

# REPORT ON OIL ENGINE MACHINERY.

No. 22630

Received at London Office

Date of writing Report 12<sup>th</sup> Jan. 1938 When handed in at Local Office 10 Port of Hamburg

No. in Survey held at Hamburg and Augsburg Date, First Survey 25<sup>th</sup> November Last Survey 4<sup>th</sup> Jan. 1938  
Reg. Book. Number of Visits 54

on the ~~Steam~~ <sup>Single</sup> Screw vessel

## NORVIK.

Tons { Gross 9555.  
Net 5987.

Built at Hamburg By whom built Deutsche Werft A.G. Yard No. 194 When built 1938.

Engines made at Augsburg By whom made Maschinenfabrik Augsburg-Nürnberg Engine No. 69/1210 When made 1937

Donkey Boilers made at Hamburg By whom made Deutsche Werft A.G. Boiler No. 611+612 When made 1937  
WASTE HEAT D.B. 627

Brake Horse Power 4100 Owners Tanker Corporation (Johan Rasmussen & Co.) Port belonging to Panama R.P.

Nom. Horse Power as per Rule 1167 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

Trade for which vessel is intended Carrying Petroleum in bulk.

OIL ENGINES, &c. Type of Engines Heavy Oil - Makin's type D6 3 in 60/110 1/2 or 4 stroke cycle 2 Single or double acting double

Maximum pressure in cylinders 45 kg/cm<sup>2</sup> Diameter of cylinders 23 5/8 600 mm Length of stroke 43 5/16 1100 mm No. of cylinders 6 No. of cranks 6

Mean Indicated Pressure 5.3 kg/cm<sup>2</sup> Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 885 mm Is there a bearing between each crank yes

Revolutions per minute 116 Flywheel dia. 2080 mm Weight 3120 mm Means of ignition direct ign. Kind of fuel used diesel oil

Crank Shaft, ~~Solid forged~~ <sup>Semi built</sup> dia. of journals as per Rule 420 mm as fitted 420 mm Crank pin dia. 420 mm Crank Webs Mid. length breadth 790 mm Thickness parallel to axis 265 mm  
~~All built~~ as fitted 420 mm Mid. length thickness 265 mm shrunk Thickness around eye-hole 185 mm

Flywheel Shaft, diameter as per Rule 420 mm as fitted 420 mm Intermediate Shafts, diameter as per Rule 385 mm as fitted 385 mm Thrust Shaft, diameter at collars as per Rule 400 mm as fitted 400 mm

Tube Shaft, diameter as per Rule as fitted Screw Shaft, diameter as per Rule 388 mm as fitted 388 mm Is the ~~tube~~ <sup>screw</sup> shaft fitted with a continuous liner yes

Bronze Liners, thickness in way of bushes as per Rule 22 mm as fitted 22 mm Thickness between bushes as per Rule 16 mm as fitted 16 mm 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 -

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 1600 mm

Propeller, dia. 7800 mm Pitch 3400 mm No. of blades 4 Material Bronze whether Moveable no Total Developed Surface 7.028 sq. feet

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

Thickness of cylinder liners 40 mm Are the cylinders fitted with safety valves yes Are the exhaust pipes and silencers ~~water cooled~~ lagged with non-conducting material yes

If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine -

Cooling Water Pumps, No. 4 (2 fresh water 2 sea water) 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. 1 Diameter 150 mm Stroke 180 mm Can one be overhauled while the other is at work -

Pumps connected to the Main Bilge Line No. and Size 1 Bilgep. - 15 m<sup>3</sup>/h. - 1 Bilgepumps 75 m<sup>3</sup>/h. - 1 Ballastpumps 250 m<sup>3</sup>/h.  
How driven main engine steam (duplex type) steam (duplex type)

Is the cooling water led to the bilges no If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements -

Ballast Pumps, No. and size 1 - Dupl. p. 250 m<sup>3</sup>/h. Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size 2 1 - toothed wheel 40 m<sup>3</sup>/h. (main eng) 1 - steam Dupl. p. 45 m<sup>3</sup>/h

Are two independent means arranged for circulating water through the Oil Cooler yes Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge

In engine rooms frame 41-42 two of 90 mm φ, frame 27-28 two of 90 mm φ, frame 18-20 two of 90 mm φ, frame 10-11 one of 90 mm φ. Main Pump Room Frame of 90 mm φ. Connected to stripping pumps.

In Hold, &c. Connected to ballast p. in fore pump room; frame 185-186 one of 64 mm φ for fore pump room; 2 of 88 mm φ for cargo hold, 1 of 70 mm φ for chain locker.

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 2, one of 150 mm φ to ballastp., one of 110 mm φ to bilge pumps.

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, lower: on margin plate in way of sea inlet chests built into double bottom upper: fitted on chest, welded to stem of vessel Are they fitted with Valves or Cocks yes

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 suction pipes to callender frame 49-50 How are they protected strong galvanized steel tube

What pipes pass through the cargo tanks cargo suction lines, steam heating coils 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 mach. aft 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 -

Main Air Compressors, No. - No. of stages - Diameters - Stroke - Driven by -

Auxiliary Air Compressors, No. 1 No. of stages 2 Diameters 2 x 260-100 Stroke 220 mm Driven by 2 cyl. steam eng.

Small Auxiliary Air Compressors, No. 1 No. of stages 2 Diameters 150-55 Stroke 100 Driven by clutched to aux diesel

What provision is made for first Charging the Air Receivers. aux. diesel engine driving the compressors can be started by hand.

Scavenging Air Pumps, No. 1 Panders Diameter 1380 mm Stroke 850 mm Driven by main engine

Auxiliary Engines crank shafts, diameter as per Rule 1 aux. oil eng. driving generator + compor. No. 2 cyl. steam eng. for compor. drive 1 cyl. steam eng. for generator drive as fitted 35 mm φ (Hamburg Rep. 22380) diameter 112 mm φ (Makin's Standard type) 400 mm φ

Have the Auxiliary Engines been constructed under special survey yes Is a report sent herewith -



5700-1911M

**AIR RECEIVERS:**—Have they been made under survey *yes* Are reports or certificates now forwarded *Certificates of material etc.*  
 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 and cleaned *yes (manhole)* Is a drain fitted at the lowest part of each receiver *yes*  
**Injection Air Receivers, No.** — Cubic capacity of each — Internal diameter — thickness —  
 Seamless, lap welded or riveted longitudinal joint — Material — Range of tensile strength — Working pressure *by Rules — Actual —*  
**Starting Air Receivers, No.** *2* Total cubic capacity *each 12 m<sup>3</sup>* Internal diameter *1750 mm* thickness *24.5 mm*  
 Seamless, lap welded or riveted longitudinal joint *riveted* Material *S.T.C. Steel* Range of tensile strength *shell 44/50 kg/cm<sup>2</sup> end plate 41/47* Working pressure *by Rules 25 kg/cm<sup>2</sup> Actual 25 kg/cm<sup>2</sup>*

**IS A DONKEY BOILER FITTED?** *yes* If so, is a report now forwarded? *yes*  
 Is the donkey boiler intended to be used for domestic purposes only *—*

**PLANS.** Are approved plans forwarded herewith for Shafting *27.3.1935* Receivers *13.11.35* Separate Fuel Tanks *24.5.35, 4.6.35*  
 (If not, state date of approval)  
 Donkey Boilers *28.9.35, 4.4.35* General Pumping Arrangements *27.2.36, 31.1.36* Pumping Arrangements in Machinery Space *27.2.36*  
 Oil Fuel Burning Arrangements *9.5.36*

**SPARE GEAR.**

Has the spare gear required by the Rules been supplied *yes.*  
 State the principal additional spare gear supplied *1 upper and 1 lower cylinder liners, 1 top- and 1 bottom cylinder cover, 1 complete piston with rod, 1 propeller shaft marked LLOYD'S 1278, L.S. 23.7.37, H.R. 2.11.37.*

The foregoing is a correct description,  
**DEUTSCHE WERFT**  
**AKTIENGESELLSCHAFT**  
 Manufacturer.

Dates of Survey while building  
 During progress of work in shops -- *1936: Nov. 25, Dec. 29, 30, 1937: March 18, 23, 25, April 6, 10, 13, 17, 22, May 4, 14, 15, June 2, 5, 15, 22, 25, 28, July 1, 15, 21, Aug 28.*  
 During erection on board vessel -- *1937: Nov. 3, 9, 12, 22, 27, Dec. 1, 7, 9, 10, 15, 17, 20, 23, 27, 29, 1938: Jan. 3, 4.*  
 Total No. of visits *54.*

Dates of Examination of principal parts—Cylinders. *Please* Covers. *see* Pistons *Augsburg* — Rods *Report* Connecting rods *dated 14.10.37*  
 Crank shaft *Augsburg Rep.* Flywheel shaft *Augsburg Rep.* Thrust shaft *2.11.37* Intermediate shafts *2.11.37* Tube shaft *—*  
 Screw shaft *2.11.37* Propeller *9.7.37* Stern tube *12.1.37* Engine seatings *22.11.37* Engines holding down bolts *14.12.37*  
 Completion of fitting sea connections *22.11.37* Completion of pumping arrangements *14.12.37* Engines tried under working conditions *27.12.37*  
 Crank shaft, Material *S.T.C. Steel* Identification Mark *LLOYD'S 14 11630-4632, 12.2.37* Flywheel shaft, Material *S.T.C. Steel* Identification Mark *LLOYD'S FS. 3599, 20.3.37*  
 Thrust shaft, Material *S.T.C. Steel* Identification Mark *LLOYD'S 563, H.K. 20.7.37* Intermediate shafts, Material *S.T.C. Steel* Identification Mark *LLOYD'S L.S. 1321+1322, 23.7.37*  
 Tube shaft, Material *—* Identification Mark *—* Screw shaft, Material *S.T.C. Steel* Identification Mark *LLOYD'S 564, H.K. 20.7.37, 1278 L.S. 23.7.37.*

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 *—* 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 duplicate of a previous case *yes* If so, state name of vessel *MARINA, THORSHEIMER, NORLYS, REGULUS.*

**General Remarks** (State quality of workmanship, opinions as to class, etc. *The main heavy oil engine has been built at Augsburg under Special Survey of the Society's Surveyors. Material and workmanship of this machinery are of good quality and the outfit is ample. It has been fitted under Special Survey at Hamburg in accordance with the approved plans the Secretary's letters and otherwise in conformity with the requirements of the Rules. During the trial trip the machinery has given satisfaction under full working and manoeuvring conditions.*)

The machinery is eligible in my opinion to be classed in the Society's Register Book with notation of *+LMC - 1,38 - oil eng. - T.S.-CL.*

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

The amount of Entry Fee *1/5 R.M. 24-* When applied for, *Special ... 1/5 R.M. 517- 77.7.1938*  
 Donkey Boiler Fee *500-* When received, *2 START. AIR. RECEIV. ... 168- 4/2 1938*  
 Travelling Expenses (if any) *71-*

*Friedrich Wilhelm He. Rohrs*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute  
 Assigned + LMC 1.38 oil eng.  
 J.S.B. 170 lb.

