Rpt. 4b.

REPORT ON OIL ENGINE MACHINERY.

No. 16543 374

Received at London Office 13 APR 1955

Date of writing Report 17th Mar. 19 55 When handed in at Local Office ..... 19 ..... Port of MANCHESTER

No. in Reg. Book. Survey held at Manchester Date, First Survey 13th April 1954 Last Survey 14th February 19 55

Number of Visits 12

Single / Twin / Triple / Quadruple Screw vessel Amhirst Island Ferry (Classed Vessel) "Lloyd's ✠ 100 A1 Steamer" Tons Gross ..... Net .....

Built at Kingston, Ontario By whom built Kingston Shipyard Yard No. 48 When built .....

Engines made at Reddish By whom made Crossley Bros. Ltd., 15520 Engine No. 146554 When made 1955

Donkey Boilers made at ..... By whom made ..... Boiler No. ..... When made .....

Brake Horse Power 300 Owners ..... Port belonging to .....

I.N. Power as per Rule 60 Is Refrigerating Machinery fitted for cargo purposes ..... Is Electric Light fitted .....

Trade for which vessel is intended Ferry

OIL ENGINES, &c. —Type of Engines One ERI6 Heavy Oil 2 or 4 stroke cycle 2 Single or double acting Single

Maximum pressure in cylinders 1250 PSI Diameter of cylinders 7" Length of stroke 9" No. of cylinders 6 No. of cranks 6

Mean Indicated Pressure 92 PSI Ahead Firing Order in Cylinders 1,5,3,4,2,6. Span of bearings, adjacent to the crank, measured from inner edge to inner edge 8 7/8" Is there a bearing between each crank Yes Revolutions per minute 750 (700 375 350)

Flywheel dia. 27" Weight 583 lbs Moment of inertia of flywheel (16lbs. in² or Kg.cm²) 71,436 Means of ignition Compression Kind of fuel used Diesel

Crank Shaft, Solid forged / Semi-built / All built dia. of journals as per Rule approved as fitted 4 3/4" Crank pin dia. 4 3/4" Crank webs Mid. length breadth 7 1/4" Mid. length thickness 2.5/16" shrunk Thickness parallel to axis ..... Thickness around eyehole .....

Flywheel Shaft, diameter as per Rule ..... as fitted ..... Intermediate Shafts, diameter as per Rule ..... as fitted ..... Thrust Shaft, diameter at collars as fitted ..... as per Rule .....

Tube Shaft, diameter as per Rule ..... as fitted ..... Screw Shaft, diameter as per Rule ..... as fitted ..... Is the tube / screw shaft fitted with a continuous liner { ..... / .....

Bronze Liners, thickness in way of bushes as per Rule ..... as fitted ..... Thickness between bushes as per Rule ..... as fitted ..... Is the after end of the liner made watertight in the propeller boss ..... If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner .....

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 tube shaft ..... If so, state type ..... Length of bearing in **Stern Bush** next to and supporting propeller .....

Propeller, dia. ..... Pitch ..... No. of blades ..... Material ..... whether moveable ..... Total developed surface ..... sq. feet

Moment of inertia of propeller (16lbs. in² or Kg.cm²) ..... Kind of damper, if fitted .....

Method of reversing Engines Direct Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication forced Thickness of cylinder liners 1/2" Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers water cooled or lagged with non-conducting material Water cooled If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine 1 - 2 1/2 x 2 1/4 - 1800 G.P.H. **Cooling Water Pumps,** No. ..... Is the sea suction provided with an efficient strainer which can be cleared within the vessel .....

Bilge Pumps worked from the **Main Engines,** No. One Diameter 2 1/2" Stroke 2 1/4" Can one be overhauled while the other is at work .....

Pumps connected to the **Main Bilge Line** { No. and size ..... / How driven .....

Is the cooling water led to the bilges ..... 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 ..... **Power Driven Lubricating Oil Pumps,** including spare pump, No. and size 1 - 1230 G.P.H. 1 - 1910 G.P.H.

Are two independent means arranged for circulating water through the **Oil Cooler** ..... **Suctions,** connected to both main bilge pumps and auxiliary bilge pumps, No. and size:—In machinery spaces ..... In pump room .....

in holds, &c. .....

Independent Power Pump Direct Suctions to the engine room bilges, No. and size .....

Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes ..... 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 .....

Are all **Sea Connections** fitted direct on the skin of the Ship ..... Are they fitted with valves or cocks ..... Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates ..... Are the overboard discharges above or below the deep water line .....

Are they each fitted with a discharge valve always accessible on the plating of the vessel ..... Are the blow off cocks fitted with a spigot and brass covering plate .....

What pipes pass through the bunkers ..... How are they protected .....

What pipes pass through the deep tanks ..... 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 .....

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 ..... Is the shaft tunnel watertight ..... 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. One No. of stages One diameters 3 1/2 stroke 2 1/4 driven by M.E.

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 .....

Scavenging Air Pumps, No. 1 D.A. Tandem diameter 13 1/2" stroke 7 1/2" driven by M.E.

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

Have the auxiliary engines been constructed under special survey ..... Is a report sent herewith .....

AIR RECEIVERS: —*Have they been made under survey* Yes *State No. of report or certificate* C.20304, X20311

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.* *Cubic capacity of each* *Internal diameter* *thickness* *Working pressure* *by Rules* *Actual*

Seamless, welded or riveted longitudinal joint *Material* *Range of tensile strength*

Starting Air Receivers, *No.* Two *Total cubic capacity* 10 cu.ft. *Internal diameter* 1' 6" *thickness* 5/16" *Working pressure* *by Rules* appd. Appd. Drg. 50-B68 *Actual* 350

Seamless, welded or riveted longitudinal joint Welded *Material* M.S. *Range of tensile strength*

IS A DONKEY BOILER FITTED *If so; is a report now forwarded*

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

PLANS. *Are approved plans forwarded herewith for shafting* 2.2.55. *(If not, state date of approval)* *Receivers* *Separate fuel tanks*

Donkey boilers *General pumping arrangements* *Pumping arrangements in machinery space*

Oil fuel burning arrangements

Have Torsional Vibration characteristics been approved Yes *Date of approval* 2.2.55.

SPARE GEAR.

Has the spare gear required by the Rules been supplied As per Rule Requirements.

State the principal additional spare gear supplied

The foregoing is a correct description, and the particulars of the engine, as supplied, are as approved [illegible] *Manufacturer.* for torsional vibration characteristic

Dates of Survey while building — *During progress of work in shops* 1954. Apr.13. Dec.7,10,16. 1955. Jan.6,14,17,18,19. Feb.9,10,14.

During erection on board vessel

Total No. of visits

Dates of examination of principal parts—Cylinders 17.1.55 *Covers* 19.1.55. *Pistons* - *Rods* - *Connecting rods* 13.4.5

Crank shaft 10.12.54. *Flywheel shaft* *Thrust shaft* *Intermediate shafts* *Tube shaft*

Screw shaft *Propeller* *Stern tube* *Engine seatings* *Engine holding down bolts*

Completion of fitting sea connections *Completion of pumping arrangements* *Engines tried under working conditions*

Crank shaft, material O.H.Steel *Identification mark* E.5097 LVH.10.12.54. *Flywheel shaft, material,* *Identification mark*

Thrust shaft, material *Identification mark* 5086 LVH 10.12.54. *Intermediate shafts, material* *Identification marks*

Tube shaft, material *Identification mark* *Screw shaft, material* *Identification mark*

Identification marks on air receivers H.3052 & H.3059.

Welded receivers, state Makers' Name Ruston & Hornsby Ltd.

Is the flash point of the oil to be used over 150°F

Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with

Description of fire extinguishing apparatus fitted

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

Is this machinery duplicate of a previous case *If so, state name of vessel*

General Remarks *(State quality of workmanship, opinions as to class, &c.* This heavy oil propulsion engine has been bui under Special Survey of tested materials and in accordance with the Secretary's letters, approve plans and Rule requirements. The material is sound and free from defects. The workmanship is g The engine, direct coupled to a dynamometer was successfully tested at the Engine Builders Works under the following conditions of loading: 4 hours 100% engine rating, 1 hour 10% overload, Governor and starting trials. The torsional vibration characteristics of the shafting installat of this Main Machinery have been examined in conjunction with the Engine Builder's calculations provisionally approved for an engine service speed of 750 r.p.m. and the corresponging propeller speed of 375 r.p.m. Explosion relief devices are fitted.

Attached hereto: Shaft Certs. F.6280, 9852.
Air Receiver Certs. C.20304, C.20311.

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

The amount of Entry Fee ...	... £ 22	: -	:
Special	... £	:	:
Donkey Boiler Fee...	... £	:	:
Travelling Expenses (if any)	£ 1	: 5	-

When applied for 12-4- 19 55 *When received* 19

L. V. Hansel
Engineer Surveyor to Lloyd's Register of Shipp

Committee's Minute TUESDAY 20 DEC 1955

Assigned Su Rel 4 L.