Rpt. 4.

REPORT ON MACHINERY.

No. 7463

Received at London Office THU. AUG. 24 1911

Date of writing Report ____ 19__ When handed in at Local Office 23/8/ 1911 Port of Grimsby

No. in Reg. Book. ____ Survey held at Grimsby Date, First Survey 3/11/10 Last Survey 19/8/ 1911 (Number of Visits 59)

on the S.S. Cayrian (Cochrane's No. 487) Tons Gross ____ Net ____

Master ____ Built at Selby By whom built Cochrane & Sons. When built 1911

Engines made at Grimsby By whom made Gt. Central Co-op. E. & S. R. Co.ld when made 1911

Boilers made at Grimsby By whom made Great Central Co-operative Engg. when made 1911

Registered Horse Power ____ Owners Gt. Cent. Co-op. E. & S. R. Co.ld Port belonging to Grimsby

Nom. Horse Power as per Section 28 775 Is Refrigerating Machinery fitted for cargo purposes no. Is Electric Light fitted no

ENGINES, &c.—Description of Engines Triple expansion inverted No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 12. 21½. 34 Length of Stroke 24 Revs. per minute 112 Dia. of Screw shaft as per rule 7.05 as fitted 7 3/8 Material of screw shaft Sc. Iron

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 yes If two liners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 35"

Dia. of Tunnel shaft as per rule 6.3" as fitted ✓ Dia. of Crank shaft journals as per rule 6.61 as fitted 7" Dia. of Crank pin 7" Size of Crank webs 4¼ × 13 Dia. of thrust shaft under collars 7" Dia. of screw 8'-6" Pitch of Screw 10'-9" No. of Blades 4 State whether moveable no Total surface 280'

No. of Feed pumps 1 Diameter of ditto 2⅛ Stroke 24 Can one be overhauled while the other is at work ✓

No. of Bilge pumps 1 Diameter of ditto 2⅛ Stroke 24 Can one be overhauled while the other is at work ✓

No. of Donkey Engines 1 Sizes of Pumps 6 × 3½ × 6 No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room 2" sea, hotwell, bilge In Holds, &c. 2" forepk. forehold & fishroom.

No. of Bilge Injections 1 sizes 3" Connected to condenser, or to circulating pump pump Is a separate Donkey Suction fitted in Engine room & size 2½ ejector.

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 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 main steam, exhaust & steam to windlass. How are they protected wood casings

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 Steel Hull of Stern Tube at Hull Screw shaft and Propeller at Hull.

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 Phoenix Akt. Ges. Abt. Hoerder Verein

Total Heating Surface of Boilers 1340' Is Forced Draft fitted no No. and Description of Boilers one S.E. return tube.

Working Pressure 180 lb. Tested by hydraulic pressure to 360 lb. Date of test 5.7.11 No. of Certificate 95

Can each boiler be worked separately ✓ Area of fire grate in each boiler 34.70' No. and Description of Safety Valves to each boiler 2 direct spring Area of each valve 3.98' Pressure to which they are adjusted 185 lb. Are they fitted with easing gear yes

Smallest distance between boilers or ~~uptakes~~ and bunkers ~~or woodwork~~ 4" Mean dia. of boilers 12'-6" Length 10'-0 Material of shell plates S

Thickness 13/32" Range of tensile strength 28/32" Are the shell plates welded or flanged no Descrip. of riveting: cir. seams double

long. seams treble butt Diameter of rivet holes in long. seams 1⅛" Pitch of rivets 4¾" ~~Lap of plates or~~ width of butt straps 16⅞"

Per centages of strength of longitudinal joint rivets 87.0 plate 85.5 Working pressure of shell by rules 194 Size of manhole in shell 12×16"

Size of compensating ring 16×16×1⅛" No. and Description of Furnaces in each boiler 2 plain Material S Outside diameter 43"

Length of plain part top 70" bottom 70" Thickness of plates crown ¾" bottom ¾" Description of longitudinal joint welded No. of strengthening rings none

Working pressure of furnace by the rules 181 Combustion chamber plates: Material S Thickness: Sides 21/32" Back 21/32" Top 21/32" Bottom 13/16"

Pitch of stays to ditto: Sides 9¼×8¾ Back 9×8¾ Top 9¼×8¾ If stays are fitted with nuts or riveted heads nuts Working pressure by rules 184

Material of stays S ~~Diameter~~ area at smallest part 2.1' Area supported by each stay 81' Working pressure by rules 207 End plates in steam space:

Material S Thickness 1⅛" Pitch of stays 17½×18 How are stays secured d. nuts & washers Working pressure by rules 190 Material of stays S

~~Diameter~~ area at smallest part 6.6' Area supported by each stay 320' Working pressure by rules 215 Material of Front plates at bottom S

Thickness 1" Material of Lower back plate S Thickness 15/16 ~~Greatest~~ mean pitch of stays 16" Working pressure of plate by rules 180

Diameter of tubes 3¼" Pitch of tubes 4½" Material of tube plates S Thickness: Front 1" Back ¾" Mean pitch of stays 9"

Pitch across wide water spaces 14¼" Working pressures by rules 190 Girders to Chamber tops: Material S Depth and thickness of girder at centre 2(9×¾) Length as per rule 31.5" Distance apart 8¼" Number and pitch of stays in each 2-9¼"

Working pressure by rules 223 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 ____ 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 ____

If Stockton, state Mechanical Tests.

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 Radius of do. Stayed by

Diameter of uptake Thickness of uptake plates Thickness of water tubes Dates of survey

SPARE GEAR. State the articles supplied :— Two top ✓ bottom end ✓ main bearing bolts nuts, a set of coupling bolts nuts ✓ feed, bilge, circulating, air pump rods, safety valve rods, tapered bolts, nuts, & iron ✓

For the GREAT CENTRAL CO-OPERATIVE ENGINEERING & SHIP REPAIRING COMPANY, LTD.

Fred Lister
Secretary.

The foregoing is a correct description,

Manufacturer.

Dates of Survey while building

During progress of work in shops— Nov 3. 7. 15. 18. 21. 22. 25. 26 Dec 2. 5. 6. 15. 17. 22. 24. 30. Jany 2. 6. 7. 10. 17. 19. 21. 24. 26 Feb 1 7. 16. 22. 23. 28. Mar 6. 14. 17. 24. Apl 6. 7. 10. 13. 19. 20. 28 May 2. 8. 15. 19. 27 30 June 1. 7. 9 19.

During erection on board vessel — July 13. 15. 19. 21. 29. Aug 1. 3. 19.

Total No. of visits 59

Is the approved plan of main boiler forwarded herewith Yes ✓.

Dates of Examination of principal parts—Cylinders HP 24/1/11 IP 10/1/11 LP 25/11/10 " " " donkey " " " Slides 19/1/11 Covers 24/12/10 Pistons 24/12/10 Rods 30.12.10 19.1.11

Connecting rods 22/12/10 Crank shaft 6/1/11 Thrust shaft 1/8/11 Tunnel shafts ✓ Screw shaft 28/4/11 Propeller 28/4/11

Stern tube 28/4/11 Steam pipes tested 29/7/11 Engine and boiler seatings seen at Hull Engines holding down bolts 21/7/11

Completion of pumping arrangements 29/7/11 Boilers fixed 29/7/11 Engines tried under steam 3/8/11

Main boiler safety valves adjusted 3/8/11 Thickness of adjusting washers S 5/16 F P 3/8

Material of Crank shaft pins steel, webs & journals iron Identification Mark on Do. LLOYDS No. 350 6.1.11 C.M. Material of Thrust shaft Iron Identification Mark on Do. No. 406 1.8.11 C.M.

Material of Tunnel shafts ✓ Identification Marks on Do. ✓ Material of Screw shafts Iron Identification Marks on Do. No. 350 28.4.11 C.M.

Material of Steam Pipes Solid drawn copper - 6 SWG ✓ Test pressure 360 lbs. ✓

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

This machinery has been built under special survey. The materials and workmanship are good.

The boiler has been built of tested material and in accordance with the approved plan. On completion it was tested by hydraulic pressure and found tight sound.

This machinery has been fitted on board the vessel in an efficient manner, and is eligible in my opinion for record of + LMC 8.11.

The vessel is a sister to the S.S. Berwian Engs. No. 6546.
Please return boiler plan for duplicate boiler.

It is submitted that this vessel is eligible for THE RECORD. + LMC. 8. 11

J.W.D. 24/8/11

J. M. C. Marsh

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

The amount of Entry Fee .. £ 1 : : When applied for, 23/8/1911 C.M.

Special .. .. .. £ 11 : 5 : :

Donkey Boiler Fee .. .. £ : : When received, 13.12.11 C.M. 14

Travelling Expenses (if any) £ : :

Committee's Minute FRI. AUG. 25. 1911

Assigned + LMC 8. 11

MACHINERY CERTIFICATE WRITTEN.

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

Certificate (if required) to be sent to