

# REPORT ON MACHINERY.

No. 22984

Port of Sunderland.

Received at London Office **THUR. 18 OCT 1906**

No. in Survey held at Sunderland Date, first Survey 22<sup>nd</sup> December 05 Last Survey 11<sup>th</sup> October 1906

Reg. Book. on the Steel Screw Steamer "KAIAPOI" (Number of Visits 50)

Master Irvine Built at Sunderland By whom built Osbourne, Gurnett & Co Tons } Gross 2003.36  
Net 1246.51  
When built 1906

Engines made at Sunderland By whom made N.E. Marine Engineering Co (Lini) when made 1906

Boilers made at Sunderland By whom made N.E. Marine Engineering Co (Lini) when made 1906

Registered Horse Power \_\_\_\_\_ Owners Union Steam Ship Co. of New Zealand Ltd Port belonging to Dunedin  
Nom. Horse Power as per Section 28 194 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes.

**ENGINES, &c.**—Description of Engines Triple Expansion (Inverted) No. of Cylinders Three No. of Cranks Three  
 Dia. of Cylinders 20 1/2 - 33 - 54 Length of Stroke 39 Revs. per minute 64 Dia. of Screw shaft as per rule 12.4 Material of Iron  
 as fitted 12 1/2 screw shaft  
 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 \_\_\_\_\_ 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 Rubber solution Length of stern bush 4-2 1/2  
 Dia. of Tunnel shaft as per rule 10.31 Dia. of Crank shaft journals as per rule 10.83 Dia. of Crank pin 10 7/8 Size of Crank webs 6 3/4 x 1 1/2 Dia. of thrust shaft under  
 collars 10 7/8 Dia. of screw 14-9 Pitch of Screw 14-6 No. of Blades four State whether moveable no Total surface 69 sq ft  
 No. of Feed pumps Two Diameter of ditto 3 Stroke 1-6 Can one be overhauled while the other is at work yes.  
 No. of Bilge pumps Two Diameter of ditto 3 1/2 Stroke 1-6 Can one be overhauled while the other is at work yes.  
 No. of Donkey Engines Two, Duplex Sizes of Pumps 7x9x9 water, 6x4x6 feed No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room Two 3" mugs, one 3" Centre In Holds, &c. Main Hold two 3" mugs, After Hold  
two 2 1/2" mugs, one 3" Centre Tunnel well 2 1/2" Centre  
 No. of Bilge Injections one sizes 4 Connected to condenser, or to circulating pump pump Is a separate Donkey Suction fitted in Engine room & size yes 3"  
 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 none  
 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 none How are they protected \_\_\_\_\_  
 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 17/8 22/8 of Stern Tube 25/8 Screw shaft and Propeller 25/8  
 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 J. Spencer & Sons Ltd. The Light & Co. Ltd.  
 Total Heating Surface of Boilers 2940 sq ft Is Forced Draft fitted no No. and Description of Boilers Two, single ended, Cylindrical  
 Working Pressure 180 lb. Tested by hydraulic pressure to 360 lb. Date of test 7/7/06 No. of Certificate 2501  
 Can each boiler be worked separately yes. Area of fire grate in each boiler 43 1/2 sq ft No. and Description of Safety Valves to  
 each boiler Two, direct spring Area of each valve 4.91 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 2-0 (Rule Mean dia. of boilers 12-9 1/2 Length 10-0 Material of shell plates steel  
 Thickness 1 1/2 Range of tensile strength 28 3/4 - 52 tons Are the shell plates welded or flanged no Descrip. of riveting: cir. seams Top, S.R.  
 long. seams DRS - TR Diameter of rivet holes in long. seams 1 1/8 Pitch of rivets 8 Lap of plates or width of butt straps 16 3/4  
 Per centages of strength of longitudinal joint rivets 89.6 plate 85.93 Working pressure of shell by rules 180.9 lb. Size of manhole in shell end 16x12  
 Size of compensating ring flanged No. and Description of Furnaces in each boiler Three plain Material steel Outside diameter 35 3/4  
 Length of plain part top 6-0 bottom \_\_\_\_\_ Thickness of plates crown } 4 Description of longitudinal joint Weld No. of strengthening rings \_\_\_\_\_  
 bottom } 4 1/2  
 Working pressure of furnace by the rules 187 lb. Combustion chamber plates: Material steel Thickness: Sides 4/16 Back 3/4 Top 4/16 Bottom 15/16  
 Pitch of stays to ditto: Sides 8 3/8 x 10 1/2 Back 11 1/8 x 8 1/2 Top 8 3/8 x 10 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 182 lb.  
 Material of stays steel Diameter at smallest part 57-163-176 Area supported by each stay 88, 101, 111 Working pressure by rules 184, 187, 199 End plates in steam space:  
 Material steel Thickness 1 5/16 Pitch of stays 18 1/2 x 23 1/2 How are stays secured DN + W Working pressure by rules 183 lb. Material of stays steel  
 Diameter at smallest part 3.28 Area supported by each stay 4.35 Working pressure by rules 150 lb. Material of Front plates at bottom steel  
 Thickness 1 3/16 Material of Lower back plate steel Thickness 3/2 Greatest pitch of stays 14 1/8 x 8 1/2 Working pressure of plate by rules 181 lb.  
 Diameter of tubes 3 1/4 Pitch of tubes 4 1/2 x 4 1/16 Material of tube plates steel Thickness: Front 1 3/16 Back 1 3/16 Mean pitch of stays 10 5/16  
 Pitch across wide water spaces 14 1/2 Working pressures by rules 215 lb. Girders to Chamber tops: Material steel Depth and  
 thickness of girder at centre 8 x 1 3/4 Length as per rule 24 15/16 Distance apart 10 1/2 Number and pitch of stays in each Two 8 3/8  
 Working pressure by rules 194 lb. 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 \_\_\_\_\_

000-2811M



**VERTICAL DONKEY BOILER—** Manufacturers of Steel *No Donkey Boilers fitted*

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:— *one set of coupling bolts & nuts, two each top and bottom end & main bearing bolts & nuts, top and bottom end frames, two sets of feed & helix pump valves, air & circulating pump valves, one ice trap, two valve springs, pump handle frame, one set each piston packing rings, 2 sets valve springs, one set connecting straps, two sets R.C. one propeller & propeller shaft.*

The foregoing is a correct description,  
**NORTH EASTERN MARINE ENGINEERING CO. LTD.**  
*W. M. Deakin* Manufacturer.

Dates During progress of work in shops— 1905. Dec. 22 - 00 - April 9, 20 May, 1, 3, 4, 7, 8, 11, 14, 17, 21, 22, 25, 29, 31 June, 1, 11, 12, 15, 14, 19, 21, 25

of Survey During erection on board vessel - - 29 July, 2, 4, 6, 7, 12, 17, 24 Aug. 1, 2, 5, 14, 16, 17, 20, 22, 25, 27, 28 Sept. 1, 11, 19, 22, 25, Oct. 9, 10, 11

while building Total No. of visits 50

Is the approved plan of main boiler forwarded herewith *yes*

" " " donkey " " " "

Dates of Examination of principal parts— Cylinders <sup>17/21/22/25/31/22</sup> 17/5 21/5 22/5 25/5 31/5 Slides 4/7 12/7 Covers 21/6 29/6 25/9 Pistons 22/5 27/6 Rods 22/12/05

Connecting rods 3/5 4/5 Crank shaft <sup>24/31/4/11/7/11</sup> 24/5 31/5 4/5 11/5 7/5 Thrust shaft 1/5 14/5 2/7 Tunnel shafts 1/4 21/15/6 Screw shaft 29/6 30/6 22/9 Propeller 22/5

Stern tube 3/5 50/8 Steam pipes tested 28/8 Engine and boiler seatings 17/8 Engines holding down bolts 27/8

Completion of pumping arrangements 9/10 Boilers fixed 11/9 Engines tried under steam 1/9

Main boiler safety valves adjusted 1/9 Thickness of adjusting washers *all rings 1/2 thick.*

Material of Crank shaft *steel* Identification Mark on Do. *12 H 06* Material of Thrust shaft *steel* Identification Mark on Do. *RN 9583 12 H 06*

Material of Tunnel shafts *iron* Identification Marks on Do. *LLOYD 316 D AB* Material of Screw shafts *iron* Identification Marks on Do. *LLOYD 316 D AB*

Material of Steam Pipes *Copper rolled drawn 4 1/2 bore No. 6 mg.* 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 material and workmanship sound & good, the Boilers and steam pipes have been tested by hydraulic pressure & the machinery worked well at the moorings & the safety valves have been adjusted under steam to their working pressure & easing gear fitted*

*This vessel is eligible in my opinion to have the Notation*  
*\* L.M.C. 10.06 with the Register Book & Electric Light*

**It is submitted that**  
**this vessel is eligible for**  
**THE RECORD L.M.C. 10.06. ELEC. LIGHT.**

The amount of Entry Fee. £ 2 : : When applied for, *17.10.06*

Special .. £ 29 : 2 : : *18.10.06*

Donkey Boiler Fee .. £ : : : *19.10.06*

Travelling Expenses (if any) £ : : : *20/10*

*W. M. Deakin*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **FRI. 19 OCT 1906**

Assigned *+ L.M.C. 10.06*  
*elec. light*

MACHINERY CERTIFICATE WRITTEN.



Certificate (if required) to be sent to Committee's Minute.