

9 Tips for Operating in Strong Currents

1. Keep your tether short and controlled

- Deploy as little tether in the water as possible as it will act like a sail and pull on the ROV.
- Let tether out so the ROV can travel down current or up current to the target. Drag increases when working perpendicular to the current.

2. Understand your environment before deployment

- Fly with the current using the tether as a fishing line to control the force on the ROV.
- Use a clump weight on tether when possible to offset tether drag. This is especially helpful with surface and mid water currents as the weight stabilizes the tether from the surface to the working depth. Lash a carabiner or small weight bag to your tether behind the ROV (safely spreading the load over at least 6 inches of tether) and leaving a short leash for the required excursion. Add necessary weight(s) to the carabiner or bag until the tether hangs straight down in the water column.
- Use natural current breaks, known as [eddies](#), to protect the ROV from the current. Protection can be provided by a ship's hull, a structure in the water like a bridge footer, a protected area on a river, or even a wreck on the seafloor.
- If you fly from shore it is better to reposition your control box several times than use too much tether in the water.
- If you use a sonar, prepare for the inspection/search by pre-viewing the area first with a long-range sonar scan. This way you can identify underwater hazards like tree branches or other debris so you can plan your inspection strategically.
- Heading into the current when possible gives you the best control over the ROV. You will need to take a diagonal heading and "crab" across the current to reach your target rather than flying a straight line. Always start upstream and go downstream with short "leash."

3. Make sure the ROV has the thrust/power to work in the environment

- If your ROV doesn't have powerful thrust, you are probably not going to be able to operate in strong currents. Understand the thrust you have available during operations and how to command it when you need it. A general rule of thumb is to have around twice the amount of thrust to the ROV's mass you are deploying.
- VideoRay's new [Mission Specialist Series \(MSS\) Defender](#) is producing incredible results for pilots offering superior performance and maneuverability. Seven powerful thrusters provide you with six degrees of freedom control including lateral movement, pitch, and roll.



4. Plan the full mission in detail, and have a back up plan just in case

- Plan the mission around tidal windows when possible.
- Time your operations as close to slack tides as possible. Don't be fooled by tide times. Moving just a short distance from the port where the tide times are listed for can change the slack water times by 30-60 minutes - so be ready to throw the ROV in an hour before the quoted slack tide.
- Pay attention to neap tides and spring tides. Timing your operations right can add valuable time to your operational window.

5. Know when and how to live boat (deploying from a boat that is not anchored)

- When live boating, run the ROV downstream, working it left and right, letting tether out as needed.
- If you are working in current more than 3 knots, live boat with the engine is facing upstream and deploy the ROV from the bow downstream. Hold on to the tether and move the boat to position the ROV into the right spot.

6. Keep lines of communication between key participants

- Maintain tight communication between the pilot and tether handler.
- Make sure the tether handler communicates to the pilot as tether is deployed into the water – usually every 5m.
- The tether handler needs to be focused on what the pilot needs them to do, there is usually no time for delays.

7. Don't forget about the turns counter

- Pay careful attention to the turns counter ([Pro 4](#)). Tether has memory - for each turn you put in the tether, it will try and counter which puts torque on the ROV. This will make it difficult to fly.

8. Know your tether types

- Select the right [tether](#) combination. VideoRay offers one negatively buoyant and two neutrally buoyant tethers to accommodate various conditions and configurations. If you're operating at depth, use a length of tether with a PPT. It is thinner and will provide much less drag on the ROV. Negative tether can also be used, but too much in the water will drag the ROV down.



9. Stay calm and if you can't beat it, go with it

- Sometimes the best you can do is to position yourself upstream of your target and fly the ROV like a kite in the stream. You will still have some limited lateral and vertical control to hopefully get within visual or sonar range of your target.
- Be soft in your wrist and tough in your flight. If you fly with fear the current will win every time.
- Try not to be in midwater if you don't have to be. If it's impossible, then sit on the seabed and use the camera and yaw function of the ROV. Stay calm and do not forget to wear your personal flotation device.

We hope you enjoyed these 9 tips and feel more prepared for your next mission! If you would like to speak with us for other or more tips, contact us on:

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