

# Report on Steam Turbine Machinery.

No. 135666

Received at London Office  
 of writing Report 8-7-1952 When handed in at Local Office 12-7-1952 Port of LIVERPOOL  
 Survey held at Birkenhead Date, First Survey 26/5/50 Last Survey 13-6-1952  
 Book on the Single Screw Tug "BRITISH CROWN" (Number of Visits 287)  
 at Birkenhead By whom built Cammell Laird & Co. Ltd. Yard No. 1208 When built 1952  
 nes made at Birkenhead By whom made Cammell Laird & Co. Ltd. Engine No. 1208 When made 1952  
 rs made at Birkenhead By whom made Cammell Laird & Co. Ltd. Boiler No. 1208 When made 1952  
 Horse Power at Full Power Sum 12500 Owners British Tug Co. Ltd. Port belonging to London  
 Horse Power as per Rule 2750 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes  
 e for which Vessel is intended Ocean

## STEAM TURBINE ENGINES, &c.—Description of Engines Double Reduction Geared In-pulse Reaction Turbines

Ahead Two Direct coupled, single reduction geared to one propelling shafts. No. of primary pinions to each set of reduction gearing 2  
 f Turbines Astern Two double reduction geared  
 coupled to Alternating Current Generator phase periods per second 50 rated ✓ Kilowatts ✓ Volts at ✓ revolutions per minute;  
 pplying power for driving ✓ Propelling Motors, Type ✓  
✓ Kilowatts ✓ Volts at ✓ revolutions per minute. Direct coupled, single or double reduction geared to ✓ propelling shafts.

BINE DING.	H. P.	I. P.	L. P.	HP. ASTERN. LP
No. of rows	14	✓	✓	1-2 row wheel. 2-1 row wheel.
No. of stages	✓	✓	13 Double flow	✓
No. of rows in each stage	✓	12-P-81	3 in 1st. 1 in 12	✓

Horse Power at each turbine  
 H.P. 1570, 7130 I.P. ✓ Reolutions per minute, at full power, of each Turbine Shaft  
 L.P. 686, 3370 HP 12-3399 LP 13-4416  
 H.P. 6 Pitch Circle 1st pinion 62-3603 1st reduction wheel 816.785  
 I.P. ✓ Diameter 2nd pinion 21-8455 main wheel 153-9464 main shaft 116. 112  
 L.P. 8

Shaft diameter at journals  
 H.P. 6" 1st pinion 20" 1st reduction wheel 27-39ap  
 I.P. ✓ 2nd pinion 3-1" main wheel 47-139ap  
 L.P. 8" 1st pinion 20" 1st reduction wheel 20"  
 2nd pinion 3-1" main wheel 3-1"

Pinion Shafts, diameter at bearings  
 1st 10" External 1st 8 1/2" 2nd 14" diameter at bottom of pinion teeth  
 2nd 8 1/2" Internal 1st 9" 2nd 20-9973

Shafts, diameter at bearings  
 1st 22" diameter at wheel shroud, 1st 149 3/4" Generator Shaft, diameter at bearings ✓  
 main 22" 2nd 149 3/4" Propelling Motor Shaft, diameter at bearings ✓

mediate Shafts, diameter  
 as per rule 18.6" Thrust Shaft, diameter at collars 20.05"  
 as fitted 20" as fitted 21 1/4"

Shaft, diameter  
 as per rule 6 1/4" as fitted 22 1/4" Is the { tube } shaft fitted with a continuous liner { yes }  
 as fitted ✓ as fitted ✓ { screw }

ze Liners, thickness in way of bushes  
 as per rule 1 1/4" Thickness between bushes ✓ Is the after end of the liner made watertight in the ✓  
 as fitted ✓ as fitted ✓

ller boss yes If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner ✓  
 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 ✓

o 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 ✓  
no If so, state type ✓ Length of Bearing in Stern Bush next to and supporting propeller 4'-0 1/2"

eller, diameter 21'-0" Pitch 14.5 No. of Blades 4 State whether Moveable no Total Developed Surface 199 square feet.  
 angle Screw, are arrangements made so that steam can be led direct to the L.P. Turbine yes Can the H.P. or I.P. Turbines exhaust direct to the ✓

enser yes No. of Turbines fitted with astern wheels 2 Feed Pumps { No. and size 2 2 195000 1 1/2 How driven Steam turbine }  
 { No. and size 2 2 60000 1 1/2 How driven Steam turbine }

ps connected to the Main Bilge Line { No. and size 3 2 140 T/R How driven Electric Motor }  
 { No. and size 3 2 140 T/R How driven Electric Motor }

st Pumps, No. and size 2 2 600 pumps Lubricating Oil Pumps, including Spare Pump, No. and size 2 2 80 T/R  
2 2 600 pumps 2 2 80 T/R

wo independent means arranged for circulating water through the Oil Cooler yes Suctions, connected both to Main Bilge Pumps and Auxiliary  
 Pumps, No. and size In Engine and Boiler Room 2 2 6 1/2, 2 2 4, 3 2 2 1/2 In Pump Rooms 2 2 2 1/2, 2 2 2 1/2

old, &c. 2-2" (by ejector)  
 Water Circulating Pump Direct Bilge Suctions, No. and size 2 2 14" Independent Power Pump Direct Suctions to the Engine Room

s, No. and size 2 2 6 1/2" Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes yes  
2 2 6 1/2" yes

he 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  
yes Are they fitted with Valves or Cocks yes

ll Sea Connections fitted direct on the skin of the ship yes Are the Overboard Discharges above or below the deep water  
yes 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

ing plate yes What pipes pass through the bunkers ✓ How are they protected ✓  
yes Have they been tested as per rule ✓

pipes pass through the deep tanks ✓  
yes All Pipes, Cocks, Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times yes

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  
 ces, or from one compartment to another yes Is the Shaft Tunnel watertight ✓ Is it fitted with a watertight door ✓ worked from ✓

ERS, &c.—(Letter for record S) Total Heating Surface of Boilers 17990 sq. ft. (Boiler 16534, Superheater 1456 sq. ft.)  
495 sq. ft. at 150 lb. pressure

Forced Draft fitted yes No. and Description of Boilers 2 B & W Vertical W.T. Working Pressure 180 lb. S.F.S.Y.  
495 sq. ft. at 150 lb. pressure

Report on Main Boilers now forwarded? yes  
yes



Is { a Donkey } Boiler fitted? to ✓ If so, is a report now forwarded? ✓  
an Auxiliary

Is the donkey boiler intended to be used for domestic purposes only? ✓

Plans. Are approved plans forwarded herewith for Shafting? yes Main Boilers 26.3.1950 Auxiliary Boilers ✓ Donkey Boilers ✓  
(If not, state date of approval)

Superheaters Flap General Pumping Arrangements 28.7.50 Oil Fuel Burning Arrangements 31.7.51  
26.5.52

Geared turbines situated aft. Have torsional vibration characteristics of system been approved? yes Date of approval 28.11.51

### SPARE GEAR.

Has the spare gear required by the Rules been supplied? yes

State the principal additional spare gear supplied. Donkey shaft.

945477  
LL6705  
JS  
16.3.1950  
G.P.  
8.10.1951

The foregoing is a correct description.

E. Stewart

Dates of Survey while building  
During progress of work in shops - -  
During erection on board vessel - -  
Total No. of visits

Dates of Examination of principal parts - Casings 29.8.51 Rotors 28.8.51 Blading 28.8.51 Gearing 22.10.51  
18.9.51

Wheel shaft 1.9.51 Thrust shaft 28.8.51 Intermediate shafts 18.9.51 Tube shaft ✓ Screw shaft 28.1.51

Propeller 8.6.52 Stern tube 27.9.51 Engine and boiler seatings 15.10.51 Engine holding down bolts 21.11.51

Completion of fitting sea connections 16.10.51 Completion of pumping arrangements 12.6.52 Boilers fixed 20.12.51 Engines tried under steam 11.11.51

Main boiler safety valves adjusted 12.6.52 Thickness of adjusting washers P. set. A 1 3/32 S. set. A 1 1/32

Rotor shaft, Material and tensile strength Steel 34-38 T/10 Identification Mark 5661 940

Flexible Pinion Shaft, Material and tensile strength Steel 31-35 T/10 Identification Mark 95154 951

Pinion shaft, Material and tensile strength 3 1/2 turned steel 40 T/10 Identification Mark 95158 951  
3443 351

Chemical analysis ✓

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment ✓

1st Reduction Wheel Shaft, Material and tensile strength Steel 8228-32 T/10 Identification Mark 95152 951

Wheel shaft, Material Steel Identification Mark 1711 B.11 Thrust shaft, Material Steel Identification Mark 9455

Intermediate shafts, Material Steel Identification Marks 94548, 94549 Tube shaft, Material Steel Identification Marks ✓

Screw shaft, Material Steel Identification Marks 94546 Steam Pipes, Material Steel Test pressure 1455+9

Date of test 18.10.51 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 the use of oil as fuel 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? ✓

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? ✓ If so, state name of vessel ✓

General Remarks. (State quality of workmanship, opinions as to class, &c.) This machinery has been constructed in accordance with the approved Plans, the Society's Rules and the Surveyor's orders. The materials and workmanship are good. It has been properly installed and tried under full working conditions with satisfactory results. It is eligible in my opinion, to be classed with the record of L.M.C. 6.52. TS

Fitted for Oil Fuel 6.52 flash point above 150°F.

main engine not to be run continuously between 50 and 58 R.P.M. of propeller

(London Letter ENG 28.11.51)

Certificate (if required) to be sent to

+ By agreement with Builders

The amount of Entry Fee ... £ - :

Special ... £447: 0

E. Welding ... 9 15

Donkey Boiler Fee ... £ - :

Travelling Expenses (if any) £ - :

When applied for

30 JUL 1952

When received

19

Committee's Minute

Assigned

John Eng Rivs.

CL

WTB.

Fitted for O.F. 6.52

F.P. above 150°F.



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