

Pilot Syllabus



Last update: October 2022



Welcome,

This course goal is to train club members new to the SERC piloting program. The information here is meant to give you a head start and an overview of what it is to be a South End Pilot. At the end of this course you will be ready to become a Co-Pilot for the Club. As you gain more Co-pilot experience and gain more confidence, you will become an accompanying pilot.

There is no replacement for time on the water with advanced pilots when it comes to learning these skills, and no matter your skill level, you will never stop learning. So good luck, ask questions and keep this syllabus as a reference as you partake in what we hope is the best preparation for our South End Pilots.

For the purpose of this course, we will be using the term “Powerboat/inflatable” to also mean Zodiacs.



1. People in the bay	4
1.1. Club responsibility	4
1.2. Traffic	4
1.3. Swim Categories	5
1.4. Pilot levels	5
2. Communication	6
2.1. With the swimmers	6
2.2. With other traffic	6
2.3. Sound signals	7
2.4. Radios	7
2.5. Channels	7
2.6. Procedure Words	8
2.7. Emergency procedures	9
2.8. Emergency phone numbers	9
3. Equipment	10
3.1. Parts of the boat	10
3.2. Parts of the engine (Hondas only)	10
3.3. Prepping, “building” the boat	11
4. Rules of the road	11
4.1. Pilot's responsibility	11
4.2. Inland Collision Regulations (COL REGS)	12
5. Before the swim: briefing	12
6. During the swim	13
6.1. Boat handling	13
6.2. Piloting strategies	13
6.3. Pulling swimmers	14
6.4. Lost or missing swimmer	15
7. Environment	15
7.1. Local Landmarks	15
7.2. Local piers	16
7.3. Around the Aquatic Park - the Chas Lap	16
7.4. The Bray bridge	17
7.5. Shipping lanes	17
7.6. Reading currents: range markers, little alcatraz, common clues	18
7.7. General bay currents →	19
7.8. Finer shipping lanes ↓	19
7.9. Currents at the GGB	20
8. Hypothermia	20
8.1. Body & cold water	21
8.1. Body & cold water	21
Resources	22

1. People in the bay

1.1. Club responsibility

- SERC board
- Swim Commissioner
- Pilot Committee
- Swim Director / Lead Pilot
- Other Pilots
- Co-pilots
- Monday morning Quarterbacks

1.2. Traffic

- Cruise ships & tankers
- Small boat / pleasure boats / "high-speed"
- Special boats: tall ships / JOB (once a month, usually on weekend) / visitors from other seas
- Space pod guy
- Pool toys, including unicorns (early september usually)
- People in distress





1.3. Swim Categories

Sunriser Swims

Free-to-join, first-come, first-served swims from the Sunriser Calendar. With-current Sunriser swims only require a Pilot, but cross-channel Sunrisers require a Lead Pilot.

Club Swims

Pre-planned swims on the Club Swim Calendar that have a designated Swim Director, advance sign-ups, usually cost a fee and often have a post-swim meal. A Club Swim requires a Lead Pilot.

Nutcracker Swims

Swims that are challenging in length, or against the current. May involve some sort of qualifier swim or other criteria. A Nutcracker requires a Lead Pilot.

1.4. Pilot levels

	Accomp.	Pilot	Lead	Senior	Asses.
Can be in boat alone inside GGB/Bay Bridges, accompanied by Pilot	Yes	Yes	Yes	Yes	Yes
Can be in boat alone outside GGB/Bay Bridges, accompanied by Lead Pilot	No	Yes	Yes	Yes	Yes
Can lead Sunriser swims (only with the current, not cross-channel)	No	Yes	Yes	Yes	Yes
Can lead Club Swims (including cross-channel Sunrisers)	No	No	Yes	Yes	Yes
Can use RIBs outside of club events	No	No	Yes	Yes	Yes
Can mentor pilots to higher levels	No	No	No	Yes	Yes
Can assess other levels	No	No	No	No	Yes

For more information, check-out the pilot policy & the [Pilot Corner](#) on SERC website.

2. Communication

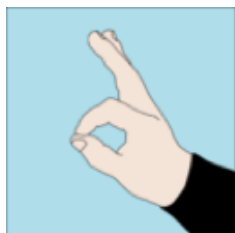
2.1. With the swimmers

Member agencies of the Recreational Scuba Training Council (RSTC) in the United States have recognized a standardized set of hand signals intended for universal use, which are taught to diving students early in their entry level diving courses. This signals are used for swimmers too.



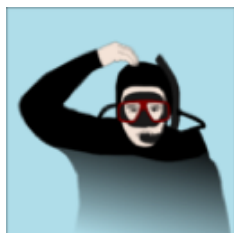
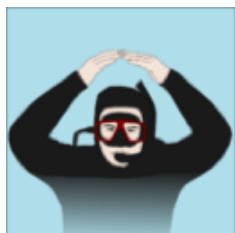
Something is wrong

An open hand with palm down and fingers apart is rocked back and forth on the axis of the forearm.



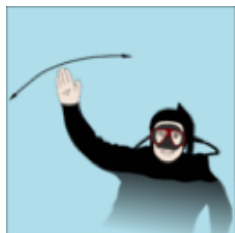
I'm OK

A circle is made with thumb and forefinger, extending the remaining fingers if possible



I'm OK

Forming a large circle with both hands above the head
OR Touching or tapping the top of the head with elbow extended sideways



Emergency! Need help

Waving one or both arms in a wide arc.

2.2. With other traffic

- Means of communication: man overboard flag, radio, hand signal, position of your boat.
- Engage oncoming traffic with professionalism and courtesy. Greet the skipper with a polite and customary “Good morning Captain” and then state your business. “Good Morning Captain. Please be aware we have 35 swimmers in the water and we ask that you maintain an appropriate watch”. Or give them direction to avoid the swimmers. Please take the transom of the blue hulled boat at the end of the swim.



2.3. Sound signals

- Horn/whistle: a short "blast" means a duration of about one second, and a long or "prolonged" blast lasts four to six seconds.
- **5 (or more) short blasts:** Emergency (Danger) Signal.
 - "There is DANGER in what you intend to do / "I do NOT AGREE with your intended maneuver / "I am in DOUBT as to your intentions."
- **3 Short Blasts:** I am operating astern propulsion
 - Most likely heard as ferries are leaving the dock
- **1 long blast:** I am leaving the dock
 - Also most likely heard as ferries leave the dock (Embarcadero). May be in place of 3 short blasts.
- **1 long blast not more than 2 minutes apart:** Power Driven Vessel under power making way in reduced **visibility**.

2.4. Radios

- ▶ Radio Room: through pantry of Cookshack kitchen, past the mop bucket, up the stairs, after the open lock, you will find the radios, manuals, foul weather jackets and peripherals.
- ▶ The Lead pilot will carry 3 radios, one for the swim, one for VTS., one for bridge-to-bridge.
- ▶ "Don't drink coffee before piloting" rule: shouting into the microphone, holding it too close to your mouth will "over modulate" the electronics, making your words unintelligible on the receiving radios.
- ▶ Hailing: say the name of the boat (or station: "Vessel Traffic", "Coast Guard") you wish to contact, then say the name of your boat, then say "Over".
- ▶ All communications with Vessel Traffic Services should be as **brief and professional as possible**. There are many users on this channel and the channel needs to be kept clear.
- ▶ Radios can be used in 1 watt or 5 watt mode.
- ▶ Squelch: limits the amount of radio static. If too much undesirable noise, increase the squelch.

The club will contribute \$50 to any pilot that buys their own radio.

2.5. Channels

- ▶ **Channel 10:** is used by commercial pilot vessels.
- ▶ **Channel 12:** Vessel Traffic transmissions with *offshore* vessels.
- ▶ **Channel 13:** called the bridge-to-bridge channel and is used for conversations limited to safety communications between vessels.
- ▶ **Channel 14:** Vessel Traffic Services.
- ▶ **Channel 16:** the distress and safety frequency and is used for hailing only. The Coast Guard monitors 16 continuously.



- ▶ **Channel 22A:** The USCG reserves use of this channel for communications that pass between the agency and boaters. If you call the Coast Guard on 16, they are likely to move the conversation to channel 22A.
- ▶ **Channel 68:** Charter boats from Fisherman's Wharf
- ▶ **Channel 69:** Primary "Working" channel for SERC
- ▶ **Channel 71:** Primary "Working" channel for the Dolphin Club

2.6. Procedure Words

When using the radio between club boats:

- ▶ Fast motor boats are called "High Speeds".
- ▶ Their direction can be given from a point on the compass or a land mark. Example: "High speed coming from the East" or "High speed coming from Sausalito/Treasure Island/Gas House Cove".

Hailing Vessel Traffic, channel 14:

- Start communication by saying the name of who you wish to contact, then the name of your own boat, then "over". Wait for them to acknowledge you, state your business and end transmission.
 - I.e: "Vessel Traffic, this South End Committee Boat. Over." Wait for acknowledgment. "Confirming the swim event is at mid Channel. Out."

When giving positions to Vessel Traffic Services Use "SF" in front of pier numbers.

- ▶ "Our lead swimmer is abeam of SF39, over". The reason for this is that there could also be a pier 39 in Oakland.

Common terminologies

- ▶ **Over:** You have ended your transmission but expect a reply.
- ▶ **Out:** You have completed your communication.
 - "Over and out" does not mean anything.
- ▶ **Copy:** You have understood the transmission.
- ▶ **Roger:** Acknowledges that the message was understood and agreed with (and you'll follow through).
- ▶ **Affirmative:** Alternatively, say "Yes".
- ▶ **Negative:** Alternatively, say "No".
- ▶ **Say again:** Please repeat
- ▶ **Wait:** You must pause, but want the other station to continue to listen.
- ▶ **Wait out:** resuming
- ▶ **Break:** marks a change in the message: for instance, in temporarily responding to another station.



Emergency terminologies

- **Mayday:** (x3 times): reserved for situations involving risk of life and/or grave and immediate danger.
- **Pan-Pan** (“pahn-pahn”; x3 times) announces an emergency when the safety of a boat and/or person is not life threatening but has the potential to become so.
- **Securite** (“say-cur-i-tay”; x3 times) signals information regarding navigation safety.
 - The Coast Guard encourages all mariners to transmit safety messages when they spot a hazard to navigation (floating log, buoy off-station; *and* that “marine event”: swimmers in the water!)
- **Silence** (“see-lonce”; x3 times) spoken by the Coast Guard to keep routine traffic off an emergency frequency.

Police numbered codes are not used in the marine environment, no “10-4”s.

2.7. Emergency procedures

When hailing the Coast Guard, be prepared to give this information. DO NOT panic, they will guide you through the questions.

- **WHO** you are: your vessel’s call sign and name.
- **WHERE** you are: your vessel’s position in latitude/longitude if you can, or distance in nautical miles from a widely known geographical point. Indicate which information you are certain of and which position information may be useful. Local names known only in immediate vicinity are confusing (*i.e. “Coghlan Beach” is only our club reference. Abeam of Saint Frances Yacht Club would be a better indicator of your position*).
- **WHAT** is wrong: nature of distress or difficulty / Kind of assistance needed.
- **NUMBER** of persons aboard and the condition of any injury: *i.e. “Sector San Francisco, we have 4 adults and one child with a broken arm.”*
- **DESCRIPTION** of your vessel: length, type, cabin, masts, power, color of hull, superstructure and trim.
- Present seaworthiness of your vessel.
- Your listening frequency and schedule.

2.8. Emergency phone numbers

Taking a cell phone allows you to contact the Coast Guard or Vessel Traffic without a radio upon encountering an emergency, or a “hazard to navigation”. You will need a waterproof device for the phone.

Program these numbers in your cell phone prior to the swim:

Coast Guard Emergency	415-556-2103 (20 min between the phone call and the arrival on-site.)
CG non-emergency	415-399-3451
Vessel Traffic	415-556-2760

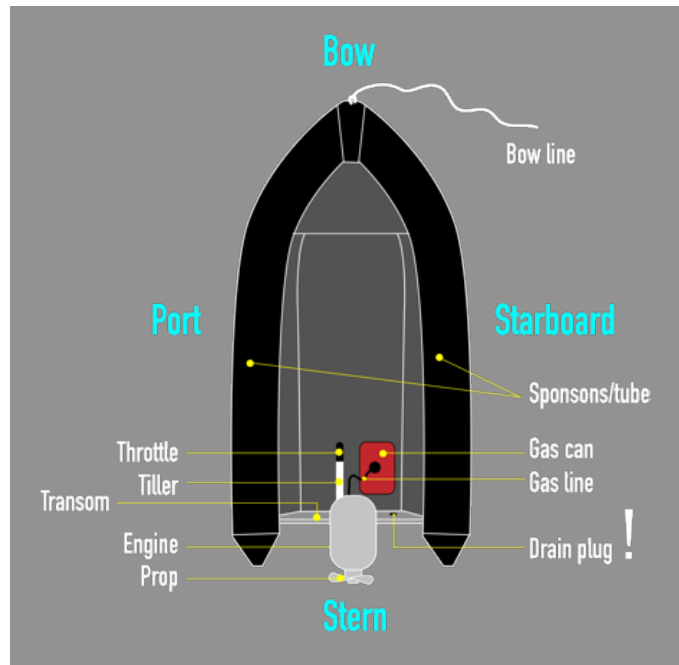
SF Police Dept, Marine Division 415-850-7440

Weather and current updates 1-866-727-6787 ex 010

3. Equipment

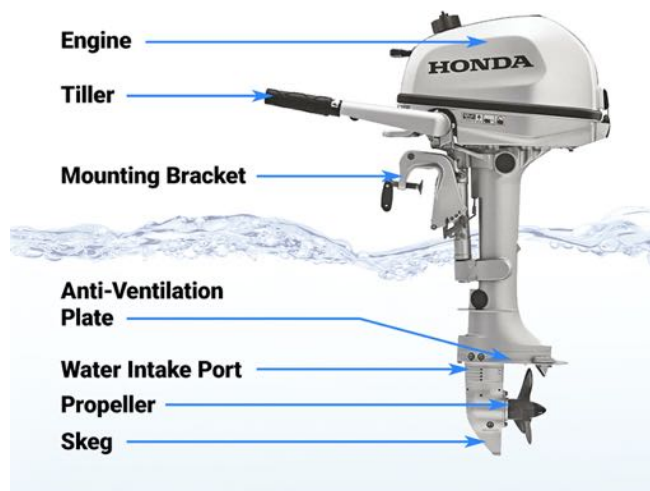
3.1. Parts of the boat

- ▶ **Bow:** the front end of the boat.
- ▶ **Stern:** the back end of the boat.
- ▶ **Transom:** The back end of the boat where the engine is mounted.
- ▶ **Keel:** a rigid longitudinal member on the bottom of the boat that acts to keep the boat from moving sideways.
- ▶ **Beam:** The widest part in a boat from one side to the other.
- ▶ **Port:** The left side of the boat when looking forward from the helm: "Is there any Port Wine Left?".
- ▶ **Starboard:** Not the Port side, the right side.
- ▶ **Bow Line:** Line that is attached to the front of the boat for tying up the boat.
- ▶ **Planning:** describes the state in which the hull of a waterborne craft is lifting up higher up to the point where it merely skims across the water, rather than moving through it.



3.2. Parts of the engine (Hondas only)

- ▶ While swimmers are entering/exiting your boat, transmission should **ALWAYS be in neutral.**
- ▶ Throttle: the friction ring should be off. The steering friction device set to your preference.
- ▶ Choke
- ▶ Transmission
- ▶ Stop-engine/kill switch lanyards should be attached to you.
- ▶ Practice steering from both sides of the boat.
- ▶ Be cautious of over tightening the mounting bracket screws.





3.3. Prepping, “building” the boat

It's required by law that each boat carry:

- **A Type I-II or III life vest** for each person: confirm it is in good condition.
- At least one **Type IV “throwable flotation device”**: the seat cushion.
- An **“audible signaling device”**: a horn and/or a whistle.
- A single **360 degree white light** for use dusk to dawn, and in foggy conditions. Be sure these lights are in working order.

Items to have in the Zodiac for every swim:

- A throw rope, 30 to 70 foot long.
- The Oscar “man-overboard” flag: grants our boat certain rights of way.
- A bailer and sponge
- Wool blankets
- A weight to help manage balancing the boat (optional)
- Plastic bags
- Silver warming blanket (optional)
- Radios (Three radios for lead pilot; at least one, preferably two, for others)

Personal Items:

- A headlamp and/or flashlight
- A compass: bay fog can drop down in minutes.
- Chemical hot packs to warm hypothermic swimmers
- Honey /GU packets
- Whistle
- Warm tea or water to warm up, no alcohol or caffeine
- Binoculars
- A “Leatherman” type tool/knife
- An extra cap and scarf for swimmers if they are pulled because of the cold.
- Orange smoke/Orange distress flag
- Mobile phone

Always sign boats out in log book. This will be helpful if we need to account for missing boats or pilots. It may save your life someday.

For more details, check-out the pilot check list at the end of the syllabus.

4. Rules of the road

4.1. Pilot's responsibility

- Obtaining your CA Boater card or equivalent
 - Safe operation of the boat
 - Knowledge of its equipment



- Rules of navigation
 - Communication with VTS, other boats.
- Neglecting any precaution in safe operation of boat & equipment:
- **Violation** of the California Boating Law
 - **Violation** of the Coast Guard Regulation
 - Could spill over into Civil Courts

4.2. Inland Collision Regulations (COL REGS)

Right-of-way

- There is a larger hierarchy, but these are the rules that apply to us. The boat with the right of way (stand on) shall maintain its course, the Give Way vessel shall alter course. (see rule 8)
- A boat displaying the Oscar "O" or Man Overboard flag. A boat shall not approach a vessel displaying the Oscar Flag and shall reduce speed within 150 meters (498 feet).

Rule 7 - RISK OF COLLISION

- Every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt such risk shall be deemed to exist.

Rule 8 - ACTION TO AVOID COLLISION (Synopsis)

- Any action taken to avoid collision shall be positive, made in ample time and with due regard to the observance of good seamanship. Any alteration of course and/or speed to avoid collision shall be large enough to be readily apparent to another vessel observing visually or by radar; a succession of small alterations of course and/or speed should be avoided.

Rule 9 - NARROW CHANNELS

- A vessel of less than 20 (65.5 feet) meters in length or a sailing vessel shall not impede the passage of a vessel which can safely navigate only within a narrow channel or fairway.

5. Before the swim: briefing

This is for the Swim Director and Head Pilot to do, but good things to keep in mind:

- Count swimmers: count swimmers at briefing, count again just before the jump via radio and at end of swim. As swimmers enter the cove, place a pilot at the opening to count swimmers.
- If you can pod the swimmers who swim at the same speed, this is better
- Pair swimmers/pods with pilots.
- Ask the swimmer which side they breathe on so you can stay in their vision.
- Kayak pilots: a raised paddle means there is an immediate need for a zodiac pilot.



- **The pilots have the ultimate say:** Inform swimmers that they may be pulled for any number of reasons. Please report swimmers that do not abide by pilots direction to the Swim Commissioner.
- Always sign boats out in log book. This will be helpful if we need to account for missing boats or pilots. It may save your life someday.

6. During the swim

6.1. Boat handling

- "Go slow, look like a pro. Go fast, look like an..."
- While swimmers are entering or exiting your boat, put transmission in neutral.
- We've deemed it mandatory that the powerboat pilots and co-pilots wear life vests: if you get thrown out at speed, you may be knocked unconscious /dissociated: a life vest can keep you face-up (breathing) in the water.
- Stop-engine lanyards should be used (attached to you).
- Practice steering from both sides of the boat (facing each way). In a tense situation you might mistakenly accelerate when you need to stop, only practice will make these motions automatic.
- Practice maneuvering the boat by picking up trash floating in the bay.
- Pull the bailer's plug only when you're going fairly fast, and replace it when you're back at idle speed. This helps drain the boat while underway.
- Quick acceleration will pop the bow up in the air, which may flip the boat in high head winds. Let the boat crawl up on plane.
- A quick stop will bring water over the transom.
- Use a weight plate in the bow of the inflatable in rough weather to help with planning. Also, shifting passengers forward or back will help with getting on a plain.
- Don't motor near the shore: sand in the water will destroy the motor's water pump. If you need to approach a shore, turn off and lift the motor and coast in. Shove off as far as you can before lowering and starting the motor again.
- Head (power) *into* waves, *diagonally*, not head-on.
- Don't wake the swimmers.
- To track position use "Range markers".
- Engaging oncoming traffic.

6.2. Piloting strategies

- Plan how to deploy assets (inflatables, kayaks, woodens) based on the swim size and points of risk.
- Keep, preferably, downwind. You can be blown into a swimmer in a couple of seconds while you're distracted.
- Stay on swimmer's breathing side, in their sight. When they get tired and cold, they start feeling alone, frightened; they can become irrational and paranoid (and combative!)
- Identify the locations of maximum risk for the swimmers:
 - o Ferry terminals and creakers
 - o Gashouse



- o Traffic from Sausalito
 - o Events: live bait sales start
- Identify threats early and plan to actively engage (i.e move to the threat).
- Events can unfold quickly so don't delay.
- Use the radio to let fellow pilots know you are leaving your station to manage the threat.
- Direct the threat to the front or the back of the swim, use assets like inflatable, kayak or wooden to mark the location).
- If necessary, lead the threat through the swim.
- Station your assets at key locations (Creakers, Gashouse...) as the swim goes by.
- Watch for movement over seawalls (I.e Hyde street).
- Watch the swimmer for signs of hypothermia:
 - o Has their swimming style fallen apart; their swimming become erratic; he/she can't keep direction?
 - o Ask the swimmer questions: "Where are you (...swimming to)?"
 - o Talk to your cold swimmer, calmly and cheerfully. A swimmer will feel safer seeing you.
- As the swim enters the ending point, the opening of Aquatic Park, place a pilot, either Zodiac or row boat, at the opening to count the swimmers.

Small swims

- Create a PERIMETER around the swimmers; ensure all swimmers have pilot boats nearby. Position boats next to the first and the last swimmers, to direct oncoming traffic around the swim.
- Keep swimmers in a tight pod.
- Keeping track of all swimmers during the swim. Wind chop can come up in 15 minutes: the swimmers become invisible to our boats, and to oncoming traffic.
- Do not chase after high speeds.

Large swims

- Can your swim be broken down into smaller pods, each with a zodiac? If so, treat each pod as a swim.
- If no, create a perimeter around the swimmers:
 - o With 4 inflatables, make a diamond.
 - o With 2 inflatables, position west/east and front/back.
- It will be harder to keep track of all the swimmers so containment is key.

6.3. Pulling swimmers

- Rowboats: lean on the side of the boat to bring the gunwale down to water level; balance the boat as the swimmer crawls over the side.
- Zodiac pilots: ask the swimmer to kick flat in the water, so you are pulling the swimmer in sideways, not lifting up (against gravity). For a firm grasp, a life vest can be put under the swimmer's arms and then falling (yourself) backwards. Get help from another boat if needed. Remember, your legs are stronger than your arms.

- Swimmers in the water **never** can be allowed to hold on to a power boat while it is moving (say, to be relocated). The boat will pull sideways and the flow of water will force the swimmer's legs/feet to the propeller.

6.4. Lost or missing swimmer

In the event that you have lost track of a swimmer, after no more than 5 minutes, contact the Coast Guard Emergency Line.

We do this because it takes 15 to 20 minutes just for them to input the data we give them so they can plan a rescue strategy.

Also, throw a personal floatation device in the water at the last known position of the swimmer. The Coast Guard can use this to track and predict currents and possible positions of the swimmer.

7. Environment

7.1. Local Landmarks



7.2. Local piers



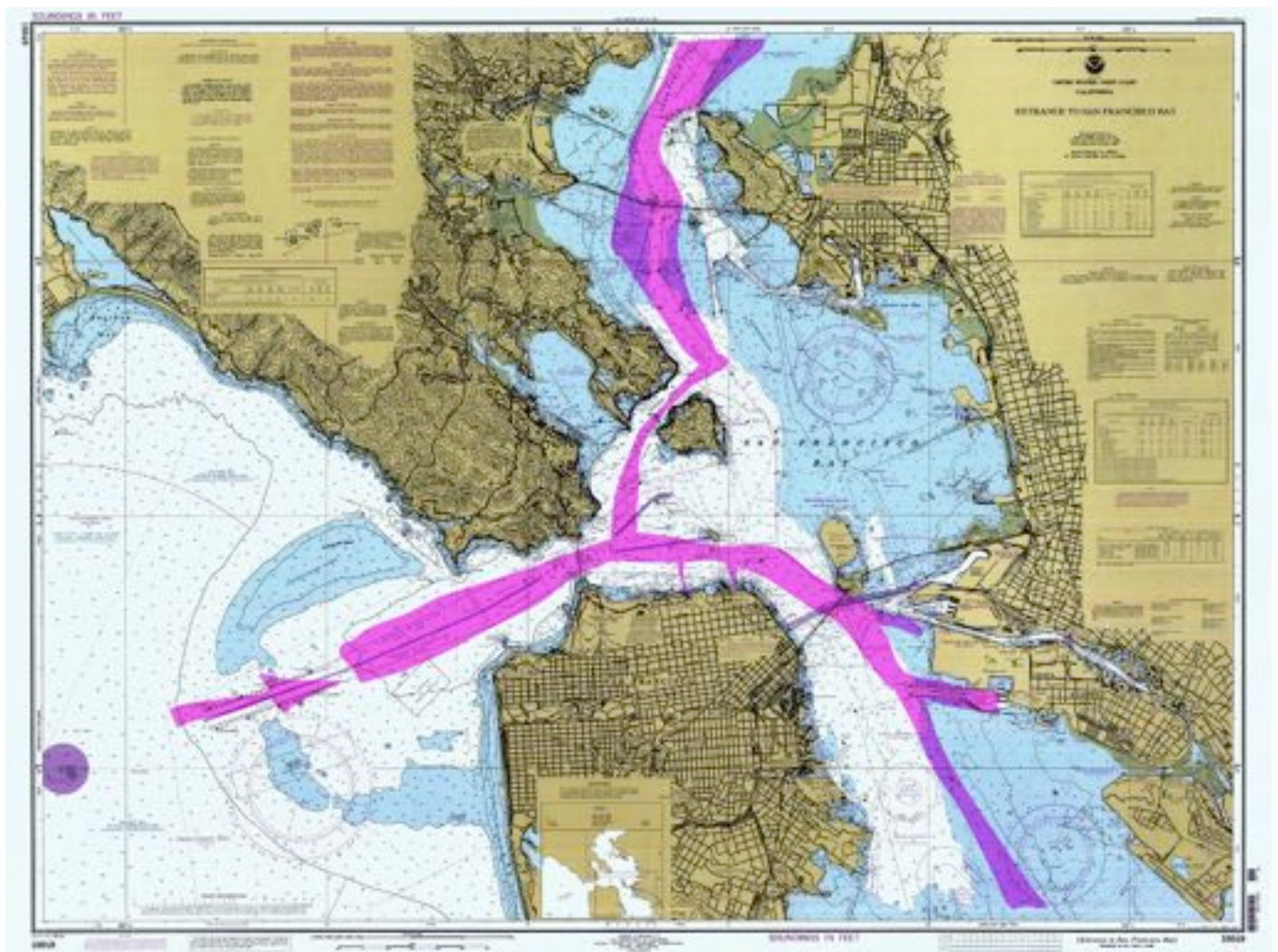
7.3. Around the Aquatic Park - the Chas Lap



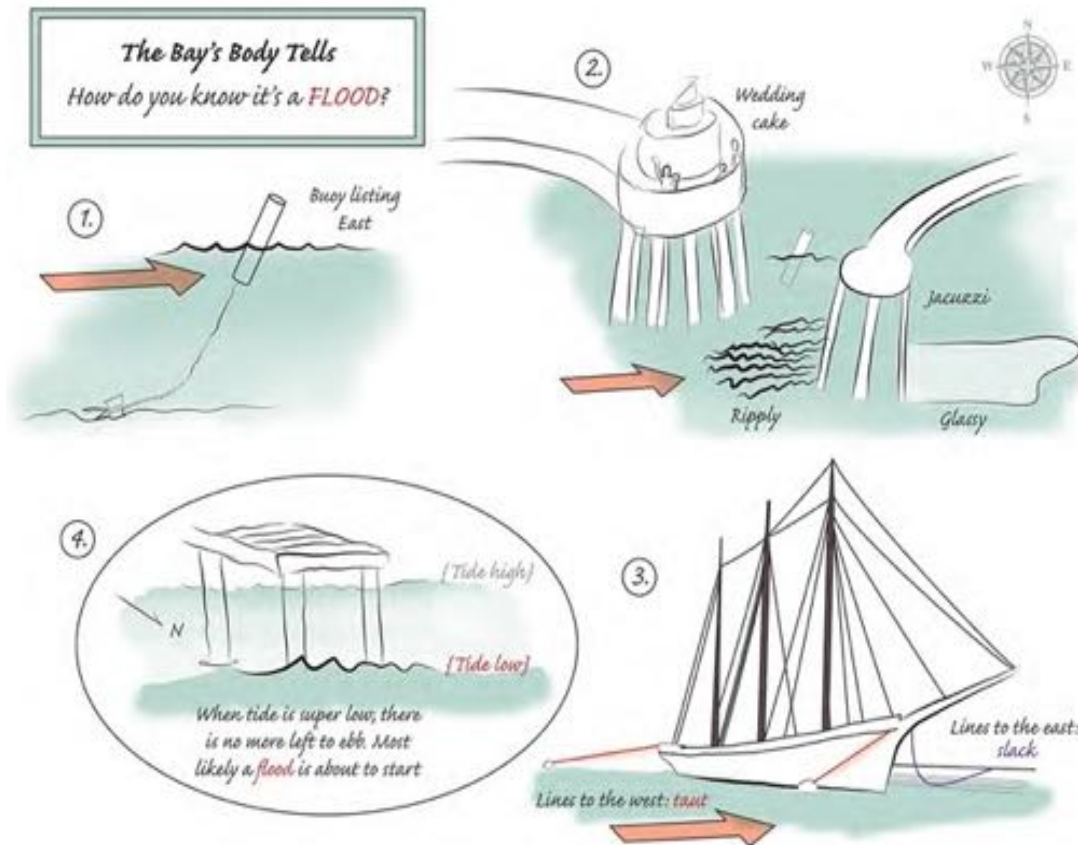
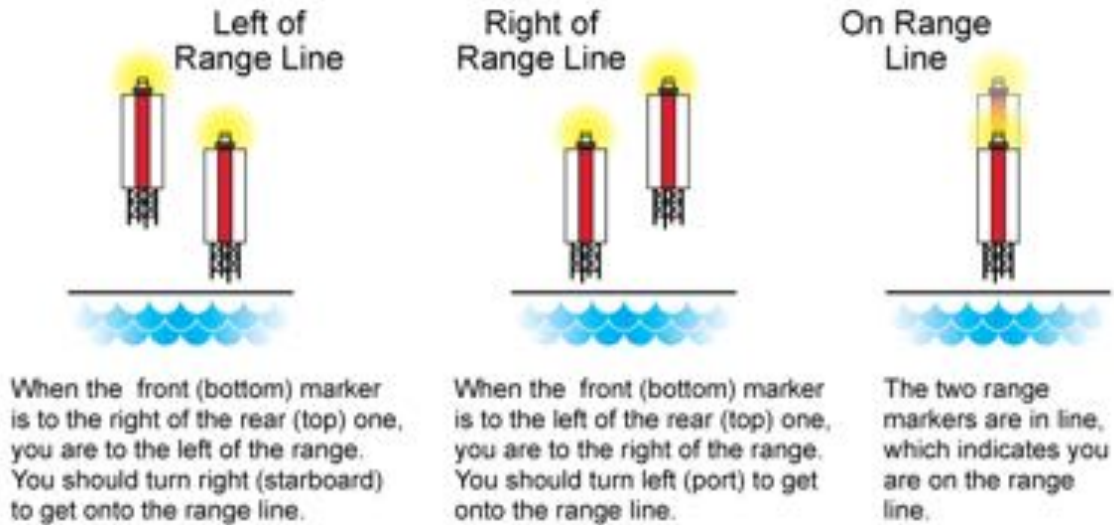
7.4. The Bray bridge



7.5. Shipping lanes

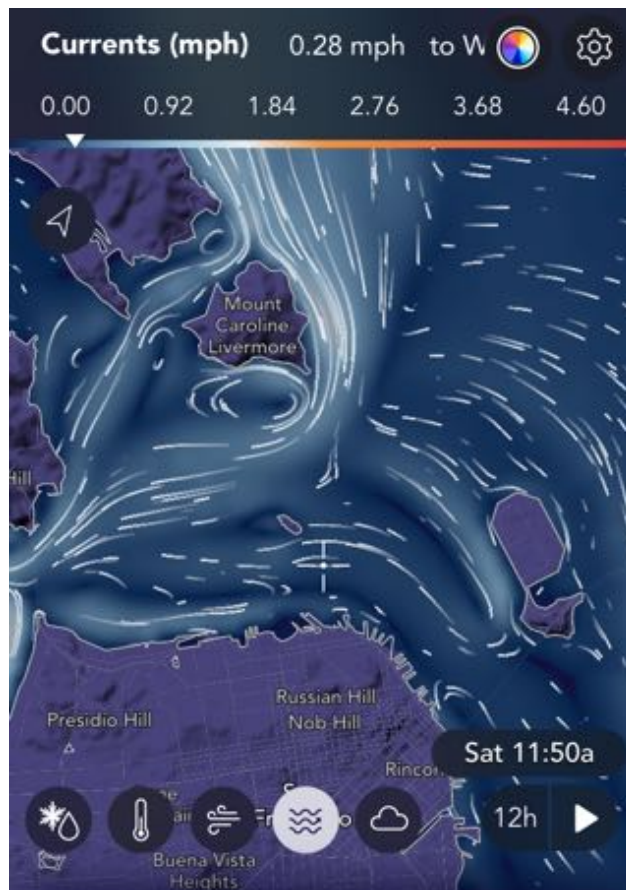


7.6. Reading currents: range markers, little alcatraz, common clues



(Most of these could be strongly affected by winds, will not show current 100%)

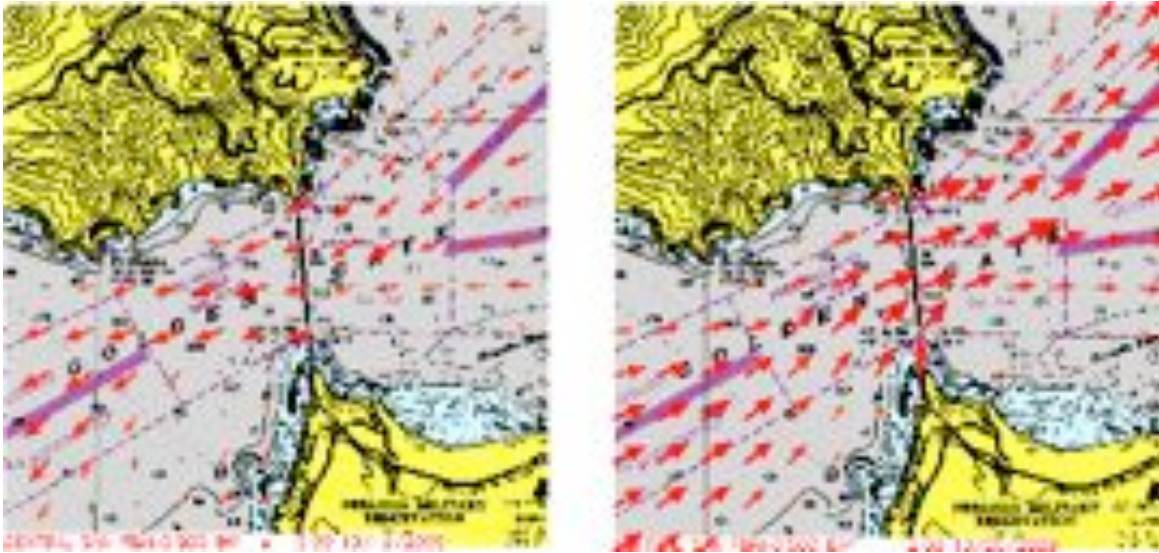
7.7. General bay currents →



7.8. Finer shipping lanes ↓



7.9. Currents at the GGB

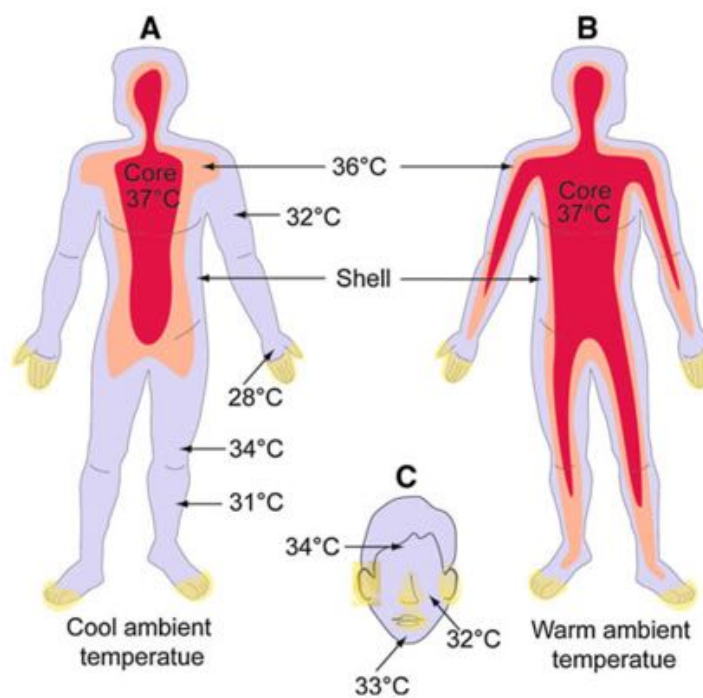


8. Hypothermia

Subnormal body temperature

- Normal: 97-100 degrees F (37°C)
- Mild hypothermia: 90-96 degree (32-35 C)
- Severe hypothermia: below 90F (32C)

What do all Hypothermic swimmers say when you ask them how they're feeling? "I'm okay".
The body loses its heat 20 times faster in a 50 degree water than in 50 degree air.



Blood distribution in cold and warm ambient temperatures.



8.1. Body & cold water

1. Entering the water: body's initial response to cold water immersion
 - peripheral vasoconstriction
 - blood is shunted away from shell
 - Increase in heat production
2. Remaining in the water: body's response to sustained cold water exposure
 - Increased energy demands
 - decreased energy stores
 - Increased diuresis
3. Exiting from the water
 - Peripheral vasodilation
 - Blood leaves core and return to shell
 - After drop
4. Rewarming
 - Drop in blood pressure
 - Syncope

4.1. Body & cold water

Mild hypothermia symptoms: 90-96 degree (32-35 C)

- Shivering
- Lack of coordination
- Flat affect
- Confusion
- Slurred speech
- Pale/ashy lips
- Cold skin
- Feeling of impending doom/restless

The "Umbles"

Stumbling / Grumbling / Mumbling / Fumbling

Treatment for mild hypothermia

- Remove the swimmer from the water.
- Prevent further heat loss
- Provide external source of heat (heat packs, body heat, warm liquids and ultimately the sauna)
- Remove wet clothing, cover with dry jacket, blanket, covering all exposed skin. Protect from wind.
- Lay swimmer flat in the sauna, do NOT sit them up in the shower! Sugary fluids!! Energy bar!!
- Don't leave the swimmer alone until you're confident that they're back to normal or they're with somebody else that will watch them.



Severe hypothermia symptoms

- Muscle rigidity (Frankenstein walk) and/or inability to walk or move
- Slow pulse
- Slow/shallow respirations
- Pale or cyanotic skin that's cold to the touch
- Altered mental status/confusion
- Loss of consciousness
- Conscious but non verbal or minimal response to verbal stimuli

Treatment for severe hypothermia

Call 911!

Update 911 dispatch if location changes.

Have somebody at the club door to guide responders.

Have necessary info for responders, name, DOB, medical history.

Keep swimmer lying down in the sauna. Provide added body heat.

Don't give fluids if swimmer is unable to sit up and swallow.

If swimmer vomits, turn them on their side.

Begin CPR if swimmer becomes pulseless prior to paramedic arrival.

Resources

South End Website: <https://serc.com>

South End Google group: <https://groups.google.com/g/southendrowingclub>

South End Facebook group: <https://www.facebook.com/groups/southendrowingclub>

<http://sfports.wr.usgs.gov/>

<http://www.animatedknots.com/>

<http://www.iwindsurf.com/>

<http://www.wunderground.com/MAR/buoy/46026.html?graphtype=2>

<http://tbone.biol.sc.edu/tide/tideshow.cgi?>

[site=Alcatraz+Island+W%2C+San+Francisco+Bay%2C+California+Current](http://tbone.biol.sc.edu/tide/tideshow.cgi?site=Alcatraz+Island+W%2C+San+Francisco+Bay%2C+California+Current)

<http://www.sfgate.com/weather/fog/fogtopclose.shtml>

<http://xpda.com/nauticalcharts/> (chart number 18652)

Water temp: https://www.ndbc.noaa.gov/station_page.php?station=ftpc1

Currents: tides.mobilegeographics.com/locations/2833.html

l-36.com/sf_current_new2.php?menu=9