

REPORT ON MACHINERY.

No. 8400.

RETAINED

Received at London Office

Date of writing Report 9th Dec 1922 When handed in at Local Office 15th Dec 1922 Port of Dundee SAT. 16 DEC. 1922

No. in Survey held at Dundee Date, First Survey 6th Sept. 1921 Last Survey 9th December 1922
Reg. Book. on the H.M. BRITISH COMMANDER (No 282) (Number of Visits 84)

Master _____ Built at Dundee By whom built Caledon Shipbuilding & Engineering Co When built 1922
Engines made at Manchester By whom made Metropolitan-Vickers Electrical Co. Ltd when made 1922
Boilers made at Dundee By whom made Caledon S & Eng Co. Ltd. (No 452) when made 1922
NOMINAL Registered Horse Power 643. Owners British Tanker Co Ltd Port belonging to London
Shaft Horse Power at Full Power 3200 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

URBINE ENGINES, &c.—Description of Engines Rateau Impulse H.P. & L.P. No. of Turbines 2
Diameter of Rotor Shaft Journals, H.P. _____ L.P. _____ Diameter of Pinion Shaft _____
Diameter of Journals _____ Distance between Centres of Bearings _____ Diameter of Pitch Circle _____
Diameter of Wheel Shaft _____ Distance between Centres of Bearings _____ Diameter of Pitch Circle of Wheel _____
Width of Face _____ Diameter of Thrust Shaft under Collars _____ Diameter of Tunnel Shaft _____ as per rule 14.5 ✓
No. of Screw Shafts one Diameter of same as per rule 16.78 ✓ as fitted 19.14 ✓ Diameter of Propeller 18'-6" Pitch of Propeller 17'-6" ✓
No. of Blades 4 State whether Moveable Yes Total Surface 102 sq ft Diameter of Rotor Drum, H.P. _____ L.P. _____ Astern _____
Thickness at Bottom of Groove, H.P. _____ L.P. _____ Astern _____ Revs. per Minute at Full Power, Turbine 3125 Propeller 73-75

ARTICULARS OF BLADING.

	H.P.			L.P.			ASTERN.		
	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.
ST EXPANSION									
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For particulars of Turbines see Manchester Report No 5010.

No. and size of Feed pumps 1 H.P. 9'2" x 7' x 21" + 1 Rotary Pump
No. and size of Bilge pumps 1 Electric driven double pump 6' x 6" Bilge connections to General Service pump 6' x 6' + Ballast Pump 10' x 12' x 10"
No. and size of Bilge suction in Engine Room 3 @ 3 1/2" : 2 @ 3 1/2" in oil Bilge. Cofferdam between S. B. Tanks in Machy Space 2 @ 3 1/2"
Forward 1 @ 4" : Forward Cargo Hold 2 @ 3" : Forward Pump Room 1 @ 3" : Above Fore Peak Tank top 1 @ 3" : Cargo oil tanks 2 each @ 10"
No. of Bilge Injections 1 sizes 11" Connected to condenser, or to circulating pump C.P. ✓ Is a separate Donkey Suction fitted in Engine Room & size Yes 3 1/2"
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 ✓
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 ✓
How are they protected None ✓
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 No tunnel Is it fitted with a watertight door Yes ✓ worked from Yes ✓

BOILERS, &c.—(Letter for record (S)) Manufacturers of Steel Bechtel & Sons, Ltd., South Duxbury, Scottish I.I.S., Glasgow T.Y.S., Scotland
Total Heating Surface of Boilers 8256 sq ft Is Forced Draft fitted Yes No. and Description of Boilers Four Single ended Multitubular
Working Pressure 200 lbs Tested by hydraulic pressure to 350 lbs Date of test 27-1-22 No. of Certificate 993
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 Two spring loaded Area of each valve 11" dia Pressure to which they are adjusted 205 lbs ✓ Are they fitted with easing gear Yes ✓
Smallest distance between boilers or uptakes and bunkers 14" Mean dia. of boilers 15'-10 3/32" Length 12'-0" Material of shell plates Steel
Thickness 1 1/32" Range of tensile strength 30-34 tons Are the shell plates welded or flanged No ✓ Descrip. of riveting: cir. seams L.D.R.
Circ. seams D.W. Straps T.R. Diameter of rivet holes in long. seams 1 3/8" ✓ Pitch of rivets 9 1/4" ✓ Lap of plates width of butt straps 20 1/8" ✓
Percentage of strength of longitudinal joint plates 85.9 Working pressure of shell by rules 201 lbs Size of manhole in shell 16' x 12" ✓
Size of compensating ring 34 x 35 x 1 1/32" No. and Description of Furnaces in each Boiler 4 Corrugated Material Steel Outside diameter 41 3/4" ✓
Length of plain part top 9 1/16" ✓ Thickness of plates crown 9 1/16" ✓ Description of longitudinal joint Weld ✓ No. of strengthening rings None ✓
Working pressure of furnace by the rules 205 Combustion chamber plates: Material S Thickness: Sides 1 1/16" Back 3/4" Top 1 1/16" Bottom 1 3/16" ✓
Pitch of stays to ditto: Sides 9 1/4" x 8 1/2" Back 8 1/4" x 8" Top 9 x 8 1/2" ✓ If stays are fitted with nuts or riveted heads Riveted heads ✓ Working pressure by rules 201 ✓
Material of stays Steel Area at smallest part 1.73 + 2.03 Area supported by each stay 86 Working pressure by rules 232 End plates in steam space Material Steel Thickness 1 9/32" Pitch of stays 2 1/8" x 1 7/8" ✓ How are stays secured D.N.T.W. Working pressure by rules 200 Material of stays Steel ✓
Area at smallest part 7.06 Area supported by each stay 362.257 3/5 Working pressure by rules 200 Material of Front plates at bottom Steel ✓
Thickness 1 Material of Lower back plate Steel Thickness 1 5/16" ✓ Greatest pitch of stays 14 1/4" x 8 1/4" Working pressure of plate by rules 252 ✓
Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" + 4 1/2" Material of tube plates Steel Thickness: Front 1" Back 7/8" Mean pitch of stays 11 1/4" ✓
Pitch across wide water spaces 14 1/4" Working pressures by rules 202 Girders to Chamber tops: Material Steel ✓ Depth and thickness of girder at centre 9" x 1 1/2" ✓ Length as per rule 32.625 ✓ Distance apart 9 ✓ Number and pitch of stays in each 3 @ 8 1/2" ✓
Working pressure by rules 204 Steam dome: description of joint to shell Yes ✓ % of strength of joint Yes ✓ Diameter Yes ✓
Thickness of shell plates Yes ✓ Material Yes ✓ Description of longitudinal joint Yes ✓ Diameter of rivet holes Yes ✓ Pitch of rivets Yes ✓
Working pressure of shell by rules Yes ✓ Crown plates: Thickness Yes ✓ How stayed Yes ✓

W351-0058



SUPERHEATER. Type *Donkey* Date of Approval of Plan *See attached Certs* IN Position Tested by Hydraulic Pressure to *600 lbs*
 Date of Test *21-3-22* 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 *210 lbs* Is Easing Gear fitted *Yes*

IS A DONKEY BOILER FITTED? *Yes* If so, is a report now forwarded? *Yes*

SPARE GEAR. State the articles supplied: *Turbine & Gearing spare parts as per Manchester Report.*
1 screw shaft, 4 propeller blades, 1 set of propeller blade studs & nuts, 1 set of coupling bolts & nuts, 24 condenser tubes & 50 Ferrules, 1 set of Pads for Michel Thrust, 6 boiler tubes (plain) 1 stay tube. 3 main & 3 auxiliary check valves. Spare parts & valves for Lucas Pumps (Lead & Air). Spare valves for General Service, Ballast & Bilge pumps. Assorted nuts, bolts & washers.

The foregoing is a correct description,
THE CALEDON SHIPBUILDING & ENGINEERING CO LD Manufacturer.
J. D. Bruce SECRETARY

Dates of Survey while building
 During progress of work in shops - *1921* SEPT. 6. 19. 23. OCT. 19. NOV. 1. 4. DEC. 1. 5. 12. 23. 30. *1922* JAN. 6. 9. 14. 20. 24. 25. 27. FEB. 2. 9. 10. 14. 18.
 During erection on board vessel - FEB. 24. 27. 28. MAR. 2. 4. 6. 4. 16. 21. APR. 11. 24. MAY 4. 11. 15. 19. 23. 26. JUN. 16. 19. 21. 23. 24. 30. JUL. 3. 10. 13. 14. AUG. 2. 8. 14. 21.
 Total No. of visits *84* Is the approved plan of main boiler forwarded herewith *Yes*
 " " " donkey " " " *Yes*

Dates of Examination of principal parts - Casings - Rotors - Blading - Gearing -
 Rotor shaft - Thrust shaft *28-2-22* Tunnel shafts *28-2-22* Screw shaft *30-6-22* Propeller *30-6-22*
 Stern tube *30-6-22* Steam pipes tested *27-4, 15-9, 21-9, 18-19-27/10* Engine and boiler seatings *23-6-22* Engines holding down bolts *12-9-22*
 Completion of pumping arrangements *7-12-22* Boilers fixed *22-9-22* Engines tried under steam *7-12-22*
 Main boiler safety valves adjusted *5-12-22* Thickness of adjusting washers *P. P. 1/16. S 1/16. S P. 1/16. S 1/32. F. P. 3/8. S 1/32.*
 Material and tensile strength of Rotor shaft - *Manchester Report* Identification Mark on Do. -
 Material and tensile strength of Pinion shaft - " " Identification Mark on Do. -
 Material of Wheel shaft - Identification Mark on Do. - Material of Thrust shaft *LLOYD'S NO 917* Identification Mark on Do. *J.H.M. 30-6-22*
 Material of Tunnel shafts *L* Identification Marks on Do. *J.H.M. 30-6-22* Material of Screw shafts *L* Identification Marks on Do. *J.H.M. 30-6-22*
 Material of Steam Pipes *L.W. 1 Seamless steel.* Test pressure *600 lbs*
 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 *No* If so, state name of vessel *✓*

General Remarks (State quality of workmanship, opinions as to class, &c. *These Engines & Boilers have been built under special survey and in accordance with the Rules and approved Plans; the materials and workmanship are sound & good; they have been fitted on board in an efficient manner, tried under working conditions and found satisfactory and are eligible in our opinion to be classed with record of + L.M.C. 12-22 and the notation "Fitted for oil fuel 12-22. F.P. above 150°F."*

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 12.22. F.D. O.G. 643. N.H.P.
"Fitted for oil fuel" 12.22. F.P. above 150°F.
2 Steam Turbines geared to one screw shaft.

The amount of Entry Fee ... £ : 0 :
 Special ... £ 76 : 18 :
 Donkey Boiler Fee ... £ : :
 Travelling Expenses (if any) £ : :
 When applied for, *Dec. 15. 19. 22*
 When received, *20. 22*

J. Selles for self & J.H. Mackintosh
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute
 Assigned *+ L.M.C. 12.22*
F.D. O.G.
Fitted for oil fuel 12.22
F.P. above 150°F.



Certificate (if required) to be sent to... (The Surveyors are requested not to write on or below the space for Committee's Minute.)