

RESTRICTED

GENERAL INFORMATION

INCLUDING DESCRIPTIONS AND
TESTS OF ELECTRIC AUXILIARIES

U. S. S. LITTLE, TORPEDO BOAT DESTROYER No. 79

INFORMATION RELATIVE TO ITEMS UNDER COGNIZANCE OF
THE BUREAU OF CONSTRUCTION AND REPAIR
NAVY DEPARTMENT

RESTRICTED

Serial No. 18

GENERAL INFORMATION

**INCLUDING DESCRIPTION AND TESTS
OF ELECTRIC AUXILIARIES**

TORPEDO BOAT DESTROYER No. 79

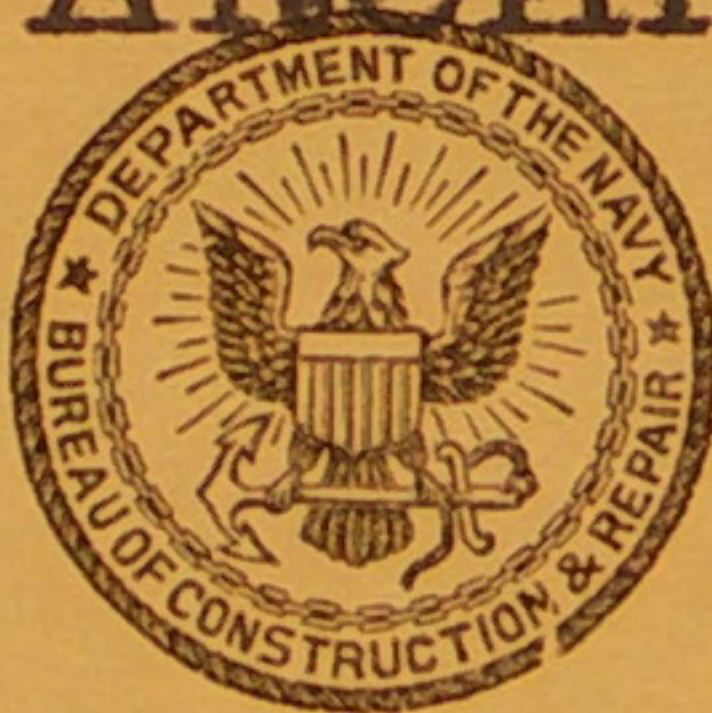
U. S. S. LITTLE

Information relative to items under cognizance of
Bureau of Construction and Repair
Navy Department, Washington, D. C.

1918

Finished Plan No. 41

**BUREAU OF SHIPS
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INTRODUCTION.

HISTORICAL DATA.

Authorized by act of Congress, August 29, 1916.

Vessel built by Fore River Shipbuilding Corporation, of Quincy, Mass.

Contract signed December 26, 1916. Supplemental contract signed May 5, 1917.

Contract date of completion, as soon as practicable.

Keel laid June 18, 1917.

Vessel launched November 11, 1917.

Christened by Mrs. Edith Vickery Wakeman.

Date of delivery to Government, April 5, 1918.

Date of official preliminary trial, February 22, 1918.

Vessel commissioned April 6, 1918.

DIMENSIONS AND DISTANCES.

Length over all, 314 feet $4\frac{1}{2}$ inches.

Length between perpendiculars, 310 feet $11\frac{1}{2}$ inches.

Breadth, molded, 30 feet $11\frac{1}{2}$ inches.

Breadth, over guards, 31 feet $8\frac{1}{4}$ inches.

Depth, molded at side (Frame No. 88), 20 feet $8\frac{1}{8}$ inches.

Depth, molded at center (Frame No. 88), 21 feet 10 inches.

Tons per inch (9 feet $1\frac{3}{4}$ inches W. L.), 15.50.

Mean trial displacement, tons, 1,185.

Wetted surface (9 feet $1\frac{3}{4}$ inches W. L.), square feet, 10,370.

Coefficient block (designed 9 feet $1\frac{3}{4}$ inches W. L.), 0.469.

Coefficient prismatic (designed 9 feet $1\frac{3}{4}$ inches W. L.), 0.627.

Coefficient midship (designed 9 feet $1\frac{3}{4}$ inches W. L.), 0.748.

Coefficient water line (designed 9 feet $1\frac{3}{4}$ inches W. L.), 0.686.

Area of rudder, 69.3 square feet.

Center of buoyancy (9 feet $1\frac{3}{4}$ inches W. L.), above bottom of keel, 5 feet $6\frac{3}{4}$ inches.

Center of buoyancy (9 feet $1\frac{3}{4}$ inches W. L.), aft of middle perpendicular, 6 inches.

Transverse metacenter above C. B. (9 feet $1\frac{3}{4}$ inches W. L.), 7 feet $8\frac{1}{2}$ inches.

Longitudinal metacenter above C. B. (9 feet $1\frac{3}{4}$ inches W. L.), 754 feet.

Center of gravity of water line abaft middle perpendicular (9 feet $1\frac{3}{4}$ inches W. L.), 5 feet 1 inch.

Center of gravity of full load water line abaft middle perpendicular (designed displacement, 1,278 tons), 5 feet $7\frac{1}{4}$ inches.

Frame spacing, 21 inches.

LONGITUDINAL DISTANCES.

Projection of stern at main deck, forward A. P., $15\frac{3}{4}$ inches.

Axis of rudder, forward of A. P., 7 feet 4 inches.

Forward end of straight keel, from F. P., 11 feet.

Afterend of straight keel, from A. P., 30 feet $8\frac{1}{2}$ inches.

GENERAL INFORMATION.

Length of straight keel, 268 feet.
 Forward end of bilge keel, from F. P., 92 feet $7\frac{1}{8}$ inches.
 Afterend of bilge keel, from A. P., 79 feet $9\frac{1}{2}$ inches.
 F. P. to center of foremast, at main deck, 90 feet 2 inches.
 F. P. to center of stack No. 1, at main deck, 107 feet, $6\frac{3}{4}$ inches.
 F. P. to center of stack No. 2, at main deck, 121 feet $10\frac{1}{4}$ inches.
 F. P. to center of stack No. 3, at main deck, 146 feet $\frac{3}{4}$ inch.
 F. P. to center of stack No. 4, at main deck, 160 feet $\frac{3}{4}$ inch.
 Center of mainmast, at main deck, to A. P., 52 feet $5\frac{1}{2}$ inches.
 Center of shaft struts forward of A. P., 21 feet 1 inch.
 Propellers, forward of A. P., 17 feet.

HEIGHTS ABOVE DESIGNER'S WATER LINE.

Bridge at center (Frame No. 48), 29 feet $8\frac{11}{16}$ inches.
 Bridge at outboard ends (Frame No. 48), 29 feet 3 inches.
 Forward smokestack on C. L., 38 feet $7\frac{1}{4}$ inches.
 Lookout platform, 66 feet 4 inches.
 Signal yard, 88 feet 3 inches.
 Upper radio, aerial, 93 feet.
 Lower radio, aerial, 66 feet 4 inches.
 Main deck, at side (Frame No. 62), 12 feet $11\frac{3}{8}$ inches.
 Main deck, at side (Frame No. 124), 9 feet $11\frac{1}{4}$ inches.
 Top of after deck house, 16 feet 8 inches.
 Freeboard, at stem, 17 feet $3\frac{1}{4}$ inches.
 Freeboard, at stern, 8 feet $3\frac{3}{4}$ inches.

CONDITIONS OF LOADING.

Ship complete, ready for service in every respect, with full complement of officers and crew with their effects, and consumable load, is tabulated below, for Normal, Full, and Emergency conditions.

In the design of the vessel the mean draft corresponding to the "designer's water line," viz. foot inches contemplates the condition of loading given under the heading "NORMAL."

Kind.	Normal.		Full.		Emergency.	
	Quantity.	Weight.	Quantity.	Weight.	Quantity.	Weight.
		<i>Tons.</i>		<i>Tons.</i>		<i>Tons.</i>
Hull, complete.....		367.3		367.3		367.3
Hull fittings.....		56.1		56.1		56.1
Steam engineering (wet).....		443.0		443.0		443.0
Reserve feed water.....		14.0		21.0		40.0
Battery.....		41.4		41.4		41.4
Ammunition and ordnance stores.....		39.1		39.3		39.3
Equipment and two-thirds equipment stores.....		37.5		37.8		37.8
Outfit, crew and two-thirds stores.....		42.7		53.1		65.3
Oil fuel.....		150.0		225.0		273.5
Displacement.....		1,191.1		1,284.0		1,363.7

DESIGNED COMPLEMENT.

(Section X-3.)

Officers:	
Commanding officer.....	1
Wardroom officers.....	5
Seaman branch:	
Chief boatswain's mate.....	1
Boatswain's mate, second class.....	1
Coxswain.....	1
Chief gunner's mates.....	2
Gunner's mates, first class.....	2
Gunner's mates, second class.....	2
Chief quartermaster, navigating.....	1
Quartermaster, first class.....	1
Quartermasters, second class.....	2
Seamen.....	16
Ordinary seamen.....	13
Total.....	42
Artificer branch:	
Electrician, first class.....	1
Electricians, first class, radio.....	2
Electrician, second class, radio.....	1
Carpenter's mate, second class.....	1
Total.....	5
Artificer branch (engine-room force):	
Chief machinists mates.....	3
Machinist's mates, first class.....	3
Machinist's mates, second class.....	3
Chief water tender.....	1
Water tenders.....	5
Boilermaker.....	1
Blacksmith.....	1
Coppersmith.....	1
Oilers.....	4
Firemen, first class.....	10
Firemen, second class.....	7
Total.....	39
Special branch:	
Yeoman, first class, commanding officer.....	1
Yeoman, second class, engineer department.....	1
Hospital steward.....	1
Total.....	3
Commissary branch:	
Ship's cook, first class.....	1
Ship's cook, third class.....	1
Total.....	2
Messmen branch:	
Cabin steward.....	1
Cabin cook.....	1
Mess attendants.....	2
Total.....	4

RECAPITULATION.

Officers.....	6
Crew.....	95
Total.....	101

PLANS.

(Section B-1.)

Furnished under the cognizance of the Bureau of Construction and Repair for ship use.

All of the following plans are a part of the ship's regular allowance of articles under cognizance of the Bureau of Construction and Repair, Equipage, Title "B," Class 35.

Additional copies of any plan specified in this list may be issued to the commanding officer at his request for use on board ship. The booklet sets are issued to the commanding officer in sufficient number to provide one copy for each officer in charge of a department or division.

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ull, and Emer-

's water line,"
"NORMAL."

Emergency.

Quantity.	Weight.
	Tons.
.....	367.3
.....	56.1
.....	443.0
.....	40.0
.....	41.4
.....	39.3
.....	37.8
.....	65.3
.....	273.5
.....	1,363.7

STEERING ARRANGEMENTS.

(Section U-8.)

(See plan No. —.)

(A) GENERAL.

The steering gear is of the horizontal right and left screw type with single thread $\frac{3}{4}$ -inch pitch. The traveling nuts are bolted and keyed to guide sleeves, which are connected to the rudder crosshead by links secured to the crosshead and the sleeves by 4-inch pins. At the forward end of the screw shaft is the main spur gear, which is connected to the engine pinion through intermediate gears.

The engine is a horizontal two-cylinder 8 by 8 inch steam-steering engine, located athwartships beneath the screw gear. It is provided with automatic follow-up type of control, and may be operated by wire rope transmission from the pilot house and bridge, by wire rope from the top of afterdeck house, or by a trick wheel mounted on the steering engine. A clutch is provided between the main spur gear and the hand gear wheels, which connects the screw gear with the engine for steam operation, or with the 5-foot handwheels for hand operation, or which can be put in middle position to permit turning over the engine free from the screw gear. Clutches are also provided overhead for connecting the outside stations.

The transmission rope is $\frac{3}{8}$ -inch diameter plow steel wire, made in accordance with Navy Department specifications 22R3, Type AA. The leads from forward stations are run over sheaves and through bushings in rail stanchion sockets and other fittings above the main deck on the starboard side; and the leads from the afterdeck house are run on sheaves under the main deck near center line; the two sets of leads terminating on separate Hanscom drums equipped with automatic tighteners and supported by brackets on the port side of steering engine. A clutch located between the gears connecting these drums with the automatic-control shaft allows the distant control of the engine from either forward or after station, or the disconnecting of both drums to permit operation by trick wheel on engine. There are rope drums inside the steering stands in pilot house and on afterdeck house which are turned by the steering wheels, and on which are wound the transmission ropes operating the engine-reverse valves. A shaft extension from the pilot house stand runs up to the bridge-steering stand, a clutch being provided in pilot house for disconnecting same.

To operate the screw gear by hand, two 5-foot wheels are installed forward of the screw shaft and directly connected to it by means of a sliding clutch held in place by stop pins.

An emergency spare tiller, stowed on the side of the afterdeck house, is provided to be fitted over the top of the rudder stock above the main deck, and operated by a relieving tackle arranged as shown on outboard fittings plan, portfolio index No. 8.

REFERENCE PLANS.

Fore River Shipbuilding Corporation plan No. H-274-22A-1.—Arrangement of steering-gear leads.

Fore River Shipbuilding Corporation plan No. H-274-22A-2.—Arrangement of steering-gear compartment, portfolio index No. 25.

American Engineering Co.—General arrangement and detail plans of steering engine and screw gear, portfolio index No. 45.

(B) INSTRUCTIONS FOR STEERING FROM THE VARIOUS STATIONS.

(1) To steer by steam from pilot house: Disconnect the clutch over the stand in pilot house, throw aft the clutch in the steering compartment connecting main spur gear to the screw shaft, and throw inboard the clutch between gears connecting transmission-rope drums with automatic control shaft.

(2) To steer by steam from bridge: Proceed as above, except that the clutch over pilot-house stand is to be connected and the pilot-house wheel disconnected.

(3) To steer by steam from afterdeck house: Throw aft the clutch in the steering compartment connecting the main-spur gear to the screw shaft, and throw outboard the clutch between the gears connecting transmission-rope drums with automatic-control shaft.

(4) To steer by steam from steering engine room: Throw into middle position the clutch in the steering compartment between the main spur gear and the hand wheels, and the clutch between the gears connecting the transmission-rope drums with automatic-control shaft, and throw in the clutch on the trick wheel on engine.

(5) To steer by hand from steering engine room: Disconnect trick wheel, throw into middle position the clutch between the gears connecting the transmission-rope drums with the automatic control shaft, and throw forward the clutch on main shaft connecting the handwheels with screw gear.

METHODS OF UNSHIPING RUDDER AND STOCK.

(1) Hoist stock through deck; shackle into holes in top edge of rudder and make fast; unbolt and remove the two-piece crosshead; remove the split gland just below the crosshead and packing ring inside of the stuffing box just below the split gland; take weight of rudder and stock on lifting link at the top of stock; remove split collar and bearing ring and loose keys at top of stock; lower until rudder rests on gudgeon; disconnect lifting tackle and remove the bearing ring, and the carrier just below it located at the top of stock; remove bolted stanchions and crosshead; connect tackle to lifting link again and take out the fid key holding rudder to stock; loosen stock from rudder with the use of starting keys provided for the purpose, and hoist the stock out.

(2) Lower rudder and stock together; slack off crosshead bolts and raise crosshead until its keys can be removed; remove stuffing box gland and the split packing ring inside the same, just below crosshead; cut away rivets connecting gudgeon to stern frame; take weight of rudder on lifting link; remove split collar, bearing ring, and keys at top of stock; the stock and rudder are now free.

STEERING-GEAR DATA.

Builders, Type,	
Number of cylinders	2
Diameter of cylinder, inches	8
Stroke of pistons, inches	8
Working steam pressure, pounds	200
Designed to withstand full boiler pressure, pounds	265
Steam supply pipe diameter, inches	2
Steam exhaust pipe diameter, inches	2½
Angle of steering engine stops, degrees	35
Angle of rudder stops, degrees	38
Revolutions of screw shaft from extreme right to extreme left, 70°	33.64
Revolutions of engine pinions, extreme right to extreme left, 70°	127.5
Revolutions of steering stand wheels, 70°	14
Revolutions of trick wheel on engine, 70°	80
Revolutions of handwheel, 70°	33.64
Ratio of screw spur gear to engine pinion	1 to 379
Lead of screw, inches	¾
Depth of Acme thread	⅝
Radius of rudder crosshead, inches	22
Diameter of rudder stock, outside, inches	11½
Diameter of rudder stock, inside, inches	5¾
Total area of rudder, square feet	69.3
Area of balanced portion, square feet	12.4