

Rpt. 4b J.H.F.

Date of writing report 7th March, 1960

Received London

Port ROTTERDAM

No.

Survey held at FLUSHING

No. of visits

In shops 35

First date 15-4-1958

20-8-1959

On vessel 18

5-6-1959

Last date

1-3-1960

## FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name YARD Nr. 297

Gross tons

Owners Managers

Hull built at Gorinchem By Messrs. "Bijkers" Port of Registry Vlissingen

Main Engines made at Flushing By Messrs. "Kon. Mij. "De Schelde" Yard No. 297 Year Month

Gearing made at Exh. gas boiler-Flushing By Messrs. Kon. Mij. "De Schelde" Eng. No. 898 When 1959

Donkey boilers made at Annan-Scotland By Messrs. Cochran &amp; Co. Annan Ltd. Nr. 441 When 1958

Machinery installed at Flushing By Messrs. Kon. Mij. "De Schelde" Blr. Nos. 21215/6 When 1960

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? yes If so, is it for cargo purposes? no Type of refrigerant Freon

Is the refrigerating machinery compartment isolated from the propelling machinery space? yes Is the refrigerated cargo installation intended to be classed? no

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

No. of main engines one No. of propellers one Brief description of propulsion system direct drive

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Schelde Sulzer Oil Engine type R S A D 76 (Supercharged)

No. of cylinders per engine 6 Dia. of cylinders 760 mm. stroke(s) 1550 mm. 2 or 4 stroke cycle 2 Single or double acting single

Maximum approved BHP per engine 7800 at 119 RPM of engine and 119 RPM of propeller.

Corresponding MIP 7.8 Kg/cm<sup>2</sup> (For DA engines give MIP top & bottom) Maximum cylinder pressure 62 Kg/cm<sup>2</sup> Machinery numeral 1560

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? no If so, how are upper pistons connected to crankshaft? in the cylinders

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

No. of exhaust gas driven scavenge blowers per engine 2 Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action? yes

If a stand-by or emergency pump or blower is fitted, state how driven No. of scavenge air coolers 2 Scavenge air pressure at full power 0.55 Kg/cm<sup>2</sup> Are scavenge manifold explosion relief valves fitted? no

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 &amp; FOUR STROKE ENGINES-GENERAL. No. of valves per cylinder: Fuel one Inlet one Exhaust one Starting one Safety one

Material of cylinder covers Cast steel Material of piston crowns S.M. Steel Is the engine equipped to operate on heavy fuel oil? yes

Cooling medium for: Cylinders freshwater Pistons oil Fuel valves freshwater Overall diameter of piston rod for double acting engines

Is the rod fitted with a sleeve? Is welded construction employed for: Bedplate? yes Frames? yes Entablature? yes Is the crankcase separated from the

underside of pistons? yes Is the engine of crosshead or trunk piston type? crosshead Total internal volume of crankcase 111 M<sup>3</sup> No. and total area of explosion reliefdevices 6-9000 cm<sup>2</sup> 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? directly to tanktop How is the engine started? by air

Can the engine be directly reversed? yes If not, how is reversing obtained?

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

CRANK &amp; FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 12-7-1956 State barred speed range(s), if imposed

for working propeller 27-33 RPM For spare propeller 27-33 RPM Is a governor fitted? yes Is a torsional vibration damper or detuner fitted to the shafting? no

Where positioned? Type 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) 1002 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 550 mm. Diameter of crankpins Centre 550 mm. Breadth of webs at mid-throw 820 mm. Axial thickness of webs 340 mm.

If shrunk, radial thickness around eyeholes 255 mm. Are dowel pins fitted? no Crankshaft material Journals S.M. Steel Minimum 44 Kg/mm<sup>2</sup>

Webs S.M. Steel Tensile strength

Diameter of flywheel 2396 mm. Weight 800 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)

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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.

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

STRAIGHT SHAFTING. Diameter of thrustshaft 550 mm. Material S.M.Steel Minimum approved tensile strength 44 Kg/mm2  
 Shaft separate or integral with crank or wheel shaft? separate Diameter of intermediate shaft 400 mm. Material S.M.Steel  
 Minimum approved tensile strength 44 Kg/mm2 Diameter of screwshaft cone at large end 460 mm. Is screwshaft fitted with a continuous liner? yes  
 Diameter of tube shaft. (If these are separate shafts) ..... Is tube shaft fitted with a continuous liner in way of stern tube ..... Thickness of screwshaft liner at bearings 22 mm. Thickness between bearings 16.5 mm. Material of screwshaft S.M.Steel Minimum approved tensile strength 44 Kg/mm2  
 Is an approved oil gland fitted? no If so, state type ..... Length of bearing next to and supporting propeller 1845 mm.  
 Material of bearing lignum vitae 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 5300 mm. Pitch 4855 mm. at 0.7 R Built up or solid solid Total developed surface 10453 M2  
 No. of blades 4 Blade thickness at top of root fillet 198.5 mm. Blade material bronze Moment of inertia of dry propeller 59700 Kg/M2  
 If propeller is of special design, state type ..... Is propeller of reversible pitch type? no If so, is it of approved design? .....  
 State method of control ..... Material of spare propeller cast iron Moment of inertia 54300 Kg/M2

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) 2 à 250 M3/h. elec. driven Stbd. in E.R. cert. Hamburg 57/1553/4, 18-5-1957.

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) 2 Main 10 M3 each Stbd. in E.R. Cert. Dusseldorf 58/2166 10-11-1958, 59/216 5-2-1959, 1 aux. P.S. in E.R. cert. Kln. 57/651 15-5-1957  
 How are receivers first charged? By small aux. air compressor Maximum working pressure of starting air system 30 Kg/cm2 Are the safety devices in 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 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  
 one daily service tank in top of E.R.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) .....

## 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 Cooling	Sea	Feed Tanks	Lub. Oil	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks
2 electr. driven gen. service pumps 225 T/h. Stbd. in E.R.	X	X	X			X				X		X
1 electr. driven main circ. pump Stbd. in E.R.		X				X						
2 electr. driven Lub. Oil pumps Stbd. in E.R.								X				
2 main freshw. cooling pumps elect. driven Stbd. in E.R.					X					X		
1 electr. driven Lub. Oil transf. pump Stbd. in E.R.								X				
1 electr. driven bilge pump 25 T/h Stbd. in E.R.	X											X
2 electr. driven O.F. transf. pumps P.S. in E.R.				X								X
2 electr. driven fuelvalve cooling pumps forw. in E.R.					X						X	
2 elec. driven Booster pumps forward in E.R.				X								
2 elec. driven aux. salt cool. water pumps P.S. in E.R.						X				X		
2 elec. driven boiler circ. pumps on boiler platform									X			
2 steam driven feed pumps on boiler platform							X		X			
1 diesel driven emerg. fire pump in shaft tunnel						X						X

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room holds Mrs. 1,2,3,4,5, each 2 à 80 mm., deep tanks Port and Starboard each 1 à 80 mm.

No. and size connected to main bilge line in main engine room 3 à 80 mm. In tunnel 1 à 80 mm.

In aux. engine room ..... Size and position of direct bilge suction in machinery spaces Port aft 1 à 150 mm. Stbd. aft 1 à 80 mm. Size and position of emergency bilge suction in machinery spaces 1 à 250 mm. Stbd. to main circ. pump

Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? yes Do the piping arrangements comply with the Rules in force? yes

## STEAM & OIL ENGINE AUXILIARIES

Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
Port forward	A.R. 216	Gebr. Stork	A'dam report Nr. 225621	Electric generator 180 KW
Port outboard				
Port inboard				
Diesel driven emergency	A.D. 2 Nr. 5719	Goventry Victor	Birmingham C 20933	
Air compr. Portside	Nr. 1/338832	Broom & Wade	London D 50091	aircompressor
in Engine Room	Broom & Wade			

Is electric current used for essential services at sea? yes If so, state the minimum No. and capacity of generators required in order that the ship may operate at sea 2 generators 200 K.W.

Is an electric generator driven by Main Engine? no  
 STEAM INSTALLATION. No. of donkey boilers burning oil fuel 2 W.P. 100 lbs. Type Cochran Boilers

Position on tweendeck forward in E.R.  
 Is a superheater fitted? no Are these boilers also heated by exhaust gas? no No. of donkey boilers heated by exhaust gas only? one W.P. 128 lbs.

Type Lamont exh. gas boiler Position in top of engine room Can the exhaust heated boilers deliver steam directly to the steam range or do they operate only as economisers in conjunction with oil fired boilers? only in conjunction with oil fired boiler  
 boilers Cert. Glasg. Mrs. 25339/40 Is steam essential for operation of the ship at sea? yes Are any steam pipes over 3 ins. bore? yes If so, what is their material? copper For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? yes No. of oil burning pressure units 2 No. of steam condensers 1 No. of Evaporators 1

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) 2 electr. motors 220 V DC, 750 R.P.M. each 15 H.P., 4 rams, 2 Hele Shaw pumps, "Hastie" make

Have the Rule Requirements for fire extinguishing arrangements been complied with? yes Brief description of arrangements C.O. 2 total flooding system steamsmothering in way of donkey boilers, 4 hydrant connections Port & Starboard sides in engine room with hoses and nozzles, 1-10 gallon, 1-30 gallon froth, 6 portable 2 gallon foam extinguishers

Has the spare gear required by the Rules been supplied? yes Has all the machinery been tried under full working conditions and found satisfactory? yes Date and duration of full-power sea trials of main engines 8 hours Does this machinery installation contain any features of a novel or experimental nature? (Give particulars) no

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).

P.P.N.V. KON. MIJ. "DE SCHELDE"

Builder

0263 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 machinery has been constructed under Special Survey in accordance with the Society's Rules, approved plans and Secretary's letters, materials used tested as required and workmanship throughout good.

The main and auxiliary machinery and boilers have been satisfactorily fitted in the ship and upon completion tried during a seatrial under full load and was found in a good working and manoeuvring order and is in our opinion eligible to be classed in the Society's Register Book with ~~M.L.C.~~ 3-60 "Oil Engines" "C.L." Aux. B. 100 lbs.

A notice board has been fitted at the manoeuvring stand stating not to run the engine continuously between 27-33 R.P.M., and the tachometer marked accordingly.

*G. Bons & P. F. Willemsse*  
Engineer Surveyor to Lloyd's Register of Shipping.  
G. Bons & P. F. Willemsse.

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

RODS 6 pistonrods Lloyd's Wln. Nrs. 2135-2178-2194-2138-2181 AWH/PFW 24-3-59, Kln. 607 AS/PFW 24-3-59

6 connectingrods Lloyd's Kln. 966-970-508-509-965 KB/PFW 24-2-59

CRANKSHAFT ~~OR ROTARY SHAFT~~ Lloyd's Dsf. G.S. 52 - 10-12-58.

FLYWHEEL SHAFT

THRUSTSHAFT Lloyd's Dsf. G.S. 876 - 10-12-58

GEARING

INTERMEDIATE SHAFTS Lloyd's M.D. 1833/1834/1840/1841/1842/1853 HPL/RB 17-2-59

SCREW AND TUBE SHAFTS Lloyd's M.D. 1852 E.B. 29-12-58, spare Lloyd's M.D. 1979 E.B. 27-1-59

PROPELLERS Bronze Lloyd's Rot. Nr. 8146 A.v.H. 13-3-59, spare cast iron Lloyd's Rot. A.v.H. 14-8-59.

## OTHER IMPORTANT ITEMS

6 crossheads Lloyd's Dsf. 469 GS/PFW 18-2-1959, 432-432 A- 432 C MSA/PFW 18-2-1959

Lloyd's Dtm. 741. HD/PFW 18-2-1959

Is the installation a duplicate of a previous case? yes If so, state name of vessel M.S. "ARGO OLLANDIA" R'dam rep. 44485

Date of approval of plans for crankshaft 12-7-56 Straight shafting 12-7-56 Gearing -- Clutch --

Separate oil fuel tanks 15-7-1956 Pumping arrangements 1-5-1956 Oil fuel arrangements 1-5, 3-7/1956

Cargo oil pumping arrangements -- Air receivers 16-7-1956 Donkey boilers --

## Dates of examination of principal parts:—

Fitting of stern tube 10-6-1959 Fitting of propeller 3-7-1959 Completion of sea connections 9-6-1959 Alignment of crankshaft in main bearings 21-5, 9-10/1959

Engine chocks & bolts 9-10-1959 Alignment of gearing -- Alignment of straight shafting 25-9-1959 Testing of pumping arrangements 9-12-1959

Oil fuel lines 23-6-1959 Donkey boiler supports 9-10-1959 Steering machinery 9-10-59, 1-3-60 Windlass 9-10-'59, 1-3-60

Date of Committee FRIDAY 24 JUN 1960

Decision

+ LMC

ES 360.

2 Aux B. 100 lbs.

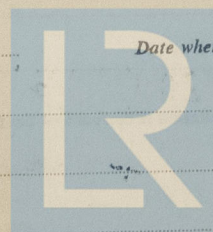
Special Survey Fee fl. 3000,--

Inst. fl. 1665,--

Cast. forg. fl. 250,--  
weld. constr.

Expenses fl. 323,--

Date when A/c rendered 13 MEI 1960



Lloyd's Register  
Foundation