

# REPORT ON MACHINERY.

Received at London Office

Date of writing Report Dec. 24th 1921 When handed in at Local Office 19 Port of Hong Kong

No. in Survey held at Hong Kong Date, First Survey Jan. 4th. Last Survey Dec. 17th. 1921

Reg. Book. on the Steel Screw Steamer "PALUDINA" (Number of Visits 106)

Master Built at Hong Kong By whom built Hong Kong & Whampoa Dock Co. Ltd. When built 1921

Engines made at Hong Kong By whom made Hong Kong & Whampoa Dock Co., Ltd. when made 1921

Boilers made at Hong Kong By whom made Hong Kong & Whampoa Dock Co., Ltd. when made 1921

Registered Horse Power 517 Owners Anglo-Saxon Petroleum Co., Ltd. Port belonging to Hong Kong

Nom. Horse Power as per Section 28 517 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

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

Dia. of Cylinders 27", 44", 73" Length of Stroke 48" Revs. per minute 78 Dia. of Screw shaft 14 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 - 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 5'-3"

Dia. of Tunnel shaft None Dia. of Crank shaft journals 13.99" Dia. of Crank pin 14 1/2" Size of Crank webs 28"x9" Dia. of thrust shaft under collars 14 1/2" Dia. of screw 17'-9" Pitch of Screw 16'-9" No. of Blades 4 State whether moveable Fixed Total surface 96 sq. ft.

No. of Feed pumps 2 Diameter of ditto 4" Stroke 24" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4" Stroke 24" Can one be overhauled while the other is at work Yes

No. of Donkey Engines 15 Sizes of Pumps See Note No. and size of Suctions connected to both Bilge and Donkey pumps in aft well, Aft cofferdam two 3 1/2"

In Engine Room 2-3 1/2" in well; 2-3 1/2" in Stokehold 1-3 1/2" In Holds, &c. Main pump room two 2 1/2"; Forward cofferdam two 3 1/2"; Forward pump room one 2"; Hold two 2"; Chain locker one 2" all connected to donkey pump

No. of Bilge Injections 1 sizes 10" Connected to condenser, or to circulating pump Cir. P. Is a separate Donkey Suction fitted in Engine room of 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 -

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 below

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 Aft cofferdam Bilge Suctions How are they protected Steel plates

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

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

**BOILERS, &c.**—(Letter for record B25/8/20 Manufacturers of Steel Wm. Beardmore & Co.)

Total Heating Surface of Boilers 7662 Is Forced Draft fitted Yes No. and Description of Boilers Three Cylindrical Multitubular

Working Pressure 180 lbs. Tested by hydraulic pressure to 320 lbs. Date of test 16/8/21 No. of Certificate 117, 118 & 119

Can each boiler be worked separately Yes Area of fire grate in each boiler 63.6 sq. ft. No. and Description of Safety Valves to each boiler Two double spring loaded 3 1/2" Area of each valve 9.6 Pressure to which they are adjusted 180 lbs. Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 1'-5" Mean dia. of boilers 15'-6" Length 11'-7" Material of shell plates Steel

Thickness 1 1/4" Range of tensile strength 28-32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams double lap

long. seams Triple Butt Diameter of rivet holes in long. seams 1.5/16" Pitch of rivets 9 1/8" Top of plates or width of butt straps 19 1/2"

Per centages of strength of longitudinal joint rivets 88.3% plate 85.6% Working pressure of shell by rules 182 lbs. Size of manhole in shell 16" x 12"

Size of compensating ring 34"x38"x1 1/4" No. and Description of Furnaces in each boiler Three Deighton Material Steel Outside diameter 48 1/4"

Length of plain part top - bottom - Thickness of plates 9/16" Description of longitudinal joint Welded No. of strengthening rings -

Working pressure of furnace by the rules 180.7 lbs. Combustion chamber plates: Material Steel Thickness: Sides 25/32" Back Cr. 1/4" Top 25/32" Bottom 25/32"

Pitch of stays to ditto: Sides 9" x 9" Back 9x9 1/2" Top 9x9 1/2" If stays are fitted with nuts or riveted heads remainder riveted Working pressure by rules S. 192 lbs. B.C. 187 lbs. T. 246 lbs.

Material of stays Steel Area at smallest part 2.03 Area supported by each stay 85.625 Working pressure by rules 181 lbs Material of stays Steel

Material Steel Thickness 1, 11/32" Pitch of stays 20 1/2 x 21 1/2" How are stays secured Nuts Working pressure by rules 193 lbs Material of Front plates at bottom Steel

Area at smallest part 8.29 Area supported by each stay 446.6 Working pressure by rules 186 lbs. Material of Lower back plate Steel Thickness 7/8" Greatest pitch of stays 14 1/4" Working pressure of plate by rules 186 lbs.

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates Steel Thickness: Front 31/32" Back 13/16" Mean pitch of stays 13 1/2" x 9"

Pitch across wide water spaces 14 1/4" Working pressures 189 Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 10 1/2 x 4 1/2" (2 off) Length as per rule 2'-9 1/2" Distance apart 9 1/2" Number and pitch of stays in each Three 9"

Working pressure by rules 214 lbs Steam dome: description of joint to shell - % of strength of joint -

Diameter - Thickness of shell plates - Material - Description of longitudinal joint - Diam. of rivet holes -

Pitch of rivets - Working pressure of shell by rules - Crown plates - Thickness - How stayed -

**SUPERHEATER.** Type - Date of Approval of Plan - Tested by Hydraulic Pressure to -

Date of Test - Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler -

Diameter of Safety Valve - Pressure to which each is adjusted - Is Easing Gear fitted -

IS A DONKEY BOILER FITTED? Yes If so, is a report now forwarded? Yes  
SPARE GEAR. State the articles supplied:— See List attached.

The foregoing is a correct description, *R.M. Dyer*,  
Manufacturer.

Dates of Survey while building { During progress of work in shops -- 18, 24, 26, 27, 30 Jun. 2, 6, 9, 11, 15, 16, 21, 23, 27, 28 Jul. 1, 6, 7, 8, 11, 12, 18, 20, 23, 25, 27 29, Aug. 2, 3, 5, 8, 12, 13, 16, 18, 19, 20, 25, 29, 31 Sept. 1, 2, 5, 6, 7, 8, 9, 10, 12, 14, 15, 17, 20 22, 24, 27, 28. Nov. 5, 12, 18, 25. Dec. 5, 6. Sept. 28, Oct. 3, 6, 12, 13, 15, 19, 22, 26, 30, Nov. 1, 10, 19, 20, 28, 31 Dec. 8, 11, 15, 16, 17  
Total No. of visits 106 Is the approved plan of main boiler forwarded herewith Yes

Dates of Examination of principal parts—Cylinders 30/5/21 Slides 6/6/21 Covers 25/4/21 Pistons 6/6/21 Rods 18/7/21  
Connecting rods 11/5/21 Crank shaft 19/4/21 Thrust shaft 6/6/21 Tunnel shafts None Screw shaft 29/8/21 Propeller 18/5/21  
Stern tube 20/9/21 Steam pipes tested 30/10/21 Engine and boiler seatings 20/9/21 Engines holding down bolts 19/10/21  
Completion of pumping arrangements 20/11/21 Boilers fired 6/10/21 Engines tried under steam 20/11/21  
Completion of fitting sea connections 20/9/21 Stern tube 20/9/21 Screw shaft and propeller 22/9/21  
Main boiler safety valves adjusted 19/11/21 Thickness of adjusting washers F.Br. St. 3/16" P.Br. St. 3/16" S.Br. St. 3/16"  
Material of Crank shaft Steel Identification Mark on Do. 6596 AP Material of Thrust shaft Steel Identification Mark on Do. 230 HKg  
Material of Tunnel shafts None Identification Marks on Do. - Material of Screw shafts Steel Identification Marks on Do. 233 HKg  
Material of Steam Pipes Solid Drawn Copper Test pressure 500 lbs.  
Is an installation fitted for burning oil fuel Yes Is the flash point of the oil to be used over 150°F. Yes

Have the requirements of Section 49 of the Rules been complied with Yes  
Is this machinery duplicate of a previous case No If so, state name of vessel -  
General Remarks (State quality of workmanship, opinions as to class, &c. The workmanship is good and it is recommended

that the vessel be classed with Lloyd's Machinery Certificate and the record of **L.M.C. 12,1921** be made in the Register Book. Fitted for oil fuel 12,1921. F.P. above 150°F.

IDENTIFICATION MARKS ON BOILERS:-

NO. 117 HKg. LLOYD'S TEST 320 lbs. W.P. 180 lbs. 16-8-21 T. S.M.	No. 118 HKg. LLOYD'S TEST 320 lbs. W.P. 180 lbs. 26-8-21 T. S.M.	No. 119 HKg. LLOYD'S TEST 320 lbs. W.P. 180 lbs. 9-9-21 T. S.M.
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NOTE:- SIZES OF DONKEY PUMPS:-  
ENGINE ROOM:- Two Weir's feed 8"x10 1/2"x21"; General Service 5 1/2"x7 1/2"x15"; Centrifugal Circulating 14"; Ballast 8"x9"x10" horiz. Duplex; Donkey Boiler feed 6"x4"x  
Two Fan engines 7" x 5". Main Pump Room  
FORWARD PUMP ROOM:- Ballast 8"x6"x10"; Transfer 8"x6"x10"/Two cargo 14"x12"x14" duplex.  
Drain pump 6"x4 1/2"x6".  
Transfer pump in stokehold 6"x4 1/2"x6", Oil fuel pump for main boiler's with heaters pump with heater  
4"x6"x8" (2 off); One oil fuel for donkey boiler 2 1/4" x 3 1/2" x 5".

The amount of Entry Fee ... \$ 93.00 : When applied for,  
Special ... \$ 1561.00 : 17/12 1921  
Donkey Boiler Fee ... \$ 65.00 :  
Electric Light ... \$ 247.00 :  
Travelling Expenses (if any) \$ 180.00 :  
Sunday fees \$ 40.00 :  
When received, 15.1.22

*J. Morrison*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute  
Assigned  
+ L.M.C. 12.21. F.D. C.L.  
Filed for oil fuel 12.21  
F.P. above 150°F.



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