Rpt. 4b

MONDAY 2 MAR 1959
12/1 APR 1958

Date of writing report 9.4.58 | Received London | Port HAMBURG | No. 6441

Survey held at Hamburg | No. of visits In shops 18 On vessel - | First date 3.1.1958 | Last date 28.3.58

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. | Name | Gross tons

Owners | Managers | Port of Registry

Built at Gävle, Sweden | By Aktiebolaget Gävle Varv | Yard No. 99 | When Year Month

Engines made at Hamburg | By Maschinenfabrik Augsburg-Nürnberg | Eng. No. 405 211-212 | When 1958-3

...g made at | By | Blr. Nos. | When

...y boilers made at | By | When

...nery installed at | By

...ulars of restricted service of ship, if limited for classification

...culars of vegetable or similar cargo oil notation, if required

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

...frigerating machinery fitted? | If so, is it for cargo purposes? | Type of refrigerant

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

...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 ...ding 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 ...ort need not be repeated below, but the port and report number should be stated.

...of main engines 2 | No. of propellers 2 | Brief description of propulsion system 2 engines direct coupled to 2 screw shafts

...AIN RECIPROCATING ENGINES. Licence Name and Type No. M A N Type G 10 V 40/60 (with supercharging)

...of cylinders per engine 10 | Dia. of cylinders 400 mm | stroke(s) 600 mm | 2 or 4 stroke cycle 4 | Single or double acting single

...ximum approved BHP per engine 2100 | at 275 | RPM of engine and - | RPM of propeller.

...responding MIP 9.1 kg/cm² (*For DA engines give MIP top & bottom*) | Maximum cylinder pressure 62 kg/cm² | Machinery numeral 420 x2

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

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

...he 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 ...ine and how driven -

...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? -

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

...UR 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 ...ine one | No. of supercharge air coolers per engine none | Supercharge air pressure 0.56 kg/cm² | Can engine operate without supercharger? yes

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

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

...oling medium for :—Cylinders fresh water | Pistons not cooled | Fuel valves fuel | Overall diameter of piston rod for double acting engines none

...the rod fitted with a sleeve? - | Is welded construction employed for: Bedplate? yes | Frames? no | Entablature? no | Is the crankcase separated from the ...derside of pistons? no | Is the engine of crosshead or trunk piston type? trunk piston | Total internal volume of crankcase 120 m³ | No. and total area of explosion relief ...ices 10 x 245 cm² | Are flame guards or traps fitted to relief devices? trap valves | Is the crankcase readily accessible? yes | If not, must the engine be removed for ...rhaul of bearings, etc? - | Is the engine secured directly to the tank top or to a built-up seating? - | How is the engine started? compressed air

...n the engine be directly reversed? no | If not, how is reversing obtained? Reversing propeller

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

377 G

...ANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 15.8.57 | State barred speed range(s), if imposed ... 80- 100 RPM working propeller - | For spare propeller - | Is a governor fitted? yes | Is a torsional vibration damper or detuner fitted to the shafting? yes

...ere positioned? fwd. end of crankshaft | Type Huelsenfeder | No. of main bearings 12 | Are main bearings of ball or roller ...e? no | Distance between inner edges of bearings in way of crank(s) 514 mm | Distance between centre lines of side cranks or eccentrics of opposed piston engines -

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

...ameter of journals 280 mm | Diameter of crankpins Centre 280 mm Side - | Breadth of webs at mid-throw 465 mm | Axial thickness of webs 140 mm

...shrunk, radial thickness around eyeholes solid forged | Are dowel pins fitted? - | Crankshaft material Pins / Journals / Webs: SM-Steel | Minimum / Approved Tensile strength: 50 kg/mm²

...iameter of flywheel 1500 mm | Weight 2350 kg | Are balance weights fitted? no | Total weight - | Radius of gyration -

...ameter of flywheel shaft none | Material - | Minimum approved tensile strength -

...ywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (*State which*) Fly wheel flanged to crankshaft.

9.5.58

015483-015441-0060

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. (*A small diagram should be attached showing gas cycle.*)

HP drives ... at ... RPM HP gas inlet temperature ... pressure

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 ... Mater

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 stroke

minute at full power ... Gas delivery pressure ... Gas delivery temperature ... Have the turbines and attached equipment been tested we

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

journals ... Are the wheels of welded construction? ... Is gearcase of welded construction? ... Has the wheel/gearcase been heat treated on comp

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

description and, for clutches, state how operated

Can the main engine be used for purposes other than propulsion when declutched? ... If so, what?

STRAIGHT SHAFTING. Diameter of thrustshaft ... Material ... Minimum approved tensile strength

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

Minimum approved tensile strength ... Diameter of screwshaft cone at large end ... Is screwshaft fitted with a continuous liner?

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 in

bearings ... Thickness between bearings ... Material of screw/tube shaft ... Minimum approved tensile strength

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

Material of bearing ... Is multiple screw vessels is the liner between stern tube and A bracket continuous? ... If not, is the exposed length of shafting be

liners readily visible in dry dock?

PROPELLER. Diameter of propeller ... Pitch ... Built up or solid ... Total developed surface

No. of blades ... Blade thickness at top of root fillet ... Blade material ... Moment of inertia of dry propeller

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

State method of control ... 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 devi

accordance with the Rules? ... Has the starting of the main engines been tested and found satisfactory?

COOLERS. No. of main engine fresh water coolers ... No. of main engine 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 lub. oil pump (22.85 m^3/h), 1 oil fuel delivery pump (2.64 m

10 oil fuel injection valves. (Camshaft driven)

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	Service for which each pump is connected to be marked thus X															
	SUCTION								DELIVERY							
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cool-ing	Sea	Feed Tanks	Lub. Oil	Boiler Feed	Salt Water Cool-ing	Fresh Water Cool-ing	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cool-ing	

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

lo. and size connected to main bilge line in main engine room ... In tunnel

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

Size and position of emergency bilge suctions in machinery spaces

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

ecial requirements for ships carrying petroleum in bulk, cargo oil or classed for navigation in ice? (*strike out words not applicable*).

STEAM & OIL ENGINE AUXILIARIES

Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)

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

sea ... Is an electric generator driven by Main Engine?

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

sition

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

pe ... Position ... Can the exhaust heated boilers deliver steam directly to

steam range or do they operate only as economisers in conjunction with oil fired boilers? ... Port and No. of report on donkey

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

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

ts ... No. of steam condensers ... No. of Evaporators

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

ve the Rule Requirements for fire extinguishing arrangements been complied with? ... Brief description of arrangements

s 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 full-

ver sea trials of main engines ... Does this machinery installation contain any features of a novel or experimental nature? (*Give particulars*)

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*).

Maschinenfabrik Augsburg-Nürnberg A.G.

Date ...

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.

These Engines have been constructed under Special Survey in confirmity with the Society's Rules and Regulations, the approved plans and the Secretary's letters. The materials and workmanship are good. These engines have been examined during construction and under working conditions on the Makers' test bed and are eligible in my opinion to have the record ✠ LMC (with date) after satisfactory installation on board the above ship.

E. Allen

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: Eng. No. 405 211: LLOYD'S AUG BA 14 18.12.57 G.H.
Eng. No. 405 212: LLOYD'S AUG BA 15 18.12.57 G.H.

CRANKSHAFTS Eng. No. 405 211: LLOYD'S AUG BA 14 20.1.58, Eng. No. 405 212: LLOYD'S AUG BA 15 2
Short Interm. Shaft:
Eng. No. 405 211: LLOYD'S KLN 1125 21.11.57, Eng. No. 405212: LLOYD'S KLN 1125 21.

LLOYD'S HAM 27.3.58 E.A. LLOYD'S HAM 31.3.58

GEARING

INTERMEDIATE SHAFTS

SCREW AND TUBE SHAFTS

PROPELLERS

OTHER IMPORTANT ITEMS Bed plates: Eng. No. 405 211: LLOYD'S HAM 704 16.1.58 E.A.
Eng. No. 405 212: LLOYD'S HAM 888 27.12.57 E.A.

Supercharging Blowers: Eng. No. 405 211: LLOYD'S TEST AUG 11380 6 kg/cm² 17.12.57 G.H.
Eng. No. 405 212: LLOYD'S TEST AUG 11381 6 kg/cm² 19.12.57 G.H.

Is the installation a duplicate of a previous case? If so, state name of vessel

Date of approval of plans for crankshaft See Aug. Certs. Nos. 7547/48 Straight shafting Gearing Clutch

Separate oil fuel tanks Pumping arrangements Oil fuel arrangements

Cargo oil pumping arrangements Air receivers Donkey boilers

Dates of examination of principal parts:—

Fitting of stern tube Fitting of propeller Completion of sea connections 19.2.58 Alignment of crankshaft in main bearings 20.2.58

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 10 APR 1959

Decision See Rpt. 1.

Special Survey Fee DM 3910,-

TEST BED TRIAL DM 200,-

Expenses DM 90,-

Date when A/c rendered 22-4-58