

Rpt. 4b.

## REPORT ON OIL ENGINE MACHINERY.

No. 4580

Received at London Office 25 JUL 1935

Date of writing Report 5/10/34 When handed in at Local Office 22/7/35 Port of Oslo  
No. in Survey held at Reg. Book. Date, First Survey 30 June 1934 Last Survey 13 July 1935  
Number of Visits 46

on the <sup>Single</sup> ~~Triple~~ ~~Quadruple~~ Screw vessel *M/S. HAARON HAVAN*  
Built at *Oslo* By whom built *Aschers Neb. Verket* Yard No. *465* When built *1935*  
Engines made at *Oslo* By whom made *Aschers Neb. Verket* Engine No. *27* When made *1935*  
Key Boilers made at *Oslo* By whom made *Aschers Neb. Verket* Boiler No. — When made *1935*  
Net Horse Power *at 2600* Owners *Norlandske Jernbaneselskab* Port belonging to *Oslo*  
Net Horse Power as per Rule *489* Is Refrigerating Machinery fitted for cargo purposes *no* Is Electric Light fitted *yes*  
Use for which vessel is intended *oil trade, mostly U.S.A. - Norway*

ENGINES, &c. — Type of Engines *Aschers B. M., vertical, airless injection* 2 or 4 stroke cycle *4* Single or double acting *SA*

Mean pressure in cylinders *46 kg/cm<sup>2</sup>* Diameter of cylinders *745 mm* Length of stroke *1500 mm* No. of cylinders *6* No. of cranks *6*

Distance of bearings, adjacent to the Crank, measured from inner edge to inner edge *1050 mm* Is there a bearing between each crank *yes*

Revolutions per minute *110* Flywheel dia. *2146 mm* Weight *1900 kg* Means of ignition *compression* Kind of fuel used *P.P.C. Standard*

Crank Shaft, dia. of journals *as per Rule* *476 mm* Crank pin dia. *476 mm* Crank Webs *Mid. length breadth 770 mm* Thickness parallel to axis *310 mm*  
*as fitted* *476 mm* *Mid. length thickness 290 mm* Thickness around eyehole *222 mm*

Wheel Shaft, diameter *as per Rule* *476 mm* Intermediate Shaft, diameter *as per Rule* *15 1/2"* Thrust Shaft, diameter at collars *as per Rule* *16 1/2"*  
*as fitted* *535 mm* *as fitted* *16"* *as fitted* *16 1/2"*

Propeller Shaft, diameter *as per Rule* *16"* Is the *propeller* shaft fitted with a continuous liner *yes*  
*as fitted* *16"*

Liner, thickness in way of bushes *as per Rule* *13/16"* Thickness between bushes *as per Rule* *10/16"* Is the after end of the liner made watertight in the stern boss *yes*

If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner *yes*

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 the liners are fitted, is the shaft lapped or protected between the liners *yes* Is an approved Oil Gland or other appliance fitted at the after end of the tube *yes*

If so, state type *yes* Length of Bearing in Stern Bush next to and supporting propeller *6' 0"*

Propeller, dia. *15' 6"* Pitch *10' 11 1/2"* No. of blades *4* Material *manila* whether Moveable *yes* Total Developed Surface *81.3* sq. feet

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

Thickness of cylinder liners *53.5 mm* Are the cylinders fitted with safety valves *yes* Are the exhaust pipes and silencers *yes* lagged with

insulating 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 *tunnel fitted*

Number of Water Pumps, No. *Two* Is the sea suction provided with an efficient strainer which can be cleared within the vessel *yes*

Water Pumps worked from the Main Engines, No. *one double* Diameter *215 mm* Stroke *200 mm* Can one be overhauled while the other is at work *yes*

Water connected to the Main Bilge Line { No. and Size *Three, 215 x 200 — 190 x 150 x 250 — 190 x 200 x 300*

How driven *one chain driven, one steam driven, one gas engine driven*

Is 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

Number of Pumps, No. and size *two in forehold: 150 x 150 x 150* Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size *one steam dr. 190 x 200 x 250*  
*one chain dr. 215 x 200 x 2*

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

No. and size: — In Machinery Spaces *one 6" gas engine p. — one 4 1/2" steam p. — one 4 1/2" chain dr. p.* In Pump Room *one 4"*

Is, &c. *in forehold: Two 4"*

Number of Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size *one 5", one 4 1/2", one 4 1/2", one 3 1/2" hose*

Are the Bilge Suction pipes in Holds and Tunnel 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 Sea 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 *yes*

Are 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*

Do the pipes pass through the bunkers *yes* How are they protected *yes*

Do the pipes pass through the deep tanks *main cargo piping* Have they been tested as per Rule *yes*

Are Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times *yes*

Are 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

space to another *yes* Is the Shaft Tunnel watertight *yes* Is it fitted with a watertight door *yes* worked from *yes*

Is the vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork *yes*

Number of Compressors, No. — No. of stages — Diameters — Stroke — Driven by —

Number of Air Compressors, No. *one* No. of stages *2* Diameters *18 1/2"* Stroke *8"* Driven by *steam eng*

Number of Auxiliary Air Compressors, No. *one* No. of stages *2* Diameters *14 1/2" max 14 1/2"* Stroke *110 mm* Driven by *dynamo shaft*

Number of Engineering Air Pumps, No. — Diameter — Stroke — Driven by —

Number of Auxiliary Engines crank shafts, diameter *as per Rule* *90 mm*

*as fitted*



**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.** *✓* Cubic capacity of each *✓* Internal diameter *✓* thickness *✓*  
Seamless, lap welded or riveted longitudinal joint *✓* Material *✓* Range of tensile strength *✓* Working pressure *✓*  
**Starting Air Receivers, No.** *Two* Total cubic capacity *280 cu. ft. each* Internal diameter *6'-0"* thickness *1"*  
Seamless, lap welded or riveted longitudinal joint *Riv. joints* Material *S.M. steel* Range of tensile strength *28-35 TONS* Working pressure *Actual 356 LBS PER SQ. INCH.*

**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 *25/6/34, 15/9/34* Receivers *23/3/34* Separate Tanks *✓*  
(If not, state date of approval)  
Donkey Boilers *28/3/34* General Pumping Arrangements *11/7/34, 29/12/34* Oil Fuel Burning Arrangements *✓*

### SPARE GEAR.

Has the spare gear required by the Rules been supplied *Yes*  
State the principal additional spare gear supplied *1 complete fuel oil pump for main engines*  
*1 tail shaft - Bottom end & main bearing brasses for air compressor.*  
*Piston rings & valves for steam driven ballast pump, & sanitary pump.*  
*Main bearing brasses, valves, pump piston (1 1/2), crosshead, piston rod for chain driven pumps.*

The foregoing is a correct description,  
*P. P. S. AKERS MEK. VERKSTED*

Manufacturer.

Dates of Survey while building  
During progress of work in shops - *1934 June 30th, July 13th, 19th, Sept. 20th, Oct. 6th, 16th, 25th, 27th, November 12th, 15th, 19th, Dec. 7, 17*  
During erection on board vessel - *1935 May 16, 22, 29, 31, June 1, 6, 13, 14, 17, 19, 20, 27, July 1, 4, 9, 11, 12, 13*  
Total No. of visits *46*

Dates of Examination of principal parts—Cylinders *3/1, 7/1, 14/1/35* Covers *3/1, 7/1, 14/1/35* Pistons *8/1/35* Rods *7/12/34* Connecting rods *7/12/34*  
Crank shaft *15/11/34* Flywheel shaft *same as* Thrust shaft *7/12/34, 15/4/35* Intermediate shafts *15/4/35* Tube shaft *✓*  
Screw shaft *13/4/35* Propeller *13/4/35* Stern tube *18/5/35* Engine seatings *1/6/35* Engines holding down bolts *1/6/35*  
Completion of fitting sea connections *20/6/35* Completion of pumping arrangements *20/6/35* Engines tried under working conditions *9/9/35*  
Crank shaft, Material *S.M. steel* Identification Mark *# 7.9.34* Flywheel shaft, Material *see Thrust Shaft* Identification Mark *Lloyd's N° 2229, serial 6.9.34*  
Thrust shaft, Material *S.M. steel* Identification Mark *# 6.9.34* Intermediate shaft, Material *S.M. steel* Identification Marks *Lloyd's N° 2227, serial 10.10.34*  
Tube shaft, Material *✓* Identification Mark *✓* Screw shaft, Material *S.M. steel* Identification Mark *Lloyd's N° 2266*

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 *✓* If so, state name of vessel *✓*

**General Remarks** (State quality of workmanship, opinions as to class, &c.) *This machinery has been constructed in accordance with the approved plans, & with Secretary's letter in connection with same. All materials have been tested by the Society's Surveyors, where required by the Rules. All cylinders, covers & pistons, oil fuel piping, starting air, receivers and piping, have been tested by hydraulic pressure & found in order. The pumping arrangements have been carried out as approved & amended. The workmanship throughout is good. The foregoing reports are enclosed herewith. The machinery has been examined under working conditions on the trial trip as well as during tests on the test bed.*

It is recommended that this vessel's machinery be classed in the Society's Register Book with notation *LMC 7.35*

The amount of Entry Fee *£ 99.50* When applied for, *22/7/1935*  
Special *£ 1957.15*  
Donkey Boiler Fee *£ 167.15* When received, *31.7.1935*  
Travelling Expenses (if any) *£ 125.35*

Committee's Minute

Assigned

Engineer Surveyor to Lloyd's Register of Shipping

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