

## REPORT ON STEAM TURBINE MACHINERY. No. 63091

Received at London Office... NOV 28 1940

Date of writing Report

When handed in at Local Office

23.11.40 Port of GLASGOW

No. in Survey held at

Date, First Survey 16.7.40

Last Survey 11th Nov. 1940

Reg. Book.

(Number of Visits 13)

Tons Gross 6828

Net 3977

on the 5/5.

"EMPIRE VOICE"

Built at

Glasgow

By whom built Barclay Curle &amp; Co. Ltd.

Yard No. 678

When built 1940

Engines made at

-do-

By whom made

-do-

Engine No. BW73

When made 1940

Boilers made at

-do-

By whom made

-do-

Boiler No. 678

When made 1940

Shaft Horse Power at Full Power 990

Owners Ministry of Shipping

Port belonging to Glasgow

Nom. Horse Power as per Rule 165

Is Refrigerating Machinery fitted for cargo purposes No

Is Electric Light fitted Yes

Trade for which Vessel is intended

STEAM TURBINE ENGINES, &amp;c.—Description of Engines One L.P. turbine with D.R. gearing &amp; Hyd. coupling.

No. of Turbines Ahead One Direct coupled, single reduction geared to One propelling shafts. No. of primary pinions to each set of reduction gearing One

direct coupled to Alternating Current Generator phase periods per second Direct Current Generator rated Kilowatts Volts at revolutions per minute;

for supplying power for driving Propelling Motors, Type rated Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

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							66 in	83 in	DHE			
2ND							84	86 1/2	"			
3RD							103	90 1/2	"			
4TH							122	94 1/2	"			
5TH							142	98 1/2	"			
6TH							163	102 1/2	"			
7TH							185	107 1/2	"			
8TH												
9TH												
10TH												
11TH												
12TH												

Shaft Horse Power at each turbine { H.P. - I.P. - L.P. 990 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. - I.P. - L.P. 3730 } 1st reduction wheel 514 main shaft 90

Rotor Shaft diameter at journals { H.P. - I.P. - L.P. 125 in } Pitch Circle Diameter { 1st pinion 8.3555" 1st reduction wheel 60.6309" 2nd pinion 14.2834" main wheel 79.1298" } Width of Face { 1st reduction wheel 260 in main wheel 600 in } AFT FORD.

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 225 in 1st reduction wheel 360 in 156.5 in 2nd pinion 422.5 in main wheel 525 in F+A }

TRANSMISSION Flexible Pinion Shafts, diameter { 1st 115 in 2nd - } Pinion Shafts, diameter at bearings External { 1st 125 in 2nd 320 in } Internal { 35 in 250 in } diameter at bottom of pinion teeth { 1st 7.9989" 2nd 13.511" }

Wheel Shafts, diameter at bearings { 1st 230 in 250 in main 500 in } diameter at wheel shroud, { 1st 1460 in main 1910 in } Generator Shaft, diameter at bearings - Propelling Motor Shaft, diameter at bearings -

Intermediate Shafts, diameter as per rule - as fitted - Thrust Shaft, diameter at collars as per rule - as fitted 362 in Tube Shaft, diameter as per rule - as fitted -

Screw Shaft, diameter as per rule - as fitted - Is the tube screw shaft fitted with a continuous liner - Bronze Liners, thickness in way of bushes as per rule - as fitted -

Thickness between bushes as per rule - as fitted - Is the after end of the liner made watertight in the propeller boss - If the liner is in more than one length are the junctions

made by fusion through the whole thickness of the liner - 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 - Length of Bearing in Stern Bush next to and supporting propeller

Propeller, diameter Pitch No. of Blades State whether Moveable Total Developed Surface square feet.

If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine - Can the H.P. or I.P. Turbine exhaust direct to the

Condenser No. of Turbines fitted with astern wheels Feed Pumps { No. and size How driven }

Pumps connected to the Main Bilge Line { No. and size How driven }

Ballast Pumps, No. and size Lubricating Oil Pumps, including Spare Pump, No. and size 208" x 9" x 18" Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge

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

Pumps, No. and size:—In Engine and Boiler Room

In Holds, &amp;c.

Main Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room

Bilges, No. and size Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes

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

Are all Sea Connections fitted direct on the skin of the ship Are they fitted with Valves or Cocks

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Overboard Discharges above or below the deep water line

Are they 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

What pipes pass through the bunkers How are they protected

What pipes pass through the deep tanks 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

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

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



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

Is Forced Draft fitted

No. and Description of Boilers

Working Pressure

Is a Report on Main Boilers now forwarded?

Is { a Donkey }  
{ an Auxiliary } Boiler fitted?

If so, is a report now forwarded?

Plans. Are approved plans forwarded herewith for Shafting  
(If not state date of approval)

Main Boilers

Auxiliary Boilers

Donkey Boilers

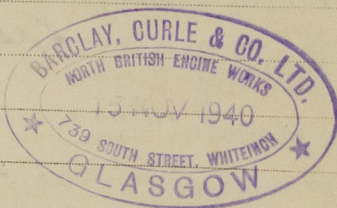
Superheaters

General Pumping Arrangements

Oil Fuel Burning Arrangements

Spare Gear. State the articles supplied:—

See attached List. (With approved plans)



FOR BARCLAY, CURLE & CO., LTD

Alexander Macneill  
Chief Draughtsman

Manufacturer.

The foregoing is a correct description,

Dates of Survey { During progress of work in shops -- } 1940 July 16 23 Aug 1 5 22 29 Sep 4 9 12 17 20 25 Nov 11  
while building { During erection on board vessel --- }  
Total No. of visits 13

Dates of Examination of principal parts—Casings 16-7-40 Rotors 23-7-40 Blading 5-8-40 Gearing 9-9-40

Wheel shaft 23-7-40 Thrust shaft 1-8-40 Intermediate shafts - Tube shaft - Screw shaft -

Propeller - Stern tube - Engine and boiler seatings - Engine holding down bolts -

Completion of pumping arrangements - Boilers fixed - Engines tried under steam -

Main boiler safety valves adjusted - Thickness of adjusting washers -

Rotor shaft, Material and tensile strength S.M. STEEL 37.6 TONS

Identification Mark 168 ERH 31-5-40 ATB

TRANSMISSION  
Flexible Pinion Shaft, Material and tensile strength S.M. STEEL 32.2 TONS

Identification Mark 657 ERH 18-1-40 ATB

Pinion shaft, Material and tensile strength S.M. STEEL 48.8 TONS

Identification Mark 768 ERH 5-3-40 ATB

1st Reduction Wheel Shaft, Material and tensile strength S.M. STEEL

Identification Mark 731 WK ATB

Wheel shaft, Material S.M. STEEL Identification Mark 230 WTH ATB Thrust shaft, Material S.M. STEEL Identification Mark 793 WK ERH ATB

Intermediate shafts, Material - Identification Marks - Tube shaft, Material - Identification Marks -

Screw shaft, Material - Identification Marks - Steam Pipes, Material - Test pressure -

Date of test - Is an installation fitted for burning oil fuel -

Is the flash point of the oil to be used over 150°F. - Have the requirements of the Rules for carrying and burning oil fuel been complied with -

Is this machinery a duplicate of a previous case Yes If so, state name of vessel "EMPIRE LIGHT" GLS.R. 62783

General Remarks (State quality of workmanship, opinions as to class, &c.) This machinery has been built under special survey in accordance with the Rules and approved plans, and the materials and workmanship are good. It has been satisfactorily installed in the vessel, tested under full load and found efficient.

Rob

23/11/40

The amount of Entry Fee ... £	:	:	When applied for,
Special ... £	:	:	19
Donkey Boiler Fee ... £	:	:	When received,
Travelling Expenses (if any) £	:	:	19

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 26 NOV 1940

Assigned SEE ACCOMPANYING MACHINERY REPORT.



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Foundation