

## REPORT ON MACHINERY.

No. 22967

Port of *Sunderland*

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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.

(Number of Visits *35*)on the *Messrs MacKay Bros S.S. No 5. S.S. "Klio"*Gross *1363.23*Net *853.84*Master *Alton*

Built at

By whom built *Messrs MacKay Bros*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

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"* 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 tightin 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 partbetween the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive *Yes* If twoliners 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"* Dia. of Crank shaft journals *as per rule 9.37"* Dia. of Crank pin *9 3/4"* Size of Crank webs *6 7/16" x 1 1/4"* Dia. of thrust shaft undercollars *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.* and size of Suctions connected to both Bilge and Donkey pumpsIn 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 *S*) 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 built?*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 toeach boiler *2 spring* Area of each valve *7.07 sq in* 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 1/32"* Range of tensile strength *28 1/2/32* Are the shell plates welded or flanged *no* Descrip. of riveting: cir. seams *d. r. lap.*long. seams *L. r. d. r. s.* Diameter of rivet holes in long. seams *1 3/16"* Pitch of rivets *9 5/16"* Lap of plates or width of butt straps *20"*Per centages of strength of longitudinal joint *92.6* 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 1/2"* Thickness of plates *bottom 19 1/2"* Description of longitudinal joint *weld* No. of strengthening rings *1*Working pressure of furnace by the rules *181.5 lbs* Combustion chamber plates: Material *steel* Thickness: Sides *1 1/16"* Back *1 1/16"* Top *1 1/16"* 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 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 *1 3/16"* Material of Lower back plate *steel* Thickness *1 3/16"* Greatest pitch of stays *11 3/4 x 10 5/8"* Working pressure of plate by rules *181.6 lbs*Diameter of tubes *3 1/4"* Pitch of tubes *4 1/2 x 4 1/2"* Material of tube plates *steel* Thickness: Front *1 3/16"* Back *1 3/16"* 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 andthickness of girder at centre *8 x 13 1/8"* 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 workedseparately *—* Diameter *—* Length *—* Thickness of shell plates *—* Material *—* Description of longitudinal joint *—* Diam. of rivetholes *—* 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

The foregoing is a correct description,

MAD COLL & POLLOCK, LTD

Manufacturer.

*Angus MacColl*  
Managing Director

Dates of Survey while building	During progress of work in shops—	1906 Feb 23, 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
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.	6372F0	Material of Thrust shaft	steel	Identification Mark on Do.	371.P.A.		
Material of Tunnel shafts	steel	Identification Marks on Do.	1905 K.H 525 P.A.	Material of Screw shafts	Steel	Identification Marks on Do.	1081.2.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

L.M.C. 9.06

*Rd. Pmb. B.*  
23.11.06

The amount of Entry Fee..	£ 2:	When applied for,	4.10.06
Special .. .. .	£ 21. 18:	When received,	23.11.06
Donkey Boiler Fee .. .. .	£ :		
Travelling Expenses (if any) £	✓ :		

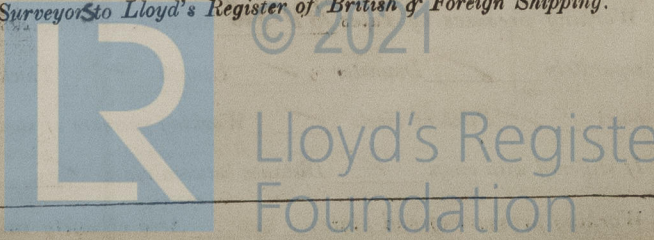
Committee's Minute

FRI. NOV 23 1906

Assigned

+L.M.C. 9.06

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



MACHINERY CERTIFICATE WRITTEN.