

REPORT ON STEAM TURBINE MACHINERY.

Received at London Office

NOV 1944

Date of writing Report 31st Oct. 44 When handed in at Local Office 31st Oct. 44 Port of MIDDLESBROUGH.

No. in Survey held at MIDDLESBROUGH. Date, First Survey 31st May, 1944, Last Survey 30th Oct. 1944.

Reg. Book. on the s.s. "EMPIRE PROTECTOR". (Number of Visits 47.)

Tons { Gross 8148.
Net 4609.

Built at Haverton Hill-on-Tees. By whom built Furness Shipbuilding Co. Ltd. Yard No. 360 When built 1944-10

Engines made at West Hartlepool By whom made Richardsons Westgarth & Co. Ltd. Engine No. 2746 When made 1944

Boilers made at -do- By whom made -do- Boiler No. 2746 When made 1944

Shaft Horse Power at Full Power 6800 Owners Ministry of War Transport. Port belonging to Middlesbrough.

Nom. Horse Power as per Rule 1210 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

STEAM TURBINE ENGINES, &c.—Description of Engines

No. of Turbines Ahead
Astern

coupled, single or double reduction geared to propelling shafts. No. of primary pinions to each set of reduction gearing, 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

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.
EXPANSION												
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Horse Power at each turbine. Revolutions per minute, at full power, of each Turbine Shaft 1st reduction wheel

Shaft Pitch Circle Diameter, 1st pinion 2nd pinion 1st reduction wheel main wheel

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings,

2nd pinion 1st reduction wheel main wheel Flexible Pinion Shafts, diameter 1st 2nd

Pinion Shafts, diameter at bearings External 1st 2nd diameter at bottom of teeth of pinion 1st 2nd

Internal 1st 2nd diameter at wheel shroud, 1st main

Propeller Shafts, diameter at bearings Propelling Motor Shafts, diameter at bearings

Shafting, diameter of Tunnel Shafting as per rule as fitted diameter of Thrust Shafting as per rule as fitted

Shaft of Screw Shaft as per rule as fitted Is the screw shaft fitted with a continuous liner the whole length of the stern tube Is the after end of the liner

watertight in the propeller boss If the liner is in more than one length are the joints burned If the liner does not fit tightly at the

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

space capped or protected between the liners Is an approved appliance fitted at the after end of the shaft to permit of it being efficiently

used Length of Stern Bush Diameter of Propeller

of Propeller No. of Blades State whether Moveable Total Surface 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

Turbines fitted with astern wheels Total number of power driven Main and Auxiliary Pumps

and size of Feed Pumps How driven No. and size of Pumps connected to the Main Bilge Line

Number and size of Ballast Pumps No. and size of Lubricating Oil Pumps, including

Pump Are two independent means arranged for circulating water through the Oil Cooler

connected to both Main Bilge Pumps and Auxiliary Bilge Pumps:—In Engine and Boiler Room and in Holds, &c.

and size of Main Water Circulating Pump Bilge Suctions No. and size of Donkey Pump Direct Suctions

Engine Room Bilges Are all the bilge suction pipes in holds and tunnel well fitted with strum-bones

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

connections with the sea direct on the skin of the ship Are they Valves or Cocks

are fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Discharge Pipes above or below the deep water line

are each fitted with a Discharge Valve always accessible on the plating of the vessel Are the Blow Off Cocks fitted with a spigot and brass covering plate

pipes are carried through the bunkers How are they protected

All Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times

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 Is the Screw Shaft Tunnel watertight Is it fitted with a watertight door worked from

Boilers, &c.—(Letter for record) Total Heating Surface of Boilers

Forced Draft fitted No. and Description of Boilers

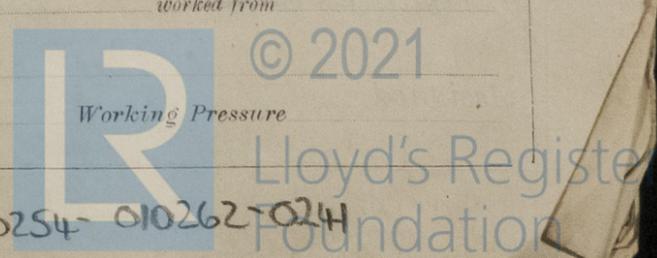
Working Pressure

No. and size of suction Main Pump room 2. 3 1/2"

Fore Peak " 3. 2 1/2"

Donkey Pump Direct Suctions 1. 4"

010254-010262-024



Is a Report on Main Boilers now forwarded? See Hartlepool Report No. 18558
 Are Donkey Boilers fitted? Yes (2) If so, is a report now forwarded? See Middlesbrough Rpts. Nos. 17673
 Plans. Are approved plans forwarded herewith for Shafting - Main Boilers - Auxiliary Boilers - Donkey Boilers
 (If not state date of approval)
 Spare Gear. State the articles supplied:— As per rule requirements (see also attached list).

The foregoing is a correct description,

Manufacturer.

Dates of Survey while building: 1944. May. 31, June. 15, 16, 28, July. 3, 5, 10, 11, 12, 14, 17, 20, 24, 25, Aug. 8, 9, 10, 14, 15, 29, 30, 31, Sept. 4, 6, 8, 11, 13, 18, 19, 21, 27, Oct. 2, 3, 5, 9, 11, 12, 13, 16, 17, 18, 19, 23, 26, see Rpt. EXP
 During progress of work in shops - -
 During erection on board vessel - - -
 Total No. of visits 47.

Dates of Examination of principal parts—Casings - Rotors - Blading - Gearing -
 Wheel shaft - Thrust shaft - Tunnel shafts 29/8/44 Screw shaft 20/7/44 Propeller 20/7/44
 Stern tube 10/7/44 & 14/7/44 Engine and boiler seatings Eng. 8/8/44 Blr. 10/7/44 Engines holding down bolts 6/9/44
 Completion of pumping arrangements 3/10/44 Boilers fired 31/8/44 Engines tried under steam 12/10/44
 Main boiler safety valves adjusted 11/10/44 Thickness of adjusting washers Port Blr. :- Drum 5/16 Spt. P - 11/32 S - 3/8
 " " " " " 5/16 " " = 11/32 S = 25/64
 Material and tensile strength of Rotor shaft Identification Mark on Do.
 Material and tensile strength of Flexible Pinion Shaft Identification Mark on Do.
 Material and tensile strength of Pinion shaft Identification Mark on Do.
 Material and tensile strength of 1st Reduction Wheel Shaft Identification Mark on Do.
 Material of Wheel shaft Identification Mark on Do. Material of Thrust shaft Identification Mark on Do.
 Material of Tunnel shafts Identification Marks on Do. Material of Screw shafts Identification Marks on Do.
 Material of Steam Pipes Test pressure Date of test
 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 Yes If so, state name of vessel "EMPIRE LAW".

General Remarks (State quality of workmanship, opinions as to class, &c. These engines & boilers were fitted on board this vessel in accordance with the approved plans & Rule Requirements and on completion machinery was tried out under working conditions and found satisfactory and in my opinion is eligible for record of LMC. 10/44 & notation of TS/CL/10/44, forced draught and superheated.

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

The amount of Entry Fee	£	:	:	When applied for,
Special LMC	26	:	1	4:11: 19 44.
Donkey Boiler Fee	6	:	10	When received,
Supervision	4	:		
Travelling Expenses (if any)		:		19

L. Roman Stuart
 Engineer Surveyor to Lloyd's Register of Shipping.

FRI. 17 NOV 1944

Committee's Minute

Assigned

+ LMC 10.44 JOC
 2 NTS 490lb (Spl 4) 5th
 2 DB 180lb