

XIV. UNDER-KEEL CLEARANCE

A. UNDER-KEEL CLEARANCE: These guidelines for underkeel clearance apply during normal weather for POLA/POLB. Bad weather demands case-by-case reevaluation. Masters and pilots shall use prudent seamanship at all times when piloting vessels in the LA/LB Harbors. Masters and pilots shall use a vessel's deepest draft when calculating the under-keel clearance. Under-keel clearance means the minimum clearance available between the deepest point on the vessel and the bottom in still water. Masters and pilots shall apply a plus or minus allowance for the tide.

These guidelines are minimum standards. The pilot organization management, the vessel's master/operator and the COTP should concur with any deviation below these standards.

In LA/LB, the Coast Guard, along with the maritime industry, has studied the immersion effect of long period, long wave-length swell in the approaches and near the breakwater openings. As a result, in 1997, ARCO hired Glosten to study the under-keel clearance effect of swell outside the breakwater. The study indicated that swell crests and troughs affect vessel immersion (heave) with the vessel rising and falling with swells off the beam. However, the study further indicated that vessels would experience significant and measurable roll before heave became a problem. Therefore, the current sound practice of measuring roll before entering port helps the master make safe under-keel clearance calculations.

B. REGULATIONS SPECIFIC TO TANK VESSELS: Coast Guard under-keel clearance regulations for tank vessels without double hulls can be found in 33 CFR 157.455.

The LALB Harbor Safety Committee recommends that all tank vessels regardless of hull configuration comply with these regulations, which require the master to estimate the anticipated under-keel clearance of his/her vessel prior to entering port or getting underway within the port.

The master should assess the adequacy of under-keel clearance during the intended transit, including consideration of the following:

1. The tankship's mean and deepest draft;
2. the tankship's trim and list characteristics;
3. the intended transit speed and the corresponding squat characteristics;
4. the tide and current conditions;
5. present sea state conditions;
6. past weather impact on water depth;
7. the depth at the facility or anchorage; and
8. the depth of the transit area.

The master should discuss the tankship's planned under-keel clearance with the pilot.

The LALB Harbor Safety Committee further recommends that masters of all vessels comply with the above tankship guidelines for estimating and discussing UKC.

C. UNDER-KEEL CLEARANCE GUIDELINES FOR ALL VESSELS

1. Port of Los Angeles:

- a. Between the Los Angeles seabuoy and the Los Angeles Main Channel Buoy #11, minimum under-keel clearance before correction for roll and pitch is 10% of the vessel's draft.
- b. In the channel between the Los Angeles Main Channel Buoy #11 and a position off the designated berth, minimum under-keel clearance is:
 - i. 1.5' (.46m) for vessels 120,000 DWT and under;
 - ii. 3' (.91m) for vessels over 120,000 DWT.
- c. In the final approach to the berth, and while at berth, the vessel must always remain afloat.
- d. At anchorages inside the breakwater, minimum under-keel clearance is 1.5' (.46m).
- e. Shifts via the anchorages between Los Angeles and Long Beach, minimum under-keel clearance is 3' (.91m).

2. Port of Long Beach:

- a. Between the Long Beach seabuoy and the Long Beach Channel Buoy #3, minimum under-keel clearance before correction for roll and pitch is 10% of the vessel's draft.
- b. In the channel between the Long Beach Channel Buoy #3 and a position off the designated berth, minimum under-keel clearance is:
 - i. 1.5' (.46m) for vessels 120,000 DWT and under;
 - ii. 3' (.91m) for vessels over 120,000 DWT.
- c. In the final approach to the berth, and while at berth, the vessel must always remain afloat.
- d. At anchorages inside the breakwater, minimum under-keel clearance is:
 - i. 4' (1.22m) for anchorages B-7 and B-11 when vessels draft is 50' (15.24m) or more; and

- ii. 1.5' (.46m) for all other anchorages.
- e. For shifts via outer harbor between Long Beach and Los Angeles, minimum under-keel clearance is 3' (.91m).

The 10% clearance requirement in the approaches is designed to give the vessel a safety margin that takes into account the vessel's anticipated squat, sea state, and weather conditions that could affect the vessel's draft on arrival.

In complying with the above guidelines, tank vessels shall always maintain at least two feet of under-keel clearance until making their final approach to the dock. If a tank vessel operator has a company policy that allows for less than two feet of under-keel clearance they must submit the company policy to the USCG Captain of the Port for approval prior to vessel entry.