

REPORT ON MACHINERY.

No. 33522
WED. NOV. 12. 1913

Received at London Office

Date of writing Report 6-10-13 When handed in at Local Office 8/11/1913 Port of **GLASGOW**

No. in Survey held at **Glasgow** Date, First Survey 23/1/13 Last Survey 4/11/1913
Reg. Book. **S/S "Irawadi"** (Number of Visits 49)

Master Built at **Troon** By whom built **Alsa & Co (281)** Tons } Gross 1243
Net 634
When built 1913

Engines made at **Glasgow** By whom made **Dunoon Jackson & Co (H2)** when made 1913

Boilers made at **ditto** By whom made **ditto (H2)** when made 1913

Registered Horse Power Owners **Bombay Steam Navigation Co** Port belonging to

Nom. Horse Power as per Section 28 193 Is Refrigerating Machinery fitted for cargo purposes - Is Electric Light fitted **Yes**

ENGINES, &c.—Description of Engines **Triple Expansion** No. of Cylinders **3** No. of Cranks **3**

Dia. of Cylinders **18 1/2 - 31 - 52** Length of Stroke **36** Revs. per minute **100** Dia. of Screw shaft **10 1/2** Material of screw shaft **S**

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 **—** If two liners are fitted, is the shaft lapped or protected between the liners **—** Length of stern bush **48"**

Dia. of Tunnel shaft **10 1/2** Dia. of Crank shaft journals **10 5/8** Dia. of Crank pin **10 3/4** Size of Crank webs **2 1/4 x 6 7/8** Dia. of thrust shaft under collars **10 3/4** Dia. of screw **13-0** Pitch of Screw **15-0** No. of Blades **4** State whether moveable **No** Total surface **70"**

No. of Feed pumps **2** Diameter of ditto **3 1/4** Stroke **18"** Can one be overhauled while the other is at work **Yes**

No. of Bilge pumps **2** Diameter of ditto **3 1/4** Stroke **18"** Can one be overhauled while the other is at work **Yes**

No. of Donkey Engines **2** Sizes of Pumps **4 1/2" Ball 4 1/2"** No. and size of Suctions connected to both Bilge and Donkey pumps **In Engine Room 3 at 2 1/2 - 2 at 2 1/4 in stokehold In Holds, &c. 8' 1" - 2 1/2 8' 2" - 2 1/4 after hold 3 - 2 1/4**

No. of Bilge Injections **5 1/2** sizes **4 1/2** Connected to condenser or to circulating pump **—** 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 **—**

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 **Iron** 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 10-9-13 of Stern Tube 10-9-13 Screw shaft and Propeller 10-9-13

Is the Screw Shaft Tunnel watertight **Yes** Is it fitted with a watertight door **Yes** worked from **U.E.R. Platform**

BOILERS, &c.—(Letter for record **S**) Manufacturers of Steel **Ed. & Steel Co. Lancashire Steel Co. Spencer**

Total Heating Surface of Boilers **3064** Is Forced Draft fitted **No** No. and Description of Boilers **2 Single Ended.**

Working Pressure **200** Tested by hydraulic pressure to **400** Date of test **8-7-13** No. of Certificate **12199**

Can each boiler be worked separately **Yes** Area of fire grate in each boiler **56** No. and Description of Safety Valves to each boiler **Double Spring** Area of each valve **5.94** Pressure to which they are adjusted **205** Are they fitted with easing gear **Yes**

Smallest distance between boilers or uptakes and bunkers or woodwork **4-3"** Mean dia. of boilers **13-4** Length **10-9** Material of shell plates **S**

Thickness **1 1/32** Range of tensile strength **28/32** Are the shell plates welded or flanged **—** Descrip. of riveting: cir. seams **DR** long. seams **TRIDBS** Diameter of rivet holes in long. seams **1 3/8"** Pitch of rivets **9 5/8"** Lap of plates or width of butt straps **1-8 1/2"**

Per centages of strength of longitudinal joint **80-29** Working pressure of shell by rules **228** Size of manhole in shell **16x12**

Size of compensating ring **W. G. Kirk** No. and Description of Furnaces in each boiler **3 Deighton** Material **S** Outside diameter **3.7**

Length of plain part **top 2.37 bottom 2.64** Thickness of plates **2.37 bottom 2.64** Description of longitudinal joint **weld** No. of strengthening rings **29/32**

Working pressure of furnace by the rules **219** Combustion chamber plates: Material **S** Thickness: Sides **1 1/16"** Back **1 1/16"** Top **1 1/16"** Bottom **29/32**

Pitch of stays to ditto: Sides **8 3/8 x 9 1/4"** Back **8 3/8 x 9 1/4"** Top **9 3/4 x 9 1/4"** If stays are fitted with nuts or riveted heads **both** Working pressure by rules **209**

Material of stays **S** Diameter at smallest part **1 9/8 2 1/4** Area supported by each stay **79** Working pressure by rules **223** End plates in steam space: Material **S** Thickness **1 1/4"** Pitch of stays **4 7/8 x 8 3/4"** How are stays secured **DN** Working pressure by rules **208** Material of stays **S**

Diameter at smallest part **1 1/4"** Area supported by each stay **336** Working pressure by rules **209** Material of Front plates at bottom **S**

Thickness **1 3/32** Material of Lower back plate **S** Thickness **6 1/16"** Greatest pitch of stays **14 3/4 x 9 1/2"** Working pressure of plate by rules **216**

Diameter of tubes **3** Pitch of tubes **4 1/4"** Material of tube plates **S** Thickness: Front **1 3/32** Back **2 1/32** Mean pitch of stays **10-6**

Pitch across wide water spaces **14** Working pressures by rules **220** Girders to Chamber tops: Material **Iron** Depth and thickness of girder at centre **10 x 7 1/8 (2)** Length as per rule **2. 8 3/32** Distance apart **9 1/4"** Number and pitch of stays in each **3 at 9 3/4"**

Working pressure by rules **209** 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

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 _____ 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 Connecting Rod bolts & nuts for top end & ditto for bottom end 2 Main Securing bolts 1 Set of Coupling bolts 1 Set of Feed & Pelge Pump Washers 1 Set of Piston Rings
 a Quantity of assorted bolts & nuts & nuts of various sizes

The following is a correct description,
 James Fisher Manufacturer.

Dates of Survey while building	During progress of work in shops	1913. Jan 22 Feb. 10-12-17-19-24-25 Mar 3-12-17-26 Apr 2-10-15-23-28 May 1-7-16-26-28
	During erection on board vessel	June 2-8-10-16-24 July 2-8-16-31 Aug 6-11-26-27 Sept 5-8-10-18-19-22-24-28 Oct 1-6-9-13-14-17-28 Nov 4
	Total No. of visits	49

Is the approved plan of main boiler forwarded herewith Yes

" " " donkey " " " None

Dates of Examination of principal parts—Cylinders	16-5-13	Slides	16-6-13	Covers	16-6-13	Pistons	10-6-13	Rods	10-6-13	
Connecting rods	7-5-13	Crank shaft	7-5-13	Thrust shaft	23-4-13	Tunnel shafts	23-4-13	Screw shaft	31-4-13	
Propeller	31-7-13	Stern tube	31-7-13	Steam pipes tested	29-8-13	Engine and boiler seatings	11-8-13	Engines holding down bolts	13-10-13	
Completion of pumping arrangements	28-10-13	Boilers fixed	13-10-13	Engines tried under steam	4-11-13	Main boiler safety valves adjusted	28-10-13	13-10-13	Thickness of adjusting washers	
							SR 3/8	PR 3/8	PR 1/4	SR 1/6
Material of Crank shaft	S	Identification Mark on Do.	LLOYDS	Material of Thrust shaft	S	Identification Mark on Do.	LLOYDS			
Material of Tunnel shafts	S	Identification Marks on Do.	WGM	Material of Screw shafts	S	Identification Marks on Do.	WGM			
Material of Steam Pipes	Iron	Test pressure	boots							

General Remarks (State quality of workmanship, opinions as to class, &c.) The Machinery of this vessel has been built under special survey in accordance with the approved plan & the workmanship & material are of good quality. The Machinery is eligible in my opinion for the Record of **L.M.C. 11-13**

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

J.G.S.
12-11-13

A.P.L.

The amount of Entry Fee	£ 2- : 0 :	When applied for,	10/11/1913
Special	£ 28- : 19- :	When received,	11-11-13
Donkey Boiler Fee	£ : : :		
Travelling Expenses (if any)	£ : : :		

W. Gordon Muir
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute GLASGOW 11 NOV. 1913

Assigned + L.M.C. 11-13

MACHINERY CERTIFICATE
 WRITTEN 12-11-13

GLASGOW

Certificate (if required) to be sent to
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)