

RESTRICTED
CONFIDENTIAL

SERIAL NO. 39

GENERAL INFORMATION

DESTROYER NUMBER 409 U. S. S. SIMS

DESTROYER NUMBER 410 U. S. S. HUGHES

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

Office Of
Supervisor of Shipbuilding, U.S.N.
Bath Iron Works Corporation,
Bath, Maine

1940

BUREAU OF SHIPS
NATIONAL ARCHIVES FILES

50759

SECTION A-1

GENERAL

BASES OF HULL MEASUREMENTS

DESIGNER'S WATERLINE (D.W.L.) IS THE WATERLINE WHICH CORRESPONDS, APPROXIMATELY, TO THE DESIGNED NORMAL LOAD AND DRAFT. THE LENGTH BETWEEN PERPENDICULARS IS OBTAINED FROM THE DESIGNER'S WATERLINE.

THE FORWARD PERPENDICULAR (F.P.) is located at the intersection of the designer's waterline and the outline of the stem.

THE AFTER PERPENDICULAR (A.P.) is located at the intersection of the designer's waterline and the outline of the stern.

THE MIDSHIP PERPENDICULAR (M.P.) is located 12" forward of Frame 98.

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

DRAFTS are measured from base line for draft marks as per plan No. 170-232-23 - Basic C&R No. 252589T.

PROJECTIONS: BELOW BOTTOM OF KEEL

Description	Projection		Location	
	Below M.B.L.	Frame	From $\varnothing$	Side
Propeller	4' 2-1/8"	185	8' 6"	Port
Propeller	4' 2-1/8"	185	8' 6"	Stbd.
Rudder	0	188-193	On $\varnothing$	
Rotating Supersonic Transceiver	See Note Below	15" Ford. of 25		Port & Stbd.

Note: $\varnothing$ of Projector, when in operating position, is 19-1/4" below bottom of keel.

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GENERAL (Cont'd.)

PRINCIPAL DIMENSIONS OF HULL

	<u>DD409</u>	<u>DD410</u>
Length overall	348' 1-3/4"	348' 2-1/16"
Length between perpendiculars =(length on D.W.L.)	340' 10-1/8"	340' 10-7/16"
Extension of vessel forward of F.P.	5' 0-1/4"	5' 0"
Extension of vessel aft of A.P.	2' 3-3/8"	2' 3-5/8"
Breadth, molded, maximum	36' 0"	36' 0"
Breadth, outside of plating maximum	36' 1-1/8"	36' 1-1/8"
Depth, molded, at M.P. (12" fwd. of Fr. 98)	19' 7-7/8"	19' 8"
Freeboard at bow to D.W.L.	21' 4-1/2"	21' 4-3/4"
Freeboard at stern to D.W.L.	10' 7-1/2"	10' 7-1/2"
Displacement, standard (designed)	1570 Tons	1570 Tons
Displacement, to D.W.L.	1770 Tons	1770 Tons
Displacement, trial (Bu.Est.)	1960.5 Tons	1960.5 Tons

FRAME SPACING

Frames are numbered from 0 at the forward perpendicular to 194, which is 18" Fwd. of after perpendicular.

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

Part frames in the forward overhang are designated as "A" and "B", and are spaced 21" forward of the forward perpendicular.

Frame spacing is 21" throughout.

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GENERAL (Cont'd.)

CALCULATED DATA AT DESIGN DRAFT 10 FOOT 8-1/4 INCH WATERLINE (BASED ON DESIGNED DIMENSIONS)

Tons per inch immersion	21.35 Tons
Area of water plane	8969 Sq.Ft.
C.G. of water plane aft of frame 98	18.25 Feet
Moment to change trim one inch	411 Ft.Tons
C.B. above bottom of keel	6.57 Feet
C.B. aft of frame 98	3.56 Feet
Transverse metacenter above C.B.	11.46 Feet
Longitudinal Metacenter above C.B.	949.4 Feet
Wetted Surface	13815 Sq.Ft.
Ratio, length between perpendiculars to beam, maximum	9.48

Note: For data on stability, see Booklet of Inclining
Experiment Data and the Damage Control Book.

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GENERAL (Cont'd.)

APPROXIMATE CAPACITIES

Oil fuel and diesel oil - normal load	322.25 Tons
Oil fuel - full load (95% capacity)	451.39 Tons
Reserve fuel oil tank (95% capacity)	14.60 Tons
Diesel oil - full load (95% capacity)	36.89 Tons
Potable water (full capacity)	32.96 Tons
Reserve feed water (full capacity)	53.11 Tons

MISCELLANEOUS DATA

Inclination of propeller shafts	
Vertical - down and aft	(Stbd. 2 Deg. 31 Min. 24 Sec. (Port 3 Deg. 16 Min. 34 Sec.
Horizontal -	0 Deg.
Area of rudder (projected)	86 Sq. Ft.
Length of signal yard	21'-0"

HEIGHTS ABOVE DESIGN DRAFT 10 FOOT 8-1/4 INCH WATERLINE

MAIN BATTERY	<u>DD409</u>	<u>DD410</u>
5" Gun Mount No. 1	26' 2-9/16"	26' 1-1/4"
5" Gun Mount No. 2	33' 2"	33' 1-1/2"
5" Gun Mount No. 3	24' 3-3/8"	24' 2-5/8"
5" Gun Mount No. 4	24' 3-3/8"	24' 2-9/16"
5" Gun Mount No. 5	16' 11-3/8"	16' 10-3/4"

SECONDARY BATTERY

.50 Cal. A.A. Mach. Guns		
For'd. - Port & Stbd	30' 10"	30' 8-15/16"
Aft - Port & Stbd.	29' 8"	29' 7-3/16"

TORPEDO TUBES

Quadruple Mount No. 1 (Ford.)	20' 5-1/4"	20' 5-1/8"
Quadruple Mount No. 2 (Stbd.)	12' 3-1/8"	12' 3-1/8"
Quadruple Mount No. 3 (Port)	12' 3-1/8"	12' 3-1/8"

SECTION A-1

GENERAL (Cont'd.)

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

BATTERY CONTROL AND OBSERVATION FEATURES

	<u>DD409</u>	<u>DD410</u>
Centerline range finder (ford.)	46' 10-1/2"	46' 11"
Centerline 5" Gun Director (Ø Range Finder)	54' 11-7/16"	54' 11-5/16"
Centerline Torpedo Director (port)	41' 6-3/8"	41' 4-5/8"
(stbd.)	41' 7-3/8"	41' 4-5/8"
Centerline 12" Searchlight (port)	42' 2-3/16"	42' 1-1/8"
(stbd.)	42' 2-1/4"	42' 1-1/16"
Centerline 24" Searchlight (port)	46' 8-3/4"	46' 8-13/16"
(stbd.)	46' 8-7/8"	46' 8-13/16"
Centerline 36" Searchlight	29' 4-1/4"	29' 4-1/4"

NAVIGATION AND SIGNALING FEATURES

Top of flag pennant staff	88' 4-7/8"	88' 1"
Centerline of signal yard	75' 8-1/4"	75' 7-1/4"
Center of truck light	83' 1-3/8"	83' 1-1/2"
Center of range light	72' 9-7/8"	73' 0-3/4"
Center of speed light	34' 7-1/2"	34' 9-1/8"
Center of towing light	54' 5-5/8"	48' 3-1/2"

MISCELLANEOUS

Top of smoke stack - At athwartship Centerline	50' 1-1/2"	47' 2-1/8"
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SECTION A-1

GENERAL (Cont'd.)

DECKS, PLATFORMS, AND BRIDGES (UPPER SIDE OF PLATING AT $\frac{1}{2}$ OF SHIP)

	<u>DD409</u>	<u>DD410</u>
First Platform		
Frame 67	3' 4-3/8"	3' 4-1/2"
Main Deck		
Frame 67	10' 4"	10' 4-1/8"
Forecastle Deck		
Frame 67	17' 11"	17' 11-5/8"
Superstructure Deck		
Frame 67	25' 6-5/16"	25' 5-1/4"
Navigating Bridge Deck		
Frame 67	35' 3-1/8"	35' 2"
Pilot house top		
Frame 67	42' 9-1/8"	42' 7-3/4"
Midship Deck House Top		
Frame 103	17' 3-1/4"	17' 2-7/8"
Aft Deck House Top		
Frame 147	17' 3-7/8"	17' 2-3/8"
Gun Crew Shelter Top		
Frame 147	24' 10-1/2"	24' 8-3/4"

SECTION A-1

GENERAL (Cont'd.)

PROPELLING MACHINERY

DD409 - U.S.S. SIMS

BOILERS

			Manu- facturer	Type	Designed Working Pressure
#1 Boiler					
Steam Drum -	Z23640	Babcock	Oil Fired	665#	
Sat. Water Drum -	Z23650	& Wilcox	Express		
S.H. Water Drum -	Z23651		with Super- heater & Economizer		
#2 Boiler					
Steam Drum -	Z23637	Babcock	Oil Fired	665#	
Sat. Water Drum -	Z23644	& Wilcox	Express		
S.H. Water Drum -	Z23645		with Super- heater & Economizer		
#3 Boiler					
Steam Drum -	Z23646	Babcock	Oil Fired	665#	
Sat. Water Drum -	Z23653	& Wilcox	Express		
S.H. Water Drum -	Z23654		with Super- heater & Economizer		

TURBINES

Number Stbd.	Manu- facturer	Type	No. Stages of Expan- sion Per Turbine	Designed R.P.M.
I.P. 1-A-6642-9	Westing- house E. & M. Co.	Impulse Reaction Cross Compound	2 Row Im- pulse 7 Rateau Stages	9871
H.P. 1-A-6641-9		with H.P. Turbine for	2 Row Im- pulse 15 Reaction	5982
L.P. 1-A-6643-9		Cruising	8 Double Flow Reaction	4935
Astern 1-A-6643-9			2 Row Impulse at each end of L.P. Turbine	2810

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GENERAL (Cont'd.)

PROPELLING MACHINERY (Cont'd.)

DD409 - U.S.S. SIMS (Cont'd.)

TURBINES (Cont'd.)

Number Port	Manu- facturer	Type	No. Stages of Expan- sion Per Turbine	Designed R.P.M.
I.P. 1-A-6642-10	Westing- house E. & M. Co.	Impulse Reaction Cross Compound	2 Row Im- pulse 7 Rateau Stages	9871
H.P. 1-A-6641-10		with H.P. Turbine for	2 Row Im- pulse 15 Reaction	5982
L.P. 1-A-6643-10		Cruising	8 Double Flow Reaction	4935
Astern 1-A-6643-10			2 Row Impulse at each end of L.P. Turbine	2810

NOTE: The astern elements assembled at each end of the L.P. Turbine and enclosed in the same casing, have the same Serial Number as the L.P. Turbine.

SECTION A-1

GENERAL (Cont'd.)

PROPELLING MACHINERY (Cont'd.)

DD410 - U.S.S. HUGHES

BOILERS

		Manu- facturer	Type	Designed Working Pressure
#1 Boiler				
Steam Drum -	Z23688	Babcock	Oil Fired	665#
Sat. Water Drum -	Z23689	& Wilcox	Express	
S.H. Water Drum -	Z23690		with Super- heater & Economizer	
#2 Boiler				
Steam Drum -	Z23691	Babcock	Oil Fired	665#
Sat. Water Drum -	Z23692	& Wilcox	Express	
S.H. Water Drum -	Z23693		with Super- heater & Economizer	
#3 Boiler				
Steam Drum -	Z23694	Babcock	Oil Fired	665#
Sat. Water Drum -	Z23695	& Wilcox	Express	
S.H. Water Drum -	Z23696		with Super- heater & Economizer	

TURBINES

Number Stbd.	Manu- facturer	Type	No. Stages of Expan- sion Per Turbine	Designed R.P.M.
I.P. 1-A-6642-11	Westing- house E. & M. Co.	Impulse Reaction Cross Compound	2 Row Im- pulse 7 Rateau Stages	9871
H.P. 1-A-6641-11		with H.P. Turbine for	2 Row Im- pulse 15 Reaction	5982
L.P. 1-A-6643-11		Cruising	8 Double Flow Reaction	4935
Astern 1-A-6643-11			2 Row Impulse at each end of L.P. Turbine	2810

SECTION A-1

GENERAL (Cont'd.)

PROPELLING MACHINERY (Cont'd.)

DD410 - U.S.S. HUGHES (Cont'd.)

TURBINES (Cont'd.)

Number Port	Manu- facturer	Type	No. Stages of Expan- sion Per Turbine	Designed R.P.M.
I.P. 1-A-6642-12	Westing- house E. & M. Co.	Impulse Reaction Cross Compound	2 Row Im- pulse 7 Rateau Stages	9871
H.P. 1-A-6641-12		with H.P. Turbine for	2 Row Im- pulse 15 Reaction	5982
L.P. 1-A-6643-12		Cruising	8 Double Flow Reaction	4935
Astern 1-A-6643-12			2 Row Impulse at each end of L.P. Turbine	2810

NOTE: The astern elements assembled at each end of the L.P. Turbine and enclosed in the same casing, have the same Serial Number as the L.P. Turbine.

SECTION A-1

GENERAL (Cont'd.)

PROPELLING MACHINERY (Cont'd.)

PROPELLERS

No.	Type	Manu- facturer	No. Blades	Dia.	Pitch	Shaft Dia.	Des. RPM	Des. Shaft H.P.
2	Solid	Hyde Windlass Co.	3	11'- 5-3/4"	12'- 7-1/2"	15 1/4" Inside Sleeve	380	50,000 2- Shafts

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

BATTLE CONDITION

Information as to the procedure required to place the ship in Battle Condition is included in the "Damage Control Book".

SECTION A-5

ORDNANCE AND ORDNANCE OUTFIT

MAIN BATTERY

Gun No.	Bore	Cali-ber	Location			Ele-va-tion	De-pres-sion	Train
			Deck	Frame	Side			
1	5"	38	Forecastle	30	On ϕ	85°	15°	300°
2	5"	38	Superstruc-ture	43	On ϕ	85°	15°	300°
3	5"	38	Top of After Deck House	133	On ϕ	85°	15°	280°
4	5"	38	Top of After Deck House	154	On ϕ	85°	15°	300°
5	5"	38	Main	170	On ϕ	85°	15°	300°

A 5' loading machine, mark XIV Mod. I is located on the main deck, frame 122 on ϕ .

SECONDARY BATTERY (A.A. GUNS)

Gun No.	Bore	Cali-ber	Location			From ϕ of Ship	Ele-va-tion	De-pres-sion	Train
			Deck	Frame	Side				
1	.50"	63.8	Superstruc-ture	53	Stbd.	6'-3"	80°	15°	360°
2	.50"	63.8	Superstruc-ture	53	Port	6'-3"	80°	15°	360°
3	.50"	63.8	Top of After Upper Deck-house	142	Stbd.	5'-6"	80°	15°	360°
4	.50"	63.8	Top of After Upper Deck-house	142	Port	5'-6"	80°	15°	360°

The angle of train of the .50 A.A. Guns has been given as 360° since the train of these guns is limited to 180° each way by the hose of the cooling system, though it is otherwise unlimited.

SECTION A-5

ORDNANCE AND ORDNANCE OUTFIT (Cont'd.)

TORPEDO TUBES

Torpedo Tube Number	Diam- eter Torpedo	Length Torpedo	Location			Train	
			Deck	Frame	Side	Fwd.	Aft
1 Quad- ruple	21"	22'- 7-1/16"	Top of Work- shop	97	Ø	45°	45°
2 Quad- ruple	21"	Ditto	Top of Work- shop	115	Ø	45°	45°

SMALL CALIBER GUNS

Quan.	Cal.	Name	Stowage Location			Remarks
			Deck	Frame	Side	
1	1 Pdr.	Sub Caliber gun	Main	27	Port	Stowed Gun Foundation #1