

4a.

REPORT ON MACHINERY.

No. 981

Received at London Office

THU. MAR. 7 1918

Date of writing Report 8 Feb 1918 When handed in at Local Office 13 Feb 1918 Port of Boston
 in Survey held at Quincy, Mass. Date, First Survey 8 May 1916 Last Survey 3rd February 1918
 on the off to sea steamer '264' ex. K.I. LUCKENBACH (Number of Visits 87)
 Gross Tons 8074
 Net Tons 5123
 Built at Quincy, Mass. By whom built Bethlehem S.B. Corporation Ltd When built Feb 1918
 Engines made at Quincy, Mass. By whom made 1 when made 1918
 Boilers made at Phoenixville, Pa. By whom made Heine Safety Boiler Co. when made 1918
 Registered Horse Power 4500 Owners U.S. Shipping Board Port belonging to Boston
 Shaft Horse Power at Full Power 4500 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes.

TURBINE ENGINES, &c.—Description of Engines

Curtis turbines geared.

No. of Turbines 2

Diameter of Rotor Shaft Journals, H.P. 8" Diameter of Pinion Shaft 1st speed 4" 2nd speed 9" with 6" hole
 Diameter of Journals (1st) 6" (2nd) 9" Distance between Centres of Bearings (1st) 32 1/4" (2nd) 40" Diameter of Pitch Circle 1st speed 7" 2nd speed 11.27"
 Diameter of Wheel Shaft (1st) 5 3/4" (2nd) 12" Distance between Centres of Bearings (1st speed) 41" (2nd speed) 40" Diameter of Pitch Circle of Wheel (1st) 52" (2nd) 47.6"
 Diameter of Face (1st) 10" (2nd) 12" Diameter of Thrust Shaft under Collars 12 1/4" Diameter of Tunnel Shaft as per rule 11.3" as fitted 11 1/2"
 Number of Screw Shafts 2 Diameter of same as per rule 13" as fitted 13" Diameter of Propeller 14'-6" Pitch of Propeller 14'-4"
 Number of Blades 3 State whether Moveable No Total Surface 74 sq ft Diameter of Rotor 34'-8"-43'-43 1/2"-44'-44 1/2"-44 3/8"-38"
 Thickness at Bottom of Groove, H.P. as per E.P. approved plan Revs. per Minute at Full Power, Turbine 3430 Propeller 109

PARTICULARS OF BLADING.

H.P.

L.P.

ASTERN.

STAGE	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.
EXPANSION	5/8" + 1/4"	36 3/8" + 37 1/2"	2				1" + 2"	41 1/4" + 42 1/4"	2
"	1"	46 1/4"	1						
"	1 1/2"	47 3/4"	1						
"	2 3/4"	51"	1						
"	4 1/2"	54 3/4"	1						
"									
"									

and size of Feed pumps Two 14" x 10" x 24" simplex.
 and size of Bilge pumps Bilge 6" x 7 1/2" x 6" General service 12" x 8 1/2" x 12" Deck service 7 1/2" x 5" x 6" all duplex.
 and size of Bilge suction in Engine Room 4-3 1/2"
 In Holds, &c. 2-3 1/2" in each hold except No. 4 hold which has 1-3 1/2".

of Bilge Injections 1 sizes 10" Connected to condenser circulating pump yes Is a separate Donkey Suction fitted in Engine Room & size yes 2-4"
 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 Both valves + cocks
 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 below
 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
 Are the pipes carried through the bunkers No bunkers Oil fuel fitted How are they protected yes
 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 skelton deck.

BOILERS, &c.—(Letter for record S)

Manufacturers of Steel

Worth Bros.

Total Heating Surface of Boilers 15520 sq ft Is Forced Draft fitted yes No. and Description of Boilers 4 Heine Water Tube Boilers
 Working Pressure 195 lbs Tested by hydraulic pressure to 450 lbs. Date of test 10 Dec 1917 No. of Certificate 21.
 Can each boiler be worked separately yes Area of fire grate in each boiler oil fired No. and Description of Safety Valves to each boiler 2 spring loaded Area of each valve 9'-62" sq Pressure to which they are adjusted 200 lbs Are they fitted with easing gear yes
 Smallest distance between boilers or uptakes and bunkers or woodwork about 4'-0" Mean dia. of boilers 54" Length 17'-4" Material of shell plates Steel
 Thickness 1 1/16" Range of tensile strength 55000/72000 lbs Are the shell plates welded or flanged no Descrip. of riveting: cir. seams D.R. Lap.
 Rivet seams T.R. D.B.S. Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 7 3/4" Lap of plates or width of butt straps Outside 11 1/16" Inside 18 3/16"
 Percentages of strength of longitudinal joint 111 Working pressure of shell by rules 267 lbs. Size of manhole in Lead 15" x 11"
 Size of compensating ring flanged No. and Description of Furnaces in each Boiler 1 Material Steel Outside diameter 15'-0"
 Length of plain part top 3'-0" bottom 3'-0" Thickness of plates 3/4" Description of longitudinal joint 1 No. of strengthening rings 1
 Working pressure of furnace by the rules 283 lbs Combustion chamber plates: Material Steel Thickness: Sides 3/4" Back 3/4" Top 3/4" Bottom 3/4"
 Pitch of stays to ditto: Sides 3/4" Back 3/4" Top 3/4" If stays are fitted with nuts or riveted heads yes Working pressure by rules 225 lbs
 Material of stays Steel Diameter at smallest part 3/4" Area supported by each stay DISHED ENDS Working pressure by rules 225 lbs End plates in steam space 225 lbs
 Material Steel Thickness 3/4" Pitch of stays 3/4" How are stays secured WATER LEG Working pressure by rules 225 lbs Material of stays Steel
 Diameter at smallest part 3/4" Area supported by each stay WATER LEG Working pressure by rules 225 lbs Material of Front plates at bottom Steel
 Thickness 3/4" Material of back plate Steel Thickness 3/4" Greatest pitch of stays 4 3/8" x 7 1/4" Working pressure of plate by rules 408 lbs
 Diameter of tubes 3 1/2" Pitch of tubes 7 1/4" x 7" Material of tube plates Steel Thickness: Front 3/4" Back 3/4" Mean pitch of stays 7 1/8"
 Pitch across wide water spaces 283 lbs Working pressures by rules 283 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 12" x 12" Length as per rule 12" Distance apart 12" Number and pitch of stays in each 12" x 12"
 Working pressure by rules 283 lbs Steam dome: description of joint to shell 1 % of strength of joint 100% Diameter 12"
 Thickness of shell plates 1 1/16" Material Steel Description of longitudinal joint 1 Diameter of rivet holes 1 1/16" Pitch of rivets 7 3/4"
 Working pressure of shell by rules 283 lbs Crown plates: Thickness 3/4" How stayed 1

002119-002126-013

Lloyd's Register Foundation

SUPERHEATER. Type *Haine* Date of Approval of Plan *31 May 1916* Tested by Hydraulic Pressure to *450 lbs.*
Date of Test *2-16 Dec 1917 2-19 Dec 1917* Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler *Yes*
Diameter of Safety Valve *1 1/2"* Pressure to which each is adjusted *200 lbs.* Is Easing Gear fitted *Yes*

If so, is a report now forwarded? ☒

SPARE GEAR. State the articles supplied:— One set of turbine thrust shoes, 1 set of turbine bearings, 1 set of labyrinth packing rings, 1 set of bearings for 1st speed pinions + wheel shafts, 1 set of bearings for 2nd speed pinion + wheel shafts, 1 set of line shaft coupling bolts. Assorted nuts, bolts + iron. One set feed + bilge pump valves. 2 Cast Iron propellers. 1 Propeller shaft. One impeller + shaft for circulating pump. Spare buckets, rods, valves + parts for air pumps + bilge pumps, lubricating oil pumps, oil cooler pumps, + spare parts + valves for all other pumps including fuel oil pumps. 30 Condenser tubes, 35 Boiler tubes, 1 set feed check valves, spare oil burners etc.

The foregoing is a correct description,
BETHLEHEM SHIPBUILDING CORPORATION LTD.
FORE RIVER PLANT.

Manufacturer.

S W Matheman good bye

1916 May & June 2, 5, 12, 14 July 6, 11, 14, 17, 19, 21 Aug 2, 9, 10, 11, 15, 19, 24 Sept. 5, 21, 28 Oct 3, 5, 19, 24, 25, 31, Nov 1, 15 Dec 1

Dates of Survey while building { During progress of work in shops - - { 1917 Jan 4, 9, 11, 13 Feb 3, 7, 23 March 9, 19, 27 April 2, 10, 13 June 11, 20, July 3, 9, 19 Aug 2, 20, 28 Sept 4, 10, 28 Oct 5, 10, 19, 23, Nov 17, 20, Dec 3, 10,

{ During erection on board vessel - - - { 1917 Oct 2, 17, 22, 24, 26 Nov 20, Dec 17, 28 1918 Jan 3, 5, 8, 10, 17, 22, 24, 25, 28, 31 Feb 1, 3

Total No. of visits 87

Is the approved plan of main boiler forwarded herewith

Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts—Casings 19 Mar 1917 Rotors 19 March 1917 Blading 19 March 1917 Gearing 7 Nov 1917
Rotor shaft 19 July 1917 Thrust shaft 28 Sept 1917 Tunnel shafts 23 Oct 1917 Screw shaft 5 Oct 1917 Propeller 19 Oct 1917
Stern tube 19 Oct 1917 Steam pipes tested 3 Jan 1918 Engine and boiler seatings 2 Oct 1917 Engines holding down bolts 28 Dec 1917

Completion of pumping arrangements 10 Jan 1918 Boilers fixed Erected in ship Engines tried under steam 3 Feb 1918

Main boiler safety valves adjusted 24 January 1918 Thickness of adjusting washers Port $\frac{1}{16}$ " P Port Centre $\frac{1}{16}$ " P Start & Centre $\frac{1}{16}$ " P Steel $\frac{1}{16}$ " S Steel $\frac{1}{16}$ " S

Material and tensile strength of Rotor shaft Nickel Steel 80,000 lbs Identification Mark on Do. 168
 Material and tensile strength of ^{1st speed} Pinion 1st speed 1750 S. S. 80,000 lbs

Material and tensile strength of Pinion shaft	1st speed Wheel Shafts	D-	Identification Mark on Do.	168	
2nd speed					
Material of Wheel shaft	Steel	Identification Mark on Do.	168	Material of Wheel shaft	Steel

Material of Wheel shafts	Steel	Identification Mark on Do.	168	Material of Thrust shaft	Steel	Identification Mark on Do.	168
Material of Tunnel shafts	Steel	Identification Marks on Do.	168	Material of Screw shafts	Steel	Identification Marks on Do.	168

Material of Steam Pipes	Steel	Test pressure	700 lb
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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 If so, state name of vessel 1/2 264 of Boston, Boston report

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General Remarks (State quality of workmanship, opinions as to class, &c.) The drums & heads of the Heine water tube boiler

made at Phoenixville, Pa., & they were riveted together, the tubes fitted & the boiler tested on board the vessel.

The machinery & boilers of this vessel have been built & fitted on board under Special Survey.

accordance with the Rules & approved plans, & the workmanship & material are good. They

been satisfactorily tried under steam, at sea, & they are now in good & safe working

condition & eligible, in my opinion, to receive the notations **LMC 2.18** F.D. & FITTED

FOR OIL FUEL 2.18, F. ABOVE 150°F' in the Register Book, subject to the

water tube boilers being annually surveyed.

THE RECORD. + LMC 2.18. F.D.

Fitted for oil fuel 2.18 FP above 150°F
Subject to water tube boilers being surveyed annually

e amount of Entry Fee ... £ \$ 15.00 : When applied for, 2 Steam Turbines geared to 2 screw shafts J.F.
 13 Feb. 18

Special	1/4	£	246.00	18.00	19.10	John S. Hecke
Boiler Fee 1/4 (Phila)	1/4	c	72.00			Engineer Surveyor to Lloyd's Register of Shipping.

Philadelphia expenses. £ 24 00

Committee's Minute New York FEB 19 1918

5 Look 3 18

MACHINERY CERTIFICATE

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Assigned + dmlc 218. WRITTEN 7-3-18
 180000 Filled for oil fuel 2,18 H. above 150°F.

Rec'd by Subject

Foundation

