

U.S.C.G. Merchant Marine Exam
Master/Chief Mate Offshore Supply Vessels
Q204 Navigation General – Oceans
(Sample Examination)

Choose the best answer to the following Multiple-Choice Questions

1. You are on course 209°T. In order to check the longitude of your vessel, you should observe a celestial body on which bearing?
- A. 209°
 - B. 270°
 - C. 299°
 - D. 000°

Correct answer: B

2. Which is TRUE concerning a first magnitude star?
- A. It is 2.5 times as bright as a second magnitude star
 - B. It is 3 times as bright as a second magnitude star
 - C. It is 5 times as bright as a second magnitude star
 - D. It is 10 times as bright as a second magnitude star

Correct answer: A

3. The Star Lists in the Nautical Almanac are based on which of the following magnitudes?
- A. First
 - B. Third
 - C. Sixth
 - D. Tenth

Correct answer: B

4. In some river mouths and estuaries the incoming high-tide wave crest overtakes the preceding low-tide trough. This results in a wall of water proceeding upstream. Which term describes this occurrence?
- A. Surge
 - B. Boundary wave
 - C. Seiche
 - D. Bore

Correct answer: D

5. Which of the following is the reference point to measure an azimuth angle for a body?
- A. observer's meridian
 - B. zenith distance
 - C. body's meridian
 - D. Greenwich meridian

Correct answer: A

6. If a sound signal is emitted from the oscillator of a fathometer, and two seconds elapse before the returning signal is picked up, what depth of water is indicated?
- A. 1048 fathoms
 - B. 824 fathoms
 - C. 1648 fathoms
 - D. 1248 fathoms

Correct answer: B

7. By what means are indications of the master gyrocompass sent to remote repeaters?
- A. by azimuth motor
 - B. by follow-up system
 - C. by phantom element
 - D. by transmitter

Correct answer: D

8. Which term is given to the dense black cumulonimbus clouds surrounding the eye of a hurricane?
- A. Spiral rainbands
 - B. Cyclonic spirals
 - C. Funnel clouds
 - D. Wall clouds

Correct answer: D

9. Under the IALA-A Buoyage System, when entering from seaward which buoy as shown in illustration D046NG below, should be left to port?
- A. A
 - B. B
 - C. C
 - D. D

Correct answer: B

10. Which is most commonly associated with fog?
- A. A warm front at night
 - B. An anticyclone
 - C. A low-pressure area
 - D. A cold front in the spring

Correct answer: A

11. How is a chart with a natural scale of 1:160,000 classified?
- A. A general chart
 - B. A harbor chart
 - C. A sailing chart
 - D. A coast chart

Correct answer: A

12. What causes deviation in a magnetic compass?

- A. The magnetic lines of force not coinciding with the lines of longitude
- B. The changes in the earth's magnetic field
- C. The magnetic influence inherent to that particular vessel
- D. A nearby magnetic land mass or mineral deposits

Correct answer: C

13. The vessel's course is 116° psc, the variation for the locality is 25° W and the deviation is 6° W. What is the true course made good if a northerly wind produces 1° leeway?

- A. 084° T
- B. 148° T
- C. 085° T
- D. 086° T

Correct answer: D

14. What is a nonadjustable error of the sextant?

- A. Side error
- B. Prismatic error
- C. Error of collimation
- D. Index error

Correct answer: B

15. Which of the listed properties does warm air possess?

- A. It rises above cooler air and cools as it rises
- B. Moisture in warm air condenses as the air is heated
- C. Atmospheric pressure rises as warm air rises
- D. Warm air that has cooled will develop low pressure areas

Correct answer: A

16. Which defines the term relative humidity?

- A. The maximum vapor content the air is capable of holding at 70 degrees
- B. The relation of the moisture content of the air to barometric pressure
- C. The ratio of the actual vapor content at the current temperature to the air's vapor holding capability
- D. The maximum vapor content the air is capable of holding

Correct answer: C

17. In the horizon system of coordinates what is equivalent to the declination of the equator system?

- A. Altitude
- B. Azimuth angle
- C. Nadir
- D. Zenith distance

Correct answer: A

18. When does the effects of priming of the tides occur?

- A. When the Moon is between first quarter and full and between third quarter and new
- B. When the Earth, Moon, and Sun are lying approximately on the same line
- C. At times of new and full Moon
- D. When the Moon is between new and first quarter and between full and third quarter

Correct answer: D

19. The initial great circle course angle between LAT 23°00'S, LONG 42°00'W and LAT 34°00'S, LONG 18°00'E is 063.8°. What is the true course?

- A. 063.8°T
- B. 296.2°T
- C. 243.8°T
- D. 116.2°T

Correct answer: D

20. Which type of precipitation is a product of the violent convection in thunderstorms?

- A. Hail
- B. Snow
- C. Sleet
- D. Freezing Rain

Correct answer: A

21. Which is TRUE when a high-pressure system is centered north of your vessel in the Northern Hemisphere?

- A. The wind direction is generally easterly
- B. You should experience hot, moist, clear weather
- C. The winds should be from the southwest at your position
- D. The winds should be brisk

Correct answer: A

22. Which item contains information about temporary, short-term changes affecting the safety of navigation in U.S. waters?

- A. Daily Memorandum
- B. Local Notice to Mariners
- C. HYDROLANT or HYDROPAC broadcasts
- D. Summary of Corrections

Correct answer: B

23. The measurement of local time is based on the passage of the Sun over the _____.

- A. lower branch of the Greenwich meridian
- B. upper branch of the Greenwich meridian
- C. lower branch of the observer's meridian
- D. upper branch of the observer's meridian

Correct answer: C

24. You are attempting to locate your position relative to a hurricane in the Northern Hemisphere. Where is your vessel located if the wind direction remains steady, but with diminishing velocity?
- A. In the right semicircle
 - B. On the storm track ahead of the center
 - C. On the storm track behind the center
 - D. In the left semicircle

Correct answer: C

25. Which characteristic and color will a preferred-channel buoy show?
- A. A composite group-flashing (2 + 1) white light
 - B. A composite group-flashing (2 + 1) red or green light
 - C. A group-occluding white light
 - D. A white light whose characteristic is Morse (A)

Correct answer: B

26. Where do you find the semidiameter correction to be used to correct sextant observations of the stars?
- A. It is included in the altitude corrections inside the front cover of the Nautical Almanac.
 - B. Table 25 in Bowditch contains the correction.
 - C. A correction of -0.5' should be applied to all star sights.
 - D. No semidiameter correction is used.

Correct answer: D

27. What is the light phase characteristic of a lighted isolated-danger mark?
- A. Long flashing
 - B. Group flashing
 - C. Interrupted quick flashing
 - D. Very quick flashing

Correct answer: B

28. Which describes the visible range marked on charts for lights?
- A. The maximum distance the light may be seen restricted by the height of the light and the curvature of the earth
 - B. The minimum distance at which the light may be seen with infinite visibility
 - C. The maximum distance at which a light may be seen in clear weather with 10 miles visibility
 - D. The minimum distance at which the light may be seen based on a 12 mile distance to visible horizon

Correct answer: C

29. A great circle crosses the equator at 17°W. It will also cross the equator at what other longitude?
- A. 17°E
 - B. 173°W
 - C. 117°W
 - D. 163°E

Correct answer: D

30. On a voyage from Halifax, N.S., to Dakar, West Africa, the Canary Current will _____.
- A. set the vessel to the right
 - B. furnish additional thrust in the form of a fair or following current
 - C. offer resistance in the form of a head current
 - D. set the vessel to the left

Correct answer: A

31. Which ocean current is "warm" based on the latitude in which it originates and on the effect it has on climate?
- A. California Current
 - B. Kuroshio Current
 - C. Peru Current
 - D. Benguela Current

Correct answer: B

32. You are underway and pass by a lighthouse. Its light, which was white since you first sighted it, changes to red. What does this indicate?
- A. The light is characterized as alternately flashing
 - B. That you have entered an area of shoal water or other hazard
 - C. The lighthouse has lost power and has switched to emergency lighting
 - D. It is the identifying light characteristic of the lighthouse

Correct answer: B

33. You are plotting a running fix. The LOP to be run forward is an arc from a radar range, what technique should be used?
- A. The position of the object observed should be advanced to the new time and a new arc swung using the radius of the old arc.
 - B. The arc should be converted into a straight line using offsets and then run forward.
 - C. The distance between LOP's should be added to the radar range and a new arc swung.
 - D. An arc should never be run forward.

Correct answer: A

34. The total magnetic effects which cause deviation of a vessel's compass can be broken down into a series of components which are given which term?
- A. Equations
 - B. Fractional parts
 - C. Coefficients
 - D. Divisional parts

Correct answer: C

35. At 0000 you fix your position and change course to 090°T. At 0030 you again fix your position and it is 0.5 mile east of your DR. Which statement is TRUE?
- A. You should alter course to the right to regain the track line.
 - B. The current is easterly.
 - C. The drift is 0.5 knot.
 - D. The current is perpendicular to your track line.

Correct answer: B

36. Your vessel has changed course and is heading 285°T, you are on the charted range and it appears as in illustration D048NG below.

After several minutes the range appears as in illustration D047NG below and your heading is still 285°T. What does this indicate?

- A. Leeway caused by a NE'ly wind
- B. A course made good to the left of the DR track
- C. A south-setting current
- D. A north-setting current

Correct answer: D

37. If the gyrocompass error is east, what describes the error and the correction to be made to gyrocompass headings to obtain true headings?
- A. The readings are too low and the amount of the error must be subtracted from the compass to obtain true
 - B. The readings are too low (small numerically) and the amount of the error must be added to the compass to obtain true
 - C. The readings are too high (large numerically) and the amount of the error must be added to the compass to obtain true
 - D. The readings are too high and the amount of the error must be subtracted from the compass to obtain true

Correct answer: B

38. Where can information for updating paper nautical charts primarily be found?
- A. Nautical chart catalogs
 - B. Coast Pilots
 - C. Sailing Directions
 - D. Notice to Mariners

Correct answer: D

39. A siphon cell is a part of which instrument?
- A. A thermograph
 - B. A hygrometer
 - C. A maximum thermometer
 - D. A barograph

Correct answer: D

40. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's foghorn 4 seconds after the signal was sounded. What is the distance to the shore?
- A. 209 yards
 - B. 363 yards
 - C. 480 yards
 - D. 730 yards

Correct answer: D

41. Your vessel is on a course of 082°T at 19 knots.

At 0255 a light bears 059.5°T, and at 0312 the light bears 037°T.
At what time and distance off will your vessel be when abeam of the light?

- A. 0333, 5.1 miles
- B. 0321, 4.7 miles
- C. 0327, 4.3 miles
- D. 0324, 3.8 miles

Correct answer: D

42. You are outbound in a channel marked by a range astern. The range line is 309°T. You are steering 127°T and have the range in sight as shown in illustration D047NG below. What action should you take?

- A. Come right to close the range then when on the range steer 129°T.
- B. Come right to 129°T.
- C. Come left until the range comes in line then alter course to 125°T.
- D. Come left until the range comes in line then alter course to 129°T.

Correct answer: A

43. The winds of the "roaring forties" are strongest near which latitude?

- A. 40°S
- B. 50°N
- C. 50°S
- D. 40°N

Correct answer: C

44. When is a revised print of a chart made?

- A. After every major hydrographic survey of the area covered by the chart
- B. Every two years to update the magnetic variation information
- C. When a low-stock situation occurs and minor corrections are made
- D. When there are numerous corrections to be made or the corrections are extensive

Correct answer: C

45. Under the IALA cardinal system, a mark with quick white light showing 3 flashes every 10 seconds indicates that the safest water in the area is in which location?
- A. The north side of the mark
 - B. The west side of the mark
 - C. The east side of the mark
 - D. The south side of the mark

Correct answer: C

46. Your longitude is 179°59'W. The LMT at this longitude is 23h 56m on the 4th day of the month. Six minutes later, your position is 179°59'E longitude. What is your LMT and date?
- A. 23h 50m on the 5th
 - B. 00h 02m on the 5th
 - C. 00h 02m on the 4th
 - D. 00h 02m on the 6th

Correct answer: D

47. Which describes the result when you turn on the fast time constant (differentiator) control of a radar?
- A. Enhanced weak target echoes and brighten them on the PPI
 - B. Only suppresses weak targets to a limited distance from the ship (sea clutter)
 - C. Reduced clutter over the entire PPI by shortening the echoes
 - D. Reduces the beam width to provide a map-like presentation for navigation

Correct answer: C

48. During the winter months, which is TRUE of the southeast trade winds?
- A. The Southeast Trade winds are drier than during the summer months
 - B. The Southeast Trade winds are stronger than during the summer months
 - C. The Southeast Trade winds are weaker than during the summer months
 - D. The Southeast Trade winds are wetter than during the summer months

Correct answer: B

49. What occurs when rising air cools to the dew point?
- A. Winds increase
 - B. Advection fog forms
 - C. Clouds form
 - D. Humidity decreases

Correct answer: C

50. As your vessel is heading southward along the east coast of the United States, you encounter a buoy showing a red flashing light. How should you pass this buoy?
- A. Leave it to your port
 - B. Pass it well clear on either side
 - C. Leave it to your starboard
 - D. Pass it about 50 yards off on either side

Correct answer: C

51. You take a bearing of 086° of a lighthouse. What bearing of another object would give the best fix?
- A. 000°
 - B. 066°
 - C. 112°
 - D. 271°

Correct answer: A

52. Which is TRUE of Raster-scan chart data?
- A. It is the only format recognized by IMO/IHO
 - B. It is a digitized "picture" of a chart in one format and one layer
 - C. It is composed of files that are smaller than vector files
 - D. It is organized into many separate files

Correct answer: B

53. In the Northern Hemisphere, swells that have outrun the storm are produced in which location?
- A. In the after section of the left semicircle
 - B. In the right front quadrant of the right semicircle
 - C. In the rear of the left semicircle
 - D. In the left front quadrant of the right semicircle

Correct answer: B

54. Where would you obtain data on currents for areas of the world not covered by the U.S. National Ocean Service?
- A. In the Nautical Almanac
 - B. In the Coast Pilot
 - C. In the List of Lights
 - D. In the Sailing Directions

Correct answer: D

55. Which condition exists at the summer solstice in the Northern Hemisphere?
- A. The north polar regions are in continual darkness.
 - B. The Sun shines equally on both hemispheres.
 - C. The Northern Hemisphere is having short days and long nights.
 - D. The Southern Hemisphere is having winter.

Correct answer: D

56. In high latitudes, celestial observations can be made over a horizon covered with pack ice by bringing the sun tangent to the ice and _____.
- A. adding 30° of arc to the sight
 - B. using a dip correction based on the height of eye above the ice
 - C. doubling the semidiameter correction
 - D. using a dip correction from table 22 in Bowditch Vol. II

Correct answer: B

57. You swung ship and compared the magnetic compass against the gyrocompass to find deviation. Gyro error is 2°W. The variation is 8°W. Find the deviation on a gyro heading of 058°.

NP-0119

HEADING	
PSC	PGC
030.5°	024°
061.5°	054°
092.0°	084°
122.5°	114°
152.0°	144°
181.0°	174°
210.0°	204°
239.5°	234°
269.0°	264°
298.0°	294°
327.5°	324°
358.5°	354°

- A. 1.5°W
- B. 1.0°W
- C. 1.0°E
- D. 0.5°W

Correct answer: A

58. In the U.S. Aids to Navigation System, lateral aids as seen entering from seaward will display lights with which characteristic?
- A. Occulting
 - B. Flashing
 - C. Quick Flashing
 - D. All of the above

Correct answer: D

59. Which type of GPS receiver has at least four channels to process information from several satellites simultaneously?
- A. Multiplex
 - B. Sequential
 - C. Continuous
 - D. None of the above

Correct answer: C

60. You are heading in a northerly direction when you come across an easterly current. Your vessel will respond in which manner?
- A. The vessel will be pushed to port
 - B. The vessel will be pushed to starboard
 - C. The vessel will decrease in engine speed
 - D. The vessel will remain on course

Correct answer: B

61. Which is TRUE why Tropical cyclones do not form within 5° of the Equator?
- A. The region is too humid
 - B. It is too hot in that region
 - C. Negligible Coriolis force in the region
 - D. There are no fronts in that area

Correct answer: C

62. Two beacons form a range in the direction of 221.5°T. The range is seen in line from your vessel bearing 223° per gyrocompass. The variation in the area is 4°E. What is the error of your gyrocompass?
- A. 1.5°W
 - B. 2.5°W
 - C. 5.5°W
 - D. 2.5°E

Correct answer: A

63. Your vessel is located at position I on the weather map in illustration D013NG below. You should experience which weather condition?
- A. Overcast skies with rising temperature
 - B. Steady precipitation
 - C. Clear skies with warm temperatures
 - D. Thundershowers

Correct answer: D

64. What is the major problem with taking high altitude sun observations?
- A. It is difficult to establish the point where the sextant is vertical to the horizon.
 - B. Rapidly changing altitudes make it difficult to get an accurate altitude.
 - C. The tables are not as accurate due to inherent errors in the spherical triangle at high altitudes.
 - D. Possible errors due to unusual refraction may exist.

Correct answer: A

65. Which is TRUE of the tides in Boston Harbor?
- A. The tides have a greater range than the tides in Gulf Coast ports
 - B. The tides have their variations caused by the changing declination of the Moon
 - C. The tides are diurnal in nature
 - D. All of the above

Correct answer: A

66. You are on course $180^{\circ}T$ and take a relative bearing of a lighthouse of 225° . What is the true bearing of the lighthouse?
- A. 045°
 - B. 135°
 - C. 180°
 - D. 270°

Correct answer: A

67. Barometers are calibrated at which standard temperature?
- A. $0^{\circ}F$
 - B. $32^{\circ}F$
 - C. $60^{\circ}F$
 - D. $70^{\circ}F$

Correct answer: B

68. You are on course $303^{\circ}T$. To check the speed of your vessel you should observe a celestial body on which bearing?
- A. 123°
 - B. 213°
 - C. 000°
 - D. 090°

Correct answer: A

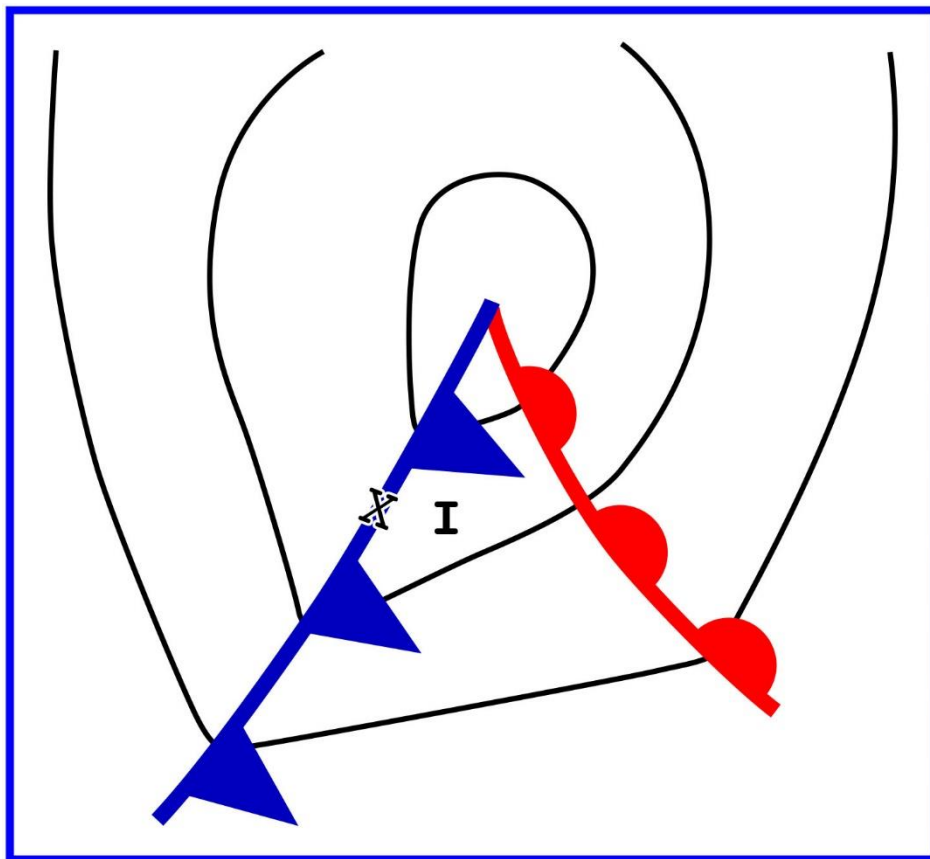
69. If you observe a rapid fall of barometric pressure, which action should you take?
- A. Call the Coast Guard to verify the change
 - B. Know that the barometer is not working properly
 - C. Prepare for an onset of stormy weather with strong winds
 - D. Contact the NWS or a local radio station

Correct answer: C

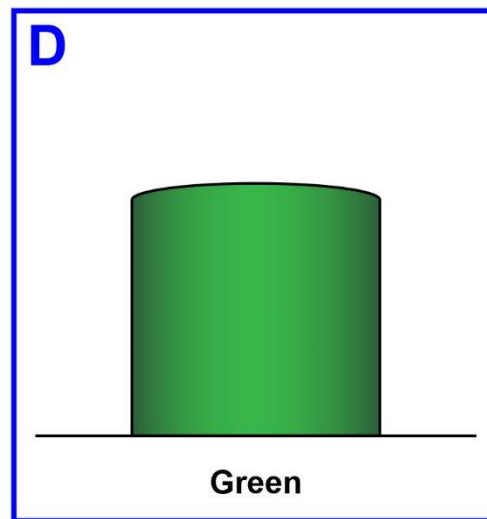
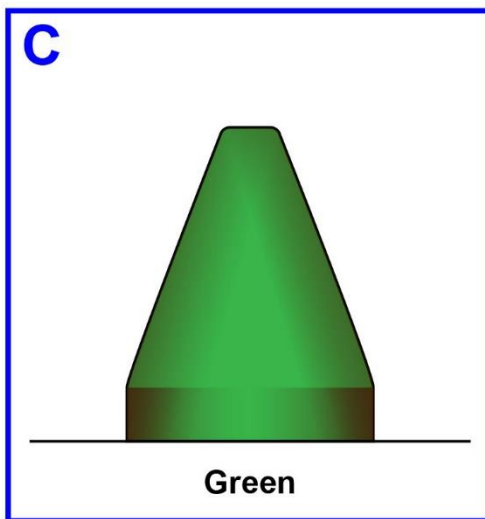
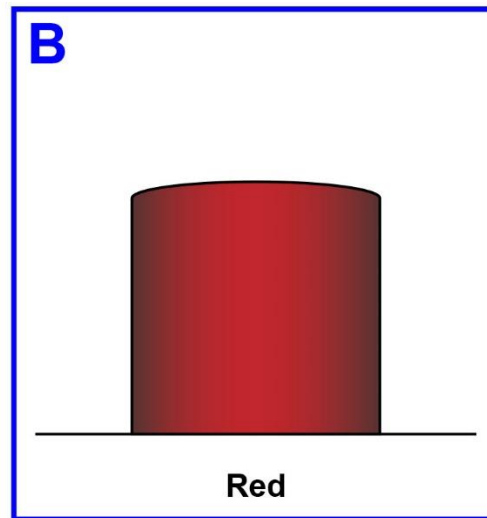
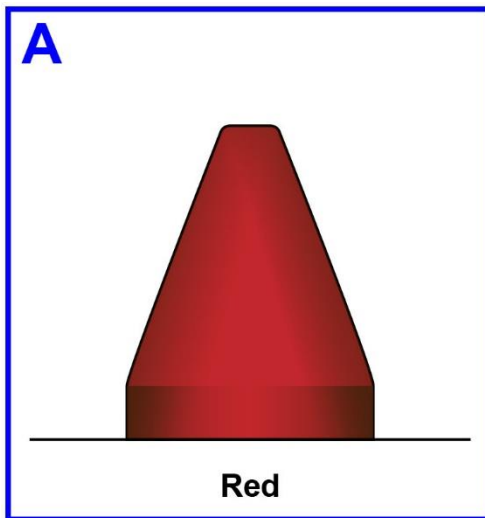
70. What weather change accompanies the passage of a cold front in the Northern Hemisphere?
- A. A line of cumulonimbus clouds
 - B. Steady precipitation, gradually increasing in intensity
 - C. Steady dropping of barometric pressure
 - D. Wind shift from northeast clockwise to southwest

Correct answer: A

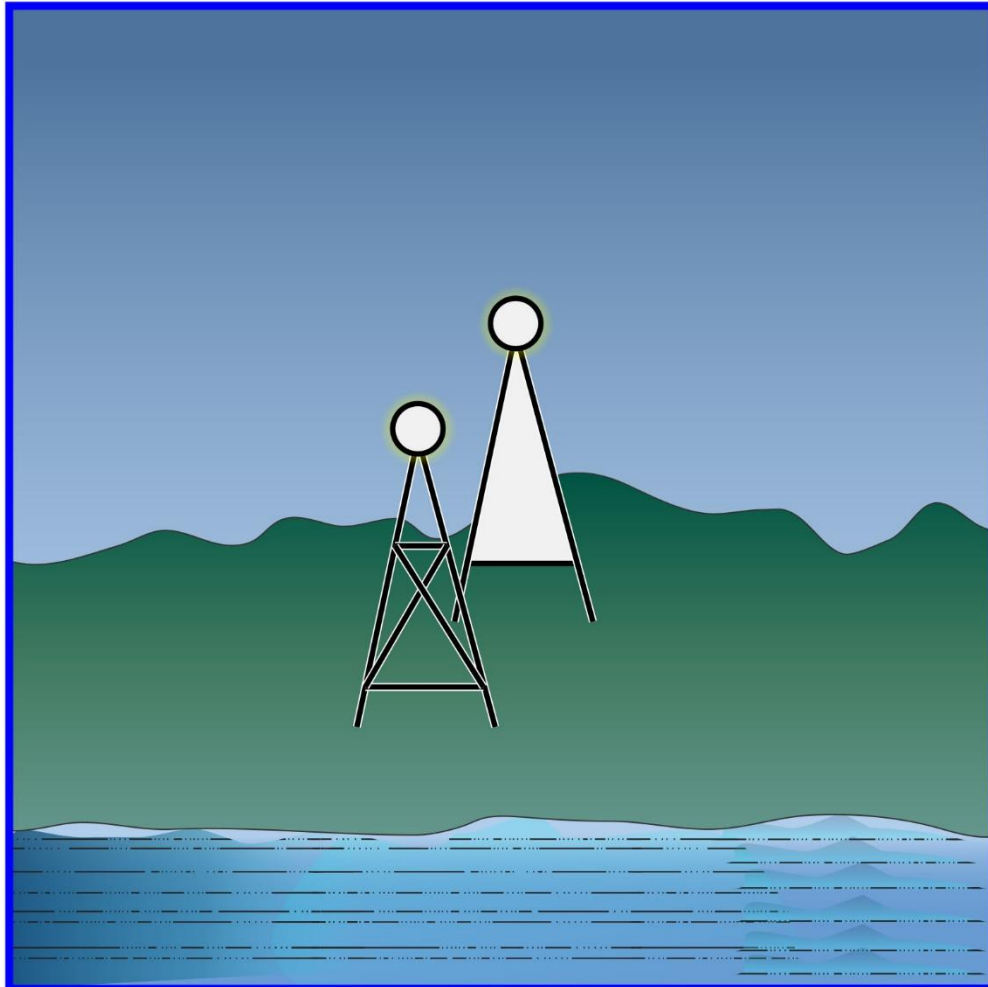
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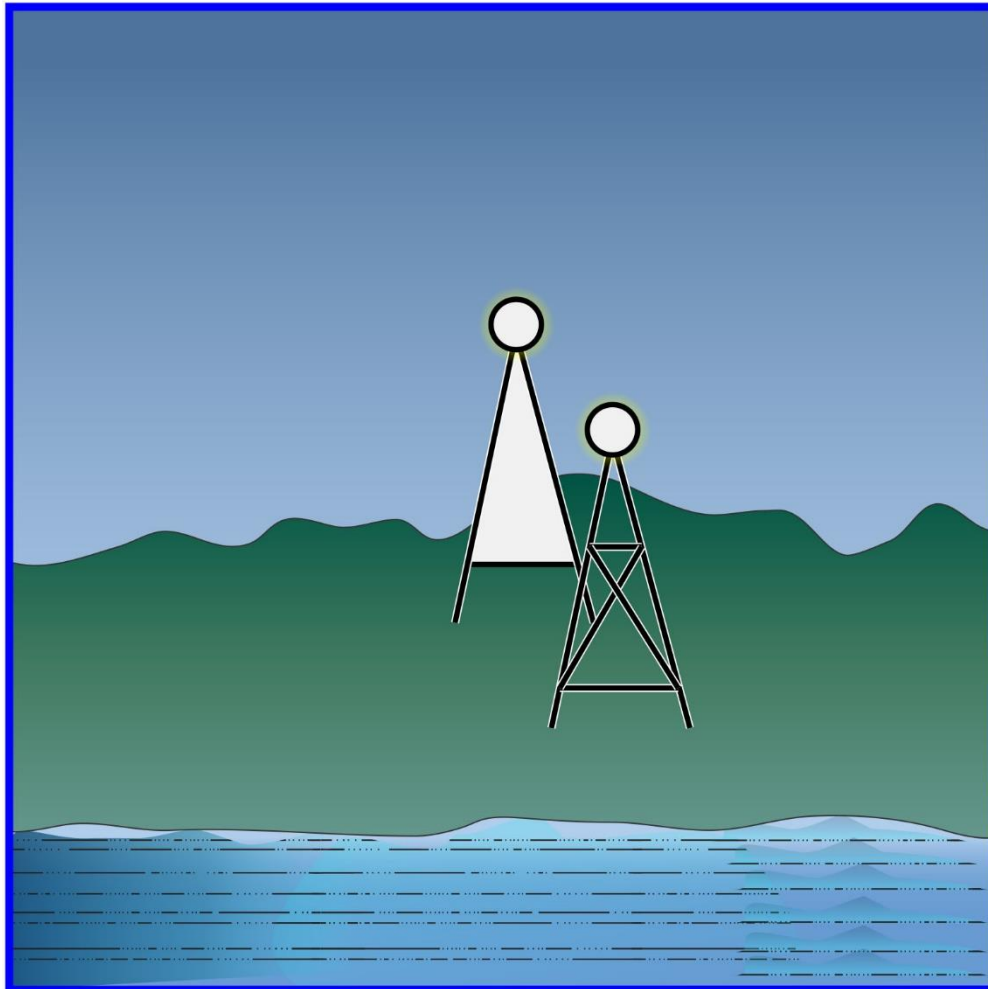


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