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REPORT ON STEAM TURBINE MACHINERY. No. 19279.

Received at London Office 18 JAN 1951

Date of writing Report 2nd Jan. 1951. When handed in at Local Office 15th Jan. 1951 Port of MIDDLESBROUGH.

No. in Reg. Book. Survey held at MIDDLESBROUGH. Date, First Survey 16th Nov. 1949 Last Survey 21st Dec. 1950.
(Number of Visits 149.)

on the T.E.S. "SAN SALVADOR". Tons { Gross 10802.45. Net 6034.65

Built at Haverton Hill-on-Tees. By whom built Furness Shipbuilding Co. Ltd. Yard No. 445 When built 1950.

Engines made at Erith By whom made G.E.C. (Fraser & Chalmers Engine No. 5404 When made 1950

Boilers made at Wolverhampton By whom made John Thompson W.T. Boilers Ltd. Boiler No. 2632/3 When made 1950

Shaft Horse Power at Full Power 9000 Owners Eagle Oil Port belonging to London.

Nom. Horse Power as per Rule MN=1704 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

Trade for which Vessel is intended Tanker

STEAM TURBINE ENGINES, &c.—Description of Engines

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

Direct coupled to { Alternating Current Generator ..... phase ..... periods per second / Direct Current Generator } rated ..... Kilowatts ..... Volts at ..... revolutions per minute;

Motor 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 LEADING.	H.P. HEIGHT OF BLADES.	H.P. DIAMETER AT TIP.	H.P. NO. OF ROWS.	I.P. HEIGHT OF BLADES.	I.P. DIAMETER AT TIP.	I.P. NO. OF ROWS.	L.P. HEIGHT OF BLADES.	L.P. DIAMETER AT TIP.	L.P. NO. OF ROWS.	ASTERN HEIGHT OF BLADES.	ASTERN DIAMETER AT TIP.	ASTERN NO. OF ROWS.
1ST EXPANSION												
2ND "												
3RD "												
4TH "												
5TH "												
6TH "												
7TH "												
8TH "												
9TH "												
10TH "												

SEE LONDON REPORT No. 120,863

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

Motor Shaft diameter at journals { H.P. ..... I.P. ..... L.P. ..... } Pitch Circle Diameter { 1st pinion ..... 1st reduction wheel ..... 2nd pinion ..... main wheel ..... } Width of Face { 1st reduction wheel ..... main wheel ..... }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion ..... 1st reduction wheel ..... 2nd pinion ..... main wheel ..... }

Flexible Pinion Shafts, diameter { 1st ..... 2nd ..... } Pinion Shafts, diameter at bearings External ..... Internal 1st { .... } 2nd { .... } diameter at bottom of pinion teeth { 1st ..... 2nd ..... }

Wheel Shafts, diameter at bearings { 1st ..... main ..... } diameter at wheel shroud, { 1st ..... main ..... } Generator Shaft, diameter at bearings .....

Intermediate Shafts, diameter as per rule ..... as fitted 17" ✓ Thrust Shaft, diameter at collars as per rule ..... as fitted 18" ✓ Propelling Motor Shaft, diameter at bearings .....

Tube Shaft, diameter as per rule - as fitted - Screw Shaft, diameter as per rule ? 18½" as fitted 18" Is the { tube / screw } shaft fitted with a continuous liner { ✓ Yes }

Bronze Liners, thickness in way of bushes as per rule ..... as fitted 7/8" ✓ Thickness between bushes as per rule ..... as fitted 21/32" Is the after end of the liner made watertight in the propeller boss Yes ✓ 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 ..... If so, state type ..... Length of Bearing in Stern Bush next to and supporting propeller .....

Propeller, diameter 18'6" ✓ Pitch 12'6" No. of Blades 4 State whether Moveable No Total Developed Surface 145 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 None Feed Pumps { No. and size 2 - Weirs Turbo Feed each 156,00 lbs/hr. ✓ / How driven steam }

Pumps connected to the Main Bilge Line { No. and size 2-Ballast Pump 200 tons/hr. & Bilge Pump - 50 tons/hr. ✓ / How driven Steam }

Ballast Pumps, No. and size 1-200 tons/hr. ✓ Lubricating Oil Pumps, including Spare Pump, No. and size 2 Drysdale 60 G.P.M. ✓

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 Aft Peak 1-3½, E.R. 4-3½" ✓, 3-2½" coff. suctions. - In Pump Room { main Ford 3-4" ✓ / Aux P.R. ford 1-2½" ✓ }

In Holds, &c. F.Hold 2.2½ ejector, F.P. 1-4" Store 2.2" 4-2½ oily bilge.

Main Water Circulating Pump Direct Bilge Suctions, No. and size 1-16" Ford ✓ Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1-6" Aft. 1-6" Aux Circ. pump ✓ 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 Both ✓

Are they fixed 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 Both ✓

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 bunkers O.F. Trans line from deck None ✓ 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 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 - Is it fitted with a watertight door - worked from -

End 26/1/51

BOILERS, &c.—(Letter for record ____) Total Heating Surface of Boilers 10072 sq.ft.

Is Forced Draft fitted Yes No. and Description of Boilers 2 La.Mont. W.T.Boilers. Working Pressure 560 lbs/

Is a Report on Main Boilers now forwarded? see Birmingham Report No.121

Is a Donkey / an Auxiliary Boiler fitted? Yes If so, is a report now forwarded? see Glasgow Report No.7

Is the donkey boiler intended to be used for domestic purposes only No

Plans. Are approved plans forwarded herewith for Shafting Yes Main Boilers No Auxiliary Boilers - Donkey Boilers No
(If not state date of approval)

Superheaters No General Pumping Arrangements Yes Oil Fuel Burning Arrangements Yes

SPARE GEAR.

Has the spare gear required by the Rules been supplied Yes

State the principal additional spare gear supplied Screwshaft and propeller.

Machinery Survey Dates cont'd.

Dec.1.2.4.6.7.8.11.12.13.15.16.18.19.20.21. = 149 visits.

The foregoing is a correct description, Furness Shipbuilding Co Ltd J Moor. Chief Mechanical Engineer Manufactu

Dates of Survey while building	During progress of work in shops	1949. Nov.16.21.22.Dec.7.9.12.13. 1950. Jan.4.25.30. Feb.1.3.Mar.1.13.15.16.17.20.24.27.
	During erection on board vessel	Apr.4.17.20.25.27.May.8.9.12.16.19.22.23.24.25.30.31.June.2.5.7.8.9.12.13.15. 23.27.28.29.30.July.4.5.6.10.11.13.14.17.18.20.21.24.25.26.28.Aug.10.11.15.17.
	Total No. of visits	24.28.29.30.Sep.1.4.6.7.8.11.13.15.18.19.20.21.26.27.28.29.Oct.2.3.4.5.6.9.10. 16.17.18.19.20.23.24.25.26.27.28.30.31.Nov.1.3.6.7.8.9.10.13.15.16.17.20.21.22.23.24.27.

Dates of Examination of principal parts—Casings Rotors Blading Gearing

Wheel shaft - Thrust shaft 4.9.50 Intermediate shafts 28.7.50 Tube shaft - Screw shaft 23.6.50

Propeller 23.6.50. Stern tube 22.5.50. Engine and boiler seatings 4.9.50-30.8.50 Engine holding down bolts 20.9.50. 11.9.50.

Completion of fitting sea connections 29.6.50. Completion of pumping arrangements Boilers fixed Engines tried under steam

Main boiler safety valves adjusted Star.21.11.50. Port 21.12.50 Thickness of adjusting washers Star.Blr.Sat.F.2.3/64 A.28/64 Spt.P.3/8 S.25/ Port " " F.11/32 A.3/8" Spt.P.11/32" S.11

Rotor shaft, Material and tensile strength - Propeller Identification Mark Z9128 ACW 14

Flexible Pinion Shaft, Material and tensile strength - Identification Mark -

Pinion shaft, Material and tensile strength - Identification Mark

1st Reduction Wheel Shaft, Material and tensile strength - Identification Mark

Wheel shaft, Material - Identification Mark - Thrust shaft, Material Steel Identification Mark 525 HAI

Intermediate shafts, Material Steel Identification Marks 528 H.A.I. Tube shaft, Material - Identification Marks -

Screw shaft, Material Steel Identification Marks Spare 527 H.A.I. Working 526 H.A.I. Steam Pipes, Material Steel Test pressure 1575 lbs.

Date of test 6/10/50 to 31/10/50. 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 Yes If so, state name of vessel T.E.S. "San Silvestre".

General Remarks (State quality of workmanship, opinions as to class, &c.) These engines and boilers have been fit on board this vessel in accordance with the approved plans and Rule requirements and on completion the machinery was tried out under working conditions and found satisfactory, and i our opinion is eligible for the record of +LMC. 12.50, and notation of TS.(CL) 12.50. Fitted for burning O.F.12.50. (F.P. above 150°F) and fitted forced draught.

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 ...	£	Being applied for by London Outdoor Surveyors. See copy letter attached
Special ...	£	
Donkey Boiler Fee ...	£	
Travelling Expenses (if any)	£	

When applied for, 16.1.1951

When received, 19

C. Norman Stuart + J. Ch[illegible] Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 9 FEB 1951

Assigned +LMC 12.50

FITTED FOR OIL FUEL 12.50 FLASH POINT ABOVE 150°F. F.D. C.L. 2WTB 560lb (Spt. 550lb) DB 155lb