Ship drafting is used to measure the amount of cargo onboard ships, to ensure the safety of a ship in shallow water, and to account for varying density at sea. “The accuracy of measuring mass of loaded or discharged cargo by draft survey mass measuring method varies due to both systematic and accidental errors” [1]. In current methods, ship draft readings are acquired by surveyors and are dependent on their visual accuracy. Draft markers are placed at 6 positions along the ship and surveyors can be expected to take measurements in calm or rough weather conditions. “Changes in the load, speed and/or ocean density can change the ship’s draft by 10s of centimeters” [2]. Lasers, optical fiber technology, pressure sensors, and image processing are considered methods in reducing errors in ship draft readings. Although these methods are available, each method presents unknown variables.

 Image processing provides real time draft makings by preprocessing and geometrically adjusting an image to detect draft lines and account for rotation and translation [3]. This method reduces errors in visual readings but does not take into account the cost of the camera, camera placement, or images affected by inclement weather. The purpose of this is project is to measure the draft of an aircraft carrier at varying loads with the use of a laser and implementing a user interface to output draft measurements to reducing cost and improve accuracy. A laser finder is placed onboard ship, with the laser directed at the water and a signal is bounced off the water to output the distance of the ship above water [4]. Ship drafting measurements are critical and require a need for accurate and efficient readings. “From the mid-1960s to the present, ship sizes have increased along with service speed” [5], causing traffic in commercial waterways thus requiring continued research for an overall effective method for ship drafting.

**References:**

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