

REPORT ON OIL ENGINE MACHINERY.

No. 21458.

Received at London Office

-3 JUL 1941

Date of writing Report 23rd JUNE 1941 When handed in at Local Office 27th JUNE 1941 Port of GREENOCK

No. in Survey held at

Date, First Survey 8th OCTOBER 1940. Last Survey 20th JUNE 1941.

Reg. Book.

Number of Visits 59

90954 on the ^{Single} ~~Triple~~ ~~Quadruple~~ Screw vessel"EMPIRE SPRING"Tons { Gross 6946.46.
Net 4144.30.

Built at PORT GLASGOW

By whom built LITHGOWS LTD

Yard No. 944 When built 1941

Engines made at GREENOCK

By whom made JOHN G. KINCAID & CO LTD

Engine No. 141 When made 1941

Donkey Boilers made at GREENOCK

By whom made JOHN G. KINCAID & CO LTD

Boiler No. 141 When made 1941

Brake Horse Power 3300

Owners MINISTRY OF SHIPPING

Port belonging to GREENOCK.

Nom. Horse Power as per Rule 490

Is Refrigerating Machinery fitted for cargo purposes No

Is Electric Light fitted YES

Trade for which vessel is intended

OCEAN GOING

OIL ENGINES, &c.—Type of Engines Diesel Airlers injection Buchi Sup. 2 or 4 stroke cycle 4 Single or double acting Single

Maximum pressure in cylinders 650 lb.

Diameter of cylinders 740 7/8

Length of stroke 1500 7/8

No. of cylinders 6

No. of cranks 6

Mean Indicated Pressure 8.725 kg/cm²

Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 1022 7/8

Is there a bearing between each crank YES

Revolutions per minute 110

Flywheel dia. 2489 7/8

Weight 2.5 tons

Means of ignition Compression

Kind of fuel used Diesel Oil

Crank Shaft, { Solid forged
Semi built dia. of journals as per Rule
All built as fitted 505 7/8

Crank pin dia. 505 7/8

Crank Webs Mid. length breadth 840 7/8

Thrust Shaft, diameter at collars as per Rule 13.95

Flywheel Shaft, diameter as per Rule

Intermediate Shafts, diameter as per Rule 13.375

Tube Shaft, diameter as per Rule

Screw Shaft, diameter as per Rule 14.620

Is the { tube
screw } shaft fitted with a continuous liner YES

Bronze Liners, thickness in way of bushes as per Rule .745

Thickness between bushes as fitted .75

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

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 No If so, state type

Length of Bearing in Stern Bush next to and supporting propeller 4'-11 1/2"

Propeller, dia. 16'-0

Pitch 10'-3 3/4 Root No. of blades 4

Material Bronze

whether Moveable No

Total Developed Surface 94 sq. feet

Method of reversing Engines Compressed Air

Is a governor or other arrangement fitted to prevent racing of the engine when declutched YES

Means of lubrication

Forced Thickness of cylinder liners 53 7/8

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

Cooling Water Pumps, No. Two One main engine

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. None

Diameter

Stroke

Can one be overhauled while the other is at work

Pumps connected to the Main Bilge Line

No. and Size One 100 tons/hr One 170 tons/hr

How driven

Steam

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

Ballast Pumps, No. and size One 170 tons/hr

Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size

1 Main engine 10"x10"

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 Two @ 3" 3/4 2 1/2"

Tunnel well 1-2 1/2"

In Pump Room

In Holds, &c. Forepeak 1-3" N°1. 2 @ 3" N°2. 2 @ 3 1/2" N°3. 2 @ 3" N°4. 2 @ 3" Deep tank 2 @ 2 1/2"

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size Two @ 5"

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 YES

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 Bilge pipes to fore holds

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 No

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 two

Diameters 11 1/4" & 4 3/4"

Stroke 8"

Driven by Steam

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 air compressor

Scavenging Air Pumps, No.

Diameter

Stroke

Driven by

Auxiliary Engines crank shafts, diameter

as per Rule ENGINE N° 1537, SHEFFIELD CER N°

as fitted COMP N° 65876 IPSWICH CER N° C4154

Position Engine room platform

Have the Auxiliary Engines been constructed under special survey

Is a report sent herewith Certificates attached

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W33-0049

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. *—* 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. *One* Total cubic capacity *750 cu ft* Internal diameter *6'-4"* thickness *1/32"*
Seamless, lap welded or riveted longitudinal joint *TR 203* Material *S* Range of tensile strength *29/33* Working pressure *365 lb*
Actual *356 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*

PLANS. Are approved plans forwarded herewith for Shafting *2-1-40* Receivers *30-1-40* Separate Fuel Tanks *12-3-41*
(If not, state date of approval)
Donkey Boilers *22-1-40* General Pumping Arrangements *12-2-40* Pumping Arrangements in Machinery Space *8-3-40*
Oil Fuel Burning Arrangements *28-5-40*

SPARE GEAR.

Has the spare gear required by the Rules been supplied

State the principal additional spare gear supplied

The foregoing is a correct description,
For JOHN G. KINCAID & CO. LIMITED.

W. C. Kincaid Director. Manufacturer.

Dates of Survey while building { During progress of work in shops-- (1940) Oct. 8-11-22-25-29 Nov. 1-4-26-28 Dec. 4-9-19-24-30 (1941) Jan. 13-16-21-22-24 Feb. 3-5-6-7-12-19-21-28
During erection on board vessel-- MAR. 4-5-6-14-17-20-31 APR. 2-4-9-15-16-17-18-19-21-22-25-26-29 MAY 1-13-14-20-24-28 JUNE 2-9-12-16-18
Total No. of visits *59*

Dates of Examination of principal parts—Cylinders *7-19-24-41* Covers *7-9-24-41* Pistons *20-3-41* Rods *1-5-41* Connecting rods *1-5-41*
Crank shaft *1-5-41* Flywheel shaft *—* Thrust shaft *21-2-41* Intermediate shafts *21-2-41* Tube shaft *—*
Screw shaft *6-3-41* Propeller *6-3-41* Stern tube *19-12-41* Engine seatings *17-3-41* Engines holding down bolts *9-6-41*
Completion of fitting sea connections *21-2-41* Completion of pumping arrangements *20-6-41* Engines tried under working conditions *20-6-41*
Crank shaft, Material *S* Identification Mark *9588 CNH* Flywheel shaft, Material *—* Identification Mark *—*
Thrust shaft, Material *S* Identification Mark *9588 CNH* Intermediate shafts, Material *S* Identification Marks *9588 CNH*
Tube shaft, Material *—* Identification Mark *—* Screw shaft, Material *S* Identification Mark *9588 CNH*
Identification Marks on Air Receivers *Nº 1663*
LL0408 TEST
556 lb
WA 356 lb
CNH. 12-2-41

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 *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 *—*
Is this machinery duplicate of a previous case *Yes* If so, state name of vessel *EMPIRE RAINBOW GPK Nº 21433*

General Remarks (State quality of workmanship, opinions as to class, &c.) *These engines have been built under Special Survey in accordance with the Rules & approved plans. The materials & workmanship are sound & good. The machinery has been efficiently installed on board & tested under full working conditions on a short sea trial with satisfactory results. This machinery is eligible in my opinion to be Classed in the Society's Register Book with Record*

+ LMC 6-41 and Notation Screw Shaft CL. 20B150 lb/ft

The plans and specification have been supervised and a copy of the report issued is enclosed herewith

The amount of Entry Fee .. £ 5 : 0 : When applied for,
Special ... £ 98 : 10 : 25th JUNE 1941
Donkey Boiler Fee ... £ 15 : 0 : When received,
AIR RECEIVER ... £ 4 : 4 : 27th JUNE 1941
Travelling Expenses (if any) £ 29 : 9 :
SPECIFICATION

Committee's Minute *GLASGOW 1 JUL 1941*

Assigned *1-1-41* *air kg*
20B150 lb

Charles J. Hunter
Engineer Surveyor to Lloyd's Register of Shipping.



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