

REPORT ON MACHINERY

No. 1672

Received at London Office FRI. 7-JUL. 1916

of writing Report 22nd June 1916 When handed in at Local Office 6th July 1916 Port of Barrow-in-Furness
 in Survey held at Barrow-in-Furness Date, First Survey 15th June 1914 Last Survey 19
 on the Twin Screw Icebreaker "J. D. HAZEN" (Number of Visits)

ester Built at Montreal By whom built Messrs Canadian-Vickers Ltd
 gines made at Barrow-in-Furness By whom made Messrs Vickers Ltd (Eng 457) when made 1916
 ilers made at Barrow-in-Furness By whom made Messrs Vickers Ltd when made 1916
 T. Hands Registered Horse Power Owners Imperial Russian Government Port belonging to

m. Horse Power as per Section 28 1355 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted

GINES, &c.—Description of Engines *3 Triple Expansion, Surface Condensing* of Cylinders 3 Each engine No. of Cranks 3 Each
 of Cylinders 29" 46" 76" Length of Stroke 48" Revs. per minute 100 Dia. of Screw shaft as per rule 14.87" Material of Steel
 the screw shaft fitted with a continuous liner the whole length of the stern tube Is the after end of the liner made water tight

the propeller boss Yes If the liner is in more than one length are the joints burned Yes If the liner does not fit tightly at the part
 between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive If two

ers are fitted, is the shaft lapped or protected between the liners Length of stern bush 7'-0"

of Tunnel shaft as per rule 13.9" Dia. of Crank shaft journals as per rule 14.6" Dia. of Crank pin 16 3/4" Size of Crank webs 33" x 11 1/2" Dia. of thrust shaft under

ars 16 1/2" Dia. of screw 15'-0" Pitch of Screw 19'-0" No. of Blades 4 State whether moveable Yes Total surface 88 sq ft

of Feed pumps 2 Independent Diameter of ditto 7" x 12 1/2" Stroke 22" Can one be overhauled while the other is at work Yes

of Bilge pumps 2 Independent Diameter of ditto 6" x 8" Stroke 8" Can one be overhauled while the other is at work Yes

of Donkey Engines 10 Sizes of Pumps 2 Air pumps 12" x 22" x 15" 2 Circulating pumps 14 1/2" discharge
 2 General Service 11" x 12" x 10" 1 Ballast No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room 3 Duplex pumps 4 1/2" x 4" x 5" pumps 14" discharge In Holds, &c.

f Bilge Injections sizes Connected to condenser, or to circulating pump Is a separate Donkey Suction fitted in Engine room & size

all the bilge suction pipes fitted with roses Are the roses in Engine room always accessible Are the sluices on Engine room bulkheads always accessible

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

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

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

t pipes are carried through the bunkers How are they protected

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

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

s of examination of completion of fitting of Sea Connections of Stern Tube Screw shaft and Propeller

e Screw Shaft Tunnel watertight Is it fitted with a watertight door worked from

ERS, &c.—(Letter for record (S)) Manufacturers of Steel Wm. Beardmore & Co. Ltd; D. Colville & Son Ltd; Frithlington I. & S. Co.

Heating Surface of Boilers 11056 sq ft Is Forced Draft fitted Yes No. and Description of Boilers Two double ended multitubular

ing Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Dates of test 9/5/16-15/5/16 Nos. of Certificates 276, 277

ach boiler be worked separately Yes Area of fire grate in each boiler 140 sq ft No. and Description of Safety Valves to

oiler Three-spring loaded Area of each valve 15.9 sq ft Pressure to which they are adjusted Are they fitted with easing gear

st distance between boilers or uptakes and bunkers or woodwork Mean dia. of boilers 15'-6" Length 22'-0" Material of shell plates Steel

ess 1 7/16" Range of tensile strength 28/32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams End stroke D.R. lap

eam 3R Double Butt Diameter of rivet holes in long. seams 1 5/32" Pitch of rivets 10" Lap of plates or width of butt straps 22 1/2"

stages of strength of longitudinal joint rivets 87.7% Working pressure of shell by rules 211 lbs Size of manhole in shell 20" x 16"

compensating ring 3'-6 1/4" x 2'-6 3/4" x 1 7/16" No. and Description of Furnaces in each boiler 6-Borrugated Material Steel Outside diameter 4'-3 1/2"

of plain part top Thickness of plates crown 7/8" Description of longitudinal joint Weld No. of strengthening rings

g pressure of furnace by the rules 196 lbs Combustion chamber plates: Material Steel Thickness: Sides 7/32" Back 7/32" Top 7/32" Bottom 1"

stays to ditto: Sides 8 3/4" x 7 3/8" Back 8 3/4" x 7 3/8" Top 8 3/4" x 7 3/8" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 186 lbs

l of stays Steel at smallest part 1.44 sq ft Area supported by each stay 64.5 sq ft Working pressure by rules 180 lbs End plates in steam space:

l Steel Thickness 1 1/16" Pitch of stays 18" x 18" How are stays secured Double Nuts Working pressure by rules 189 lbs Material of stays Steel

r at smallest part 7.23 sq ft Area supported by each stay 322 sq ft Working pressure by rules 232 lbs Material of Front plates at bottom Steel

27/32" Material of Lower back plate Thickness Greatest pitch of stays Working pressure of plate by rules

eter of tubes 2 1/2" Pitch of tubes 3 3/8" Material of tube plates Steel Thickness: Front 27/32" Back 1 1/16" Mean pitch of stays 9'-06"

h across wide water spaces 12 3/4" Working pressures by rules 190 lbs Girders to Chamber tops: Material Steel Depth and

ness of girder at centre 9 1/2" x 1 1/2" Length as per rule 32" Distance apart 8 3/4" Number and pitch of stays in each 3-7 3/8"

working pressure by rules 210 lbs Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked

rately Diameter Length Thickness of shell plates Material Description of longitudinal joint Diam. of rivet

Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness

stiffened with rings Distance between rings Working pressure by rules End plates: Thickness How stayed

working pressure of end plates Area of safety valves to superheater Are they fitted with easing gear

Manufacturers of Steel

SPARE GEAR. State the articles supplied:— 4 nuts; 2 bottom end brasses; 4 top end brasses; 50 condenser tubes + 100 feet of
1 set H.P. piston rings, 1 set I.P. piston rings, 1 set L.P. piston rings, 12 set pins for piston junk rings, 1 stern tube bush
end, 1 do. fore end, 1 set coupling bolts for shafting; 2 main bearing bolts + nuts; 1 eccentric strap complete; 2 pairs ecc. rod
bushes with bolts + nuts; 2 drag links complete; 12 studs + nuts for cyls. + casing covers; 7 spare springs for cyl. escape valves
brass iron bolts + nuts; 72 boiler tubes, 6 feed check valves; 6 safety valve springs; one furnace front complete; firebars + bearers
furnaces; 12 screwed ecc. stays + nuts; iron of various sizes. (Spare Gear for Aux^y machinery) Air pump—1 bucket + rod
1 steam valve chest complete, 2 sets valves, 1 set piston rings, 1 pair link + brasses—(for 6)

Is the approved plan of main boiler forwarded herewith ✓

Material of Crank shafts Steel Identification Mark on Do. N°32 JH Material of Thrust shafts Steel Identification Mark on Do. 7717 A support
Material of Tunnel shafts _____ Identification Marks on Do. _____ Material of Screw shafts Steel Identification Marks on Do. 7717 A back
Material of Steam Pipes Lapwelded Wrought Iron with M. S. flanges ✓ Test pressure 540 lbs per sq. inch ✓ of tube

To complete the survey the following remains to be done:-

The tunnel shafts, being made by The Nova Scotia Steel Co. Ltd. of Montreal, require to be tested & examined, the Engines & Boilers to be efficiently fitted on board, the safety valves to be adjusted under steam to their working pressure, & the machinery generally tried under working conditions. The Machinery is being despatched to Montreal, to be first on board the vessel at that port.

In my opinion the Machinery will be eligible to be classed in the Register Book & to have the notation **+LMC** with date, when the survey is completed.

The amount of Entry Fee .. £ ~~3~~ : 0 : 0 *have the notation*
 Special £ ~~78~~ : 17 : 6 *When applied for, 6th July 1916*
 Donkey Boiler Fee *monetary* £ ~~52~~ : 11 : 4 *When received, 21/8/16*
 Travelling Expenses (if any) £ 26 : 5 : 10

John Houston
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

FRI. JUL. 14 1972

Assigned