

## REPORT ON MACHINERY.

No. 2330.

Port of CopenhagenReceived at London Office THUR. 12 JUL 1906

No. in Survey held at Copenhagen Date, first Survey 13<sup>th</sup> November Last Survey 13<sup>th</sup> June 1906  
 Reg. Book. 90 in Splend on the Stel & S. Tranquebar (Yard No. 249) (Number of Visits 26)  
 Master J. Thomsen Built at Copenhagen By whom built Attilus Skabel, Burmeister & Wain Maskin When built 1906  
 Engines made at Copenhagen By whom made Attilus Skabel, Burmeister & Wain Maskin when made 1906  
 Boilers made at Copenhagen By whom made Attilus Skabel, Burmeister & Wain Maskin when made 1906  
 Registered Horse Power 380 Owners Det Oslasiaske Kompagni Port belonging to Copenhagen  
 Nom. Horse Power as per Section 28 380 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Inverted triple expansion surface condensing No. of Cylinders 3 No. of Cranks 3  
 Dia. of Cylinders 24 3/4, 42 & 70 Length of Stroke 4.5 Revs. per minute 65 Dia. of Screw shaft 14 1/2 Material of S. S. 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 yes 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 for protected between the liners ✓ Length of stern bush 5'-2 1/4"  
 Dia. of Tunnel shaft 12 1/2 Dia. of Crank shaft journals 13.05 Dia. of Crank pin 14 Size of Crank webs 20" x 10" Dia. of thrust shaft under  
 collars 14 Dia. of screw 17-6 Pitch of Screw 17-6 No. of Blades 4 State whether moveable no Total surface 86 ft<sup>2</sup>  
 No. of Feed pumps 2 Diameter of ditto 4 1/2 Stroke 21 Can one be overhauled while the other is at work yes One evaporator of  
 No. of Bilge pumps 2 Diameter of ditto 4 1/2 Stroke 21 Can one be overhauled while the other is at work yes 15 Tons capacity.  
 No. of Donkey Engines 1 Sizes of Pumps 5 1/4 x 3 1/2 x 8" No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room 4 - 3 1/2" In Holds, &c. 9 - 3 1/2"

No. of Bilge Injections 1 sizes 7" Connected to condenser or to circulating pump Is a separate Donkey Suction fitted in Engine room & size 2-6"  
 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 Valves except blow off cocks  
 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 Bilge pipes How are they protected cased in by ceiling  
 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 26<sup>th</sup> April 06 of Stern Tube 26<sup>th</sup> April 06 Screw shaft and Propeller 28<sup>th</sup> April 06  
 Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from upper platform

BOILERS, &c.—(Letter for record S) Manufacturers of Steel Thyssen & Co., Mülheim a. d. Ruhr, Germany  
 Total Heating Surface of Boilers 6171 ft<sup>2</sup> Is Forced Draft fitted no No. and Description of Boilers 3 single end. hor. return tubular  
 Working Pressure 180 lbs per sq. in. Tested by hydraulic pressure to 360 lbs per sq. in. Date of test 2<sup>nd</sup> April 06 No. of Certificate 244, 245, 246  
 Can each boiler be worked separately yes Area of fire grate in each boiler 52.5 ft<sup>2</sup> No. and Description of Safety Valves to  
 each boiler 2 off, spring loaded Area of each valve 9.62 sq. in. 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 15" Mean dia. of boilers 14'-0" Length 11'-0" Material of shell plates S. S. Steel  
 Thickness 1 3/16" Range of tensile strength 27-30.2 Tons Are the shell plates welded or flanged no Descrip. of riveting: cir. seams Double riveted  
 long. seams Double riveted Diameter of rivet holes in long. seams 1 1/4" Pitch of rivets 8 3/4" Lap of plates or width of butt straps 18 3/4"  
 Per centages of strength of longitudinal joint 87.8 Working pressure of shell by rules 180.8 lbs Size of manhole in shell 12" x 16"  
 Size of compensating ring 2'-6" x 3'-6" No. and Description of Furnaces in each boiler 3 Morisons Material S. S. Steel Outside diameter 3'-10"  
 Length of plain part top 10 1/2" Thickness of plates bottom 10 1/2" Description of longitudinal joint ✓ No. of strengthening rings ✓  
 Working pressure of furnace by the rules 182.9 lbs Combustion chamber plates: Material S. S. Steel Thickness: Sides 9/16" Back 9/16" Top 9/16" Bottom 3/4"  
 Pitch of stays to ditto: Sides 7 1/4" x 8 1/4" Back 7 1/2" x 8" Top 7" x 8" If stays are fitted with nuts or riveted heads nuts inside Working pressure by rules 181.8 lbs  
 Material of stays S. S. Steel Diameter at smallest part 1.384 Area supported by each stay 60 sq. in. Working pressure by rules 200.5 lbs End plates in steam space:  
 Material S. S. Steel Thickness 1" Pitch of stays 15" x 17" How are stays secured Double nuts & washers Working pressure by rules 184.3 lbs Material of stays S. S. Steel  
 Diameter at smallest part 2.634 Area supported by each stay 25.5 sq. in. Working pressure by rules 213.7 lbs Material of Front plates at bottom S. S. Steel  
 Thickness 3/4" Material of Lower back plate S. S. Steel Thickness 13/16" Greatest pitch of stays 13 9/16" x 7 1/2" Working pressure of plate by rules 190 lbs  
 Diameter of tubes 3 3/8" Pitch of tubes 14 9/16" x 14 9/16" Material of tube plates S. S. Steel Thickness: Front 1" Back 3/4" Mean pitch of stays 9 1/8" x 11 7/16"  
 Pitch across wide water spaces 14" Working pressures by rules 183 lbs Girders to Chamber tops: Material S. S. Steel Depth and  
 thickness of girder at centre 7 3/4" x 2 x 3/4" Length as per rule 28" Distance apart 8 1/2" Number and pitch of stays in each 3, 7" pitch  
 Working pressure by rules 180 lbs 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	Stayed by			
Diameter of uptake	Thickness of uptake plates	Thickness of water tubes	Dates of survey		

SPARE GEAR. State the articles supplied:— 2 conn. rod top end bolts, 2 " bottom end bolts, 2 main bearing bolts, 1 set coupling bolts, 1 set feed, bilge, air & donkey engine pump valves, 1 set valve seats for feed pumps, 1 set packing rings for each piston, 6 junk ring bolts, a quantity of assorted bolts & nuts, iron of various sizes, 1 cast iron propeller, 1 propeller shaft, 1 pair crank pin brasses, 1 pair crosshead brasses, brasses for circ. pump, 27 plain boiler tubes 12 stay tubes, 56 cond. tubes with screw ferrules, springs for all escape valves, 24 arg. plug.

The foregoing is a correct description,

Manufacturer.

Aktieselskabet  
Burmeister & Wains Maskin- og Skibsbyggeri.  
Copenhagen

Dates of Survey while building	During progress of work in shops -	13/11, 11/12, 14/12, 16/12, 20/12, 27/12, 29/12, 10/1, 22/1, 14/2, 17/2, 22/2, 2/3, 3/3, 5/3, 2/4, 10/4, 26/4, 28/4
	During erection on board vessel -	30/4, 14/5, 17/5, 31/5, 2/6, 13/6
	Total No. of visits	26

Is the approved plan of main boiler forwarded herewith yes

Dates of Examination of principal parts—	Cylinders 22/2	Slides 22/2	Covers 22/2	Pistons 5/3	Rods 5/3
Connecting rods 5/3	Crank shaft 22/1	Thrust shaft 10/4	Tunnel shafts 10/4 & 30/4	Screw shaft 11/4	Propeller 26/4
Stern tube 26/4	Steam pipes tested 4/5	Engine and boiler seatings 26/4	Engines holding down bolts 17/5		
Completion of pumping arrangements 10/5	Boilers fixed 17/5	Engines tried under steam 23/5			
Main boiler safety valves adjusted 2/6	Thickness of adjusting washers <u>all about 1/2"</u>				
Material of Crank shaft <u>S.M. Steel</u>	Identification Mark on Do. <u>R.N. 597-10-AMP</u>	Material of Thrust shaft <u>S.M. Steel</u>	Identification Mark on Do. <u>R.N. 615-4-06-H.S.</u>		
Material of Tunnel shafts <u>S.M. Steel</u>	Identification Marks on Do. <u>R.N. 612, 13, 14, 16, 17, 18</u>	Material of Screw shafts <u>S.M. Steel</u>	Identification Marks on Do. <u>R.N. 620-4-06-ATP</u>		
Material of Steam Pipes <u>Steel</u>	Test pressure <u>360 lbs per sq"</u>				

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

In accordance with the rules for special survey we have examined the material and workmanship from the commencement until the final trial under steam and found it good in every respect. All the forgings are of Siemens Martin Steel and have been found good. All the castings are sound and good, the bearings of proper dimensions and sound material. The boiler material has been tested as per rules as per test notes received, and satisfactory hot & cold tests of the material has been carried out by us. The dimensions are as specified and in accordance with the rules and the approved plan. On the trial trip the engines and boilers worked satisfactorily.

It is submitted that  
this vessel is eligible for  
THE RECORD ILM.C G.06. ELEC:LIGHT

The amount of Entry Fee..	£ 3 : -	When applied for,
Special ..	£ 39 : -	9 <sup>th</sup> July 1906
Electric Light Donkey Boiler Fee ..	£ 5 : -	When received,
Travelling Expenses (if any) £	" : 3 : 9	27-7-06

Committee's Minute

FRI. 13 JUL 1906

Assigned

MACHINERY CERTIFICATE  
WRITTEN.



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Foundation