

REPORT ON OIL ENGINE MACHINERY.

No 34891

1 MAY 1948

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Date of writing Report 19 *20th April 1948* Port of *Sunderland.*
 No. in Survey held at *Sunderland.* Date, First Survey *20th March 1947* Last Survey *28th April 1948*
 Reg. Book. " *INTERPRETER* " Number of Visits *88*

on the *Single* Screw vessel
 Built at *Sunderland* By whom built *Wm. Leafford & Sons Ld.* Yard No. *444* When built *1948*
 Engines made at *Sunderland* By whom made *Wm. Leafford & Sons Ld.* Engine No. *444* When made *1948*
 Monkey Boilers made at *Annan* By whom made *Cochran & Co (Annan) Ld.* Boiler No. *16946* When made
 Brake Horse Power *5150* Owners *Charante S.S. Co Ld.* Port belonging to *Liverpool*
 Nom. Horse Power as per Rule *1084* Is Refrigerating Machinery fitted for cargo purposes *No.* Is Electric Light fitted *Yes.*
 Trade for which vessel is intended *1088*

MAIN ENGINES, &c. Type of Engines *Opposed piston, airless injection 2 or 4 stroke cycle 2* Single or double acting *Single*
 Maximum pressure in cylinders *640 lbs/sq. in.* Diameter of cylinders *640 mm* Length of stroke *upper 980 mm 91 5/16"* No. of cranks *5 (3 throats)*
 Mean Indicated Pressure *86 lbs/sq. in.* Is there a bearing between each crank *Between each 3 throats.*
 Span of bearings, adjacent to the Crank, measured from inner edge to inner edge *1030 mm*
 Revolutions per minute *108* Flywheel dia. *1410 mm* Weight *20 Cnts.* Means of ignition *Compression* Kind of fuel used *-*
 Crank Shaft, *Solid forged* dia. of journals *as per Rule 491 mm* Crank pin dia. *520 mm* Crank Webs *Mid. length breadth 430 mm* Thickness parallel to axis *290 mm*
 Flywheel Shaft, diameter *as per Rule 491 mm* Intermediate Shafts, diameter *as per Rule 349 mm* Thrust Shaft, diameter at collars *as per Rule 491 mm*
 Main Shaft, diameter *as per Rule 413 mm* Screw Shaft, diameter *as per Rule 437 mm* Is the *main* shaft fitted with a continuous liner *Yes.*

BRONZE LINERS, thickness in way of bushes *as per Rule 20.2 mm* Thickness between bushes *as per Rule 15.15 mm* 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 *One length.*
 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 *-*
 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 *-*
 If so, state type *-* Length of Bearing in Stern Bush next to and supporting propeller *5'-8"*
 Propeller, dia. *16'-9"* Pitch *11.8 ft - 14.05 ft.* No. of blades *4* Material *Bronze* whether Moveable *No.* Total Developed Surface *104* sq. feet

REVERSING ENGINES *Hand lever* Is a governor or other arrangement fitted to prevent racing of the engine when disengaged *Yes.* Means of lubrication *Yes.*
 Thickness of cylinder liners *25 mm* Are the cylinders fitted with safety valves *Yes.* Are the exhaust pipes and silencers water cooled or lagged with
 non-conducting material *Yes.* If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine *-*
COOLING WATER PUMPS, No. *Two (Electrically driven)* Is the sea suction provided with an efficient strainer which can be cleared within the vessel *(i.e. w. cooling)*
BILGE PUMPS worked from the Main Engines, No. *none* Diameter *-* Stroke *-* Can one be overhauled while the other is at work *-*
PUMPS connected to the Main Bilge Line { No. and Size *2 6" x 6" duplex.* How driven *Electric motor*

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 Rotary Centrifugal (300 gpm/hr)* Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size *Two 50 gpm/hr.*
 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 *6 - 3" in E.R.* *1 @ 3" Dumped hull.* In Pump Room *-*
 Holds, &c. *Nº1. 3" φ 15. Nº2. 3 1/2" φ 15. Nº3 (Deep Tank) 3 1/2" φ 15. Nº4. 3" φ 15. Nº5. 3" (c/s) Deep Tank aft. 3" φ 15.*

DEPENDENT POWER PUMP Direct Suctions to the Engine Room Bilges, No. and size *1 - 8" Ballast pump 1 - 6" (G.S.)*
 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.*
 Are all Sea Connections fitted direct on the skin of the ship *Yes.* 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 *Below.*
 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.*

Are all pipes pass through the bunkers *None.* How are they protected *-*
 Are all pipes pass through the deep tanks *None.* 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 *Yes.* worked from *Top Platform*
 If on a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork *-*

AIR COMPRESSORS, No. *Two.* No. of stages *Three* Diameters *12 1/4", 3", 12 1/4", 10 1/2", 3"* Stroke *4"* Driven by *Electric motor*
 Auxiliary Air Compressors, No. *One* No. of stages *Two.* Diameters *6-1/2", 2 1/2"* Stroke *4 1/2"* Driven by *Steam (1 1/2" x 4 1/2")*
 Small Auxiliary Air Compressors, No. *-* No. of stages *-* Diameters *-* Stroke *-* Driven by *-*
 What provision is made for first Charging the Air Receivers *Steam driven compressor.*
 Charging Air Pumps, No. *One* Diameter *1480 mm.* Stroke *1380 mm* Driven by *Man Engine*
 Auxiliary Engines crank shafts, diameter *as per Rule 6 1/4"* No. *Yes.* Position *Port side of E.R. (2 ft above 81 aft)*
 Have the Auxiliary Engines been constructed under special survey *Yes.* Is a report sent herewith *Yes.*

AIR RECEIVERS: - Have they been made under survey *Yes.* State No. of Report or Certificate *Ho. No. 61992*
 Is each receiver, which can be isolated, fitted with a safety valve as per Rule *Yes.* *Relief valves on Comp. Discharge*
 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. - Cubic capacity of each - Internal diameter - thickness -
 Seamless, lap welded or riveted longitudinal joint - Material - Range of tensile strength - Working pressure by Rules Actual -
Starting Air Receivers, No. *Two* Total cubic capacity *350 cuft.* Internal diameter *4'-6"* thickness *1 1/4"*
 Seamless, lap welded or riveted longitudinal joint *Lined* Material *M/Steel* Range of tensile strength *28/32* Working pressure by Rules Actual *600 lbs*

IS A DONKEY BOILER FITTED? *Yes.* If so, is a report now forwarded? *Yes.*
 Is the donkey boiler intended to be used for domestic purposes only *No.*
PLANS. Are approved plans forwarded herewith for Shafting *Yes.* Separate Fuel Tanks *Yes.*
 (If not, state date of approval) *16/1/46* *Circ 1803* *16/1/46* Receivers *Yes.*

Donkey Boilers - General Pumping Arrangements - Pumping Arrangements in Machinery Space
 Oil Fuel Burning Arrangements - **SPARE GEAR.**

Has the spare gear required by the Rules been supplied *Yes.*
 State the principal additional spare gear supplied *1 C.A. Lewis & pack. Complete, 2 main piston heads & 50 piston rings, 1 C.A. & Side Cam. rod both End Spherical bearings, 2 (each) Centre & side top End bearings, 2 (each) Centre & side Cam. rod top & both End bearings both units, 2 main bearings Slid. units, 1 upper & lower, piston rod & skirt, main bearings, 1 set Coupling bolts for crank & int. Shafting, 6 fuel valves complete, 1 N.R. air starting valve, relief valves, 4 seawater pump valves & dies, 3 fuel pump heads with delay chamber complete with valves, 15 thrust pads, 3 (each) Pads for int. & tail shaft bearings, 1 C.I. Propeller, 1 tail shaft, 10 rubber hoses for port cooling system, 1 roller chain for camshaft drive &c. &c.*

The foregoing is a correct description.
WILLIAM DOXFORD & SONS, LIMITED, Manufacturer.

W. J. Purdie Director

Dates of Survey while building	During progress of work in shops -	1947	March 20, 21, 26, 31. Apr 8, 14, 15, 16, 18, 22. May 7, 8, 13, 19, 20, 21, 22, 27, 30. Aug 27, 29. Sep 23, 25, 29, 30. Oct 1, 6, 10, 23, 24, 27, 28, 29.
	During erection on board vessel -	1948	Jan 2, 5, 6, 7, 8. Feb 16, 17, 19, 23. Mar 1, 4, 10, 15, 19, 30. Apr 5, 6, 8, 9, 12, 13, 20, 26, 28.
Total No. of visits		88	

Dates of Examination of principal parts -	Cylinders	6/10/47, 21/10/47	Pistons	5/12/47	Rods	5/12/47	Connecting rods	30/12/47
Crank shaft	4/12/47	Flywheel shaft as crank.	Thrust shaft as crank.	Intermediate shafts	30/12/47	Tube shaft	-	
Screw shaft	12/12/47	Propeller 13/11/47.	LOA. CRT. 7/11/47	Stern tube 29/10/47, 4/11/47	Engine seatings	Bank top.	Engines holding down bolts	12/4/48.
Completion of fitting sea connections	28/10/47	Completion of pumping arrangements	26/4/48.	Engines tried under working conditions	28/4/48.			

Crank shaft, Material	Ingot Steel	Identification Mark	No 44 N.H.F. 4/12/47.	Flywheel shaft, Material	as crank	Identification Mark	as crank.
Thrust shaft, Material	as crank	Identification Mark	as crank.	Intermediate shafts, Material	Ingot Steel	Identification Marks	6421-95699/700.
Tube shaft, Material	-	Identification Mark	-	Screw shaft, Material	Ingot Steel	Identification Mark	6332-96598 N → 6334-96606 N.H.F. 18/12/47

Identification Marks on Air Receivers
K1984/5
L.R. 22456.
J.C. 266/47.

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.*
 Description of fire extinguishing apparatus fitted *1 1/2" N.1. Dupont's pipe for steam led around E.R. Bldg. 8-2 full containers.*
 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 *Not desired.*
 Is this machinery duplicate of a previous case *Yes.* If so, state name of vessel *"HERDSMAN"*

General Remarks (State quality of workmanship, opinions as to class, &c.) *This machinery has been built and Special Survey in accordance with the approved plans & the rules of the Society. The materials & workmanship are good. It has been securely fitted on board the vessel & tried under working conditions at sea with satisfactory results. The donkey boiler has also been securely fixed on board the vessel, fitted to burn oil fuel (F.P. about 150° F) & safety valves adjusted under steam to bear pressure in accordance with rule requirements. Section 20 of the rules has been complied with. The machinery is eligible in our opinion to have notation of L.M.C. 4. 48 (oil Eng.), T.S. (C), D.B. 100 lbs.*

The amount of Entry Fee	£ - : -	When applied for,
Special	£ 149 : 4	✓ MAY 10 1948
Donkey Boiler Fee	£ 20 : -	✓ When received,
Travelling Expenses (if any)	£ : :	19

Committee's Minute
 Assigned *+ L.M.C. 4. 48 oil Eng. C.L.*
D.B. 100 lb.

H. J. Haswell & C. Booker
 Engineer Surveyor to Lloyd's Register of Shipping.

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