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NM by *H. L. Murray* Date *3/16/64*

SERIAL NO.

GENERAL INFORMATION

DESTROYER NUMBER 364 U. S. S. MAHAN  
DESTROYER NUMBER 365 U. S. S. CUMMINGS

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.

Office of

Superintending Constructor, U.S.N.  
United Shipyards, Inc.,  
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1938  
BUREAU OF SHIPS  
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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 <u>Q</u>	Side
Propeller	4' 0-3/4"	181	8' 6"	Port
Propeller	4' 0-3/4"	181	8' 6"	Stbd.
Rudder	0	185-A.P.	on <u>Q</u>	
Rotating Supersonic Transceiver	See Note Below	27	17"	Port & Stbd.

Note: Q of Projector, when in operating position, is 23-1/4" below bottom of keel.

#### PRINCIPAL DIMENSIONS OF HULL

Length overall 341' 3-5/8"  
Length between perpendiculars (= length on D.W.L.) 334' 0"

## SECTION A-1

## GENERAL (Cont'd.)

## PRINCIPAL DIMENSIONS OF HULL (Cont'd.)

Extension of vessel forward of F.P.	5' 0-1/4"
Extension of vessel aft of A.P.	2' 3-5/8"
Midship section (at M.P.) aft of Fr. #95	9"
Breadth, molded, maximum, at D.W.L.	34' 11-3/4"
Breadth, outside of plating, maximum, at D.W.L.	35' 0-3/16"
Depth, molded, at M.P. (9" aft of fr. #95)	19' 7-7/8"
Freeboard at bow (F.P.)	21' 0-3/4"
Freeboard at stern (A.P.)	10' 5"
Displacement, standard (designed)	1500 tons
Displacement, to D.W.L.	1715 tons
Displacement, trial	1726 tons

## FRAME SPACING

Frames are numbered from 0 at the forward perpendicular to 190, which is eighteen 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 #190	21"

## SECTION A-1

## GENERAL (Cont'd.)

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 frame #95	19.69 Feet
Moment to change trim one inch	390 Ft. Tons
C.B. above bottom of keel	6.58 Feet
C.B. aft of frame #95	5.11 Feet
Transverse metacenter above C.B.	10.99 Feet
Longitudinal metacenter above C.B.	905 Feet
Area of greatest section (No. 11)	300 Sq. Ft.
Wetted Surface	13600 Sq. Ft.
Ratio, Length between perpendiculars to beam, maximum	9.54
Block coefficient	.4812
Prismatic coefficient	.6001
Greatest section coefficient (No. 11)	.8018
Water plane coefficient	.7382

Note: Coefficient of fineness are with mean thickness of plating. For data on stability, see the "Booklet of Inclining Experiment Data", and the "Damage Control Book".

## SECTION A-1

## GENERAL (Cont'd.)

## APPROXIMATE CAPACITIES

Oil fuel and Diesel oil - normal load	204.6 tons
Oil fuel - full load	523.96 tons
Diesel oil - full load	19.23 tons
Potable water	27.99 tons
Reserve feed water	58.18 tons

## MISCELLANEOUS DATA

Inclination of propeller shafts	
Vertical - down and aft	2 Deg. 57 Min.
Horizontal - out and aft	0 Deg. 7 Min.
Area of rudder (Projected)	84 Sq. Ft.
Length of signal yard (between speed cone eyes)	20' 8-1/2"

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

MAIN BATTERY	DD364	DD365
5 inch gun number 1	27' 2"	27' 2"
5 inch gun number 2	34' 3-1/2"	34' 3-1/2"
5 inch gun number 3	23' 4-1/4"	23' 4-1/4"
5 inch gun number 4	23' 4-1/8"	23' 4-1/8"
5 inch gun number 5	16' 1-3/8"	16' 1-3/8"

## SECONDARY BATTERY

0.50 inch gun number 1	63' 3-1/2"	63' 3-7/16"
0.50 inch gun number 2	63' 3-1/2"	63' 3-7/16"
0.50 inch gun number 3	29' 5-5/16"	29' 5-5/16"
0.50 inch gun number 4	29' 5-5/16"	29' 5-5/16"

## TORPEDO TUBES

Quadruple mount number 1	12' 6"	12' 6"
Quadruple mount number 2	12' 6"	12' 6"
Quadruple mount number 3	18' 8-3/4"	18' 8-3/4"

## SECTION A-1

## GENERAL (Cont'd.)

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

MISCELLANEOUS	DD364	DD365
Top of forward smoke stack - Aft side at C/L	45' 5-3/8"	45' 5-3/8"
Top of after smoke stack - Aft side at C/L	43' 7-3/8"	43' 7-3/8"
BATTERY CONTROL AND OBSERVATION FEATURES	DD364	DD365
Centerline range finder (port) (stbd.)	46' 8-1/16" 46' 8-1/16"	46' 8-1/16" 46' 8-1/16"
Centerline 5" gun director	51' 4-15/16"	51' 4-15/16"
Centerline torpedo director (port) (stbd.)	41' 5-3/16" 41' 5-1/16"	41' 5-3/16" 41' 5-1/16"
Centerline 12 inch searchlight: Top of Pilot House (DD364 on Nav. Bridge.)	40' 11-3/4"	47' 10-13/16"
Centerline 24 inch searchlight on foretop (DD364 on Gun Dir- ector plat.)	47' 0-3/4"	62 8-1/4"
Centerline 36 inch searchlight on aft top	37' 2-1/2"	37' 2-1/2"
NAVIGATION AND SIGNALLING FEATURES	DD364	DD365
Top of flag and pennant staff cap foremast		99' 5-3/8"
Top of flag and pennant staff cap mainmast		79' 8-3/16"
Center of truck light on foremast	84' 4-1/4"	94' 11-7/16"
Center of truck light on mainmast		74' 0-7/8"
Signal yard on foremast to C/L of yard	77' 3-3/4"	87' 9-5/8"
Center of mast head light on foremast (DD364 on light pole, in position)		52' 11-1/2"
Center of range light on mainmast (DD364 on foremast)	74' 3-3/4"	72' 0-5/8"
Center of speed light, aft end of deck house	26' 11-7/8"	26' 11-7/8"
Center of towing light on foremast (DD364 on light pole)	46' 11-1/2"	63' 3"

## SECTION A-1

## GENERAL (Cont'd.)

HEIGHTS ABOVE DESIGN DRAFT 10 FOOT 8 1/4 INCH  
WATERLINE (Cont'd.)DECKS, PLATFORMS, AND BRIDGES  
(UPPER SIDE OF PLATING AT C/L OF SHIP)

	DD364	DD365
Second platform (level below design- ed draft)		
(Fr. #15)	1' 11-1/2"	1' 11-1/2"
(Fr. #48)	2' 11-7/8"	2' 11-7/8"
(Fr. #135)	6' 1-3/8"	6' 1-3/8"
(Fr. #151)	6' 1-3/8"	6' 1-3/8"
First platform at F.P.	4' 6-3/4"	4' 6-3/4"
First platform at frame #61	2' 8"	2' 8"
First platform at frame #144	1' 9-3/8"	1' 9-3/8"
First platform at A.P.	2' 7-5/16"	2' 7-5/16"
Main Deck at F.P.	12' 6-7/8"	12' 6-7/8"
Main Deck at frame #61	10' 7-7/8"	10' 7-7/8"
Main Deck at frame #100	9' 11-7/8"	9' 11-7/8"
Main Deck at frame #144	9' 9-1/2"	9' 9-1/2"
Main Deck at A.P.	10' 7-1/8"	10' 7-1/8"
Forecastle deck at F.P.	21' 1-1/8"	21' 1-1/8"
Forecastle deck at frame #68	18' 0-1/4"	18' 0-1/4"
Top of after deck house at frame #161 (Top of coaming 5-3/4" aft)	20' 9-1/2"	20' 9-1/2"
Top of Blast shield (Fr. #161)	20' 1-7/8"	20' 1-7/8"
Superstructure deck at frame #68	26' 0-5/8"	26' 0-5/8"
Navigating bridge at frame #68	35' 6-1/2"	35' 6-1/2"
Top of pilot house at frame #68	43' 1-1/2"	43' 1-1/2"

## SECTION A-1

## GENERAL (Cont'd.)

## PROPELLING MACHINERY

## BOILERS

<u>Item No.1</u>	<u>No.</u>	<u>Manufacturer</u>	<u>Type</u>	<u>Designed Working Pressure</u>
#1 Boiler (Steam Drum (R.H. Water Drum (L.H. Water Drum	1 1 1	Foster Wheeler Corporation New York, N.Y.	Express	465
#2 Boiler (Steam Drum (R.H. Water Drum (L.H. Water Drum	1 1 1	ditto	Express	465
#3 Boiler (Steam Drum (R.H. Water Drum (L.H. Water Drum	1 1 1	ditto	Express	465
#4 Boiler (Steam Drum (R.H. Water Drum (L.H. Water Drum	1 1 1	ditto	Express	465

## TURBINES

<u>Item No.2</u>	<u>No.</u>	<u>Manufacturer</u>	<u>No. of Stages or Expansion per Turbine</u>	<u>Designed R.P.M.</u>
Port (Cruising (H.P. (I.P.)	1 1 1	G.E. Co. ditto ditto	Eight Twelve Seven (double flow)	10510 5850 4930
Starboard (Cruising (H.P. (L.P.)	1 1 1	ditto ditto ditto	Eight Twelve Seven (double flow)	10510 5850 4930
Astern included inside the LP Casing		G.E. Co.	Velocity 1 Double	

## SECTION A-1

## GENERAL (Cont'd.)

## PROPELLING MACHINERY (Cont'd.)

THREE-FOURTHS DRAFTED

## PROPELLERS

No.	Type	Manu-fac-turer	Blades	Dia.	Pitch	Hollow Shaft Dia.	De-sign-ed R.P.M.	Des. Shaft H.P.
2	Solid	Hyde Wind-llass Co.	3	11'3"	12' 4-1/2"	15 $\frac{1}{4}$ " O.D. 10-5/8" I.D. 16-5/8" O.D. of Sleeve	400	52,000 2 Shafts

Complete information and instructions concerning the propelling machinery may be obtained from the "General Operating Instructions covering Special Features of Machinery Installation," which was furnished the vessel by the contractor in accordance with the requirements of the General Specifications for Machinery.

# SECTION A-1

## GENERAL (Cont'd.)

### 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. FOR FURTHER INFORMATION AS REGARDS BALLASTING, ATTENTION IS INVITED TO THE "BOOKLET OF INCLINING EXPERIMENT DATA" AND THE "DAMAGE CONTROL BOOK".

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## SECTION A-1

## BENCH MARKS. (Cont'd.)

Bench marks for the periodic checking and alingment 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	In-scrip-tion	Deck	Frame	Side
5" Gun #1	4	"C-L"	Gun Plat. 31'8" Above B.L.	10-1/2" aft of Fr. 26	2 of ship
5" Gun #2	4		Super-structure	6" aft of Fr. 41	2 of ship
5" Gun #3	4		Top of Aft Deck House	15" aft of Fr. 123	2 of ship
5" Gun #4	4		Top of Aft Deck House	18" aft of Fr. 149	2 of ship
5" Gun #5	4		Main Deck	18" aft of Fr. 165	2 of ship
5" Gun Director	4		Top of Pi- lot House	7-3/8" aft of Fr. 63	2 of ship
.50" Cal. Mach. Gun #1	4		Top of Gun CrewShelter	6" aft Fr. 52	5'-0" to Stbd.
.50" Cal. Mach. Gun #2	4		Top of Gun CrewShelter	6" Aft Fr. 52	5'-0" to Port
.50" Cal. Mach. Gun #3	4		Top of Gun CrewShelter	18" aft of Fr. 140	3'9" to Stbd.
.50" Cal. Mach. Gun #4	4		Top of Gun CrewShelter	18" aft of Fr. 140	3'9" to Port
Torpedo Tubes Mount #1	4		Top of Dk. Gear Lkr.	5-1/4" aft of Fr. 89	2 of ship
Torpedo Tubes Mount #2	4		Main Deck	15" aft of Fr. 111	13'1" to Stbd.
Torpedo Tubes Mount #3	4		Main Deck	15" aft of Fr. 111	13'1" to Port
Stbd. Torpedo Director			Ped. Plat. on Nav. Br.	10-1/2" aft of Fr. 66	12'5-1/2" to Stbd.
Port Torpedo Director			Ped. Plat. on Nav. Br.	10-1/2" aft of Fr. 66	12'5-1/2" to Port
Stbd. Rangefinder			Top of Pi- lot House	7-1/2" aft of Fr. 63	11'4-1/2" to Stbd.
Port Rangefinder			Top of Pi- lot House	7-1/2" aft of Fr. 63	11'4-1/2" to Port
Stbd. Pelorus	4		Ped. Plat. on Nav. Br.	3-1/2" aft of Fr. 63	13'4-1/2" to Stbd.

## SECTION A-1

## BENCH MARKS (Cont'd.)

Item	No. of Plates	Inscrip-tion	Deck	Frame	Side
Port Pelorus	4	"C-L"	Ped. Plat. on Nav.Br.	3-1/2" aft of Fr. 63	13'4-1/2" to Port
Forward Binnacle	2		Nav. Br.	9" aft of Fr. 58	Q of ship
Aft Binnacle	2		Top of Gun Cr. Shelter	On Fr. 132	Q of ship
Master Gyro Compass	2		2nd Plat.	13" aft of Fr. 43	4'3" to Stbd.

## SECTION A-1

## CENTERLINE AND WATERLINE PLATES

For the ready establishment of the horizontal and vertical centerlines 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	Q - 6 ft. W.L.	A-1-W	Bhd. 6	Hold	On Ford.side of Bhd.Plate
1	Q -20 ft. W.L.	A-1-W	Bhd. 6	First Plat.	On Ford.side of Bhd.Plate
1	Q -30 ft. W.L.	A-102-E	Bhd. 6	Main Deck	On Aft side of Bhd.Plate
1	Q - 6 ft. W.L.	A-401-W	Bhd.14	Hold	Ford.side of Bhd.on Stiff.
1	Q - 6 ft. W.L.	A-404-C	Bhd.25	Hold	On Aft Side of Bhd.Plate
1	Q -12 ft. W.L.	A-404-C	Bhd.25	Second Plat.	On Aft side of Bhd.Plate
1	Q -25 ft. W.L.	A-104-L	Bhd.28	Main Deck	On Aft side of Bhd.Plate
1	Q -36 ft. W.L.	Weather Deck	7½" Aft of Fr.33	Foc'sle Deck	On Ford.side of Dk.Hs.Plt
1	Q -20 ft. W.L.	A-203-L	Bhd.36	First Plat.	On Ford.side of Bhd.Plate
1	Q -12 ft. W.L.	A-305-ACE	Bhd.48	Second Plat.	On Ford.side of Bhd.Plate
1	Q -18 ft. W.L.	A-204-L	Bhd.48	First Plat.	On Ford.side of Bhd.Plate
1	Q - 6 ft. W.L.	A-408-M	Bhd.49	Hold	On Ford.side of Bhd.Plate
1	Q -42 ft. W.L.	A-0201-L	15" Aft of Fr.62	Super-str.Dk.	On Ford.side of GunDir.Tr.
1	Q -50 ft. W.L.	-	15" Aft of Fr.62	Nav. Bridge	On Ford.side of GunDir.Tr.
1	Q -15 ft. W.L.	B-1	Bhd.68	#1 Blr. Room	On Aft side of Bhd.Plate
1	Q -50 ft. W.L.	Weather Deck	Fr. 69 - Fr. 70	Nav. Bridge	On Ford.side of Mast
1	Q -34 ft. W.L.	A-0102-L	Fr. 69 - Fr. 70	Foc'sle Deck	On Aft side of Mast
1	Q -16 ft. W.L.	B-2	Bhd.87½	#2 Blr. Room	Aft side of Bhd.on Stiff.
1	Q -16 ft. W.L.	C-1	Bhd.107	Mach. Space	On Aft side of Bhd.Plate
1	Q -16 ft. W.L.	D-206-AL	Bhd.135	First Plat.	On Aft side of Bhd.Plate

## SECTION A-1

## CENTERLINE AND WATERLINE PLATES (Cont'd.)

No. of Plates	Inscription	Compt.	Frame	Deck	Remarks
1	2 -10 ft. W.L.	D-301-M	Bhd.143	Second Plat.	On Ford. side of Bhd. Plate
1	2 -18 ft. W.L.	D-208-L	Bhd.151	First Plat.	Ford. side of Bhd.on Stiffn.
1	2 -18 ft. W.L.	D-210-L	Bhd.167	First Plat.	On Aft side of Bhd. Plate
1	2 -18 ft. W.L.	D-210-L	Bhd.179	First Plat.	On Ford. side of Bhd. Plate
1	2 -12 ft. W.L.	D-310-V	Bhd.185	Second Plat.	Ford.side of Bhd.on Stiffn.

## SECTION A-5

## ORDNANCE AND ORDNANCE OUTFIT

## MAIN BATTERY

Gun No.	Bore	Caliber	Deck	Frame	Side	Ele- va- tion	De- pres- sion	Train
1	5"	38	Fore- castle	26-27	on $\ell$	85°	15°	300°
2	5"	38	Super- struct- ure	41-42	on $\ell$	85°	15°	300°
3	5"	38	Top of After Deck House	124	on $\ell$	85°	15°	300°
4	5"	38	Top of After Deck House	149-150	on $\ell$	85°	15°	300°
5	5"	38	Main	165-166	on $\ell$	85°	15°	300°

A 5" loading machine, mark X-1, is located on the main deck between frames 89-90, stbd. side, 8' 8-1/4" from  $\ell$ .

## SECONDARY BATTERY (A.A. GUNS)

Gun No.	Bore	Caliber	Deck	Frame	Side	From $\ell$ of Ship	Ele- va- tion	De- pres- sion	Train
1	.50"	63.8	Top Gun Crew Shelter	52-53	Stbd.	5'0"			360°
2	.50"	63.8	Top Gun Crew Shelter	52-53	Port	5'0"			360°
3	.50"	63.8	Top Gun Crew Shelter	140-141	Stbd.	3'9"			360°
4	.50"	63.8	Top Gun Crew Shelter	140-141	Port	3'9"			360°

## SECTION A-5

## ORDNANCE AND ORDNANCE OUTFIT (Cont'd.)

## TORPEDO TUBES

Torpedo Tube Number	Diameter Torpedo	Length Torpedo	Location		Train		
			Deck	Frame	Side	Fwd	Aft
1 Quadruple	21"	22'- 7 1/16"	Top Deck Gear Locker	89-90	On Z	45°	45°
2 Quadruple	21"	Ditto	Main	111-112	Stbd	60°	45°
3 Quadruple	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	Foc'sle	Fr. 59	Port	Stowed in passage