

## REPORT ON MACHINERY.

No. 71431

Received at London Office

Writing Report 31st March 1919 When handed in at Local Office 31st March 1919 Port of NEWCASTLE THU APR 3 - 1919  
 in Survey held at Larson & Hebburn Date, First Survey 5th March 1918 Last Survey 24th March 1919  
 Book 19 on the S.S. Cairndhuie ex Har Camel (Number of Plates 36) Gross 5250 Tons  
 Built at Renfrew By whom built Palmers & Co No. 884 Net 3218 When built 1919  
 Engines made at Larson By whom made Palmers & Co No. 890 when made 1919  
 Boilers made at do By whom made do when made 1919  
 Rated Horse Power 517 Owners Cairndhuie Steamships Ltd Port belonging to Renfrew  
 Horse Power as per Section 28 517 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes  
 LINES, & Co. — Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3  
 of Cylinders 27" 4 1/2" 73" Length of Stroke 48 Revs. per minute 77 Dia. of Screw shaft 14 1/2" as per rule 14 1/2" Material of Steel  
 Is 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  
 Is 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 Yes If two  
 are fitted, is the shaft lapped or protected between the liners Yes Length of stern bush 5-0 1/2"  
 of Tunnel shaft 13-3 3/8" as per rule 13 1/2" Dia. of Crank shaft journals 14 1/2" as per rule 14 1/2" Dia. of Crank pin 14 1/2" Size of Crank webs 22 1/2" x 9" Dia. of thrust shaft under  
 pins 14 3/4" Dia. of screw 17-6" Pitch of Screw 16-6" No. of Blades 4 State whether moveable No Total surface 98.2 sq ft  
 of Feed pumps 2 Diameter of ditto 4" Stroke 24 Can one be overhauled while the other is at work Yes  
 of Bilge pumps 2 Diameter of ditto 4" Stroke 24 Can one be overhauled while the other is at work Yes  
 of Donkey Engines 3 Sizes of Pumps 10 1/2" x 14 1/2" 2 1/2" x 7 1/2" 9 1/2" x 7 1/2" No. and size of Suctions connected to both Bilge and Donkey pumps  
 Engine Room Four 3 1/2" diameter In Holds, one 3 1/2" in No 4 and one 3" in tunnel well.  
 of Bilge Injections 1 sizes 8" Connected to condenser, or to circulating pump Yes 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 the sluices on Engine room bulkheads always accessible Yes  
 Are all connections with the sea direct on the skin of the ship Yes Are the Valves or Cocks Both main discharge below all others above  
 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 Both  
 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 all pipes carried through the bunkers forward bilge pipes How are they protected Wood boxing  
 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  
 Results of examination of completion of fitting of Sea Connections 25/3/19 of Stern Tube 25/3/19 Screw shaft and Propeller 25/3/19  
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Engine room top platform  
 BUILDERS, & Co. — (Letter for record S) Manufacturers of Steel Spencer & Sons Ltd  
 Total Heating Surface of Boilers 7668 sq ft Is Forced Draft fitted Yes No. and Description of Boilers 3, Single Ended  
 Working Pressure 180 lb per sq in Tested by hydraulic pressure to 360 lb Date of test 25/10/18 No. of Certificate 9172  
 Can each boiler be worked separately Yes Area of fire grate in each boiler 63.3 sq ft No. and Description of Safety Valves to  
 each boiler one direct spring Area of each valve 9.62 sq in Pressure to which they are adjusted 185 lb Are they fitted with easing gear Yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 30" Mean dia. of boilers 15-6" Length 11-6" Material of shell plates Steel  
 Thickness 1 1/8" Range of tensile strength 28/32 ton Are the shell plates welded or flanged No Descrip. of riveting: cir. seams 2 R Lap  
 of seams 5 with Diameter of rivet holes in long. seams 1 5/16" Pitch of rivets 9/8" Lap of plates or width of butt straps 19 1/2"  
 Percentages of strength of longitudinal joint 85% Working pressure of shell by rules 182 lb Size of manhole in shell 16" x 12"  
 of compensating ring spigot No. and Description of Furnaces in each boiler 3, Dighton Material Steel Outside diameter 50 3/16"  
 Length of plain part top 19 1/2" Thickness of plates bottom 19 1/2" Description of longitudinal joint Welded No. of strengthening rings none  
 Working pressure of furnace by the rules 185 Combustion chamber plates: Material Steel Thickness: Sides 23/32" Back 11/16" Top 23/32" Bottom 23/32"  
 of stays to ditto: Sides 13/32" Back 10/32" Top 10/32" Bottom 10/32" If stays are fitted with nuts or riveted heads Nuts inside Working pressure by rules 180 lb  
 Material of stays Steel Diameter at smallest part 2 1/8" Area supported by each stay 98.9 sq in Working pressure by rules 219 End plates in steam space:  
 Material Steel Thickness 1 1/32" Pitch of stays 20/32" How are stays secured Double nuts Working pressure by rules 192 Material of stays Steel  
 Diameter at smallest part 5-4 1/8" Area supported by each stay 446 sq in Working pressure by rules 199 Material of Front plates at bottom Steel  
 Thickness 31/32" Material of Lower back plate Steel Thickness 27/32" Greatest pitch of stays 13 5/8" x 8 3/4" Working pressure of plate by rules 187  
 Diameter of tubes 2 1/2" Pitch of tubes 4" x 3 1/8" Material of tube plates Steel Thickness: Front 31/32" Back 3/4" Mean pitch of stays 9 7/8"  
 Height across wide water spaces 13 5/8" Working pressures by rules 181 lb Girders to Chamber tops: Material Steel Depth and  
 thickness of girder at centre 10" x 1 1/2" Length as per rule 35 7/8" Distance apart 10 5/8" Number and pitch of stays in each none, 9 1/4"  
 Working pressure by rules 187 lb Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked  
 separately Yes 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



IS A DONKEY BOILER FITTED? *No*

If so, is a report now forwarded? *✓*

SPARE GEAR. State the articles supplied:—

2 Connecting rod top bolts & nuts, 2 connecting rod bottom bolts & nuts, 2 main bearing bolts & nuts, 6 coupling bolts & nuts, one feed pump suction & one discharge valve, one bilge pump suction and one discharge valve, 3 main check valves, 3 donkey feed check valves, 24 assorted bolts & nuts, 6 cylinder cover bolts & nuts, 6 steam chest cover studs & nuts, 12 junk ring studs & nuts, 5 bars round iron, 3/8", 1/2", 5/8", 3/4" & 1" and one cast iron propeller.

The foregoing is a correct description,

*Palmers Shipbuilding & Iron Co. Ltd.*

*D. Kemp.*

Manufacturer.

87.  
Dates of Survey while building  
During progress of work in shops -- *1919*  
During erection on board vessel -- *May 5. Apr. 3. 8. 24. 25. 29. May 3. 8. 10. 14. 17. Jun 10. 18. 20. July 4. 24. 26. 30. Aug 2. 26. 27. 29. 30. Sept 4. 6. 10. 11. 13. 17. 20. 26. 27. 30. Oct 2. 3. 10. 11. 18. 22. 25. 28. 29. 30. Nov 1. 5. 6. 8. 14. 29. 21. 22. 26. 29. Dec 6. 9. 10. 12. 17. 18. 23. 24. 1919*  
Total No. of visits *76*

Is the approved plan of main boiler forwarded herewith? *No*

Dates of Examination of principal parts: Cylinders *3/5. 10/6. 18/6. 26/7. 16/10* Covers *26/7. 18/8* Pistons *26/7. 15/8* Rods *26/8. 10/10*  
Connecting rods *26/8* Crank shaft *15/6. 26/8* Thrust shaft *22/10* Tunnel shafts *26/8. 5/11* Screw shaft *24/4. 29/4* Propeller *3/5. 26/8*  
Stern tube *16/10* Steam pipes tested *22/10/18* Engine and boiler seatings *12/12/18* Engines holding down bolts *22/12/18*  
Completion of pumping arrangements *6/2/19* Boilers fixed *6/2. 11/2/19* Engines tried under steam *11/2/19*  
Main boiler safety valves adjusted *11/2/19* Thickness of adjusting washers *P.B. 7/16. 5/16 C.B. 3/8. 3/8 H.B. 1/32. 5/16*

Material of Crank shaft *Steel* Identification Mark on Do. *2139* Material of Thrust shaft *Steel* Identification Mark on Do. *2102*  
Material of Tunnel shafts *Steel* Identification Marks on Do. *2015/6/7/8/9. 2104* Material of Screw shafts *Steel* Identification Marks on Do. *2105*  
Material of Steam Pipes *Steel & copper* Test pressure *540 & 360 lbs respectively*

Is an installation fitted for burning oil fuel? *No* 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? *Not used* If so, state name of vessel *S.S. Mar Pundit*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The machinery of this vessel, has been constructed under special survey, the materials and workmanship are of good quality, it has been securely fitted on board and satisfactorily tested under steam. In my opinion the machinery of this vessel is eligible for record: L.M.C. 3-19 in the register book.*

*9 forging and pipe reports, 2 invoices for furnaces and invoices for steel plates & bars now attached.*

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 3-19. F.D.

*J.W.D. 4/4/19*

The amount of Entry Fee ... £ : : When applied for.  
Special ... £ 116 : 13 : 2. 4. 1919  
Donkey Boiler Fee ... £ : : Then received.  
Travelling Expenses (if any) £ : : 14. 4. 1919

Committee's Minute  
Assigned *+ L.M.C. 3-19 F.D.*

*George Hurdock*  
Engineer-Surveyor to Lloyd's Register of British & Foreign Shipping.

Lloyd's Register Foundation