

REPORT ON OIL ENGINE MACHINERY.

No. 99856

Received at London Office 21 OCT 1941

Date of writing Report 19 ^{0.9.} When handed in at Local Office 17/10/1941 Port of **NEWCASTLE-ON-TYNE**

No. in Survey held at Reg. Book. Date, First Survey 10 April 1940 Last Survey 23/9/1941 Number of Visits 127

on the ^{Single} ~~Triple~~ ~~Quadruple~~ Screw vessel **"BRITISH HARMONY"** Tons {Gross 8453 Net 4897}

Built at **Newcastle** By whom built **Swan, Hunter & Wigham Richardson Ltd** Yard No. **1696** When built **1941**
Engines made at **ditto** By whom made **ditto** Engine No. **1696** When made **1941**
Donkey Boilers made at **ditto** By whom made **ditto** Boiler No. **1696** When made **1941**
Brake Horse Power **3100** Owners **British Tanker Co** Port belonging to **LONDON**
Nom. Horse Power as per Rule **687** 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 **Opposed piston, Airless injection 2 or 4 stroke cycle 2** Single or double acting **Single**
Maximum pressure in cylinders **568 lbs** Diameter of cylinders **600 m.m** Length of stroke **2320 m.m.** No. of cylinders **4** No. of cranks **4 three throw**
Mean Indicated Pressure **85 lbs**

Span of bearings, adjacent to the Crank, measured from inner edge to inner edge **940 m.m** Is there a bearing between each crank **bet. each**
Revolutions per minute **105** Flywheel dia. **24 ton-ft²** Means of ignition **heat of Compression** Kind of fuel used **heavy oil**

Crank Shaft, {Solid forged dia. of journals as per Rule **425 m/m** as fitted **450** Crank pin dia. **450 m/m** Crank Webs Mid. length breadth **650 m/m** Thickness parallel to axis **255 m.m**
Semi built as fitted **450** (" " as fitted **432 m/m**) Mid. length thickness **255 m/m** Thickness around eyehole **200 m.m.**
All built as fitted **425** Intermediate Shafts, diameter as per Rule **13.125** Thrust Shaft, diameter at collars as per Rule **425 m.m**

Flywheel Shaft, diameter as per Rule **425** as fitted **450** Tube Shaft, diameter as per Rule **None** as fitted **None** Screw Shaft, diameter as per Rule **14.68** as fitted **16 7/8** Is the {tube screw} shaft fitted with a continuous liner **Yes**

Bronze Liners, thickness in way of bushes as per Rule **23 9/32** as fitted **27/32** Thickness between bushes as per Rule **9/16** as fitted **25/32** 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 **Yes**

Length of Bearing in Stern Bush next to and supporting propeller **5' 8 1/2"**
Propeller, dia. **16' 3"** Pitch **12' 3"** No. of blades **4** Material **M. Buz** whether Moveable **No** Total Developed Surface **90** sq. feet

Method of reversing Engines **Compressed air** Is a governor or other arrangement fitted to prevent racing of the engine when disengaged **Yes** Means of lubrication **Forced**
Thickness of cylinder liners **25 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 up funnel**
Cooling Water Pumps, No. **2** Salt water for Coolers Is the sea suction provided with an efficient strainer which can be cleared within the vessel **In S.W. System**

Bilge Pumps worked from the Main Engines, No. **2** Diameter **10" x 11" x 10" duplex** Stroke **190 tons/hr** Can one be overhauled while the other is at work **Yes**
Pumps connected to the Main Bilge Line {No. and Size **Three viz. 1-Ballast 10" x 11" x 10" dup; 1 Bilge + 1 Sanitary each 7" x 7 1/2" x 8" dup.** How driven **Indep. steam** each **80 tons/hr**

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 **Yes**

Ballast Pumps, No. and size **one 10" x 11" x 10" duplex** Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size **one 8" x 7" x 18" duplex**
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" dia; 2 of 2 1/2" to OF Cutterways** In Pump Room **5 of 2 1/4" dia**

Holds, &c. **2 of 2 1/2" dia in Forehold; 2 of 2" dia in Store room; 1 of 2" dia in Forehold Pump Room**
Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size **one 6" to Ballast Pump + one 5" to Bilge Pump**

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 sized 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**
Do all pipes pass through the bunkers **None** How are they protected **Yes**

Do 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 **None** Is it fitted with a watertight door **Yes** 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 **None**
Main Air Compressors, No. **None (Airless Injin)** No. of stages **None** Diameters **None** Stroke **None** Driven by **None**

Auxiliary Air Compressors, No. **2** No. of stages **3** Diameters **11 3/4** Stroke **7"** Driven by **Steam Eng.**

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

What provision is made for first Charging the Air Receivers **by steam driven compressors**
Scavenging Air Pumps, No. **One double acting** Diameter **1960 m/m** Stroke **608 m.m.** Driven by **Over by Main Eng.**

Auxiliary Engines crank shafts, diameter as per Rule **None** as fitted **None** No. **4** viz **2 Steam driven 30 KW sets** Position **+2 "all on Star Side"**
Have the Auxiliary Engines been constructed under special survey **No (Steam driven only)** Is a report sent herewith **Yes**

AIR RECEIVERS:—Have they been made under survey Yes State No. of Report or Certificate ✓
 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 ✓
Starting Air Receivers, No. 2 Total cubic capacity 280 cub. ft Internal diameter 4'-1 1/2" thickness 1/32
 Seamless, lap welded or riveted longitudinal joint T.R. M. butt strap Material Steel Range of tensile strength 29 to 33 tons Working pressure 602 lb
 Actual 600 lb

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 1/8/40 Receivers 4/10/40 Separate Fuel Tanks
 Donkey Boilers 9/9/40 General Pumping Arrangements 5/11/40 Pumping Arrangements in Machinery Space 1/2/41
 Oil Fuel Burning Arrangements 18/2/41

SPARE GEAR.

Has the spare gear required by the Rules been supplied Yes
 State the principal additional spare gear supplied 1. main Bearing (Spherical), 1 non-return Air Starting Valve, 1 Cylr Relief Valve, 1 Fuel pump body complete with Sect. & delv. valves, 1 upper & 1 lower piston skirt, 5 piston rings for M. Cyls, 4 piston skirt scraper rings, 6 rubber hoses for upper Piston Water Service, 1 - 1/2" feed lubricator for M. Cyls, 2 complete sets of springs & joints, 1 doz. each gauge glass & packing rings, 1 lid for feed check, 12 boiler tubes, 1 Safety Valve Spring, 1 set each cages for feed water & lub oil filters, 2 sets piston rings for HP Compr. Cyls, 1/2 set valves & springs for Compressors, etc etc.

The foregoing is a correct description,
SWAN, HUNTER, & WIGHAM RICHARDSON LTD.

G. J. J. J.
 Manufacturer.

Dates of Survey while building	During progress of work in shops--	1940 Apr. 10, 22, May 7, 14, 15, 16, 17, 21, 22, 24, 29, 31, June 11, 12, 21, 24, 27, 28, July 5, 16, 18, 24, 31, Aug. 7, 13, 28, 29, Sep. 2, 4, 9, 11, 16, 18, 19, 20, 23, Oct. 1, 4, 7, 8, 9, 14, 15, 23, 30, 31, Nov. 1, 4, 6, 11, 19, 25, 28, Dec. 2, 9, 11, 13, 16, 24
	During erection on board vessel--	30, 1941 Jan. 7, 17, 20, 21, 23, 27, 29, Feb. 7, 12, 13, 14, 19, 26, 27, Mar. 17, 24, 25, 28, 31, Apr. 2, 16, 18, 20, 25, May 1, 5, 9, 16, 22, 23, 26, 28, June 3, 4, 5, 10, 11, 13, 17, 18, 23, July 2, 10, 11, 22, 23, 24, 25, 29, 30, Aug. 5, 6, 7, 8, 11, 12, 13, 14, 15, 21, Sept. 4, 23
	Total No. of visits	127

Dates of Examination of principal parts—Cylinders	23/8/40	Covers	✓	Pistons	20 ¹⁴ + 23 ²²	Rods	as Pistons	Connecting rods	8/10/40
Crank shaft	9/12/40	Flywheel shaft	as Crank Sh	Thrust shaft	as Cr. Sh.	Intermediate shafts	16/5/41	Tube shaft	to 25/11/41
Screw shaft	16/5/41	Propeller	16/5/41	Stern tube	16/5/41	Engine seatings	4/6/41	Engines holding down bolts	23/6/41
Completion of fitting sea connections	4/6/41	Completion of pumping arrangements	4/9/41	Engines tried under working conditions	21/8/41 and 23/9/41				
Crank shaft, Material	7 Steel	Identification Mark	9823 NK 29/11/40	Flywheel shaft, Material	as crank shaft	Identification Mark			10275 H.A.I.
Thrust shaft, Material	as crank shaft	Identification Mark		Intermediate shafts, Material	7 Steel	Identification Marks			23 + 26
Tube shaft, Material	✓	Identification Mark	✓	Screw shaft, Material	7 Steel	Identification Mark			10275 H.A.I. 24

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 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 required
 Is this machinery duplicate of a previous case (No) If so, state name of vessel British Influence

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 and the Society's Rules, and the materials and workmanship are good. The main engines were tested under full load on the works and afterwards the elec. welded construction. Bedplate, columns & luffablature were examined and found in good condition. The machinery has been efficiently installed on board the vessel, tested under working conditions with satisfactory results, and is eligible, in my opinion, for record + L.M.C. 9. and the notations 2DB. HP 150 lbs. CL. Oil Eng. machy aft.

The amount of Entry Fee	£ 6: 0: 0	When applied for,	18 OCT 1941
Special	£ 109: 7: 12	When received,	
EW. Construction	£ 12: 12: 0		
Donkey Boilers Fee	£ 23: 10: 0		
2 Starting Receivers	£ 4: 4: 0		
Travelling Expenses (if any)	£ 0: 0: 0		

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

Committee's Minute
 Assigned
 + L.M.C. 9.41
 2 DB. 150 lbs
 oil Eng. *Ch*



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