

REPORT ON MACHINERY

No. 8318
WED. AUG. 31 1921

Received at London Office

Date of writing Report 29th Aug 1921 When handed in at Local Office 30th Aug 1921 Port of DUNDEE.No. in Survey held at Dundee Date, First Survey 19th June 1919 Last Survey 25th August 1921
Reg. Book. on the S.S. "NORWEGIAN" (Number of Visits 69.)

Master Built at Dundee By whom built Laidon S.B. & Co. Ltd. Tons Gross 6354 Net 4018. When built

Engines made at Dundee By whom made Laidon S.B. & Co. Ltd. when made

Boilers made at Dundee By whom made Laidon S.B. & Co. Ltd. when made

Registered Horse Power Owners F. Heyland & Co. Ltd. Port belonging to Liverpool

Nom. Horse Power as per Section 28 644 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted Yes.

ENGINES, &c.—Description of Engines Inserted Quadruple Expansion No. of Cylinders 4 No. of Cranks 4

Dia. of Cylinders 23 $\frac{1}{2}$ 34 49 40 Length of Stroke 51 Revs. per minute 75 Dia. of Screw shaft as per rule 13.75 as fitted 15 Material of screw shaft Steel

Is the screw shaft fitted with a continuous liner the whole length of the stern tube Yes Is the after end of the liner made water tight

In the propeller boss Yes If the liner is in more than one length are the joints burned 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

liners are fitted, is the shaft lapped or protected between the liners Length of stern bush 5'-2"

Dia. of Tunnel shaft as per rule 13.1 as fitted 13.2 Dia. of Crank shaft journals as per rule 13.75 as fitted 14.2 Dia. of Crank pin 14 $\frac{3}{4}$ Size of Crank webs 21 x 9 $\frac{1}{2}$ Dia. of thrust shaft undercollars 14 $\frac{1}{2}$ Dia. of screw 14'-6" Pitch of Screw 14'-6" No. of Blades 4 State whether moveable Yes Total surface 86 sq. ft.

No. of Feed pumps Diameter of ditto Stroke Can one be overhauled while the other is at work Yes } all independent

No. of Bilge pumps Diameter of ditto Stroke Can one be overhauled while the other is at work Yes } pumps, as given

No. of Donkey Engines 5 Sizes of Pumps 2 FEED - 10 $\frac{1}{2}$ x 8 x 24 2 BILGE - 9 x 8 x 18 1 BALLAST - 10 x 9 x 21 No. and size of Suctions connected to both Bilge and Donkey pumpsIn Engine Room 2 @ 3 $\frac{1}{2}$ In Hold, &c. F.P.T. 1 @ 3 $\frac{1}{2}$ No. 1 Hold 2 @ 3 $\frac{1}{2}$ No. 2 Hold 2 @ 3 $\frac{1}{2}$ No. 3 Hold 2 @ 3 $\frac{1}{2}$ No. 4 Hold 2 @ 3 $\frac{1}{2}$ No. 5 Hold 1 @ 3 $\frac{1}{2}$ TUNNEL WELL 1 @ 2 $\frac{1}{2}$ A.P.T. 1 @ 2 $\frac{1}{2}$ No. of Bilge Injections / sizes 8" Connected to condenser or to circulating pump Yes Is a separate Donkey Suction fitted in Engine room & size Yes, 3 $\frac{1}{2}$ "

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

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 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

What pipes are carried through the bunkers Bilge & ballast pipes How are they protected Strong wood casings

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 Top platform.

BOILERS, &c.—(Letter for record S) Manufacturers of Steel James Dunlop & Co. - J. Spence & Sons

Total Heating Surface of Boilers 10210 sq. ft. Is Forced Draft fitted Yes No. and Description of Boilers 4 Single ended marine

Working Pressure 215 lbs. Tested by hydraulic pressure to 343 lbs. Date of test 1/11/20 No. of Certificate 984

Can each boiler be worked separately Yes Area of fire grate in each boiler 59.8 sq. ft. No. and Description of Safety Valves to

each boiler 2 Spring loaded Area of each valve 8.29 sq. in. Pressure to which they are adjusted 220 lbs. Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 21" Mean dia. of boilers 15'-0" Length 11'-4" Material of shell plates Steel

Thickness 1 $\frac{1}{16}$ " Range of tensile strength 28/32 Tons Are the shell plates welded or flanged Descrip. of riveting: cir. seams D.R.Long. seams T.R. D.B.S. Diameter of rivet holes in long. seams 1 $\frac{1}{16}$ " Pitch of rivets 9 $\frac{1}{8}$ " Lap of plates or width of butt straps 2 $\frac{1}{4}$ "

Per centages of strength of longitudinal joint rivets 85.0 plate 85.4 Working pressure of shell by rules 224 lbs. Size of manhole in shell 16" x 12"

Size of compensating ring 1 $\frac{1}{16}$ " FLANGED No. and Description of Furnaces in each boiler 3 Marston's Material Steel Outside diameter 47 $\frac{3}{4}$ "Length of plain part top 10" Thickness of plates crown 1 $\frac{1}{16}$ bottom 1 $\frac{1}{16}$ Description of longitudinal joint welded No. of strengthening ringsWorking pressure of furnace by the rules 236 Combustion chamber plates Material Steel Thickness: Sides 2 $\frac{1}{32}$ Back 2 $\frac{1}{32}$ Top 2 $\frac{1}{32}$ Bottom 7 $\frac{1}{8}$ Pitch of stays to ditto: Sides 8 $\frac{1}{2}$ x 7 $\frac{3}{4}$ Back 8 $\frac{1}{2}$ x 8 Top 8 $\frac{1}{2}$ x 7 $\frac{3}{4}$ If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 221

Material of stays Steel Area at smallest part 2.07 sq. in. Area supported by each stay 67.4 sq. in. Working pressure by rules 268. End plates in steam space:

Material Steel Thickness 1 $\frac{5}{32}$ " Pitch of stays 8 $\frac{1}{2}$ x 5 $\frac{1}{2}$ How are stays secured D.N. & W. Working pressure by rules 220 Material of stays Steel

Area at smallest part 6.49 sq. in. Area supported by each stay 286 sq. in. Working pressure by rules 236 Material of Front plates at bottom Steel

Thickness 1 $\frac{3}{16}$ " Material of Lower back plate Steel Thickness 1 $\frac{5}{16}$ " Greatest pitch of stays 15 x 20 Working pressure of plate by rules 244Diameter of tubes 2 $\frac{1}{2}$ " Pitch of tubes 3 $\frac{3}{4}$ " Material of tube plates Steel Thickness: Front 1 $\frac{3}{16}$ Back 1 $\frac{3}{16}$ Mean pitch of stays 11 $\frac{1}{4}$ x 4 $\frac{1}{2}$ Pitch across wide water spaces 13 $\frac{1}{2}$ " Working pressures by rules 260 & 250 Girders to Chamber tops: Material Steel Depth andthickness of girder at centre 9 x 7 $\frac{1}{2}$ (Two) Length as per rule 2'-8 $\frac{3}{8}$ Distance apart 8 $\frac{1}{2}$ " Number and pitch of stays in each 4 x 4 $\frac{1}{4}$ "

Working pressure by rules 218 Steam dome: description of joint to shell % of strength of joint

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

Pitch of rivets Working pressure of shell by rules Crown plates Thickness How stayed

SUPERHEATER. Type Date of Approval of Plan Tested by Hydraulic Pressure to

Date of Test Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler

Diameter of Safety Valve Pressure to which each is adjusted Is Easing Gear fitted

IS A DONKEY BOILER FITTED?

20.

If so, is a report now forwarded?

✓

SPARE GEAR. State the articles supplied:—4 Top end bolts + nuts. 2 Bottom end bolts + nuts. 2 bearing bolts + nuts. Set of coupling bolts + nuts. Spare top + bottom end brasses. 12 pump ring bolts + washers. 12 studs + nuts for cyl. covers, also for valve covers. 1 valve spindle for H.P. + one for L.P. engine. Scaper valve springs for each engine. Spare piston ring for each engine. 50 condenser tubes. Spare S.V. spring for boiler. Impeller shaft for centrifugal pump. Suction + delivery valves for donkey pump. Main + aux. check valves. Assorted bolts + nuts + iron of various sizes.

The foregoing is a correct description.

THE CALEDON SHIPBUILDING & ENGINEERING CO. LTD.

J. E. Bruce

SECRETARY

Manufacturer.

Dates of Survey while building
During progress of work in shops -- 1919 JUNE 19. JULY 8. AUG 12. 18. 24. SEP 11. 25. OCT 9. 31. NOV 18. 25. DEC 29.
During erection on board vessel -- 1920 JAN 16. FEB 12. 20. 26. MAR 3. 10. APR 2. 4. 13. 16. 22. 30. MAY 6. 24. JUNE 16. 21. JULY 8. AUG 4. 14. 18. 25. SEP 1. 3. 8. 10. OCT 4. 19. 22. 28. NOV 1. 2. 22. 24. DEC 13.
Total No. of visits 69.

Is the approved plan of main boiler forwarded herewith

✓

Dates of Examination of principal parts—Cylinders H.P. 16.4.20 M.P. 20.2.20 L.P. 2.10.20 Slides 22.11.20 Covers 19.10.20 Pistons 19.10.20 Rods 3.9.20

Connecting rods 18.8.20 Crank shaft 20.2.20 Thrust shaft 27.5.20 Tunnel shafts 27.5.20 Screw shaft 22.11.20 Propeller 22.11.20

Stern tube 22.11.20 Steam pipes tested Glasgow Engine and boiler seatings 23.12.20 Engines holding down bolts 8.2.21

Completion of pumping arrangements 9.3.21. Boilers fixed 28.1.21. Engines tried under steam 16.3.21.

Completion of fitting sea connections 17.12.20 Stern tube 17.12.20. Screw shaft and propeller 17.12.20.

Main boiler safety valves adjusted 16.3.21. Thickness of adjusting washers (F.S. $\frac{7}{16}$ A. $\frac{13}{32}$) (F.P. $\frac{11}{16}$ A. $\frac{3}{8}$) (A.S. $\frac{13}{32}$ A. $\frac{13}{32}$) (A.P. $\frac{7}{16}$ A. $\frac{13}{32}$)

Material of Crank shaft Steel Identification Mark on Do. 892 J.H.M. Material of Thrust shaft Steel Identification Mark on Do. 892 J.H.M.

Material of Tunnel shafts Steel Identification Marks on Do. 892 J.H.M. Material of Screw shafts Steel Identification Marks on Do. 892 J.H.M.

Material of Steam Pipes Lap welded Steel Test pressure 645 lbs. Tested Glasgow

Is an installation fitted for burning oil fuel 20 Is the flash point of the oil to be used over 150°F. ✓

Have the requirements of Section 49 of the Rules been complied with ✓

Is this machinery duplicate of a previous case ✓ If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, &c.)

The machinery of this vessel has been built under special survey + in accordance with the approved plans. The materials and workmanship are sound + good. The machinery was found to be in good working order under steam, and is eligible in my opinion to be classed L.M.C. 8.21.

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 8.21. F.D. CL

Roll
9/12/21 *Roll*

The amount of Entry Fee ... £ 6/0/0 When applied for, 30 Aug 1921
Special ... £ 107/4/0
Donkey Boiler Fee ... £ : :
Travelling Expenses (if any) £ : : When received, 6.9.1921

Committee's Minute

Assigned

+ L.M.C. 8.21
F.D. C.L.

MACHINERY DEPT
BUILT

John H. Macarty
Engineer Surveyor to Lloyd's Register of Shipping.



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Foundation