

REPORT ON MACHINERY.

No. 64816

Received at London Office

SEP. 12. 1913

Date of writing Report 1st Sept 1913 When handed in at Local Office

1-9-1913 Port of

NEWCASTLE-ON-TYNE

No. in Survey held at Newcastle

Date, First Survey 10th Jun 1912 Last Survey 1st Sept 1913

Reg. Book. on the S. S. "Pawnee"

(Number of Visits 77)

Gross 4536

Net 3002

When built 1913

Master Built at Newcastle By whom built Palmes' Co

Engines made at Newcastle By whom made Palmes' Co No. 827 when made 1913

Boilers made at Newcastle By whom made Palmes' Co when made 1913

Registered Horse Power Owners Deutsche Amerikanische Petroleum Gesellschaft Port belonging to Hamburg

Nom. Horse Power as per Section 28 332 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

Engines, &c.—Description of Engines Quadruple Expansion No. of Cylinders 4 No. of Cranks 4

Dia. of Cylinders 20 $\frac{1}{4}$ "-29 $\frac{1}{2}$ "-42 $\frac{1}{4}$ "-61" Length of Stroke 45" Revs. per minute 70 Dia. of Screw shaft as per rule 13.49" Material of screw shaft as fitted 13 $\frac{1}{2}$ " 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 yes If two

liners are fitted, is the shaft lapped or protected between the liners Length of stern bush 4'-6"

Dia. of Tunnel shaft as per rule 12" Dia. of Crank shaft journals as per rule 12" Dia. of Crank pin 12" Size of Crank webs 16 $\frac{3}{4}$ "x8 $\frac{1}{2}$ " Dia. of thrust shaft under

collars 12" Dia. of screw 17'-6" Pitch of Screw 15'-0" No. of Blades 4 State whether moveable yes Total surface 85 sq

No. of Feed pumps 2 Diameter of ditto 3 $\frac{1}{2}$ " Stroke 22 $\frac{1}{2}$ " Can one be overhauled while the other is at work yesNo. of Bilge pumps 2 Diameter of ditto 4" Stroke 22 $\frac{1}{2}$ " Can one be overhauled while the other is at work yesNo. of Donkey Engines 2 Sizes of Pumps 7 $\frac{3}{4}$ "x9"x10" 6"x4"x6" No. and size of Suctions connected to both Bilge and Donkey pumpsIn Engine Room Two 3 $\frac{1}{2}$ " in wells In Holds, &c. noneNo. of Bilge Injections 1 sizes 8" Connected to condensers or to circulating pump yes Is a separate Donkey Suction fitted in Engine room & size yes 5 $\frac{1}{2}$ "

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 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 25-7-13 of Stern Tube 25-7-13 Screw shaft and Propeller 25-7-13

Is the Screw Shaft Tunnel watertight none Is it fitted with a watertight door worked from

BOILERS, &c.—(Letter for record S Manufacturers of Steel J. Spencer & Sons & Palmes' Co

Total Heating Surface of Boilers 4446 sq ft Is Forced Draft fitted yes No. and Description of Boilers Two, single-ended

Working Pressure 215 lbs Tested by hydraulic pressure to 430 lbs Date of test 14-2-13 No. of Certificate 8452

Can each boiler be worked separately yes Area of fire grate in each boiler 51 sq ft No. and Description of Safety Valves to

each boiler Two, spring Area of each valve 8.29 sq in Pressure to which they are adjusted 215 lbs Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 10'-4" Mean dia. of boilers 14'-1 $\frac{3}{4}$ " Length 11'-8" Material of shell plates SteelThickness 1 $\frac{1}{16}$ " Range of tensile strength 29-32 $\frac{1}{2}$ Are the shell plates welded or flanged no Descrip. of riveting: cir. seams S. Laplong. seams S. & R. Riv. Diameter of rivet holes in long. seams 1 $\frac{3}{8}$ " Pitch of rivets 18 $\frac{3}{4}$ " Lap of plates or width of butt straps 27 $\frac{5}{8}$ "

Per centages of strength of longitudinal joint rivets 100% plate 92% Working pressure of shell by rules 236 lbs Size of manhole in shell 16"x12"

Size of compensating ring 3 $\frac{1}{2}$ "x27 $\frac{1}{2}$ " No. and Description of Furnaces in each boiler 3, horizontal Material Steel Outside diameter 3'-7 $\frac{1}{2}$ "Length of plain part top Thickness of plates crown 19 $\frac{1}{32}$ " Description of longitudinal joint Welded No. of strengthening ringsWorking pressure of furnace by the rules 216 lbs Combustion chamber plates: Material Steel Thickness: Sides 1 $\frac{1}{16}$ " Back 1 $\frac{1}{16}$ " Top 1 $\frac{1}{16}$ " Bottom 7 $\frac{1}{8}$ "Pitch of stays to ditto: Sides 8"x7 $\frac{1}{2}$ " Back 8"x7 $\frac{3}{4}$ " Top 8"x7 $\frac{1}{2}$ " If stays are fitted with nuts or riveted heads nuts Working pressure by rules 262 lbs

Material of stays Steel Diameter at smallest part 1.73" Area supported by each stay 62 sq in Working pressure by rules 225 lbs End plates in steam space:

Material Steel Thickness 1 $\frac{5}{32}$ " Pitch of stays 17"x16" How are stays secured S. h. w. Working pressure by rules 231 lbs Material of stays Steel

Diameter at smallest part 6.1" Area supported by each stay 248 sq in Working pressure by rules 254 lbs Material of Front plates at bottom Steel

Thickness 1 $\frac{1}{16}$ " Material of Lower back plate Steel Thickness 1" Steepest pitch of stays 14 $\frac{3}{4}$ " Working pressure of plate by rules 240 lbsDiameter of tubes 2 $\frac{1}{2}$ " Pitch of tubes 3 $\frac{3}{4}$ " Material of tube plates Steel Thickness: Front 1 $\frac{1}{16}$ " Back 27 $\frac{1}{32}$ " Mean pitch of stays 9 $\frac{1}{2}$ "Pitch across wide water spaces 13 $\frac{3}{4}$ " Working pressures by rules 230 lbs Girders to Chamber tops: Material Steel Depth andthickness of girder at centre 8 $\frac{1}{2}$ "x13 $\frac{1}{4}$ " Length as per rule 30 $\frac{1}{4}$ " Distance apart 8 $\frac{1}{2}$ " Number and pitch of stays in each 3-7 $\frac{1}{2}$ "

Working pressure by rules 236 lbs Superheater or Steam chest; how connected to boiler none 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

W587 0145

VERTICAL DONKEY BOILER—

Manufacturers of Steel

pt. 5a.

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 Safe
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
Working pressure of shell by rules	Thickness of shell crown plates	Radius of do.	No. of stays to do.	Dia. of stays	Plates
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	Radius of do.	Stayed by		
Diameter of uptake	Thickness of uptake plates	Thickness of water tubes	Dates of survey		

SPARE GEAR. State the articles supplied:— 2 top-end & 2 bottom-end & 2 main bearing bolts & nuts, 1 set of coupling bolts, 1 set of feed & bilge pump valves, pistons for H.P. & 2 M.P. pistons, a quantity of assorted bolts, nuts & iron, 1 crank shaft, 1 screw shaft, 2 propeller blades, 1 air pump rod, 1 slide valve, 1 eccentric shaft, 1 pair bottom-end & 2 pair top-end bushes, 3 safety valve springs.

The foregoing is a correct description, *James Watson & Co. Ltd.* Manufacturer.

Dates of Survey while building	During progress of work in shops	During erection on board vessel	Total No. of visits
1912 Jan 10, 13, 15, Feb 2, 3, 10, 23, Aug 6, 7, 8, 15, 16, 21, 26, 27, 28, 29, Sep 3, 9, 10, 16, 23, 25, 26, Oct 4, 9, 10, 15, 16, 18	1913 Jan 7, 9, 15, 16, 20, 21, 24, 28, 30, Feb 4, 10, 12, 14, 21, 24, 25	Apr 17, May 6, 15, 29, Jun 20, Jul 4, 10, 25, Aug 8, 19, 21, 23, 27, Sep 1	77

Dates of Examination of principal parts	Cylinders	Slides	Covers	Pistons	Rods
8-8-12	15-8-12	8-8-12	15-8-12	26-9-12	27-11-12
Connecting rods	Crank shaft	Thrust shaft	Tunnel shafts	Screw shaft	Propeller
27-11-12	23-9-12	26-9-12	20-6-13	15-10-12	29-10-12
Stern tube	Steam pipes tested	Engine and boiler seatings	Engines holding down bolts	Engines tried under steam	21-8-13
21-8-13	21-8-13	21-8-13	23-8-13	23-8-13	23-8-13
Main boiler safety valves adjusted	Thickness of adjusting washers	P.B. P ⁷ / ₁₆ S ⁷ / ₁₆ S.B. P ³ / ₈ S ³ / ₈ S.B. P ⁵ / ₁₆ S ³ / ₈			
Material of Crank shaft	Steel	Identification Mark on Do.	T.P. 9-12	Material of Thrust shaft	Steel
Material of Tunnel shafts	None	Identification Marks on Do.	✓	Material of Screw shafts	Steel
Material of Steam Pipes	Steel	Test pressure	645 lbs.		

General Remarks (State quality of workmanship, opinions as to class, &c.) The engines & boilers of this vessel have been constructed under special survey and the materials and workmanship are found to be good. The engines have been tried under steam and the safety valves of main and donkey boilers adjusted at the working pressure. The boilers have been fitted with the Ballend system of oil fuel burning and the requirements of section 49 of the Rules have been complied with.

The machinery is now in good and safe working condition and is eligible in my opinion to have the notation of + LMC 9-13. A report on the electric installation will be forwarded when received from the electricians.

It is submitted that this vessel is eligible for THE RECORD, + LMC 9-13 (FD) Fitted for oil fuel 9-13 F.P. above 150°F

The amount of Entry Fee	£ 3 : 0 : 0	When applied for	1912
Special	£ 36 : 12 : 0	When received	1913
Donkey Boiler Fee	£ 2 : 2 : 0	Travelling Expenses (if any)	£ - : - : -

Committee's Minute
Assigned
FRI. SEP 12 1913
Fitted for oil fuel 9-13 F.P. above 150°F
Machinery Certificate
WRITTEN