

## REPORT ON OIL ENGINE MACHINERY.

No. 7504.

8 MAY 1929

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Reg. Book.

(APPLEMENT)

71334 on the Single  
Twin  
Triple  
Quadruple Screw vessel

"NAGARA"

Tons { Gross 6525  
Net 3980Built at GothenburgBy whom built A.B. GÖTAVERKENYard No. 416 When built 1929-4Engines made at GothenburgBy whom made A.B. GÖTAVERKENEngine No. 1798 When made 1929Donkey Boilers made at LongboroughBy whom made WALTER W. COLTMAN & CoBoiler No. 5062 When made 1927Net Horse Power 700Owners AB. SVENSKA OSTATISKA KOMP.Port belonging to GothenburgHorse Power as per Rule 700Is Refrigerating Machinery fitted for cargo purposes NOIs Electric Light fitted YES

Which vessel is intended

GENERALType of Engines Two Diesel Oil Engines 2 or 4 stroke cycle 4 Single or double acting SinglePressure in cylinders 35 kg/cm<sup>2</sup> Diameter of cylinders 630 [24 13/16] Length of stroke 1700 [66 5/8] No. of cylinders 12 No. of cranks 12

Bearings, adjacent to the Crank, measured from inner edge to inner edge

892Is there a bearing between each crank YesRevolutions per minute 100Flywheel dia. NoneWeight ✓Means of ignition Diesel systemKind of fuel used Diesel OilShaft, dia. of journals as per Rule 430.4Crank pin dia. 434

Crank Webs

Mid. length breadth

Thickness parallel to axis 250-270as fitted 434

as per Rule

as fitted 315

M.d. length thickness

Thickness around eyehole 213Intermediate Shafts, diameter as per Rule ✓

as fitted

as per Rule

as fitted 315Thrust Shaft, diameter at collars as fitted 340Screw Shaft, diameter as per Rule ✓

as fitted

as per Rule

as fitted 345Is the tube shaft fitted with a continuous liner YesLiners, thickness in way of bushes as per Rule 18.1as fitted 19.20

Thickness between bushes

as per rule 13.6as fitted 18 Is the after end of the liner made watertight in theboss YesIf the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner Liner in one lengthLiner 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 YesLiners 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 tubeIf so, state type ✓Length of Bearing in Stern Bush next to and supporting propeller 1620Pitch 4390 No. of blades 4 Material Bronze whether Moveable No Total Developed Surface 2x5.16x10.129Means of reversing Engines Direct reversible by means of compound Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubricationThickness of cylinder liners Bottom 42 Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers water cooled or lagged withconducting 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 a funnelWorking Water Pumps, No. Two 175 tons Is the sea suction provided with an efficient strainers which can be cleared within the vessel YesLarge Pumps worked from the Main Engines, No. Two Diameter 160 Stroke 190 Can one be overhauled while the other is at work YesPumps connected to the Main Bilge Line { No. and Size Two 20 tons trunk piston pumps, One 20 tons trunk piston pump, One 150 tons ballast pump.How driven By main engines Electric ElectricLubricating Oil Pumps, including Spare Pump, No. and size Four 42 tons driven by two electric motorsIndependent means arranged for circulating water through the Oil Cooler Yes Suctions, connected to both Main Bilge Pumps and Auxiliary BilgeNo. and size:—In Machinery Spaces Four 3 1/2" & two 2 1/2", one 2 1/2" to each cofferdam & one 3 1/2" to tunnel well.Suctions, &c. Two 3 1/2" to each of 1, 2 & 3 holds, three 3 1/2" to No. 4 hold, one 3 1/2" to No. 5 hold, one 2 1/2" to fore peak, one 3" to tail.Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size One 3" to bilge pump, one 5" to ballast pump. [main eng. bilge pump]All the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes Are the Bilge Suctions in the Machinery Spacesfrom easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges YesAll Sea Connections fitted direct on the skin of the ship Yes Are they fitted with Valves or Cocks BothAre they fixed sufficiently high on the ship's side to be seen without lifting the platform plates Not all, some by lifting of small plates Are the Overboard Discharges above or below the deep water line AboveIs it 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 YesTee pass through the bunkers No bunkers How are they protected ✓Tensions through the deep tanks None Have they been tested as per Rule ✓Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes

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

Cold to another Yes Is the Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper engine room platformWood 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 134, 540 & 600 Stroke 650 Driven by Main enginesAuxiliary Air Compressors, No. 1 No. of stages 2 Diameters 405 & 460 Stroke 260 Driven by ElectricBoiler Air Compressors, No. 1 No. of stages 2 Diameters 35 & 106 Stroke 80 Driven by Steam engineWorking Air Pumps, No. None Diameter ✓ Stroke ✓ Driven by ✓Main Engines crank shafts, diameter as per Rule ✓ as fitted 165 as per Stockholm reports No. 3007, 3008 & 3009 attached.RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule YesAre the internal surfaces of the receivers be examined Yes What means are provided for cleaning their inner surfaces The high pressure air receivers by means of caustic soda & steamIs there an arrangement fitted at the lowest part of each receiver YesHigh Pressure Air Receivers, No. 4 Cubic capacity of each 2 of 225 litres, 2 of 450 Internal diameter 400 & 466 thickness 14 & 17Seamless, lap welded or riveted longitudinal joint Seamless Material L.M. steel Range of tensile strength 38-38.4 kg/cm<sup>2</sup> Working pressure by Rules 65 kg/cm<sup>2</sup>Starting Air Receivers, No. 2 Total cubic capacity 222.6-45.2 m<sup>3</sup> Internal diameter 1830 & 1880 thickness 25 & 25.5Seamless, lap welded or riveted longitudinal joint Riveted Material L.M. steel Range of tensile strength 45.3-48.3 kg/cm<sup>2</sup> Working pressure by Rules 26.7 kg/cm<sup>2</sup>

014077-014082-0191



## 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)

14/7/27, 9/12/27

Receivers

20/10/27, 8/2/28

Separate Tanks

12/9/28

Donkey Boilers

General Pumping Arrangements

17/1/28

Oil Fuel Burning Arrangements

✓

## SPARE GEAR

For the main engines with compressors & pumps:  
1 cylinder cover, 1 complete set of all valves, valve seats, springs & other fittings for one cylinder cover, in addition, 1 air inlet valve complete, 1 exhaust valve complete and 3 extra valves for same, 1 starting air valve complete, 5 fuel valves complete with 6 extra valve seats for same, 1 cylinder liner, 1 cooling jacket for same, 1 piston complete with rings and, in addition, 3 sets of piston rings for one piston, telescopic cooling pipes for one piston, 1 set of studs & nuts for a cylinder cover, 2 crosshead bearing bolts & nuts and 4 halves of crosshead brasses, 2 crank pin bolts & nuts and 4 halves of crank pin brasses, 4 main bearing bolts & nuts and 4 halves of main bearings, 1 set of bolts & nuts for one intermediate shaft coupling, 1 propeller shaft with nut, 2 cast iron propellers, 1 cam roller with pin of each side for the valve gear, 1 complete set of springs for one engine & compressor, 1 set of rings (for one piston) of each size used in the compressor, 1 set of suction & delivery valves of each size used in a compressor, 2 crosshead brasses for the compressor, 2 compressor crank pin bolts & nuts and 4 halves of crank pin brasses, 1 set of 4 HP compressor air cooling coils, 1 set of all working parts for a fuel pump, 1 set of valves for the bilge pumps.

For the auxiliary engines:

Spare gear as per list, approved on the 12<sup>th</sup> February 1923, placed on board.

For the manoeuvring air compressor:

2 crank pin bolts &amp; nuts and 2 halves of crank pin brasses, 2 halves of main bearing brasses, 1 set of piston springs of each size used in the compressor, 1 set of suction and delivery valves.

For the small steam driven compressor:

1 set of piston rings, 1 set of suction &amp; delivery valves.

For the auxiliary pumps: 1 set of suction &amp; delivery valves for the bilge &amp; sanitary pump, 1/2 set of data for the donkey boiler feed pump, 2 wings for the ballast pump.

For the donkey boiler: 1 check valve, 1 safety valve spring, spare parts for the fuel installation.

General: A quantity of assorted nuts &amp; bolts, a length of pipe of each size used for the fuel delivery and injection air pipes to the main &amp; auxiliary power cylinders, and the air delivery from the main and auxiliary compressors to the receivers, with unions &amp; flanges suitable for each.

The foregoing is a correct description.

AKTIEBOLAGET COTTAVERKEN  
Leeds & Co. Ltd.

Manufacturer.

Dates of Survey while building	During progress of work in shops - -	1928: April 4, May 3, 23, June 7, Aug 4, 21, 21, 28, 29, Sept 3, 5, 7, Oct 2, 4, 5 Nov 3, Dec 18
	During erection on board vessel - -	1929: Jan 2, 22, 24, 25, 31, Feb 6, 15, 21, 22, 23, 25, 28, March 4, 12, 6, 7, 9, 11, 18, 22, 26 April 2, 4, 13
	Total No. of visits	52
Dates of Examination of principal parts - Cylinders	21/9/29	2, 6, 7, 9, 11, 26
Crank shafts	21/9/29	3/29
Flywheel shaft	✓	
Thrust shaft	11/3/29	
Intermediate shafts	2/4/29	
Tube shaft	✓	
Screw shafts	22/4/29	
Propellers	6/2/29	
Stern tube	22/2/29	
Engine seatings	25/2/29	
Engines holding down bolts	12/3/29	
Completion of fitting sea connections	9/4/29	
Completion of pumping arrangements	23/4/29	
Engines tried under working conditions	28/4/29	
Crank shaft, Material	L.M. Steel	Identification Mark
Thrust shaft, Material	L.M. Steel	Identification Mark
Tube shaft, Material	✓	Identification Mark
Screw shaft, Material	L.M. Steel	Identification Mark
Is the flash point of the oil to be used over 150° F.	No	
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	Yes	
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, &amp;c.)

The main engines of this vessel have been built under Special Survey and all the requirements of the Rules have been complied with.

The shafting as per forging reports attached. The material of the starting air receivers as per test sheets attached.

The workmanship is good and the material fulfils the requirements of the Rules.

The dimensions are as specified and in accordance with the Rules and approved plans.

The auxiliary machinery consists of three 4-stroke cycle, single acting Diesel oil engines of

cylinder diam 290 mm stroke 430 mm manufactured by Messrs AB Atlas Diesel of Stockholm, as per skm reports.

Nos 3007, 3008 &amp; 3009 attached, each working an electric dynamo of 66 kw.

The main &amp; auxiliary engines have been tested under full working power on a seven hours

trial trip &amp; found to work satisfactorily.

(Part of the survey was at the Builders request carried out by the undersigned E. Bernholm on the 13<sup>th</sup> April 1929, p. 8)

The Machinery of this vessel is eligible in our opinion to be classed in

the Register Book with notation of + LMC 4.29

Working pressure of donkey boiler 85 lbs/sq"

The amount of Entry Fee	100.00	When applied for,	6 <sup>th</sup> May 1929
Special	200.00	When received,	27.5.29
STARTING AIR RECEIVERS	152.88		
Donkey Boiler Fee	25.00		
LATE FEE			
Travelling Expenses (if any)			

Committee's Minute

Assigned

Oil Engines

DB 85 lb

Lloyd's Register Foundation