. 4b.

REPORT ON OIL ENGINE MACHINERY

No. 8222

22 APR 1930
Received at London Office

[of] writing Report 15th april 1930 When handed in at Local Office 16th april 1930 Port of Copenhagen

[No. i]n Survey held at Copenhagen Date, First Survey 19th april 1929 Last Survey 11th april 1930

[Reg.] Book. Number of Visits 115

on the ~~Single~~ Twin ~~Triple~~ ~~Quadruple~~ Screw Motor vessel Tons { Gross ✓ Net ✓

[Buil]t at Osaka By whom built Messrs. Osaka Iron Works Ld. Yard No. 1128B. When built ✓

[Eng]ines made at Copenhagen By whom made Messrs. Akt. Burmeister & Wain's Maskin og Skibsbyggeri. Engine No. {1628 1629 When made 1929-30

Designated NYK 4

[Don]key Boilers made at ✓ By whom made ✓ Boiler No. ✓ When made ✓

[Brak]e Horse Power 11.000 Owners ✓ Port belonging to ✓

[N.] Horse Power as per Rule 2190.6 Is Refrigerating Machinery fitted for cargo purposes ✓ Is Electric Light fitted ✓

[Tra]de for which vessel is intended ✓

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

[Maxi]mum pressure in cylinders 35 kg/cm² Diameter of cylinders 680 m/m = 26 3/4" Length of stroke 1600 m/m = 63" No. of cylinders 2 × 8 No. of cranks 2 × 8

[Length] of bearings, adjacent to the Crank, measured from inner edge to inner edge 920 m/m Is there a bearing between each crank yes

[Revol]utions per minute 110 m/m Turning Flywheel dia. 1975 m/m Weight 2250 kg Means of ignition Air compression Kind of fuel used Crude oil, flash point above 150° F.

[Cran]k Shaft, dia. of journals as per Rule 491 m/m as fitted 495 m/m Crank pin dia. 530 m/m Crank Webs Mid. length breadth 850 m/m Mid. length thickness 288 m/m shrunk Thickness parallel to axis 308 m/m Thickness around eyehole 232.5 m/m

[Fly]wheel Shaft, diameter as per Rule ✓ as fitted ✓ Intermediate Shafts, diameter as per Rule ✓ 430 as fitted ✓ Thrust Shaft, diameter at collars as per Rule 441 m/m as fitted 447 m/m (Plan 467)

[Tub]e 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 {✓

[Bron]ze 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

[prope]ller boss ✓ If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner ✓

[If th]e 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 tw]o 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

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

[Prop]eller, dia. ✓ Pitch ✓ No. of blades ✓ Material ✓ whether Moveable ✓ Total Developed Surface ✓ sq. feet

[Meth]od of reversing Engines Direct reversible Is a governor or other arrangement fitted to prevent racing of the engine ~~when declutched~~ yes Means of lubrication

[Lu]brication Thickness of cylinder liners 65 m/m Are the cylinders fitted with safety valves yes Are the exhaust pipes and silencers water cooled or lagged with

[non-co]nducting material Top pipes lagged, bottom pipes watercooled If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine ✓

[Cooli]ng Water Pumps, No. 4 off, Centrifugal. 250 tons each. Is the sea suction provided with an efficient strainer which can be cleared within the vessel ✓

[Bilge] Pumps worked from the Main Engines, No. ✓ Diameter ✓ Stroke ✓ Can one be overhauled while the other is at work ✓

[Pum]ps connected to the Main Bilge Line { No. and Size ✓ How driven ✓

[Balla]st Pumps, No. and size ✓ Lubricating Oil Pumps, including Spare Pump, No. and size 4 off. Rotary pumps. 200 tons each.

[Are t]wo independent means arranged for circulating water through the Oil Cooler ✓ Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge

[Pum]ps, No. and size:—In Machinery Spaces ✓

[In H]olds, &c. ✓

[Indep]endent Power Pump Direct Suctions to the Engine Room Bilges, No. and size ✓

[Are a]ll the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes ✓ Are the Bilge Suctions in the Machinery Spaces

[led fro]m easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges ✓

[Are al]l Sea Connections fitted direct on the skin of the ship ✓ Are they fitted with Valves or Cocks ✓

[Are th]ey fixed sufficiently high on the ship's side to be seen without lifting the platform plates ✓ Are the Overboard Discharges above or below the deep water line ✓

[Are th]ey 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 ✓

[Do any] pipes pass through the bunkers ✓ How are they protected ✓

[Do any] 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 t]he 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

[com]partment to another ✓ Is the Shaft Tunnel watertight ✓ Is it fitted with a watertight door ✓ worked from ✓

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

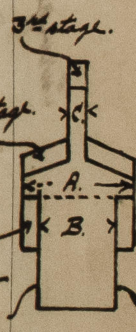
[Ma]in Air Compressors, No. 2 off to each engine No. of stages 3 Diameters A. 750 - B. 675 - C. 172 m/m Stroke 600 m/m Driven by the main engines.

[Au]xiliary Air Compressors, No. 3 off No. of stages 3 Diameters 320-270-70 m/m Stroke 370 m/m Driven by the auxiliary engines.

Emergency Air Compressor No. 1 off No. of stages 3 Diameters 210-176-45 m/m Stroke 180 m/m Driven by a 35 HP electro motor.

[Sm]all Auxiliary Air Compressors, No. 1 off No. of stages 2 Diameters 400 - 350 m/m Stroke 250 m/m Driven by a 180 HP electro motor.

[Sc]avenging Air Pumps, No. ✓ Diameter ✓ Stroke ✓ Driven by ✓



[Au]xiliary Engines crank shafts, diameter as per Rule 192 m/m as fitted 204 m/m Auxiliary Diesel Oil engines, 3 off, 6 Cyl. 4 S.C.S.A. - 490 BHP each, Cyl. diam. 330 m/m, Stroke 600 m/m. Each working a direct coupled 360 KW Generator.

[AI]R 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 ✓

[Is t]here a drain arrangement fitted at the lowest part of each receiver yes I - 550 Litres / II - 300 Litres / III - 80 Litres } Internal Diameter 450 m/m thickness 20 m/m

[Hi]gh Pressure Air Receivers, No. I - 2 off. Spare for main & aux. engines / II - 3 - Working for main engines / III - 3 - Working for aux. engines Cubic capacity of each Internal diameter 9 3/4 inches thickness 3/8 inches

[Sea]mless, lap welded or riveted longitudinal joint Seamless Material S.M. Steel Range of tensile strength 44.6 kg/mm² / 41.6-42.1 tons/□" Working pressure by Rules 78.8 " " / 95.5 kg/cm²

[Sta]rting Air Receivers, No. ✓ Total cubic capacity ✓ Internal diameter ✓ thickness ✓

[Sea]mless, lap welded or riveted longitudinal joint ✓ Material ✓ Range of tensile strength ✓ Working pressure by Rules ✓

009182 - 009191 - 0016

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

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

Donkey Boilers ✓ General Pumping Arrangements ✓ Oil Fuel Burning Arrangements ✓

SPARE GEAR as per accompanying list.

Plans forwarded per commercial papers post.
Plan of Crank shaft for the main engines.
" " Crank shaft for the auxiliary engines.
" " Thrust, Intermediate and Screw-shafts.

The foregoing is a correct description,

AKTIESELSKABET BURMEISTER & WAINS MASKIN- OG SKIBSBYGGERI [signature] Manufacturer.

Dates of Survey while building — During progress of work in shops: April 19. - May 25. - July 4. 9. 17. 22. 26. - Aug. 7. 9. 20. 27. 30. - Septbr. 3. 6. 10. 16. 17. 21. - Octbr. 11. 16. 17. 18. 19. 22. 23. 24. 29. 30. - Novbr. 1. 2. 4. 6. 11. 12. 13. 14. 15. 16. 19. 21. 23. 25. Decbr. 2. 3. 4. 5. 6. 7. 9. 10. 12. 13. 14. 17. 18. 19. 20. 21. 23. 27. 28. 30. - 1929. - Jan. 2. 3. 4. 7. 8. 9. 11. 13. 17. 18. 20. 21. 24. 28. 30. 31. - Febr. 1. 4. 5. 10. 11. 12. 13. 14. 17. 18. 20. 21. 22. 24. 26. March 1. 3. 4. 5. 12. 14. 18. 20. 21. 22. 24. 25. 27. - April 1. 2. 3. 5. 7. 8. 11. - 1930.

~~During erection on board vessel~~

Total No. of visits 115.

Dates of Examination of principal parts—Cylinders - and - Covers 30/10. 21/11. 6/12. 13/12. 29. 7/1. 11/1. 13/1. 24/1. 17/2. 18/2. 1/3. 30 Pistons 1/11. 19/11. 12/12. 19/12 29. 17/1. 30/1. 1/2. 14/2. 30. Rods 11/10. 30/10. 21/11. 19/12. 29. 7/1. 13/1. 31/1. 30. Connecting rods 6/9. 11/10. 21/11. 4/12. 13/1. 1/2. 19/4. 25/5. 4/7. 7/8. 6/9. 30/10. 6/11. 4/12. 6/12.

Crank shafts 19/12. 29. 3/1. 17/1. 30. Flywheel shaft Thrust shafts 2/9. 28/10. 30/10. 19/11. 6/12. 27/12. 29. Intermediate shafts ✓ Tube shaft ✓

Screw shaft ✓ Propeller ✓ Stern tube ✓ Engine seatings ✓ Engines holding down bolts ✓

Completion of fitting sea connections ✓ Completion of pumping arrangements ✓ Engines tried under working conditions 10/2. 11/2. 12/2. 13/2. 14/2. 18/3. 20/3. 22/3. 24/3. 25/3.

Crank shafts Material S.M.I. Steel. Identification Mark LLOYD'S No. 474 & 475 Ⓛ 6.12.29 No. 553 & 554 Ⓛ 17.1.30 Flywheel shaft, Material ✓ Identification Mark ✓

Crank webs Material S.M. cast steel.

Thrust shafts Material S.M.I. Steel Identification Mark LLOYD'S No. 512 & 513 Ⓛ 22.12.29. Intermediate shafts, Material ✓ Identification Marks ✓

Tube shaft, Material ✓ Identification Mark ✓ Screw shaft, Material ✓ Identification Mark ✓

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 ✓

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 ✓

Is this machinery duplicate of a previous case yes. If so, state name of vessel Please see Copenhagen Reports No. 8088 & 8150.

General Remarks (State quality of workmanship, opinions as to class, &c.) In accordance with the Society's Rules for Special Survey we have examined the material and workmanship during construction of the above main and auxiliary engines until the final running test under working condition in the shop, and found it good and efficient in every respect, and found the engines to work satisfactorily.

The material used in the construction of the engines and the air receivers has been tested as required by the Rules, either by us, or as per certificates produced, issued by Surveyors to this Society.

The dimensions are as specified and in accordance with the Rules, the approved plans and the requirements contained in the Sec. letters E dated the 17th September 1928 and 12th January 1929.

The intermediate and screw-shafts, - plan of which was approved on the 17th September 1928, have not been made here.

Recommend the vessel's machinery to have notation in the Register Book of ✠LMC - with date and OIL ENGINES, when the machinery has been fitted on board the vessel under the supervision of, and tested to the satisfaction of the local Surveyors to this Society.

Certificate (if required) to be sent to Surveyors Office - Copenhagen.

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

4/5 The amount of Entry Fee ...	Kr. 87.36	When applied for,	16.4.1930.
4/5 Special ...	Kr. 2253.34		
Donkey Boiler Fee ...	£	When received,	26.5.30
Travelling Expenses (if any)	Kr. 16.00		
Late fee ..	Kr. 90.00		

A. F. Ørbeck. Nielsen ff. [illegible] Engineer Surveyors to Lloyd's Register of Shipping.

Committee's Minute TUE. 13 JAN 1931 ECC

Assigned See Kob. Rpt. 7150