

REPORT ON OIL ENGINE MACHINERY.

No. 7942

Received at London Office - 2 MAY 1929

Date of writing Report 14th April 1929. When handed in at Local Office

10 Port of

Copenhagen

in Survey held at

Copenhagen

Date, First Survey 4th July 1928 Last Survey 28th March 1929

Book.

Number of Visits 83

2088 on the

Single
Twin
Triple
QuadrupleMotor
Screw vessel

"SANTA INEZ"

Tons { Gross 5538.40
Net 3371.14

Built at

Copenhagen

By whom built

Akt. Burmeister & Wain's

Yard No. 552

When built 1929

Engines made at

Copenhagen

By whom made

Akt. Burmeister & Wain's

Engine No. 1506

When made 1929

Monkey Boilers made at

Aarhus and
Copenhagen

By whom made

Akt. Burmeister & Wain's

Boiler No. 11029

When made 1929

Brake Horse Power

3520

Owners

Grace Steamship Co. Incorporated

Port belonging to

New York, U.S.A.

Nom. Horse Power as per Rule

708

Is Refrigerating Machinery fitted for cargo purposes

no

Is Electric Light fitted

yes

Trade for which vessel is intended

Passenger trade between ports at North and South America.

OIL ENGINES, &c.—Type of Engines Vertical Diesel Oil Engines (Crosshead type) 2 or 4 stroke cycle 4 Single or double acting Single

Maximum pressure in cylinders 35 kg/cm² Diameter of cylinders 630 mm = 24 3/8" Length of stroke 300 mm = 5 1/4" No. of cylinders 2 x 6 No. of cranks 2 x 6

No. of bearings, adjacent to the Crank, measured from inner edge to inner edge 892 mm Is there a bearing between each crank yes

Revolutions per minute 130 Crank wheel dia. 1902 mm Weight 1140 kg. Means of ignition air compression Kind of fuel used crude oil, flash point above 150°F.

Crank Shaft, dia. of journals as per Rule 404 mm as fitted 404 mm Crank pin dia. 404 mm Crank Webs Mid. length breadth 600 mm Mid. length thickness 246 mm Thickness parallel to axis 266 mm Thickness around eye hole 185 mm

Crank wheel Shaft, diameter as per Rule as fitted Intermediate Shafts, diameter as per Rule 11.4" as fitted 11 1/2" Thrust Shaft, diameter at collars as per Rule 12.075" as fitted 12 1/2"

Screw Shaft, diameter as per Rule as fitted 12.60" Is the shaft fitted with a continuous liner yes

Cylinder Liners, thickness in way of bushes as per Rule 0.683" as fitted 3/4" & 7/8" Thickness between bushes as per rule 0.512" as fitted 9/16" Is the after end of the liner made watertight in the

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

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 yes

Two liners are fitted, is the shaft lapped or protected between the liners yes Is an approved Oil Gland or other appliance fitted at the after end of the tube

If so, state type yes Length of Bearing in Stern Bush next to and supporting propeller 6'-3"

Propeller, dia. 12'-0" Pitch 12'-3" No. of blades 3. Material Bronze whether Moveable no Total Developed Surface 34 sq. feet

Method of reversing Engines direct reversible Is a governor or other arrangement fitted to prevent racing of the engine when disengaged yes Means of lubrication

Lubrication Thickness of cylinder liners 46 mm Are the cylinders fitted with safety valves yes Are the exhaust pipes and silencers water cooled or lagged with

conducting material lagged If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine Exhaust pipes led to funnel

Sling Water Pumps, No. 2 off. Centrifugal. 200 tons each Is the sea suction provided with an efficient strainer which can be cleared within the vessel yes

Bilge Pumps worked from the Main Engines, No. 2 off. 40 tons Diameter of trunk 160 mm Stroke 260 mm Can one be overhauled while the other is at work yes

Pumps connected to the Main Bilge Line No. and Size 2 off. 40 tons each. 2 off. 50 tons each independent bilge pumps How driven by the main engines. by electric motors.

Last Pumps, No. and size 1 off. Centrifugal. 150 tons Lubricating Oil Pumps, including Spare Pump, No. and size 2 off. Cog wheel pumps. 70 tons each.

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 Machinery Spaces 4 off. 3" diam. In tunnel well 1 off 3" diam. In F.P.T. & A.P.T. 1 off in each 3" diam.

Folds, &c. In 1st hold 2 off in each 3" diam. In 2nd hold 3 off 3" diam. In 3rd hold 4 off 3" diam. In 4th hold 5 off 3" diam. In suction hets on top of wing tanks 1 off in each 3" diam.

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 2 off. 3" diam and 1 off. 6" diam. In the deep tank and in D.B. tanks arranged as per approved plan.

All the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes. yes Are the Bilge Suctions in the Machinery Spaces

from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges yes

All Sea Connections fitted direct on the skin of the ship yes Are they fitted with Valves or Cocks. Valves except the boiler blow off cocks.

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

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

How are they protected yes

Do pipes pass through the bunkers none Have they been tested as per Rule yes

Do pipes pass through the deep tanks none, pipe tunnel built through the deep tanks

All Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times yes

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 the grating at upper deck level.

In wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork

In Air Compressors, No. 2 No. of stages 3 Diameters 600-540-120 mm Stroke 520 mm Driven by the main engines

Auxiliary Air Compressors, No. Please see accompanying report. No. of stages Diameters Stroke Driven by 1st stage

All Auxiliary Air Compressors, No. 1 No. of stages 2 Diameters 106 34 Stroke 80 mm Driven by steam engine 2nd stage

Serving Air Pumps, No. Diameter Stroke Driven by

Auxiliary Engines crank shafts, diameter as per Rule Please see accompanying report. as fitted

RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule yes

The internal surfaces of the receivers be examined yes What means are provided for cleaning their inner surfaces Starting air receivers provided with man holes. dipping arrangement made for cleaning the injection air receivers by means of steam.

Where a drain arrangement fitted at the lowest part of each receiver yes 400 litres Internal diameter 450 mm thickness 25 mm

High Pressure Air Receivers, No. 2 off. 2 off. 400 litres for main engines 2 off. 200 litres for main engines Cubic capacity of each 200 Internal diameter 388 mm thickness 21 mm

Seamless, lap welded or riveted longitudinal joint Lap welded Material S.M. Steel Range of tensile strength 37.4-42.2 kg/mm² Working pressure by Rules 65.6-66.9 kg/cm²Starting Air Receivers, No. 2 off. double butt straps Total cubic capacity 1250 cubic feet. Internal diameter 5'-11 1/8" and 6'-1" thickness 15 1/8" and 1" Working pressure by Rules 25.1 kg/cm²Seamless, lap welded or riveted longitudinal joint double riveted Material S.M. Steel Range of tensile strength 42.2 kg/mm² Working pressure by Rules 25.1 kg/cm²

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IS A DONKEY BOILER FITTED? *yes*

If so, is a report now forwarded? *Glasgow Report No. 48585 & 488*

PLANS. Are approved plans forwarded herewith for Shafting *19/1 and 20/4 28*

Receivers *starting 24/7. 28.*

Separate Tanks

24/7. 28.

Donkey Boilers *Glasgow Island 1/6583*

(If not, state date of approval)

General Pumping Arrangements *26/10 27 and 25/4 28.*

Oil Fuel Burning Arrangements *✓*

SPARE GEAR *as per accompanying list.*

The foregoing is a correct statement

BURMEISTER & WAIN

AKTIESELSKABET OG SKIBSBYGGERI

Manufacturer.

Dates of Examination of principal parts—Cylinders *and* Covers *19/1, 17/2, 28/9* Pistons *17/1, 28/1, 19/1, 28/1* Rods *17/1, 19/1, 28/1* Connecting rods *17/1, 19/1, 28/1*

Crank shaft *17/1, 19/1, 28/1* Flywheel shaft *✓* Thrust shaft *17/1, 19/1, 28/1* Intermediate shafts *17/1, 19/1, 28/1* Tube shaft *✓*

Screw shaft *17/1, 19/1, 28/1* Propellers *17/1, 19/1, 28/1* Stern tube *17/1, 19/1, 28/1* Engine seatings *17/1, 19/1, 28/1* Engines holding down bolts *17/1, 19/1, 28/1*

Completion of fitting sea connections *17/1, 19/1, 28/1* Completion of pumping arrangements *17/1, 19/1, 28/1* Engines tried under working conditions *17/1, 19/1, 28/1*

Crank shaft Material *S.M.I. Steel* Identification Mark *N2748* Flywheel shaft, Material *✓* Identification Mark *N2748*

Thrust shaft Material *S.M.I. Steel* Identification Mark *N2748* Intermediate shafts, Material *S.M.I. Steel* Identification Mark *N2748*

Tube shaft, Material *✓* Identification Mark *N2748* Screw shaft, Material *S.M.I. Steel* Identification Mark *N2748*

Is the flash point of the oil to be used over 150° F. *Above.*

Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with *yes*

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo *No.* If so, have the requirements of the Rules been complied with *✓*

Is this machinery duplicate of a previous case *No.* If so, state name of vessel *✓*

General Remarks (State quality of workmanship, opinions as to class, &c. *In accordance with the Rules for Special Survey we have examined the material and workmanship from the commencement of construction until the final test of the main and auxiliary machinery under full power working condition and found it good in every respect.*

The material used in the construction of the engines and air receivers have been tested as required by the Rules - either by us or as per certificate of test produced.

The dimensions are as specified and in accordance with the Rules, the approved plans and the requirements contained in the Letters E dated the 26th Oct. 27. - 18th Jan. 20th April. - 24th July. - 25th Oct. - 3rd December 1928.

On the trial trip the main engines and the whole auxiliary machinery have been tested under full power working condition and found to work satisfactorily. - the manœuvring of the main engines tested under working condition and found satisfactory.

Recommend the vessel's machinery to have notation in the Register Book of *LMC-3,29* OIL ENGINES.

The amount of Entry Fee *109.20* When applied for *29.4.1929*

Special *2009.28* When received *27.5.1929*

Starting Air Receivers *152.58*

Donkey Boilers Fee *100.00*

Travelling Expenses (if any) *43.75*

Committee's Minute *JUL 7 MAY 1929*

Assigned *Oil Engines*

CERTIFICATE WRITTEN *Oil Engines*

25 B 100lb

1 DB (upper) 80lb

Rpt. 9a.

Port of *Copenhagen.*

Continuation of Report No. 7940 dated 15th April 1929. on the

Steel Twin Screw Motor Vessel "SANTA INEZ" of New York.

No. in Reg. Book 92088.

Burmeister & Wain's Yard No. 552.

Engines No. 1506 & 1507.

The auxiliary machinery comprising.

One - 150 tons centrifugal ballast pump.
Two - 50 tons centrifugal bilge pumps.
One - 50 tons " " fire pump.
One - 50 tons " " sanitary pump.
Two - 200 tons " " cooling water pumps.
Two - 70 tons cog wheel pump for the forced oil lubrication } all driven by electro motors.
Two - 50 tons " " oil fuel transfer pumps.
Two - 5 tons duplex cog wheel oil fuel service pumps.
Two - 10 tons centrifugal fresh water pumps.
One - 30 tons " " circulating pump to the auxiliary condenser, driven by a steam engine.

Four - 3 cylinder 4 S.C.S.A. auxiliary Diesel oil engines each of 150 B.H.P. and each working a compound wound generators of 100 KW. 200 Volts, 445 Amperes supplying electric current for motive power to the following.

One - 17 HP. compound wound electro motor working the ballast pump.
Two - 12 HP. " " " " working the 2 bilge pumps.
Two - 27 HP. " " " " working the sanitary and the fire pump.
Two - 45 HP. " " " " working the cooling water pumps and the lubricating oil pumps.
Two - 20 HP. " " " " working the oil fuel transfer pumps.
Two - 3 HP. shunt " " " " working the oil fuel service pumps.
Two - 4.5 HP. compound " " " " working the fresh water pumps.
Two - 6 HP. serie " " " " working the turning gear to the main engine.
Two - 2.5 HP. compound " " " " working the lubricating oil purifiers.
Two - 2.5 HP. " " " " working the oil fuel purifiers.
One - 9 KW. shunt " " " " lubricating oil heater.
One - 3 HP. compound " " " " working the hot water pump.
One - 1.65 HP. shunt " " " " working the turning lathe.
One - 1 HP. " " " " working the drilling machine.
Two - 16 HP. " " " " working the CO₂ compressor for the refrigerating appliance.
Two - 2.5 HP. " " " " working the brine pumps " " " " " "
Two - 2.5 HP. " " " " working the cooling water pumps " " " " " "
Four - 4.75 HP. " " " " for the 4 thermo tanks.
Two - 3 HP. " " " " working the 2 supply fans.
Three - 1.5 HP. " " " " working the 3 exhaust fans.
One - 0.75 HP. " " " " working one exhaust fan.
One - 16 HP. compound " " " " working the oil pump to the electro hydraulic steering gear.
One - 60 HP. " " " " working the windlass.
Two - 50 HP. " " " " working the two 5 tons cargo winches.
Six - 33 HP. " " " " working the six 3 tons " " " "
One - 50 HP. " " " " working the warping winch aft.

And supplying current for the electric lighting purpose.

AKTIESELSKABET
BURMEISTER & WAIN'S MAKIN OG SKIBSBYGGERI

Manufacturers.

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