RESTRICTED

GENERAL INFORMATION

INCLUDING DESCRIPTIONS AND
TESTS OF ELECTRIC AUXILIARIES

U. S. S. TORPEDO BOAT DESTROYERS
NOS. 251 TO 295

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

RESTRICTED

CONFIDENTIAL

Serial No. 300

GENERAL INFORMATION

INCLUDING DESCRIPTION AND TESTS
OF ELECTRIC AUXILIARIES

TORPEDO BOAT DESTROYERS Nos. 251 to 295

U. S. S. BELKNAP CLASS

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

1920

Finished Plan No. 41

WASHINGTON
GOVERNMENT PRINTING OFFICE
1920

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 weight.	Full weight.	Emergency weight.
	Tons.	*Tons.*	*Tons.*
Hull complete	405.89	405.89	405.89
Hull fittings	60.60	60.60	60.60
Steam engineering	430.80	430.80	430.80
Reserve feed water	14.00	21.00	40.75
Battery	40.11	40.11	40.11
Ammunition and ordnance stores	37.82	38.15	38.15
Equipment and equipment stores	32.94	33.40	33.40
Outfit, crew and stores	42.61	53.01	66.76
Fuel oil	150.00	225.00	375.00
Displacement	1,214.77	1,307.96	1,491.46

DESIGNED COMPLEMENT.

(Section X–3.)

Officers:	
Commanding officer	1
Wardroom officers	5
Seaman branch:	
Chief boatswain's mate	1
Boatswain's mates—	
First class	1
Second class	1
Coxwains	2
Chief gunner's mates (torpedo)	1
Gunner's mates—	
First class	1
Second class	1
Third class	1
First class (torpedo)	2
Second class (torpedo)	2
Third class (torpedo)	2
Chief quartermaster (navigating)	1
Quartermaster—	
First class	1
Second class	1
Third class	1
First class (signal)	1
Seamen	17
Seamen, second class	8
Total	45
Artificer branch:	
Electricians—	
First class (general)	1
Third class (general)	1
Chief electricians (radio)	1
Electricians—	
First class (radio)	1
Second class (radio)	1
Third class (radio)	1
Carpenter's mates, first class	1
Storekeepers, first class	1
Total	8
Artificer branch—Continued.	
Engine-room force—	
Chief machinist's mates	3
Machinist's mates—	
First class	2
Second class	3
Enginemen—	
First class	5
Second class	8
Chief water tenders	1
Water tenders	6
Boiler makers	1
Blacksmiths, second class	1
Coppersmiths, second class	1
Firemen—	
First class	12
Second class	8
Total	51
Special branch:	
Yeomen—	
First class, commanding officer	1
Second class, first lieutenant	1
Pharmacist's mates, first class	3
Commissary branch:	
Ship's cooks—	
First class	1
Second class	1
Total	2
Messmen branch:	
Cabin stewards	1
Cabin cooks	1
Mess attendants	3
Total	5

RECAPITULATION.

Officers	6
Seamen, including 3 chief petty officers	45
Artificer branch:	
Including 1 chief petty officer	8
Engine room, including 4 chief petty officers	51
Special branch	3
Commissary branch	2
Messmen branch	5
Total	120

thorized by act of Congress, March 4, 1917.
ships built by Bethlehem Shipbuilding Corporation
ntract signed December 6, 1917.
ntract date of completion, as soon as possible.

Name of vessel.	No.	Keel laid.	Launched.	Official trial
	251	Aug. 31, 1918	Jan. 14, 1919	Apr. 9, 1
	252	Sept. 11, 1918	Jan. 31, 1919	Apr. 26, 1
	253	Sept. 25, 1918	Feb. 18, 1919	May 13, 1
	254	....do....	Apr. 26, 1919	July 12, 1
	255	Oct. 15, 1918	Feb. 28, 1919	June 3, 1
	256	Nov. 4, 1918	Mar. 21, 1919	June 19, 1
	257	Nov. 13, 1918	May 8, 1919	July 26, 1
	258	Dec. 3, 1918	Apr. 11, 1919	July 9, 1
	259	Dec. 19, 1918	May 17, 1919	Sept. 12, 1
	260	Dec. 27, 1918	May 29, 1919	Aug. 25, 1
	261	Apr. 20, 1918	July 18, 1918	Nov. 21, 1
	262	....do....	Aug. 6, 1918	Mar. 17, 1
	263	....do....	Aug. 25, 1918	Mar. 6, 1
	264	....do....	Sept. 22, 1918	Mar. 24, 1
	265	....do....	Oct. 10, 1918	Apr. 12, 1
	266	June 3, 1918	Nov. 2, 1918	Apr. 29, 1
	267	....do....	Dec. 7, 1918	May 30, 1
	268	....do....	Dec. 31, 1918	June 27, 1
	269	....do....	Feb. 5, 1919	June 18, 1
	270	....do....	Mar. 22, 1919	July 3, 1
	271	July 20, 1918	Apr. 12, 1919	July 10, 1
	272	Aug. 8, 1918	Apr. 24, 1919	July 18, 1
	273	Aug. 27, 1918	May 7, 1919	July 25, 1
	274	Sept. 23, 1918	May 24, 1919	Sept. 2,
	275	Oct. 15, 1918	June 2, 1919	Aug. 18
	276	Nov. 5, 1918	June 14, 1919	Aug. 23,
	277	Dec. 9, 1918	June 28, 1919	Sept. 19
	278	Jan. 3, 1919	....do....	Sept. 18
	279	Feb. 8, 1919	July 18, 1919	Sept. 23
	280	Mar. 24, 1919	July 26, 1919	Oct. 3,
	281	Apr. 14, 1919	Aug. 12, 1919	Oct. 4
	282	Apr. 26, 1919	Sept. 5, 1919	Oct. 24,
	283	May 8, 1919	....do....	Nov. 22,

INTRODUCTION.

HISTORICAL DATA.

Authorized by act of Congress, March 4, 1917.
Vessels built by Bethlehem Shipbuilding Corporation of Quincy, Mass.
Contract signed December 6, 1917.
Contract date of completion, as soon as possible.

United States torpedo-boat destroyers.	No.	Keel laid.	Launched.	Official trial.	Delivered and commissioned.	Christened by—
Belknap	251	Aug. 31, 1918	Jan. 14, 1919	Apr. 9, 1919	Apr. 28, 1919	Miss Georgiana Belknap.
McCook	252	Sept. 11, 1918	Jan. 31, 1919	Apr. 26, 1919	Apr. 30, 1919	Mrs. H. C. Dinger.
McCalla	253	Sept. 25, 1918	Feb. 18, 1919	May 13, 1919	May 19, 1919	Mrs. Elizabeth McCalla Miller.
Rodgers	254	.....do.....	Apr. 26, 1919	July 12, 1919	July 22, 1919	Miss Helen Rodgers.
Osmond Ingram	255	Oct. 15, 1918	Feb. 28, 1919	June 3, 1919	June 27, 1919	Mrs. N. E. Ingram.
Bancroft	256	Nov. 4, 1918	Mar. 21, 1919	June 19, 1919	June 30, 1919	Miss Mary W. Bancroft.
Welles	257	Nov. 13, 1918	May 8, 1919	July 26, 1919	Sept. 2, 1919	Miss Alma Freeman Welles.
Aulick	258	Dec. 3, 1918	Apr. 11, 1919	July 9, 1919	July 26, 1919	Mrs. Elizabeth L. Willett.
Turner	259	Dec. 19, 1918	May 17, 1919	Sept. 12, 1919	Sept. 23, 1919	Mrs. Leigh C. Palmer.
Gillis	260	Dec. 27, 1918	May 29, 1919	Aug. 25, 1919	Sept. 3, 1919	Miss Helen Irving Murray, Mrs. Josephine T. Smith.
Delphy	261	Apr. 20, 1918	July 18, 1918	Nov. 21, 1918	Nov. 30, 1919	Mrs. William S. Sims.
McDermut	262	.....do.....	Aug. 6, 1918	Mar. 17, 1919	Mar. 27, 1919	Mrs. E. G. Grace.
Laub	263	.....do.....	Aug. 25, 1918	Mar. 6, 1919	Mar. 17, 1919	Miss Marjorie Mohun.
McLanahan	264	.....do.....	Sept. 22, 1918	Mar. 24, 1919	Apr. 5, 1919	Mrs. C. M. Howe.
Edwards	265	.....do.....	Oct. 10, 1918	Apr. 12, 1919	Apr. 24, 1919	Miss Julia Edwards Noyes.
Greene	266	June 3, 1918	Nov. 2, 1918	Apr. 29, 1919	May 9, 1919	Mrs. Mary Green Conover.
Ballard	267	.....do.....	Dec. 7, 1918	May 30, 1919	June 5, 1919	Miss Eloise Ballard.
Shubrick	268	.....do.....	Dec. 31, 1918	June 27, 1919	July 3, 1919	Mrs. Thomas Bayard.
Bailey	269	.....do.....	Feb. 5, 1919	June 18, 1919	June 27, 1919	Miss Rosalie Fellows Bailey.
Thornton	270	.....do.....	Mar. 22, 1919	July 3, 1919	July 15, 1919	Miss Marcia Thornton Davis.
Morris	271	July 20, 1918	Apr. 12, 1919	July 10, 1919	July 21, 1919	Mrs. Geo. Emlin Roosevelt.
Tingey	272	Aug. 8, 1918	Apr. 24, 1919	July 18, 1919	July 25, 1919	Miss Mary Velora Arringdale.
Swasey	273	Aug. 27, 1918	May 7, 1919	July 25, 1919	July 31, 1919	Miss Mary Leverin Swasey.
Meade	274	Sept. 23, 1918	May 24, 1919	Sept. 2, 1919	Sept. 8, 1919	Miss Annie Paulding Meade.
Sinclair	275	Oct. 15, 1918	June 2, 1919	Aug. 18, 1919	Aug. 26, 1919	Mrs. Geo. Barnett.
McCawley	276	Nov. 5, 1918	June 14, 1919	Aug. 23, 1919	Aug. 29, 1919	Miss Eleanor Lawry McCawley.
Moody	277	Dec. 9, 1918	June 28, 1919	Sept. 19, 1919	Sept. 25, 1919	Miss Mary E. Moody.
Henshaw	278	Jan. 3, 1919	.....do.....	Sept. 18, 1919	Sept. 24, 1919	Miss Ethel H. Dentsey.
Meyer	279	Feb. 8, 1919	July 18, 1919	Sept. 23, 1919	Sept. 30, 1919	Mrs. Alice Meyer Rodgers.
Doyen	280	Mar. 24, 1919	July 26, 1919	Oct. 3, 1919	Oct. 10, 1919	Miss Fay Elizabeth Doyen.
Sharkey	281	Apr. 14, 1919	Aug. 12, 1919	Oct. 4, 1919	Oct. 20, 1919	Mrs. Mary E. Sharkey.
Toucey	282	Apr. 26, 1919	Sept. 5, 1919	Oct. 24, 1919	Oct. 31, 1919	Mrs. Elizabeth Alden Robinson.
Breck	283	May 8, 1919	.....do.....	Nov. 22, 1919	Nov. 28, 1919	Mrs. Forrest MacNee.

United States torpedo-boat destroyers.	No.	Keel laid.	Launched.	Official trial.	Delivered and commissioned.	Christened by—
Isherwood	284	May 24, 1919	Sept. 10, 1919	Nov. 21, 1919	Nov. 26, 1919	Mrs. Ralph G. Walling.
Case	285	June 3, 1919	Sept. 21, 1919	Nov. 29, 1919	Nov. 29, 1919	Miss Helena de St. P. Case.
Lardner	286	June 16, 1919	Sept. 29, 1919	Dec. 4, 1919	Dec. 10, 1919	Miss Margaret Lardner Large.
Putnam	287	June 30, 1919	Sept. 30, 1919	Dec. 11, 1919	Dec. 18, 1919	Miss Katherine Brown.
Worden	288	.....do.....	Oct. 24, 1919	Dec. 17, 1919	Dec. 23, 1919	Mrs. Daniel Worden.
Flusser	289	July 21, 1919	Nov. 7, 1919	Dec. 24, 1919	Dec. 31, 1919	Mrs. Maud S. Williams.
Dale	290	July 28, 1919	Nov. 19, 1919	Feb. 10, 1920	Feb. 14, 1920	Mrs. Martha R. Peters.
Converse	291	Aug. 13, 1919	Nov. 28, 1919	Apr. 14, 1920	Apr. 27, 1920	Miss J. Edith Converse Colt.
Reid	292	Sept. 9, 1919	Oct. 15, 1919	Oct. 31, 1919	Nov. 6, 1919	Mrs. J. W. Powell.
Billingsley	293	Sept. 8, 1919	Dec. 10, 1919	Jan. 30, 1920	Feb. 7, 1920	Miss Irene Billingsley.
Charles Ausburn	294	Sept. 11, 1919	Dec. 18, 1919	Feb. 13, 1920	Feb. 28, 1920	Mrs. Della E. Ausburn.
Osborne	295	Sept. 23, 1919	Dec. 29, 1919	May 7, 1920	May 17, 1920	Mrs. Elizabeth Osborne.

DIMENSIONS AND DISTANCES.

Length over all, 314 feet, $4\frac{1}{2}$ inches.
Length between perpendiculars, 310 feet.
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, $8\frac{1}{2}$ inches.
Depth, molded at center (frame No. 88), 21 feet, 10 inches.
Tons per inch (9 feet, 5 inches W. L.), 15.60.
Mean trial displacement, 1,215 tons.
Wetted surface (9 feet, 5 inches W. L.), 10,540 square feet.
Coefficient block (designed 9 feet, 5 inches W. L.), 0.477.
Coefficient prismatic (designed 9 feet 5 inches W. L.), 0.624.
Coefficient midship (designed 9 feet 5 inches W. L.), 0.758.
Coefficient water line (designed 9 feet 5 inches W. L.), 0.686.
Area of rudder, 77 square feet.
Center of buoyancy (9 feet 5 inches W. L.), above bottom of, 5 feet 9 inches.
Center of buoyancy (9 feet 5 inches W. L.), aft of middle perpendicular, $2\frac{1}{2}$ inches.
Transverse metacenter above C. B. (9 feet 5 inches W. L.), 14 feet $1\frac{3}{4}$ inches.
Longitudinal metacenter above C. B. (9 feet 5 inches W. L.), 730 feet.
Center of gravity of water line abaft middle perpendicular, 6 feet $4\frac{13}{16}$ inches (9 feet 5 inches W. L.).
Center of gravity of full load water line abaft middle perpendicular (designed displacement, 1,308 tons), 6 feet.
Frame spacing, 21 inches.

LONGITUDINAL DISTANCES.

Projection of stern at main deck, abaft A. P., $16\frac{1}{2}$ inches.
Axis of rudder, forward of A. P., 6 feet $4\frac{1}{2}$ inches.
Forward end of straight keel, from F. P., 11 feet.
After end of straight keel, from A. P., 43 feet 9 inches.
Length of straight keel, 255 feet 6 inches.
Forward end of bilge keel from F. P., 92 feet 8 inches.
After end of bilge keel, from A. P., 78 feet 10 inches.
F. P. to center of fore mast, at main deck, 90 feet 2 inches.

F. P. to center of stack No. 1, at main deck, 107 feet 6¾ inches.
F. P. to center of stack No. 2, at main deck, 121 feet 10¼ inches.
F. P. to center of stack No. 3, at main deck, 146 feet ¾ inch.
F. P. to center of stack No. 4, at main deck, 160 feet ¾ inch.
Center of mainmast, at main deck, to A. P., 58 feet.
Center of shaft struts forward of A. P., 21 feet 3 inches.
Propellers, forward of A. P., 17 feet.

HEIGHTS ABOVE DESIGNER'S WATER LINE.

Bridge at center (frame No. 49), 22 feet ½ inch.
Bridge at outboard ends (frame No. 49), 22 feet ½ inch.
Forward smokestack on C. L., 38 feet 5 inches.
Lookout platform, 66 feet 4 inches.
Signal yard, 88 feet.
Upper wireless aerial, 93 feet.
Lower wireless aerial, 51 feet 9 inches.
Main deck, at side (frame No. 52), 13 feet 8 inches.
Main deck, at side (frame No. 144), 9 feet.
Top of after-deck house (frame 150), 16 feet 5 inches.
Freeboard at stem, 17 feet ⅜ inch.
Freeboard at stern, 8 feet 1¼ inches.

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.

All plans issued to the vessel shall be receipted for, and shall be considered as a charge on the books of the executive officer, under the same regulation as governing articles of equipage.

All plans and booklets are to be considered as confidential documents.

The plans furnished the vessel are in portfolios 32 inches by 15 inches, bound on the 32-inch edge.

The prints are taken on 30-inch wide blue-print paper, folded "bellows fashion," 13 inches wide, arranged so that the top fold presents the title of the plan without unfolding.

The inside front cover of the portfolio carries a list of plan numbers and a list of portfolio numbers and titles of the plans.

An additional copy of the lists, inside the front cover of the portfolio, is made up into booklet form for use in finding plans, and is left loose in the front part of the portfolio.

Blue prints of electrical auxiliaries, steering engine, windlass, etc., obtained from outside sources, are of miscellaneous sizes. They are attached together and folded as one set, and the set assigned a single number in series of portfolio numbers.

There is one copy furnished of all the plans named in the list except Booklets of General Information and Booklets of General Plans, of which one copy is furnished for each officer.

Booklet of General Information and Final Inclining Experiments are not included with the plans made up in the portfolio; there is included, however, in the portfolio an uncut print of small scale booklet plans of the vessel.

STEERING ARRANGEMENTS.

GENERAL.

The steering gear is of the horizontal right and left screw type with single thread three-fourths-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 steam-engineering 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 bridge, by wire rope from the top of the after deckhouse, 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. A clutch is also provided between the rope drums for connecting the outside stations.

The transmission rope is three-eighths-inch diameter plow steel wire, made in accordance with Navy Department Specifications 22R3, type AA. The leads from the forward station 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 after deckhouse are run on sheaves under the main deck near center lines; 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 on the bridge and on the after deckhouse which are turned by the steering wheels, and on which are wound the transmission ropes operating the engine reverse valves.

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 after deckhouse, is provided to be fitted over the top of the rudderstock above the main deck, and operated by a relieving tackle arranged as shown on the outboard fittings plan, portfolio index No. 8.

REFERENCE PLANS.

Bethlehem Shipbuilding Corporation plan No. H–331–22A–19, arrangement of steering gear leads.

American Engineering Co. general arrangement and detail plans of steering engine and screw gear, porfolio index No. 45.

(B) INSTRUCTIONS FOR STEERING FROM VARIOUS STATIONS.

(1) To steer by steam from bridge: Throw aft the clutch in the steering compartment connecting the main spur gear to the screw shaft and throw inboard the clutch lever connecting the starboard transmission rope drum with automatic control shaft.

(2) To steer by steam from the after deckhouse: Throw aft the clutch in the steering compartment connecting the main spur gear to the screw shaft and throw outboard the clutch lever connecting the port transmission rope drum with automatic control shaft.

(3) 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 handwheels 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.

(4) To steer by hand through the 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 the main shaft connecting the handwheels with screw gear.

METHOD OF UNSHIPPING 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 and packing ring; take the weight of rudder and stock on lifting link and remove the split collar, bearing ring, and loose keys at top of stock; lower until rudder rests on gudgeon; disconnect the lifting tackle and remove the bearing ring and carrier; remove bolted stanchions and crosshead; connect tackle to lifting link again; take out lower key to loosen stock from rudder, using starting keys if necessary, and hoist stock out.

(2) To lower rudder and stock together slack off crosshead bolts and raise crosshead until keys in same can be removed; remove stuffing box gland and split packing ring; cut away rivets connecting gudgeon to stern frame; take the weight of rudder on lifting link; remove split collar bearing ring and loose keys at top of stock leaving stock and rudder free.

Reference plan, rudder bearing and stuffing box: Bethlehem Shipbuilding Corporation plan No. H–331–58–6.

STEERING GEAR DATA.

Builders	American Engineering Co.
Type	Horizontal 8 by 8 inch steam steerer.
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
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	1–379
Lead of screw, inches	¾
Depth of Acme thread, inches	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

ANCHOR HANDLING AND WINDLASS.

(Section U–6.)

Number of anchors	2.
Type of anchors	Navy type.
Weight of anchors	1, 800 pounds each.
Number of anchor cables	2.
Size of anchor cables	1-inch close link chain cables.
Length of anchor cables	105 fathoms each.
Designed working load for anchor crane	2, 500 pounds.
Designed test load for anchor crane	5. 000 pounds.

WINDLASS.

Builders	Samuel L. Moore & Son's Corporation.
Type	Direct acting reverse valve type.
Number of cylinders	2.
Diameter of cylinders	5 inches.
Stroke of cylinders	5 inches.
Working steam pressure	200 pounds per square inch.
Designed to withstand full boiler pressure	265 pounds per square inch.
Diameter of steam supply pipe	1¼ inches.
Diameter of steam exhaust pipe	1½ inches.
Gear ratio	36. 1.
Revolutions per minute to heave in anchor at 6 fathoms per minute	433.

AMMUNITION HANDLING AND LOADING ARRANGEMENTS.

(Section U–2.)

For handling torpedoes from the ship's side to the tubes, the boat davits between frames Nos. 106 and 107 port and 114 and 115 starboard are used, being provided with outriggers hinged to the davits by double eyes. Two-ton Chisholm and Moore Cyclone hoists are suspended from the outriggers to hoist the torpedoes which are swung inboard and transferred to the chain trolley hoist running on overhead fore-and-aft tracks between the tubes. These tracks are 6 by 3.33 by 3.33 by 12.25 pound I-beams, and are attached to the under side of the double 8 by 2.26 by 2.26 by 11.25 pound boat-skid beams. Trolleys and tracks were tested to 5,600 pounds, twice the working load.

The torpedoes are stowed in the tubes. The war heads are stowed in magazine compartment D–109–M aft, and are handled through hatches between frames 138 to 140 starboard by a davit on the main deck, also located between frames 138 to 140 starboard. Davit tested to 1,000 pounds. A deck truck is provided for carrying war heads from hatches to torpedoes tubes.

Ammunition is handled to the forward magazine compartments through the handling room compartment between frames Nos. 47 and 49, and then by hatches between frames 47 and 49 starboard, to the main deck.

Racks for holding 4-inch ready service ammunition are provided on the main deck, two racks per gun, each rack holding 16 cartridge tanks, except the two forward of the pilot house, which hold 14, and are in convenient position for quick withdrawal of cartridges. Racks for holding 4-inch drill ammunition, two per rack, are provided at the following locations: Passage, after deck house, frames 146 to 148 starboard. Windlass room, A–303, frames 14 to 15 port.

LIST OF AMMUNITION STOWAGE.

(Section U–1.)

Type.	Compartment.	Total capacity.	Allowance.	Number in each box or tank.	Length.	Stowage sizes, width.	Depth or diameter.	Weight of each box or tank.
					Inches.	*Inches.*	*Inches.*	
4-inch .50 caliber cartridge	A–114–M A–111–M D–108–M	568	400	1	52	.....	6.32	83.75
4-inch .50 caliber drill cartridge	.....	.....	6	1	52	.....	.....	83.75
3-inch .23 caliber A. A. cartridge	D–107–M	318	300	6	20½	.....	13	119
3-inch .23 caliber dummy	.....do	6	6	6	20½	.....	13	119
.30 caliber, 1906, machine gun	A–112–M	21,600	24,000	1,200	16¼	14	8	91.5
.30 caliber, 1906, rifle	.....do	12,000	13,200	1,200	16¼	14	8	91.5
.30 caliber, 1909, blank	.....do	2,000	2,000	2,000	17⅛	11¾	12½	84
.30 caliber, 1906, dummy	.....do	1,000	1,000	1,000	21⅝	12½	7	66
.30 caliber, 1898, ball	.....do	4,800	4,800	1,200	34½	9	7½	99.75
.30 caliber, 1898, blank	.....do	4,000	4,000	1,000	19¾	13⅛	8	44.5
.45 caliber, Model 1911, ball	.....do	6,000	6,000	2,000	16¼	12¾	7⅝	110
Net cutters	D–109–M	12	12	3	32½	9 13/16	7 5/16	57
Warheads	.....do	12	12	1	[1] 28 9/16	.....	21	430
Torpedo detonators	Range finder platform.	24	24	4	.....	.....	.....	.....
Impulse primers	A–112–M	168	144	24	4⅞	3⅜	3	3
Superheater fuses	.....do	160	140	20	4⅞	3⅜	3	3
Gyro boxes	.....do	13	13	1	14⅝	8⅛	8⅛	24
Impulse powder (pounds)	.....do	1 box	1 box	50	10⅝	10⅝	16 9/16	77
Machine gun	A–114–M	2	2	1	.....	.....	.....	.....

[1] Height.

BATTERY.

GUNS.

(Section A–5.)

Caliber.	Location.		Gun No.
	Deck.	Frame.	
4-inch rapid-fire gun	Main	28 center line	1
Do	.....do	76 port	2
Do	.....do	76 starboard	3
Do.[1]	.....do	163 center line	4
Do.[2]	Top after deckhouse	152 center line	4
ANTIAIRCRAFT.			
3-inch antiaircraft gun	Top of after deck house on Torpedo Boat Destroyers 251–286.	153	.....
Do	Main, on Torpedo Boat Destroyers 286–295.	163	.....
TORPEDO TUBES.			
6.8 m. by 21 inches (deck)	Main deck	98 port	1
Do	.....do	106 starboard	
Do	.....do	128 port	3
Do	.....do	138 starboard	
SMALL ARMS.			
.30 caliber machine gun (stowed in forward magazine.)	Signal bridge	43–44	.....
Do	.....	.....	.....
.30 caliber rifles (25)	Small arms magazine	43½–45	.....
.45 caliber automatic pistols (29)	.....do	44½–45	.....

[1] Location on Torpedo-Boat Destroyers 251–285 only.

[2] Location on Torpedo-Boat Destroyers 286–295 only.

BOATS.

(Section U–5.)

Name.	No.	Carrying capacity (each).
24-foot motor sailing launch	1	19
24-foot whaleboat	2	23
21-foot motor	3	10
14-foot wherry	4	5

LIFE RAFTS.

(Section A–5.)

Five Carley-type life floats, carrying 27 persons each.

SEA OPENINGS BELOW LOAD WATER LINE.

Name of valve.	Location.	Location of center of opening.		Girths.		Size of opening in ship's side.	
		Above bottom of keel.	From center line of ship.				
		Ft. *in*	*Ft.* *in.*	*Ft.* *in.*		*Ft.* *in.*	
Internal draft gauge	12–13, port	1 9	1 10	24 3		0	$2\frac{3}{4}$
$3\frac{1}{2}$-inch fire and bilge pump discharge	64–65, port	1 $9\frac{1}{4}$	7 $7\frac{1}{4}$	23 $10\frac{3}{4}$			$4\frac{3}{16}$
4-inch fire and bilge pump suction	do	1 $6\frac{1}{2}$	5 $7\frac{1}{8}$	25 10			$9\frac{9}{16}$
2-inch boiler blow	65–66, port	4	2 $0\frac{1}{4}$	29 11			$2\frac{3}{4}$
4-inch fire and bilge pump suction	86–87, port	1 $2\frac{1}{8}$	5 7	26 2			$9\frac{9}{16}$
$3\frac{1}{2}$-inch fire and bilge pump discharge	do	1 $5\frac{7}{8}$	7 8	24 $1\frac{1}{2}$			$4\frac{3}{16}$
2-inch boiler blow	87–88, port	$2\frac{1}{2}$	2 $0\frac{1}{4}$	28 8			$2\frac{3}{4}$
Internal draft gauge	88–89, starboard	3	2 3	28 8			$2\frac{3}{4}$
$\frac{1}{2}$-inch torpedo air compressor suction	91–92, starboard	1 $5\frac{1}{2}$	7 $7\frac{3}{4}$	23 9			$4\frac{9}{16}$
$1\frac{1}{2}$-inch torpedo air compressor discharge	do	1 1	5 $10\frac{3}{4}$	25 6			$2\frac{1}{16}$
24-inch main injection	96, starboard	4 4	13 $7\frac{1}{2}$	16 7		6 2	
$3\frac{1}{2}$-inch fire and bilge pump discharge	99–100, port	5 $7\frac{3}{8}$	13 $4\frac{1}{4}$	15 3		2 1	
4-inch fire and bilge pump suction	100–101, port	2 $10\frac{1}{4}$	10 $2\frac{5}{8}$	20 $3\frac{1}{2}$			$4\frac{3}{16}$
4-inch auxiliary circulation pump discharge	109–110, port	8 11	14 $10\frac{1}{2}$	15 4			$9\frac{9}{16}$
$2\frac{1}{2}$-inch water service discharge	100–110, starboard	4	2 $4\frac{1}{4}$	28 8			$4\frac{11}{16}$
4-inch lubricating oil cooler pump discharge	111–112, starboard	3 $3\frac{3}{4}$	10 $3\frac{3}{8}$	19 1			$3\frac{1}{16}$
24-inch main injection	112, port	5 $2\frac{5}{8}$	13 $2\frac{1}{8}$	15 3			$4\frac{11}{16}$
4-inch auxiliary circulation pump suction	112–113, port	3 7	10 $3\frac{1}{8}$	18 10		6 10 2 1	
24-inch main overboard discharge	113–114, starboard	5 $7\frac{1}{2}$	12 $6\frac{1}{2}$	14 9			$9\frac{9}{16}$
5-inch lubricating oil cooler pump suction	115–116, starboard	2 2	7 $4\frac{3}{8}$	21 11		2 $1\frac{1}{4}$ 2 10	
4-inch lubricating oil cooler pump discharge	117–118, port	8 $11\frac{1}{4}$	14 $2\frac{7}{8}$	11			$11\frac{1}{8}$
$2\frac{1}{2}$-inch water service discharge	118–119, starboard	$9\frac{3}{8}$	4 $1\frac{7}{8}$	25 6			$8\frac{3}{4}$
5-inch lubricating oil cooler pump suction	119–120, port	3 $11\frac{3}{4}$	10 $0\frac{1}{2}$	18 2			$4\frac{11}{16}$
4-inch fire and bilge pump suction	121–122, starboard	4 $6\frac{1}{4}$	10 3	17 6			$3\frac{1}{16}$
$4\frac{1}{2}$-inch fire, bilge, and distiller circulation water discharge.	124–125, starboard	6 $4\frac{1}{8}$	12 0	13 9			$11\frac{1}{8}$
$2\frac{1}{2}$-inch evaporator feed pump suction	125–126, port	2 $9\frac{1}{2}$	7 $2\frac{1}{4}$	20 0			$9\frac{9}{16}$
2-inch evaporator blow	128–129, port	5 $0\frac{1}{4}$	9 $9\frac{3}{4}$	16 6			$5\frac{3}{16}$
24-inch main overboard discharge	130, port	7 $0\frac{3}{4}$	10 $7\frac{3}{4}$	13 3			$6\frac{9}{16}$
Internal draft gauge	163–164, starboard	4 3	1 11	12 0			$2\frac{11}{16}$
						3 1 2 $1\frac{1}{4}$	
							$2\frac{3}{4}$

SOUNDING TUBES.

GENERAL.

All sounding tubes are standard wrought-steel pipe, galvanized, except in cases where pipes extend into fuel-oil tanks, where black pipe is used.

Sounding tubes in fuel oil are perforated with one-half-inch diameter holes spaced about 6 inches apart the whole length of pipe within the tank which is sounded through the same.

Ball flanges are cast steel, galvanized. Couplings are wrought steel, galvanized. Deck plates are of composition "N." All valves are of composition.

For sounding bilges two sounding rods are provided the ship. These rods are 3 feet long, and one-half-inch in diameter, with one-half inch marks. Each rod has 35 feet of nine-thread manila secured by means of an one-eighth-inch brass-wire ring.

For sounding fuel-oil tanks 25 steel sounding tapes, graduated in feet, inches, and one-eighth-inch marks, fitted with a brass rod at the lower end and a brass ring at the upper end, are provided; one stowed in each sounding tube.

Bolts and nuts are black wrought steel where located clear of bilge water. In way of bilges, and when liable to come in contact with bilge water, the bolts are galvanized and the nuts are rolled naval brass. Nuts on top side of decks are rolled naval brass.

All sounding tubes terminate in extra heavy cast-steel foot fittings, galvanized, of special design, to protect the shell plating.

The closing of gate valves which are fitted in sounding tubes to oil tanks which terminate in living spaces is accomplished by turning the handwheel to the right.

All deck plates and valves may be identified at the deck plate or valve by means of label plates.

SOUNDING TUBES, LIST AND LOCATION.

Sound compartment.	Location of inlet.			Operated from.
	In compartment—	Deck.	Between frames—	
A-101 peak tank	A-302	First platform	5–6 port	Deck plate.
A-102 peak tank	A-302	do	7–8 port	Do.
A-104 fuel-oil tank		Main	17–18 port	Do.
A-105 fuel-oil tank	A-304	First platform	25–26 starboard	1½-inch gate valve.
A-106 fuel-oil tank	A-304	do	25–26 port	Do.
A-107 fuel-oil tank [1]		Main	34–35 starboard	Deck plate.
A-108 fuel-oil rank [1]		do	34–35 port	Do.
A-109 fuel-oil tank [1]		do	34–35 starboard	Do.
A-110 fuel-oil tank [1]		do	34–35 port	Do.
A-112-M small arms ammunition	A-315	First platform	45–46 port	Do.
A-111-M 4-inch ammunition	A-315	do	46–47 port	Do.
A-114-M war heads	A-315	do	48–49 port	Do.
A-115 fuel-oil tank		Main	50–51 port	Do.
A-116 fuel-oil tank		do	51–52 port	Do.
A-117 fuel-oil tank		do	51–52 starboard	Do.
A-208 fuel-oil tank		do	50–51 port	Do.
A-209 fuel-oil tank		do	51–52 starboard	Do.
A-210 fuel-oil tank		do	54–55 port	Do.
A-113 cofferdam		do	54–55 starboard	Do.
B-103 fresh-water tank	B-101	Boiler room	63–64 starboard	¼-inch pet cocks.
B-104 fresh-water tank	B-101	do	63–64 port	Do.
C-101 reserve feed water	C-102	Machinery space	99–100 starboard	1½-inch gate valve.
D-101 fuel-oil tank		Main	133–134 port	Deck plate.
D-102 fuel-oil tank		do	do	Do.
D-103 fuel-oil tank		do	133–134 starboard	Do.
D-201 fuel-oil tank		do	134–135 port	Do.
D-202 fuel-oil tank		do	do	Do.

[1] For arrangement of tubes to compartments A–107, A–108, A–109, and A–110 on Destroyers 261–295, see plate No. 10.

MACHINERY.

(A) ENGINES.

The high-pressure and intermediate-pressure turbines, Curtis type, one in each engine room, are rranged in tandem, and connected directly to the outboard pinion of each reduction gear, and the low-pressure and astern turbines, arranged in one casing, and connected directly to the inboard pinions, both inboard and outboard pinions, in one casing, driving one main gear which is coupled directly to its respective line shaft.

The high-pressure turbine contains seven wheels on the rotor shaft, the wheels being separated from each other by diaphragms containing nozzles and forming seven separate compartments or stages.

The first stage wheel contains two rows of buckets and each of the other stage wheels one row.

The intermediate-pressure turbine contains six wheels on the rotor shaft with diaphragms between, forming six stages, the wheels each containing one row of buckets.

The low-pressure turbine and astern turbine in one casing contains seven wheels on the rotor shaft, five of which are for ahead and two for astern conditions.

Diaphragms containing nozzles are fitted in the casing, forming five ahead and two backing stages, the backing stages occupying the forward end of the casing.

There are two rows of buckets on each of the backing wheels and one row on each of the ahead wheels.

(B) PROPELLERS AND SHAFTS.

Diameter of propeller shafting	11½ inches.
Diameter of line shafting	11½ inches.
Diameter of axial hole in shafting	7½ inches.
Number of propellers	2.
Number of blades, each propeller (cast solid)	3.
Diameter of propellers (designed)	9 feet.
Pitch of propellers, fixed (designed)	9 feet 11 inches.
Ratio of diameter to pitch (designed) $=\frac{D}{P}=$	908.
Area, projected (designed) D	37.8 square feet.
Area, helicoidal (designed)	44.9 square feet.
Area, disc (designed)	63.62 square feet.
Lower tip of blades below bottom of keel	18½ inches.
Tips of blade below D. W. L.	10 feet 10½ inches.
Material of propellers	Manganese bronze.

Starboard propeller is right hand.
Port propeller is left hand.

(C) BOILERS.

Kind of boiler (oil burning)	Yarrow water tube.
Number (2 in each boiler room)	4.
Designed working pressure	265 pounds.
Heating surface, each boiler	6,885 square feet.
Cubical contents of combustion chamber, each boiler	800 cubic feet.
Diameter of main steam pipes	10½ inches.
Diameter of steam pipe from each boiler	8 inches.
Number of oil burners, each boiler	12 feet.
Number of furnaces, each boiler	1.
Smokepipes, height above base line	38 feet 5 inches.
Number of smokepipes	4.
Area of section through one smokepipe	17.73 square feet.