



U.S. Coast Guard History Program

36-Foot Motor Lifeboat-Type TRS

Number: 36416-36474; 36479-36554
Completed: 1937-1956
Remarks: This model craft was stationed throughout the United States; last unit removed from service in 1987

Cost: \$18,912 (1945)

Hull

Displacement (lbs): 19,675 lbs.
Length: 36' 8" oa
Beam: 10' 8 7/8" max
Draft: 3' 4"

Machinery

Main Engines: Sterling Petrel; 6-cylinder, 4-cycle
BHP: 90 at 1000 RPM

Performance

Cruising Radius: 280 miles at 8 knots

Logistics

Complement: 3
Passengers: 30

Design

Experience with the Type TR lifeboat indicated that perhaps still further efforts could be made toward simplifying construction, reducing weight, and controlling construction costs. Towards these ends, plans were drawn up during late 1936 and early 1937 for the Type TRS (meaning Type TR-Simplified) motor lifeboat, and the first boat (No. 4963) was completed during early 1937 at the Curtis Bay Yard.

Visually, there is very little to differentiate a Type TRS from the earlier Type TR lifeboat. The main distinguishing features are those of detail. In the Type TRS, the number of freeing scuppers was again increased to a total of nine on each side (four on each side of the forward and aft cockpits, plus one on each side for the forward lookout cockpit) vice eight on each side for the Type TR. All hand or grab rails on the Type TRS were of painted white oak instead of polished brass as on the Types T and TR lifeboats. Life rail stanchions on the main deck were fitted for only one rail in place of the two rails carried on Types T and TR. Almost all the bright work found on the earlier type lifeboats was eliminated in the Type TRS; for example, the guard or rub strakes along the sheer, as well as cockpit

coamings were painted white in the Type TRS rather than being clear varnished. The only remaining bright work consisted of the windshield frames, the upper portion of all bits, the helmsman's grating, the steps inside the compartments, and the tool board and grab rails in the engine compartment. As such, the overall appearance became more plain and utilitarian with the Type TRS and less yacht-like. To protect the hull from dry rot, all compartments below deck were coated with an application of creosote.

The sailing rig was completely eliminated from the Type TRS design based on results from a 1937 Coast Guard headquarters survey of lifeboat station commanding officers. Although some stations had reported using the sail rig on the Type T and TR lifeboats for handling and steadying, and a few had even resorted to its use in the (by this time) rare instances of engine failure, most felt that there were few occasions for its use and had no objection to it being eliminated. Some stations actually felt that a sail rig was a hindrance, as it often hampered crew movements around the boat during rescue operations. The survey results tended to confirm what Coast Guard officials had been thinking for some time, and resulted in headquarters instructions to Curtis Bay to exclude sail rigs from all new-construction lifeboats starting with the Type TRS. In June of 1938, approval was granted to remove the sail rigs from all earlier lifeboat types as well, as long as the boat was equipped with a radio transmitter. By eliminating the sail rig, a weight savings of over 400lbs. was achieved, improving stability and boat response characteristics.

The differences between a Type TRS and a Type T/TR lifeboat are more obvious when the lifeboats are out of the water. The Type TRS no longer had a semi-tunnel stern or a bronze skeg, and the rudder was now returned to an open position as it was in the Type H lifeboat. There were several reasons for the Coast Guard's decision to abandon semi-tunnel sterns. Experience with the Type T and TR MLBs had shown that the relatively modest increase in propeller protection was not worth the cost and complexity of semi-tunnel stern construction, and semi-tunnel or full tunnel sterns, under certain sea conditions, could create a phenomenon where the propeller becomes air bound with a significant drop in boat speed and power. Construction features were also simplified. All decks, including the watertight main deck, were laid flat eliminating the camber featured in the Types T and TR. Basic hull compartmentation remained the same, but buoyancy blocks were removed. The bottom hull planking of the TRS extending from the keel to the top side of the lower guard was increased to 1 3/8" thickness; 1/4" thicker than the planking used on the Type TR. With the increased thickness of bottom hull planking, it was no longer necessary to add the 5/8" ash ice sheathing layer, and copper-nickel alloy sheathing could be applied directly to the hull bottom. All Type TRS lifeboats built for assignment to Great Lakes region stations had ice sheathing installed at the time of construction.

Another significant difference with Type TRS hulls built after World War II was the Coast Guard's first use of laminated wood construction. Stocks of seasoned wood and much of the supply of oak planks in larger sizes were depleted due to their extensive use in wartime boat construction. In order to utilize stocks of seasoned oak that were available in larger plank sizes, the Curtis Bay Yard began to construct pieces of laminated, glued oak, built up to sufficient size to be used for some framing, stem and stern pieces, and knees. Coamings of circular shape were also developed in this way. The layers of wood used to make up the timbers were glued together with a phenol-type resin glue which required heat for setting. The glued laminates were bent over forms of the desired shape and then bound with clamps. The laminated timbers, forms, and clamps were then placed in a curing chamber where heat and humidity were applied and closely controlled to assure a perfect set. The setting/curing process usually took about 16 hours. All Type TRS lifeboats completed from 1946 to 1956 were built with this type of construction.

Initially, all Type TRS lifeboats were powered with the same Sterling Petrel 100HP/1000RPM gasoline engine installed on the Type T and TR lifeboats, or with a Kermath Sea Farer L-Head

100HP/1000RPM gasoline motor. This was later replaced in new construction boats starting in 1946 with a Buda-Lanora Model 6 DTMR-486, six cylinder (4.25" diameter/5.5" stroke), four cycle, solid injection diesel engine developing 75HP at 1600RPM. It was equipped with an electric starter motor and was fresh-water cooled. Diesel engine installation in lifeboats had not been initially possible due to the larger size and weight of diesel engines compared to gasoline engines of similar horsepower. By the end of World War II, however, smaller-sized diesel engines had been developed for marine use and, although more expensive than gasoline engines, offered advantages in cruising range (300nm. versus the 170nm. associated with the Sterling gasoline engine) and fuel costs, as well as in the reduced flammability risks associated with diesel fuel. The displacement of a diesel-equipped Type TRS lifeboat increased from the original 19,700lbs. to 20,875lbs., and overall cost of the boat also increased from just over \$15,000 each to about \$23,000 each, later increasing to about \$45,000 each by 1956.

Starting in 1949, Type TRS lifeboats were being built with a single General Motors Model GM-4-71, four cylinder diesel engine developing 110HP at 2000RPM, equipped with a hydraulically actuated reverse gear and reduction gearing with a 2:1 ratio. Boat No. CG-36513 was the first to have the GM diesel installed, with speed and self-righting trials conducted on January 7, 1949. Having a three-bladed, 26" diameter/21" pitch propeller, she achieved a maximum speed of 9.88 statute MPH at 1950RPM. She re-righted in 7.2 seconds, and self-bailed in 24.6 seconds. With the exception of six Type TRS lifeboats built during 1953 and 1954 powered by the Buda diesel, all subsequent Type TRS lifeboats were built with the GM diesel.

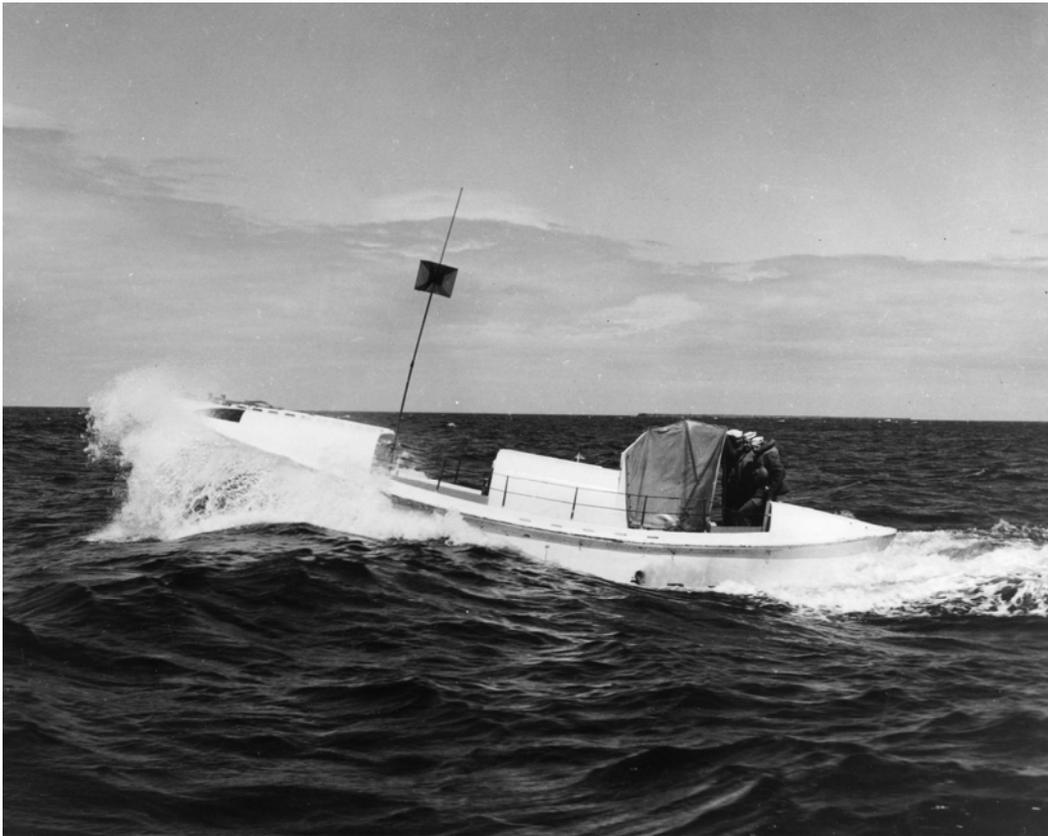
All Type TRS motor lifeboats were constructed by the Curtis Bay Yard, starting in 1937 through to the end of Coast Guard series production in 1956.

The Type TRS motor lifeboat was the last wooden-hulled coastal lifeboat design developed by the Coast Guard. It was also built over a longer period of time than any other lifeboat model; almost twenty years from 1937 through 1956 (actually, an additional Type TRS lifeboat was built in 1959, but for the U.S. Navy rather than the Coast Guard).

Images



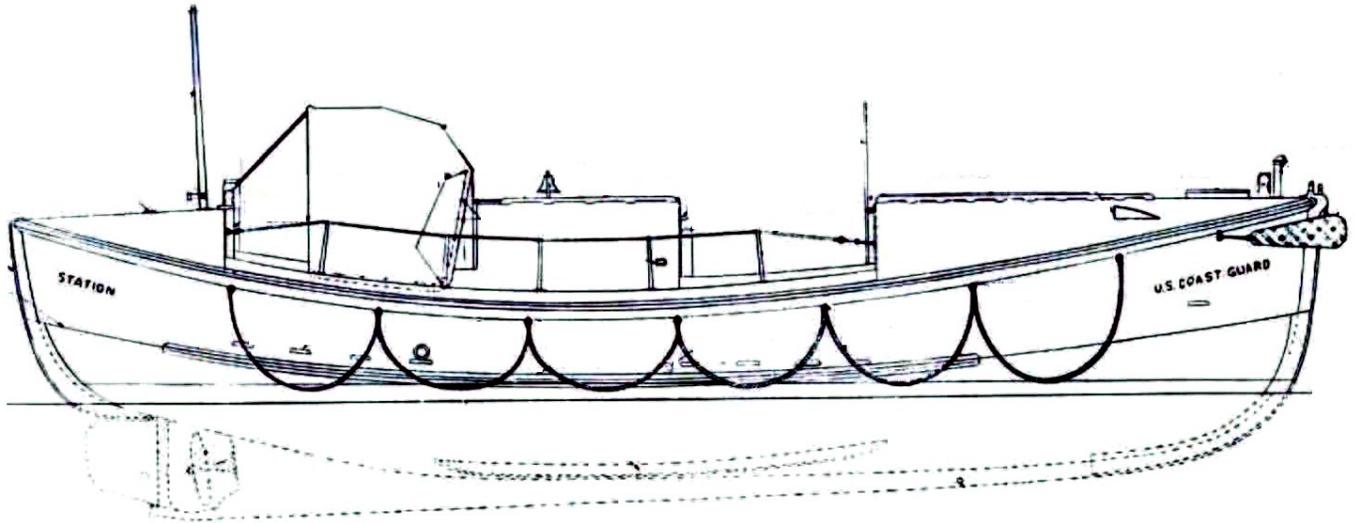
Ice-covered Type-TRS out of water



Type TRS underway with radio mast and hood deployed



Type-TRS at mooring



Line Drawing of 36-Foot Type TRS MLB

Sources

Boat Files, U.S. Coast Guard Historian's Office.

Scheina, Robert L. *U.S. Coast Guard Cutters & Craft of World War II*. Annapolis, MD: Naval Institute Press, 1982.

Scheina, Robert L. *U.S. Coast Guard Cutters and Craft, 1946-1990*. Annapolis, MD: Naval Institute Press, 1990.

Wilkinson, William D., and Timothy R. Dring. *American Coastal Rescue Craft: A Design History of Coastal Rescue Craft Used by the United States Life-Saving Service and the United States Coast Guard*. Gainesville: University Press of Florida, 2009.

