

REPORT ON MACHINERY.

No. 14783

Received at London Office

THU. NOV. 13. 1913

Date of writing Report 4 Nov 1913 When handed in at Local Office 6 Nov 1913 Port of West Hartlepool

No. in Survey held at West Hartlepool Date, First Survey 13th Jan 1910 Last Survey 5 Nov 1913
Reg. Book. on the Steel Steamer Orna (Number of Visits 97)

Master P. E. Lyne Built at W Hartlepool By whom built W Gray & Co Ltd When built 1903
Engines made at W Hartlepool By whom made Central Marine & Works when made 1913
Boilers made at W Hartlepool By whom made Central Marine & Works when made 1913

Registered Horse Power _____ Owners British India Steam Nav. Co Ltd Port belonging to London
Nom. Horse Power as per Section 28 588 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple Compound No. of Cylinders Three No. of Cranks Three
Dia. of Cylinders 28" 46" 77" Length of Stroke 48" Revs. per minute 65 Dia. of Screw shaft 15 1/2" 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 No 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 64"

Dia. of Tunnel shaft 13 1/2" Dia. of Crank shaft journals 14 1/2" Dia. of Crank pin 1 1/2" Size of Crank webs 21" 8 1/2" Dia. of thrust shaft under collars 1 1/2" Dia. of screw 18" 0' Pitch of Screw 17" 0' No. of Blades 4 State whether moveable Yes Total surface 104 sq ft

No. of Feed pumps Two Diameter of ditto 4 1/2" Stroke 32" Can one be overhauled while the other is at work Yes
No. of Bilge pumps Two Diameter of ditto 4 1/2" Stroke 32" Can one be overhauled while the other is at work Yes
No. of Donkey Engines Four Sizes of Pumps 5" 6" 7" 11 1/2" 10" No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room Three 3 1/2" In Holds, &c. Light 3 1/2" Tunnel 3 1/2"

No. of Bilge Injections ten sizes 10 Connected to condenser, or to circulating pump Yes Is a separate Donkey Suction fitted in Engine room & size Yes 3 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 Both
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 _____ 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 15/9/13 of Stern Tube 23/9/13 Screw shaft and Propeller 1/10/13
Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Cop Head Room

BOILERS, &c.—(Letter for record S) Manufacturers of Steel J. Chance & Sons
Total Heating Surface of Boilers 8813 sq ft Is Forced Draft fitted Yes No. and Description of Boilers Three single ended
Working Pressure 180 lb Tested by hydraulic pressure to 360 lb Date of test 24 & 26/9/13 No. of Certificate 3341 & 3342

Can each boiler be worked separately Yes Area of fire grate in each boiler 71 sq ft No. and Description of Safety Valves to each boiler Two Spring Area of each valve 12.56 sq in Pressure to which they are adjusted 183 lb Are they fitted with easing gear Yes
Smallest distance between boilers or uptakes and bunkers or woodwork F 28" A 22" Mean dia. of boilers 16" 0' Length 12" 0' Material of shell plates Steel
Thickness 1 1/2" Range of tensile strength 27-30 Are the shell plates welded or flanged Both Descrip. of riveting: cir. seams 3/8" in lap long. seams all through Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10" Lap of plates or width of butt straps 22 1/8"

Per centages of strength of longitudinal joint 89.5% Working pressure of shell by rules 210 lb Size of manhole in shell 16" 12"
Size of compensating ring 24" 30" 1 1/2" No. and Description of Furnaces in each boiler 4 straight Material Steel Outside diameter 48 1/8"
Length of plain part top _____ bottom _____ Thickness of plates 19/32" Description of longitudinal joint welded No. of strengthening rings long
Working pressure of furnace by the rules 218 lb Combustion chamber plates: Material Steel Thickness: Sides 2 1/2" Back 2 1/2" Top 2 1/2" Bottom 1 1/2"
Pitch of stays to ditto: Sides 9" 8 1/4" Back 9" 8 1/4" Top 9" 8 1/4" If stays are fitted with nuts or riveted heads both Working pressure by rules 183 lb

Material of stays Steel Diameter at smallest part 1 1/2" Area supported by each stay 9" 8 1/4" Working pressure by rules 183 lb End plates in steam space: Material Steel Thickness 1 1/2" Pitch of stays 19" 16" How are stays secured all nuts Working pressure by rules 191 lb Material of stays Steel
Diameter at smallest part 2" 9 1/8" Area supported by each stay 19" 16" Working pressure by rules 224 lb Material of Front plates at bottom Steel
Thickness 3 1/2" Material of Lower back plate Steel Thickness 3 1/2" Greatest pitch of stays 17" Working pressure of plate by rules 180 lb
Diameter of tubes 2 3/4" Pitch of tubes 4" 3 1/2" Material of tube plates Steel Thickness: Front 3 1/2" Back 2 9/32" Mean pitch of stays 11 7/8"
Pitch across wide water spaces 13 1/4" Working pressures by rules 190 lb Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 10 7/8" 1 1/2" Length as per rule 3 1/2" Distance apart 8 1/4" Number and pitch of stays in each Three 9"

Working pressure by rules 181 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 _____

W575-0013



VERTICAL DONKEY BOILER— Manufacturers of Steel *None*

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	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:— *The top end bolts. The bottom end bolts. The main bearing bolts. One set coupling bolts. One set feed pump valves. One set Pelge pump valves. One set 150 piston openings. Piston pins. Piston blades. One pump bucket and rod. Circulating pump bucket and Rod & Slide. Pist. Valve.*

The foregoing is a correct description,

FOR THE CENTRAL MARINE ENGINE WORKS,
(W. Gray & Co. Ltd.)

Manufacturer.

James S. Jones

Dates of Survey while building	During progress of work in shops	1913 Jan 13, 14, 15, 22, 23, 24, Feb 21, March 4, 5, 6, April 11, 22, 23, 24, May 2	DIRECTOR
	During erection on board vessel	5, 6, 19, 20, 21, 22, 26, 27, 28, 30, June 2, 4, 9, 10, 12, 13, 16, 18, 19, 20, 23, 25, 27, 28, July 1, 2, 3, 4, 7, 8, 9, 14, 15, 16, 17, 18, 22, 31, Aug 12, 13, 14, 15, 18, 19, 20, 22, 25, 26, 27, 29, Sep 1, 3, 4, 5, 8, 9, 10, 11, 12, 15, 16, 17, 19, 22, 23, 24, 25, 26, 29, 30, Oct 1, 3, 6, 7, 8, 17, 20, 22, 24, 31, Nov 3, 5	
	Total No. of visits	97	

Is the approved plan of main boiler forwarded herewith

" " " donkey " " "

Dates of Examination of principal parts—Cylinders	17/9/13	Slides	17/9/13	Covers	17/9/13	Pistons	19/9/13	Rods	4/9/13
Connecting rods	17/9/13	Crank shaft	29/8/13	Thrust shaft	29/8/13	Tunnel shafts	29/9/13	Screw shaft	29/8/13
Stern tube	17/9/13	Steam pipes tested	1, 7, 17, 22/10/13	Engine and boiler seatings	22/9/13	Engines holding down bolts	22/10/13		
Completion of pumping arrangements	31/10/13	Boilers fixed	22/10/13	Engines tried under steam	31/10/13				
Main boiler safety valves adjusted	31/10/13	Thickness of adjusting washers	Pat 15/16, 5 12/16, 7 12/16, 5 25/32, 7 1/2, 5 59/64						
Material of Crank shaft	Steel Identification Mark on Do. 5395		Material of Thrust shaft	Steel Identification Mark on Do. 5395					
Material of Tunnel shafts	Steel Identification Marks on Do. 5395		Material of Screw shafts	Steel Identification Marks on Do. 5395					
Material of Steam Pipes	Main, Iron. Annul, Copper. Test pressure		Main boiler	Copper 450 lb					

General Remarks (State quality of workmanship, opinions as to class, &c. *Workmanship good.*)

Trap in boiler tested to 400 lbs. body to 50 lbs.

This case is similar in all respects to O. I. Analysis Case No. 827, to Hartlepool Report No. 14727, dated Aug 1913.

The machinery and boilers of this steamer have been constructed under special survey, and placed on board in accordance with the Society's Rules. They are now in my opinion in safe working condition, and the case is respectfully submitted for the notification, + L.M.C. 11-13.

It is submitted that this vessel is eligible for THE RECORD, + L.M.C. 11. 13.

J.W.D.
13/11/13
James Jones
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

The amount of Entry Fee	£ 3 : 0 :	When applied for,	11/11/13
Special	£ 49 : 8 :	When received,	12/11/13
Donkey Boiler Fee	£ :		
Travelling Expenses (if any)	£ :		

Committee's Minute
Assigned
+ L.M.C. 11. 13
F. D.

FRI. NOV. 14. 1913

Machinery Certificate WRITTEN



West Hartlepool

Certificate (if required) to be sent to

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