

# REPORT ON OIL ENGINE MACHINERY.

No 99300

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Date of writing Report 19 When handed in at Local Office 15/3/41 Port of NEWCASTLE-ON-TYNE  
 No. in Survey held at Newcastle on Tyne Date, First Survey 23 Feb/1940 Last Survey 4 March 1941  
 Reg. Book. Number of Visits 98

on the Single Triple Quadruple Screw vessel ECHODALE Tons Gross 8150  
Net 4788  
 Built at Hebburn on Tyne By whom built R & W Hawthorn, Leslie & Co. Lr Yard No. 628 When built 1941  
 Engines made at St Peter's, Newcastle By whom made do do Engine No. 3967 When made 1941  
 Donkey Boilers made at ditto By whom made do do Boiler No. 3967 When made 1941  
 Brake Horse Power 3500 Owners Port belonging to  
 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 Carrying Petroleum in bulk - Ocean going

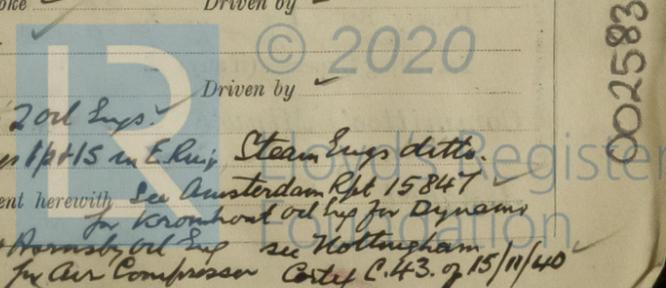
OIL ENGINES, &c. — Type of Engines Hawthorn Workshops, Supercharged 4 stroke cycle 4, Single or double acting Single  
 Maximum pressure in cylinders 700 lb/sq in Diameter of cylinders 650 mm Length of stroke 1400 mm No. of cylinders 8 No. of cranks 8  
 Mean Indicated Pressure 135 lb/sq in Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 844 mm Is there a bearing between each crank Yes  
 Revolutions per minute 120 Flywheel dia. 2260 mm Weight 6000 Kg Means of ignition Heat of Compression Kind of fuel used Heavy oil  
 Crank Shaft, Solid forged  
Semi forged  
All built dia. of journals as per Rule 448 mm as fitted 460 Crank pin dia. 460 mm Crank Webs Mid. length breadth 870 mm Thickness parallel to axis 267 mm  
 Flywheel Shaft, diameter as per Rule 448 mm as fitted 460 Intermediate Shaft, diameter as per Rule 325 mm as fitted 470 mm Thrust Shaft, diameter at collars as per Rule 341 mm as fitted 460 mm  
 Tube Shaft, diameter as per Rule NONE as fitted NONE Screw Shaft, diameter as per Rule 385 mm as fitted 400 mm Is the screw shaft fitted with a continuous liner Yes  
 Bronze Liners, thickness in way of bushes as per Rule 18.55 mm as fitted 20 mm Thickness between bushes as per Rule 13.9 mm as fitted 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 in one piece  
 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 mm

Propeller, dia. 15'0" Pitch 12'0" No. of blades 4 Material Mang. Brzg. whether Moveable Solid Total Developed Surface 72 sq. feet  
 Method of reversing Engines By 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 mm 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 to top of funnel  
 Cooling Water Pumps, No. Two 1 - Rotary on Main Eng.  
1 - Centrifugal - Steam 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. Two Diameter Rotary Stroke — Can one be overhauled while the other is at work Yes  
 Pumps connected to the Main Bilge Line No. and Size  
How driven THREE IN ALL viz. TWO Rotary each 35 ton/hr, ONE G.S.P. 8'x8'x10" duplex 100 ton/hr  
 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 None

Ballast Pumps, No. and size One G.S.P. 8'x8'x10" DUPLEX Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size One Standby 8'x8'x10" 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 1 of 3 1/2" AFT; 2 of 3 1/2" For 1 Port & 2 of 2 1/2" in LUB. OIL COFFER DAM (FOR 1 AFT) in Pump Room  
 In Holds, &c. In For Hold 2 of 2; In For Store 2 of 2; In For aft Cofferdam one 4" in each main (auxil) one 2 1/2"  
 Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size one 5" G.S.P. Pump in Port side; One 7" Emergency on Self C.W. Pump on Starboard  
 Are all the Bilge Suction pipes in Holds 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 with 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 bulwarks O.F. Above Suction from AFT COFFERDAM How are they protected none necessary  
 What 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 No TUNNEL 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 MACHY. AFT.

Main Air Compressors, No. NONE No. of stages 120 cub ft of free air/min at 350 lb/sq in Driven by —  
 Auxiliary Air Compressors, No. Two No. of stages Each 2 stages Diameters See Search Cert D 3763 of 30/4/40 Driven by one Ruston & Hornsby oil eng. other " " Steam Engine  
 Small Auxiliary Air Compressors, No. NONE No. of stages — Diameters — Stroke — Driven by —  
 What provision is made for first Charging the Air Receivers by steam driven Air Compressor  
 Scavenging Air Pumps, No. None Diameter — Stroke — Driven by —  
 Auxiliary Engines crank shafts, diameter as per Rule See Amsterdam Rpt 15847 as fitted + Nottingham Cert/No C.43 Position Oil Eng. 1 ft 15 in E. Eng. Steam Eng. ditto  
 Have the Auxiliary Engines been constructed under special survey Yes Are reports sent herewith See Amsterdam Rpt 15847 for Kronhord oil eng for Dynamis for Ruston & Hornsby oil eng see Nottingham Cert/No C.43 of 15/11/40

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**AIR RECEIVERS:**—Have they been made under survey Yes. State No. of Report or Certificate Letter to 550 HWT. per bel  
 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 800 CUB. FT.. Internal diameter 4'-10 7/8". thickness 27/32".  
 Seamless, lap welded or riveted longitudinal joint T.R.. Material STEEL. Range of tensile strength 28 to 32 Tons. Working pressure by Rules 372 LBS/IN.  
~~Seamless, lap welded or riveted longitudinal joint~~ DELE BUTT STRAPS. Actual 350 " ".

**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. — ALSO FOR STEAM AUXILIARIES.  
**PLANS.** Are approved plans forwarded herewith for Shafting No. starting air Receivers 20/9/39. Separate Fuel Tanks 22/12/39.  
 Donkey Boilers 19/9/39. General Pumping Arrangements 14/1/41. Pumping Arrangements in Machinery Space 22/12/39.  
 Oil Fuel Burning Arrangements 22/12/39. for Lub Oil Tanks at Forward End }  
**SPARE GEAR.**  
 Has the spare gear required by the Rules been supplied Yes } as per List attached.  
 State the principal additional spare gear supplied

The foregoing is a correct description,  
R. & W. HAWTHORNE & CO. LIMITED  
R.B. Johnson Manufacturer.

**DATES OF SURVEY**  
 During progress of work in shops -- 1940 Feb. 23, Mar. 7, 26, Apr. 1, 3, 10, 15, 17, 19, 26, 29, 30, May 4, 6, 10, 13, 15, 27, June 3, 6, 12, 14, 18, 21, 25, July 1, 3, 5, 9.  
 During erection on board vessel -- 11, 15, 16, 19, 23, 24, 25, 26, 30, 31, Aug. 1, 7, 9, 13, 15, 16, 19, 20, 22, 23, 28, 29, 30, Sep. 3, 4, 5, 9, 10, 11, 17, 18, 20, 23, 24, 27, Oct. 1, 2, 4, 8, 10, 11, 14, 17, 24, 29, Nov. 6, 12, 18, 19, 22, 25, Dec. 13, 18, 20, 24, 27, 31, 1941 Jan. 4, 9, 10, 14, 22, 24, 27, 30, Feb. 14, Mar. 4.  
 Total No. of visits 98.  
**DATES OF EXAMINATION OF PRINCIPAL PARTS**—Cylinders 19/7/40 to 28/9/40 Covers as Cyls Pistons 21/5/40 to 6/6/40 Rods 7/8/40 Connecting rods 2/9/40 to 12/11/40  
 Crank shaft 1/10/40 Flywheel shaft 23/3/40 Thrust shaft 23/8/40 Intermediate shaft 25/11/40 Tube shaft —  
 Screw shaft 22/8/40 Propeller 22/8/40 Stern tube 19/11/40 Engine seatings 22/11/40 Engines holding down bolts 24/12/40  
 Completion of fitting sea connections 22/11/40 Completion of pumping arrangements 14/2/41 Engines tried under working conditions 4/3/41  
 Crank shaft, Material 7 Steel Identification Mark 9909 HAI Flywheel shaft, Material 7 Steel Identification Mark S106.CSP  
 Thrust shaft, Material 7 Steel Identification Mark S107.CSP. Intermediate shaft, Material 7 Steel Identification Marks 9477 HAI, F4301.  
 Tube shaft, Material none Identification Mark — Screw shaft, Material 7 Steel Identification Mark 9162 HAI F4216  
 Identification Marks on Air Receivers Lloyds test 550 lbs WP 350 lbs. 29/4/40 Space Se. Sh " " " " 9477 HAI. F4295.

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 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 —.  
 Is this machinery duplicate of a previous case Yes. If so, state name of vessel Empire Bronze Hwt. Rpt. 98948.

**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 Society's Rules and the approved plans. The materials & workmanship are good. The Machinery has been satisfactorily installed on board the vessel, and tested under working conditions, and is eligible, in my opinion for record + LMC: 3:41, and the notation DB. WP 180 lbs. TS C. Ord Eng. Mchly aft.

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|--|---------------------|
| The amount of Entry Fee .. £ 6 : -     | When applied for,   |
| Special ... .. £ 100 : 2               | <u>24 MAR. 1941</u> |
| Donkey Boiler Fee ... .. £ 23 : 6      | When received,      |
| Two Starting Air Recs Fee ... £ 8 : 8  | 19 .. .. .          |
| Travelling Expenses (if any) £ .. .. . |                     |

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

Committee's Minute 1 APR 1941  
 Assigned + Lmb. 3. 41 oil mch  
DB. - 180 lbs Ch.



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