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# REPORT ON OIL ENGINE MACHINERY.

No. 9570

Received at London Office

-1 APR 1935

Writing Report 19/3 1935 When handed in at Local Office 19 Port of Copenhagen  
 Survey held at Odense Date, First Survey 12/11 1934 Last Survey 12/3 1935  
 Number of Visits 16  
 on the <sup>Single</sup> ~~Twin~~ ~~Triple~~ ~~Quadruple~~ Screw vessel "PERNA"  
 Tons { Gross 2984  
 Net 4748  
 at Odense By whom built Odense Skibsværft Yard No. 54 When built 1935  
 made at Amsterdam By whom made N.V. Werkspoor Engine No. 631 When made 1934  
 Boilers made at Amsterdam By whom made N.V. Werkspoor Boiler No. 2668 When made 1934  
 Horse Power 2800 Owners N.V. Petroleum Maats. 19 CORONA Port belonging to S Gravenhage  
 Horse Power as per Rule 502 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted yes.  
 for which vessel is intended ocean trade, carrying petroleum in bulk.

**ENGINES, &c.**—Type of Engines 2 or 4 stroke cycle Single or double acting  
 Mean pressure in cylinders \_\_\_\_\_ Diameter of cylinders \_\_\_\_\_ Length of stroke \_\_\_\_\_ No. of cylinders \_\_\_\_\_ No. of cranks \_\_\_\_\_  
 Indicated Pressure 110 lbs/sq. in. \_\_\_\_\_  
 Bearings, adjacent to the Crank, measured from inner edge to inner edge \_\_\_\_\_ Is there a bearing between each crank \_\_\_\_\_  
 Revolutions per minute \_\_\_\_\_ Flywheel dia. \_\_\_\_\_ Weight \_\_\_\_\_ Means of ignition \_\_\_\_\_ Kind of fuel used \_\_\_\_\_  
 Shaft, dia. of journals as per Rule \_\_\_\_\_ as fitted \_\_\_\_\_ Crank pin dia. \_\_\_\_\_ Crank Webs Mid. length breadth \_\_\_\_\_ shrunk \_\_\_\_\_ Thickness parallel to axis \_\_\_\_\_  
 Mid. length thickness \_\_\_\_\_ Thickness around eyehole \_\_\_\_\_  
 Main Shaft, diameter as per Rule \_\_\_\_\_ as fitted \_\_\_\_\_ Intermediate Shafts, diameter as per Rule \_\_\_\_\_ as fitted \_\_\_\_\_ Thrust Shaft, diameter at collars as per Rule \_\_\_\_\_ as fitted \_\_\_\_\_  
 Propeller Shaft, diameter as per Rule \_\_\_\_\_ as fitted \_\_\_\_\_ Screw Shaft, diameter as per Rule \_\_\_\_\_ as fitted \_\_\_\_\_ Is the { tube } shaft fitted with a continuous liner { screw }  
 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 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 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 \_\_\_\_\_  
 Propeller, dia. \_\_\_\_\_ Pitch \_\_\_\_\_ No. of blades \_\_\_\_\_ Material \_\_\_\_\_ whether Moveable \_\_\_\_\_ Total Developed Surface \_\_\_\_\_ sq. feet  
**of reversing Engines** Is a governor or other arrangement fitted to prevent racing of the engine when declutched \_\_\_\_\_ Means of lubrication \_\_\_\_\_  
 Thickness of cylinder liners \_\_\_\_\_ Are the cylinders fitted with safety valves \_\_\_\_\_ Are the exhaust pipes and silencers water cooled or lagged with insulating material \_\_\_\_\_  
 If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine to funnel \_\_\_\_\_  
**Water Pumps, No.** \_\_\_\_\_ Is the sea suction provided with an efficient strainer which can be cleared within the vessel yes \_\_\_\_\_  
**Pumps worked from the Main Engines, No.** \_\_\_\_\_ Diameter \_\_\_\_\_ Stroke \_\_\_\_\_ Can one be overhauled while the other is at work \_\_\_\_\_  
**connected to the Main Bilge Line** { No. and Size 2 off 3 1/2" to 1/4" each } 1 off 10" 8" 8" duplex \_\_\_\_\_  
 { How driven by main engine } by steam \_\_\_\_\_  
 Bilge pumping 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 \_\_\_\_\_  
**Pumps, No. and size** 1 off 10" 8" 8" duplex \_\_\_\_\_ **Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size** \_\_\_\_\_  
**D. PUMP:** 1 off 6" 6" 6" duplex \_\_\_\_\_  
 Independent means arranged for circulating water through the Oil Cooler \_\_\_\_\_ **Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge** \_\_\_\_\_  
**No. and size:**—In Machinery Spaces 3 off 3 1/2" 2 off 3 1/2" FROM COFFERS IN DOUBLE BOTTOM \_\_\_\_\_ In "Pump Rooms": 1 off 3" \_\_\_\_\_  
 & FOREHOLD: 3 off 2" F. PUMP ROOM: 1 off 2" F. COFF.: 3 off 2 3/4" AFT COFF.: 1 off 5" \_\_\_\_\_  
**Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size** 1 off 5" 1 off 6 1/4" \_\_\_\_\_  
 Are the Bilge Suction pipes in Holds and Tank Well fitted with strum-boxes yes \_\_\_\_\_ Are the Bilge Suctions in the Machinery Spaces easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges yes \_\_\_\_\_  
 Are the Connections fitted direct on the skin of the ship yes \_\_\_\_\_ Are they fitted with Valves or Cocks valves \_\_\_\_\_  
 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 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 \_\_\_\_\_  
 Are they fitted with covers to prevent water from passing through the bunkers \_\_\_\_\_ How are they protected \_\_\_\_\_  
 Are they fitted with covers to prevent water from passing through the deep tanks 1 off 5" COFF. SUCTION \_\_\_\_\_ Have they been tested as per Rule yes \_\_\_\_\_  
 Are the Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times yes \_\_\_\_\_  
 Are the arrangements 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 \_\_\_\_\_ Is it fitted with a watertight door \_\_\_\_\_ worked from \_\_\_\_\_  
 Are the arrangements provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork \_\_\_\_\_  
**Compressors, No.** \_\_\_\_\_ **No. of stages** \_\_\_\_\_ **Diameters** \_\_\_\_\_ **Stroke** \_\_\_\_\_ **Driven by** \_\_\_\_\_  
**VERING** \_\_\_\_\_  
**Air Compressors, No.** 2 \_\_\_\_\_ **No. of stages** 2 \_\_\_\_\_ **Diameters** 120 CB. FT. PR. MIN. \_\_\_\_\_ **Driven by** Steam \_\_\_\_\_  
**Auxiliary Air Compressors, No.** \_\_\_\_\_ **No. of stages** \_\_\_\_\_ **Diameters** \_\_\_\_\_ **Stroke** \_\_\_\_\_ **Driven by** \_\_\_\_\_  
**Engines Air Pumps, No.** \_\_\_\_\_ **Diameter** \_\_\_\_\_ **Stroke** \_\_\_\_\_ **Driven by** \_\_\_\_\_  
**Engines crank shafts, diameter** as per Rule \_\_\_\_\_ as fitted 110 mm. \_\_\_\_\_

FOR REMAINING ITEMS PLEASE SEE AMSTERDAM RPT. NO. 13334 A

**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 and cleaned *yes* Is a drain fitted at the lowest part of each receiver *yes*  
**High Pressure Air Receivers, No.** *None* 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.** Total cubic capacity Internal diameter thickness  
 Seamless, lap welded or riveted longitudinal joint Material Range of tensile strength Working pressure *by Rules Actual*

**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 *no*  
**PLANS.** Are approved plans forwarded herewith for Shafting *✓* Receivers *✓* Separate Tanks *yes*  
 (If not, state date of approval)  
 Donkey Boilers *No* General Pumping Arrangements *yes* Oil Fuel Burning Arrangements *yes*

**SPARE GEAR.**

Has the spare gear required by the Rules been supplied *yes*  
 State the principal additional spare gear supplied *1 cylinder head, 2 cylinder liners, 1 piston, 1 piston rod, 1 crosshead, 1 guide shoe, 1 connecting rod, 6 exhaust valves complete, 8 exhaust valves w. spindles & seats, 3 inlet valves, 2 spindle seats, 2 escape valves complete, 2 starting valves w. spindles, 4 feed valves complete, 1 chain for cam, 1 screw & crosshead bolts, 2 crank pin bearing bolts, 2 main bearing bolts, 48 piston ring scraper rings, 1 feed pump complete, 1 propeller shaft, 1 cast iron propeller.*

The foregoing is a correct description,  
 PR. ODENSE STAALSKIBSVÆRFT  
 VED A. P. MÖLLER  
 Manufacturer.

Dates of Survey while building	During progress of work in shops--																
	During erection on board vessel--	2/11	27/4	6/12	17/12	1934	3/11	10/1	15/1	22/1	29/1	1/2	13/2	20/2	28/2	7/3	12/3
	Total No. of visits	16															
Dates of Examination of principal parts—Cylinders		Covers	Pistons	Rods	Connecting rods												
Crank shaft	Flywheel shaft	Thrust shaft	Intermediate shafts	Tube shaft													
Screw shaft	Propeller	17/12	Stern tube	9/12	17/12	Engine seatings	17/12	Engines holding down bolts	3/1								
Completion of fitting sea connections	27/4	Completion of pumping arrangements	13/2	Engines tried under working conditions	7/3												
Crank shaft, Material	Identification Mark	Flywheel shaft, Material	Identification Mark														
Thrust shaft, Material	Identification Mark	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 *yes*  
 Is the vessel (not being an oil tanker) fitted for carrying oil as cargo *yes* (Oil Tanker) *no*, have the requirements of the Rules been complied with *yes*  
 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 *✓* If so, state name of vessel *✓*

**General Remarks** (State quality of workmanship, opinions as to class, &c.)  
*The above machinery has been supplied by Messrs. N.V. Werkspoor of Amsterdam and has been fitted on board the vessel under special survey and in accordance with Society's Rules, the approved plans and the requirements contained in the Letters E dated 19/12/1934 and 18/1/1935.*

*On completion of the installation the whole of the main & auxiliary machinery as the cargo pumping arrangement was tried under working conditions and satisfactory and on the final trial trip, on which a speed of 13.1 knots was obtained the maneuvering of the main engine was tested and found good.*

*Recommend the vessel's machinery to have notation of +LMC-3.35*  
 C.L.

The amount of Entry Fee	.. \$ 26.88	When applied for,	28.3	1935
1/5 Special	.. \$ 448.48	When received,	10.4	13/4
Donkey Boiler Fee	.. \$ 300.00			
Travelling Expenses (if any)	\$ 542.00			
LATE FEE	---			
Committee's Minute	FRI. 5 APR 1935			
Assigned	+LMC 3.35 Ch.			
	S.B. 180th oil engines			

*Cluiff*  
 Engineer Supervisor to Lloyd's Register of Shipping

*Openlager* Continuation of Report No. 9570 dated 19/3 1935 on the Motor Tanker "PERNA" of 's Gravesend.

The Auxiliary Machinery comprises

one single ended vertical donkey boiler, 2560 sq. ft. H.S., 180 LBS. W.P., fitted for exhaust gas and oil firing. The steam is used for the following purposes:  
 off Win's feed pumps, 6" x 8 1/2" x 18" duplex  
 26 inch for oil burning, Smith's patent, consisting of 2 oil fuel pressure pumps, 3" x 4 1/2" x 6" simplex, 2 preheaters and 2 filters.  
 fan for forced draught.  
 evaporator  
 ballast pump (general service pump), 10" x 8" x 8" duplex.  
 "stand by" centrifugal salt water cooling pump, 200 to 600 gals.  
 " " piston cooling water pump (fresh water), 8" x 8" x 10" duplex.  
 " " lubricating oil pump, 8" x 8" x 10" duplex.  
 coffee dam pump, 6" x 6" x 6" duplex.  
 oil fuel transfer pump, 6" x 6" x 6" duplex.  
 lubricating oil transfer pump (drum pump), 4 1/2" x 3" x 4" duplex.  
 2 stage manufacturing air compressor, each driven by a 1-cyl. 50 H.P. engine, 450 R/M., capacity 120 cu. ft. free air per minute.  
 16 kwh. compound wound dynamo, driven by a 1-cyl. steam engine, 110 V. x 140 amp. x 390 R/M.  
 2-cyl. NH3 compressor for the cooled provision stores, driven by a 1-cyl. steam engine, placed in a special compartment aft.  
 cargo oil pumps, 12" x 10" x 24" duplex } In No. 1 main  
 stripping & bilge pump 6" x 6" x 6" duplex } pump room.  
 cargo oil pumps, 12" x 10" x 24" duplex } In No. 2 main  
 stripping & bilge pump 6" x 6" x 6" duplex } pump room.  
 oil fuel transfer pump, 6" x 6" x 6" duplex } In the forward  
 bilge & ballast pump, 6" x 6" x 6" duplex } pump room  
 hydraulic steering gear, worked by a 2-cyl. steam engine, controlled from the bridge through telemotor.  
 winches on deck, 1 windlass and heating coils in oil belts, daily service tanks, D.B. tanks and heaters in the accommodation spaces.  
 In the aft-most center tank for cargo oil is fitted a 18 to 1/2 inch with a 2" suction pipe to center, port and starboard tanks, grand forward tank.  
 Further a 26/30 H.P. 2 S.C.S.A. throughout Diss oil engine, 210 mm diam. x 275 mm stroke x 390 R/M. is working a 16 kwh. compound wound dynamo, 110 V. x 140 amp. x 390 R/M. like the steam driven dynamo intended for giving current for the electric light installation and for the following electric motor:

