

# REPORT ON MACHINERY.

No. 22967

Port of Sunderland

Received at London Office FRI. NOV 23 1906

No. in Survey held at Sunderland Date, first Survey 25<sup>th</sup> February 06 Last Survey 28<sup>th</sup> September 1906

Reg. Book. on the Master MacKay Bros S.S. No 5. S.S. "Klio" (Number of Visits 55)

Master Alma Built at Alma By whom built Messrs Mackay Bros Tons <sup>Gross</sup> 1363.23 <sub>Net</sub> 853.84 When built 1906

Engines made at Sunderland By whom made Messrs Mac Coll & Pollock when made 1906

Boilers made at Sunderland By whom made Messrs Mac Coll & Pollock when made 1906

Registered Horse Power 146 Owners Dampfschiffahrts Ges. Neptune Port belonging to Bremen

Nom. Horse Power as per Section 28 146 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted no

ENGINES, &c.—Description of Engines Inverted triple expansion No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 18", 29", 48" Length of Stroke 33" Revs. per minute 90 Dia. of Screw shaft as per rule 10.78" / as fitted 11.3/16" Material of Steel

Is the screw shaft fitted with a continuous liner the whole length of the stern tube no 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 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 liners are fitted, is the shaft lapped or protected between the liners no Length of stern bush 3' 8 3/4"

Dia. of Tunnel shaft as per rule 8.93" / as fitted 9 1/4" Dia. of Crank shaft journals as per rule 9.37" / as fitted 9 3/4" Dia. of Crank pin 9 3/4" Size of Crank webs 6 7/16" x 1 1/2" Dia. of thrust shaft under collars 9 3/4" Dia. of screw 13' 0" Pitch of Screw 14' 6" No. of Blades 4 State whether moveable no Total surface 62.37

No. of Feed pumps 2 Diameter of ditto 2 3/4" Stroke 17" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 2 3/4" Stroke 17" Can one be overhauled while the other is at work Yes

No. of Donkey Engines 2 Sizes of Pumps 6 x 8 x 6 Ballast & 6 x 4 x 6 No. No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 2 of 2 1/2" & 1 of 2 1/4" In Holds, &c. 2 of 2" in each hold

No. of Bilge Injections 1 sizes 4 1/2" Connected to condenser, or to circulating pump no Is a separate Donkey Suction fitted in Engine room & size Yes - 2 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 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

What pipes are carried through the bunkers nil 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

Dates of examination of completion of fitting of Sea Connections 28.8.06 of Stern Tube 28.8.06 Screw shaft and Propeller 28.8.06

Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from top platform

BOILERS, &c.—(Letter for record 5) Manufacturers of Steel Messrs Beardmore & Co

Total Heating Surface of Boilers 2268 sq ft Is Forced Draft fitted no No. and Description of Boilers one S. E. Cylindrical Mult?

Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 1.8.06 No. of Certificate 2512

Can each boiler be worked separately Yes Area of fire grate in each boiler 63 sq ft No. and Description of Safety Valves to each boiler 2 spring

Area of each valve 7.07 sq ft Pressure to which they are adjusted 185 lbs Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 14" Mean dia. of boilers 16' 0" Length 10' 6" Material of shell plates steel

Thickness 1 9/32" Range of tensile strength 28 1/2 / 32 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams d. v. lap.

long. seams t. r. d. s. Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 9 5/16" Lap of plates or width of butt straps 20"

Per centages of strength of longitudinal joint rivets 92.6 / plate 85.234 Working pressure of shell by rules 182 lbs Size of manhole in shell 16 x 12"

Size of compensating ring flanged No. and Description of Furnaces in each boiler 3 Dighton Material steel Outside diameter 52"

Length of plain part top 19 1/32" / bottom 19 1/32" Thickness of plates 19 1/32" Description of longitudinal joint weld No. of strengthening rings 4

Working pressure of furnace by the rules 181.5 lbs Combustion chamber plates: Material steel Thickness: Sides 11/16" Back 11/16" Top 11/16" Bottom 1"

Pitch of stays to ditto: Sides 10 x 9" Back 10 7/8 x 8 1/2" Top 10 x 9" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 180.5 lbs

Material of stays steel Diameter at smallest part 1.79" Area supported by each stay 87.6 sq in Working pressure by rules 183.8 lbs End plates in steam space:

Material steel Thickness 1 3/32" Pitch of stays 18 1/2 x 16 3/8" How are stays secured d. n. w. Working pressure by rules 181 lbs Material of stays steel

Diameter at smallest part 5.56" Area supported by each stay 294.75 sq in Working pressure by rules 181.5 lbs Material of Front plates at bottom steel

Thickness 13/16" Material of Lower back plate steel Thickness 13/16" Greatest pitch of stays 11 3/4 x 10 5/8" Working pressure of plate by rules 181.5 lbs

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2 x 4 1/2" Material of tube plates steel Thickness: Front 13/16" Back 13/16" Mean pitch of stays 9"

Pitch across wide water spaces 13 1/4" Working pressures by rules 244.2 lbs Girders to Chamber tops: Material steel Depth and thickness of girder at centre 8 x 13 7/8"

Length as per rule 30 7/16" Distance apart 9" Number and pitch of stays in each 2-10"

Working pressure by rules 180.3 lbs Superheater or Steam chest; how connected to boiler — Can the superheater be shut off and the boiler worked separately —

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

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

If 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 —

VERTICAL DONKEY BOILER— Manufacturers of Steel

No.	Description	Made at	By whom made	When made	Where fixed
Working pressure	tested by hydraulic pressure to	Date of test	No. of Certificate	Fire grate area	Description of Safety
Valves	No. of Safety Valves	Area of each	Pressure to which they are adjusted	Date of adjustment	
If fitted with easing gear	If steam from main boilers can enter the donkey boiler	Dia. of donkey boiler	Length		
Material of shell plates	Thickness	Range of tensile strength	Descrip. of riveting long. seams		
Dia. of rivet holes	Whether punched or drilled	Pitch of rivets	Lap of plating	Per centage of strength of joint	Rivets Plates
Working pressure of shell by rules	Thickness of shell crown plates	Radius of do.	No. of stays to do.	Dia. of stays	
Diameter of furnace Top	Bottom	Length of furnace	Thickness of furnace plates	Description of joint	
Working pressure of furnace by rules	Thickness of furnace crown plates	Stayed by			
Diameter of uptake	Thickness of uptake plates	Thickness of water tubes	Dates of survey		

SPARE GEAR. State the articles supplied:— Propeller, 2 top end, 2 bottom end, 2 main bearings & 1 set coupling bolts, 6 junk ring bolts, 1/2 set air pump & 1/2 set Air pump valves, 1 main feed check valve, Bolts & Nuts assorted & iron of sizes, 2 spare rings for piston valve

MAD COLL & POLLOCK, LTD  
 Manufacturer. *James MacColl*  
 Managing Director.

The foregoing is a correct description,  
 Dates of Survey while building: During progress of work in shops— 1906 Feb 25, Mch 2, 30, Apr 12, May 2, 10, 15, 22, 28, 29, June 1, 7, 8, 15, 19, 25, July 6, 12, 19, 30, Aug 1, 10, 17, 22, 25.  
 During erection on board vessel— 28, 31, Sept 4, 7, 10, 12, 14, 20, 21, 28.  
 Total No. of visits 35  
 Is the approved plan of main boiler forwarded herewith Yes

Dates of Examination of principal parts—Cylinders 6.7.06 Slides 22.5.06 Covers 22.5.06 Pistons 10.5.06 Rods 22.5.06  
 Connecting rods 22.5.06 Crank shaft 23.6.06 Thrust shaft 22.5.06 Tunnel shafts 30.6.06 Screw shaft 17.8.06 Propeller 6.7.06  
 Stern tube 30.7.06 Steam pipes tested 31.8.06 Engine and boiler seatings 25.8.06 Engines holding down bolts 3.9.06  
 Completion of pumping arrangements 7.9.06 Boilers fixed 28.8.06 Engines tried under steam 7.9.06  
 Main boiler safety valves adjusted 7.9.06 Thickness of adjusting washers Port Valve 13/32 Star Valve 13/32  
 Material of Crank shaft steel Identification Mark on Do. 637AFD Material of Thrust shaft steel Identification Mark on Do. 371.P.A.  
 Material of Tunnel shafts steel Identification Marks on Do. 2905 K.H 525 P.A. Material of Screw shafts Steel Identification Marks on Do. 1081.P.H.  
 Material of Steam Pipes Copper Test pressure 400 lbs

General Remarks (State quality of workmanship, opinions as to class, &c.) The Machinery of this vessel has been constructed under special survey, the workmanship and materials used are both of good quality, the Engines have been tried under steam and worked well

I beg to recommend that this vessel is eligible in our opinion to have the record L.M.C. 9.06 in the Register Book

It is submitted that this vessel is eligible for THE RECORD H.L.M.C. 9.06  
 R.S. P.M.S. 23.11.06

The amount of Entry Fee... £ 2:  
 Special... £ 21.18:  
 Donkey Boiler Fee... £ :  
 Travelling Expenses (if any) £ ✓ : ✓ : ✓ :  
 When applied for, 4.10.06  
 When received, 23.11.06

R.W. Coomber & J. Graham  
 Engineer Surveyors to Lloyd's Register of British & Foreign Shipping.

Committee's Minute FRI. NOV 23 1906  
 Assigned + L.M.C. 9.06

