

TREASURY DEPARTMENT
UNITED STATES COAST GUARD

COMMANDANT
U.S. COAST GUARD
WASHINGTON, D.C.

4 June 1963

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 11-63


Subj: LSTs as unmanned barges; structural reinforcement and drydocking; hull inspection requirements

1. Purpose. To provide a minimum structural standard for conversion of the subject vessels for unmanned barge operation in merchant service on Ocean, Coastwise or Great Lakes waters) and to provide an adequate, uniform basis for hull inspection of these vessels subsequent to conversion.
2. Discussion.
 - a. Navigation and Vessel Inspection Circular 7-56 set standards for structure and for the inspection of LST conversions in manned service. Since that time need has arisen for comparable standards for LST's in unmanned service. These instructions are based on average conditions. Depending on the condition of the individual vessel and the severity of the intended service, alternative measures may be considered or additional alterations required.
 - b. In LST hulls built during World War II shell and deck plating butts were made as laps at bulkheads, and joggled laps were used for seams, including the critical connection of the garboard strakes under the center vertical keel (no flat plate -keel being fitted)) and the critical bottom -seams under the longitudinal bulkheads. These points are susceptible to accelerated corrosion and to possible metal fatigue (figures 1, 3 and 5). Furthermore, the plating concerned is generally thinner than that of a normal merchant vessel of the same size.
 - c. Because of the light scantlings, the wastage-which can be accepted in LSTs is less than in vessels of more normal build. (Paragraph 111(D) of Navigation and Vessel Inspection Circular 4-60 provides a general guide for corrosion limits for light scantlings.) The ¼ " deck plating) 3/8 " stringer and sheer strakes and 3/8 " bottom plating including the bilge strakes should be replaced when wasted more than 15%. Where plating adjacent to lapped seams and strapped lapped butts show appreciable deterioration or evidence of cracking the plating should be replaced even though the deterioration is localized. When bottom plating in way of the center vertical keel is replaced the new plate shall be 9/16 " in thickness. It shall be fitted as an insert plate and shall extend far enough on both sides of the center vertical keel to butt to sound material. Where the bottom plating in way of the longitudinal bulkheads is wasted locally, it may be handled in the manner outlined in paragraph 3(b)(2). Scattered pits may be repaired by welding where the condition of the plating is otherwise satisfactory, but patch plates are not to be used. In installing replacement plating, care shall be taken that internals are released and rewelded as necessary.

3. Instructions. The following instructions apply to the hull inspection and certification of all LST type vessels for unmanned operation in merchant service.
- a. Vessels currently certificated may be continued in the service for which certificated, subject to full compliance with the following hull inspection requirements:
- (1) At each periodic drydocking all shell and deck plating shall be thoroughly examined and all hull spaces shall be entered. Areas showing evidence of wastage since the previous survey shall be checked by drilling or audiogaging in the presence of a Coast Guard inspector. Close attention should be paid to plating adjacent to lapped butts and seams, especially those at bulkheads and in way of the center vertical keel.
 - (2) To determine the rate of deterioration, blueprints showing the location and value of all gagings taken at previous surveys shall be maintained by the owner. At each survey the Coast Guard inspector will refer to the prints applicable to the previous surveys to determine the change in the vessel's condition.
- b. Vessels newly certificated will be listed in route depending upon the nature of the service and the extent of conversion alterations. Before any vessel is newly certificated it is to be examined in dry dock and plans covering in full detail all modifications from the basic LST structure and arrangement including those called for herein are to be submitted to and approved by the Commandant (MMT):
- (1) Existing lapped butts in shell and deck plating at Frames 13-35 inclusive shall either be reinforced by the fitting of scalloped doubler straps as shown in Fig. 3, or be modified as shown in Fig. 4. Where the reinforcement shown in Fig. 3 is used, existing welds in the lapped butts, both internal and external, must be sound with no significant localized wastage in the plating adjacent to the welds. This is especially important at the internal welds of the butts in the bottom plating (Fig. 3). Where such wastage is apparent the bottom butts shall be reworked in accordance with the method shown in Fig. 4.
 - (2) Continuous longitudinal bottom doublers $\frac{1}{2}$ " x 48" shall be fitted port and starboard on the bottom shell as shown in Figure 1. These doublers shall extend from Frame 13 to Frame 39. The lapped seams in way of the longitudinal bulkheads shall be sound with no significant localized wastage in the plating adjacent to the welds (Fig. 5). Where such wastage is apparent the lapped seam shall be removed and the required doubler shall be centered on the longitudinal bulkhead as shown in Figure 6.
 - (3) A continuous longitudinal sheer strake or stringer plate doubler $\frac{1}{2}$ " x 24" shall be fitted port and starboard as shown in Figure r. These doublers shall extend from Frame 13 to Frame 39. If the mean operating draft of the vessel is to be 12' or less, consideration may be given by the Commandant to omit these doublers depending upon the nature and severity of the intended service.
 - (4) If corrosive or otherwise damaging cargoes are to be handled, all structure affected thereby is to be suitably increased in thickness.

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- (5) Balance of vessel's structure is to be renewed as necessary following the general standards indicated by requirement (2)(c).
 - (6) Bow doors are to be welded closed with suitable reinforcing and a collision bulkhead is to be fitted.
4. Action. Instructions as contained in paragraph 3 will be complied with by OCMI's in the inspection, repair or conversion and certification of subject vessels.
5. Effective date. Upon receipt.

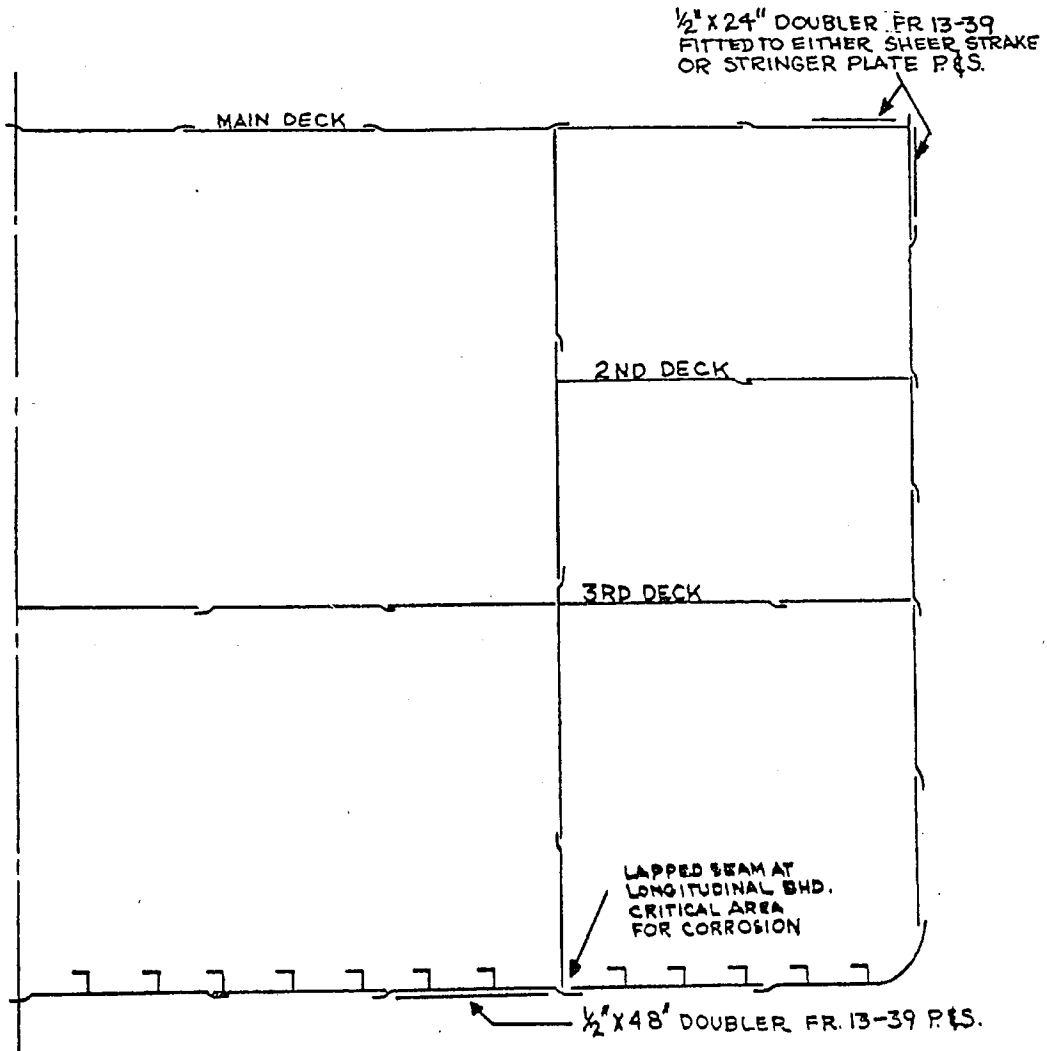

C. P. MURPHY
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Chief, Office of Merchant Marine Safety

- Ends: (1) Fig. 1 - LST Typical Section (unmanned conversion)
(2) Figs. 2 and 3 - Strap Reinforcement of Shell Lapped Butts
(3) Fig. 4 - Reconstruction of LST Lapped Butts
(4) Figs. 5 - and 6 - Lapped Seam Details at Longitudinal Bulkheads

Dist. (SDL NO. 76)

- A: None
B: n(35); c(10); e 1(3); b d p(l)
C: m(IL); o(2)
D: i(2); k(l)
E: m(l)
Lists 112, 155

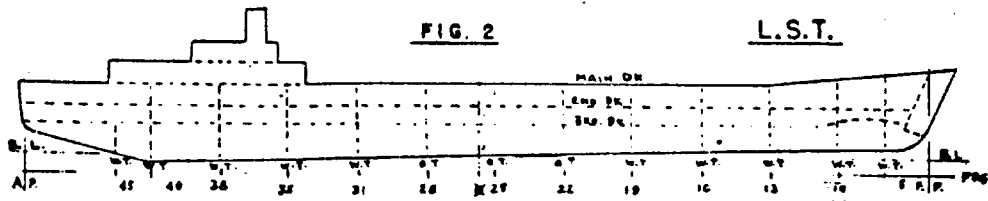
FIG. 1



TYPICAL SECTION - LST
SHOWING STRUCTURAL REQUIREMENTS FOR UNMANNED OPERATION

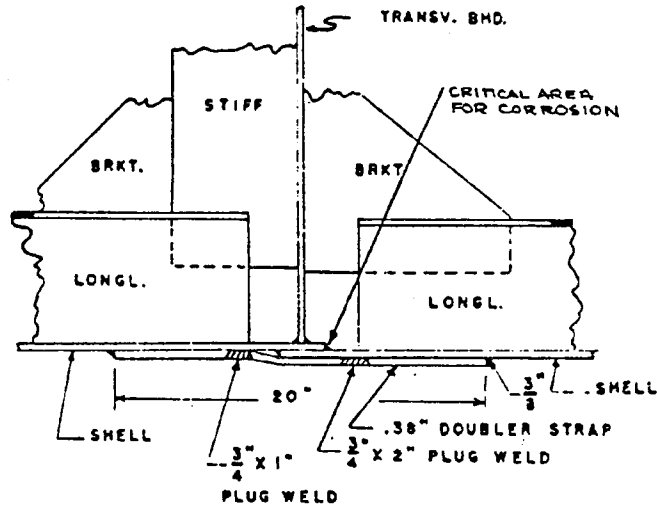
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ENCLOSURE (1) NAVIGATION AND VESSEL ENGINEERING

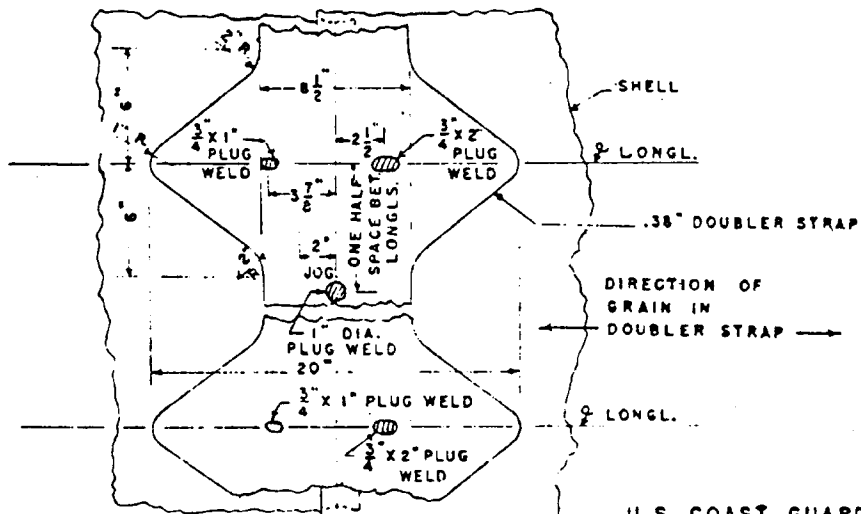


STRAP REINFORCEMENT OF SHELL LAPPED BUTTS, FRGS. 13-35 INCL.

FIG. 3 ELEVATION



PLAN

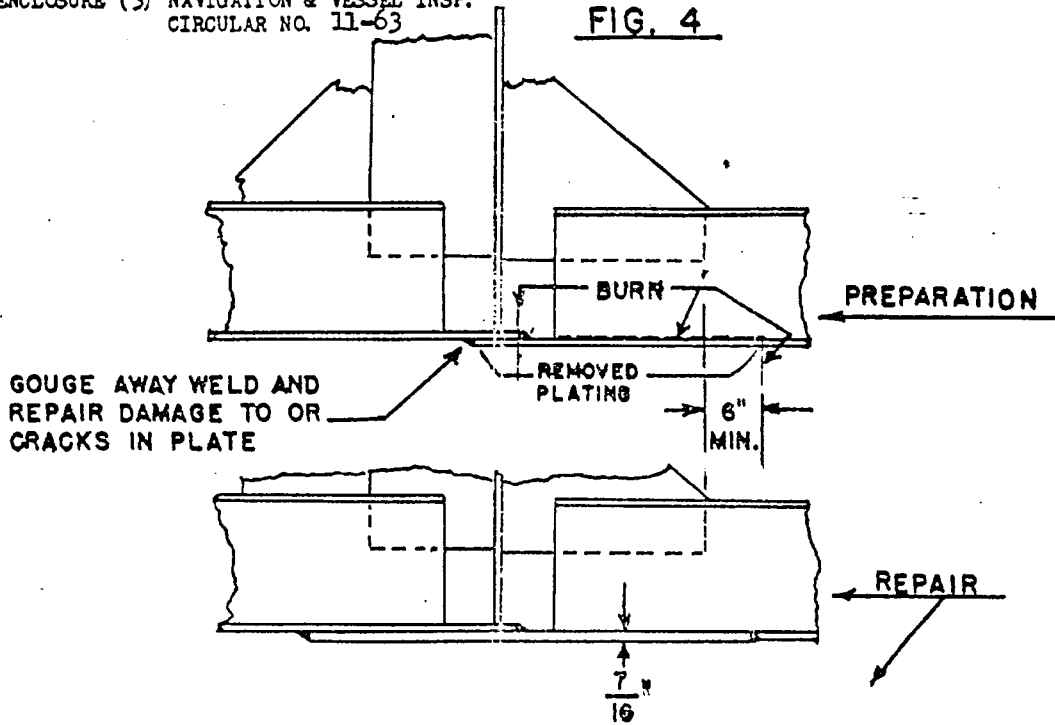


SCALE: 1/2" = 1'-0"

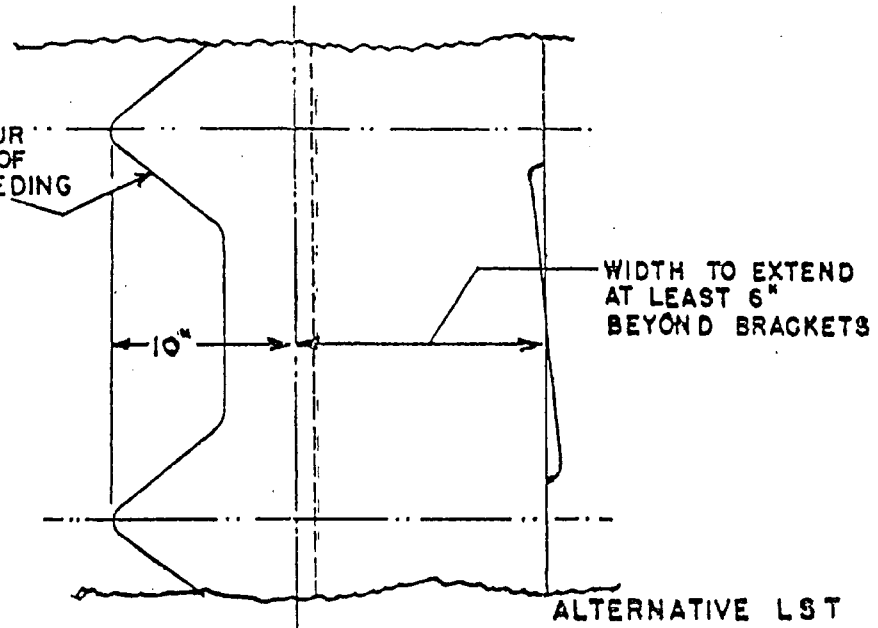
U.S. COAST GUARD
M.M.T. 17 JAN. 1956
BY: WMC
REVISED 29 MARCH 1963
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ENCLOSURE (3) NAVIGATION & VESSEL INSP.
CIRCULAR NO. 11-63

FIG. 4

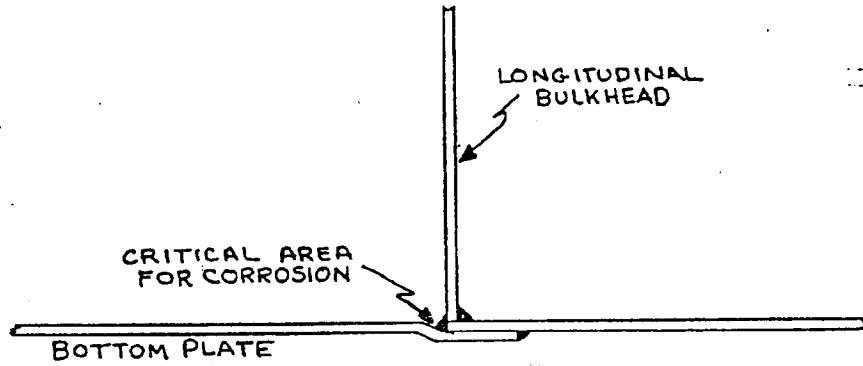


SAME CONTOUR
AS ONE SIDE OF
FIG. 3, PRECEEDING



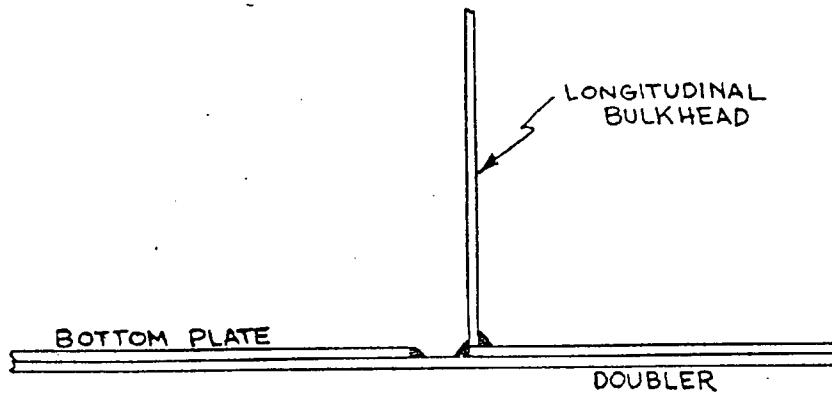
ALTERNATIVE LST
HULL BUTTS ALTERATION
U.S. COAST GUARD
M.M.T. 9 MARCH 1956
ALT. 18 AUG. 1956

FIG. 5



TYPICAL LAPPED SEAM AT LONGITUDINAL BULKHEAD
ORIGINAL CONSTRUCTION

FIG. 6



ALTERNATE METHOD OF INSTALLING BOTTOM DOUBLER
IN WAY OF LONGITUDINAL BULKHEAD