Rpt. 4b L.R. 924a

10 OCT 1963

Date of writing report 16.7.63 Received London ... Port Köln No. 842

Survey held at Köln-Deutz No. of visits In shops 5 On vessel ... First date 10.4.63 Last date 10.6.63

O.N. 1.8369.0.7035

# FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. – Name – Gross tons –

Owners – Managers – Port of Registry –

Hull built at Elmshorn By D.W. Kremer & Sohn Yard No. 1101 When Year – Month –

Main Engines made at Köln-Deutz By Klöckner-Humboldt-Deutz A.G. Eng. No. 3529651-58 When 6.63

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 –

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

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 two No. of propellers – Brief description of propulsion system –

**MAIN RECIPROCATING ENGINES.** Licence Name and Type No. one airless injection heavy oil SBA8M 517

No. of cylinders per engine 8 Dia. of cylinders 130 mm stroke(s) 170 mm 2 or 4 stroke cycle 4 Single or double acting single

Maximum approved BHP per engine 230 at 1350 RPM of engine and – RPM of propeller.

Corresponding MIP 10.20 kg/cm2 *(For DA engines give MIP top & bottom)* Maximum cylinder pressure 70 kg/cm2 Machinery numeral 46

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 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 one No. of supercharge air coolers per engine none Supercharge air pressure 360 mm Hg at full load Can engine operate without supercharger? yes

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

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

Cooling medium for :—Cylinders water Pistons – Fuel valves – Overall diameter of piston rod for double acting engines –

Is piston 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 240 ltrs. No. and total area of explosion relief valves none Are flame guards or traps fitted to relief devices? – Is the crankcase readily accessible? no If not, must the engine be removed for withdrawal of bearings, etc? yes Is the engine secured directly to the tank top or to a built-up seating? – How is the engine started? electrically

Can the engine be directly reversed? no If not, how is reversing obtained? Reintjes Reversing Gear Type Wuö 180 - 3.5:1

Has the engine been tested working in the shop? yes How long at full power? 6hours

**CRANK & FLYWHEEL SHAFTING.** Date of approval of torsional vibration characteristics of the propelling machinery system 7.5.63 State barred speed range(s), if imposed

Working propeller – For spare propeller – Is a governor fitted? yes Is a torsional vibration damper or detuner fitted to the shafting? yes

Where positioned? opposite flywheel Type friction damper No. of main bearings 9 Are main bearings of ball or roller type? no Distance between inner edges of bearings in way of crank(s) 137 mm Distance between centre lines of side cranks or eccentrics of opposed piston engines –

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

Diameter of journals 90 mm Diameter of crankpins Centre 85 mm Side 85 mm Breadth of webs at mid-throw 130 mm Axial thickness of webs 32.5 mm

Bunk, radial thickness around eyeholes – Are dowel pins fitted? no Crankshaft material Pins Journals Webs Cr.steel Minimum Y.P. 70 kg/mm2 Approved 15.9.62 Tensile strength 90 kg/mm2

Diameter of flywheel 520 mm Weight 85 kg Are balance weights fitted? no Total weight – Radius of gyration –

Diameter of flywheel shaft – Material – Minimum approved tensile strength –

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

not to be operated continuously below 500 r.p.m.

28/8/63

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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. *(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 – Mat

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 stro

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

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 – Whe

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

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 g

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 shaf

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 – In multiple screw vessels is the liner between stern tube and A bracket continuous? – If not, is the exposed length of shafting

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 d

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

## COOLERS. No. of main engine fresh water coolers one No. of main engine lubricating oil coolers one

## 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)* one combined circulating pump

## INDEPENDENT PUMPS

me below essential pumps, state position and ow 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 Cooling | Sea | Feed Tanks | Lub. Oil | Boiler Feed | Salt Water Cooling | Fresh Water Cooling | Oil Fuel Tanks | Fire Main | Lub. Oil | Piston Cooling |
| | | | | | | | | | | | | | | |

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

nd size connected to main bilge line in main engine room In tunnel

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

Size and position of emergency bilge suctions in machinery spaces

e 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

l 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) |
|---|---|---|---|---|
| | | | | |

ctric 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

Is an electric generator driven by Main Engine?

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

on

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

Position Can the exhaust heated boilers deliver steam directly to

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

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

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

No. of steam condensers No. of Evaporators

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

he Rule Requirements for fire extinguishing arrangements been complied with? Brief description of arrangements

e 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-

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

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

X Klöckner-Humboldt-Deutz Builder

**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 a 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 p*

This engine has been constructed under special survey of tested materials and is in accordance with the Secretary's letters, approved plans and Rules Requirements. The materials and workmanship are good and the engine, when tested in the shops under full and overload conditions was found to function satisfactorily. The governor tests were also found satisfactory. This engine, in my opinion, is suitable for main propell purposes and when satisfactorily installed and reported will be eligible to receive the notation ✠ LMC (with date).

H. Droge
*Engineer Surveyor to Lloyd's Register of Shi*

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

Conn. RODS LLOYD'S KLN. 211/17-24 K.B. 20.3.63

CRANKSHAFT ~~OR ROTORSHAFT~~ LLOYD'S DSF 521 H.S. 26.2.63

FLYWHEEL SHAFT –

THRUSTSHAFT –

GEARING –

INTERMEDIATE SHAFTS –

SCREW AND TUBE SHAFTS –

PROPELLERS –

OTHER IMPORTANT ITEMS supercharger: G.Fi. 14.2.63 LR - 27 001

Is the installation a duplicate of a previous case? yes If so, state name of vessel KLN. Rpt. 816, Engine No.

Date of approval of plans for crankshaft 15.9.62 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 – Alignment of crank shaft 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 - 1 NOV 1963

Decision Sc Ham 12987

*Special Survey Fee* DM. 308.-

Runn.Test DM. 100.-

*Expenses* DM. 40.-

*Date when A/c rendered* KLN. 6656 d

5m,11.55. T. (MADE & PRINTED IN ENGLAND)