

Rpt. 4b.

REPORT ON OIL ENGINE MACHINERY.

1-DEC-1942
No. 700885

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NEWCASTLE-ON-TYNE

Date of writing Report 19... When handed in at Local Office 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-
NELVIN 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 lbs. 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 & Compression Kind of fuel used Heavy oil
Crank Shaft, dia. of journals as per Rule 448 m.m. as fitted 460 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. as fitted 460 Intermediate Shafts, diameter as per Rule 325 m.m. as fitted 470 at top 550 bet. brgs. Thrust Shaft, diameter at collars as per Rule 341. as fitted 460.
Tube Shaft, diameter as per Rule None as fitted Screw Shaft, diameter as per Rule 358. 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 as fitted 22. Thickness between bushes as per rule 13.9 m/m as fitted 17. 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 Yes 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 disengaged Yes Means of lubrication Forced. Thickness 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. 1-Steam Centrifugal 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 (440 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 Ab. Cofferdam in E.R. In Pump Room 2 of 4"
In Holds, &c. Fore Hold 2 of 2 1/2; 3 Hold 1 of 2 1/2; 7 Pk. Store 1 of 2 1/2; Fore 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 P side & one 6 on S 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 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 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 aft) 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 Both Driven by 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. Driven by
Auxiliary Engines crank shafts, diameter as per Rule as fitted not built to Survey. No. 1. 25 kW. Russel Newbury, for lighting purposes only. Cont'd over.

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 _____

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. Dole 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. Bl. + one Thimble Tank Bl.* 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* *6/8/41* Receivers *Yes* *25/8/42* Separate Fuel Tanks *Yes* *9/2/42*
(If not, state date of approval)

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. HAVILLAND & CO. LIMITED

R.B. Folmer Manufacturer.

Dates of Survey while building	1941		1942		1943	
	During progress of work in shops	During erection on board vessel	During progress of work in shops	During erection on board vessel	During progress of work in shops	During erection on board vessel
	Dec. 18	Jan 31	Feb. 19-25	Mar. 4-9-11-16-24-26	Apr. 7-9-16-24-27-29	May 1-5-6-12-13-16-20-21-27
	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. 1-4-17-22-23-29	
Total No. of visits	<i>80.</i>					

Dates of Examination of principal parts		Cylinders	Covers	Pistons	Rods	Connecting rods
Crank shaft	<i>5/8/42</i>	<i>27/5/42 to 10/8/42</i>	<i>as Cyls</i>	<i>24/4/42 to 12/5/42</i>	<i>1/7/42</i>	<i>12th & 18th / 8/42</i>
Flywheel shaft	<i>4/8/42</i>					
Thrust shaft	<i>17/7/42</i>					
Intermediate shaft	<i>21/8/42</i>					
Tube shaft	<i>✓</i>					
Screw shaft	<i>21/5/42</i>					
Propeller	<i>18-8-42</i>					
Stern tube	<i>29/7/42</i>					
Engine seatings	<i>14-10-42</i>					
Engines holding down bolts	<i>14-10-42</i>					
Completion of fitting sea connections	<i>18-8-42</i>	Completion of pumping arrangements	<i>12-11-42</i>	Engines tried under working conditions	<i>11-12-13-16-23/11</i>	
Crank shaft, Material	<i>7 Stl.</i>	Identification Mark	<i>11521 HAI.</i>	Flywheel shaft, Material	<i>7 Stl.</i>	Identification Mark <i>11278 HAI.</i>
Thrust shaft, Material	<i>7 Stl.</i>	Identification Mark	<i>11278 HAI.</i>	Intermediate shaft, Material	<i>7 Stl.</i>	Identification Marks <i>11294 HAI.</i>
Tube shaft, Material	<i>✓</i>	Identification Mark		Screw shaft, Material	<i>7 Stl.</i>	Identification Mark <i>11294 HAI.</i>

Is the flash point of the oil to be used over 150° F. *Yes* *Marks on the 2 Starting Air Receivers;* **LLOYD'S TEST 550 LBS WP 350 LBS 1-9-42 AW CAN**

Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with *Yes* If so, have the requirements of the Rules been complied with *✓*

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo *Yes* 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 *Empire Warsworth 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 + LMC 11.42. 1 WTDB T 1 DB CL.

NEWCASTLE-ON-TYNE

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

The amount of Entry Fee	£ 6	When applied for,	<i>130 NOV 1942</i>
Special & Spec	£ 125 2	When received,	
WT Donkey Boiler Fee & Spec	£ 27 10		
2 Starting Air Recs.	£ 8 8		
Travelling Expenses (if any)	£ :		

A. Watt & R. Hoffmann
Engineer Surveyor to Lloyd's Register of Shipping.



Committee's Minute *TUE 8 DEC 1942*
+ LMC 11.42
Assigned SB + 1 WTDB SB - 180th oil dy, ch