

REPORT ON MACHINERY.

No. 3176

Received at London Office TUE 27 MAY 1919

Date of writing Report April 14 1919 When handed in at Local Office April 22 1919 Port of Philadelphia Pa.

No. in Survey held at Philadelphia

Date, First Survey May 9/18 Last Survey April 12 1919

Reg. Book.

on the S.S. "INGOLD" Submarine Boat Corporation Hull No. 4

(Number of Visits 55)

Gross 3659
Net 2256
Tons

Master P. D. Peterson Built at Newark, N.J. By whom built Submarine Boat Corporation When built 1919

Engines made at Essington, Pa. By whom made Westinghouse Elec. & Mfg. Co. when made 1919

Boilers made at Bayonne, N.J. By whom made Babcock & Wilcox Co. when made 1919

Nominal Registered Horse Power 386 Owners U.S. Shipping Board, Emergency Fleet Corp. belonging to Newark, N.J.

Shaft Horse Power at Full Power 1500 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted yes

TURBINE No. 6699, GEAR No. 5133 SHAFTING No. 889

URBINE ENGINES, &c.—Description of Engines Double Reduction Gear Turbine No. of Turbines One

Diameter of Rotor Shaft Journals 4 1/2 I.P.V. Dia. of Pinion Shaft (1st Red) 5.49 (2nd Red) 11.49

Dia. of Journals (1st Red) 3 at 5.49 Distance between Centres of Bearings (1st Red) 39 3/8 Dia. of Pitch Circle (1st Pinion) 8.5 (34 Teeth)

Dia. of Wheel Shaft 11 (2nd ") 4 at 11.49 (2nd ") 35 1/2 (2nd ") 12.4 (31 Teeth)

Width of Face (1st Red) 2 at 7 1/2 Dia. of Thrust shaft under collars (17" Kingsbury Thrust) (2nd ") 2 at 18 (Wheel Shaft) 67 3/4 (1st gear) 53 (212 Teeth)

No. of Screw Shafts ONE Diameter of same as per rule 4.28 13.01 CL Sec Over 15'-0" Diameter of Propeller Pitch of Propeller 12'-9"

No. of Blades 4 State whether Moreable No Total Surface 62.18 sq. ft. Diameter of Rotor Drum, H.P. 21 IMPULSE Eastern

Thickness at Bottom of Groove, H.P. 1 3/32 L.P. 1/2 Revs. per Minute at Full Power, Turbine 3600 Propeller 90.

ARTICULARS OF BLADING.

IMPULSE BLADING DATA.

AHEAD.

ASTERN.

	H.P. REACTION								
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION	3/4	22 1/2	3	DRUM DIA	1ST ROTATING	30 1/4	30 3/8		
2ND	1	23	3	"	2ND	29 1/2	✓		
3RD	1 1/2	24	3	MASTIP	1ST	32 1/2	39		
4TH	2	25	3	"	2ND	33 1/2	✓		
5TH	2	30	2	WIDTH OF BLADE	1ST	1 1/8	1 1/2		
6TH	3	32	2	"	2ND	1 1/16	✓		
7TH	4	34	1	MEAN DIA. PASSAGE TWO BLADES		32	35		
8TH	6	38	2	NO. OF ROTATING ROWS.		2	1		

No. and size of Feed pumps Two 9 1/2 x 6 x 10 (Westinghouse Air Brake)

No. and size of Bilge pumps One 10 x 6 x 10 Worthington Duplex — also Ballast & Transfer Pumps.

No. and size of Bilge suction in Engine Room One 5" port side (independent suction) and one 3" starboard side.

In Holds, &c. 3 in Hold No. 1 — 2 Hold No. 2 — 2 Deep Tank.

Two (Fire Room, — 2 in Hold No. 3, — one in Hold No. 4, & one in Tunnel well — all 3".

No. of Bilge Injections One sizes 10" Connected to condenser, or to circulating pump Fire pumps a separate Donkey Suction fitted in Engine Room & size yes 5"

Are all the bilge suction pipes fitted with roses yes Are the roses in Engine room always accessible yes

Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks Valves

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates yes Are the Discharge Pipes above or below the deep water line above

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel yes Are the Blow Off Cocks fitted with a spigot and brass covering plate yes

What pipes are carried through the bunkers none How are they protected

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times yes

Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges yes

Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Engine room, upper deck level.

OILERS, &c.—(Letter for record) Manufacturers of Steel

Total Heating Surface of Boilers Is Forced Draft fitted No. and Description of Boilers

Working Pressure Tested by hydraulic pressure to Date of test No. of Certificate

Can each boiler be worked separately Area of fire grate in each boiler No. and Description of Safety Valves to

each boiler Area of each valve Pressure to which they are adjusted Are they fitted with easing gear

Smallest distance between boilers or uptakes and bunkers or woodwork Mean dia. of boilers Length Material of shell plates

Thickness Range of tensile strength Are the shell plates welded or flanged Descrip. of riveting: cir. seams

Long. seams Diameter of rivet holes in long. seams Pitch of rivets Lap of plates or width of butt straps

rivets Working pressure of shell by rules Size of manhole in shell

Per centages of strength of longitudinal joint plates

Size of compensating ring No. and Description of Furnaces in each Boiler Material Outside diameter

Length of plain part top Thickness of plates crown Description of longitudinal joint No. of strengthening rings

bottom Working pressure of furnace by the rules Combustion chamber plates: Material Thickness: Sides Back Top Bottom

Pitch of stays to ditto: Sides Back Top If stays are fitted with nuts or riveled heads Working pressure by rules

Material of stays Diameter at smallest part Area supported by each stay Working pressure by rules End plates in steam space

Material Thickness Pitch of stays How are stays secured Working pressure by rules Material of stays

Diameter at smallest part Area supported by each stay Working pressure by rules Material of Front plates at bottom

Thickness Material of Lower back plate Thickness Greatest pitch of stays Working pressure of plate by rules

Diameter of tubes Pitch of tubes Material of tube plates Thickness: Front Back Mean pitch of stays

Pitch across wide water spaces Working pressures by rules Girders to Chamber tops: Material Depth and

Thickness of girder at centre Length as per rule Distance apart Number and pitch of stays in each

Working pressure by rules Steam dome: description of joint to shell % of strength of joint Diameter

Thickness of shell plates Material Description of longitudinal joint Diameter of rivet holes Pitch of rivets

Working pressure of shell by rules Crown plates: Thickness How stayed

W1474-0050 1/2

Lloyd's Register

Foundation

SUPERHEATER. Type *Two Tubular*. 580 sq. feet total heating surface. Date of Approval of Plan. Tested by Hydraulic Pressure to 400 lb. per sq. in. 5. Date of Test *Feb. 10/1918*. Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler *yes*. Diameter of Safe'y Valve *1"*. Pressure to which each is adjusted *250 lbs*. Is Easing Gear fitted *yes*.

IS A DONKEY BOILER FITTED? *no*. If so, is a report now forwarded?

SPARE GEAR. State the articles supplied: *Complete list of spare gear according to Rules for 1917-18 including following: Two studs & nuts for each of the following bearings: rotor, first & second pinions & main gear wheel. One set of main & turbine coupling bolts — 5% of gear & turbine casing bolts — Two thermometers for oil circulating, one complete set of bearing bushes for turbine rotor, first & second pinions & gear shaft — One complete half set of gland segments & springs for rotor shaft — One set of pads for one face of Kingsbury thrust for main & turbine oil — One set of liners for ditto — One set of valves & springs for following pumps, bilge, ballast, feed & lubricating oil — One bucket & rod for lubricating oil pump — One relief valve spring for main & aux. condensers — One boiler safety valve spring — A quantity of assorted bolts, studs & nuts, also bars & plates. Boiler spares as follows: 10 sets of handhole fittings — 3-4" tube nipples for downtakes — 7-4" ditto for mud drum 10-4" boiler tubes — 2 fusible plugs — 2 Peabody atomizers with sprays — 10 spray plates — gaskets & templates Same — one 4" expander with 3 straight rolls & taper rolls & mandrels — One tube cleaver & hose — B & W silver nitrate testing apparatus — taps for 3/4 & 1/2 taper studs, soot brushes &c.*

The foregoing is a correct description.

Westinghouse Electric & Mfg. Co.

Manufacturer. *Essex Works*

W.B. Hawker, Engineer, Marine Dept. for Robert M. Langdon, Representative

Dates of Survey while building: During progress of work in shops — *June 13-19-21, July 3-5-11-15-14-26-29, Aug 1-8-9-12-14-16-19-21-23-26-28-31, Sep 3-5-9-13-16.* During erection on board vessel — *1918- May 9-10-13-14-15-16-17 June 3-20 Aug 1- Sept 17-28-30. Oct. 2-8-9-17 Nov. 15-21 Dec. 2-19 1919 March 11-24-26-27 April 7-5-12.* Total No. of visits *55*.

Is the approved plan of main boiler forwarded herewith.

Dates of Examination of principal parts—Casings Rotors *A.B.S.* Blading Gearing

Rotor shaft *A.B.S.* Thrust shaft Tunnel shafts Screw shaft Propeller *Sept 30/1918*

Stern tube Steam pipes tested *Oct. 9/1918.* Engine and boiler seatings *March 24/1919* Engines holding down bolts *March 24/19*

Completion of pumping arrangements *March 27/1919* Boilers fired *Oct. 2/1919.* Engines tried under steam *March 27/1919*

Main boiler safety valves adjusted *March 27/1919* Thickness of adjusting washers *Port Boilers (star) 57/64. Star boiler (star) 55/64.*

Material and tensile strength of Rotor shaft *Cast Steel* Identification Mark on Do. *6699*

Material and tensile strength of Pinion shaft *55 to 65 Carbon* Identification Mark on Do.

Material of Wheel shaft *Ingot Steel* Identification Mark on Do. *X.5. 2325 4-2-19 W.L.* Material of Thrust shaft *same as wheel shaft* Identification Mark on Do.

Material of Tunnel shafts *Ingot Steel* Identification Marks on Do. *ABS (32) 889* Material of Screw shafts *Ingot Steel* Identification Marks on Do. *ABS (3) 889*

Material of Steam Pipes *Steel* Test pressure *600 lbs per square inch.*

Is an installation fitted for burning oil fuel. *yes* Is the flash point of the oil to be used over 150°F. *yes*

Have the requirements of Section 49 of the Rules been complied with. *yes*

Is this machinery a duplicate of a previous case *yes* except for Reduction gears, in which it duplicates the "COKATO" If so, state name of vessel. *"AGAWAM"*

Tail shaft is fitted with a continuous liner.

General Remarks (State quality of workmanship, opinions as to class, &c. *The Turbine and gears have been*

built under special survey in accordance with the approved plans.

The workmanship is good. The materials have been tested by the Surveyors to

the American Bureau of Shipping in accordance with New York letter

dated. The machinery has been shipped to Newark, N.J. to be

fitted on board the vessel.

It was decided to replace the Westinghouse Gears by Reduction Gears built by the Falk Co. Milwaukee

The machinery has been installed in the S.S. "INGOLD" under Special Survey. In my opinion it is

worthy of the class + L.M.C. 4:19. FITTED FOR OIL FUEL 4:19. F.P. ABOVE 150°F.

The amount of Entry Fee ... £ : : When applied for.

Special ... £ *\$250.00.* } *29 April 1919*

Donkey Boiler Fee ... £ : : When received.

Travelling Expenses (if any) £ : : *24/5/19*

Credit & P. & L. fee.

Committee's Minute *New York MAY 7 1919*

Assigned *+ L.M.C. 4:19 subject*