

REPORT ON OIL ENGINE MACHINERY.

DEC 28 1938 No. 12-276

Received at London Office

Date of writing Report 19 When handed in at Local Office 24. 12. 1938 Port of Belfast
No. in Survey held at Belfast Date, First Survey 15. Apr. 1937 Last Survey 23. 12. 38 19
Reg. Book. Number of Visits 233

73547 on the ^{Single} Twin ^{Triple} Screw vessel "Tw. Ser. DUBBAN CASTLE"
Built at Belfast By whom built Harland & Wolff Ltd. Yard No. 987 When built 1938
Engines made at Belfast By whom made Harland & Wolff Ltd. Engine No. 987 When made 1938
Boilers made at Belfast By whom made Harland & Wolff Ltd. Boiler No. 987 When made 1938
Indicated Horse Power 16000. Owners Union Castle Mail Steamship Co. Port belonging to London
Nom. Horse Power as per Rule 3284. Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes
Trade for which vessel is intended Ocean going 558

MAIN ENGINES, &c.—Type of Engines Harland B.W. airless injection 2 or 4 stroke cycle 2. Single or double acting Yes
Maximum pressure in cylinders 49 Kgs/cm² Diameter of cylinders 24 1/2 620% Length of stroke 1400% No. of cylinders 16 No. of cranks 16
Distance of bearings, adjacent to the Crank, measured from inner edge to inner edge 1164% Is there a bearing between each crank Yes
Revolutions per minute 104 Flywheel dia. 2483% Weight 2500 Kgs Means of ignition Compression Kind of fuel used Diesel Oil
Crank Shaft, dia. of journals as per Rule as approved Crank pin dia. 500% Crank Webs Mid. length breadth 960% Thickness parallel to axis 260%
as fitted 500% Mid. length thickness 260% shrunk Thickness around eye-hole 225%
Flywheel Shaft, diameter as per Rule as approved Intermediate Shafts, diameter as per Rule as approved Thrust Shaft, diameter at collars as per Rule as approved
as fitted 530% as fitted 18% as fitted 490%
Tube Shaft, diameter as per Rule as fitted Screw Shaft, diameter as per Rule as fitted 19 1/2% Is the tube screw shaft fitted with a continuous liner Yes
as fitted Thickness between bushes as per rule as fitted 27/32% 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 Yes
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 Yes
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
shaft No If so, state type Length of Bearing in Stern Bush next to and supporting propeller 7'-0"

Propeller, dia. 19'-0" Pitch 21'-3" No. of blades 3 Material M.B. whether Moveable Solid Total Developed Surface 97. sq. feet
Method of reversing Engines Air Brake cylinders a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication
Forced Thickness of cylinder liners 42% 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 Yes
Cooling Water Pumps, No. 4-400 tons/hr 2 working 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. Diameter Stroke Can one be overhauled while the other is at work
Pumps connected to the Main Bilge Line No. and Size 4-135 tons each/hr How driven Electric motor

Ballast Pumps, No. and size 2-135 tons each/hr Lubricating Oil Pumps, including Spare Pump, No. and size 4-320 tons/hr 2 working
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 2-3 1/2" 91-3" In for tunnel 2-3 1/2" Aux. E.P. 4-3 1/2"
In Holds, &c. Off tunnels 4-3" Tunnel well 1-3 1/2" N.1. 2-3 1/2" N.2. 2-3 1/2" N.3. 3-3 1/2" N.4. 1-3 1/2" N.5. 2-3 1/2" Chain locker 1-2 1/2"

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size Engine room 3, Aux. E.P. 2, Tunnel 1, all 6" tone.
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 None 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 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 Yes worked from upper deck
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. 2 No. of stages 2 3 cylinders Diameters 240% 210% Stroke 160% Driven by El motor
Auxiliary Air Compressors, No. No. of stages Diameters Stroke Driven by
Small Auxiliary Air Compressors, No. 1 No. of stages 2 Diameters 160% 34% Stroke 80% Driven by Steam engine
Scavenging Air Pumps, No. 4 387.5 m³/min in capacity at 385 rpm. at 1.24 Kgs/cm² abs. Driven by Main engines
Auxiliary Engines crank shafts, diameter as per Rule as fitted See report form 4C

AIR RECEIVERS:—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 Yes What means are provided for cleaning their inner surfaces Manhole
Is there a drain arrangement fitted at the lowest part of each receiver Yes
High Pressure Air Receivers, No. 3 Cubic capacity of each 800 cu ft Internal diameter 2'-6 1/8" thickness 1 3/32"
Material S Range of tensile strength 28/32 ton Working pressure by Rules 359
Total cubic capacity 180 LITRES Internal diameter 1'-6" thickness 3/5"
Working pressure by Rules 372

IS A DONKEY BOILER FITTED? *Yes 30/6*

If so, is a report now forwarded? *Yes*

PLANS. Are approved plans forwarded herewith for Shafting *1-6-37, 1-4-37* Receivers *13-10-38* Separate Tanks *14-7-38 & 8-7-38*

Donkey Boilers *31-8-38, 21-10-38*

General Pumping Arrangements *16-5-38*

Oil Fuel Burning Arrangements *23-12-38*

SPARE GEAR

See attached sheets

The foregoing is a correct description,
FOR HARLAND AND WOLFE, LIMITED.

A. G. Marshall Manufacturer.

1937 *1938*

Dates of Survey while building

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

Dates of Examination of principal parts—Cylinders *3-8-38* Covers *5-5-38* Pistons *10-5-38* Rods *5-7-38* Connecting rods *5-27-38*

Crank shaft *P 4-5-38* Flywheel shaft ✓ Thrust shaft *S 26-5-38* Intermediate shafts *35-38 to 2-6-38* Tube shaft ✓

Screw shaft *S 2-5-38* Propeller ✓ Stern tube *S 13-4-38* Engine seatings *17-5-38* Engines holding down bolts *S 25-8-38*

Completion of fitting sea connections *27-5-38* Completion of pumping arrangements *24-11-38* Engines tried under working conditions *22-25 Nov 38*

Crank shaft, Material *S* Identification Mark *S 220405 271* Flywheel shaft, Material ✓ Identification Mark ✓

Thrust shaft, Material *S* Identification Mark *220405 271* Intermediate shafts, Material *S* Identification Marks *220405 321*

Tube shaft, Material ✓ Identification Mark ✓ Screw shaft, Material *S 2-5-38* Identification Mark *S 220405 271*

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 _____

Is this machinery duplicate of a previous case *No* If so, state name of vessel _____

General Remarks (State quality of workmanship, opinions as to class, &c.)

The machinery of this vessel has been constructed under special survey. The workmanship & materials are good. The main engines & auxiliaries have been efficiently installed & tried out under working conditions. In our opinion the vessel is eligible for notation in the Society's Register Book

+ LMC 12.38 C.L. 3 DBs 100 lbs. Oil Engines

The amount of Entry Fee ... £ 6 : 0 : When applied for, *24.12.1938*

Special ... £ 182 : 2 : ✓

Donkey Boiler Fee ... £ 15 : 0 : When received, *14/1 1939*

Travelling Expenses (if any) £ 14 : 14 : ✓

Committee's Minute *TUE 8 JAN 1939*

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



Assigned *+ LMC 12.38 3 DB 100 lb Ch Oil Eng*