

## REPORT ON MACHINERY.

No. 1140

Port of *Bremerhaven*Received at London Office *FRI. 20 MAR 1906*No. in Survey held at *Bremen*Date, first Survey *25<sup>th</sup> July 1905* Last Survey *27<sup>th</sup> March 1906*

Reg. Book.

(Number of Visits *24*)Gross *5008.49*on the *Machinery & Boilers of the steel S. S. Lotharingen*Tons Net *3198.29*

Master

Built at *Bremen*By whom built *At. Ges. Weser*

When built

Engines made at *Bremen*By whom made *At. Ges. Weser*when made *1906*Boilers made at *Bremen*By whom made *At. Ges. Weser*when made *1906*

Registered Horse Power

Owners *Nordde. Lloyd*Port belonging to *Bremen*Nom. Horse Power as per Section 28 *530*Is Refrigerating Machinery fitted *No*Is Electric Light fitted *Yes*

ENGINES, &c.—Description of Engines *Inv. Quadruple Comp. Surf. Condens.* No. of Cylinders *4* No. of Cranks *4*

Dia. of Cylinders *24 3/4 50 72 2 1/2* Length of Stroke *53 5/8* Revs. per minute *70* Dia. of Screw shaft as per rule *14 3/8* Material of *S. M. 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 *12' 8 3/4"*

Dia. of Tunnel shaft as per rule *13 1/2* Dia. of Crank shaft journals as per rule *14 3/8* Dia. of Crank pin *14 9/16* Size of Crank webs *29 1/2 x 9 1/2* Dia. of thrust shaft under collars *14 3/8* Dia. of screw *17 8 1/2* Pitch of screw *18' 8 1/2* No. of blades *4* State whether moveable *Yes* Total surface *101.4*

No. of Feed pumps *2* Diameter of ditto *4 1/2* Stroke *23 5/8* Can one be overhauled while the other is at work *Yes*

No. of Bilge pumps *2* Diameter of ditto *4 3/4* Stroke *23 5/8* Can one be overhauled while the other is at work *Yes*

No. of Donkey Engines *2 simple lift* Sizes of Pumps *7 1/2 x 5 1/2* No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room *3 a 3 9/16, two in stokehold* In Holds, &c. *Two a 3 9/16 in each hold, one a 3 8/16 in*

*tunnel aft.* No. of bilge injections *1* sizes *7 7/8* Connected to condenser, or to circulating pump *Yes* Is a separate donkey suction fitted in Engine room & size *1 a 3 9/16*

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 *Valves and 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 *Tank & Bilge suction pipes* How are they protected *Wooden boxes*

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*

When were stern tube, propeller, screw shaft, and all connections examined in dry dock Is the screw shaft tunnel watertight *Yes*

Is it fitted with a watertight door *Yes* worked from *Engine room platform above Upper deck*

BOILERS, &c.— (Letter for record *S*) Total Heating Surface of Boilers *71044 ft* Is forced draft fitted *Yes*

No. and Description of Boilers *3 multibubular cylindrical* Working Pressure *220 lb* Tested by hydraulic pressure to *292 lb*

Date of test *15.1.06* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *56 ft* No. and Description of safety valves to each boiler *Three spring valves* Area of each valve *8 1/2* Pressure to which they are adjusted *220 lb* Are they fitted with easing gear *Yes*

Smallest distance between boilers or uptakes and bunkers or woodwork *12"* Mean dia. of boilers *14' 3 5/8"* Length *11' 7 1/2"* Material of shell plates *S. M. steel*

Thickness *1 1/4"* Range of tensile strength *26,742 lb* Are they welded or flanged *flanged* Descrip. of riveting: cir. seams *overlapped* long. seams *double butt straps*

Diameter of rivet holes in long. seams *1 3/16"* Pitch of rivets *20 5/16"* Lap of plates or width of butt straps *2' 5 1/16"*

Per centages of strength of longitudinal joint rivets *96* Working pressure of shell by rules *227 lb* Size of manhole in shell *15 3/4" x 11 1/8"*

Size of compensating ring *4 5/8" x 4 1/8"* No. and Description of Furnaces in each boiler *3 Morrison's* Material *S. M. steel* Outside diameter *47 1/4"*

Length of plain part top *4"* bottom *6"* Thickness of plates crown *4 9/16"* bottom *4 1/4"* Description of longitudinal joint *welded* No. of strengthening rings *corrugated*

Working pressure of furnace by the rules *259 lb* Combustion chamber plates: Material *S. M. steel* Thickness: Sides *4 5/16"* Back *4 3/16"* Top *4 5/16"* Bottom *1 1/8"*

Pitch of stays to ditto: Sides *7 1/8"* Back *7 1/8"* Top *7 1/16"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *290 lb*

Material of stays *S. M. steel* Diameter at smallest part *1 5/8"* Area supported by each stay *50 3/4"* Working pressure by rules *395* End plates in steam space:

Material *S. M. steel* Thickness *1 3/16"* Pitch of stays *14 3/16"* How are stays secured *Nuts-washers* Working pressure by rules *231* Material of stays *S. M. steel*

Diameter at smallest part *2 1/2"* Area supported by each stay *212 1/2"* Working pressure by rules *273* Material of Front plates at bottom *S. M. steel*

Thickness *1 3/16"* Material of Lower back plate *S. M. steel* Thickness *1 5/16"* Greatest pitch of stays *7 1/8"* Working pressure of plate by rules *598*

Diameter of tubes *2 3/4"* Pitch of tubes *3 25/32"* Material of tube plates *S. M. steel* Thickness: Front *1 3/16"* Back *1 5/16"* Mean pitch of stays *7 9/16"*

Pitch across wide water spaces *13 3/4"* Working pressures by rules *232 lb* Girders to Chamber tops: Material *S. M. steel* Depth and thickness of girder at centre *9 7/8" x 29 1/2"* Length as per rule *29 1/2"* Distance apart *7 1/16"* Number and pitch of Stays in each *3 x 7 1/16"*

Working pressure by rules *245 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

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DONKEY BOILER— No. 66 Description Please see separate Report No. 1140

Made at By whom made When made Where fixed  
Working pressure tested by hydraulic pressure to No. of Certificate Fire grate area Description of safety valves  
No. of safety valves Area of each Pressure to which they are adjusted 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 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  
Thickness of furnace crown plates Stayed by Working pressure of shell by rules  
Working pressure of furnace by rules Diameter of uptake Thickness of uptake plates Thickness of water tubes

SPARE GEAR. State the articles supplied:— 1/4 crankshaft, Propellershaft, vent, Propeller boss, two Propeller blades, One crankpin brass with bolts and nuts, One crosshead brass with bolts and nuts, Two main bearing bolts and nuts, One set of couplings bolts, One set of piston rings for each cylinder, One slide valve spindle, One Eccentric strap complete, One eccentric sheave, One air pump piston rod, One set of valves for air pumps, feed pumps, and bilge pumps, Two complete link straps for pump levers, One spring for each safety valve, 10% of all top bolts for cylinder valve covers, pistons and air pump, 2% condenser tubes, For circulating pump: Piston rod & slide valve spindle, 2% Boiler tubes 1/2 set of fire bars, 1 set of chain valves, 1 set of gauge glasses, assorted bolts nuts and iron of different sizes  
The foregoing is a correct description,

ACTION-GESELLSCHAFT WESER  
Manufacturer.

Dates of Survey while building  
During progress of work in shops - 25/7, 3/8, 8/8, 15/8, 25/8, 9/9, 16/9, 29/9, 19/10, 29/10, 2/11, 29/11, 13/12, 28/12, 1905. 9/1, 15/2, 23/2  
During erection on board vessel - 8/2, 15/2, 22/2, 9/3, 16/3, 23/3, 29/3, 1906  
Total No. of visits 24, Is the approved plan of main boiler forwarded herewith Yes

General Remarks (State quality of workmanship, opinions as to class, &c. Letter from Secretary: 15/2, 2/3, 4/9, 13/9, 05 init C.)

These Engines and Boilers have been built under special Survey of good materials, manufactured by approved works and tested as per rule. The workmanship is very good.

All castings have been carefully examined, found of good close grained quality and found quite tight when tested by hydraulic pressure. All steam and feed pipes have been tested by hydraulic double working pressure of 440 lbs.  $2\frac{1}{2}$

In the pumping arrangement, there is, at the special request of the owners as expressed in their letter dated 8.9.05, a deviation from the rules approved by the Committee, in so far as the fore Peak is drained through Ballast tank No. 1 as shown on the enclosed sketch.

The Boilers have been built in accordance with the rules and approved tracings, for a working pressure of 220 lb, but it is a rule in all steamers of the Norddeutscher Lloyd to carry 7 lb less so as to avoid the frequent lifting of the valves and save the fresh water.

The Boilers have been tested in accordance with the German law by hydraulic pressure of 292 lb and found quite tight.

Under steam they are also tight, the safety valves lift freely at 220 lb and the Engines work well so that they are fully eligible in my opinion to be classed in the Register Book with notation of \* L.M.C. 3.06

It is submitted that this vessel is eligible for THE RECORD H.L.M.C 3.06. F.D. ELEC. LIGHT.

The amount of Entry Fee. £ 3 : - : When applied for, 27.3.1906  
Special £ 46 : 10 :  
Donkey Boiler Fee £ 2 : 2 : When received, 28.3.1906  
Travelling Expenses (if any) £ 4 : 10 :  
TUES. 3 APR 1906

Committee's Minute

Assigned

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