

REPORT ON STEAM TURBINE MACHINERY.

No. 93528
-5 MAR 1936

Received at London Office

3rd March 36 When handed in at Local Office 2nd March, 1936 Port of **NEWCASTLE-ON-TYNE**
in Survey held at **Newcastle-on-Tyne** Date, First Survey **12 Jan/1934** Last Survey **29.2.1936.**
Boilers **33** on the **S.S. "HOPESTAR"** (Number of Visits **49.**)

built at **Wallsend-on-Tyne** By whom built **Swan, Hunter & Wig. Rson Ltd. Yard No. 1513** When built **1936.**
Engines made at **Wallsend-on-Tyne** By whom made **The Parsons Marine Steam Turbine Co. Ltd. Engine No. 283** When made **1936.**
Boilers made at **Wallsend-on-Tyne** By whom made **Wallsend Shipway & Eng. Co. Ltd. Boiler No. 919** When made **1936.**
Horse Power at Full Power **2000** Owners **Wallsend Shipping Co. Ltd. (Arthur Stott & Co. Ltd.)** Port belonging to **Newcastle**
Horse Power as per Rule **400** Is Refrigerating Machinery fitted for cargo purposes **no** Is Electric Light fitted **yes**

Report No. 92079 herewith on Turbine Machinery made by Parsons Marine Steam Turbine Co. Ltd.
STEAM TURBINE ENGINES, &c. — Description of Engines **Impulse Reaction & Red. Geared Turbines**

of Turbines Ahead **2** Direct coupled, single reduction geared to **one** propelling shaft. No. of primary pinions to each set of reduction gearing **one**
Astern **2** double reduction geared
Direct coupled to Alternating Current Generator — phase — periods per second — rated — Kilowatts — Volts at — revolutions per minute;
supplying power for driving — Propelling Motors, Type —
Kilowatts — Volts at — revolutions per minute. Direct coupled, single or double reduction geared to — propelling shafts.

Turbine	H.P. AHEAD			H.P. ASTERN			L.P. AHEAD			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.
EXPANSION	1"	Reaction	24	3 Rows on Impulse Wheel	13 1/2"		14 1/2"		2 Rows	Impulse Wheel		
	1 1/4"	"			5 1/4"							
	2 Rows on Impulse Wheel						N.B. 14 Rows on Rotor		3 Rows	Reaction Blading		
							15 " " Cylinder		2 1/4" — 3"			
							Last row on cylinder acting as baffle against return steam.					

Shaft Horse Power at each turbine { H.P. 1000 I.P. — L.P. 1000
Revolutions per minute, at full power, of each Turbine Shaft { H.P. 3993 I.P. — L.P. 3993
1st reduction wheel 416
main shaft 80
Motor Shaft diameter at journals { H.P. 4 1/2" I.P. — L.P. 4 1/2"
Pitch Circle Diameter { 1st pinion 7.07" 1st reduction wheel 67.915" Width of Face { 1st reduction wheel 18" main wheel 30"
2nd pinion 18.707" main wheel 97.203" 1st reduction wheel 19 1/2" main wheel 24 1/2"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 12 5/8" 1st reduction wheel 19 1/2" 2nd pinion 25 1/2" main wheel 24 1/2"
Flexible Pinion Shafts, diameter { 1st 12" 2nd 12"
Pinion Shafts, diameter at bearings { External 1st 5 1/2" 2nd 12" diameter at bottom of pinion teeth { 1st 6.924" 2nd 18.465"
Internal 1st 67.915" 2nd 97.203"
Generator Shaft, diameter at bearings —
Propelling Motor Shaft, diameter at bearings —

Intermediate Shafts, diameter { as per rule 11.6" as fitted 12"
Thrust Shaft, diameter at collars { as per rule 12.18" as fitted 12 3/4"
Screw Shaft, diameter { as per rule 22.25" as fitted 23"
Thickness between bushes { as per rule 17 1/2" as fitted 17 1/2"

Is the shaft fitted with a continuous liner { yes
Is the after end of the liner made watertight in the { 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
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 { full length

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 { —
Length of Bearing in Stern Bush next to and supporting propeller { 5' 4"
Propeller, diameter 17' 6" Pitch 12' 0" — 16' 13/4" No. of Blades 4 State whether Moveable { no Total Developed Surface 95 square feet.

Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine { yes Can the H.P. or L.P. Turbine exhaust direct to the { —
Condenser { yes No. of Turbines fitted with astern wheels { two Feed Pumps { No. and size 2-8 1/2" x 6" x 18", 1-8" x 6" x 18", 1-4 1/2" x 3" x 5"
How driven { Steam Steam Steam

Pumps connected to the Main Bilge Line { No. and size one Cent. 75 tons/hour From Main Turbine by chain drive or by steam { —
Ballast Pumps, No. and size { one 10" x 11" x 10" Lubricating Oil Pumps, including Spare Pump, No. and size { one Cent. 4000 gals/hr. one 7' 6 1/2" x 15"
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 Engine and Boiler Room { 5 @ 3" and one @ 2 1/2" to Tunnel Well In Pump Room { —

Holds, &c. { No. 1 — 2 @ 3"; No. 2 — 2 @ 3 1/2"; Deep Tank 2 @ 3"; No. 3 — 2 @ 3"; No. 4 — 2 @ 3"
Main Water Circulating Pump Direct Bilge Suctions, No. and size { one @ 8" Independent Power Pump Direct Suctions to the Engine Room { —
Bilges, No. and size { 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 Sea Connections fitted direct on the skin of the ship { yes Are they fitted with Valves or Cocks { yes
Are they fitted sufficiently high on the ship's side to be seen without lifting the stokehold 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
How are they protected { — 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 decks.

BOILERS, &c.—(Letter for record S) Total Heating Surface of Boilers 4238 ^{sq} ft. Is Forced Draft fitted yes No. and Description of Boilers Two Single-Ended Working Pressure 285 lb Is a Report on Main Boilers now forwarded? yes

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 16.8.35 Main Boilers yes Auxiliary Boilers — Donkey Boilers yes (If not state date of approval)

Superheaters yes General Pumping Arrangements yes Oil Fuel Burning Arrangements —

Has the spare gear required by the Rules been supplied yes

State the principal additional spare gear supplied See attached lists.

Auxiliaries driven from main Engines by means of chain gearing and friction clutches and also, as an alternative, by means of a reciprocating high speed steam Engine:—

Main Circulating:— 2400 gallons per min @ 500 R.P.M.

Bilge:— 75 tons per hour at 500 R.P.M.

Sanitary:— 27 " " " " " "

Forced Lubrication:— 4000 gallons per hour at 1100 R.P.M.

Oil Cooler:— 150 gallons per minute at 1100 R.P.M.

The foregoing is a correct description,

Dates of Survey while building: During progress of work in shops: 1934 Jan. 12.31. Mar. 6.13.19. Apr. 11.18. May 1.7.10.23.28. June 6.19. July 9.23. Aug. 8.29. Sep. 1.10.23.28. 1935 Nov. 29. Dec. 4.11.17.19. Oct. 14.22.28.30. Nov. 2.11.20. 1936 Jan. 22.23.24.27.28.29.30.31. Feb. 5.6.7.11.13.17. 26.29. Total No. of visits 49

Dates of Examination of principal parts: Casings 10.5.34 Rotors 6.3.34 Blading 6.6.34 Gearing 9.6.34

Wheel shaft 9.6.34 Thrust shaft 9.6.34 Intermediate shafts 29.11.35 + 19.12.35 Shaft 19.12.35

Propeller 11.12.35 Stern tube 27.12.35 Engine and boiler seatings 28.1.36 Engine holding down bolts 31.1.36

Completion of fitting sea connections 22.1.36 Completion of pumping arrangements 19.2.36 Boilers fired 6.2.36 Engines tried under steam 19.2.36

Main boiler safety valves adjusted 19.2.36 Thickness of adjusting washers F 11/8" A 5/16" S 1/4" F 3/8" A 3/8" S 1/4" 9/32" P 5/16" 35/16"

Rotor shaft, Material and tensile strength Steel 38 tons All forgings examined Identification Mark H.P. 974 M.A. 23/32

Flexible Pinion Shaft, Material and tensile strength — finished and stamped B Identification Mark —

Pinion shaft, Material and tensile strength Steel 44 tons with date. Identification Mark 950 M.A.B.

1st Reduction Wheel Shaft, Material and tensile strength Steel 34.8 tons Identification Mark 4727 C.S.P.

Wheel shaft, Material Steel 33.6 tons Identification Mark 4727 C.S.P. Thrust shaft, Material Forma part of wheel shaft Identification Mark —

Intermediate shafts, Material Steel Identification Marks 5759 H.A.I. Tube shaft, Material — Identification Marks —

Screw shaft, Material Steel Identification Marks 6759 H.A.I. Steam Pipes, Material No Steel Test pressure 855 lb

Date of test 18.12.35 to 11.2.36 Is an installation fitted for burning oil fuel no

Is the flash point of the oil to be used over 150°F. — Have the requirements of the Rules for the use of oil as fuel been complied with —

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 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 turbines and gearing have been constructed by Parsons Marine Steam Turbine Co. Ltd. (see separate report attached hereto); the boilers and machinery parts have been constructed by The Wallend Slipway & Engineering Co. Ltd., and the whole installation fitted in the vessel by them; the materials and workmanship are good.

The machinery has been examined under full working conditions and found satisfactory, and is eligible, in my opinion, for classification, and to have the record L.M.C. 2.36 - C.L. in the Register Book.

The amount of Entry Fee ... £ 5 : 0 : 0 When applied for, 4 MAR 1936

Special already charged to Parsons £ 46 : 12 : 0

Donkey Boiler Fee £ 9 : 16 : 0 When received, 13.3.36

Travelling Expenses (if any) £ —

Committee's Minute FRI. 13 MAR 1936

Assigned + LMC 2.36 70. C.L.

A.B. Forster Engineer Surveyor to Lloyd's Register of Shipping.

L Lloyd's Register Foundation