Rpt. 4b.

REPORT ON OIL ENGINE MACHINERY.

No. 8195.

14 MAR 1930

Received at London Office

Date of writing Report 5/3 1930 When handed in at Local Office 19 Port of Copenhagen.

No. in Reg. Book. 40491. on the ~~Single~~ Twin ~~Triple~~ ~~Quadruple~~ Screw vessel "GULDBORG".

Date, First Survey 28/8 1929. Last Survey 25/2 1930. Number of Visits 85.

Tons { Gross 4731.71 Net 2864.97

Built at Odense. By whom built Odense Staalskibsværft Yard No. 36. When built 1929-30

Engines made at Copenhagen. By whom made B/S Burmeister & Wain. Engine No. 1691/1692 When made 1929-30.

Donkey Boiler made at Cradley Heath. By whom made Cradley Boiler Co. Ltd. Boiler No. 16919 When made 1929.

Brake Horse Power 2400. Owners A/S Dampskibsselskabet "Danmborg". Port belonging to Copenhagen.

Nom. Horse Power as per Rule 543. Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted yes.

Trade for which vessel is intended Ocean Trade, general cargo.

OIL ENGINES, &c.—Type of Engines Vertical Diesel, trunk piston, air injection 4 stroke cycle 4 Single or double acting single

Maximum pressure in cylinders 35 kg/cm². Diameter of cylinders 550 m/m Length of stroke 1000 m/m No. of cylinders 2 × 6 No. of cranks 2 × 6

Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 730 m/m. Is there a bearing between each crank yes.

Revolutions per minute 145. ~~Turn~~ Flywheel dia. 1362 m/m. Weight 850 kg. Means of ignition compression Kind of fuel used Crude Oil, F.P. > 150° F.

Crank Shaft, dia. of journals as per Rule 339.98 m/m as fitted 340 m/m Crank pin dia. 340 m/m Crank Webs Mid. length breadth 670 m/m Mid. length thickness 193 m/m shrunk Thickness parallel to axis 213 m/m Thickness around eyehole 159 m/m

Flywheel Shaft, diameter as per Rule 339.8 m/m as fitted 340 m/m. **Intermediate Shafts,** diameter as per Rule 9.4" as fitted 9½" **Thrust Shaft,** diameter at collars as per Rule 9.87" = 251 m/m. as fitted 340 m/m

Tube Shaft, diameter as per Rule ✓ as fitted ✓ **Screw Shaft,** diameter as per Rule 10.4" as fitted 10½" Is the {~~tube~~ screw} shaft fitted with a continuous liner {yes.}

Bronze Liners, thickness in way of bushes as per Rule 0.62" as fitted 11/16" + 3/4" Thickness between bushes as per rule 0.465" as fitted ½" 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 in one length.

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 yes.

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 4'-6"

Propeller, dia. 11'-0" Pitch 9'-3" No. of blades 3. Material bronze. whether Moveable No. Total Developed Surface 29. sq. feet

Method of reversing Engines direct reversible Is a governor or other arrangement fitted to prevent racing of the engine ~~when declutched~~ yes. Means of lubrication forced. Thickness of cylinder liners 38 m/m. Are the cylinders fitted with safety valves yes. Are the exhaust pipes and silencers water cooled or lagged with non-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 led to funnel

Cooling Water Pumps, No. 2 off, centrifugal, 120 t/hr. 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 Diameter 150 m/m. Stroke 175 m/m. Can one be overhauled while the other is at work yes.

Pumps connected to the **Main Bilge Line** {No. and Size 2 off 150 m/m dia × 175 m/m str. / 1 off 150 t (ballast p.) / 1 off 20 t. How driven by main engines electrically / electrically.

Ballast Pumps, No. and size 1 off, 150 t, rotary. **Lubricating Oil Pumps,** including Spare Pump, No. and size 2 off, 55 t, cog wheel.

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 Machinery Spaces 4 off 3" In Holds, &c. No 1 HOLD: 2 off 3"; No 2 HOLD: 2 off 3½"; No 3 HOLD: 2 off 3"; No 4 HOLD: 1 off 3", 1 off 1½". TUNNEL WELL: 1 off 3"; PEAKS + TANKS: as per plan.

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 3 off 3", 1 off 6"

Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes yes. Are the Bilge Suctions in the Machinery Spaces 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 Valves, except D.B. blow off cock.

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.

What pipes pass through the bunkers ✓ How are they protected ✓

What pipes pass through the deep tanks 2 off 3", 2 off 3½" bilge suctions to No 1 + 2 HOLDS 1 off 2½" to F.P. tank. 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 casing, W.T. both inside engine room.

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

Main Air Compressors, No.	2	No. of stages	3	Diameters	A. 605 - B. 540 - C. 120 m/m	Stroke	320 m/m	Driven by main engines.
Auxiliary Air Compressors, No.	2 / 1	No. of stages	3 / 2	Diameters	318 - 285 - 78 m/m / 225 - 68	Stroke	170 m/m / 220 "	Driven by auxiliary engines.
Small Auxiliary Air Compressors, No.	1	No. of stages	2	Diameters	90 - 35 m/m	Stroke	120 m/m	Driven by hand.
Scavenging Air Pumps, No.	✓			Diameter	✓	Stroke	✓	Driven by ✓

Auxiliary Engines crank shafts, diameter as per Rule 162 m/m as fitted 170 m/m.

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

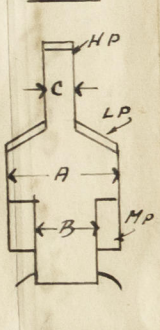
Can the internal surfaces of the receivers be examined yes. What means are provided for cleaning their inner surfaces manhole in starting air receivers. arrangements made for cleaning air bottles by steam.

Is there a drain arrangement fitted at the lowest part of each receiver yes.

High Pressure Air Receivers, No.	2 / 2 / 3	Cubic capacity of each	125 LITERS / 250 " / 25 "	Internal diameter	312 m/m / 404 " / 7¼"	thickness	19 m/m / 23 " / 3/8"
Seamless, lap welded or riveted longitudinal joint	LAP WELDED / LAP " " / SEAMLESS	Material S.M. steel		Range of tensile strength	38.4 KG. / 38.4 KG. / 30.7 Ts.	Working pressure by Rules	78.6 KG/CM² / 69.8 " " / 102.5 " "
Starting Air Receivers, No.	1.	Total cubic capacity	575 cb. ft.	Internal diameter	5'-11 11/16"	6'-1" thickness	15/16" 1/32" 1" + ENDS 13/16"
Seamless, lap welded or riveted longitudinal joint	3 b/e riveted	Material S.M. steel.		Range of tensile strength	SHELL: 28 Ts. / ENDS: 42.9 KG. / RIVETS: 26 Ts.	Working pressure by Rules	25 KG/CM² / ENDS: 26.2 KG/CM²

No. of Visits 44

3 STAGE.



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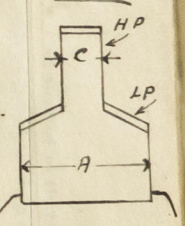

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IS A DONKEY BOILER FITTED? yes. If so, is a report now forwarded? yes.

PLANS. Are approved plans forwarded herewith for Shafting (If not, state date of approval) yes. Receivers yes. Separate Tanks yes.

Donkey Boiler yes. General Pumping Arrangements yes. Oil Fuel Burning Arrangements

SPARE GEAR as per accompanying list.

The foregoing is a correct description,

AKTIESELSKABET BURMEISTER & WAINS MASKIN- OG SKIBSBYGGERI

Manufacturer.

Dates of Survey while building — During progress of work in shops: 28/8 2/9 3/9 4/9 13/9 16/9 17/9 18/9 21/9 27/9 30/9 3/10 3/10 7/10 8/10 9/10 10/10 11/10 15/10 16/10 17/10 18/10 19/10 22/10 24/10 26/10 29/10 30/10 31/10 1/11 2/11 6/11 8/11 9/11 11/11 12/11 13/11 14/11 15/11 18/11 19/11 20/11 21/11 22/11 25/11 27/11 28/11 29/11 30/11 2/12 4/12 5/12 6/12 7/12 9/12 13/12 14/12 17/12 18/12 19/12 27/12 1929, 3/1 21/1 24/1 1930.

During erection on board vessel: 30/8 1/10 23/10 24/10 2/11 8/11 9/11 11/11 21/11 2/12 12/12 1929, 4/1 9/1 16/1 24/1 3/2 8/2 11/2 20/2 25/2 1930.

Total No. of visits 85.

Dates of Examination of principal parts—Cylinders with Covers 18/11 30/10 3/11 Pistons 1/11 11/11 21/11 Rods ✓ Connecting rods 3/10 9/10 22/10

Crank shaft 3/9 17/9 21/9 27/9 17/10 9/11 19/11 Flywheel shaft ✓ Thrust shaft 5/10 14/10 9/11 19/11 Intermediate shafts 9/10 11/10 18/10 22/11 Tube shaft ✓

Screw shaft 6/10 9/10 24/10 13/11 19/12 Propellers 13/11 21/11 Stern tubes 28/8 4/9 21/11 Engine seatings 24/10 Engines holding down bolts 24/11 3/12

Completion of fitting sea connections 2/11 Completion of pumping arrangements 24/11. Engines tried under working conditions 9/12 17/12 20/12 2

Crank shaft, Material S. M. steel. Identification Mark LLOYDS Nº 385 429 ⓐ 9-11-29 ⓐ 19-11-29 Flywheel shaft, Material ✓ Identification Mark ✓ LLOYDS Nº 433. 4-5-6-7-8-9-440

Thrust shaft, Material S. M. steel. Identification Mark LLOYDS Nº 386 430 ⓐ 9-11-29 ⓐ 19-11-29 Intermediate shafts, Material S. M. steel. Identification Marks LLOYDS Nº 405-6 ⓐ 22-11-29. 50

Tube shaft, Material ✓ Identification Mark ✓ Screw shaft, Material S. M. steel. Identification Mark ⓐ 13-11-29. 4/19 (3

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

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 in dup tank, yes If so, have the requirements of the Rules been complied with yes.

Is this machinery 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 built and fitted under Special Survey and in accordance with the Society's Rules, the approved plans and the requirements contained in the Secretary's letter Ed dated 2/5 5/4 8/6 3/7 27/8 11/9 31/10 1929. The dimensions are as specified, the material has been tested and examined as required by the Rules and found good and the workmanship is of good description throughout.

On completion of the installation on board the vessel the main and auxiliary engines with all their appliances were tried under full power working conditions and found to work satisfactorily, and in the final trial trip the manoeuvring of the main engines was tested and found good.

Recommend the vessel's machinery to have notation of ✠ LMC 2.30, OIL ENGINES, oil engines 4 S.C.S.A. Boy 21/5 '28-29/5 '28 N.H.P. 543. CL. 5890 25A.

✠ LMC 2.30.

The amount of Entry Fee ... £ 109.20 : When applied for, 12 3 1930

Special ... ... £ 1859.13 :

1 STARTING AIR RECEIVER ... £ 76.44 : When received.

Fitting Donkey Boiler Fee ... £ 50.00 : £ 1094.95 - 8/4/30 666

Travelling Expenses (if any) £ 636.00 : £ 1035.82 - 6/5/30 666

A. O. Jebsen. Chief Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 21 MAR 1930

Assigned + Lmc 6. 2.30 CL, oil engs. D.S. 90 hs

CERTIFICATE WRITTEN.

Certificate (if required) to be sent to Surveyor's Office, Copenhagen.

(The Surveyors are requested not to write on or below the space for Committee's Minute)

Rpt. 9a.

Port of Copenhagen. Continuation of Report No. 8195 dated 5/3 1930 on the

M/S "GULDBORG"

List of Auxiliary Machinery—

One rotary Ballast pump + deep tank pump, system "IRON", 150 t. capacity. — worked by electro-motors.

Two centrifugal cooling water pumps, 120 t. capacity.

Two cog wheel Lubricating oil pumps, 55 t. - -

One Bilge + Sanitary pump, consisting of 2 trunk pistons, one for each purpose, 20 t. capacity each.

One cog wheel Oil fuel transfer pump 30 t. capacity.

One donkey boiler feed pump, 90×60×90 m/m duplex, steam driven.

One 2-cylinder 4 stroke single acting paraffin engine, working a 4 kwts. compound wound dynamo, giving current at 220 Volts pressure for the emergency lights installation.

Two 2-cylinder and One 1-cylinder 4 stroke single acting Diesel oil engines, each working a compound wound dynamo of resp. 66, 66 and 33 kwts., giving current at 220 Volts pressure for the following purposes:

1 of	15 HP.	shunt wound electromotor	for the ballast pump.
2 "	30 "	" " "	combined cooling water and lubricating oil pumps.
1 "	9 "	" " "	bilge + sanitary pump.
1 "	9 "	" " "	oil fuel transfer pump.
2 "	3 "	serie " "	engine turning gears
2 "	2 "	shunt " "	oil fuel purifiers.
1 "	2 "	" " "	lubricating oil purifier.
1 "	22 "	serie " "	electric steering gear.
1 "	42 "	compound " "	anchor windlass.
1 "	33 "	" " "	warping winch on poop dk.
2 "	33 "	" " "	2 5 t cargo winches.
8 "	25 "	" " "	8 3 t cargo winches.
2 "	1½ "	" " "	2 SO_2 compressors for the cooled provision store rooms
1 "	3 "	shunt " "	workshop.

and the whole electric light installation.

A. O. Jebsen Chief Engineer Surveyor to Lloyd's Register of Shipping

THE FOREGOING IS A CORRECT DESCRIPTION.
PR. ODENSE STAALSKIBSVÆRFT
VED A. P. MØLLER
John Mortensen

5m.7.28.

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