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Rpt. 4b.

2 JUL 1946

REPORT ON OIL ENGINE MACHINERY.

No. 53546

fm 16187

IN D.O.

Received at London Office

1 JUL 1946

No. 70176

Date of writing Report 19... When handed in at Local Office 19...

Port of **HULL**

No. in Survey held at **Goode and Hull.**

Date, First Survey **13.12.45** Last Survey **12.6.1946**

Number of Visits **16**

on the **Single** Screw vessel **"CATO"**

Tons { Gross **9110**
Net **497**

Built at **Goode** By whom built **Goode S.A. & R. Co. Ltd.** Yard No. **442** When built **1946**

Engines made at **Glasgow** By whom made **British Polar Engines Ltd.** Engine No. **584** When made **1946**

Donkey Boilers made at **none** By whom made **✓** Boiler No. **✓** When made **✓**

Brake Horse Power **520** Owners **The Bristol Steam Nav. Co. Ltd.** Port belonging to **Bristol**

Nom. Horse Power as per Rule **118** Is Refrigerating Machinery fitted for cargo purposes **no** Is Electric Light fitted **yes**

Trade for which vessel is intended **134** **Coastal Service**

L ENGINES, &c.—Type of Engines **Vertical Airless Injection Oil Eng. 2 or 4 stroke cycle 2 Single or double acting S.A.**

Maximum pressure in cylinders **78 lbs** Diameter of cylinders **250 mm or 9 7/8"** Length of stroke **420 mm** No. of cylinders **7** No. of cranks **7**

Mean Indicated Pressure **96 lbs** Is there a bearing between each crank **yes**

Distance between bearings, adjacent to the Crank, measured from inner edge to inner edge **365 mm** Means of ignition **compression** Kind of fuel used **heavy oil**

Revolutions per minute **300** Flywheel dia. **1050 mm** Weight **605 lbs**

Crank Shaft, { Solid forged dia. of journals as per Rule **155 mm** Crank pin dia. **170 mm** Crank Webs Mid. length breadth **226 mm** Thickness parallel to axis as fitted **170 mm** Mid. length thickness **95 mm** Thickness around eye-hole **shrunk**

Flywheel Shaft, diameter as per Rule **✓** Intermediate Shafts, diameter as per Rule **✓** Thrust Shaft, diameter at collars as per Rule **123 mm**

Propeller Shaft, diameter as fitted **✓** Is the tube screw shaft fitted with a continuous liner **no**

Propeller Liners, thickness in way of bushes as per Rule **✓** Thickness between bushes as per Rule **6 3/8 bush** Is the after end of the liner made watertight in the propeller boss **✓**

Is the liner in more than one length are the junctions made by fusion through the whole thickness of the liner **✓**

Does 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 **✓** Is an approved Oil Gland or other appliance fitted at the after end of the tube **✓**

Length of Bearing in Stern Bush next to and supporting propeller **2'0"**

Propeller, dia. **6'6"** Pitch **3'1" 43°** No. of blades **4** Material **M.P.** whether Moveable **no** Total Developed Surface **18.38** sq. feet

Method of reversing Engines **Air direct** Is a governor or other arrangement fitted to prevent racing of the engine when declutched **yes** Means of lubrication **forced**

Thickness of cylinder liners **19.5 mm** Are the cylinders fitted with safety valves **yes** Are the exhaust pipes and silencers water cooled or lagged with conducting material **lagged**

If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine **✓**

Bilge Water Pumps, No. **1 M.E. 150x60 mm. 1 Aux. 50 ton/hr.** Is the sea suction provided with an efficient strainer which can be cleared within the vessel **yes**

Bilge Pumps worked from the Main Engines, No. **ONE** Diameter **120 mm** Stroke **60 mm** Can one be overhauled while the other is at work **✓**

Pumps connected to the Main Bilge Line { No. and Size **1-120-60 mm. One 50 ton/hr. (D.O.) One pulcometer 50 ton/hr.** How driven **M.E. El. Motor El. Motor**

Is the cooling water led to the bilges **no** If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements **✓**

Lubricating Pumps, No. and size **Two 50 ton/hr. as above** Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size **Two 2" 2, 115 gal/hr. each**

Are two independent means arranged for circulating water through the Oil Cooler **yes** Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Machinery Spaces **Two 2 1/2" Two 2"** In Pump Room **✓**

Holds, &c. **2-3" 2-2 1/2" oil bilge 2-2"**

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size **2-2"**

Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes **yes** Are the Bilge Suctions in the Machinery Spaces from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges **yes, as far as practicable**

Are all Sea Connections fitted direct on the skin of the ship **yes, or on robust E.W. all boxes** Are they fitted with Valves or Cocks **Both**

Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates **yes** Are the Overboard Discharges 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 **✓**

Do all pipes pass through the bunkers **Forward edge** How are they protected **Lead thro' conduit as per approved plan.**

Do all pipes pass through the deep tanks **none** Have they been tested as per Rule **✓**

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times **yes**

Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another **yes** Is the Shaft Tunnel watertight **Part of E.R.** Is it fitted with a watertight door **✓** worked from **✓**

For wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork **✓**

Main Air Compressors, No. **One** No. of stages **2** Diameters **70 x 75 mm** Stroke **170 mm** Driven by **M.E.**

Auxiliary Air Compressors, No. **One** No. of stages **2** Diameters **4 1/2" x 1 1/8"** Stroke **3 1/4"** Driven by **Aux oil eng.**

Small Auxiliary Air Compressors, No. **✓** No. of stages **✓** Diameters **✓** Stroke **✓** Driven by **✓**

Is that provision is made for first Charging the Air Receivers **Above Aux oil engine - Hand starting**

Recharging Air Pumps, No. **One** Diameter **650 mm** Stroke **170 mm** Driven by **M.E.**

Auxiliary Engines crank shafts, diameter as per Rule **✓** No. **241223 241224 60/24587** as fitted **4 3/16"** Position **PS. ER SS. ER SSER AFT.**

Were the Auxiliary Engines constructed under special survey **yes** Is a report sent herewith **yes**

Reston Hornby 4 Cy (201)
Not. Cubi C 3989
3988

Lloyd's Register Foundation
003154-003161-0164

CATO

AIR RECEIVERS:—Have they been made under survey *yes* ✓ State No. of Report or Certificate *Glasgow No. 70176*
 Is each receiver, which can be isolated, fitted with a safety valve as per Rule *yes* ✓
 Can the internal surfaces of the receivers be examined and cleaned. *yes* ✓ Is a drain fitted at the lowest part of each receiver *yes* ✓
Injection Air Receivers, No. *none* Cubic capacity of each *✓* Internal diameter *✓* thickness *✓*
 Seamless, lap welded or riveted longitudinal joint *✓* Material *✓* Range of tensile strength *✓* Working pressure *by Rules ✓*
Starting Air Receivers, No. *Two* ✓ Total cubic capacity *30 cu. ft.* ✓ Internal diameter *1'-9"* thickness *13/32" ✓*
 Seamless, lap welded or riveted longitudinal joint *riveted* Material *stl* Range of tensile strength *5 Rods 28-32 tons* Working pressure *by Rules 355 lbs.*
 Actual *355 lbs.*

IS A DONKEY BOILER FITTED? *No* ✓ If so, is a report now forwarded? *✓*
 Is the donkey boiler intended to be used for domestic purposes only *✓*
PLANS. Are approved plans forwarded herewith for Shafting *20-2-45* Receivers *26-12-44* Separate Fuel Tanks *22-3-43*
 (If not, state date of approval)
 Donkey Boilers *✓* General Pumping Arrangements *12-3-45* Pumping Arrangements in Machinery Space *11-4-45*
 Oil Fuel Burning Arrangements *16-4-45, 24-7-45*

SPARE GEAR.

Has the spare gear required by the Rules been supplied *Yes* ✓
 State the principal additional spare gear supplied *As per attached list.*

It is stated by the Engine Builders that the Torsional Vibration calculations as required by Notice No. 1803 have been submitted by the shipbuilders & have been approved.

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 *16*
Su Gls. Rpt. No. 70176. 28
 1945 Dec 13 1946 JAN 14, 22. FEB 15, 27 MAR 12, 15, 18 APR 8, 12. MAY 2, 22 JUN 4, 6, 12

Dates of Examination of principal parts—Cylinders Covers Pistons Rods Connecting rods
 Crank shaft *Su* Flywheel shaft *Gls. Rpt. No. 70176* Thrust shaft Intermediate shafts *2-5-46* Tube shaft *70176*
 Screw shaft *28-3-46* Propeller *28-3-46* Stern tube *28-3-46* Engine seatings *18-3-46* Engines holding down bolts *2-5-46*
 Completion of fitting sea connections *28-3-46* Completion of pumping arrangements *4-6-46* Engines tried under working conditions *4/6/46 17/6/46*
 Crank shaft, Material Identification Mark *no 70176* Flywheel shaft, Material Identification Mark *99/ See letter*
 Thrust shaft, Material *Su Gls.* Identification Mark *no 70176* Intermediate shafts, Material *F-1. STL* Identification Marks *B 476, CG 23/3/46*
 Tube shaft, Material *NONE* Identification Mark *✓* Screw shaft, Material *D2* Identification Mark *B 478, FW, 23/4/45*

Identification Marks on Air Receivers
 Both receivers at aft end of engine room, port side. } Bottom No 56170 B TEST 555B } Top No 56171 B TEST 555B
 Receivers 1/8" 45 WAL. WP 355B } Receivers 1/8" 45 WAL WP 355B
 Starting air to main and auxiliary engines.

Is the flash point of the oil to be used over 150° F. *YES* ✓
 Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with *YES* ✓
 Is the vessel (not being an oil tanker) fitted for carrying oil as cargo *NO* ✓ If so, have the requirements of the Rules been complied with *✓*
 If the notation for Ice Strengthening is desired, state whether the requirements in this respect have been complied with *✓*
 Is this machinery duplicate of a previous case *YES* ✓ If so, state name of vessel *NO* HULL RPT. NO.

General Remarks (State quality of workmanship, opinions as to class, &c.)
The above machinery installed in CATO by Eadie & Co. Ltd. in accordance with the Secretary's letters, approves plans & the Rules. The workmanship and materials are good. The machinery was tried under working conditions and found satisfactory but no torsiongraph readings were taken. It was stated this would probably be done at an early date. Eligible on completion of the above to be classed, in my opinion, in the Register Book

* LMC 6, 46. O.G. OIL ENG. 7 CYL. 9 13/16" - 16 9/16" 25C SA MN 118
abras plate has been fixed to the main engine, at control station, denoting "main engine not to be run continuously between 103 - 149"

The amount of Entry Fee ...
 Special ... *See 70176*
 Donkey Boiler Fee ... £
 Travelling Expenses (if any) £

W.S. Shields
 Engineer Surveyor to Lloyd's Register of Shipping.

FRI. 26 JUL 1946

Committee's Minute
 Assigned *+ LMC 6, 46 Oil Eng. O.G.*



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