

Date of writing report 19-9-1964 Received London Port ROTTERDAM No.

Survey held at ROTTERDAM No. of visits 188 In shops 114 On vessel 74 First date 7-9-62 Last date 11-9-64

FIRST ENTRY REPORT ON STEAM TURBINE MACHINERY

No. in Register Book Name s.s. "POOLSTER" Gross tons 12451.19 Owners Ministerie van Defensie (Marine) Managers Port of Registry Den Helder

Hull built at Rotterdam By Rotterd. Droogdok Mij. Yard No. 307 When 1964 Sept. Main engines made at Rotterdam By " " " Engine No. 363 When 1964 Sept. Gearing made at Vlissingen By Kon. Mij "De Schelde" Gear No. 6556 When 1963 Sept. Machinery installed at Rotterdam By Rotterd. Droogdok Mij. N.V. When 1964 Sept.

Particulars of restricted service of ship if limited for classification none If ship is to be classed for navigation in ice, state whether Class 1, 2 or 3 no Particulars of vegetable or similar cargo oil notation if required N.A.

Is ship an oil tanker? yes Is a refrigerating installation fitted? yes If so, is it for cargo purposes? no Type of refrigerant Is the compartment containing the refrigerating machinery 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. Dashes, ticks and other signs of doubtful meaning are not to be used. Wording not applicable to the installation should be cancelled with a black line.

BOILERS AND OTHER STEAM PRESSURE VESSELS.

No. of main boilers two Type and licence name, if any Foster Wheeler/ ESD II Position boiler room No. of donkey boilers one Type and licence name, if any Scotch boiler Position engine room lower platform Saturated safety valve pressure, main boilers 52 kg./cm2 donkey boilers 10 kg/cm2 Steam temperature if superheated 470°C Superheater safety valve pressure 46,4 kg/cm2 Natural, forced or induced draught forced draught No. of steam heated steam generators one Generator safety valve pressure 10 kg./cm2 Report on main, aux./donkey boilers and steam heated steam generators (Port and No.) main boilers - Rotterdam, donkey boiler - Groningen No. 2631, steam generator - Amsterdam No. 64/1885.

If the boilers are oil fired, is the arrangement of pipes, valves and controls in accordance with the Rules? yes Licence name of oil burning system De Jong-Schiedam (donkey blr) No. and position of oil burning pressure units main: two pumps F&A with three heaters S inner-middle-outer. Donkey blr: one pump with one heater No. and position of oil fuel settling or service tanks not forming part of the hull structure none

No. of forced or induced draught fans two How driven electrically

MAIN PROPULSION. (If the main steam turbines, generators or propelling motors have been constructed at another port and are covered by a separate report, the particulars given in that report should not be repeated below but the port and report No. must be stated and all other applicable information must be given.)

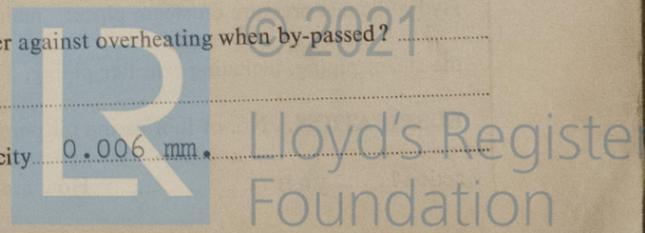
Geared or electric transmission? geared No. of propellers one Maximum S.H.P. for which each line of shafting has been approved 22500 at 145 R.P.M. Machinery numeral 4500

STEAM TURBINES. Description and licence name, if any. (State whether impulse, reaction, impulse-reaction, etc., and whether in tandem.) License Pametrada cross compound H.P. impulse L.P. impulse reaction L.P. astern impulse.

No. of ahead turbines two No. of astern turbines one

If ship is single screw, can steam be led direct to M.P. or L.P. turbine and can either H.P. or M.P. turbine exhaust direct to condenser? yes Are ahead turbines fitted with emergency overspeed governors as per Rule? yes Is provision made for reheating the exhaust steam from the H.P. or M.P. turbines? no If so, state pressure and temperature of steam on entering reheater N.A. and leaving reheater N.A. What means are provided for protecting reheat boiler against overheating when by-passed? N.A.

Temperature of stabilisation of H.P. rotor 500°C = 932°F. Residual eccentricity 0.006 mm



547210-4EEF10-06F10

TURBINES	H.P.		M.P.		L.P.	
	Ahead	Astern	Ahead	Astern	Ahead	Astern
No. of velocity compounded impulse stages	one				-	two
No. of other impulse stages	nine				six	-
Material of blades	13% Cr.St.				13% Cr.St.	13% Cr.St.
Material of nozzles	Cr.Mo.St.				-	Cr.Mo.St.
No. of rows of reaction blading	-				seven	-
Material of blades	-				13% Cr.St.	-
Type of glands	Spring backed glands				Spring backed glands	
Type of rotor construction	single solid steel forging				Single solid steel forging	
Material of rotor shaft	Cr.Ni.Mo.steel				Cr.Ni.Mo. steel	
Tensile strength	63 kg./mm ²				63 kg./mm ²	
Rotor shaft diameter at bearings	152 mm.				190 mm.	
Span of bearing centres	1697 mm.				2820 mm.	
S.H.P. at approved maximum power	8440				14060	
Corresponding R.P.M.	7430				3000	
Type of casing construction and material. State if fabricated	Double cast steel casing				Double cast steel/inner casing outer casing fabricated	

REDUCTION GEARING. (Full particulars to be reported on Form 4e) Port Rotterdam Report No. 56831

ELECTRIC PROPULSION. (Full particulars to be reported on Form 4d) Port _____ Report No. _____

No. of alternators _____ Kw. each alternator _____ at _____ R.P.M. Position in ship _____

_____ No. of propulsion motors _____ S.H.P. each motor _____ at _____ R.P.M. Position in ship _____

LINE SHAFTING. THRUST SHAFT (If not integral with gearwheel or electric motor shaft) Is it forward or abaft of the gear case or motor? abaft

Diameter at collar 575 mm Minimum approved tensile strength 44 kg/mm² INTERMEDIATE SHAFT Diameter 520 mm

Minimum approved tensile strength 44 kg/mm² SCREWSHAFT Diameter of cone at large end 610 mm

Is continuous liner fitted? no Type of propeller key normal TUBESHAFT (If separate from screwshaft) Diameter N.A.

Is continuous liner fitted in way of stern tube? N.A. Thickness of screw/tubeshaft liner at bearings N.A.

Thickness between bearings N.A. How is end of liner made watertight in propeller boss? N.A.

Is an approved oil gland fitted? yes If so, state type "Simplex" Deutsche Length of bearing next to and supporting propeller 2230 mm

Material of bearing white metal In multiple screw ships, is the liner between stern tube and "A" bracket continuous? N.A.

If not, is the exposed length of shafting between liners readily visible in drydock? N.A.

Minimum approved tensile strength of screw/ax shaft 44 kg./mm² Is screw/ax shaft of approved corrosion resisting material? no

PROPELLER. If of special design, state type N.A. Is it of reversible pitch type? no

If so, is it of approved design? N.A. State method of control N.A.

Propeller	Diameter mm.	Pitch mm.	Built or solid	Total developed surface m ²	No. of blades	Blade thickness at top of root fillet mm.	Blade material	Tensile strength kg/m ²	Design moment of inertia of propeller (dry) kgm ²	For Class 1 or 2 ice strengthening only			
										Blade thickness at 25% radius	Blade thickness at tip	Length of blade section at 25% radius	Rake of blade
Working	5600	5170	solid	18,24	4	255	Lima	60	135600				
Spare	none						bronze						

TORSIONAL VIBRATION CHARACTERISTICS. Date of approval with (a) working propeller 9-10-62 (b) spare propeller -

State barred speed ranges if imposed with (a) working propeller none (b) spare propeller -

STEAM PIPES. Material of main steam pipes 13 Cr.Mo.44 Tensile strength 45-58 kg/mm²

External diameter 193.7 mm. Thickness 8.8 mm. How are flanges attached? elec.welded

Material of valves and fittings for superheated steam cast molybdeen steel Are any auxiliary steam pipes for essential services over 3" bore? yes

If so, what is the material? Carb.steel 35,8 Tensile strength 35-45 kg/mm²

Hydraulic test pressure on steam pipes: main 104 kg/cm² auxiliary 104 kg/cm² Is adequate drainage provided for the steam piping, including reheater piping, and fittings? yes

LUBRICATION. No. of lubricating oil pumps two Are their capacities sufficient to maintain normal oil supply with any one pump out of action? yes

How are the pumps driven? electrically

Is an emergency supply of oil automatically available as per Rule? yes Is an alarm device fitted to give warning of failure or reduction of the oil supply from the pumps? yes No. of oil coolers two

Are duplex strainers/filters fitted on the suction/pressure side of the pumps? one duplex filter

Are they of magnetic type? yes

FEED SYSTEM. Are all boilers provided with two separate means of feed? yes No. of pressure feed heaters one

Temperature of feed water at admission to boilers 135°C. No. of duplex feed filters: suction one pressure - No. of feed water evaporators two

Capacity of each in tons/hour two Is feed water distilled from fresh water carried on board, or sea water? sea water

Is the feed water single or double distilled? single Is the feed system closed? yes

No. of condensers: main one aux. one Cooling surface of main condensers 940 m²

Material specification of condenser tubes Alum. brass No. of air ejectors, main two aux. two

PUMPS Name below each essential pump and state its position. Give capacities 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 Main	Condr. Extr.	Sea	Feed Tanks	lub. oil	Boiler Feed	aux. Main Condr. Cooling	Oil Fuel Burners	Oil Fuel Tanks	Fire Main	lub. oil de-aerator
Feed pumps-starb.inner-middle outer							X		X					
Condensate ps starb.port					X									X
Aux.condensate ps fore aft					X									X
Main circ.pump port						X					X			
Aux.circ.pump port						X					X			
Lub.oil pumps forward and aft								X						X
Fuel oil service pumps forw. and aft					X						X			
Fuel oil transfer pump starb. Bilge pumps P.forw.and aft cap.113 T/h.each		X	X											overboard
Fire pump engineroom starb.) Fire pump forw.pumproom starb.)						X								X
Prewetting pump 250 T/h.						X								X
St.gen feedpumps elec/steam-S.B.							X							st. gen. donkey boiler
Donkey boiler feedpump elec-S.B. Bilge pump forw.pumproom) cap. Bilge pump aft pumproom) -80 T.each							X							overboard

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room Aft: 1 of 5" Forw: one port and starboard of 70 mm.

Also special holds - 80mm

No. and size connected to main bilge line in main engine room 3 x 4" and 2 x 2"

in aux. engine room N.A. in boiler room None in tunnel N.A.

Size and position of direct bilge suction in machinery spaces 5" port and starboard

Size and position of emergency bilge suction in machinery spaces one 20" tanktop port Are all bilge suction valves of non-return type? yes

Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? no

Do the pumping arrangements comply with the Rules, including special requirements for oil tankers, ships carrying cargo oil, or classed for navigation in ice class (Strike out words not applicable) yes

ELECTRIC GENERATOR PRIME MOVERS.

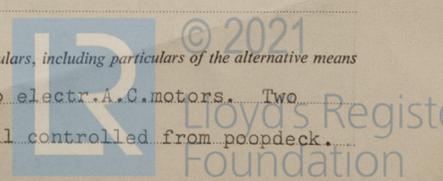
Position of each	Prime Mover	Made by	Port and No. of Report or Certificate	Output in Kw.	Volts	Amps.
Eng.room-port forward	turbine	Werkspoor	Amsterdam No.25650	620	775kVA	450 990
port aft	Diesel	Davey Paxman	Ipswich No.150043	300	375kVA	450 480
Foreship portside-Jdeck	engine					
Port inb.centre-outb.						

If electric current is used for essential services at sea, state the minimum No. and capacity of generators required in order that the ship may operate at sea

One turbo generator or two diesel generators

STEERING GEAR. (State type, also No. of steam engines, electric motors, hydraulic pumps and other particulars, including particulars of the alternative means of steering) Electric hydraulic steering gear No. H.G. 9241/2. Two electr.A.C.motors. Two

L.P.18 Hele-Shaw pumps and telemotor cert.Greenock.C.9484; manual controlled from poopdeck.



AIR COMPRESSORS AND RECEIVERS FOR ESSENTIAL SERVICES. (State purpose, capacity, prime mover, position in ship, Port and No. of

Certificate Two elec.dr. control air compr.-S.inb./outb.-71 m³/hr.at 20 kg/cm² Ham.Cert.63/1142-1143
 One control air receiver-S.B. 1st platf.Lloyd's Test 35 kg.W.P.20.5 kg.Rot.8-8-63 EMD.
 Two elec.dr.S.A.compr.dieselroom foreship J-deck cert.Ham.62/3404/3405
 Four S.A.air receivers - dieselroom foreship above each other Lloyd's Dsf. C.63/1655

Have the Rules for fire extinguishing arrangements been complied with? yes Brief description of arrangements In Eng.room: 5 hydrant
with hoses and spray nozzles, 4 portable CO2 app.(6 kg.)-fixed 4" frothline with 4 branches on tank
One portable froth nozzle pipe with 4 jerry cans froth liquid, 1-sandbox- Boilerroom: 4" fixed froth
line with 2 branches, 2 hydrants with hoses and nozzles, 2 portable CO2 app.(6 kg.), one portable froth
nozzle pipe with 4 jerry cans liquid, 2 sandboxes. (continued on attached sheet A.)

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

Has the manœuvring of the main engines been tried and found satisfactory? yes Date and duration of full-power sea trials of
16-19 June, 1964

main engines AT 10.500 SHP-24 hrs.; 22.500 SHP-2 hrs Does this machinery installation contain any features of a novel or experimental
 nature? (State particulars) Yes, please see attached description of automatic and remote controls

Date of approval of plans for: Main boilers 22-10-'62 Auxiliary boilers - Donkey boilers 26-2-63 see Gron.Rp
64/1885 nr.2631

Superheaters 22-10-62 Economisers 22-10-62 Steam heated steam generators Ams.rpt./- Main steam pipes 22-11-62/28-3-6

Shafting 5-9-62 Pumping and piping arrangements 5-6-62/18-7-63

4-9-62/24-1-63

Separate oil fuel tanks N.A. Propeller (including spare if supplied) 9-5-63

If the installation is a duplicate of a previous case, state name of ship

The foregoing description of the main engines and installation is correct and the particulars are as approved for torsional vibration characteristics. (Strike out words not applicable.)

DE ROTTERDAMSCHES PROEFDOK N.V.
 Director
[Signature] Builder

GENERAL REMARKS. (State if 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 machinery has been constructed and installed under Special Survey in accordance with the Society's Rules, Secretary's letters and approved plans. The materials used have been tested as required and the workmanship found good throughout. The machinery has been examined under full working condition and found satisfactory, no gearhammer was observed throughout the service speed range, specially watched at 57 and 82 r.p.m. (H.O.letter dated 9-10-62). The automatic and manual controls of the complete boiler installation, all remote controls, alarms and warning lamps in the centralised control room were tried out working and found good. In my opinion this machinery merits the approval of the Committee to be entered in the Society's Register Book with notation + LMC.

E.M.Dudock. *[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 to be forwarded with report.

Turbine Rotors H.P. Lloyd's Rot. No.2012 EMD. 11-12-'63 L.P. Lloyd's Rot. No.2013 EMD.16-12-'63
 (see cert.Ams.62/2641/2701/2789/2844/2815)
 Turbine Casings H.P. Lloyd's Test 45-30-8 kg. Rot. EMD.31-7-63 L.P. Lloyd's Test 9-4 kg.Rot.23-7-63 E
 Flexible Couplings Lloyd's Vln. 4183 AWH-AvB 2-9-63 L.P.
 Thrust Shaft Lloyd's Rot.1982^A EMD.6-9-63 Intermediate Shafts Lloyd's Rot.1982 EMD.6-9-63
 Screw and Drive Shafts Lloyd's Rot. 1981 EMD.6-9-63 Propellers Lloyd's Rot. No.571 H.S.10-6-63
 Other important items

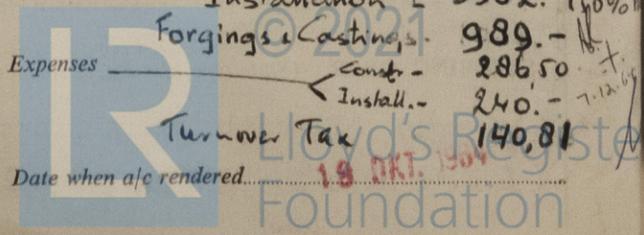
DATES OF EXAMINATION OF PRINCIPAL PARTS.

Casings H.P. 31-7-63 L.P. 23-7-63 Rotors H.P. 11-12-63 L.P. 16-12-63
 Flexible Couplings 2-9-63 Alignment of Turbines and Gearing 7-2-64
 Alignment of Straight Shafting 7-2-64 Boiler Supports 17-10-63 Fitting of Sterntube 4-9-63
 Fitting of Propeller 13-9-63 Completion of Sea Connections 15-10-63 Testing of Pumping Arrangements 11-6-64
 Oil Fuel Lines 29-4-64 Steering Machinery 19-6-64 Windlass 16-6-64

Date of Committee WEDNESDAY 23 DEC 1964

Decision +LMC ES
MBS
dfs
sgs
sps
OF
TS(OG) } 9-64

Special Survey Fee Construction 2104.- (70%
 Installation 3302.- (50%
 Forgings & Castings 989.-
 Expenses 286.50
 Turnover Tax 140.81
 Date when a/c rendered 18 OCT 1964



AIR COMPRESSORS AND RECEIVERS FOR ESSENTIAL SERVICES. (State purpose, capacity, prime mover, position in ship, Port and No. of

Certificate).....

Have the Rules for fire extinguishing arrangements been complied with?..... Brief description of arrangements Forw. pumproom:.....

fixed CO2 line and 2 portable CO2 powder app.12 kg. Aft pumproom: fixed CO2 line and 2 portable

CO2 powder app.6 kg. Auxiliary dieselroom: fixed 4" froth line 2 portable CO2 app.; one portable

froth nozzle pipe with 4 cans liquid

Has the spare gear required by the Rules been supplied?..... Has all the machinery been tried under full working conditions and found satisfactory?.....

Has the manœuvring of the main engines been tried and found satisfactory?..... Date and duration of full-power sea trials of

main engines..... Does this machinery installation contain any features of a novel or experimental

nature? (State particulars).....

Date of approval of plans for: Main boilers..... Auxiliary boilers..... Donkey boilers.....

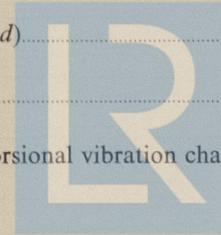
Superheaters..... Economisers..... Steam heated steam generators..... Main steam pipes.....

Shafting..... Pumping and piping arrangements.....

Separate oil fuel tanks..... Propeller (including spare if supplied).....

If the installation is a duplicate of a previous case, state name of ship.....

The foregoing description of the main engines and installation is correct and the particulars are as approved for torsional vibration characteristics. (Strike out words not applicable.)



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Foundation

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Rpt. 4a (cont.)

Ship's Name SS/MSC " POOLSTER "

Port ROTTERDAM

Rpt. No.

Centralised controls and automation on board the Navy Supply Tanker s.s. " POOLSTER " built at Messrs. De Rotterdamsche Droogdok Maatschappij. Yard Number 307.

Two centralised, air-conditioned, soundproof controlrooms are situated at the after end of the engine room above each other. In the lower one the following is installed:-

1. The pneumatic control of manoeuvring, overload, emergency stop and bleed valves in addition to the normal hand controls.
2. The automatic or manual pneumatic control of the complete boiler installation (please see separate brief description).
3. Full instrumentation together with warning lamps and alarms regarding the complete machinery and boiler installation.

In the upper controlroom are fitted:-

1. Main switchboards with circuit breakers, instrumentation etc.
2. All emergency stops.
3. Gaswarning alarms and special navy outfit.
4. Remote starting devices for both bilge pumps and pneumatic controls of their direct bilge suction and discharge valves in addition to normal hand operation.

Automatic controlled are the following items:-

- a. Lubricating oil temperature.
- b. Pressure in control air receiver.
- c. The one furnace Scotch boiler for steam pressure and water level.
- d. Steam heated generator for steam pressure and water level.
- e. Starting of stand-by feedpump in case of failure of feedpump in use.
- f. Starting of stand-by lubricating oil pump at a certain min. lub.oil pressure.

Brief description of automatic boiler control.

All the following items are automatic or manual pneumatic controlled from the centralised control room in addition to a normal hand-control of the complete boiler installation.

1. Switching on-off of main burners; burners will be ignited by a continuous burning pilot burner.
2. Feedwater supply valve and an emergency feedwater by-pass valve for each boiler,
3. Position of forced draught fan vanes and switching over from L.S. to H.S. or the reverse.
4. Super heat steam temperature.



Ship's Name SS/~~MS~~ " POOLSTER "

Port ROTTERDAM

Rpt. No.

5. Fuel/air ratio.

In the electric circuit of the electric pneumatic main fuel valve are fitted an emergency stop, a contact for pilot burner failure and a contact for failure of the forced draught fan.

Signaling of the burners in use is obtained by foto-electric cells near the burners and transmitted to warning lamps in the control panels.

On a special request of the Royal Netherlands Navy an additional control panel is located in engine room near the manoeuvring stand, from which panel the boiler f.d.fans and all burners can be switched to automatic or manual control beside controlling from the main control rooms. It was pointed out to the officer in charge that no warning was obtained in the control room when the controls were switched over on to this emergency panel, but it was found of no importance to them and no alteration has been made.

