

Rpt. 4b

Date of writing report 28th October 1959 Received London Port Groningen No. 20256  
Survey held at Waterhuizen In shops No. of visits On vessel 14 First date 18-5-1959 Last date 23-10-1959

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. 42107 Name m.s. "SOLVANTI" Gross tons 491.04  
Owners N.P. Antigonon Managers Port of Registry Antwerp  
Hull built at Waterhuizen By Scheepswerven Gebr. v. Diepen N.V. Yard No. 954 Year Month 1959-10  
Main Engines made at Köln By Klockner-Humboldt-Deutz Eng. No. 2515 322/329 When 1959  
Gearing made at By  
Donkey boilers made at By  
Machinery installed at Waterhuizen By Messrs D.E. Gorter Blr. Nos. When 1959

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? no  
Is refrigerating machinery fitted? no 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 direct drive - reversable engine

MAIN RECIPROCATING ENGINES. Licence Name and Type No. RV 8 M 545  
No. of cylinders per engine 8 Dia. of cylinders 320 mm stroke(s) 450 mm 2 or 4 stroke cycle 4 Single or double acting Single  
Maximum approved BHP per engine 660 at 380 RPM of engine and 380 RPM of propeller.  
Corresponding MIP 5.54 kg/cm<sup>2</sup> (For DA engines give MIP top & bottom) Maximum cylinder pressure 56 kg/cm<sup>2</sup> 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? 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 Inlet 1 Exhaust 1 Starting 1 Safety 1  
Material of cylinder covers Material of piston crowns Is the engine equipped to operate on heavy fuel oil? no  
Cooling medium for: Cylinders fresh water Pistons 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? crank Total internal volume of crankcase No. and total area of explosion relief devices 4x  
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? built-up seating 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? How long at full power?

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 27-7-59 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? yes  
Where positioned? forward end crankshaft Type friction type 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) Distance between centre lines of side cranks or eccentrics of opposed piston engines

Crankshaft type: Built, semi-built, solid. (State which)  
Diameter of journals Diameter of crankpins Centre Breadth of webs at mid-throw Axial thickness of webs  
Side Pins Minimum  
If shrunk, radial thickness around eyeholes Are dowel pins fitted? Crankshaft material Journals Approved  
Webs Tensile strength  
Diameter of flywheel Weight Are balance weights fitted? 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) bolted to crankshaft



012678-012685-0243 1/2

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 \_\_\_\_\_ Material \_\_\_\_\_ Minimum approved tensile strength \_\_\_\_\_

Shaft separate or integral with crank or wheel shaft? *integral with crankshaft* Diameter of intermediate shaft *190 mm (bobbin piece) 220 mm* Material *S 16 Steel*  
 Minimum approved tensile strength *44 kg/cm<sup>2</sup>* Diameter of screwshaft cone at large end *20 mm* Is screwshaft fitted with a continuous liner? *no*  
 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 at bearings \_\_\_\_\_ Thickness between bearings \_\_\_\_\_ Material of screw/tube shaft *S 16 Steel* Minimum approved tensile strength *44 kg/cm<sup>2</sup>*  
 Is an approved oil gland fitted? \_\_\_\_\_ If so, state type *rubber ring type grease lubrication* Length of bearing next to and supporting propeller *820 mm*  
 Material of bearing *cast iron* 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 *1700 mm* Pitch *1100 mm* Built up or solid *solid* Total developed surface *50%*

No. of blades *4* Blade thickness at top of root fillet *6.4 mm* Blade material *bronze* Moment of inertia of dry propeller *237 kgm<sup>2</sup>*  
 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 *274 kgm<sup>2</sup>*

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine *1* Can they be declutched? *no*

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) *one DEQ compressor no 596 cap 30 m<sup>3</sup>/h - Starb aux. eng. driven - cert Groningen no 594572*  
 No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) *2 - cap 500 lbs each - filled Starb. upper one no 50-R-14932 - LR-HNO cert C 561571 - lower one no 50R-14930 LR-HNO cert. C. 561569*  
 How are receivers first charged? *Starb. aux. eng. hand started* Maximum working pressure of starting air system *20 kg/cm<sup>2</sup>* 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 *1* No. of main engine lubricating oil coolers *1*

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure *one fitted in top casing ER*

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) *Bilge pump - seawater circ pump - fresh cooling water pump - lub oil pump.*

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	Fire Main	Lub. Oil	Piston Cooling
Starb general service pump aux. eng. driven - cap. 40 m <sup>3</sup> /h	X	X	X			X								X	
Port general service pump aux. eng. driven cap 40 m <sup>3</sup> /h	X	X	X			X				X				X	
Stand by lub oil pump Starb. aux. eng. driven								X							X
Harbour fresh cooling pump elec. driven - fitted p.s. aft					X						X				
O.F. transfer pump elec. driven - fitted p.s. forward				X								X			
hand - O.F. transfer pump				X								X			

BILGE SUCTIONS. No. and size in each hold, deep-tank or pump-room *1 x 2.5 forward 3" φ - 1 x 2.5 aft 3" φ*  
 No. and size connected to main bilge line in main engine room *1 - 2" φ - 1 - 1.5" φ* In tunnel \_\_\_\_\_  
 In aux. engine room \_\_\_\_\_ Size and position of direct bilge suction in machinery spaces *Starb.*  
 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? *no* 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). *yes*

Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
Starb	A3M 514 2460477/79 3 cyl	Deutz	cert. K.L.N. C. 59/1068	general service pump stand-by lub. oil pump compressor
Port	A3M 514 2460480/82 3 cyl	Deutz	cert. K.L.N. C. 59/1068	generator 7kw general service pump generator 6kw
harbour - set in precasable	FIL 712 2493707	Deutz		

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 *none*

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. \_\_\_\_\_  
 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? \_\_\_\_\_ Port and No. of report on donkey 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) *one hand - hydraulic - v.d. Giessen - steering gear - LR ROK no 121*

Have the Rule Requirements for fire extinguishing arrangements been complied with? *yes* Brief description of arrangements *4 x 9 lb foam ext<sup>s</sup> - 1 CO<sub>2</sub> ext - 16 kg - one hose with hydrant in ER.*  
 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-sea trials of main engines *23-10-59 - 6 hours.* Does this machinery installation contain any features of a novel or experimental nature? (Give particulars) *none*

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).

012678-012685-0243<sup>2/2</sup>



© 2021

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.

This engine and auxiliaries have been constructed and fitted under special survey in accordance with the approved plans, Society's Rules and Secretary's letters.

The materials and workmanship were found good.

The machinery has been tested under full working conditions on a trial trip with satisfactory results.

In my opinion the machinery of this ship merits the approval of the Committee and may be recorded in the R.B. with notation of **+ LMC 10, 59** - oil engine.

*[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

CRANKSHAFT OR ROTORSHAFT

FLYWHEEL SHAFT

THRUSTSHAFT

GEARING

bobbin piece: LLOYD KLN 707 HR 2-6-59  
INTERMEDIATE SHAFTS LLOYDS ROT 020 HD / AVB 21-0-59 end. Gns 59/339

SCREW AND TUBE SHAFTS LLOYDS ROT 029 HD / AVB 21-0-59 " 59/340

PROPELLERS LLOYDS ROT 023 AVH 26-5-59 end. Rotterdam 591915.

OTHER IMPORTANT ITEMS

Is the installation a duplicate of a previous case? no If so, state name of vessel \_\_\_\_\_

Date of approval of plans for crankshaft \_\_\_\_\_ Straight shafting 26-5-59 Gearing \_\_\_\_\_ Clutch \_\_\_\_\_

Separate oil fuel tanks 0-10-59 Pumping arrangements 2-6-59 — 31-8-59 Oil fuel arrangements 31-0-59

Cargo oil pumping arrangements \_\_\_\_\_ Air receivers \_\_\_\_\_ Donkey boilers \_\_\_\_\_

Dates of examination of principal parts:—

Fitting of stern tube 22-0-59 Fitting of propeller 19-6-59 Completion of sea connections 5-9-59 Alignment of crankshaft in main bearings 12-10-59

Engine checks & bolts 17-9-59 Alignment of gearing \_\_\_\_\_ Alignment of straight shafting 17-9-59 Testing of pumping arrangements 13-11-59

Oil fuel lines 13-10-59 Donkey boiler supports \_\_\_\_\_ Steering machinery 23-10-59 Windlass 23-10-59

Date of Committee FRIDAY - 5 FEB 1960 Special Survey Fee FLS 315,-

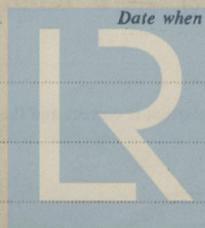
Decision See Rpt. 1.

Expenses

fls 59,-

Date when A/c rendered

30-11-59



Lloyd's Register Foundation