

# REPORT ON MACHINERY.

No. 89585  
SAT. 20 AUG. 1921

Received at London Office

19 AUG 1921 Port of LIVERPOOL.

of writing Report *Aug 10 '21* When handed in at Local Office *19 AUG 1921*

in Survey held at *Liverpool* Date, First Survey *16 Feb'y* Last Survey *6 July 1921*

Book *188* on the *SS "Empress of Scotland" ex Kaiserin Auguste Victoria* (Number of Visits *5*)

ster Built at *Stettin* By whom built *Akt. G. Bulcan* Tons { Gross  
Net

ines made at *Stettin* By whom made *A. G. Bulcan* when made *05*

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gistered Horse Power *1810* Owners *Canadian Pacific Ocean Service* Port belonging to *London*

n. Horse Power as per Section 28 *2992* Is Refrigerating Machinery fitted for cargo purposes *No* Is Electric Light fitted *Yes*

GINES, &c.—Description of Engine *Twin Screw Quadruple* No. of Cylinders *8* No. of Cranks *8*

a. of Cylinders *36 1/2, 53 1/2, 75 1/4, 107* Length of Stroke *65* Revs. per minute *76* Dia. of Screw shaft *20 1/2* Material of screw shaft *Steel*

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 *Yes*

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 *Yes* If two screws are fitted, is the shaft lapped or protected between the liners *Yes - steel shaft* Length of stern-bush *8'-11 1/2"*

a. of Tunnel shaft *19'-2"* Dia. of Crank shaft journals *20'-1"* Dia. of Crank pin *2 1/4"* Size of Crank webs *13 1/2 x 4 1/2"* Dia. of thrust shaft under *20 7/8"*

of Feed pumps *4 separate* Dia. of ditto *17 x 12"* Stroke *26"* No. of Blades *3* State whether moveable *Yes* Total surface *128.70*

of Bilge pumps *2* Dia. of ditto *8"* Stroke *12"* Can one be overhauled while the other is at work *Yes*

of Donkey Engines *see schedule* Sizes of Pumps *herank* No. and size of Suctions connected to both Bilge and Donkey pumps *2 1/2"*

Engine Room *2 m. long two Centre, 1 pair in each side 1'-4"* In Holds, &c. *17' dia. 12' dia. 3' dia. 2' dia. 1' dia.*

of Bilge Injections *4* sizes *10"* Connected to condenser or to circulating pump *Yes* Is a separate Donkey Suction fitted in Engine room & size *2 1/2"*

Are all the bilge suction pipes fitted with roses *Yes* Are the roses in Engine room always accessible *Yes* Are the stices 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*

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 *Yes*

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 *high ballast* How are they protected *wood & steel lining*

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 *Yes* Is it fitted with a watertight door *Yes* worked from *Yes*

MANUFACTURERS, &c.—(Letter for record *SE. 2099*) Total *45251* Manufacturers of Steel *Yes*

Total Heating Surface of Boilers *42152* Is Forced Draft fitted *Yes* No. and Description of Boilers *Eight Double ended*

Working Pressure *25 lb* Tested by hydraulic pressure to *37 1/2 lb* Date of test *1921* No. of Certificate *250*

Can each boiler be worked separately *Yes* Area of fire grate in each boiler *127.70* No. and Description of Safety Valves to *Yes*

Is each boiler fitted with a Spring loaded valve *Yes* Area of each valve *3 1/2"* Pressure to which they are adjusted *110 lb* Are they fitted with cutting gear *Yes*

Smallest distance between boilers or uptakes and bunkers or woodwork *1'-0"* Mean dia. of boilers *16'-0 1/2"* Length *27'-3 1/2"* Material of shell plates *Steel*

Thickness *1 1/16"* Range of tensile strength *28.3-34 tons* Are the shell plates welded or flanged *Yes* Descrip. of riveting: cir. seams *8 in. R lap*

Fig. seams *4 Rows Double butt* Diameter of rivet holes in long. seams *1 1/16"* Pitch of rivets *15 1/4"* Lap of plates *2'-6 1/4"* Width of butt straps *2'-6 1/4"*

Percentage of strength of longitudinal joint *110* Working pressure of shell by rules *225 lb* Size of manhole in shell *16 x 12"*

Size of compensating ring *3'-7 1/2" x 2'-8 1/2" x 1 3/8"* No. and Description of Furnaces in each boiler *Six Corrugated* Material *Steel* Outside diameter *3'-11"*

Length of plain part *top 2'-4 1/2" bottom 3'-6 1/2"* Thickness of plates *top 3/16" bottom 3/16"* Description of longitudinal joint *Yes* No. of strengthening rings *4*

Working pressure of furnace by the rules *220 lb* Combustion chamber plates: Material *Steel* Thickness: Sides *1/4"* Back *1/4"* Top *1/4"* Bottom *3/16"*

Height of stays to ditto: Sides *7 1/8" x 6 1/2"* Back *7 1/8" x 7 1/8"* If stays are fitted with nuts or riveted heads *Yes* Working pressure by rules *260 lb*

Material of stays *Iron* Area at smallest part *2.03* Area supported by each stay *57 1/2"* Working pressure by rules *265 lb* End plates in steam space: *Yes*

Material *Steel* Thickness *1 1/2"* Pitch of stays *4 1/2" x 4 1/2"* How are stays secured *nut & washer* Working pressure by rules *270 lb* Material of stays *Steel*

Thickness at smallest part *2 1/2"* Area supported by each stay *2200* Working pressure by rules *275 lb* Material of Front plates at bottom *Steel*

Thickness *1 1/32"* Material of Lower back plate *Steel* Thickness *1 1/16"* Greatest pitch of stays *as per plan* Working pressure of plate by rules *220 lb*

Diameter of tubes *2 3/4"* Pitch of tubes *4 x 4"* Material of tube plates *Steel* Thickness: Front *1 1/32"* Back *1 1/16"* Mean pitch of stays *8"*

Pitch across wide water spaces *13 3/4"* Working pressures by rules *250 lb* Girders to Chamber tops: Material *Steel* Depth and *Yes*

Thickness of girder at centre *13 1/2" x 21 1/2"* Length as per rule *2'-7 1/2"* Distance apart *7 1/2"* Number and pitch of stays in each *6-7 1/2"*

Working pressure by rules *220 lb* Steam dome: description of joint to shell *Yes* % of strength of joint *Yes*

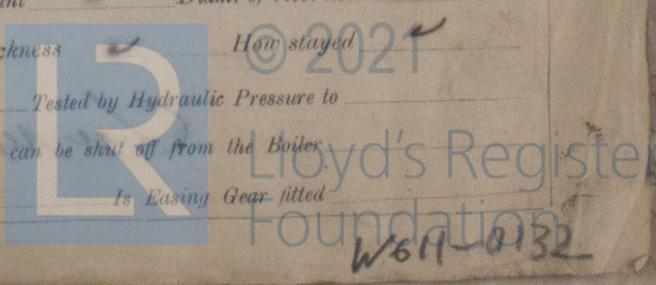
Diameter *Yes* Thickness of shell plates *Yes* Material *Yes* Description of longitudinal joint *Yes* Diam. of rivet holes *Yes*

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

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

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

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



TO WRITE ACROSS THE MARGIN  
 TO BE REQUESTED NOT TO WRITE ACROSS THE MARGIN

IS A DONKEY BOILER FITTED?

Donkey boiler fitted  
No, but. If so, is a report now forwarded?

SPARE GEAR. State the articles supplied:—

The foregoing is a correct description,

Manufacturer.

Dates of Survey while building  
During progress of work in shops  
During erection on board vessel ---  
Total No. of visits  
1921. Feb 16, 18, 27, 28. March 8, 15, 21. May 11. June 7, 17, 23, 28. July 5, 6.

Is the approved plan of main boiler forwarded herewith?

Dates of Examination of principal parts—Cylinders ✓ Slides ✓ Covers ✓ Pistons ✓ Rods ✓  
Connecting rods ✓ Crank shaft ✓ Thrust shaft ✓ Tunnel shafts ✓ Screw shaft ✓ Propeller ✓  
Stern tube ✓ Steam pipes tested ✓ Engine and boiler seatings ✓ Engines holding down bolts ✓  
Completion of pumping arrangements ✓ Boilers fixed ✓ Engines tried under steam ✓  
Completion of fitting sea connections ✓ Stern tube ✓ Screw shaft and propeller ✓  
Main boiler safety valves adjusted ✓ Thickness of adjusting washers ✓  
Material of Crank shaft ✓ Identification Mark on Do. ✓ Material of Thrust shaft ✓ Identification Mark on Do. ✓  
Material of Tunnel shafts ✓ Identification Marks on Do. ✓ Material of Screw shafts ✓ Identification Marks on Do. ✓  
Material of Steam Pipes ✓ Test pressure ✓  
Is an installation fitted for burning oil fuel? No Is the flash point of the oil to be used over 150° F. ✓  
Have the requirements of Section 49 of the Rules been complied with? ✓  
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 foll. pumps are fitted aboard in addition to the feed water pumps above enumerated— Two Hand Sanitary pumps 11 1/2" dia x 12 stroke; Two Duplex Ballast pumps 11 1/2" dia x 11" pump x 11 1/2" stroke; Two Duplex ballast pumps 11" x 7 1/2" x 13 1/2"; Two Hand water pumps 7" x 6" x 6"; Two Ash Yeast pumps 11" x 9 1/2" x 12 3/4"; One Draining pump 11" x 7 1/2" x 13 1/2";

The Machinery of this vessel is in efficient condition, and when Survey has been completed (as per attached Report and Form) will, in my opinion, be eligible for record of L.R.C. I will do

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

The amount of Entry Fee ... £ : :  
Special ... £ : :  
Donkey Boiler Fee ... £ : :  
Travelling Expenses (if any) £ : :  
When applied for 19...  
When received 19...

J. D. McArthur  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute LIVERPOOL 19 AUG 1921 FRI 24 FEB 1922

Assigned See report attached.

