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M/cle Rpt A/o 1949
'San Salvador'

Report on Steam Turbine Machinery. No. 120863

Received at London Office 13 JAN 1951

Date of writing Report 20 Sept 1950 When handed in at Local Office 25 Sept 1950 Port of London

Log. in Log Book Survey held at Erith Kent. Date, First Survey 23.4.49 Last Survey 17.8 1950 (Number of Visits 25)

on the T.E.S. SAN SALVADORE. Tons {Gross 10802 Net 6035

Built at Haverton Hill on Tees. By whom built Furness S.B. Co. 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 By whom made Boiler No. When made

Shaft Horse Power at Full Power 9,000 Owner Eagle Oil & Shipping Co Ltd. Port belonging to

Com. Horse Power as per Rule Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted

Grade for which Vessel is intended

STEAM TURBINE ENGINES, &c.—Description of Engines Turbo Electric Propulsion.

No. of Turbines Ahead ONE Astern ~~Direct coupled, single reduction geared, double reduction geared~~ Impulse + 12 Rateau stages in single cylinder direct coupled to Alternator. to ~ propelling shafts. No. of primary pinions to each set of reduction gearing ~

Direct coupled to {Alternating Current Generator 3 phase 50 periods per second / Direct Current Generator} rated 6940 Kilowatts 3300 Volts at 3210 revolutions per minute;

For supplying power for driving one Propelling Motors, Type Salient pole synchronous motor.

Rated 9000 S.H.P. ~~Kilowatts~~ 3300 Volts at 123.5 revolutions per minute. Direct coupled, ~~single or double reduction geared~~ to one propelling shaft.

TURBINE READING.

	H.P.			H.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	.86"	37.06"	1	1.34	35.82	1						
2nd "	1.22	37.42	1	1.48	36.10	1						
3rd "	Velocity wheels.			1.66	36.46	1						
4th "				1.32	37.78	1						
5th "				1.54	38.22	1						
6th "				1.82	38.78	1						
7th "				1.14	49.40	1						
8th "				1.68	50.48	1						
9th "				2.68	52.48	1						
10th "				4.60	56.30	1						
11th "				6.60	60.30	1						
12th "				9.60	65.30	1						
				Rateau Wheels.								

Shaft Horse Power at each turbine {H.P. 9000 / I.P. ~ / L.P. ~} **Revolutions** per minute, at full power, of each Turbine Shaft {H.P. 3210 / I.P. ~ / L.P. ~} 1st reduction wheel / main shaft

Motor Shaft diameter at journals {H.P. 7" / 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 {1st / 2nd} 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 9" **Propelling Motor Shaft,** diameter at bearings

Intermediate Shafts, diameter as per rule / as fitted **Thrust Shaft,** diameter at collars as per rule / as fitted

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 If so, state type Length of Bearing in **Stern Bush** next to and supporting propeller

Propeller, diameter Pitch No. of Bades 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.~~ **Turbines** exhaust direct to the Condenser yes. No. of Turbines fitted with astern wheels 1 one rotation only. **Feed Pumps** {No. and size Two. each. 156,000 lb/hr / How driven Turbine}

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

Are two independent means arranged for circulating water through the **Oil Cooler** **Suctions,** connected both to Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room In Pump Room

In Holds, &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

TM 19/9/50

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?.....

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

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

Superheaters..... General Pumping Arrangements..... Oil Fuel Burning Arrangements.....

SPARE GEAR.

Has the spare gear required by the Rules been supplied..... Yes.

State the principal additional spare gear supplied..... Please see attached lists.

For and on behalf of
THE GENERAL ELECTRIC Co. LTD,
(Frasers & Chalmers Engineering Works.)

The foregoing is a correct description,..... Manufactu...

1949: Am 23 July 5 Nov 23. 25. 1950: Am 11. 25 May 1

Dates of Survey while building { During progress of work in shops - - { May 2. 5. 13. 16. 23. 26. June. 3. 9. 23. 28. July. 10. 20. 27. 28. 31 Aug. 14. 17. 1950.
During erection on board vessel - - -
Total No. of visits 25 (in shops)

Dates of Examination of principal parts—Casings May. 2. 13. 23. 26. June 3. 23. Rotors June 9. 28. July 10. Blading June 9. July 10. Gearing.....

Wheel shaft..... Thrust shaft..... Intermediate shafts..... Tube shaft..... Screw shaft.....

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

Completion of fitting sea connections..... 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 Forged ingot steel. Identification Mark LLOYD'S 360 3481. D 23

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..... Identification Mark.....

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 the use of oil as fuel been complied with.....

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 Sylvestre.

General Remarks. (State quality of workmanship, opinions as to class, &c.) This turbine has been built under Special Survey in accordance with the approved plans and the requirements of the Rules. Steel used in its manufacture has been made at works approved by the Committee and under the supervision of their Surveyors.
On completion the turbine was coupled to the alternator rotor and tested at working speed. The overspeed and emergency governors were tested and found to operate satisfactorily. The turbine was subsequently opened for inspection and found in good order. The workmanship is good and the turbine is in my opinion eligible for the notation + LMC (with date) when satisfactorily installed and tested in the vessel intended. It has now been despatched to Waverton.

H. O. Kirby.
Engineer Surveyor to Lloyd's Register of Shipping.

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

Committee's Minute FRI. 9 FEB 1951

Assigned See F.E. mchy. rpt.

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