

Rpt. 4b.

REPORT ON OIL ENGINE MACHINERY.

1- DEC 1942

No. 700885

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Date of writing Report 19 28/11/42 When handed in at Local Office 19 28/11/42 Port of NEWCASTLE-ON-TYNE

No. in Survey held at Newcastle on Tyne Date, First Survey 18 Dec. Last Survey 19 Nov 1942

Reg. Book. 86289. on the ^{Single} ~~Double~~ ^{Triple} ~~Quadruple~~ Screw vessel "EMPIRE CAVALIER."

Number of Visits 80.

Built at Sunderland By whom built Sir J. Laing & Co. Ld. Yard No. 743 When built 1942-

Engines made at Newcastle on Tyne (St. Peter's) By whom made R.W. Hawthorn Leslie & Co. Ld. Engine No. 8982 When made 1942-

Donkey Boilers made at (Forth Bank) By whom made Little Boiler No. 3982 When made 1942-

Brake Horse Power 3500 Owners Ministry of War Transport Port belonging to Sunderland.

Nom. Horse Power as per Rule 502 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

Trade for which vessel is intended Ocean going, Carrying Petroleum in bulk.

OIL ENGINES, &c.—Type of Engines Hawthorn-Workshop Supercharged 2 or 4 stroke cycle 4 Single or double acting Single

Maximum pressure in cylinders 700 lbs/sq. in. Diameter of cylinders 650 m.m. Length of stroke 1400 m.m. No. of cylinders 8. No. of cranks 8.

Mean Indicated Pressure 135 lb. Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 844 m.m. Is there a bearing between each crank Yes

Revolutions per minute 120 Flywheel dia. 2260 m.m. Weight 6000 Kg. Means of ignition Heat 9 Compression Kind of fuel used Heavy oil

Crank Shaft, dia. of journals as per Rule 448 m.m. Crank pin dia. 460 m.m. Crank Webs Mid. length breadth 870 m.m. Thickness parallel to axis 267 & 290 m.m.

Flywheel Shaft, diameter as per Rule 448 m.m. Intermediate Shafts, diameter as per Rule 325 m.m. Thrust Shaft, diameter at collars as per Rule 341.

Tube Shaft, diameter as fitted None Screw Shaft, diameter as fitted 457. Is the ^{tube} ~~screw~~ shaft fitted with a continuous liner Yes

Bronze Liners, thickness in way of bushes as per Rule 18.55 m.m. Thickness between bushes as per rule 13.9 m.m. 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 In 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 a tight fit.

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 shaft No If so, state type

Length of Bearing in Stern Bush next to and supporting propeller 1585 m.m.

Propeller, dia. 15'-0" Pitch 12'-0" No. of blades 4 Material M. Brge. whether Moveable No. Total Developed Surface 80. sq. feet

Method of reversing Engines Air Servo motor Is a governor or other arrangement fitted to prevent racing of the engine when decelerated Yes Means of lubrication Forced.

Thickens of cylinder liners 55 m.m. Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers water cooled or lagged with non-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 Led inside A.N.D. Posts.

Cooling Water Pumps, No. Two 1-Rotary on M. Eng. 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. 2 Diameter Rotary Stroke Can one be overhauled while the other is at work Yes

Pumps connected to the Main Bilge Line No. and Size Three: viz. 2 Rotary on M. Eng. (each 32 tons/hr) & one G.S.P. 8x8x10" duplex (100 tons/hr)

How driven by main engine. by Steam

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

Ballast Pumps, No. and size one G.S.P. 8x8x10" duplex. Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size one Rotary on M. Eng. (40 tons/hr) one 8x8x10" duplex (Steam)

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 3 of 3 1/2 m. E.R. + 2 of 2 1/2 to 4" Cofferdam in E.R. In Pump Room 2 of 4"

In Holds, &c. Forw Hold 2 of 2 1/2; 3 Hold 1 of 2 1/2; 7 Pk Store 1 of 2 1/2; Forw Cofferdam 1 of 4; Aft Cofferdam 3" Ejector.

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size one 5 1/2" on Pside & one 6" on Sth side.

Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes Are the Bilge Suctions in the Machinery Spaces

ed 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 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 pass through the bunkers None How are they protected

What 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 (machinery off) Is it fitted with a watertight door worked from

If a 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. None No. of stages Diameters Stroke Driven by

Auxiliary Air Compressors, No. Two No. of stages 120 cub ft of free air to 350 lb Stroke Driven by Both Steam

Small Auxiliary Air Compressors, No. None No. of stages Diameters Stroke Driven by

Scavenging Air Pumps, No. none First charging of air Receivers — by Steam driven Compressors.

Auxiliary Engines crank shafts, diameter as per Rule as fitted not built to Survey. No. 1. 25 Kw. Russel Newbury. for Position lighting purposes only. Contol over.

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AIR RECEIVERS:—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

High Pressure 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

Actual

Starting Air Receivers, No. Two

Total cubic capacity 800 cub. ft.

Internal diameter 4'-10 7/8"

thickness 27/32"

Seamless, lap welded or riveted longitudinal joint T.R. Dill butt straps

Material Steel plates

Range of tensile strength 28-32 tons

Working pressure by Rules 372 lbs./sq. in.

Actual 350.

IS A DONKEY BOILER FITTED? Yes — one W.T.B. + one Thimble End Bk

If so, is a report now forwarded? ✓

Is the donkey boiler intended to be used for domestic purposes only no

PLANS. Are approved plans forwarded herewith for Shafting Yes 6/8/41 8/11/41

(If not, state date of approval)

Receivers Yes 25/8/42

Separate Fuel Tanks Yes 9/2/42

Donkey Boilers 9/10/41

General Pumping Arrangements 29/8/41

Pumping Arrangements in Machinery Space 9/12/41

Oil Fuel Burning Arrangements 9/12/41

SPARE GEAR.

Has the spare gear required by the Rules been supplied Yes

State the principal additional spare gear supplied

1 main bearing, 1 Cylr Head & Liner (jointed together), 1 Piston Rod, 30 Condenser tubes + 24 ferrules etc.

The foregoing is a correct description.

R. & W. HAVTHORNE & CO. LIMITED

R.B. Folmer

Manufacturer.

Dates of Survey while building	During progress of work in shops	During erection on board vessel	Total No. of visits	1941		1942		1943		1944	
				Dec. 18	Jan. 31	Feb. 19	Mar. 4	Apr. 9	May 1	Jun. 5	Jul. 10
				3, 5, 15, 18, 22, 24, 26	July 1, 3, 14, 17, 23, 29, 31	Aug. 4, 5, 10, 12, 18, 22, 26, 28, 31	Sep. 1, 4, 14, 17, 22, 23, 29				
				6, 12, 15, 16, 19, 22, 24, 26, 27, 29, 30	Nov. 3, 5, 6, 9, 10, 11, 12, 13, 16, 19						
				80.							

Dates of Examination of principal parts—Cylinders		27/5/42 to 10/8/42	Covers	as Cyln	Pistons	24/4/42 to 12/5/42	Rods	1/7/42	Connecting rods	12/4/18 to 1/8/42
Crank shaft	5/8/42	Flywheel shaft	4/8/42	Thrust shaft	17/7/42	Intermediate shaft	21/8/42	Tube shaft	✓	
Screw shaft	21/5/42	Propeller	18.8.42	Stern tube	29/7/42	Engine seatings	14.10.42	Engines holding down bolts	14.10.42	
Completion of fitting sea connections		18.8.42	Completion of pumping arrangements		12.11.42	Engines tried under working conditions		11.12.13.16.23/11		
Crank shaft, Material	7 Stl	Identification Mark	11521 HAI.	Flywheel shaft, Material	7 Stl.	Identification Mark	11278 HAI.			
Thrust shaft, Material	7 Stl.	Identification Mark	11278 HAI	Intermediate shaft, Material	7 Stl	Identification Marks	11294 HAI			
Tube shaft, Material	✓	Identification Mark		Screw shaft, Material	7 Stl.	Identification Mark	11294 HAI.			

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 ✓

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 Imperial Worksouth New Rpt no 100775

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

The Machinery of this Vessel has been constructed under Special Survey in accordance with the approved plans & the Society's Rules, and the materials & workmanship are good.

The machinery has been installed under Special Survey & found satisfactory under working conditions at quay.

All Rule & Specification Requirements have been carried out.

The machinery is eligible in my opinion to have the Record

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