

# REPORT ON STEAM TURBINE MACHINERY.

Received at London Office.....17 FEB 1926

Date of writing Report 19 When handed in at Local Office 14/2/26 Port of Newcastle-on-Tyne  
 No. in Survey held at Newcastle-on-Tyne Date, First Survey 16 May 1925 Last Survey 3 Feb 1926  
 Reg. Book. 38496 on the CITY OF LYONS (Number of Visits 78)

Built at Newcastle-on-Tyne By whom built Swan Hunter & Wigham Richardson and No. 1287 When built 1926  
 Engines made at Newcastle By whom made Hall & Shipway Engineering Co Ltd Engine No. 861 When made 1926  
 Boilers made at Newcastle By whom made Hall & Shipway Engineering Co Ltd Boiler No. 861 When made 1926  
 Shaft Horse Power at Full Power 3150 Owners Ellerman Lines, Ltd. (Shell Lines Ltd Ings) Port belonging to Liverpool  
 Nom. Horse Power as per Rule 709 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

STEAM TURBINE ENGINES, &c.—Description of Engines Pure Impulse Reaction No. of Turbines 3 Ahead 3 Astern 2  
 Direct coupled, single or double reduction geared to one propelling shaft. No. of primary pinions to each set of reduction gearing 3, direct coupled to phase  
 periods per second, Alternating Current Generator rated Kilowatts Volts at revolutions per minute; for supplying power for driving  
 Propelling Motors. Propelling Motors, Type  
 rated Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

## PARTICULARS OF TURBINE BLADING.

	H. P.			I. P.			L. P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION	1 1/16"	23 3/8"	12	1 9/16"	21 3/8"	8	2 3/8"	31 8 3/4"	3	1 1/2"	21 11"	2
2ND	1 1/4"	23 1/2"	10	2"	21 1/4"	8	3 1/4"	31 10 1/2"	3	2 3/8"	31 0 1/4"	2
3RD	1 1/2"	24"	10	2 1/2"	21 1/2"	8	3 3/8"	31 11 5/8"	2	3"	31 2"	2
4TH	1 3/4"	24 1/2"	10	3 1/8"	21 6 1/4"	8	4 3/16"	41 1 1/8"	2	3"	31 2"	2
5TH	Impulse wheel before 1st expansion			4 1/16"	21 8 1/8"	8	4 3/4"	41 1 1/2"	1	3"	31 2"	2
6TH	3 1/2"	31 7 1/16"	1	1 3/8"	31 7 3/8"	1	5 5/8"	41 3 1/4"	1	1 1/2"	31 7 3/8"	1
7TH	1 1/16"	31 5 1/16"	1	2 1/8"	31 9 3/8"	1	6 1/2"	41 5"	1	1 1/2"	31 5 3/8"	1
8TH	1 5/16"	31 8 1/4"	1	3 3/8"	31 3 1/4"	1	6 1/2"	41 5"	1	1 3/8"	31 8 3/8"	1

Shaft Horse Power at each turbine 1997 Revolutions per minute, at full power, of each Turbine Shaft 1997 1st reduction wheel ✓  
 main shaft 80 Pitch Circle Diameter, 1st pinion 6.2517 2nd pinion — 1st reduction wheel — main wheel 156.0479  
 Width of Face, 1st reduction wheel — main wheel 28 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, 11 1/2" END BEARINGS  
 1st pinion 3 1/2" CENTRE BEARINGS 2nd pinion — 1st reduction wheel — main wheel 18 3/8 Flexible Pinion Shafts, diameter 1st 5" 2nd —  
 Pinion Shafts, diameter at bearings External 1st 5" 2nd — diameter at bottom of teeth of pinion 1st 5.6746 2nd —  
 Internal —  
 Wheel Shafts, diameter at bearings, 1st — main 15 1/2" diameter at wheel shroud, 1st — main 12-6 1/2" INT. DIA.  
 Generator Shafts, diameter at bearings — Propelling Motor Shafts, diameter at bearings —  
 Main Shafting, diameter of Tunnel Shafting as per rule 13.75 as fitted 14 diameter of Thrust Shafting as per rule 14.4375 as fitted 14 3/4  
 diameter of Screw Shaft as per rule 15.292 as fitted 16 1/2 Is the screw shaft fitted with a continuous liner the whole length of the stern tube Yes 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 joints burned 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 appliance fitted at the after end of the shaft to permit of it being efficiently lubricated No Length of Stern Bush 5-9 1/4" Diameter of Propeller 18-6"  
 Pitch of Propeller 16-0" No. of Blades 4 State whether Moveable Yes Total Surface 116 square feet. If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine, and either the H.P. or I.P. Turbine can exhaust direct to the Condenser Yes  
 No. of Turbines fitted with astern wheels two Total number of power driven Main and Auxiliary Pumps 10  
 No. and size of Feed Pumps one pair 9" x 12" x 24" How driven Steam No. and size of Pumps connected to the Main Bilge Line two 6 3/4" x 14" ONE 14" x 10 1/2" x 24"  
 How driven ONE STEAM No. and size of Ballast Pumps ONE 14" x 10 1/2" x 24" No. and size of Lubricating Oil Pumps, including Spare Pump THREE 5" x 6" (ELECTRIC) Are two independent means arranged for circulating water through the Oil Cooler YES No. and size of suction connected to both Main Bilge Pumps and Auxiliary Bilge Pumps;—In Engine and Boiler Room FIVE 3" FOUR 2 1/2" and in Holds, &c. NO 3= 2-2 1/2" NO 4= 2-3" NO 5= 2-3" DEEPTANK 2-2 1/2"  
 No. and size of Main Water Circulating Pump Bilge Suctions ONE 12" No. and size of Donkey Pump Direct Suctions to the Engine Room Bilges ONE 5" Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes. YES  
 Are the Bilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges YES  
 Are all connections with the sea direct on the skin of the ship YES Are they Valves or Cocks BOTH  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokenhold plates YES Are the Discharge Pipes above or below the deep water line ABOVE  
 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 are carried through the bunkers BILGE SUCTIONS How are they protected WOOD CASED  
 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 Screw Shaft Tunnel watertight YES Is it fitted with a watertight door YES worked from UPPER DECK

BOILERS, &c.—(Letter for record S) Total Heating Surface of Boilers 9225 sq ft  
 Is Forced Draft fitted YES No. and Description of Boilers 3 SB C/L. MULT. Working Pressure 240 LBS

If not, state whether, and when, one will be sent?

If a Report also sent on the Hull of the ship?

Is a Report on Main Boilers now forwarded? **YES**  
 Is a Donkey Boiler fitted? **YES** If so, is a report now forwarded? **YES**  
 Plans. Are approved plans forwarded herewith for Shafting Main Boilers **Yes** Auxiliary Boilers **✓** Donkey Boilers **Yes**  
 (If not state date of approval)  
 Spare Gear. State the articles supplied:— **To rule requirements - see enclosed list.**

The foregoing is a correct description, **FOR THE WALLSEND SLIPWAY & ENGINEERING CO. LIMITED.**  
 Manufacturer. **A. King**  
 DIRECTOR.

1925  
 Dates of Survey while building { During progress of work in shops -- May 6. 12. 25. 26. 28. Jun. 4. 9. 10. 12. 15. 16. 18. 19. 30. July 6. 10. 13. 14. 22. 23. 24. 27. 28. 29. Aug. 4. 6. 12. 19. 25. 26. 28. 31. Sep. 2. 7. 9. 11. 16. 17. 22. 23. 25. 28. Oct. 5. 12. 13. 14. 15. 19. 22. 26. 28. 29. 30. Nov. 19. 24. 25. Dec. 2. 4. 7. 14. 16. 21. 22. 23. 24. 29. 31. 1926 Jan. 6.  
 { During erection on board vessel --- 7. 13. 14. 16. 19. 21. 25. 28. Feb. 2. 3.  
 Total No. of visits **78.**  
 Dates of Examination of principal parts—Casings 5. 10. 25. 26. 10. 25 Rotors 29. 10. 25 Blading 12. 10. 25 Gearing 7. 12. 25  
 Wheel shaft 25. 9. 25 Thrust shaft 25. 9. 25 Tunnel shafts 12. 10. 25 Screw shaft 31. 8. 25 Propeller 12. 10. 25  
 Stern tube 28. 10. 25 Engine and boiler seatings 25. 9. 25 Engines holding down bolts 14. Jan. 1926  
 Completion of pumping arrangements 19. Jan. 1926 Boilers fired 14. Jan. 1926 Engines tried under steam 25. Jan. 1926  
 Main boiler safety valves adjusted 19. Jan. 1926 Thickness of adjusting washers Port Valve F 1 3/32" A 3/32" Centre Valve F 1 3/32" A 3/32" Star Valve F 1 3/32" A 1 3/32"  
 Superheating valves 7/16" 9/32"  
 Material and tensile strength of Rotor shaft S.M. Steel 3 5/16" Dia. Identification Mark on Do. 1788 A.L. 1789 A.L. 1790 A.L.  
 Material and tensile strength of Flexible Pinion Shaft Coupling S.M. Steel 2 1/2" Dia. Identification Mark on Do. 1794 A.L. 1795 A.L.  
 Pinion Shaft S.M. Steel 2 1/2" Dia. Identification Mark on Do. 1806 A.L. 1808 A.L.  
 Material and tensile strength of Pinion shaft Nickel Steel 4 1/4" Dia. Identification Mark on Do. 1807 A.L. 1808 A.L.  
 Material and tensile strength of 1st Reduction Wheel Shaft S.M. Ingot Steel 3 1/35" Dia. Identification Mark on Do. 183A. 735 J.P. M.R. 25. 9. 25  
 Material of Wheel shaft S.M. Ingot Steel Identification Mark on Do. 735 J.P. Material of Thrust shaft S.M. Ingot Steel Identification Mark on Do. 16 H.J.  
 Material of Tunnel shafts S.M. Ingot Steel Identification Marks on Do. 2 H.J. 37 H.J. 18 H.J. 17 H.J. 38 H.J. 36 H.J. Material of Screw shafts S.M. Ingot Steel Identification Marks on Do. 19 H.J.  
 Material of Steam Pipes S.W. Steel S.D. Steel ✓ Test pressure 720 lbs. Date of test 22. 3. 25  
 Is an installation fitted for burning oil fuel **Yes** Is the flash point of the oil to be used over 150°F. **Yes**  
 Have the requirements of the Rules for carrying and burning oil fuel been complied with **Yes**  
 Is this machinery a 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 materials and workmanship are sound and good. The main and auxiliary engines have been efficiently installed on the vessel and held out under steam with satisfactory results. The oil fuel burning plant & its connections have been installed & tested by hydraulic pressure in accordance with the rules. In my opinion the vessel is now eligible for notation in the Society's Register Book**  
 + L.M.C. 2. 26 C.L. Fitted for OIL FUEL 2. 26 F.P. above 150°F

It is submitted that this vessel is eligible for **THE RECORD.** + L.M.C 2. 26. CL.  
 3 Steam turbines S.A. geared to 1 Screw shaft.  
 Fitted for oil fuel 2. 26. F.P. above 150°F.

The amount of Entry Fee ... £ **6** : —  
 Special ... £ **110** : **9**  
 Donkey Boiler Fee ... £ : :  
 Travelling Expenses (if any) £ : :  
 When applied for, **4 FEB. 1926**  
 When received, **13/21 26**

**R. Lee Annes**  
 Engineer Surveyor to Lloyd's Register of Shipping.  
 18/2/26

Committee's Minute **FRI. 19 FEB 1926**

Assigned **+ L.M.C 2. 26 C.L.**  
**Fitted for Oil Fuel 2. 26, F.P. above 150°F**



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