

RESTRICTED

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SERIAL NO. 35

GENERAL INFORMATION

DESTROYER NUMBER 384	U. S. S. DUNLAP
DESTROYER NUMBER 385	U. S. S. FANNING

Information relative to construction and equipment and a description of electrical and other auxiliaries under the cognizance of the Bureau of Construction and Repair, Navy Department, Washington, D. C.

**RETURN TO
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Office of
Superintending Constructor, U.S.N.
United Shipbuilding & Dry Dock Corp.
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SECTION A-1

GENERAL

BASES OF HULL MEASUREMENTS

THE DESIGNER'S WATERLINE (D.W.L.) IS THE NORMAL WATERLINE, NAMELY, THAT WHICH CORRESPONDS TO DESIGNED NORMAL LOAD AND DRAFT. This waterline is parallel to the base line, and is at draft 10'8-1/4".

THE FORWARD PERPENDICULAR (F.P.) is located at the extreme forward end of the designer's waterline.

THE AFTER PERPENDICULAR (A.P.) is located at the extreme after end of the designer's waterline.

THE MIDDLE PERPENDICULAR (M.P.) is located midway between the forward and after perpendiculars.

THE MOLDED BASE LINE (B.L.) is located 3/4" above the bottom of the midship portion of the keel.

DRAFTS are measured from the bottom of the midship portion of the keel extended forward and aft.

PROJECTIONS BELOW BOTTOM OF KEEL

Description	Projection Below Keel	Frame	Location From $\angle$	Side.
Propeller	4'0-3/4"	181	8'6"	Port
Propeller	4'0-3/4"	181	8'6"	Stbd.
Rudder	0	183-190	on $\angle$	
Rotating Super-sonic Transceiver	* See note Below	27	17"	Port & Stbd.

*NOTE: $\angle$ of Projector, when in operating position, is 1'3-5/16" below bottom of keel.

PRINCIPAL DIMENSIONS OF HULL

	DD384	DD385
Length overall	341'2-3/8"	341'1-5/8"
Length between perpendiculars (length on D.W.L.)	333'10-3/4"	333'-10"
Extension of vessel forward of F.P.	5'0-1/4"	5'0-1/4"
Extension of vessel aft of A.P.	2'3-3/8"	2'3-3/8"
Midship section (at M.P.) aft of Fr.#95	9"	9"
Breadth, molded, maximum, at D.W.L.	35'5-7/16"	35'5-7/16"

SECTION A-1 (Cont'd.)

Breadth, outside of plating, maximum, at D.W.L. .	35'0-3/16"
Depth, molded, at M.P.(9" aft of Fr. #95) at side	19'7-7/8"
Freeboard at bow	21'4-3/4"
Freeboard at stern	10'7-3/4"
Displacement, standard (designed)	1500 tons
Displacement, to D.W.L.	1715 tons
Displacement, trial	1725 tons

FRAME SPACING

Frames are numbered from 0 at the forward perpendicular to 191 which is fifteen inches forward of the after perpendicular.

Complete transverse frames do not exist at all of the intermediate numbered locations as the principal framing of this vessel is longitudinal.

Two part frames in the forward overhang are designated as "A" and "B", and are respectively 21" and 3'6" forward of the forward perpendicular.

Frame spacing is various, as follows:

Extent	Space Between Successive Frames
From F.P. to Frame #107	21"
From Frame #107 to Frame #111	22-1/2"
From Frame #111 to Frame #119	21-3/8"
From Frame #119 to Frame #123	21"
From Frame #123 to Frame #131	19-7/8"
From Frame #131 to Frame #179	21"
From Frame #179 to Frame #191	19-1/2"

CALCULATED DATA AT DESIGN DRAFT 10 FOOT 8-1/4 INCH WATERLINE

Tons per inch immersion	20.54
Area of water plane	8630 sq. ft.
C.G. of water plane aft of Fr. #95	19.69 ft.
Moment to change trim one inch	390 ft. tons
C.B. above bottom of keel	6.58 ft.
C.B. aft of Fr. #95	5.22 ft.
Transverse metacenter above C.B.	11.05 ft.
Longitudinal metacenter above C.B.	910 ft.
Area of greatest section (No. 11)	300 sq. ft.
Wetted surface	13640 sq. ft.

SECTION A-1 (Cont'd.)

CALCULATED DATA AT DESIGN DRAFT - 10'8-1/4" WATERLINE (Cont'd.)

Ratio, length between perpendiculars to beam, molded	9.54
Block Coefficient *	.4812
Prismatic Coefficient *	.6001
Midship Section Coefficient *	.8018
Water Plane Coefficient *	.7382

* Note: Coefficients of fineness are calculated to outside of mean thickness of plating.

For data on stability see "Booklet of Inclining Experiment Data" and "Damage Control Book".

APPROXIMATE CAPACITIES

Oil fuel and Diesel oil (normal load)	200.0 tons
Oil fuel - full load (95% Cap.)	513.0 tons
Diesel Oil - full load (95% Cap.)	19.2 tons
Potable water	28.0 tons
Reserve feed water	58.2 tons

HEIGHTS ABOVE DESIGN DRAFT - 10'8-1/4" WATERLINE

Main Battery

(℄ of gun trunnions 73.5" above top of foundation)

DD384 -DD385

5 inch gun number 1	25'11"
5 inch gun number 2	33'2-1/2"
5 inch gun number 3	23'5-1/4"
5 inch gun number 4	23'5-1/4"
5 inch gun number 5	16'0-7/8"

Secondary Battery

(℄ of gun 57" above top of foundation)

0.50 inch gun number 1	30'8-1/16"
0.50 inch gun number 2	30'8-1/16"
0.50 inch gun number 3	29'8-3/8"
0.50 inch gun number 4	29'8-3/8"

Torpedo Tubes

(℄ of tubes 30.6" above top of foundation)

Quadruple mount number 1	19'8-1/2"
Quadruple mount number 2	12'4-3/4"
Quadruple mount number 3	12'4-3/4"

SECTION A-1 (Cont'd.)

HEIGHTS ABOVE DESIGN DRAFT - 10'8-1/4" WATERLINE (Cont'd.)

Battery Control and Observation Features

DD 384 & DD 385

Center - 5" gun director (Top of pilot House)	51'5-7/8"
Center-2-1/2 meter rangefinders (Top of pilot house)	46'8-5/8"
Center - port torpedo director (Navigating bridge)	41'4-1/4"
Center-starboard torpedo director (Navigating bridge)	41'4-3/8"
Center-port 12" searchlight (Top of pilot house)	47'10-11/16"
Center-starboard 12" searchlight (Top of pilot house)	48'1-9/16"
Center-port 24" searchlight (Top of pilot house)	47'0-1/16"
Center-starboard 24" searchlight (Top of pilot house)	46'10-11/16"
Center-36" searchlight (Searchlight operators platform)	37'6-11/16"

Navigation and Signalling Features

Top of flag and pennant staff cap on pole mast	99'4-1/2"
Highest point of fixed portion of pole mast	94'3-1/2"
Signal yard on pole mast (To $\angle$ of yard)	87'10-1/2"
Center of truck light on pole mast	94'11-1/2"
Center of range light	68'8-7/8"
Center of masthead light	53'8-7/8"
Center of towing light	47'10-3/8"
Center of side lights (port and starboard)	30'10-1/8"
Center of speed light (aft end of gun crew shelter)	27'0-3/4"

Decks, Platforms and Bridges Upper side of plating at $\angle$ of ship.

Second Platform at Frame 1	1'5-3/8" below D.W.L.
Second Platform at Frame 48	2'11-15/16" " "
First Platform at F.P.	4'6-3/4" above D.W.L.
First Platform at Frame 48	3'0-3/8" " "
First Platform at Frame 144	1'9-3/8" " "
First Platform at A.P.	2'7-5/16" " "
Main Deck at F.P.	12'6-15/16" " "
Main Deck at Frame 61	10'7-7/8" " "
Main Deck at Frame 100	9'11-7/8" " "

SECTION A-1 (Cont'd.)

HEIGHT ABOVE DESIGN DRAFT - 10'8-1/4" WATERLINE (Cont'd.)

Decks, Platforms and Bridges

Upper side of plating at $\varnothing$ of ship. (Cont'd.)

		DD 384 & DD 385
Main Deck at Frame 144	9'9-9/16"	above D.W.L.
Main Deck at A.P.	10'7-1/4"	" "
Forecastle deck at F.P.	21'1-3/16"	" "
Forecastle deck at Frame 68	18'0-1/4"	" "
Top of after deck house at Frame 159	17'3-5/8"	" "
Superstructure deck at Frame 68	26'0-5/8"	" "
Navigating bridge at Frame 68	35'6-5/8"	" "
Top of pilot house at Frame 68	43'1-5/8"	" "

MISCELLANEOUS DATA

	DD 384 & DD 385
Pole mast (F.P. to $\varnothing$ of mast on main deck)	119'6"
Length of signal yard (Between speed cone eyes)	21'6"
Top of For'd. Smoke Stack (at $\varnothing$ of same) above D.W.L.	45'8-1/4"
Top of Aft Smoke Stack (at $\varnothing$ of same) above D.W.L.	43'10-5/16"
Area of Rudder (projected)	84 sq. ft.
Inclination of propeller shafts (Vertical - down and aft)	20°-56'-54"
Inclination of propeller shafts (Horizontal - out and aft)	00°-6'-32"

BENCH MARKS

Bench marks for the periodic checking and alignment of navigational and ordnance equipment are provided, on suitably inscribed label plates fitted at the bases of the respective units, as follows:-

Item	No. of Plates	Inscrip-tion	Deck	Frame	Side
5" Gun #1	4	C.L.	Forecastle	30	$\varnothing$ of ship
5" Gun #2	4	C.L.	Super-structure	41	$\varnothing$ of ship
5" Gun #3	4	C.L.	Top of Aft Deck House	15" Aft of Fr.123	$\varnothing$ of ship
5" Gun #4	4	C.L.	Top of Aft Deck House	18" Aft of Fr.149	$\varnothing$ of ship

SECTION A-1 (Cont'd.)

BENCH MARKS (Cont'd.)

Item	No. of Plates	Inscrip- -tion	Deck	Frame	Side
5" Gun #5	4	C.L.	Main Deck	18" Aft of Fr. 165	℄ of ship
5" Gun Direc- tor.	4	C.L.	Top of Pi- lot House	7-3/8" Aft of Fr. 63	℄ of ship
50" Cal. Mach. Gun #1.	4	C.L.	Super- structure.	10 1/2" Aft of Fr. 54	6'9" to Stbd.
50" Cal. Mach. Gun #2	4	C.L.	Super- structure	10 1/2" Aft of Fr. 54	6'9" to Port
50" Cal. Mach. Gun #3	4	C.L.	Top of Gun Crew Shlt.	18" Aft of Fr. 140	3'9" to Stbd.
50" Cal. Mach. Gun #4	4	C.L.	Top of Gun Crew Shlt.	18" Aft of Fr. 140	3'9" to Port
Torpedo Tubes Mount #1.	4	C.L.	Top of Dk. Gear Lkr.	5 1/4" Aft of Fr. 89	℄ of ship
Torpedo Tubes Mount #2.	4	C.L.	Main Deck	15" Aft of Fr. 111	13'1" to Stbd.
Torpedo Tubes Mount #3.	4	C.L.	Main Deck	15" Aft of Fr. 111	13'1" to Port
Stbd. Torpedo Director.	4	C.L.	Ped. Plat. on Nav. Br.	10 1/2" Aft of Fr. 66	12'0 1/2" to Stbd.
Port Torpedo Director.	4	C.L.	Ped. Plat. on Nav. Br.	10 1/2" Aft of Fr. 66	12'0 1/2" to Port
Stbd. Range- finder.	4	C.L.	Top of Pi- lot House	7-3/8" Aft of Fr. 63	12'6" to Stbd.
Port Range- finder.	4	C.L.	Top of Pi- lot House	7-3/8" Aft of Fr. 61	12'6" to Port
Stbd. Pelorus	4	C.L.	Ped. Plat. on Nav. Br.	3 1/2" Aft of Fr. 63	12'11 1/2" to Stbd.
Port Pelorus	4	C.L.	Ped. Plat. on Nav. Br.	3 1/2" Aft of Fr. 63	12'11 1/2" to Port
Ford. Binnacle	2	C.L.	Nav. Bridge	8" Aft of Fr. 58	℄ of ship
After Binnacle	2	C.L.	Top of Gun Crew Shlt.	On Fr. 132	℄ of ship
Master Gyro Compass.	2	C.L.	2nd Plat- form.	16" Aft of Fr. 42	5'7" to Stbd.

SECTION A-1 (Cont'd.)

CENTRELINE AND WATERLINE PLATES

For the ready establishment of the horizontal and vertical centrelines of the ship, the intersection of these lines with various waterlines is marked, on suitably inscribed label plates, fitted as follows:

No. of Plates	Inscription	Compt.	Frame	Deck	Remarks
1	℄ - 6' W.L.	A-1-W	Bhd.6	Hold	On Forward Side of Bhd. Plate
1	℄ - 20' W.L.	A-1-W	Bhd.6	First Plat.	On For'd. Side of Bhd. Plate
1	℄ - 30' W.L.	A-102-E	Bhd.6	Main Deck	On Aft side of Bhd. Plate
1	℄ - 6' W.L.	A-401-W	Bhd.14	Hold	For'd. side on Stiffener
1	℄ - 6' W.L.	A-403-C	Bhd.25	Hold	On Aft side of Bhd. Plate
1	℄ - 12' W.L.	A-403-C	Bhd.25	2nd Plat.	On Aft side of Bhd. Plate
1	℄ - 25' W.L.	A-104-M	Bhd.25	Main Deck	On Aft side of Bhd. Plate
1	℄ - 20' W.L.	A-203-L	Bhd.36	First Plat.	On For'd. side of Bhd. Plate
1	℄ - 36' W.L.	Weather Deck	6"Aft of Fr. 37	Focsle. Deck	On For'd. side of Dk.Hs.Plate
1	℄ - 12' W.L.	A-305-3-CE	Bhd.48	2nd Plat.	On For'd. side of Bhd. Plate
1	℄ - 18' W.L.	A-204-L	Bhd.48	First Plat.	On For'd. side of Bhd. Plate
1	℄ - 6' W.L.	A-407-M	Bhd.49	Hold	On For'd. side of Bhd. Plate
1	℄ - 42' W.L.	A-0201-L	15" Aft of Fr.62	Super. Deck	On For'd. side of Gun Dir.Tr.
1	℄ - 50' W.L.	A-111-T	15" Aft of Fr.62	Nav. Bridge	On For'd. side of Gun Dir.Tr.
1	℄ - 16' W.L.	B-1-1	Bhd.68	#1 Blr Room	On aft side of Bhd. Plate
1	℄ - 34' W.L.	A-0105-L	Fr.69-Fr.70	Focsle. Deck	On Aft side of Mast
1	℄ - 50' W.L.	Weather Deck	Fr.69-Fr.70	Nav. Bridge	On Forward side of Mast
1	℄ - 16' W.L.	B-2-1	Bhd.87½	#2 Blr. Room	Aft side on Stiffener
1	℄ - 16' W.L.	C-1	Bhd.107	Mach. Space	On Aft side of Bhd. Plate

SECTION A-1 (Cont'd.)

CENTRELINE AND WATERLINE PLATES (Cont'd.)

No. of Plates	Inscription	Compt.	Frame	Deck	Remarks
1	℄ - 16' W.L.	D-206-AL	Bhd.135	First Plat.	On Aft side of Bhd. plate
1	℄ - 10' W.L.	D-301-M	Bhd.143	Second Plat.	on For'd. side of Bhd. Plate
1	℄ - 18' W.L.	D-208-L	Bhd.151	First Plat.	For'd. side on Stiffener
1	℄ - 18' W.L.	D-209-L	Bhd.167	First Plat.	For'd. side on Bhd. Plate
1	℄ - 18' W.L.	D-210-L	Bhd.179	First Plat.	On For'd. side of Bhd. Plate
1	℄ - 12' W.L.	D-310-A	Bhd.184	Second Plat.	For'd. Side on Stiffener

PROPELLING MACHINERY

BOILERS

No.	Manufacturer	Type	Designed Working Pressure
4	Foster Wheeler Corp.	Water-Tube	400 lbs. at Superheater Outlet

TURBINES

No. - 2 Units (H.P. - L.P. - Cruising and Astern Turbines)
 Type -Impulse
 Manufacturer - General Electric Company,

TURBINE CHARACTERISTICS

Turbine	No. of Stages	Turbine R.P.M. (Max.)	Propeller R.P.M. (Max.)
H.P.	1 double - 11 single	5850	400
L.P.	2 rows of 7 single stages arrg'd. for double steam flow.	4926	400
Cruising	1 double - 7 single	4493	171
Astern	1 double Velocity stage in L.P. Casing	-	-

SECTION A-1 (Cont'd.)

PROPELLING MACHINERY (Cont'd.)

PROPELLERS

Ship	Manufacturer
DD 384	2 by Morse Drydock Co.
DD 385	1 by Morse Drydock Co., 1 by Hyde Windlass Co.

PROPELLER CHARACTERISTICS

No.	Type	No. of Blades	Diam.	Pitch	Shaft Diam.	Designed R.P.M.	Designed Shaft H.P.
2	Solid	3	11'3"	12'4 $\frac{1}{2}$ "	15 $\frac{1}{2}$ " Inside Sleeve	366	21400 per shaft

Complete information and instructions concerning the propelling machinery may be obtained from the booklet, "Main Propulsion Turbines and Gears", which was furnished the vessel by the contractor in accordance with the requirements of the General Specifications for Machinery.

STABILITY and BALLASTING

Vessel when light, namely condition II of the Inclining Experiment, has a reduced displacement and righting arm. The nearest approach to this condition in service, with the vessel intact, is obtained when fuel, reserve feed water, ammunition and stores are practically expended. This condition is aggravated if topside load is increased for any reason. As a general guide under such conditions, the policy should be to use fuel and water from the lowest tanks last. Further information regarding ballasting may be obtained from the "Booklet of Inclining Experiment Data" and the "Damage Control Book".

SECTION A-5 (Cont'd.)

ORDNANCE AND ORDNANCE OUTFIT (Cont'd.)

TORPEDO TUBES

Mount No.	No. of Tubes	Dia- meter Torpedo	Length Torpedo	Location			Train	
				Deck	Frame	Side	Fwd.	Aft
1	Quad- ruple	21"	22' - 7-1/16"	Top Deck Gear Lkr.	89-90	On C.L.	45°	45°
2	Quad- ruple	21"	Ditto	Main	111-112	Stbd.	60°	45°
3	Quad- ruple	21"	Ditto	Main	111-112	Port	60°	45°

SMALL CALIBER GUNS

Quan.	Cal.	Name	Stowage Location			Remarks
			Deck	Frame	Side	
3	1 Pdr.	Sub caliber gun	Focsle.	59	Port	Stowed in passage