

Rpt. 4a.

# Report on Steam Turbine Machinery.

No. 132467.

Received at London Office 28 FEB 1951

Date of writing Report 6.2.1951 When handed in at Local Office 7.2.1951 Port of Liverpool  
 No. in Survey held at Birkenhead Date, First Survey 16-6-49 Last Survey 30-1-1951  
 Reg. Book (Number of Visits 276)  
 on the Single Screw Tug "GENERAL SAN MARTIN" Tons (Gross 12769 Net 7408)  
 Built at Birkenhead By whom built Cammell Laird & Co. Ltd. Yard No. 1203 When built 1951  
 Engines made at Birkenhead By whom made Cammell Laird & Co. Ltd. Engine No. 1203 When made 1951  
 Boilers made at Birkenhead By whom made Cammell Laird & Co. Ltd. Boiler No. 1203 When made 1951  
 Shaft Horse Power at Full Power 6200 Owners Yacimiento Petroliferos Fiscales Port belonging to Buenos Aires  
 Net Horse Power as per Rule 1573 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes  
 Trade for which Vessel is intended open sea

## STEAM TURBINE ENGINES, &c.—Description of Engines Double Reduction Impulse-Reaction

No. of Turbines 2 Direct coupled, single reduction geared to one propelling shafts. No. of primary pinions to each set of reduction gearing 2  
 direct coupled to Alternating Current Generator phase periods per second 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.
Impulse Blading	No. of rows 11	—	1	Two 3 row wheels
Reaction Blading	No. of stages	—	15	3 rows in 10 stage 1 row in 14 stages
	No. of rows in each stage	—	—	—

Shaft Horse Power at each turbine H.P. 3600; 3530 I.P. — L.P. 3200; 2670  
 Rotor Shaft diameter at journals H.P. 4 1/2" I.P. — L.P. 7 1/2"  
 Pitch Circle Diameter 1st pinion 8.57; 14.78 1st reduction wheel 55.0608 2nd pinion 17.219 main wheel 140.068

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 8 3/4" 1st reduction wheel 19 + 3 gap  
 2nd pinion 14 3/4" main wheel 38 + 3 gap  
 Flexible Pinion Shafts, diameter at bearings 1st 6 1/4" 2nd 7 1/2"

Wheel Shafts, diameter at bearings 1st 18" main 15.85" 2nd 16"  
 Intermediate Shafts, diameter as per rule 17.085" as fitted 17 3/4"  
 Tube Shaft, diameter as per rule 17.085" as fitted 17 3/4"

Bronze Liners, thickness in way of bushes as per rule .823" as fitted .875" Thickness between bushes as per rule .617" as fitted .716"  
 If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner —

Propeller, diameter 18.75" Pitch 13.5" No. of Bades 4 State whether Moveable No Total Developed Surface 133 square feet.  
 If 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. Turbines exhaust direct to the

Condenser Yes No. of Turbines fitted with astern wheels one Feed Pump No. and size 2 - 6500 to 8460 1 1/2 hr each  
 Pumps connected to the Main Bilge Line No. and size 2 - 150 T/hr; 1 - 300 T/hr How driven Electric motor

Ballast Pumps, No. and size 1 - 300 T/hr Lubricating Oil Pumps, including Spare Pump, No. and size 2 - 11,500 G/hr each  
 Are two independent means arranged for circulating water through the Oil Cooler Yes Suctions, connected both to Main Bilge Pumps and Auxiliary  
 Bilge Pumps, No. and size: In Engine and Boiler Room 1 - 6" 3 - 3 1/2" In Pump Room (main) 2 - 4" (ballast) 1 - 2"

Main Water Circulating Pump Direct Bilge Suctions, No. and size 1 - 16" Independent Power Pump Direct Suctions to the Engine Room  
 Bilges, No. and size 1 - 6" 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 some on boxes Are they fitted with Valves or Cocks Yes  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stowhold 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

What pipes pass through the deep tanks one Have they been tested as per rule Yes  
 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 Yes

BOILERS, &c.—(Letter for record S) Total Heating Surface of Boilers 10,938 sq ft; Superheater 1680 sq ft  
 Is Forced Draft fitted Yes No. and Description of Boilers 2 B&W Vertical Marine Working Pressure 495 lb (design)  
 Is a Report on Main Boilers now forwarded? Yes

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Is <sup>a Donkey</sup> ~~an Auxiliary~~ Boiler fitted? yes. Two If so, is a report now forwarded? yes  
Is the donkey boiler intended to be used for domestic purposes only no. Cargo pumping & tank heating  
Plans. Are approved plans forwarded herewith for Shafting 25-8-49 Main Boilers 22-6-49 Auxiliary Boilers ✓ Donkey Boilers 18-8-49  
(If not, state date of approval) 10-6-49, 28-9-49  
Superheaters ✓ General Pumping Arrangements 26-7-49, 25-8-49 Oil Fuel Burning Arrangements 14-6-50  
Geared turbines situated aft. Have torsional vibration characteristics of system been approved yes Date of approval 15-3-49

SPARE GEAR.

Has the spare gear required by the Rules been supplied? yes  
State the principal additional spare gear supplied. Stern shaft 86052  
LLOYDS  
BK  
7-7-49  
G.P.  
1-9-50

T.V.C. app<sup>d</sup> enclosure  
7/9/51 for III.

The foregoing is a correct description,

E. Stewart Manufacturer.

Dates of Survey while building During progress of work in shops - - 16/6/49 to 30/1/51.  
During erection on board vessel - -  
Total No. of visits 270.

Dates of Examination of principal parts—Casings 20-9-49 Rotors 27-1-50, 8-5-50 Blading 27-1-50, 8-5-50 Gearing 20-1-51  
Wheel shaft 4-11-49 Thrust shaft ✓ Intermediate shafts 28-8-50 Tube shaft ✓ Screw shaft 25-8-50  
Propeller 25-8-50 Stern tube 20-8-50 Engine and boiler seatings 14-9-50 Engine holding down bolts 28-11-50, 3-10-51  
Completion of fitting sea connections 14-9-50 Completion of pumping arrangements 20-1-51 Boilers fired 3-10-50 Engines tried under steam 18/20-1-51  
Main boiler safety valves adjusted 11-22-1-51 Thickness of adjusting washers P. sat. Outer 29/64, Suplr. 3/8; S. sat. Outer 3/8, Suplr. 7/16  
Rotor shaft, Material and tensile strength Steel 34-38 T/10" Identification Mark HP 80901, LP 80905  
Flexible Pinion Shaft, Material and tensile strength Steel 35-37 T/10" Identification Mark HP 81081, LP 81082  
Pinion shaft, Material and tensile strength Steel carbon steel 40 T/10" min Identification Mark HP 80885, LP 80886  
; Chemical analysis.

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

1st Reduction Wheel Shaft, Material and tensile strength Steel 35 T/10" Identification Mark HP 81089, LP 81090

Wheel shaft, Material Steel Identification Mark 81877 Thrust shaft, Material ✓ Identification Mark ✓

Intermediate shafts, Material Steel Identification Marks 84924, 84928, 84932 Tube shaft, Material ✓ Identification Marks ✓

Screw shaft, Material Steel Identification Marks 84920 Steam Pipes, Material Steel Test pressure 1440 lb

Date of test 16-11-50 & following 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 no If so, state name of vessel.

General Remarks. (State quality of workmanship, opinions as to class, &c.) This machinery has been constructed under

Special Survey in accordance with the Approved Plans, the Society's Rules and the

Secretary's letters. The materials and workmanship are good. It has been

properly installed in the vessel and tried under working conditions with satisfactory

results, and is eligible, in my opinion, to be classed in the Register Book with the

record of \* LMC 1,51, C.L., Fitted for Oil Fuel 1,51, F.P. above 150°F.

The amount of Entry Fee ... £ ✓ : When applied for 20 FEB 1951  
Special £ 332: 6  
Less Plans 75 Balance 52: 0  
Donkey Boiler Fee ... £ 73: 6  
E.W. gear case 7: 6  
Travelling Expenses (if any) £ : : When received 19

(Committee's Minute) LIVERPOOL 27 FEB 1951

Assigned + LMC 1,51 C.L.

H. Pinner  
Engineer Surveyor to Lloyd's Register of Shipping.



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