

3 Marine Navigation Challenge: Plan Your Route

Marine Month
IN CANADA

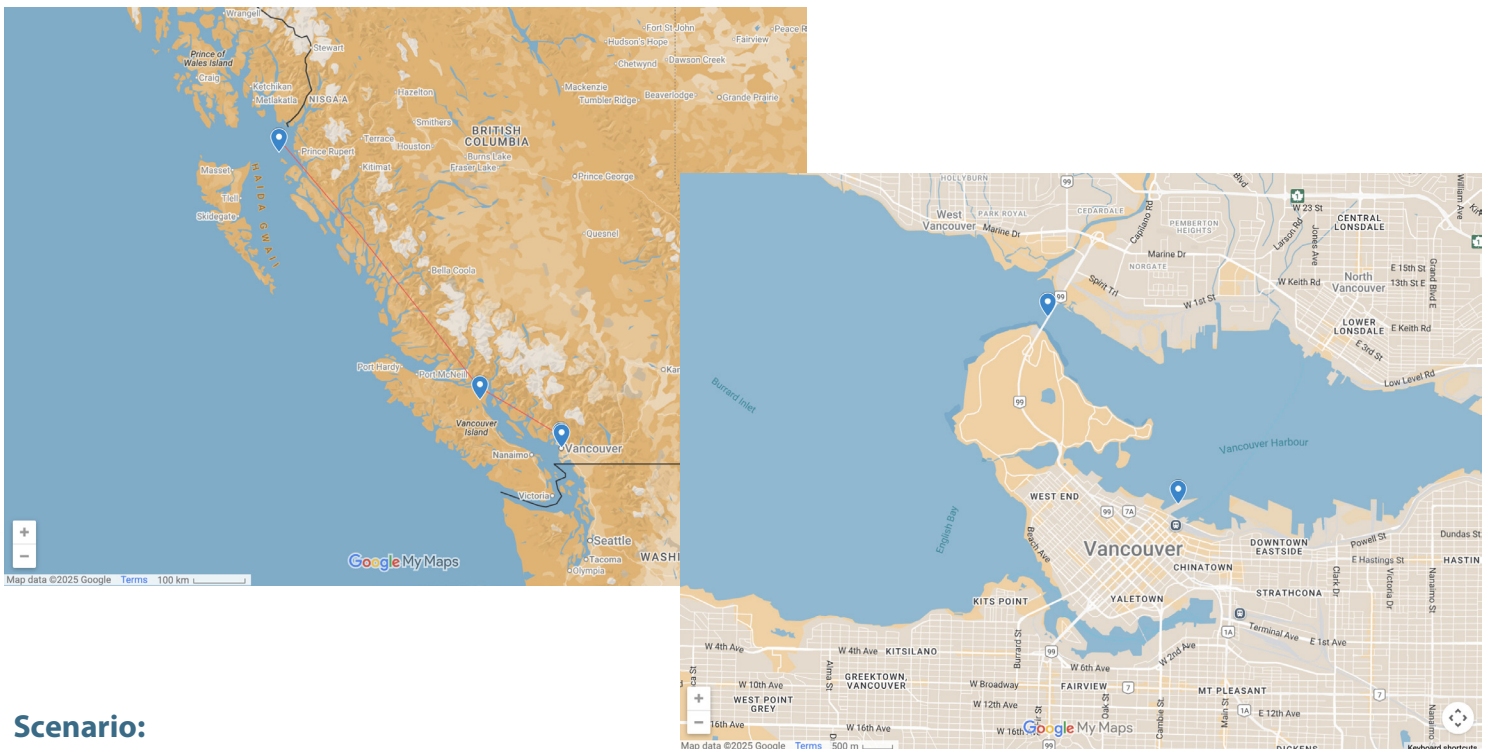
You're a BC Coast Pilot, a mariner who navigates large ships through confined coastal waters. Today, you're planning the safe and on-time arrival of the cruise ship Viking Orion as it sails through British Columbia's Inside Passage. One of your most important jobs is to guide the ship through Seymour Narrows — a narrow channel known for its strong tidal currents. To pass through safely, you must time the ship's arrival for slack current — the short period between a flood tide and an ebb tide when the current is at its weakest.

Key Vocabulary:

- **Knot:** A unit of speed used at sea (1 knot = 1 nautical mile per hour)
- **Nautical mile:** A unit of distance used in navigation (1 nautical mile = about 1.85 km)
- **Slack current:** A short period when the tidal current slows to a near stop. It happens when the tide changes direction — between flood tide (rising) and ebb tide (falling).
- **Confined coastal waters:** Narrow or challenging waterways near the coast where ships require expert navigation.

The Route:

The map on the left includes a red line indicating the route between the four locations. The map on the right is a close-up of the 1st Narrows and Canada Place in Vancouver Harbour.



Scenario:

- Sept. 9 @ 6:30 PM: Viking Orion picks up BC Coast pilots at Triple Island
- Sept. 10: Must pass Seymour Narrows during slack current
- Sept. 11 @ 6:30 AM: Must pass 1st Narrows (under Lions Gate Bridge)
- Sept. 11 @ 7:00 AM: Must dock at Canada Place (Vancouver Harbour)

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Important Information:

- Ship's max speed: 17 knots
- Distance from Triple Island to Seymour Narrows = 378 nautical miles
- Distance from Seymour Narrows to 1st Narrows = 106 nautical miles
- Slack Currents at Seymour Narrows (PDT - Sept. 10, 2025): 01:32 AM, 07:48 AM, 01:59 PM, 07:30 PM

Your Navigation Plan:

Determine the optimal slack current time to pass through Seymour Narrows.

Use this formula: $\text{Speed} = \text{Distance} \div \text{Time}$

1. Pick ONE slack current time (safe time to pass through tides) from the list above to pass through Seymour Narrows:

2. How many hours from departure at Triple Island (6:30 PM Sept. 9) to your chosen slack current time?

3. Speed required to go from Triple Island to Seymour Narrows:

Speed = $378 \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ knots

4. How many hours from the chosen slack current time to 1st Narrows (6:30 AM Sept. 11)?

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Important Information continued:

5. Speed required to go from Seymour Narrows to 1st Narrows:

Speed = $106 \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ knots

Based on your calculated speeds, is the slack current time you chose within the ship's limits?

(Hint: If either of the speeds you calculate is more than 17 knots, that's higher than the max speed of the ship. Try a different slack time!)