



Ship Tracking

STEM Sims

Lesson 2: Medium Sized Ships

Using hydrophones not only identifies ships, but it can track its location. By setting hydrophones in multiple places in the ocean, the hydrophones can track if the ship is moving towards the hydrophone or away from it. If it gets out of range, another hydrophone will pick up the ship’s frequency and can determine the direction of the ships movement as well as its location based on the hydrophone’s location. It’s time to add more ships to the database, so head underwater to try to identify the ships.

Doing the Science

1. Start the Ship Tracking Simulation by clicking on the “Sim” tab.
2. Click on the green “Learn” button.
3. Click on “Start” on the left side of the simulation.
4. Ships will float across the screen. When you see a ship floating by, hover your cursor over the ship to see its acoustic signatures.
5. Click on the ship to stop its movements and freeze its acoustic signature.
6. Record the ship’s frequency and amplitude in Table 1.
7. Draw the acoustic signature into the table to create a database of the medium shaped ships.
8. Clicking on “Redo” will reset the ship so that it will sail across again.
9. Click on “Next” to continue onto the next ship.
10. Repeat steps 3-9 for the next three ships.

Table 1.

Ship Type	Frequency (Hz)	Amplitude (dB)	Acoustic Signature
Fishing Trawler			
Tug with Empty Barge			
Tug with Loaded Barge			
34m Work Boat			

Do You Understand?

1. How do the medium sized ship acoustic signatures compare to the small ship acoustic signatures? Is there a pattern?

2. Would the acoustic signatures change if weight was added to each of the ships? Explain.