

REPORT ON OIL ENGINE MACHINERY.

No. 2537a.

WED APR. 25 1923

Received at London Office

Port of **Christiania**
 Date, First Survey **14/10-1920** Last Survey **2/3-1923**
 Survey held at **Fevig and Langemund**
 "HEIREN"
 Built at **Fevig** By whom built **Randolph & Whitelegg** Yard No. **1** When built **1923**
 Engines made at **Stockholm** By whom made **Messrs J.C.S. Cylinders Co Ltd** Engine No. **13073/96** When made **1917**
 Boilers made at **Newcastle** By whom made **Clark Chapman & Co** Boiler No. **2506** When made **1920**
 Indicated Horse Power **240 each engine** Owners **Ms. Cygnus (H. Sjelland)** Port belonging to **Christiania**
 Net Horse Power as per Rule **68.5 each** Is Refrigerating Machinery fitted for cargo purposes **no.** Is Electric Light fitted **no.**

ENGINES, &c. Type of Engines **Cylinder two stroke cycle, reversible with air injection** Single or double acting **single**
 Maximum pressure in cylinders **18 atm.** No. of cylinders **4** No. of cranks **8** Diameter of cylinders **380 mm.**
 Length of stroke **410 mm.** Revolutions per minute **250** Means of ignition **hot bulb** Kind of fuel used **heavy oil**

Span of bearings (Page 92, Section 2, par. 7 of Rules) **156 mm.**
 Is a flywheel fitted **yes** Diameter of crank shaft journals **160 mm.**
 Diameter of crank pins **160 mm.** Breadth of crank webs **220-945 mm.** Thickness of ditto **as fitted**
 Diameter of flywheel shaft **as per Rule** Diameter of tunnel shaft **as fitted 155 mm.** Diameter of thrust shaft **as fitted 155 mm.**

Is the screw shaft fitted with a continuous liner the whole length of the stern tube **no liner**
 If the liner is in more than one length are the joints burned **yes**
 Is the space charged with a plastic material insoluble in water and non-corrosive **yes**
 If without liners, is the shaft arranged to run in oil **yes**
 Diameter of propeller **1700 mm.**

Length of stern bush **2'4"** Total surface **0.525 x dia of square feet**
 No. of blades **3** state whether moveable **yes** Thickness of cylinder liners **26 mm.**
 Is a governor or other arrangement fitted to prevent racing of the engine when declutched **yes**
 Are the exhaust pipes and silencers water cooled or lagged with **led up through funnels**

No. of cooling water pumps **2** Is the sea suction provided with an efficient strainer which can be cleared **yes**
 Diameter of ditto **116 mm.** Stroke **130 mm.**
 No. of bilge pumps fitted to the main engines **2** How driven **1 - 2 1/2'**
 No. of auxiliary pumps connected to the main bilge lines **1** Sizes of pumps **8" x 8" x 6"**

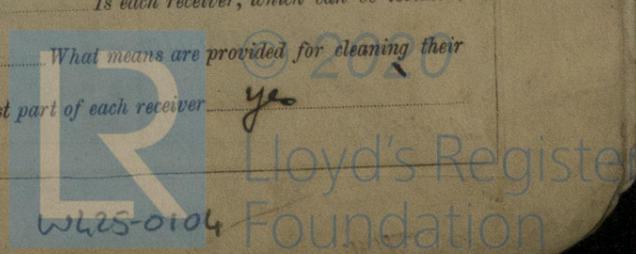
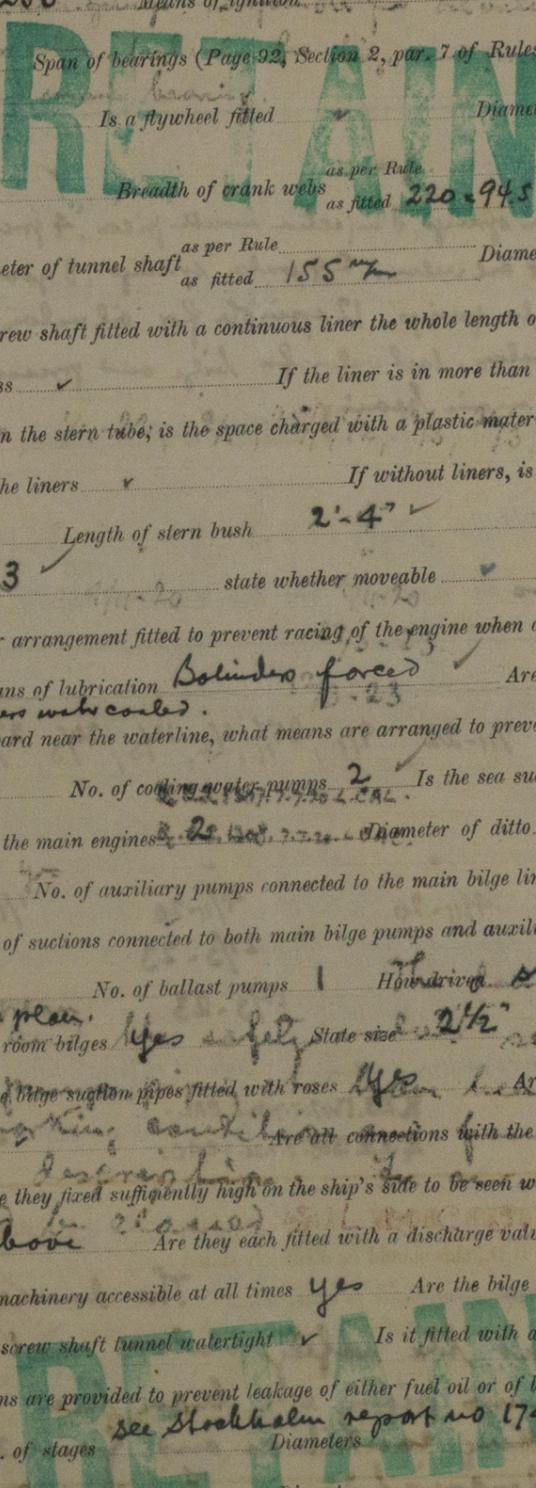
No. of ballast pumps **1** How driven **steam** Is a separate auxiliary pump suction fitted in **yes**
 Are all the bilge suction pipes fitted with roses **yes** Are the roses in Engine Room always accessible **yes**
 Are all connections with the sea direct on the skin of the ship **yes**
 Are they fixed sufficiently high on the ship's side to be seen without lifting the floor plates **yes**
 Are they each fitted with a discharge valve always accessible on the plating of the vessel **yes**

Are the bilge suction pipes, cocks and valves arranged so as to prevent any **yes**
 Is the screw shaft tunnel watertight **yes** Is it fitted with a watertight door **yes**
 If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork **yes**
 No. of main air compressors **2** No. of stages **see Stockholm report no 1740** Stroke **see Stockholm report no 1740 and plan**
 Driven by **see Stockholm report no 1740 and plan**

No. of auxiliary air compressors **(span head) compr.** No. of stages **see Stockholm report no 1740 and plan**
 Driven by **see Stockholm report no 1740 and plan**
 No. of small auxiliary air compressors **see Stockholm report no 1740 and plan**
 Driven by **see Stockholm report no 1740 and plan**

Are the air compressors and their coolers made so as to be easy of access **yes**
 No. of scavenging air pumps **see Stockholm report no 1740 and plan**
 Diameter of auxiliary Diesel Engine crank shafts **as per Rule**
 Are the receivers made so as to be easy of access **yes**

RECEIVERS: No. of high pressure air receivers **1** Internal diameter **152 mm.** Cubic capacity of each **see Stockholm report no 1740 and plan**
 Material **steel** Seamless, lap welded or riveted longitudinal joint **yes** Range of tensile strength **see Stockholm report no 1740 and plan**
 Thickness **4.5 mm.** Working pressure by Rules **30 atm.** No. of starting air receivers **1** Internal diameter **450 mm.**
 Material **steel** Seamless, lap welded or riveted longitudinal joint **see Stockholm report no 1740 and plan**
 Working pressure by rules **15 atm.** Is each receiver, which can be isolated, **yes**
 Can the internal surfaces of the receivers be examined **yes** What means are provided for cleaning their **see Stockholm report no 1740 and plan**
 Is there a drain arrangement fitted at the lowest part of each receiver **yes**



IS A DONKEY BOILER FITTED? *yes*

If so, is a report now forwarded? *yes delivered from Messrs. Clarke Chapman & Co., Ld.*

HYDRAULIC TESTS:—

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS	<i>7-9-17</i> <i>7-11-17.</i>	18 atm.	529 lb.	LLOYD'S TEST 529 lb. 7-11-17 7-9-17.	
COVERS	<i>7-9-17</i> <i>7-11-17.</i>	✓	50 lb.	✓	
JACKETS		✓	✓	✓	
PISTON WATER PASSAGES		✓	✓	✓	
MAIN COMPRESSORS—1st STAGE		30 atm.	60 atm.	✓	
2nd		8 atm.	16 atm.	✓	
<i>Wash jackets for same</i> 3rd		✓	50 lb.	✓	
AIR RECEIVERS—STARTING	<i>23.11.17.</i>	15 atm.	30 atm.	2145. Skm. 23.11.17.	
INJECTION	<i>23.11.17</i>	30	60	2146. Skm. 23.11.17.	
AIR PIPES <i>solid drawn copper</i>			60		
FUEL PIPES					
FUEL PUMPS					
SILENCER <i>cooling</i>			50 lb.		
WATER JACKET					
SEPARATE FUEL TANKS					

PLANS. Are approved plans forwarded herewith for shafting *yes* Receivers Separate Tanks

SPARE GEAR *for each engine: 16 piston springs, 8 injection mouth-pieces, 4 pressure valves for oil fuel pumps, 4 suction valves for do. 4 oil valves, 24 valve springs, 8 governor springs, 4 spiral springs for oil fuel pump, 8 air valve springs, 12 spindles for oil valves, 4 do for oil fuel valves, 6 spiral springs for compressor valves, 1 set valves for bilge and pressure pumps, 2 belts for crankshaft-bearing and main bearing.*

The foregoing is a correct description,

J. & C. G. Bøllingers A/S
Jørgen Styrer Manufacturer.

Dates of Survey while building
 During progress of work in shops --
 During erection on board vessel --
 Total No. of visits *9*

14/10, 4/11-1920, 1/11-22, 9/1, 25/1, 1/2, 12/3, 26/3, 27/3-1923.

Dates of Examination of principal parts—Cylinders ✓ Covers ✓ Pistons ✓ Rods ✓ Connecting rods ✓
 Crank shaft ✓ Thrust shaft ✓ Tunnel shafts *4/11-20* Screw shaft *4/11-20* Propeller *1/11-22* Stern tube *4/11-20* Engine seatings *4/11-20*
 Engines holding down bolts *25/1-23* Completion of pumping arrangements *27/3-23* Engines tried under working conditions *27/3-23*
 Completion of fitting sea connections *12/3-23* Stern tube *12/3-23* Screw shaft and propeller *12/3-23*

Material of crank shaft ✓ Identification Mark on Do. ✓ Material of thrust shaft ✓ Identification Mark on Do. ✓
 Material of *inlet* tunnel shafts *steel* Identification Marks on Do. *R.C.S. 1307-7-7-20 L.CAL.* Material of screw shafts *steel* Identification Marks on Do. *R.C.S. 1308-7-7-20 L.CAL.*

Is the flash point of the oil to be used over 150° F. *yes*

Is this machinery duplicate of a previous case ✓ If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, &c.)
*The donkey boiler has been examined under steam pressure and the safety valves set to 100 lbs per sq inch (see end drawing). The engines and pumps, piping etc have been examined during fitting outboard and tried under working conditions and found in order, and the workmanship is of the best description. In our opinion this vessel's machinery is eligible to be classed * L.M.C. 3, 23*

It is submitted that this vessel is eligible for THE RECORD. + LMC 3/23. OG. 137 N.H. Oil Engines. 2SC. SA. 8 Cy 15-16 1/8" J. & C. G. Bøllingers Co Ltd Skm. DB 100 lb. Annual survey)

The amount of Entry Fee ... £ : : When applied for,
 Special ... £ *4.350.-* : : *5/4-1923*
 Donkey Boiler Fee ... £ : :
 Travelling Expenses (if any) £ : :
 When received, *24/5*

Per Jørgen Styrer 26/4/23 J. Styrer
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned *+ L.M.C. 3, 23 Oil Engines DB 100 lb*

MACHINERY CERT. WRITTEN.



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