

Rpt. 4.

REPORT ON MACHINERY.

No. 2452.

Date of writing Report 4th Nov 1916 REC'D NEW YORK Nov. 14 1916 Received at London Office TUE NOV. 28 1916
When handed in at Local Office 11th Nov 1916 Port of PHILADELPHIA
No. in Survey held at Wilmington Del. Date, First Survey 16th July 1915 Last Survey 1st Nov. 1916
Reg. Book. 261 on the S S "PEARL SHELL" (Number of Visits 61)
Master Oscar Lane Built at Wilmington By whom built Harlan & Hollingsworth Corp Tons { Gross 5614
Engines made at Wilmington By whom made Harlan & Hollingsworth Corp when made 1916 Net 3420
Boilers made at Wilmington By whom made Harlan & Hollingsworth Corp when made 1916
Registered Horse Power _____ Owners Shell Company of California Port belonging to Wilmington Del.
Nom. Horse Power as per Section 28 534 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Triple No. of Cylinders 3 No. of Cranks 3
Dia. of Cylinders 24-45-74 Length of Stroke 48" Revs. per minute _____ Dia. of Screw shaft as per rule 14.9 Material of 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 tight fit If two
liners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 5'-6"
Dia. of Tunnel shaft as per rule 13.5 Dia. of Crank shaft journals as per rule 14.2 Dia. of Crank pin 14.5 Size of Crank webs 28"x92" Dia. of thrust shaft under
collars 14.5 Dia. of screw 17.9 Pitch of Screw 17'-0" No. of Blades 4 State whether moveable no Total surface 100 sq'
No. of Feed pumps 2 Diameter of ditto 8x10 1/2 Stroke 21" Can one be overhauled while the other is at work yes
No. of Bilge pumps 2 Diameter of ditto 4" Stroke 26" Can one be overhauled while the other is at work yes
No. of Donkey Engines 4 Sizes of Pumps 8x6x12 12x10x12 7x6x10 No. and size of Suctions connected to both Bilge and Donkey pumps
In Engine Room Sea 3"x4" Eng Room Well 8"x8 1/2"x12" Boiler Well 3" after Peak 4"x4" Fore Peak 4"x4"
Fore & after Cofferdam 3 1/2" From Bunker 3 1/2" Bilges 2" In Holds, &c. 3" 3 1/2" 4"
No. of Bilge Injections 1 sizes 9" Connected to condenser or to circulating pump ✓ Is a separate Donkey Suction fitted in Engine room & size yes 4 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 Suction to after cofferdam How are they protected Heavy wooden casing
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 (S)) Manufacturers of Steel Lukens Iron & Steel Co Coatesville
Total Heating Surface of Boilers 8000 Is Forced Draft fitted yes No. and Description of Boilers 3 Single ended
Working Pressure 180 lbs Tested by hydraulic pressure to 240 Date of test 9th May 1916 No. of Certificate 94
Can each boiler be worked separately yes Area of fire grate in each boiler 64 sq' No. and Description of Safety Valves to
each boiler 2 direct spring Area of each valve 9.6 sq" 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 3'-0" Mean dia. of boilers 15'-7 1/2" Length 11'-7" Material of shell plates steel
Thickness 1 1/2" Range of tensile strength 28-32/100 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams d. & lap
long. seams DBS TR Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 8 1/4" Lap of plates or width of butt straps 19 1/4"
Per centages of strength of longitudinal joint 99 Working pressure of shell by rules 191 Size of manhole in shell 16"x12"
Size of compensating ring 36"x3 1/2"x1 1/2" No. and Description of Furnaces in each boiler 3 Morrison Material steel Outside diameter 49"
Length of plain part top 19" Thickness of plates bottom 32" Description of longitudinal joint welded No. of strengthening rings ✓
Working pressure of furnace by the rules 193 Combustion chamber plates: Material steel Thickness: Sides 3/32 Back 3/32 Top 3/32 Bottom 3/32
Pitch of stays to ditto: Sides 7 1/2"x7 1/2" Back 7 1/2"x7 1/2" Top 9"x7 1/2" If stays are fitted with nuts or riveted heads riveted Working pressure by rules 194
Material of stays steel Area at smallest part 1.52 sq" Area supported by each stay 56.7 sq" Working pressure by rules 214 End plates in steam space:
Material steel Thickness 1 1/8" Pitch of stays 7 1/2"x1 1/2" How are stays secured DN & W Working pressure by rules 196 Material of stays steel
Area at smallest part 2 3/4 sq" Area supported by each stay 289 sq" Working pressure by rules 214 Material of Front plates at bottom steel
Thickness 1 1/8" Material of Lower back plate steel Thickness 1" Greatest pitch of stays 13 1/2"x7 1/2" Working pressure of plate by rules 289
Diameter of tubes 3" Pitch of tubes 4"x4 1/4" Material of tube plates steel Thickness: Front 7/8" Back 3/32 Mean pitch of stays 10.375
Pitch across wide water spaces 14"x16" Working pressures by rules 244 Girders to Chamber tops: Material steel Depth and
thickness of girder at centre 9 1/2"x1 1/8" Length as per rule 33" Distance apart 9" Number and pitch of stays in each 3-7 1/2"
Working pressure by rules 216 Steam dome: description of joint to shell none % 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 Schmidt Date of Approval of Plan 12th October 1915 Tested by Hydraulic Pressure to 550 lbs
Date of Test 2nd October 1916 Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler yes
Area 1.76 sq" Pressure to which each is adjusted 185 lbs. Is Easing Gear fitted yes

W563-0137

IS A DONKEY BOILER FITTED? *no.*

If so, is a report now forwarded?

SPARE GEAR.

State the articles supplied:— 1 Tail shaft, 1 propeller, 1 section crank shaft, 1 piston, 1 set of piston rings for HP, IP and LP, 1 piston rod, 1 valve spindle, 1 air pump rod, 1 bilge pump ram, 2 crank pin brasses, 2 sets crosshead brasses, link block complete, eccentric strap, 2 crosshead, 2 crank pin and 2 main bearing bolts & nuts, 1 set of coupling bolts & nuts, 1 set of feed, bilge and air pump valves also 1 set of valves for all auxiliaries, 20 boiler tubes, 20 condenser tubes, a quantity of bolts and assorted iron.

The foregoing is a correct description,

HARLAN & HOLLINGSWORTH CORP'N.

H. L. Hollingsworth

Manufacturer.

Dates of Survey while building
During progress of work in shops - 1915 July 16, 21, Sept 29, Oct 4, 19, 25, 28 Nov 5, 12, 14, 23, 26, Dec 1, 7, 20, 24
During erection on board vessel - 1916 July 6, 19, 27, Aug 19, 21, 31, Sept 5, 15, 20, Oct 13, 14, 20, 24, 25, 26, Nov 1
Total No. of visits 61

Is the approved plan of main boiler forwarded herewith *yes.*

Dates of Examination of principal parts—Cylinders Nov 5-15 Slides Nov 5-15 Covers Nov 5-15 Pistons Nov 5-15 Rods Nov 5-15
Connecting rods Nov 5-15 Crank shaft Nov 12-15 Thrust shaft Nov 12-15 Tunnel shafts ✓ Screw shaft 23-3-16 Propeller 30-6-16
Stern tube 30-6-16 Steam pipes tested 13-10-16 Engine and boiler seatings 19-7-16 Engines holding down bolts 21-8-16
Completion of pumping arrangements 23-10-16 Boilers fixed 24-7-16 Engines tried under steam 26-10-16
Completion of fitting sea connections 30-6-16 Stern tube 30-6-16 Screw shaft and propeller 30-6-16
Superheater and Main boiler safety valves adjusted 25-10-16 Thickness of adjusting washers F.B. $F\frac{1}{16}$ A $\frac{3}{32}$ S $\frac{1}{32}$ P.B.F. $\frac{23}{32}$ A $\frac{1}{8}$ S $\frac{1}{8}$ S.B.F. $\frac{1}{8}$ A $\frac{1}{8}$ S
Material of Crank shaft Steel Identification Mark on Do. 280. Material of Thrust shaft Steel Identification Mark on Do. 280.
Material of Tunnel shafts ✓ Identification Marks on Do. ✓ Material of Screw shafts Steel Identification Marks on Do. 280.
Material of Steam Pipes Steel ✓ Test pressure 540.

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 *yes.*

With exception of Superheater. *1/2 Silver Shell PHE Rpt 2304.*
If so, state name of vessels. *1/2 Gold Shell PHE Rpt 2356.*

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

The machinery of this vessel has been constructed and fitted on board under Special Survey, the workmanship is sound and good. The Doh oil fuel system has been fitted. The machinery has all been tried under steam and safety valves adjusted, oil system tried and found to work well and is in my opinion eligible for the record of LMC 11-16, fitted for oil fuel 11-16 flash point over 150°F in the Register Book.

It is submitted that this vessel is eligible for THE RECORD + LMC 11-16. F.D.

Fitted for oil fuel 11-16. F.P. above 150°F. *9782*

The amount of Entry Fee ... \$ 15.00
Special ... \$ 234.25
Donkey Boiler Fee ... £
Travelling Expenses (if any) £ 42.25

When applied for, 4-11-1916.
When received, 11-12-1916.

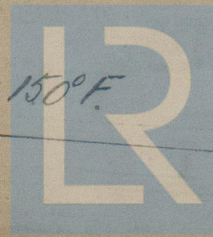
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute New York NOV 16 1916

Assigned

+ Lmc 11.16 Fitted for oil fuel 11.16 F.P. above 150°F.
Elec. Light

MACHINERY CERTIFICATE
WRITTEN 28/11/16



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Foundation