

latitude and longitude.

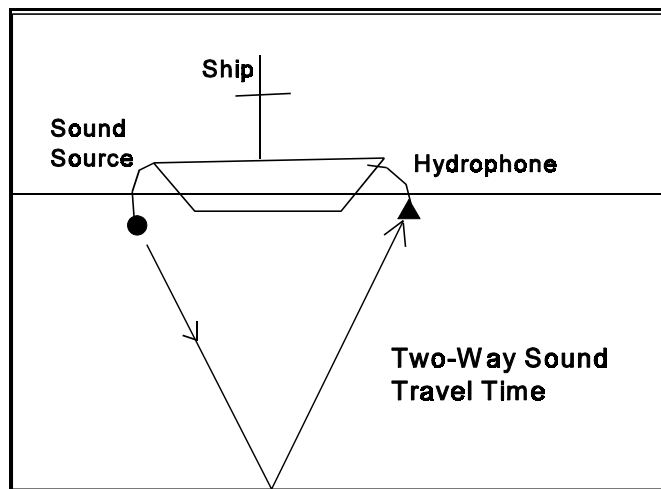
- a. common sizes of topographic maps: 7.5 minute and 15 minute series:
 - (1) 7.5 min = an area of earth, 7.5 min longitude x 7.5 min latitude,
 - (2) 15 min map = 15 min long x 15 min lat.
- b. each 15 minute quadrangle can be divided into 4 7.5 minute maps

C. Bathymetric Maps

1. Depth measurement and topography of seafloor
2. soundings = depth measurements
 - a. echo sounder - uses sound waves and the speed of sound in water to determine the depth to the ocean floor from sea surface
 - (1) sound emission source
 - (2) hydrophone = sound receiver
 - b. velocity of sound in water = 1450 m/sec (4800 ft/sec)

$$V = d/t \quad \text{velocity} = \text{distance} / \text{time}$$

"two-way travel time" = the time for sound to travel from sea surface to sea bottom, and back to the hydrophone



Example Problem: If the source-hydrophone travel time is 2 sec, what is the depth of the sea floor directly below a ship?