

REPORT ON OIL ENGINE MACHINERY.

No 33488

21 SEP 1942

Date of writing Report

Then handed in at Local Office / 4 Sep. 1942 Port of Sunderland

No. in Survey held at Reg. Book.

Date, First Survey 17 Sep 41 Last Survey 3rd Sept 1942

Number of Visits 62

on the Single Twin Triple Quadruple Screw vessel

"HARDINGHAM"

Tons Gross 7269 Net 5041

Built at Sunderland

By whom built Wm. Leasford & Sons Ld.

Yard No. 692 When built 1942.

Engines made at Sunderland

By whom made Wm. Leasford & Sons Ld.

Engine No. 692 When made 1942.

Donkey Boilers made at Stockton

By whom made Stockton Chem. Engs. & Relying Bros Ld.

Boiler No. 15384 When made 1942.

Brake Horse Power 2500

Owners J. C. Harrison & Co Ld.

Port belonging to London.

Nom. Horse Power as per Rule 516.

Is Refrigerating Machinery fitted for cargo purposes

Is Electric Light fitted Yes.

Trade for which vessel is intended

IL ENGINES, &c. Type of Engines Opposed piston airless injection or 4 stroke cycle 2 Single or double acting Single

Maximum pressure in cylinders 5 1/2 lbs/sq. in. Diameter of cylinders 6 1/2 in. Length of stroke 9 1/2 in. No. of cylinders 3 No. of cranks 3 (3 throws)

Mean Indicated Pressure 88 lbs/sq. in. Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 9 1/2 in. Is there a bearing between each crank Between each 3 throws.

Revolutions per minute 108 Flywheel dia. F. 23 1/2 in. Weight A. 5 1/2 tons. Means of ignition Compression Kind of fuel used -

Crank Shaft, Solid forged dia. of journals as per Rule 4 1/8 in. Crank pin dia. 4 5/8 in. Mid. length breadth 6 5/8 in. Thickness parallel to axis 2 5/8 in.

Flywheel Shaft, diameter as per Rule 4 1/8 in. Intermediate Shafts, diameter as per Rule 3 3/8 in. Thrust Shaft, diameter at collars as per Rule 4 5/8 in.

Tube Shaft, diameter as per Rule 3 3/8 in. Is the tube shaft fitted with a continuous liner Yes.

Bronze Liners, thickness in way of bushes as per Rule 18 in. Thickness between bushes as per Rule 16 3/4 in. 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

shaft Yes. If so, state type - Length of Bearing in Stern Bush next to and supporting propeller 4'-11"

Propeller, dia. 15'-9" Pitch 11'-9" No. of blades 4 Material Bronze whether Moveable Yes Total Developed Surface 90 sq. feet

Method of reversing Engines Hand lever Is a governor or other arrangement fitted to prevent racing of the engine Yes Means of lubrication Hand forced

Thickens of cylinder liners 25 in. 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. one engine driven Is the sea suction provided with an efficient strainer which can be cleared within the vessel (R.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 1 @ 5 1/2" x 6" x 15" Simplex & Ballast pump

How driven Steam.

Is the cooling water led to the bilges Yes. If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping

arrangements - one engine driven 8 5/8 in x 6 1/2 in

Ballast Pumps, No. and size 1 @ 12 1/2" x 14" x 24" Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size one steam driven 5 1/2" x 6" x 15"

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 4 in E.R. at 3" 1 @ 3" in Tunnel well. In Pump Room -

In Holds, &c. N°1. 3 1/2 in. N°2. 4 in. N°3. (Leasford) 4 in. N°4. 3 1/2 in. N°5. 4 in. (aft.)

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1 @ 8" Ballast pump, 1 @ 5" and 1 @ 4" connected to main Eng. Circ. 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

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 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

What pipes pass through the bunkers none How are they protected -

What pipes pass through the deep tanks In: hold bilge Suctions 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 (Becked.) intact 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. Two No. of stages 3 Diameters 11 1/2, 11 1/2-9 1/4, 2 3/4 Stroke 6 1/2 Driven by Steam Eng.

Auxiliary Air Compressors, No. - No. of stages - Diameters - Stroke - Driven by -

Small Auxiliary Air Compressors, No. - No. of stages - Diameters - Stroke - Driven by -

What provision is made for first Charging the Air Receivers (Steam driven Compressors)

Scavenging Air Pumps, No. one Diameter 14 1/2 in Stroke 6 1/2 in Driven by Quers from main engines

Auxiliary Engines crank shafts, diameter as per Rule - No. - Position -

Have the Auxiliary Engines been constructed under special survey - Is a report sent herewith -

AIR RECEIVERS: - Have they been made under survey

Is each receiver, which can be isolated, fitted with a safety valve as per Rule 10
Can the internal surfaces of the receivers be examined and cleaned

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 *220 cuft.* Internal diameter *3'-6"* thickness *1"*
Seamless, lap welded or riveted longitudinal joint *Riveted* Material *M. Steel* Range of tensile strength *28/32* Working pressure by Rules Actual *603* *600*

IS A DONKEY BOILER FITTED?

Is the donkey boiler intended to be used for domestic purposes only

PLANS. Are approved plans forwarded herewith for Shafting (If not, state date of approval)

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

State the principal additional spare gear supplied

*Yes. (Except bearings for top & bottom ends of connecting rod).
1 C.I. Propeller, 1 cyl. liner & jacket Complete, 1 main piston bar
24 piston rings, 4 fuel valves Complete, 8 spray pumps, 2 Side & centre top & bottom end bearing bolts
& nuts, 1 M.R. air starting valve, 1 cyl. relief valve Complete, 4 Scavenge Pumps 1/2 discs, 1 fuel
Pump body with x Hd, Shut. & full crank liners with valves & clippers, 3 rubber hoses for upper
piston cooling water, 6 links of roller chain for camshaft drive 3 michell pads for tail
shaft bearings & 3 ditto for intermediate shaft bearings.*

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

Manufacturer.

Wm. H. Purdie Director.
Dates of Survey while building
During progress of work in shops - 1941. Sep. 17, 19. Oct. 1, 2, 9, 31. Nov. 10, 11, 21, 25, 26, 28, Dec. 5. 1942. Jan. 12, 13, 14, 18, 24, 25, 29. Apr. 1, 2, 3, 7, 8, 9.
During erection on board vessel - 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 27, 28, 29, 30. May. 1, 4, 6, 19, 22, 26. June 5, 8, 11. July 2, 27. Aug. 4, 7, 18, 21, 24, 25, 26.
Total No. of visits *62*
Dates of Examination of principal parts - Cylinders *13/3/42, 18/3/42* Covers *✓* Pistons *29/3/42* Rods *29/3/42* Connecting rods *17/4/42*
Crank shaft *14/4/42* Flywheel shaft *as crank* Thrust shaft *as crank* Intermediate shafts *4/8/42* Tube shaft -
Screw shaft *4/8/42* Propeller *4/8/42* Stern tube *26/5/42* Engine seating (Tank top) *24/8/42* Engines holding down bolts *24/8/42*
Completion of fitting sea connections *19/5/42* Completion of pumping arrangements *3/9/42* Engines tried under working conditions *3/9/42*
Crank shaft, Material *Imper. Steel* Identification Mark *N° 692 WHF. 14/4/42* Flywheel shaft, Material *as crank* Identification Mark *as crank*
Thrust shaft, Material *as crank* Identification Mark *as crank* Intermediate shafts, Material *Imper. Steel* Identification Marks *WHF. 4/8/42*
Tube shaft, Material - Identification Mark - Screw shaft, Material *Imper. Steel* Identification Mark *N° 11261. Test N° 390 WHF 4/8/42.*
Identification Marks on Air Receivers *K 1388/9 L.R. N° 21034 L.C.D. 21/4/42.*

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 dia h.l. perforated pipe for steam led around E.R. & B.R. 8-2 gall. Phenolic Cabinet*

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 *(Standard 600hp).*

General Remarks (State quality of workmanship, opinions as to class, &c.) *This machinery has been built under Special Survey in accordance with the approved plans & the requirements of the Society's rules. The materials & workmanship are good. It has been securely fixed on board the vessel & tried under working conditions alongside Quay with satisfactory results. The two donkey boilers have also been securely fixed on board, fitted to burn oil fuel (F.P. above 150°F), Section 20 of the rules has been complied with & safety valves of boilers adjusted to working pressure in accordance with rule requirements.*

The machinery is eligible in my opinion to have notation LMC 9.42 (oil Eng.), T.S. (CL) 2 DB 120hp.

The amount of Entry Fee .. £ *6* : : When applied for, *17 SEP 1942*
Special £ *100* : *16* :
Donkey Boiler Fee *Welded boiler.* £ *12* : *12* : When received,
Travelling Expenses (if any) £ : : 19.

Committee's Minute

Assigned

FRI. 25 SEP 1942

P. H. Fraser.

Engineer Surveyor to Lloyd's Register of Shipping.



Lloyd's Register Foundation