

28th May 1903

REPORT ON MACHINERY.

Port of PHILADELPHIA

Received at London Office 6 JUN 1903

No. in Survey held at Camden N. J Date, first Survey Aug 12th 1902 Last Survey May 18th 1903
No. of Book. (Number of Visits 24)

on the S. S. LIGONIER Tons { Gross 8787. Net 2396.8

Builder L. G. Johnson Built at Camden By whom built New York Shipbuilding Co When built 1903.5

Machinery made at Camden By whom made New York Shipbuilding Co when made 1903.5

Engines made at Camden By whom made New York Shipbuilding Co when made 1903.5

Registered Horse Power 455 Owners J. M. Caffey Petroleum Co Port belonging to Port Arthur

Horse Power as per Section 28 455 Is Refrigerating Machinery fitted no Is Electric Light fitted yes

Engines, &c. — Description of Engines Triple, single screw No. of Cylinders 3 No. of Cranks 3
No. of Cylinders 25, 4 2 1/2, 7 2 Length of Stroke 48 Revs. per minute 75 Dia. of Screw shaft as per rule 14 3/8" as fitted 15 1/4" Lgth. of stern bush 6' 9 1/2"

Tunnel shaft as per rule none Dia. of Crank shaft journals as per rule 14 1/2" as fitted 14 3/4" Dia. of Crank pin 15" Size of Crank webs 11 x 18 1/2" Dia. of thrust shaft under 14 3/4" Dia. of screw 17 0" Pitch of screw 18 6" No. of blades 4 State whether moceable yes Total surface 80 sq ft

Feed pumps 2 Diameter of ditto 8 x 5" Stroke 12" Can one be overhauled while the other is at work yes

Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 2 1/2" Can one be overhauled while the other is at work yes

Donkey Engines 3 Sizes of Pumps 8 x 5 x 12, 10 x 7 x 10 No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room 5 - 3 1/2 In Holds, &c. fore peak one 3 1/2, fore hold one 3 1/2

Engine room one 3 1/2, Cargo pump room two 3 and two 1 1/2

Bilge injections 1 sizes 8" Connected to condenser, or to circulating pump pump Is a separate donkey suction fitted in Engine room & size yes, 3 1/2"

Are 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

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

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

How are they protected yes

Are pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times yes

Are bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges yes

Were stern tube, propeller, screw shaft, and all connections examined before launch Is the screw shaft tunnel watertight no tunnel

Is the tunnel worked from yes

Boilers, &c. — (Letter for record S) Total Heating Surface of Boilers 6070 sq ft Is forced draft fitted yes

Description of Boilers Two single ended, mult. Working Pressure 200 lbs Tested by hydraulic pressure to 400 lbs

Can each boiler be worked separately yes Area of fire grate in each boiler 78 sq ft No. and Description of safety valves to test 1/8 - 2.03

Two, direct spring Area of each valve 19.6 sq in Pressure to which they are adjusted 205 lbs Are they fitted with easing gear yes

Distance between boilers or uptakes and bunkers or woodwork 10 ft Mean dia. of boilers 16.3" Length 12.8" Material of shell plates Steel

1/8" Range of tensile strength 27.32 Are they welded or flanged no Descrip. of riveting: cir. seams D & T, R long. seams D, B, S, T, R

Pitch of rivets 10" Lap of plates or width of butt straps 2.3"

Are they of strength of longitudinal joint rivets 95. plate 83.7 Working pressure of shell by rules 217 lbs Size of manhole in shell 16 x 12"

Compensating ring 36 1/2 x 32 1/2 x 1 1/2 No. and Description of Furnaces in each boiler 4 Morrison's Material Steel Outside diameter 43 3/8"

plain part top nil Thickness of plates crown 9/16 Description of longitudinal joint welded No. of strengthening rings none

bottom 9/16 pressure of furnace by the rules 204 lbs Combustion chamber plates: Material Steel Thickness: Sides 9/16 Back 9/16 Top 9/16 Bottom 9/16

Stays to ditto: Sides 6 1/8 x 6 1/8 Back 7 3/8 x 6 3/8 Top 6 1/8 x 7 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 214 lbs

Material of stays Steel Diameter at smallest part 1 3/32" Area supported by each stay 47 sq in Working pressure by rules 269 lbs End plates in steam space:

Steel Thickness 1/32" Pitch of stays 16 x 16" How are stays secured D, N Working pressure by rules 253 lbs Material of stays Steel

at smallest part 2 3/4" Area supported by each stay 256 sq in Working pressure by rules 231 lbs Material of Front plates at bottom Steel

3/4" Material of Lower back plate Steel Thickness 3/4" Greatest pitch of stays 13 1/8 x 6 3/8 Working pressure of plate by rules 210 lbs

Material of tube plates Steel Thickness: Front 3/4" Back 3/4" Mean pitch of stays 8 1/2"

Pitch of tubes 4 x 4 1/4" Working pressures by rules 232 lbs Girders to Chamber tops: Material Steel Depth and

Material of girder at centre 6 1/2 x 1 1/8 plates Length as per rule 25 3/4" Distance apart 7 1/2" Number and pitch of Stays in each 3 - 6 1/8"

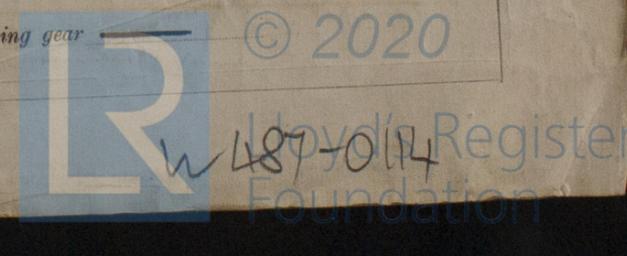
Working pressure by rules 209 lbs Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked

Material of shell plates — Description of longitudinal joint — Diam. of rivet

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

End plates: Thickness — How stayed —

Area of safety valves to superheater — Are they fitted with easing gear —



DONKEY BOILER— No. 1 Description *Roberts Water Tube boiler*
 Made at *New York* By whom made *The Roberts Safety Water Tube Boiler Co.* When made *1903-5* Where fixed *Main deck*
 Working pressure *500 lbs* Tested by hydraulic pressure to *500 lbs* No. of Certificate *✓* Fire grate area *14 sq ft* Description of safety valves *Direct Spring*
 No. of safety valves *2* Area of each *4.9 sq ft* Pressure to which they are adjusted *100 lbs* If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *no*
 Dia. of donkey boiler *19 1/4"* Length *5-9"* Material of shell plates *Steel* Thickness *3/8"* Range of tensile strength *27-30* Descrip. of riveting long. seams *double riveted* Dia. of rivet holes *3/4"* Whether punched or drilled *drill* Pitch of rivets *2 1/2"*
 Lap of plating *✓* Per centage of strength of joint *✓* Rivets *✓* Thickness of shell *steel* plates *1/2"* Radius of do. *drum* No. of Stays to do. *✓*
 Dia. of stays. *✓* Diameter of furnace Top *✓* Bottom *✓* Length of furnace *✓* Thickness of furnace plates *✓* Description of joint *✓* Thickness of furnace crown plates *✓* Stayed by *✓* Working pressure of shell by rules *280 lbs*
 Working pressure of furnace by rules *✓* Diameter of uptake *✓* Thickness of uptake plates *✓* Thickness of water tubes *1/2" B.M.G.*

SPARE GEAR. State the articles supplied:— *12 Coupling bolts, 2 main bearing, 2 crosshead and 2 crank pin bolts omits, 16 propeller studs omits, 6 feed & bilge pump valves one set piston springs and assorted bolts iron.*

The foregoing is a correct description,
New York Shipbuilding Co. Manufacturer.
by DeLooney May. Sub. Insp.

Dates of Survey while building *During progress of work in shops - -*
During erection on board vessel - -
 Total No. of visits *Is the approved plan of main boiler forwarded herewith no*
donkey " " " no

General Remarks (State quality of workmanship, opinions as to class, &c.) *Boiler plans retained for dealing with Lisle ship.*

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 *fitted close* If two liners are fitted, is the shaft lapped or protected between the liners *✓*

The machinery of this vessel is fitted aft.
This vessel is fitted to burn oil fuel in the main boilers, steam being used for spraying the oil. An efficient evaporator of a capacity equal to 30 tons per day has been fitted to make up the loss of water. The Rockwell System of burners is used. The oil fuel pumps are quite separate from the ordinary pumps. The machinery of this vessel has been constructed & fitted on board under Special Survey the workmanship is sound & good throughout. The machinery has been tried under steam as required by the Rules & found satisfactory & is in my opinion eligible for the record of **L.N.C. 503** in the Register Book.

The owners letter regarding the flash point of the oil fuel is sent with this report.

The amount of Entry Fee...	\$ 15.00	When applied for,	
Special	\$ 214.00	20.5.1903	
Donkey Boiler Fee	\$ 10.50	When received,	
Travelling Expenses (if any)	\$ 22.50	22.5.03	
Including \$20 for New York Expenses	Total \$ 262.00		

Robert Haig.
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

It is submitted that this vessel is eligible for **THE RECORD**. **L.N.C. 503**. Fitted for *liquid fuel*. Subject to annual Survey of *Machinery*. **L.M.** **FD ELEC LIGHT** **Lloyd's Register** **Foundation** *9.6.03*

Assigned **L.N.C. 503** **FD**
 Fitted for liquid fuel
 Subject

Certificate (if required) to be sent to

The Surveyors are requested not to write on or below the space for Committee's Minute.

MACHINERY CERTIFICATE