

GENERAL REMARKS—(The Surveyor should state the Number of Report and Name of any Sister Vessel. Plans showing Vessel as built should be forwarded and a List of the Plans should be embodied.)

Rpt. 4b.

# REPORT ON OIL ENGINE MACHINERY.

No. 19584.

Received at London Office MAY 23 1938

Date of writing Report 26<sup>th</sup> May 1938. When handed in at Local Office 24<sup>th</sup> May 1938 Port of Leith  
No. in Survey held at Leith Date, First Survey 12<sup>th</sup> Oct 1934 Last Survey 20<sup>th</sup> May 1938  
Reg. Book. 16950 on the Twin Motor "A. A. COWAN" Number of Visits 20

Gross 295  
Net 133  
Built at Leith By whom built Henry Robb & Co. Yard No. 242 When built 1938  
Engines made at Cologne By whom made Humboldt-Deutzmaschinen A.G. Engine No. 419570/45 When made 1938  
Donkey Boilers made at Leith By whom made Leith Boiler No. 419576/51 When made 1938  
Brake Horse Power 360 Owners United Africa Co. Ltd. Port belonging to London  
Nom. Horse Power as per Rule 104 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted yes  
Trade for which vessel is intended Coastal Service

OIL ENGINES, &c.—Type of Engines 2 or 4 stroke cycle Single or double acting  
Maximum pressure in cylinders as per Rule Diameter of cylinders as per Rule Length of stroke as per Rule No. of cylinders as per Rule No. of cranks as per Rule  
Mean Indicated Pressure as per Rule Span of bearings, adjacent to the Crank, measured from inner edge to inner edge as per Rule Is there a bearing between each crank as per Rule  
Revolutions per minute as per Rule Weight as per Rule Means of ignition as per Rule Kind of fuel used as per Rule  
Crank Shaft, dia. of journals as per Rule Crank pin dia. as per Rule Crank Webs as per Rule Mid. length breadth as per Rule Thickness parallel to axis as per Rule  
Flywheel Shaft, diameter as per Rule Intermediate Shafts, diameter as per Rule Thrust Shaft, diameter at collars as per Rule  
Tube Shaft, diameter as per Rule Screw Shaft, diameter as per Rule Is the tube shaft fitted with a continuous liner as per Rule  
Bronze Liners, thickness in way of bushes as per Rule Thickness between bushes as per Rule Is the after end of the liner made watertight in the propeller boss as per Rule  
If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner as per Rule  
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 as per Rule  
If two liners are fitted, is the shaft lapped or protected between the liners as per Rule Is an approved Oil Gland or other appliance fitted at the after end of the tube shaft as per Rule  
Propeller, dia. 4' 9" Pitch Varying No. of blades 4 Material Bronze whether Movable No Total Developed Surface 4.78 sq. feet  
Method of reversing Engines as per Rule Is a governor or other arrangement fitted to prevent racing of the engine when disengaged as per Rule Means of lubrication as per Rule  
Thickness of cylinder liners as per Rule Are the cylinders fitted with safety valves as per Rule Are the exhaust pipes and silencers water cooled or lagged with non-conducting material as per Rule  
Cooling Water Pumps, No. as per Rule Is the sea suction provided with an efficient strainer which can be cleared within the vessel as per Rule  
Bilge Pumps worked from the Main Engines, No. 1-Bach & Co. Diameter 100"/4 Stroke 60"/4 Can one be overhauled while the other is at work as per Rule  
Pumps connected to the Main Bilge Line as per Rule No. and Size 1-35 tons/hr capacity How driven Auxiliary Engine  
Is the cooling water led to the bilges as per Rule If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements as per Rule  
Ballast Pumps, No. and size 1-20 tons/hr capacity Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size See Rpt. No. 172  
Are two independent means arranged for circulating water through the Oil Cooler as per Rule Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Machinery Spaces Port 1-2" Star 1-2" Aft Centre 1-2" In Pump Room yes  
In Holds, &c. No 1 held Port 1-2 1/2" Star 1-2 1/2" Centre 1-2 1/2" No 2 held Port 1-2 1/2" Star 1-2 1/2" Centre 1-2 1/2"  
Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1-2 1/2" from B.S. Pumps, 1-2 1/2" for C.W. Pump  
Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes as per Rule Are the Bilge Suctions in the Machinery Spaces as per Rule  
led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges as per Rule  
Are all Sea Connections fitted direct on the skin of the ship which are fitted to sumps as per Rule Are they fitted with Valves or Cocks Valves  
Are they sized sufficiently high on the ship's side to be seen without lifting the platform plates as per Rule Are the Overboard Discharges above or below the deep water line On W.L.  
Are they each fitted with a Discharge Valve always accessible on the plating of the vessel as per Rule Are the Blow Off Cocks fitted with a spigot and brass covering plate as per Rule  
What pipes pass through the bunkers as per Rule How are they protected as per Rule  
What pipes pass through the deep tanks as per Rule Have they been tested as per Rule as per Rule  
Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times as per Rule  
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 as per Rule Is the Shaft Tunnel watertight as per Rule Is it fitted with a watertight door as per Rule worked from as per Rule  
If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork as per Rule  
Main Air Compressors, No. one No. of stages 2 Diameters 12 1/2"/4 1/2" Stroke 40"/4 Driven by Aux. Eng.  
Auxiliary Air Compressors, No. See Rpt. No. 172 No. of stages Rpt. No. 172 Diameters 14 1/2" Stroke 40"/4 Driven by Aux. Eng.  
Small Auxiliary Air Compressors, No. one No. of stages 2 Diameters 100"/4 1/2" Stroke 60"/4 Driven by Aux. Eng.  
Scavenging Air Pumps, No. as per Rule Diameter as per Rule Stroke as per Rule Driven by as per Rule  
Auxiliary Engines crank shafts, diameter as per Rule Position as per Rule



AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule

Can the internal surfaces of the receivers be examined and cleaned. Is a drain fitted at the lowest part of each receiver

High Pressure Air Receivers, No. Cubic capacity of each Internal diameter thickness

Seamless, lap welded or riveted longitudinal joint. Range of tensile strength Working pressure by Rules Actual

Starting Air Receivers, No. Total cubic capacity Internal diameter thickness

Seamless, lap welded or riveted longitudinal joint. Material Range of tensile strength Working pressure by Rules Actual

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, Sten Gear, yes. Receivers, Separate Fuel Tanks

Donkey Boilers, General Pumping Arrangements, With hull report, Pumping Arrangements in Machinery Space, yes.

Oil Fuel Burning Arrangements, yes. SPARE GEAR.

Has the spare gear required by the Rules been supplied, yes.

State the principal additional spare gear supplied, yes.

The foregoing is a correct description,

Manufacturer.

Dates of Survey while building: During progress of work in shops, 1934 Oct. 12, 24, 25, Nov. 2, 5, 6, 12, 16, 30, Dec. 2, 6, 20, 1938 Feb. 5, 19, 23, 28, 29, May 18, 20.

Total No. of visits: 20.

Dates of Examination of principal parts—Cylinders, Covers, Pistons, Rods, Connecting rods, Crank shaft, Flywheel shaft, Thrust shaft, Intermediate shafts, Tube shaft

Screw shafts in place 13/11/37, Propellers in place 24/3/38, Stern tubes in place 27/10/37, Engine seatings, 5-11-37, Engines holding down bolts, 5-2-38, Completion of fitting sea connections, 30-11-37, Completion of pumping arrangements, 28-3-38, Engines tried under working conditions at sea, 20-5-38

Crank shaft, Material, Identification Mark, Flywheel shaft, Material, Identification Mark, Intermediate shafts, Material, Identification Mark, Thrust shaft, Material, Identification Mark, Screw shaft, Material, Identification Mark

Tube shaft, Material, Identification Mark, Steel, Identification Mark, Steel, Identification Mark

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, yes.

If the notation for Ice Strengthening is desired, state whether the requirements in this respect have been complied with, yes.

Is this machinery duplicate of a previous case, yes. If so, state name of vessel, "Joseph Flint"

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

This Machinery—Des. Rpt. No 142 for Main Engines, & Des. Rpts. No 169 & 171 for the Aux. Engines—has been efficiently fitted on board, the materials & workmanship being sound & good. The Main & Aux. Machinery was finally tried out at sea, under full load & working conditions, & it was found satisfactory in all respects.

Manoeuvring tests were carried out, & the capacity of the air receivers was found to be in excess of the Rule requirements. Safety valves have been fitted to the cylinders heads. Both aux. engines can be started by hand.

In my opinion the Machinery of this vessel is eligible to be classed in the Registered Book with the notation of + L.M.C. 5-38, Oil Eng.

The amount of Entry Fee .. £ : : When applied for, Special 1/5 L.M.C. £ 9 : 14 : 6 advised by Donkey Boiler Fee ... £ : : : When received, Travelling Expenses (if any) £ : : : 14/10/1934

Committee's Minute, Assigned, 5.38, Oil Eng.

John Houston, Engineer Surveyor to Lloyd's Register of Shipping.

# REPORT ON OIL ENGINE MACHINERY.

No. 172.

Rpt. 4b. Comm. 684532 Comm. 684533

Received at London Office

MAY 28 1938

Date of writing Report, 19.5. 1937. When made in at Local Office, 21.5. 1937. Port of Dusseldorf.

No. in Survey held at, Cologne. Date, First Survey, 13.1.1937. Last Survey, 14.5. 1937. Reg. Book. Number of Visits, 12.

16950 on the Twin Screw vessel "A. A. Cowan". Tons Gross 295 Net 133.

Hy. Robb (Ld.) (Incorporating Ramage & Ferguson (Ld.)) Yard No. 419570/75 When built, 1937.

Built at, Leith. By whom built, Humboldt-Deutzmotoren AG. Engine No. 419576/81 and when made, 1937.

Engines made at, By whom made, Boiler No., When made.

Donkey Boilers made at, By whom made, Port belonging to, London.

Brake Horse Power, 2 x 180 BHP. Owners, United Africa Co Ltd. Is Electric Light fitted, yes.

Nom. Horse Power as per Rule, 2 x 52. Is Refrigerating Machinery fitted for cargo purposes, yes. Is Electric Light fitted, yes.

Trade for which vessel is intended, 9-7, 14-76.

OIL ENGINES, &c. Type of Engines, Heavy oil engines E.V. 6 M 436 2 or 4 stroke cycle, 4 Single or double acting, single.

Maximum pressure in cylinders, 50 kgs/cm<sup>2</sup>. Diameter of cylinders, 240 mm. Length of stroke, 360 mm. No. of cylinders, 6. No. of cranks, 6.

Mean Indicated Pressure, 6.6 kgs/cm<sup>2</sup>. Span of bearings, adjacent to the Crank, measured from inner edge to inner edge, 257 mm. Is there a bearing between each crank, yes.

Revolutions per minute, 300. Flywheel dia., 1000 mm. Weight, 1050 kgs. Means of ignition, sol. inject. Kind of fuel used, on test bed gas oil.

Crank Shaft, dia. of journals, as per Rule, 150 mm. Crank pin dia., 145 mm. Crank Webs, Mid. length breadth, 260 mm. Thickness parallel to axis, 64 mm. Thickness around eye-hole, as per Rule.

Flywheel Shaft, diameter, as per Rule, 355. Intermediate Shafts, diameter, as per Rule, 374. Thrust Shaft, diameter at collars, as per Rule.

Tube Shaft, diameter, as per Rule, 412. Screw Shaft, diameter, as per Rule, 412. Is the tube shaft fitted with a continuous liner, yes.

Bronze Liners, thickness in way of bushes, as per Rule, 3.55. Thickness between bushes, as per Rule, 3.55. Is the after end of the liner made watertight in the propeller boss, yes.

If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner, 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 liners are fitted, is the shaft lapped or protected between the liners, yes. Is an approved Oil Gland or other appliance fitted at the after end of the tube shaft, yes.

If so, state type, Length of Bearing in Stern Bush next to and supporting propeller, 18 mm.

Propeller, dia., Pitch, No. of blades, Material, whether Moveable, Total Developed Surface, sq. feet.

Method of reversing Engines, directly by hand. Is a governor or other arrangement fitted to prevent racing of the engine when decelerated, yes. Means of lubrication, forced, Thickness of cylinder liners, 18 mm. Are the cylinders fitted with safety valves, at present, none. Are the exhaust pipes and suction water cooled or lagged with non-conducting material, water cooled. If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine, none.

Cooling Water Pumps, No., one. 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, 100 mm. Stroke, 60 mm. Can be overhauled while the other is at work, yes.

Pumps connected to the Main Bilge Line, No. and Size, How driven.

Is the cooling water led to the bilges, yes. If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements, Capacity 36 lts/min. at 840 rev. per min. 1 tooth wheel pump & 1 spare of same type.

Main engine, Driven Lubricating Oil Pumps, including Spare Pump, No. and size, Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size, In Pump Room.

Are two independent means arranged for circulating water through the Oil Cooler, yes.

Pumps, No. and size:—In Machinery Spaces, In Pump Room.

In Holds, &c., Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size.

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

Are all Sea Connections fitted direct on the skin of the ship, yes. Are they fitted with Valves or Cocks, yes.

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, 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 pass through the bunkers, How are they protected, yes.

What pipes pass through the deep tanks, Have they been tested as per Rule, yes.

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, yes. Is it fitted with a watertight door, worked from, 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.

Main Air Compressors, No., No. of stages, Diameters, Stroke, Driven by, main engine.

Auxiliary Air Compressors, No., one, No. of stages, two, Diameters, 145/60 mm, Stroke, 60 mm, Driven by, main engine.

Small Auxiliary Air Compressors, No., No. of stages, Diameters, Stroke, Driven by, main engine.

Scavenging Air Pumps, No., Diameter, Stroke, Driven by, main engine.

Auxiliary Engines crank shafts, diameter, as per Rule, 150 mm. Position, 8.

