

Instructions to the crew in the use of all the ship's lifesaving equipment shall be completed _____.

Note: The regulations pertaining to drills involving lifesaving equipment aboard cargo ships are incorporated in Subchapter "W" of 46 CFR: Part 199.180.

A. before sailing

Incorrect: Crewmembers are only required to become familiar with the emergency duties assigned to them on the muster list before sailing: 199.180(b)(1). Drills are only required before sailing if a vessel enters service for the first time or when a new crew is engaged: 46 CFR 199.180(b)(3).

B. within one week of sailing

Incorrect: Crewmembers joining a vessel for the first time must be instructed in the use of firefighting and lifesaving equipment within two weeks of joining the vessel: 46 CFR 199.180(g)(1).

C. in one month and repeated quarterly

Incorrect: Every crewmember must participate in at least one abandon-ship and one fire drill every month. The drills must take place within 24 hours of the vessel leaving port if more than 25% of the crew has not participated in drills aboard that particular vessel in the previous month: 46 CFR 199.180(c)(2). These drills are required to be repeated at least weekly aboard passenger vessels: 46 CFR 199.250.

D. within any two month period

Correct Answer: The regulations require that "The crew must be instructed in the use of the vessel's fire-extinguishing and lifesaving appliances and in survival at sea at the same intervals as the drills. Individual units of instruction may cover different parts of the vessel's lifesaving and fire-extinguishing appliances, but all the vessel's lifesaving and fire-extinguishing appliances must be covered within any period of 2 months": 46 CFR 199.180(g)(3).

A towing vessel becomes tripped while towing on a hawser astern. What factor is MOST important when assessing the risk of capsizing?

Note: A tug is in imminent danger of capsizing when she is “tripped”. Tug boats are designed with their after decks as low as possible in order to minimize the effect of the tripping force. A tug could become tripped and rendered unable to maneuver when it is pulled athwartships (sideways) by the force that the towed vessel exerts on the towline. As an example, tripping is more likely to occur to a harbor tug when the vessel it has under tow moves ahead too rapidly under her own power while being assisted in leaving a pier. It could also be caused by the momentum of a seagoing barge carrying it alongside the tug if the tug were to suddenly reduce speed, such as losing propulsion. As the towed vessel comes alongside of the tug the capsizing force would become prominent and would be intensified as the height of the hawser connection on the tug increased.

A. Length of the towline

Incorrect: A longer towline will contribute to less maneuverability and greater difficulty in recovering from the tripped condition. However, this is not a significant factor in causing the tripping of a tug.

B. Height of the towline connection

Correct Answer: This is a prominent factor that can contribute to the capsizing of a tripped tug. The higher the towline connection is made above the center of flotation (vertical lever-arm), the greater its effect will be on the capsizing moment. The tug will capsize if the connection is high enough to cause the capsizing moment to overcome the righting moment.

C. Longitudinal position of the towline connection

Incorrect: The farther aft the longitudinal connection is from the center of flotation, the less effect it will have on transverse stability of a tug. Although the longitudinal position of the towline connection may become a factor, the height of the towline connection is the more critical of these two elements when assessing the risk of capsizing.

D. Direction of the tripping force

Incorrect: The horizontal direction of the force increases and will contribute to the danger of capsizing, as the lead becomes more athwartships. Although the factors in “C” and “D” are important considerations in the tripping of a tug, they are not by themselves the most critical with regard to capsizing.

Frames to which the tank top and bottom shell are fastened are called _____.

Note: Frames are transverse structural members which act as stiffeners to the shell and bottom plating.

A. floors

Correct Answer: The transverse vertical members supporting and compartmenting the double-bottom are called floors. Floors may be solid to form a water and/or oil tight boundary to form double-bottom or inner bottom tanks, or they may have lightening holes to economize weight.

B. intercostals

Incorrect: Intercostals are vertical longitudinal parts of the hull's structure and are cut in comparatively short lengths between transverse structural members.

C. stringers

Incorrect: Stringers are longitudinal girders or stiffeners bridging transverse beams or frames. Stringers are fore-and-aft strength member girders. They may be used as the keelsons or longitudinals at the bottom of the vessel.

D. tank top supports

Incorrect: This term is not part of the nautical nomenclature used in ship construction.

The belt of light and variable winds between the westerly wind belt and the northeast trade winds is called the _____.

Note: The earth's atmosphere consists of three major circulation belts per hemisphere that each span 24° - 26° of latitude. They are: the polar easterlies, the westerlies, and the trades. Between these major belts are narrower belts (4° - 6° of latitude) consisting of light and variable air circulation. They are centered near 60° N&S (low pressure), 30° N&S (high pressure) and near the equator (low pressure). Prevailing winds flow from areas of high pressure to areas of low pressure deflected by Coriolis force.

A. subtropical high pressure belt

Correct Answer: This is the narrow belt of high pressure in the vicinity of 30° N, nicknamed the "horse latitudes." This belt is characterized by clear skies with light and variable winds. The weather is generally good because the descending air is warmed and dried as it approaches the earth's surface. There is a corresponding high-pressure belt at latitude 30° S.

B. intertropical convergence zone

Incorrect: This is the narrow belt of low pressure in the vicinity of the equator, nicknamed the "doldrums." This belt is characterized by cloudy skies with light and variable winds. The weather is generally poor as a result of ascending warm, moist air, which cools as higher elevations are reached condensing the water vapor to form clouds. The moisture is inevitably released as rain.

C. doldrums belt

Incorrect: Same as above for the intertropical convergence zone, which is the technical name for the "doldrums."

D. polar frontal zone

Incorrect: There are two of these zones. These narrow belts of low pressure in the vicinity of latitudes 60° N&S are at the limit of the polar easterlies where they meet the westerly wind belt of each hemisphere. The polar fronts are on the side toward the poles of the westerly wind belts while the subtropical high-pressure belts are on the tropical side of the westerly wind belts.