

Rpt. 4b

ALPHA DIESEL A/S. O/N 3196.

28 DEC 1959

ABG 17978

Date of writing report 16-12-59 Received London Aalborg Port No. 10-11-59
Survey held at Frederikshavn No. of visits 13 In shops 24-6-59 First date Last date
On vessel

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name 'ARUM' Gross tons
Owners Managers Port of Registry Year Month
Hull built at Beverley, England By Cook, Welton & Gemmell Ltd. Yard No. 954 When
Main Engines made at Frederikshavn By Alpha Diesel A/S Eng. No. 8608 When 1959-11
Coupling Horsens By A/S Møller & Jochumsen
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? no. 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 oil operated coupling, reversible propeller

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Alpha Diesel A/S. Type 497 VO.

No. of cylinders per engine 7 Dia. of cylinders 298 mm stroke(s) 490 mm 2 or 4 stroke cycle 2 Single or double acting single

Maximum approved BHP per engine 840 at 310 RPM of engine and 310 RPM of propeller.

Corresponding MIP 6.46 kg/cm² (For DA engines give MIP top & bottom) Maximum cylinder pressure 60 kg/cm² Machinery numeral 168.

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

TWO STROKE ENGINES. Is the engine of opposed piston type? no 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? ports in cyls. No. and type of mechanically driven scavenge pumps or blowers per engine and how driven 1 off direct driven double acting piston pump.

No. of exhaust gas driven scavenge blowers per engine none 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 none Scavenge air pressure at full power 0.15 kg/cm² Are scavenge manifold explosion relief valves fitted? yes

FOUR STROKE ENGINES. Is the engine supercharged? Are the undersides of the pistons arranged as supercharge pumps? No. of exhaust gas driven blowers per engine No. of supercharge air coolers per engine Supercharge air pressure Can engine operate without supercharger?

TWO & FOUR STROKE ENGINES—GENERAL. No. of valves per cylinder: Fuel 1 off Inlet none Exhaust none Starting 1 off Safety 1 off

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

Cooling medium for: Cylinders fresh water Pistons lub. oil Fuel valves Overall diameter of piston rod for double acting engines

Is the rod fitted with a sleeve? 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 3.48 m³ No. and total area of explosion reliefdevices 4 - 720 cm² Are flame guards or traps 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 comp. air

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

Has the engine been tested working in the shop? yes How long at full power? 5 hours. approval

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system outstanding State barred speed range(s), if imposed

for working propeller For spare propeller Is a governor fitted? yes Is a torsional vibration damper or detuner fitted to the shafting? no

Where positioned? Type No. of main bearings 8 Are main bearings of ball or roller

type? no Distance between inner edges of bearings in way of crank(s) 385 mm Distance between centre lines of side cranks or eccentrics of opposed piston engines

Crankshaft type: Built, semi-built, solid. (State which) semi-built.

Diameter of journals 200 mm Diameter of crankpins Centre 195 mm Breadth of webs at mid-throw 370 mm Axial thickness of webs 105 mm

If shrunk, radial thickness around eyeholes 116 mm Are dowel pins fitted? no Crankshaft material Journals SMI steel Minimum

Diameter of flywheel 1120 mm Weight 660 kg. Are balance weights fitted? yes GD2 80.68 kgm² GD2 500 kgm²

Diameter of flywheel shaft Material balance weights flywheel

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 diameter
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?

100/1000

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 1 off oil operated coupling

Can the main engine be used for purposes other than propulsion when declutched? no If so, what? -

STRAIGHT SHAFTING. Diameter of thrust shaft 190mm with Material SM Steel Minimum approved tensile strength 44 kg/mm²
92mm cent.hole

Shaft separate or integral with crank or wheel shaft? _____ Diameter of intermediate shaft — Material —

Minimum approved tensile strength — Diameter of screw shaft cone at large end flange 190mm with Is screw shaft fitted with a continuous liner? no
92mm cent.hole

Diameter of tube shaft. (If these are separate shafts)..... Is tube shaft fitted with a continuous liner in way of stern tube no..... Thickness of screw/tube shaft liner at bearings.....

Thickness between bearings..... Material of screw/tube shaft SM Steel..... Minimum approved tensile strength 44 k.....

Is an approved oil gland fitted? yes..... If so, state type "Cedervall" orig. no. 9..... Length of bearing next to and supporting propeller 800 mm.....

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

PROPELLER. Diameter of propeller 2300 mm Pitch 1000 mm Built up or solid built up Total developed surface 1,9 m²

No. of blades 3 Blade thickness at top of root fillet 75 mm Blade material bronze Moment of inertia of dry propeller 1208 kgm²

If propeller is of special design, state type no Is propeller of reversible pitch type? yes If so, is it of approved design? yes

State method of control rod and sliding block Material of spare propeller — Moment of inertia —

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine 1 off Can they be declutched? no
 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) main - 2 off 200 litres ABG certif.
no. 95/96.

How are receivers first charged? Maximum working pressure of starting air system 30 kg/cm² Are the safety devices
accordance with the Rules? yes Has the starting of the main engines been tested and found satisfactory? yes

COOLERS. No. of main engine fresh water coolers 1 off No. of main engine lubricating oil coolers 1 off
 No. of settling or service tanks not forming part of hull structure —

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) 2 off plunger pumps (bilge- & cooling purposes) - 1 off
FW centrifugal pump - 1 off lub. oil gear pump.

[illegible]

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 times.....

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).

STEAM & OIL ENGINE AUXILIARIES

[illegible]

Is electric current used for essential services at sea? If so, state the minimum No. and capacity of generators required in order that the ship may operate at sea
Is an electric generator driven by Main Engine?

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 direct to the engine?..... Port and No. of report on do

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

units..... No. of steam condensers..... No. of Evaporators.....

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

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

[illegible]

Has the spare gear required by the Rules been supplied?..... Has all the machinery been tried under full working conditions and found satisfactory?..... Date and duration of
power sea trials of main engines Does this machinery installation contain any features of a novel or experimental nature? (Give 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*).

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 Rules, the approved plans and the Secretary's letters.

The material used has been examined and tested as required by the Rules and the workmanship is good.

Crankcase explosion relief devices have been fitted.

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

[Signature]

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 connecting rods: Lloyds CPN 4434 GS 14-8-59 ABG

CRANKSHAFT OR ROTORSHAFT : " " 4671 GS 26-6-59 ABG

coupling : " " 3522 GS 25-7-58 ABG

FLYWHEEL SHAFT : " " 3142 GS 25-7-58 ABG

THRUSTSHAFT : " " 57 GS 25-7-58 ABG

GEARING clutch input : " " 62 GS 10-11-59 "

coupling flange : " " 41 GS 22-10-59 "

INTERMEDIATE SHAFTS : " Dsf 41 GS 22-10-59 "

SCREW AND TUBE SHAFTS : " Dsf 41 GS 22-10-59 "

PROPELLERS Boss: Lloyds ABG GS 30-10-59. Blades Lloyds HAM 59/382 HE 30-10-59.

OTHER IMPORTANT ITEMS cylinders: Lloyds test ABG 7 atm.GS 24-6-59(1 off)26-6-59(3 off)7-7-59(3 off)

cyl. covers: " " " 7 " MN 3-7-59 (3 off)GS 14-8-59 (4 off)

pistons : " " " 7 " GS 26-6-59(1 off)GS 14-8-59 (6 off)

1 lub.oil cooler f.eng:Lloyds test ABG 5 atm.GS 14-8-59.1 air comp.:Lloyds test ABG 60/7 atm.GS 10-8-59.

1 " " " f.coup: " " 5 " GS 2-10-59.2 pl.pumps: " " 5 " GS 26-6-59.

1-28 m² fw cooler : " " 5 " GS 2-10-59.1 sterntube: " " 2 " MN 21-10-59

Is the installation a duplicate of a previous case? no

If so, state name of vessel

Date of approval of plans for crankshaft 2-7-59 Straight shafting 9-11-59 Gearing coupling 2-7-59.

Separate oil fuel tanks Pumping arrangements Oil fuel arrangements

Cargo oil pumping arrangements Air receivers 2-7-59 Donkey boilers

Dates of examination of principal parts:—

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

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

Oil fuel lines Donkey boiler supports Steering machinery Windlass

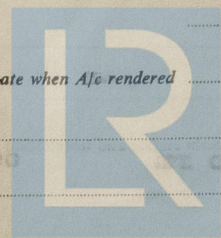
Date of Committee FRIDAY 24 JUN 1960

Decision See Rpt 4b

Special Survey Fee

Expenses

Date when A/c rendered



22 DEC. 1959

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