

REPORT ON OIL ENGINE MACHINERY.

No 33265

Received at London Office

10 DEC 1941

Date of writing Report

When handed in at Local Office

1st Dec 1941 Port of

Sunderland.

No. in Survey held at
Reg. Book.

Sunderland

Date, First Survey

Apr 29

Last Survey

Nov 29 1941

Number of Visits

67

Single
Triple
Quadruple
on the ~~Triple~~ Screw vessel**"EMPIRE GRENFELL"**Tons Gross 7238
Net 5099

Built at

Sunderland

By whom built

Wm. Leasford & Sons L^{td}

Yard No.

648 When built

1941.

Engines made at

Sunderland

By whom made

Wm. Leasford & Sons L^{td}

Engine No.

648 When made

1941.

Donkey Boilers made at

Stockton

By whom made

Stockton Chem. Eng^g & Riley Bhs L^{td}

Boiler No.

15009 When made

1941.

Brake Horse Power

2500

Owners Ministry of War Transport.

Port belonging to

Sunderland.

Nom. Horse Power as per Rule

516.

Is Refrigerating Machinery fitted for cargo purposes

No.

Is Electric Light fitted

Yes.

Trade for which vessel is intended

23rd

9/10

OIL ENGINES, &c.—Type of Engines *Opposed piston airless injection* or 1/2 stroke cycle *2* Single or double acting *Single*
 Maximum pressure in cylinders *34 1/2 lbf/sq. in.* Diameter of cylinders *600 mm* Length of stroke *Upper 980 mm* No. of cylinders *3* No. of cranks *3 (3 throws)*
 Mean Indicated Pressure *88 lbf/sq. in.* Span of bearings, adjacent to the Crank, measured from inner edge to inner edge *940 mm* Is there a bearing between each crank *Between each 3 throws*
 Revolutions per minute *108* Flywheel dia. *F 2300 mm* Weight *F 534 tons* Means of ignition *Compression* Kind of fuel used *—*
 Crank Shaft, { *Semi forged* dia. of journals *as per Rule* *418 mm* Crank pin dia. *450 mm* Crank Webs *as per Rule* *308 mm* Thickness parallel to axis *255 mm*
 { *Semi built* dia. of journals *as fitted* *450 mm* Crank pin dia. *450 mm* Crank Webs *as per Rule* *308 mm* Thickness around eye-hole *200 mm*
 { *All built* dia. of journals *as per Rule* *418 mm* Crank pin dia. *450 mm* Crank Webs *as per Rule* *308 mm* Thickness around eye-hole *200 mm*
 Flywheel Shaft, diameter *as per Rule* *418 mm* Intermediate Shafts, diameter *as per Rule* *308 mm* Thrust Shaft, diameter at collars *as per Rule* *418 mm*
 Tube Shaft, diameter *as per Rule* *450 mm* Screw Shaft, diameter *as per Rule* *341 mm* Is the shaft fitted with a continuous liner *Yes*
 Bronze Liners, thickness in way of bushes *as per Rule* *18 mm* Thickness between bushes *as per Rule* *13 1/2 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 *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 when detached *Yes* Means of lubrication *Hand forced*
 Thickness of cylinder liners *25 mm* 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 *(F.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 *—*

Ballast Pumps, No. and size *1 @ 10 1/2" x 12" x 24"* Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size *one engine driven 8 1/2" x 6 1/2"*
 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 @ 3" x 4" E.R.* *1 @ 3" in Tunnel Well.* In Pump Room *—*

In Holds, &c. *N°1. 3" p.r.s. N°2. 3 1/2" p.r.s. N°3 (Deep Tank) 3 1/2" p.r.s. N°4. 3" p.r.s. N°5. 3 1/2" (a/c).*
 Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size *1 @ 8" (Ballast pump), 1 @ 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

ed 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 *Yes*

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 boiler 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 *Yes (Bulkhead)* 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" 9 1/2" 2 3/4"* Stroke *6 1/2"* Driven by *Steam Engine*

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 *1400 mm* Stroke *610 mm* Driven by *Levers from Main Engine*

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

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

Lloyd's Register
Foundation

008122 008128 0018

AIR RECEIVERS: - Have they been made under survey

Is each receiver, which can be isolated, fitted with a safety valve as per Rule
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

Starting Air Receivers, No.

Total cubic capacity

Internal diameter

thickness

Seamless, lap welded or riveted longitudinal joint

Material

Range of tensile strength

Working pressure by Rules

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
(If not, state date of approval)

Receivers

Separate Fuel Tanks

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
1 C.I. Propeller, 1 cyl. liner & jacket Complete, 1 main piston head, 2 main piston rings, 4 fuel valves complete, 8 spray plugs, 2 side & centre top & bottom end bearing bolts & nuts, 1 N.R. Starting valve, 1 cyl. relief valve complete, 4 scavenge pump 1/2 discs, 1 fuel pump body with & without, 1 main & side crank lever with valves & tappets, 6 rubber hoses for upper piston cooling water, 1 roller chain for camshaft drive.

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

Manufacturer.

Director.
Dates of Survey while building
During progress of work in shops - 1941. Apr. 29. May 2, 22 June 2, 4, 6, 9, 10, 11, 12, 13, 16, 17, 23, 25. July 2, 3, 17, 18, 24, 22, 23, 24, 28, 29, 30, 31.
During erection on board vessel - Aug. 1, 5, 6, 7, 11, 12, 13, 15, 18, 19, 20, 21, 25, 26, 27, 28, 29. Sep. 1, 2, 3, 7, 5, 8, 9, 10, 11, 16, 17, 18, 23. Oct. 6, 7, 13, 14, 21, 27, 31.
Nov. 5, 19, 29
Total No. of visits 67
Dates of Examination of principal parts - Cylinders 18/7/41 24/7/41 28/7/41 Covers 30/7/41 30/7/41 18/8/41 18/8/41 20/8/41 20/8/41 26/8/41.
Crank shaft 19/8/41 Flywheel shaft as crank Thrust shaft as crank. Intermediate shafts 16/9/41 Tube shaft 16/9/41
Screw shaft 28/7/41 Propeller 21/7/41 Stern tube 11/6/41, 14/6/41 Engine seatings (Bank top) Engines holding down bolts 21/10/41.
Completion of fitting sea connections 12/6/41 Completion of pumping arrangements 19/11/41 Engines tried under working conditions 5/11/41
Crank shaft, Material Ingot Steel & Cast Steel Identification Mark N° 648 W.H.F. 19/8/41 Flywheel shaft, Material Ingot Steel Identification Mark as crank.
Thrust shaft, Material Ingot Steel Identification Mark as crank. Intermediate shafts, Material Ingot Steel Identification Marks N° 5210, 5198, 5222
Tube shaft, Material - Identification Mark - Screw shaft, Material Ingot Steel Identification Marks 5204, 5196, 5221
Identification Marks on Air Receivers K 1221 1/2. N° 20825 L.C.D. 14.8.41. N° 5223 W.H.F. 28/7/41

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 1 1/2 dia W.I. perforated pipes for steam led around E.R. & B.R. tanks

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 M/V "EMPIRE DAWN" &c.

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, Specification, Secretary's letter & the requirements of the rules of the Society. The materials & workmanship are good. The steel castings used in the crankshaft are, so far as can be seen, sound. The machinery has been securely fitted on board the vessel & tried under working conditions alongside quay with satisfactory results. The two donkey boilers have also been securely fixed, fitted to burn oil fuel (F.P. oil 150° F) Section 20 of the rules has been complied with & safety valves adjusted to working pressure in accordance with rule requirements. The machinery is eligible in my opinion to have notation of 100 L.M.C. 11. 41 (oil Eng.) T.S. (CL), 2 DB 120 lbs/100.

The amount of Entry Fee .. £ 6 :

When applied for

Special

£ 100 : 16 :

1 DEC 1941

Welded Const. 12 : 12 :

When received

Donkey Boiler Fee 25 : 4 :

4 DEC 1941

Specification 25 : 4 :

Travelling Expenses (if any) £

Committee's Minute

Assigned

Engineer Surveyor to Lloyd's Register of Shipping.



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