

Rpt. 4b

Date of writing report 2-12-1960

Received London

Port Copenhagen

27 NOV 1961 18663.

Survey held at Copenhagen

No. of visits
In shops 10
On vessel

First date 18-8-1960

Last date 16-11-1960

19 DEC 1960

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. _____ Name _____ Gross tons _____
Owners Sociedade de Pesca Arrasto de Aveiro, Portugal Managers _____ Port of Registry _____ Year Month _____
Hull built at Aveiro, Portugal By Estaleiros Sao Jacinto Yard No. 53 When _____
Main Engines made at Copenhagen By A/S Vølund Eng. No. 5328 When 1960-11
Gearing made at _____ By _____
Donkey boilers made at _____ By _____ Blr. Nos. _____ When _____
Machinery installed at _____ By _____ When _____

Particulars of restricted service of ship, if limited for classification

Particulars of vegetable or similar cargo oil notation, if required

Is ship to be classed for navigation in ice? Is ship intended to carry petroleum in bulk?

Is refrigerating machinery fitted? If so, is it for cargo purposes? Type of refrigerant

Is the refrigerating machinery compartment isolated from the propelling machinery space? Is the refrigerated cargo installation intended to be classed?

The following particulars should be given as fully and as clearly as possible. Where the answer is "No" or "None", say so! Ticks and other signs of doubtful meaning are not to be used. Where the wording is not applicable to the installation, a black line may be inserted. If the main engines have been constructed at another port and are covered by a separate report, the particulars given in that report need not be repeated below, but the port and report number should be stated.

No. of main engines 1 No. of propellers 1 Brief description of propulsion system Diesel Oil engine through hydr. operated friction coupling to reversible pitch propeller
MAIN RECIPROCATING ENGINES. Licence Name and Type No. A/S Vølund Dieselmotor Type DMT 630

No. of cylinders per engine 6 Dia. of cylinders 300 mm stroke(s) 410 mm 2 or 4 stroke cycle 4 Single or double acting single

Maximum approved BHP per engine 660 at 375 RPM of engine and 375 RPM of propeller.

Corresponding MIP 9.1 kg/cm² (For DA engines give MIP top & bottom) Maximum cylinder pressure 58 kg/cm² Machinery numeral 132

Are the cylinders arranged in Vee or other special formation? no If so, number of crankshafts per engine

TWO STROKE ENGINES. Is the engine of opposed piston type? If so, how are upper pistons connected to crankshaft?

Is the exhaust discharged through ports in the cylinders or through valve(s) in the cylinder covers? No. and type of mechanically driven scavenge pumps or blowers per engine and how driven

No. of exhaust gas driven scavenge blowers per engine Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action?

If a stand-by or emergency pump or blower is fitted, state how driven No. of scavenge air coolers Scavenge air pressure at full power Are scavenge manifold explosion relief valves fitted?

FOUR STROKE ENGINES. Is the engine supercharged? yes Are the undersides of the pistons arranged as supercharge pumps? no No. of exhaust gas driven blowers per engine 1 No. of supercharge air coolers per engine none Supercharge air pressure 0.52 kg/cm² Can engine operate without supercharger? yes

TWO & FOUR STROKE ENGINES—GENERAL. No. of valves per cylinder: Fuel 1 Inlet 1 Exhaust 1 Starting 1 Safety 1

Material of cylinder covers cast iron Material of piston crown Aluminium Is the engine equipped to operate on heavy fuel oil? no

Cooling medium for: Cylinders fresh water Pistons none Fuel valves none Overall diameter of piston rod for double acting engines -

Is the rod fitted with a sleeve? no Is welded construction employed for: Bedplate? no Frames? no Entablature? no Is the crankcase separated from the underside of pistons? no Is the engine of crosshead or trunk piston type? trunk Total internal volume of crankcase 2.81 m³ No. and total area of explosion relief devices 2-255 cm²

Are flame guards fitted to relief devices? yes Is the crankcase readily accessible? yes If not, must the engine be removed for overhaul of bearings, etc? - Is the engine secured directly to the tank top or to a built-up seating? - How is the engine started? by compressed air

Can the engine be directly reversed? no If not, how is reversing obtained? by hydr. operated reversible pitch propeller

Has the engine been tested working in the shop? yes How long at full power? 14 hours

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 21-10-1960 State barred speed range(s), if imposed 487 P
for working propeller 255 to 297 For spare propeller - Is a governor fitted? yes Is a torsional vibration damper or detuner fitted to the shafting? no

Where positioned? - Type 7 No. of main bearings 7 Are main bearings of ball or roller type? no Distance between inner edges of bearings in way of crank(s) 356 mm Distance between centre lines of side cranks or eccentrics of opposed piston engines -

Crankshaft type: Built, semi-built, solid. (State which) solid Centre 200 mm Breadth of webs at mid-throw 310 mm Axial thickness of webs 105 mm
Diameter of journals 210 mm Diameter of crankpins Side - Pins Minimum

If shrunk, radial thickness around eyeholes - Are dowel pins fitted? - Crankshaft material Journals SM-Steel Approved 44 kg/mm² Webs Tensile strength

Diameter of flywheel 740 mm Weight 320 kg Are balance weights fitted? no Total weight - Radius of gyration

Diameter of flywheel shaft none Material - Minimum approved tensile strength

Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) integral with crankshaft.

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MAIN GAS TURBINES. Name and Type No. _____

No. of sets of turbines _____ Open or closed cycle _____ BHP per set _____ at _____ RPM of output shaft _____

How is drive transmitted to propeller shaft? _____

ARRANGEMENT OF TURBINES. HP drives _____ at _____ RPM HP gas inlet temperature _____ pressure _____
(A small diagram should be attached showing gas cycle.) IP drives _____ at _____ RPM IP gas inlet temperature _____ pressure _____
 LP drives _____ at _____ RPM LP gas inlet temperature _____ pressure _____

No. of air compressors per set _____ Centrifugal or axial flow type? _____ Material of turbine blades _____ Material of compressor blades _____
 No. of air coolers per set _____ No. of heat exchangers per set _____ How are turbines started? _____

How is reversing effected? _____ Are the turbines operated in conjunction with free piston gas generators? _____

Total No. of free piston gas generators _____ Diameter of working pistons _____ Diameter of compressor pistons _____ No. of double strokes per minute at full power _____ Gas delivery pressure _____ Gas delivery temperature _____ Have the turbines and attached equipment been tested working in the shop? _____ How long at full power? _____

ELECTRIC PROPULSION *(Reciprocating engines or gas turbines. Electrical particulars to be reported on Form 4d.)*

No. of generators _____ KW per generator _____ at _____ RPM AC or DC? _____ Position _____

No. of propulsion motors _____ SHP per motor _____ at _____ RPM Position _____

How is power obtained for excitation of generators? _____ Motors? _____

REDUCTION GEARING *(Reciprocating engines or gas turbines. A small line sketch should be attached showing arrangement of gearing.)*

Is gearing of single or double helical type? _____ If single, position of gear thrust bearing _____ Is gearing of epicyclic type? _____

PCD of pinions: First reduction _____ Second reduction _____ PCD of wheels: First reduction _____ Main _____

Material of pinions _____ Tensile strength _____ Material of wheel rims _____ Tensile strength _____

Are gear teeth surface hardened? _____ How are teeth finished? _____ Diameter of pinion journals _____ Wheel shaft journals _____

Are the wheels of welded construction? _____ Is gearcase of welded construction? _____ Has the wheel/gearcase been heat treated on completion of welding? _____ Where is the propeller thrust bearing located? _____ Are gear bearings of ball or roller type? _____

CLUTCHES, FLEXIBLE COUPLINGS, ETC. If a clutch or other flexible connection is fitted between engine/turbine and gearing or between engine and line shafting give brief description and, for clutches, state how operated. Oil pressure operated friction coupling.

Can the main engine be used for purposes other than propulsion when declutched? yes If so, what? Oil pump f. hydr. trawl winch can be fitted

STRAIGHT SHAFTING. Diameter of thrustshaft 165 mm Material SM-Steel Minimum approved tensile strength 44 kg/mm²
90 mm Hols. Shaft separate or integral with crank or wheel shaft? separate Diameter of intermediate shaft 180 mm Intermediate shaft Material SM-Steel
Integral with thrust shaft Minimum approved tensile strength 44 kg/mm² Diameter of screwshaft cone at large end 180 mm Is screwshaft fitted with a continuous liner? no
in 300/162 mm dia. with 70 mm Hols. Diameter of tube shaft. *(If these are separate shafts)* _____ Is tube shaft fitted with a continuous liner in way of stern tube _____ Thickness of screw/tube shaft liner _____

bearings _____ Thickness between bearings _____ Material of screw/tube shaft SM-Steel Minimum approved tensile strength 44 kg/mm²

Is an approved oil gland fitted? intended to be If so, state type Cedervall Length of bearing next to and supporting propeller _____

Material of bearing _____ In multiple screw vessels is the liner between stern tube and A bracket continuous? _____ If not, is the exposed length of shafting between stern liners readily visible in dry dock? _____

PROPELLER. Diameter of propeller 1820 mm Pitch 890/950 mm Built up or solid built up Total developed surface 5965 cm²

No. of blades 3 Blade thickness at top of root fillet 63 mm Blade material Manganbronce Moment of inertia of dry propeller 213 kgm²

If propeller is of special design, state type _____ Is propeller of reversible pitch type? yes If so, is it of approved design? yes

State method of control hydraulically operated Material of spare propeller _____ Moment of inertia _____

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine _____ Can they be declutched? _____

No. of independently driven air compressors. *(State capacity, prime mover, position in ship, and Port and No. of certificate)* _____

No. of starting air receivers. *(Main and Aux. State capacity of each, position in ship and Port and No. of Certificate)* _____

How are receivers first charged? _____ Maximum working pressure of starting air system _____ Are the safety devices in accordance with the Rules? _____ Has the starting of the main engines been tested and found satisfactory? _____

COOLERS. combined No. of main engine fresh water coolers and 1 No. of lubricating oil coolers _____

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure _____

MAIN ENGINE DRIVEN PUMPS *(No. and Purpose)* 1- cooling & 1- bilge pump

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room.....

No. and size connected to main bilge line in main engine room..... In tunnel

In aux. engine room..... Size and position of direct bilge suction in machinery spaces

..... Size and position of emergency bilge suction in machinery spaces

Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side?..... Do the piping arrangements comply with the Rules including special requirements for ships carrying petroleum in bulk, cargo oil or classed for navigation in ice? (*strike out words not applicable*).

[illegible]

STEAM INSTALLATION. No. of donkey boilers burning oil fuel W.P. Type

Position

Is a superheater fitted? Are these boilers also heated by exhaust gas? No. of donkey boilers heated by exhaust gas only? W.P.

Type Position Can the exhaust heated boilers deliver steam directly to Port and No. of report on donkey

the steam range or do they operate only as economisers in conjunction with oil fired boilers?

boilers Is steam essential for operation of the ship at sea? Are any steam pipes over 3 ins. bore? If so, what is their

material? For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? No. of oil burning pressure

units No. of steam condensers No. of Evaporators

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars)

The foregoing description of the main engine and installation is correct and the particulars are as approved for torsional vibration characteristics (strike out words not applicable).

Builder
0109 2/2

GENERAL REMARKS

State if the machinery has been constructed and/or installed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship and give recommendations for classification, including any special notation to be assigned. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.

The oil engine has been built under Special Survey in accordance with the requirements of the Rules, the approved plans and the Secretary's letter.

The material used has been examined and tested as per certificate produced.

On completion the engine was tested in the shop under full power working condition and found satisfactory.

NOTICE BOARD TO BE FITTED AT CONTROL STATION "ENGINE"
IS NOT TO BE OPERATED CONTINUOUSLY BETWEEN 255 + 297 R.P.M.
+ TACHOMETER MARKED ACCORDINGLY.

V. N. N. - J. N. N.
Engineer Surveyor to Lloyd's Register of Shipping.

PARTICULARS OF IDENTIFICATION MARKS ((Including Port of origin) of important Forgings and Castings. (Copies of certificates should be forwarded with report.)

RODS 6- connecting rods: NV AK 23-10-1959 52737 VHK 18-8-1960

CRANKSHAFT ~~INTERMEDIATE SHAFT~~ NV 335860/014280 AK 29-8-1958 VHK 18-8-1960

FLYWHEEL SHAFT

THRUSTSHAFT Integral with intermediate shaft: NV 201-9254 EF 31-10-57 VHK 26-8-1960
coupling part: VHK 9-9-1960

Stern tube: Lloyd's test Cpn. 5 Atm. VHK 28-10-1960
~~INTERMEDIATE SHAFT~~

SCREW ~~AND TUBE~~ SHAFTS Lloyd's Cpn. No. 9033 VHK 28-10-1960

PROPELLERS No. 5328 Lloyd's test Cpn. VHK 5-11-1960

OTHER IMPORTANT ITEMS Cylinder Monoblock: Lloyd's test Cpn 3.5 Atm. VHK 18-8-1960

Cylinder Covers: Lloyd's test Cpn. 7 Atm. VHK 9-9-1960

Cylinder Liners: Lloyd's test Abg. 7 Atm. MN 25-5-1960

Oil & fresh water cooler: Lloyd's test Cpn 5 Atm. VHK 5-11-1960

Is the installation a duplicate of a previous case? no

If so, state name of vessel -

Date of approval of plans for crankshaft 22-7-1960 Straight shafting 22-7-60 & 21-10-60 Gearing Clutch 22-7-60 & 21-10-60

Separate oil fuel tanks Pumping arrangements Oil fuel arrangements

Cargo oil pumping arrangements Air receivers 2-11-1960 Donkey boilers

Dates of examination of principal parts:—

Fitting of stern tube Fitting of propeller Completion of sea connections Alignment of crank shaft in main bearings

Engine checks & bolts Alignment of gearing Alignment of straight shafting Testing of pumping arrangements

Oil fuel lines Donkey boiler supports Steering machinery Windlass

Date of Committee FRIDAY -5 JAN 1962 Construction Special Survey Fee kr. 1035.-

Decision *Subis 9228* Machinery parts kr. 300.-

Expenses kr. 85.-

ENTERED IN COPENHAGEN ROUGH FEE BOOK ON THE 2/12

Date when A/c rendered 3/12 1960