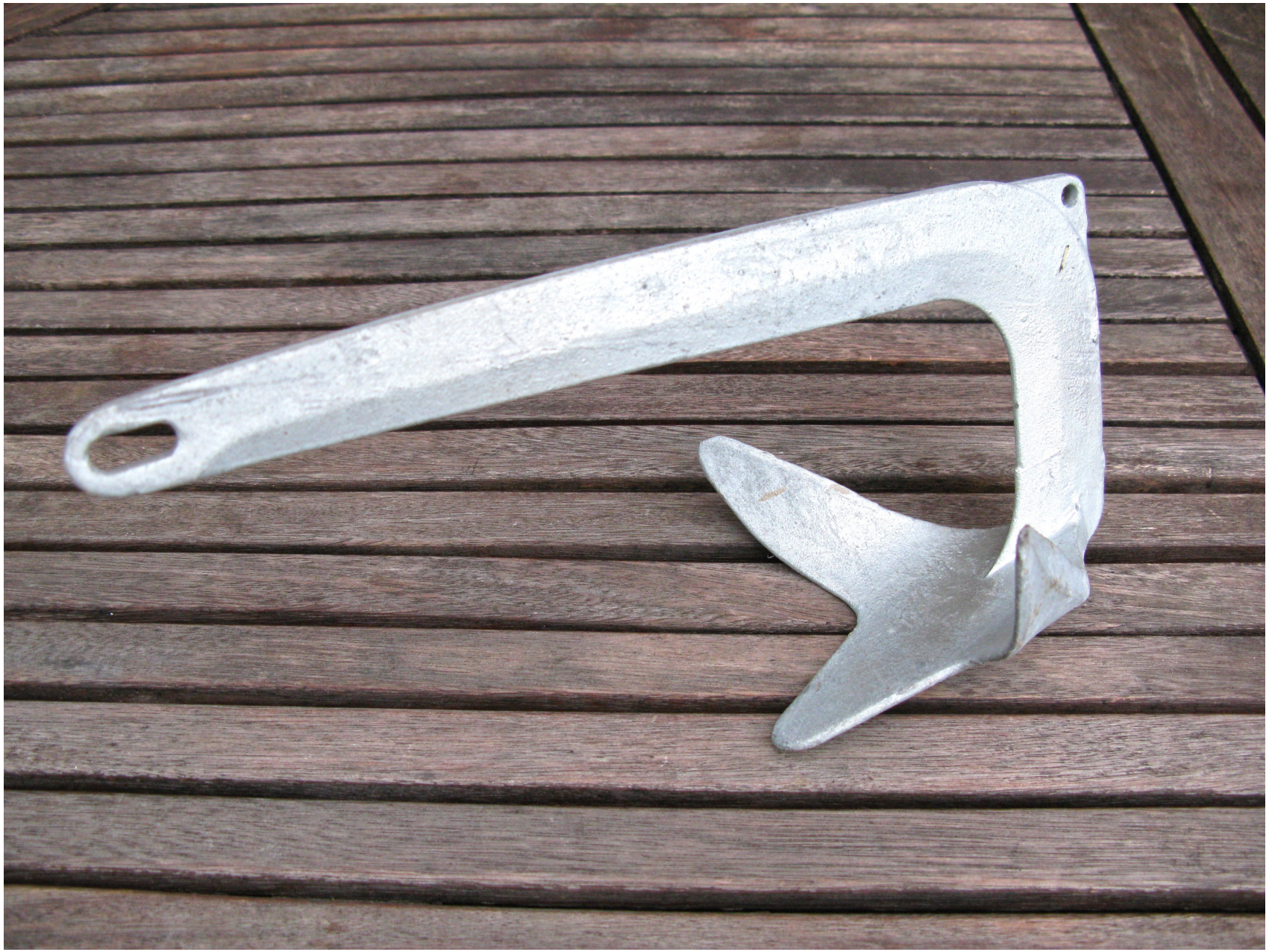
- Introduction
- Types of anchors
- Anchor size
- Types and length of rode
- Setting the anchor
- Anchoring for a race and setting the starting line
- Anchor site selection for cruisers
- Adjusting swing
- Retrieving the anchor
- Q&A

Common Type of Anchors

- CQR
- Bruce (+ Lewmar Claw)
- Delta
- Danforth-style: Fortress
- New Generation Anchors
  - Convex: Sarca Excel
  - Hooped Anchors: Rocna, Manson Supreme, Mantus
  - Concave (no hoop): Manson Boss
  - Weighted Tip: Spade, Vulcan, Ultra

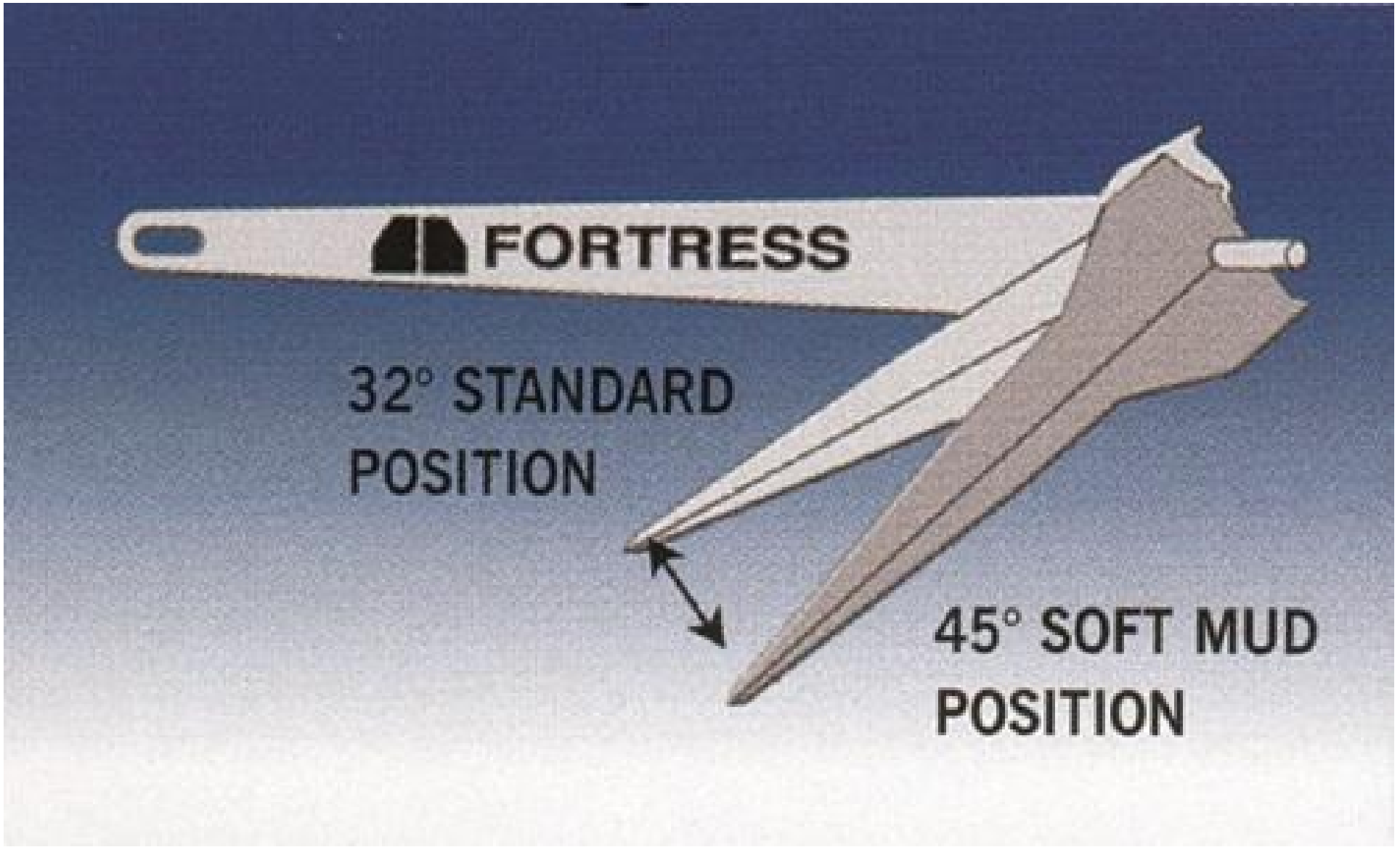
CQR

Bruce




DELTA
Self Launch Anchor • FAST SET • High Holding Power
LEWMAR

Danforth

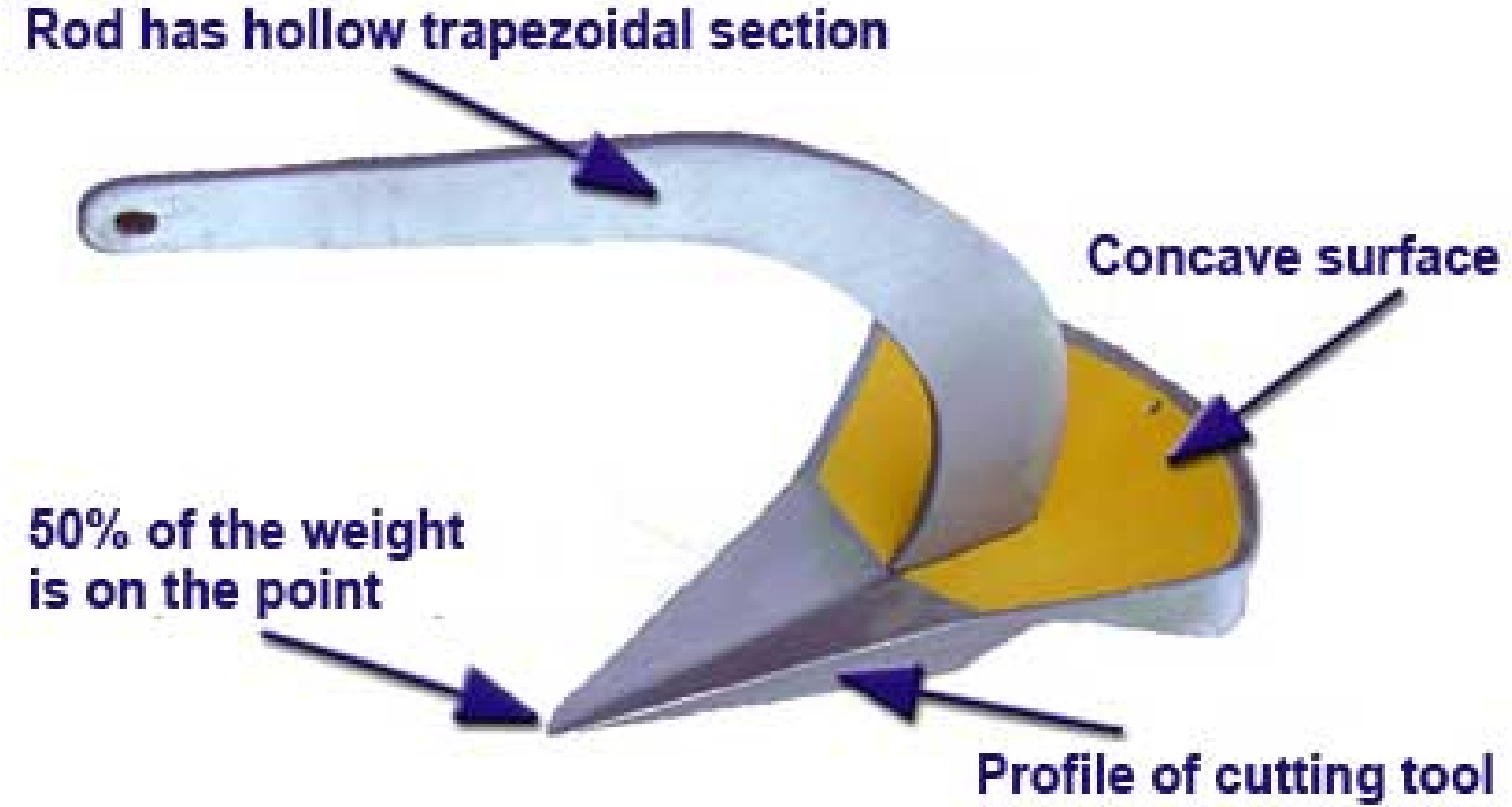

FORTRESS
32° STANDARD
POSITION
45° SOFT MUD
POSITION

Rocna

Manson Supreme

Mantus

Spade


Rod has hollow trapezoidal section
Concave surface
50% of the weight
is on the point
Profile of cutting tool

Anchor Size

- Follow the manufacturers guidelines
- For big storms, oversize it.

For Fortress anchor….

FORTRESS MARINE ANCHORS Selection Guide

Anchor size recommendations are for boats of average windage and proportions, 30 knots of wind, average bottom conditions, and moderate protection from open seas. For storm conditions, we recommend using an anchor one or two sizes larger.

Fortress Model		FX-7	FX-11	FX-16	FX-23	FX-37	FX-55	FX-85	FX-125
Boat Length	(ft)	16-27	28-32	33-38	39-45	46-51	52-58	59-68	69-150
	(m)	5-8	8-10	10-12	12-14	14-15	16-18	18-21	21-46
Weight	lb (kg)	4 (1.8)	7 (3.2)	10 (4.5)	15 (6.8)	21 (9.5)	32 (14.5)	47 (21.3)	69 (31.3)
Replaces Steel Fluke Anchors	(lb)	6-9	10-13	14-18	19-28	33-50	50-65	70-90	100-170
	(kg)	3-4	5-6	6-8	9-13	15-23	23-29	32-41	45-77
Holding Power									
32° Hard Sand Holding	(lb)	2,800	3,600	5,000	8,000	12,000	16,000	21,000	27,000
	(kg)	1,270	1,630	2,270	3,630	5,440	7,260	9,530	12,250
45° Soft Mud Holding	(lb)	840	1,080	1,500	2,400	3,600	4,800	6,300	8,100
	(kg)	380	490	680	1,090	1,633	2,180	2,860	3,670
32° Soft Mud Holding	(lb)	420	540	750	1,200	1,800	2,400	3,150	4,050
	(kg)	190	250	340	540	820	1,090	1,430	1,840
Support Hardware									
Proof Coil Chain	in (mm)	3/16 (5)	1/4 (6)	5/16 (8)	3/8 (9)	3/8 (9)	1/2 (13)	1/2 (13)	1/2 (13)
Nylon Rope	in (mm)	3/8 (9)	3/8 (9)	1/2 (12)	5/8 (16)	3/4 (18)	7/8 (22)	1 (24)	1 1/4 (32)
Shackle Size	in (mm)	1/4 (6)	1/4 (6)	5/16 (8)	3/8 (9)	7/16 (12)	1/2 (13)	5/8 (16)	5/8 (16)

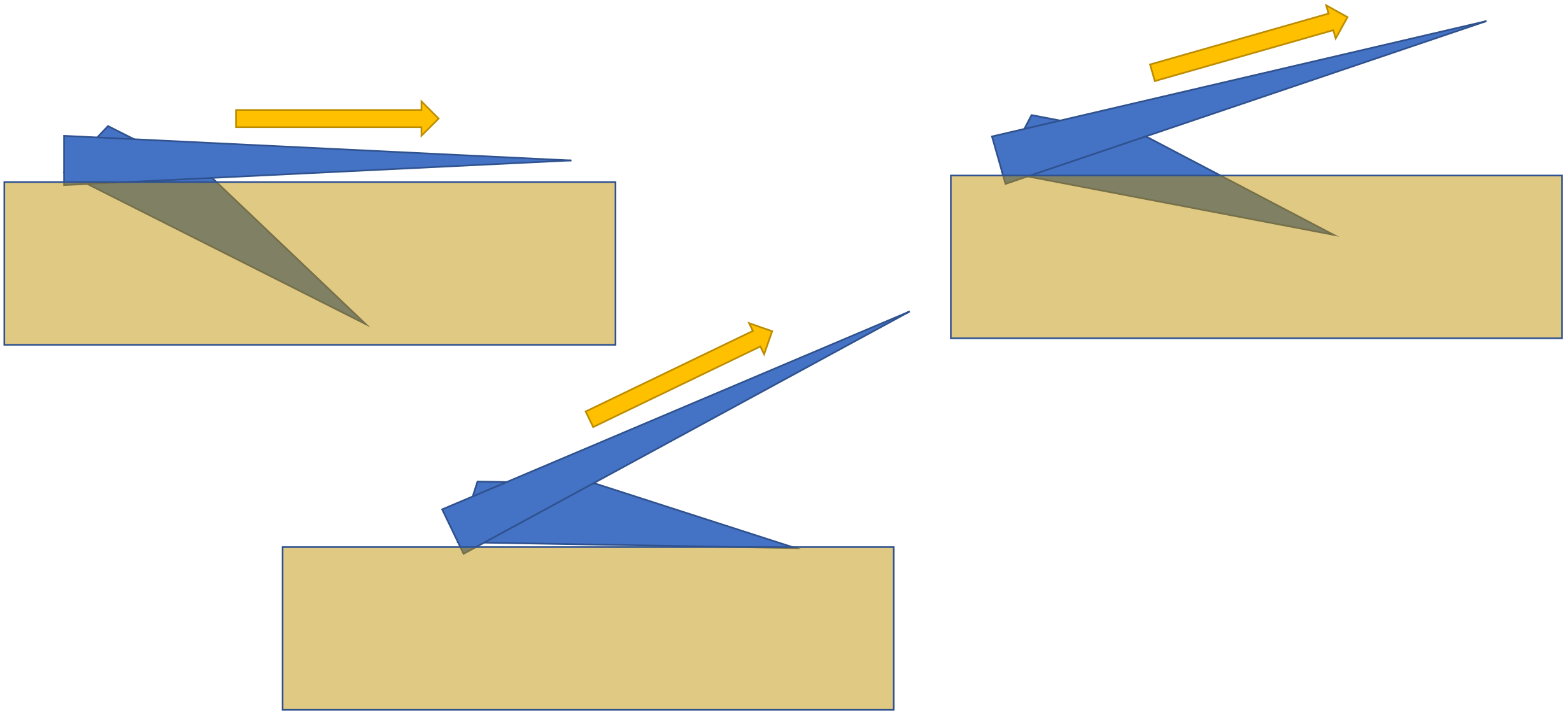
Use three-strand nylon rope and a minimum of 6 ft (2 m) of chain for every 25 ft (8 m) of water depth. Be sure to use enough chain and rope for a minimum 5:1 scope.

(954) 978-9988 | WWW.FORTRESSANCHORS.COM | MADE IN THE USA

Tip #1

Anchors work best when they are pulled horizontally.

Fortress at 32° setting



Type and Length of Anchor Rode

“Rode” refers to the line (any combination of rope and chain) that connects the boat and anchor.

The type and length of rode impact:

- Set speed
- Direction of pull
- Elasticity
- Holding power
- Durability or resistance to chafe
- Cost

Types of Road

- All Rope
  - not recommended
  - hard to set anchor
  - increases probability of dragging
- All Chain
  - overall best for cruising and especially where you have rocks or coral.
  - Heavy
  - Requires snubber
- Chain-rope
  - Best option for racers
  - Good for local cruisers and racer-cruisers

Rode Length

TIP #2: Best Practice: Carry enough rode for least 8 times the expected maximum depth of your expected deepest anchorages. (See Tip #1)

Scope = 1) length of line from your boat to the anchor.
2) ratio of length of rode to depth (L:D)

Recommended length determined by:

- Depth - length derived from depth based on target scope ratio
- Wind, bottom type, currents, tides – to determine target scope

Current theory: Holding does not improve much after a 7:1 ratio.

How much should you carry?

- LCSA – Depths: 15 – 30 feet.
  - Max: 8 x 30 = 240 feet of rope and chain
  - Ave: 8 x 18 = 144 feet of rope and chain

- Willoughby – Depths: 8 – 15 feet
  - Max: 8 x 15 = 120 feet
  - Ave: 8 x 10 = 80 feet

- Cruisers
  - In the Chesapeake Bay, it would be rare to anchor in 30 feet (intentionally), so 240 -280 feet is probably sufficient.
  - When traveling to unknown waters, carry more.

How much should I deploy?

- For most LCSA races,
  I recommend at least a 5:1 ratio even if the wind is light.

- For most Willoughby races,
  I still recommend at least a 5:1 ratio, but you can probably squeeze by with 3:1.

- For cruisers, it depends on:
  - Forecasted overnight conditions (winds, storms, currents, tides)
  - Bottom conditions
  - Available to swing room
  - Quality of sleep you want to have at night

How much should you deploy for races?

Little Creek

- Depths: 15 – 30 feet.

  At 5:1 ratio:
  - Max: 5 x 30 = 150 feet
  - Ave: 5 x 18 = 90 feet

Willoughby

- Depths: 8 – 15 feet

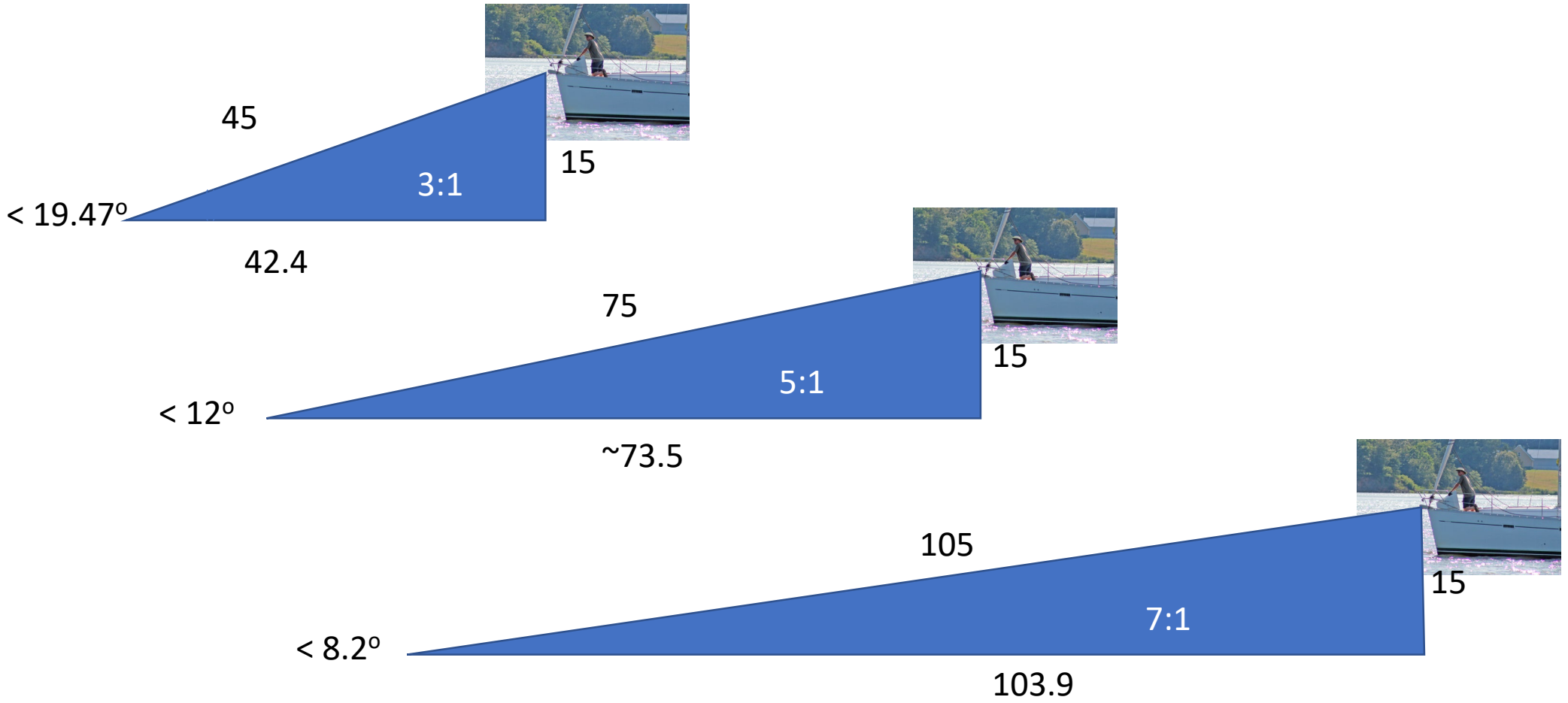
  At 5:1 ratio:
  - Max: 5 x 15 = 75 feet
  - Ave: 5 x 10 = 50 feet

  At 3:1 ratio:
  - Max: 3 x 15 = 45 feet
  - Ave: 3 x 10 = 30 feet

10-20 feet of chain with the rest as rope. Size the chain and rope based on anchor vendors recommendations.

Comparison of Scope Ratios

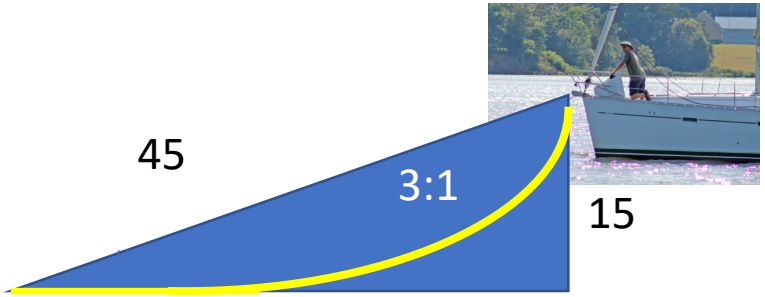
The smaller the angle, the more horizontal the pull

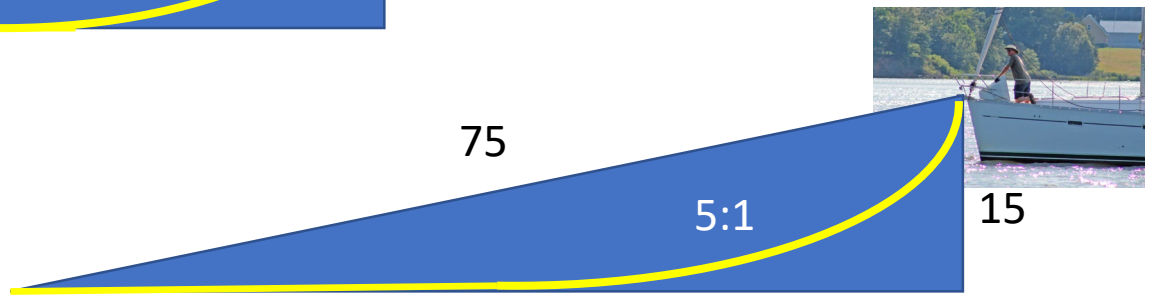


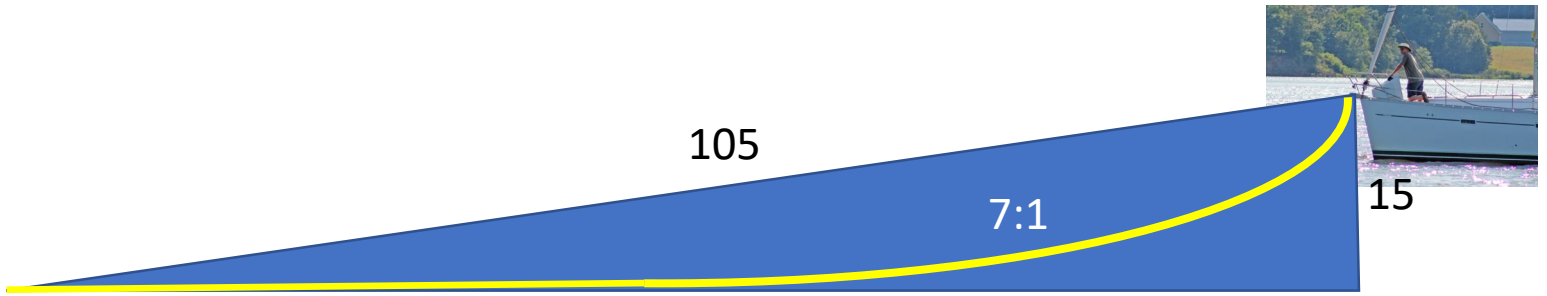

BENETEAU 473
FLIGHT RISK

Comparison of Scope Ratios

Adding chain – changes angle of pull








Raymarine
Sea-Ductive

General consideration for racers

Or situations when you might want to increase scope:

Storms pop up. Even if you abandon the race, you may still be anchored. Know the forecast and watch the skies.

Currents off Little Creek can exceed 2 knots.
Check current projections before the race.

Know the tidal range and set scope based on high tide

TIP #3: WHEN IN DOUBT, LET IT OUT.

Know the Bottom Type

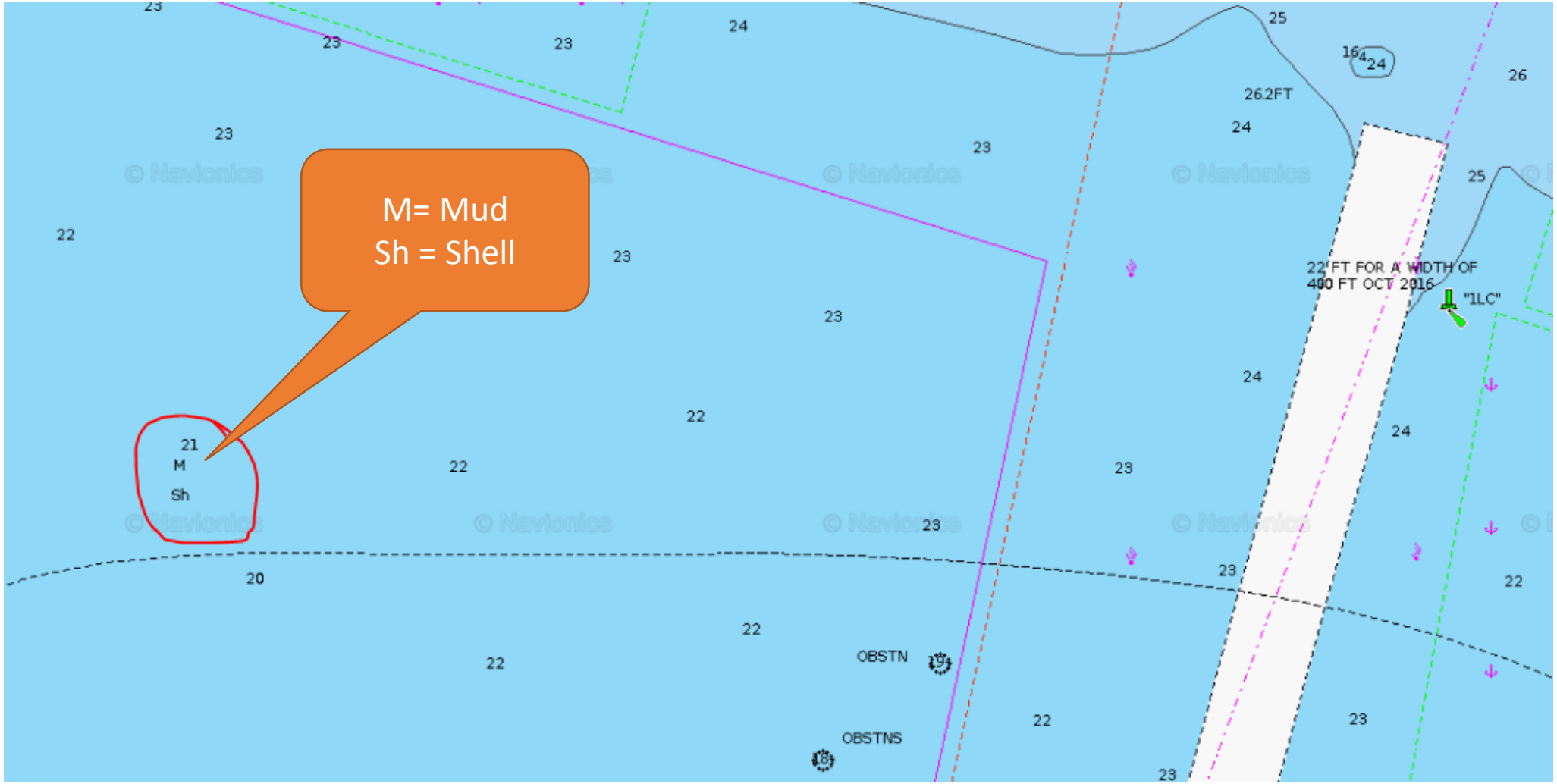


Chart Symbols from NOAA U.S. Chart No. 1

- S = sand
- M = mud
- Cy = clay
- Si = silt
- St = stones
- G = gravel
- P = pebbles
- Cb = cobbles
- R = rock; rocky
- Bo = boulder
- Co = coral
- Sh = shells (skeletal remains)
- S/M = sand over mud
- fS M Sh = mix: fine sand, mud, shells
- Wd = weeds
- Oys = oysters

Deploying and Setting the Anchor
Summary

1. Lower anchor (under control) until it hits the bottom
2. Move the boat away from the anchor (slowly)
3. Ease out and stretch the road on the bottom
4. When you reach the desired scope, secure the rode
5. Ease back on the anchor road to set the anchor
6. Back-down on the anchor
7. Mark position so you can monitor for dragging

Deploying and Setting the Anchor (details)

- Lower anchor (under control) until it hits the bottom
  - Stop the boat into the wind where you want to drop the anchor
  - Don’t just drop the anchor and stack the chain or line on top of the anchor
  - The anchor may not set or grab if entangled with rode
  - Sometimes it is good to tie a line and float to the anchor to mark position and to enable “back-out” retrieval

- Move the boat slowly away from the anchor deploying rode.
  - Boat can be drifting away from anchor by wind, power, or current.
  - Go slowly. You don’t want to drag the anchor.
  - Go in the direction you will hang when anchored

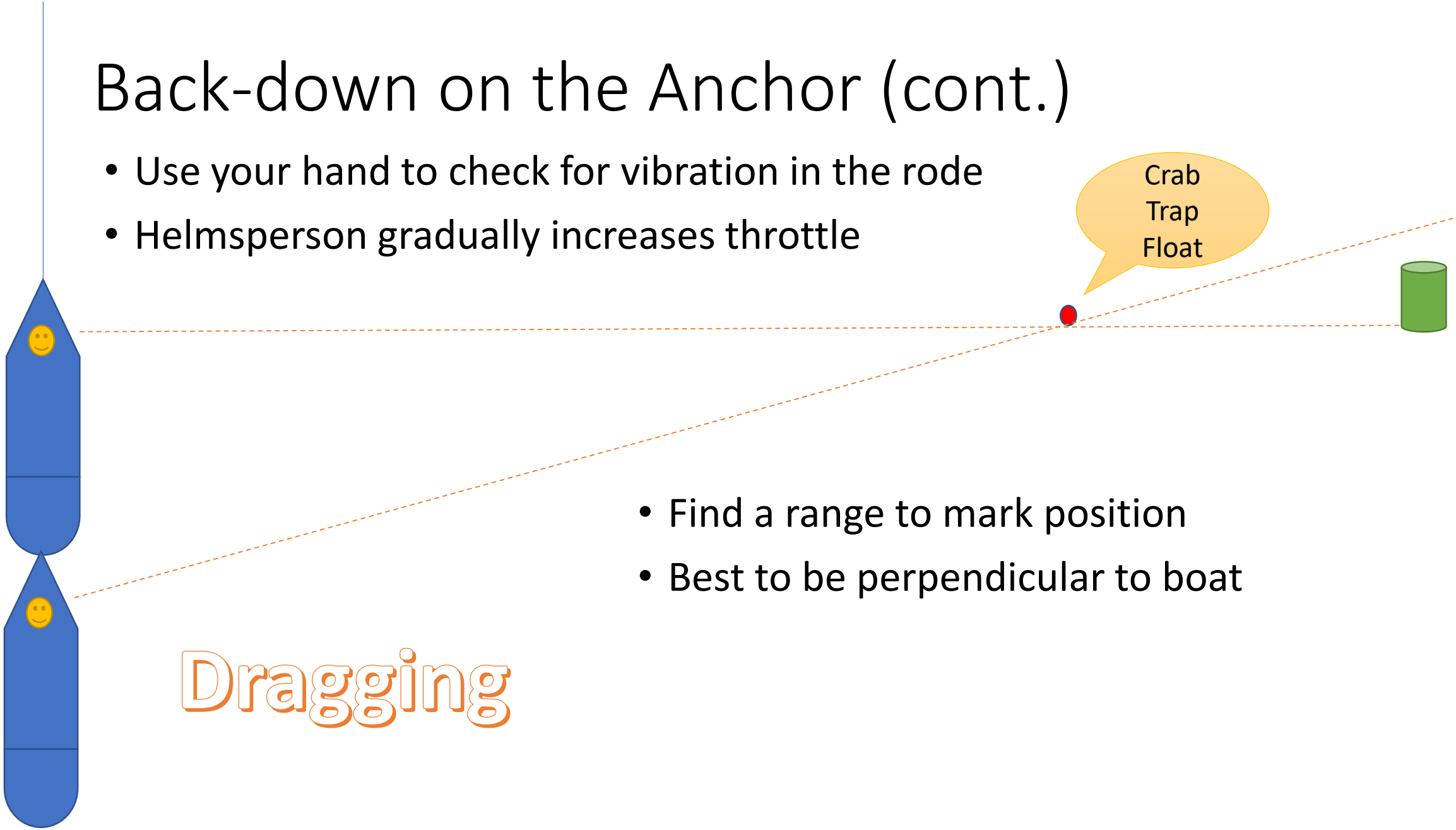
Deploying and Setting the Anchor (cont.)

- Ease out the anchor rode
  - Make sure the anchor rode lays on the bottom and not on the anchor.
  - As you move further away, you can stretch the rode and pull briefly on anchor
  - If using your hands, you can feel the tension and if the anchor is dragging

- When you reach the desired scope, secure the rode
  - Do not leave anchor permanently secured to a windlass
  - If rope, tie to a cleat.
  - If chain, secure with a chain-stopper.

Back-down on the Anchor (cont.)

- Use your hand to check for vibration in the rode
- Helmsperson gradually increases throttle



- Find a range to mark position
- Best to be perpendicular to boat

Dragging

Deploying and Setting the Anchor (final step)

Verify that final position is safe with sufficient swinging room

Mark position so you can monitor for dragging.

Multiple options:

- Use your GPS to set a way point. RC should write down position.
- Turn on tracking to see how you swing (or drag) over time
- GPS may offer alerts to movement outside of range
- Identify multiple ranges and monitor visually over time
- Plot on a paper chart
- Mobile apps

- For chain rode, add a snubber

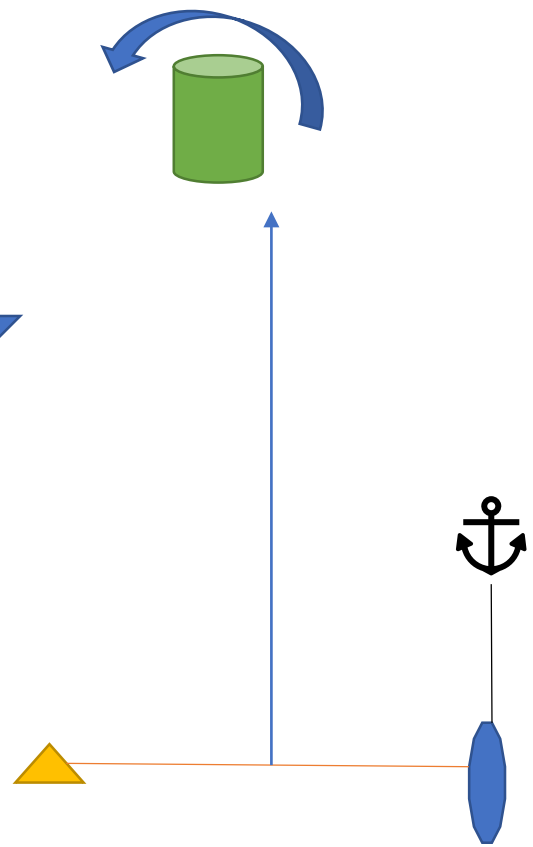
Using a snubber

Anchoring for Starting Line in Race if Starting Line not Predetermined

Ideal upwind start line

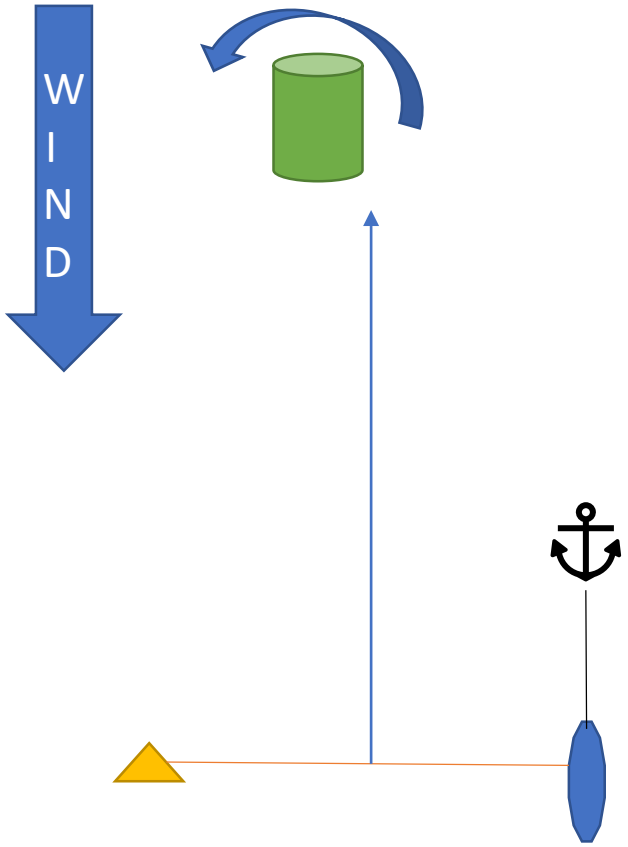
- Perpendicular to wind
- Directly downwind from first mark
- Strive for no favored end
- Start line also serves as finish line

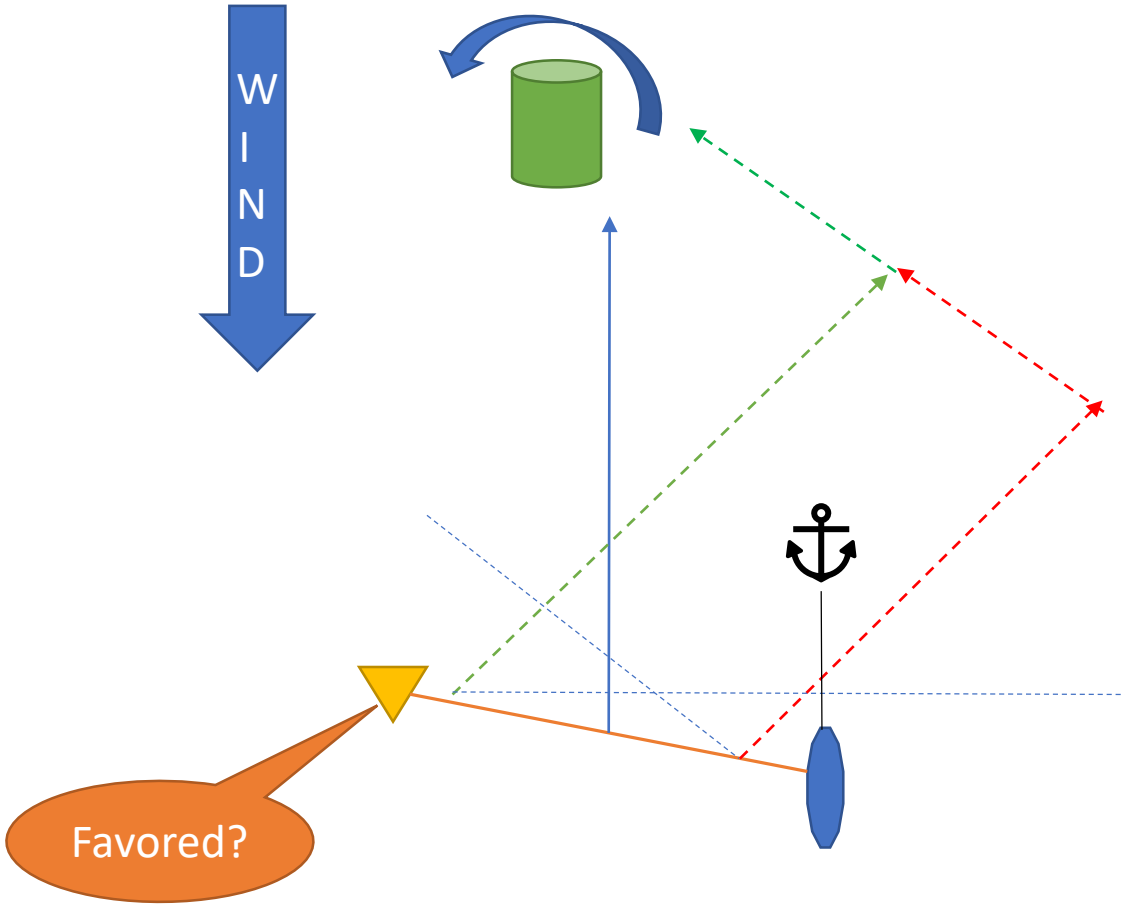
- Easy for LCSA
- Not always possible for Willoughby*



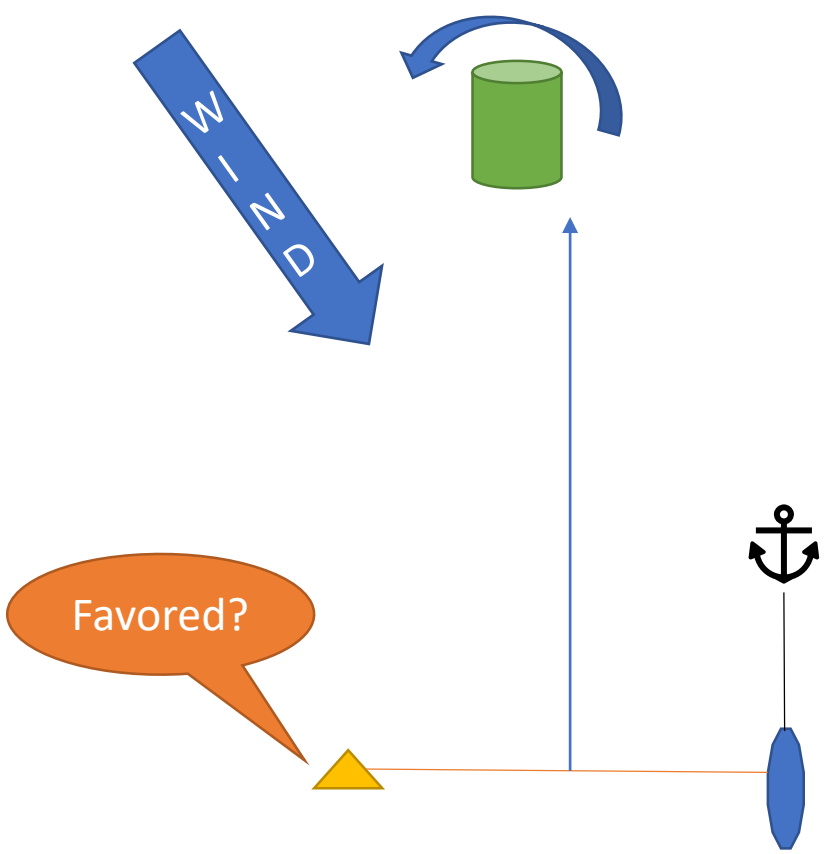
*Start – Orange Ball drop mark north of the Committee Boat, and approximately 200 yards south of green day marker #11

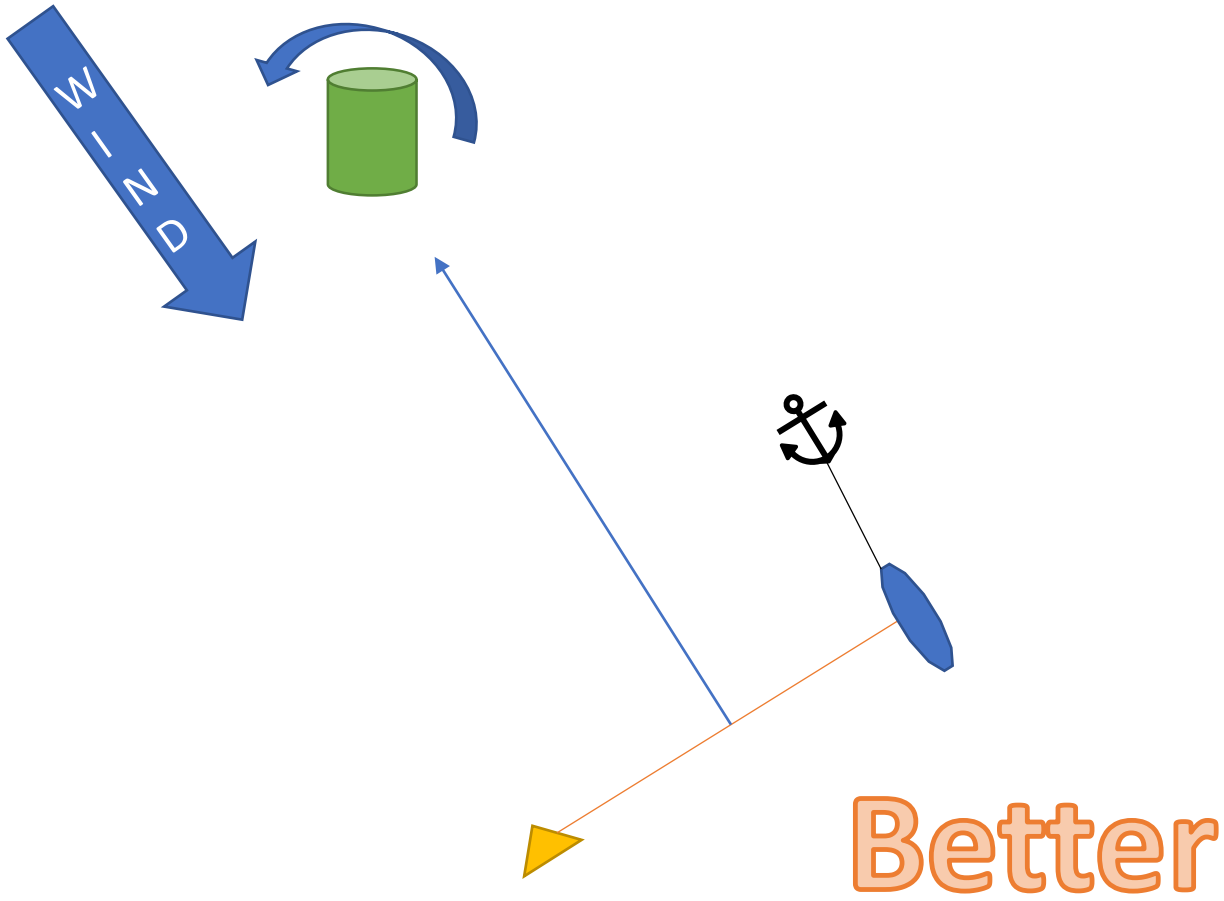
Starting line with a favored end



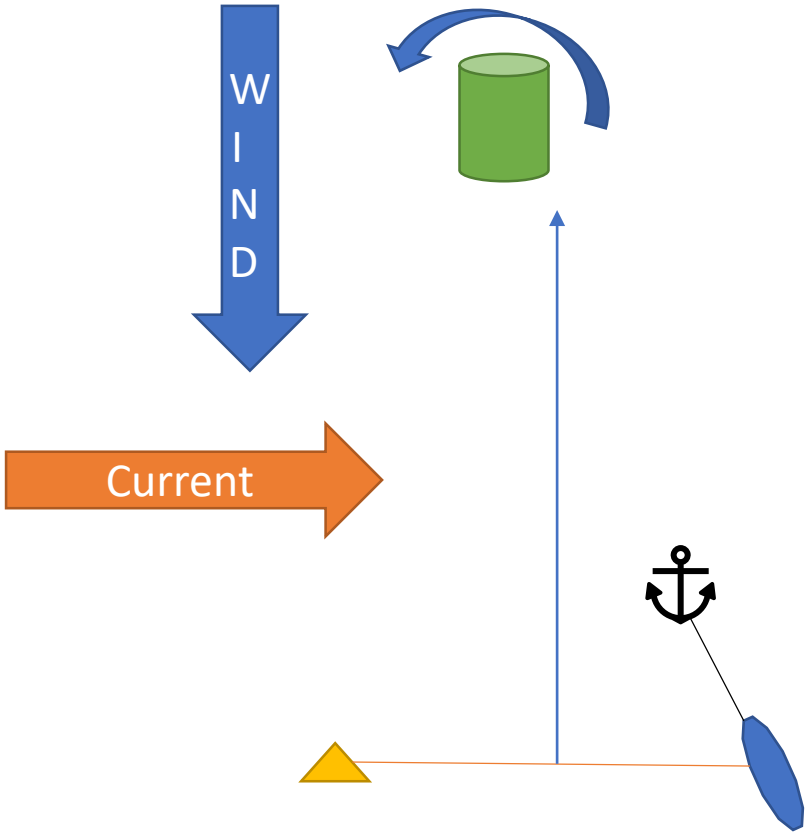


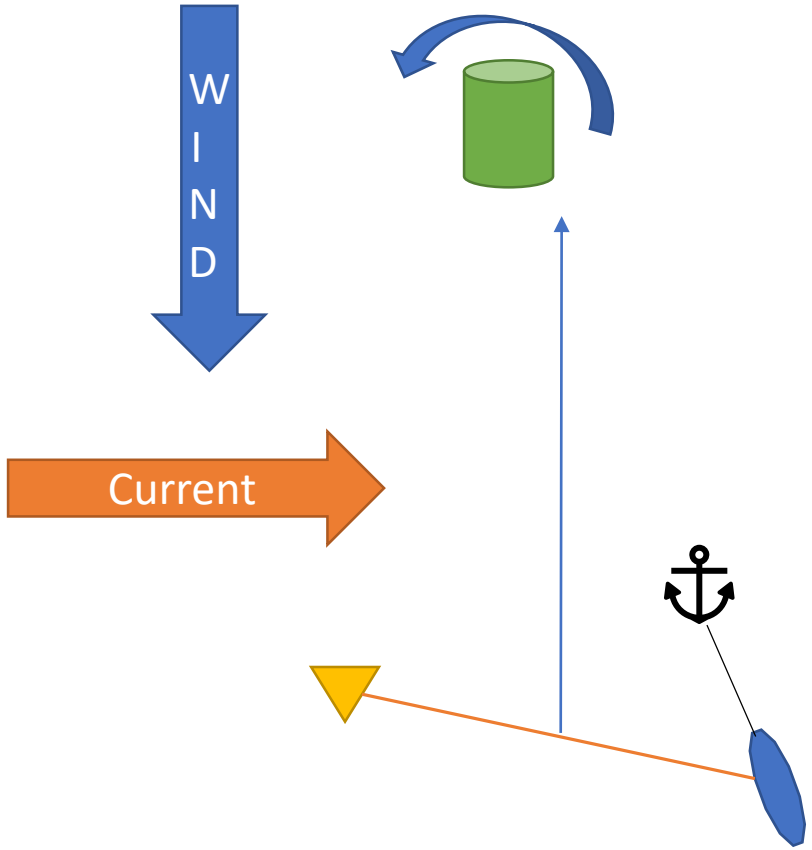
Starting line with a favored end

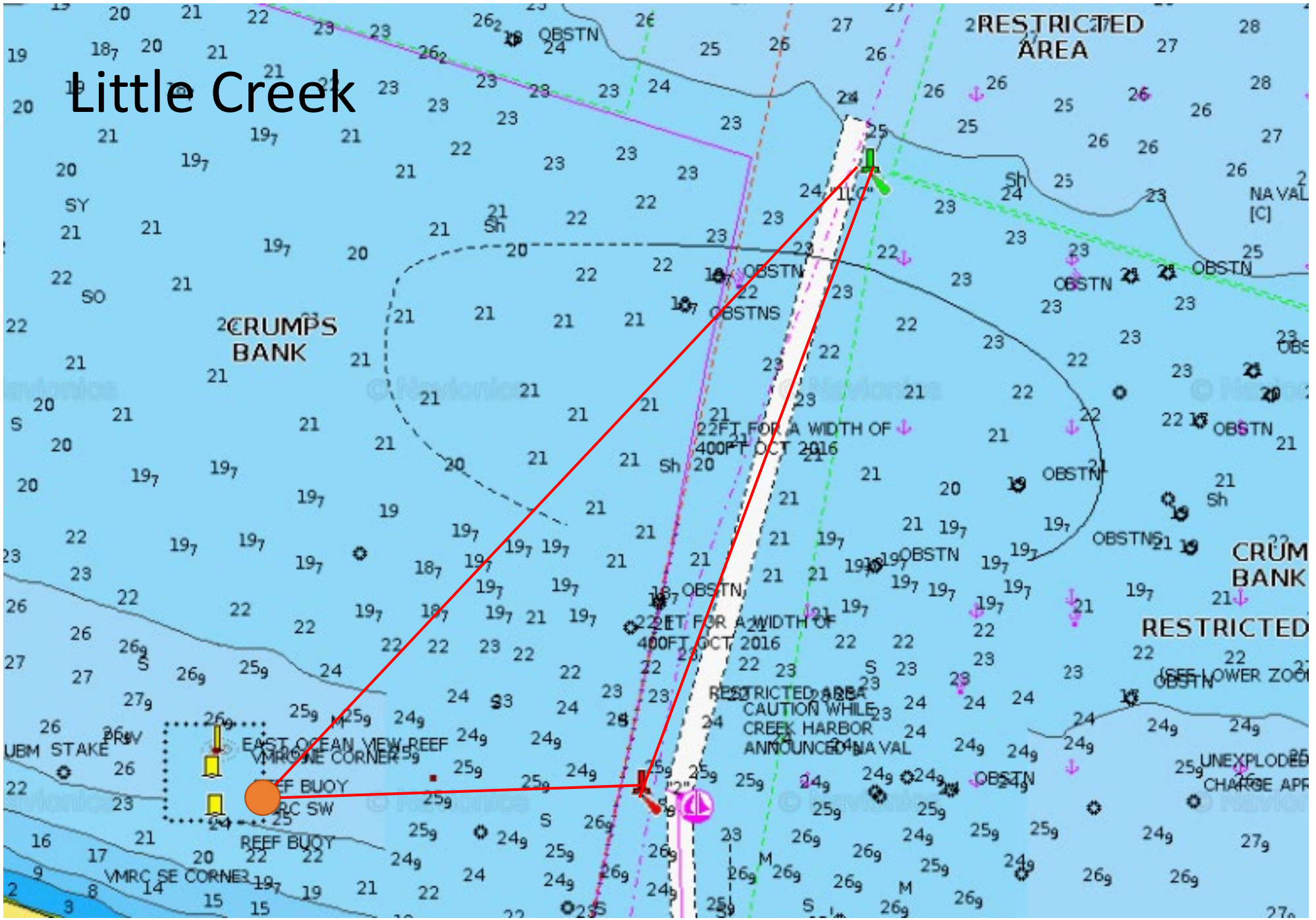




Starting line adjusted for current (light wind)






Little Creek
RESTRICTED AREA
CRUMPS BANK
OBSTN
OBSTNS
22FT FOR A WIDTH OF 400FT OCT 2016
RESTRICTED AREA
CAUTION WHILE
CREEK HARBOR
ANNOUNCED NA VAL
EAST OCEAN VIEW REEF
REEF BUOY
VMRC SE CORNER
UNEXPLODED
CRUM BANK
RESTRICTED

Steps: Positioning the Starting Line and Boat

- Determine wind direction, current, depth, and required scope
- Maneuver to a position directly downwind of first mark
  - Heading into the wind
  - Usually closer to the downwind mark than the upwind mark
- Drop starting line mark to your port side
  - Starting line length=(1.25 * #boats in largest class * mean length)
- Move boat to starboard to desired end of starting line
- Motor forward:
  - Into the wind
  - Far enough to use desired scope, allowing some distance for initial dragging
  - After setting anchor, adjust forward or back to align starting line

Willoughby

West Course
(Blue Course Flag):
B mark will be first mark sailed to.

East Course
(White Course Flag):
A mark will be first mark sailed to.

Willoughby Racers Consideration

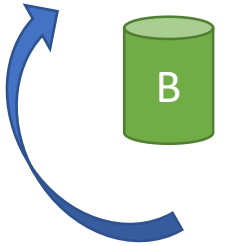
- Same issues as Little Creek, except start line location is fixed
- Need to figure out the best line angle to optimize favored side
- Make sure anchor rode is deep if anchor within start line
- Consider second anchor to control swing
  - See cruising section next.
- Think like a racer to determine best line for:
  - The race
  - Your boat

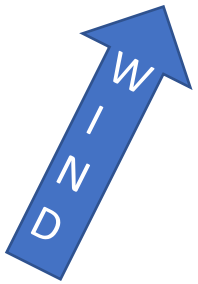
Willoughby Start with SW wind

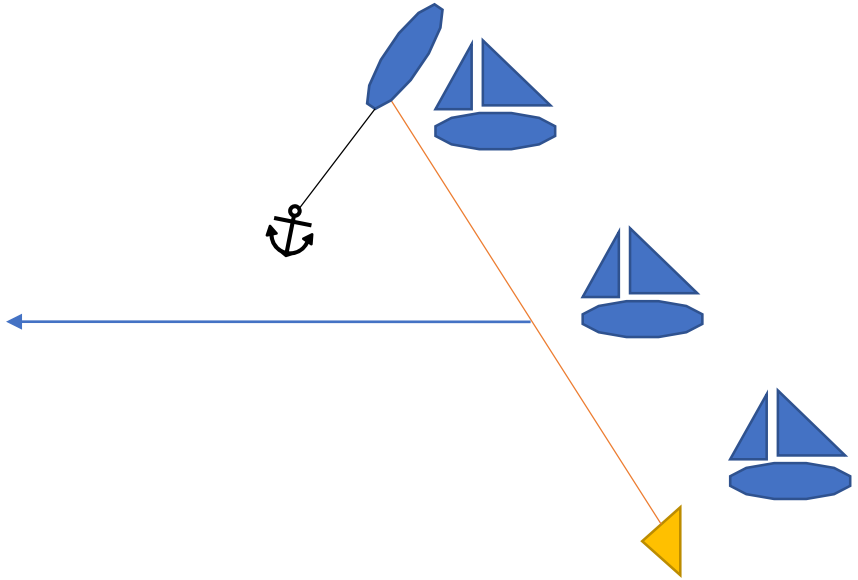
Willoughby Start with SW wind

Removing favored side is not worth it.

- Puts committee boat in danger.
- Upwind side on port tack still favored



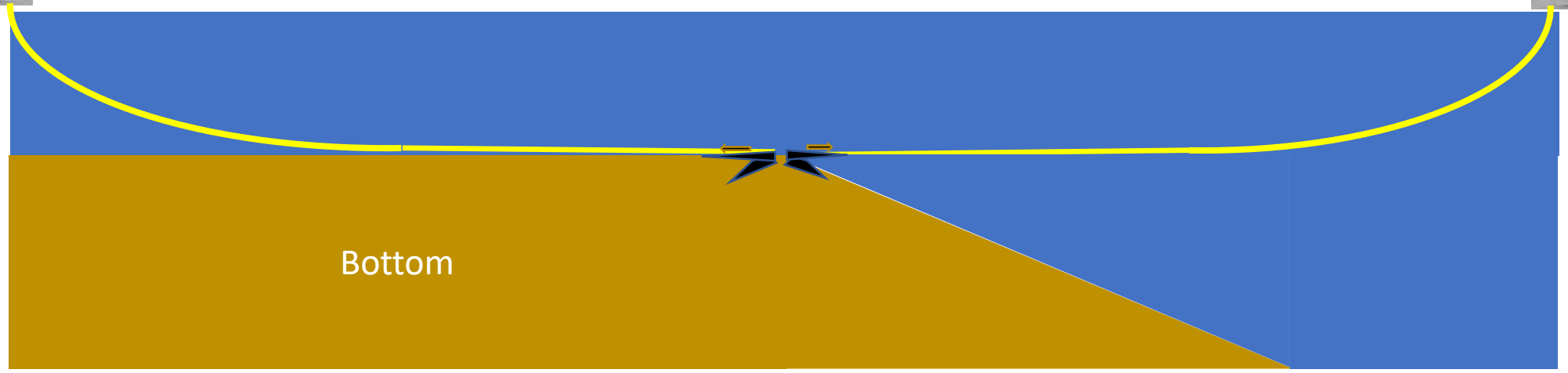




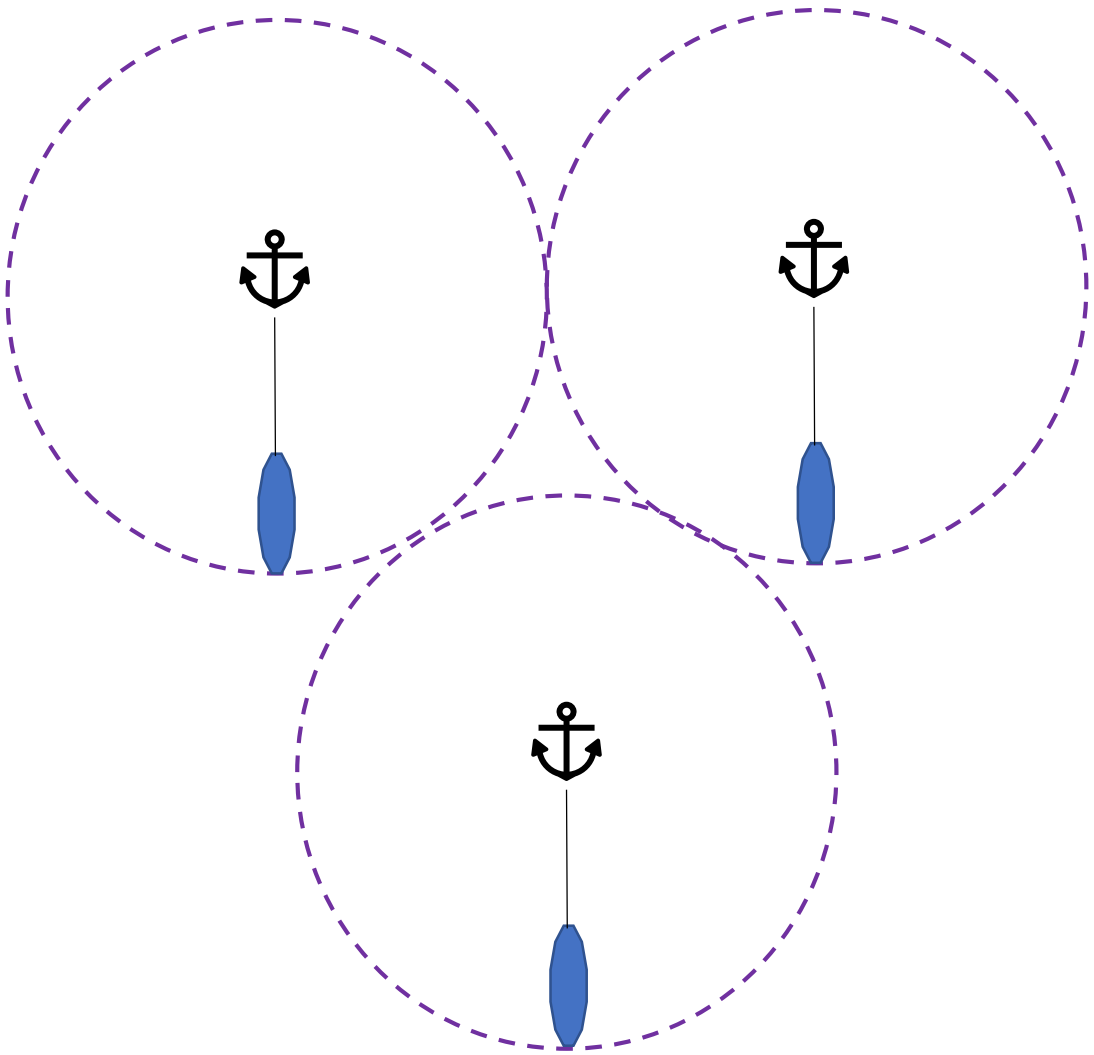
Cruiser’s Site Selection

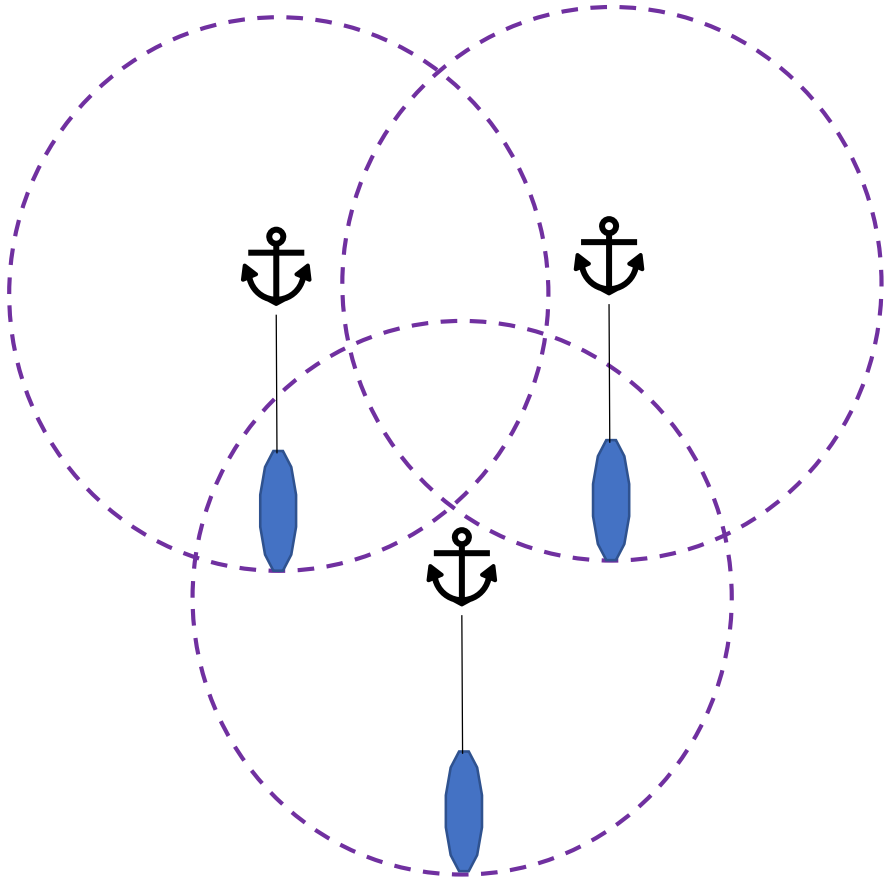
- Know the bottom type before you arrive
  - Check the charts
  - Note any underground cables or “no anchor” zones
- Sufficient depth
  - At high and low tide
  - Check for bottom grade (drop off)
- 360 degree swinging room for scope deployed
  - Check for shallow spots, obstacles, boats, and fish traps
  - Determine if you need two anchors to limit swing
- Out of busy channels
  - In wide creeks with very little traffic, not as much of concern
  - Be aware if any barge or commercial traffic

Bottom Profile



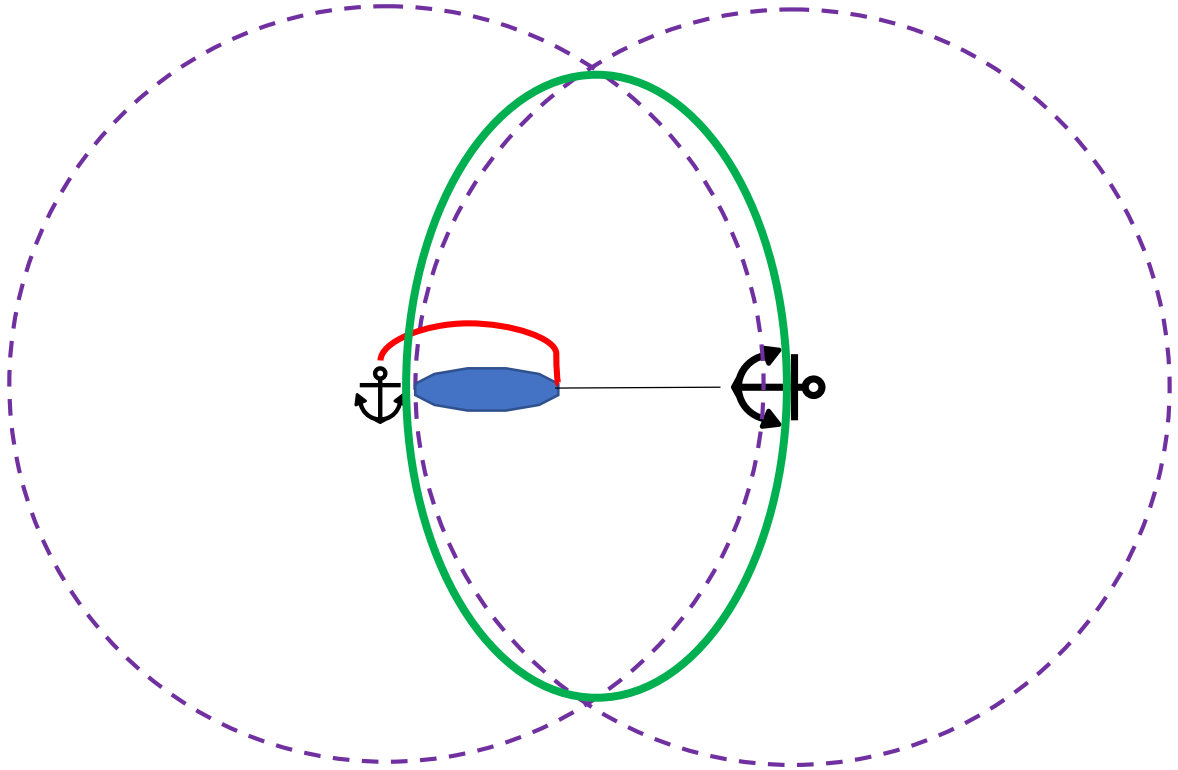
Plenty of room vs Tight Spacing





Bahamian Moor – to restrict swing

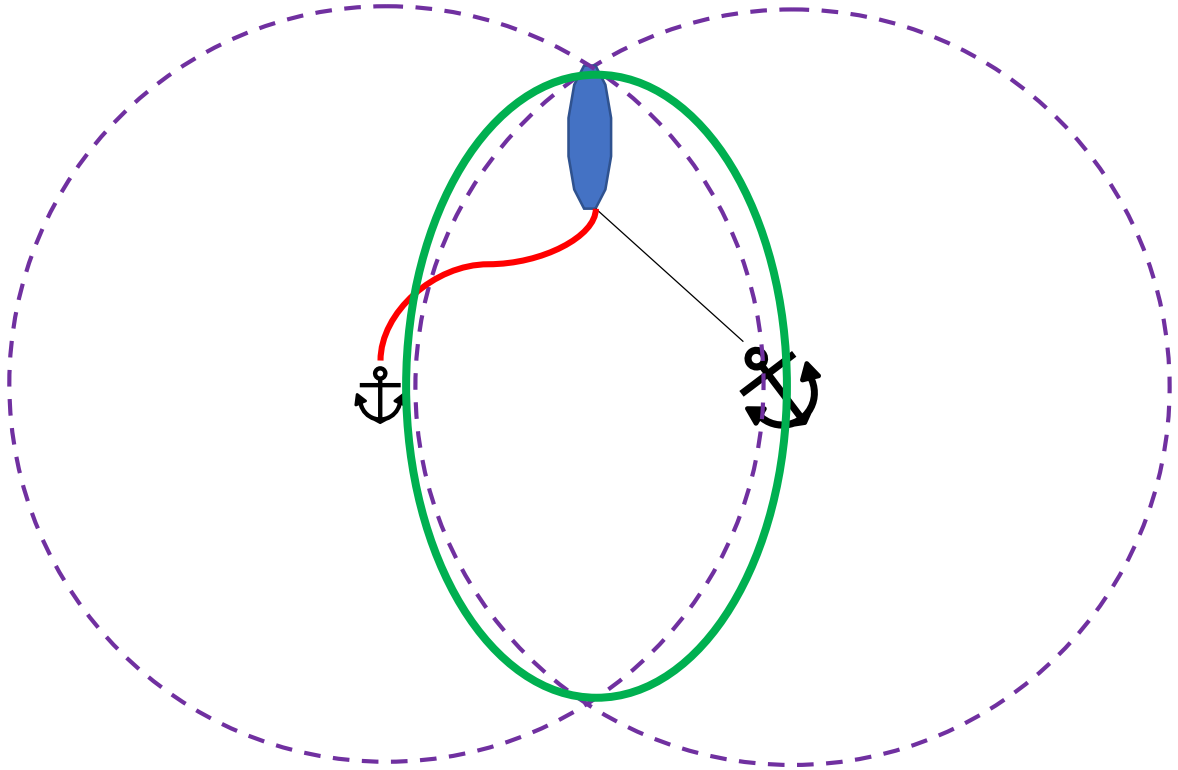
One option of many



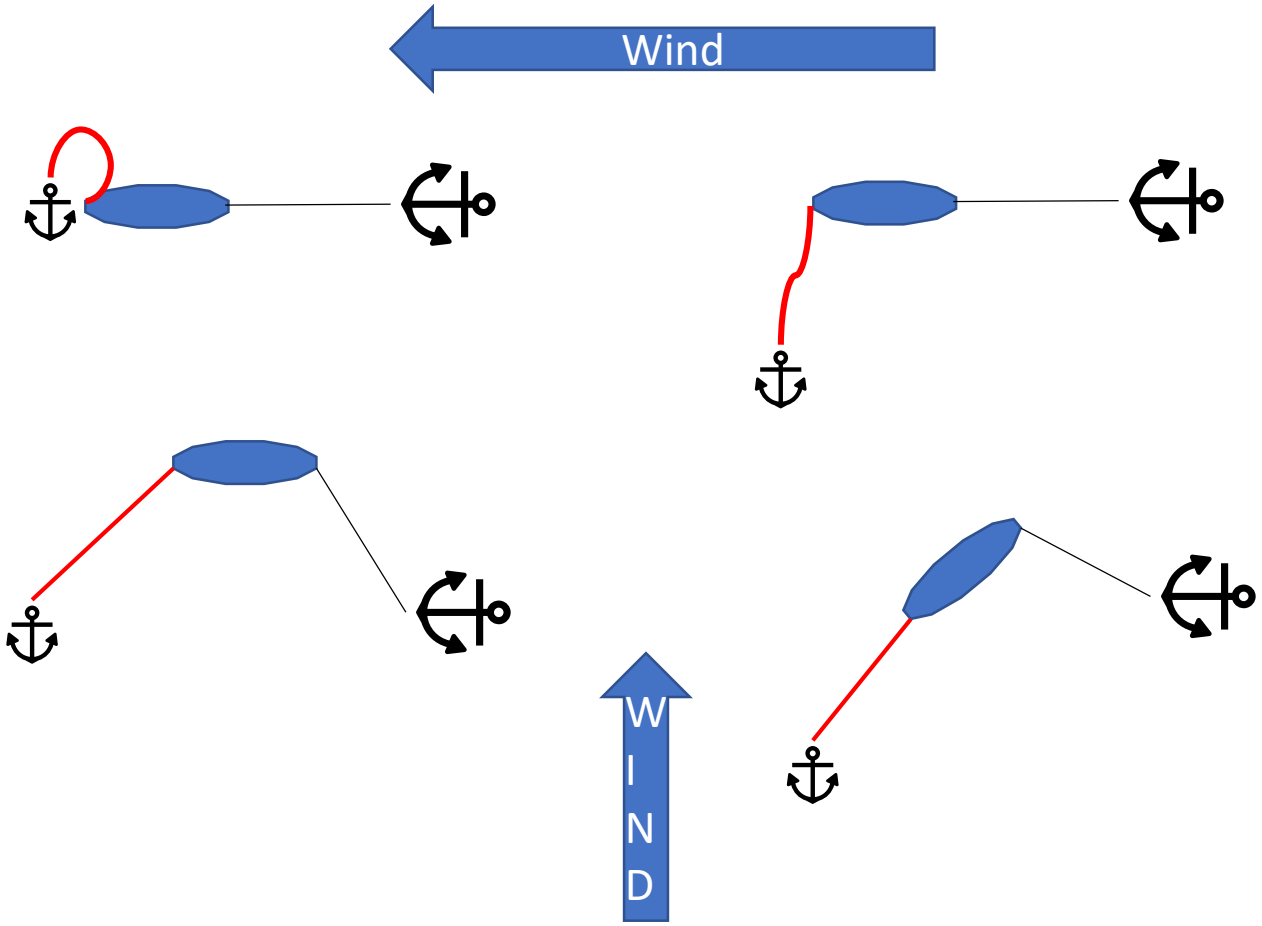
- Drop second anchor off the stern
- But lead the rode to the bow

or drop back, drop anchor, pull forward

Bahamian Moor – to restrict swing
Advantage: Bow always into the wind



Stern Moor – to restrict swing; light wind



- Drop second anchor off the stern
- Attach to stern

Downside:

- Swing in an unnatural way
- Waves may break over the stern

Pro:

- Easier to set
- Can deploy with dinghy

Retrieving the Anchor

Communication: Bow to Stern

- Most of us put one person on the bow and one in the cockpit
- Communicating can be challenging
- DON’T YELL AT EACH OTHER!!
  - It doesn’t help
  - It is not good for friendships or marriages
  - Sound travels on the water and your yelling may or may not be entertaining.
- Better Options:
  - Hand signals – make your own or find online or in book. Just be clear.
  - Headsets – several options now. Not cheap, but worth it.

Thank You

Questions, discussions and debate