USCGC LILAC RENOVATION

DEVELOPING A PLAN TO CARRY PASSENGERS ON A HISTORIC LIGHTHOUSE TENDER

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Abstract

The *USCGC Lilac* is a 1933 lighthouse tender currently being operated as a museum. This thesis aims to assess the feasibility of modifying the Lilac to meet intact and damage stability regulations for passenger vessels. It additionally aims to propose specific actions that can be taken to address any current shortcomings which prevent her from satisfying United States Coast Guard regulations for passenger vessels. An assessment of the vessel's current lightship particulars, subdivision, and arrangement were carried out, allowing for a subsequent analysis of her stability characteristics and possible loading conditions.

Objectives

The *Lilac* Preservation Project intends to carry paid passengers aboard the *Lilac* to raise awareness about the vessel. The objectives of this thesis are to determine the feasibility of improving the *USCGC Lilac* to satisfy modern passenger stability regulations and to propose modifications that would achieve this while maintaining her historical integrity.

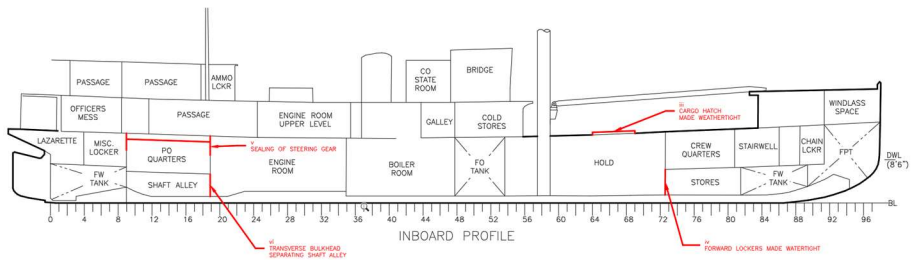
USCGC Lilac: Vessel Background

The lighthouse tender *USCGC Lilac* was constructed in 1933. She supported manned lighthouses and maintained navigation buoys during her Coast Guard service. During WWII, the *Lilac* served as a coastal patrol vessel for the US Navy. In 2003, the *Lilac* Preservation Project acquired the vessel and relocated it to Manhattan as a museum ship.

Inclining Experiment

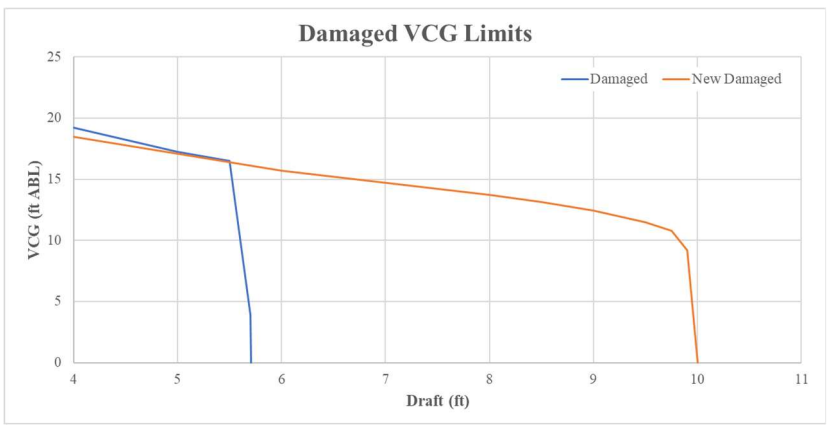
An inclining experiment was conducted aboard the *Lilac* at Caddell Drydock and Ship Repair in November of 2020 to determine her lightship weight and center of gravity. Three weights (totaling 12.5LT) were transversely shifted across the deck, and the resulting angles of heel were measured to calculate the metacentric height. Drafts, freeboards, and the specific gravity of the water were all recorded. A deadweight survey was performed prior to the inclining to identify items to be removed, items to be relocated, and items to be added, as well as their positions and weights. The results were used to assess the *Lilac's* current lightship particulars.

Proposed Modifications

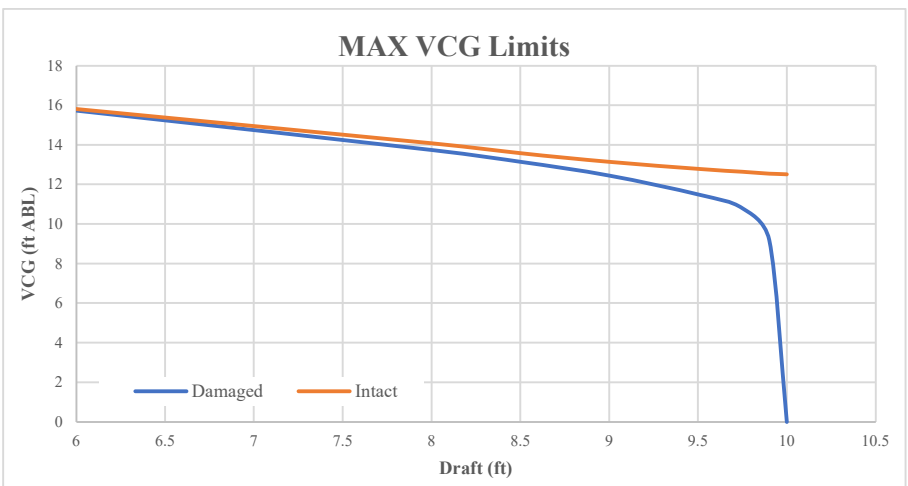


All the vessel's original watertight subdivision should be restored. The doors on the exterior of the house and the forward cargo hatch should be made weathertight and be secured closed when at sea. Both forward ammunition lockers should be separated from the forward cargo hold (existing hatches made watertight). The steering chain pipe penetration between the engine room and the lazarette should be made watertight in the Petty Officer's quarters. A transverse bulkhead should be added at Frame 19 to seal off shaft alley from the engine room.

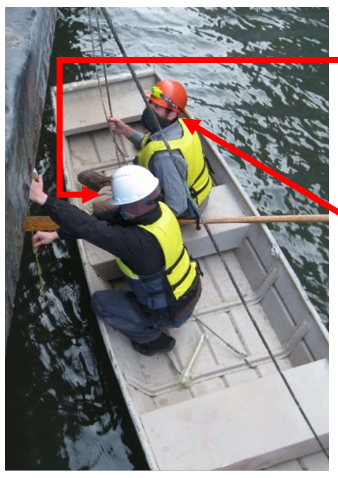
Conclusions



The *Lilac* can be modified to comply with small passenger vessel (Subchapter T) stability regulations in the Code of Federal Regulations. Her displacement should be limited to 927 LT or less, and the vertical center of gravity of her loading condition must not exceed the value on the maximum VCG curve for a given displacement.



Biographies



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