

Rpt. 4b

Date of writing report 15-12-58

Received London

Port H A M B U R G

No.

7105

Survey held at Hamburg

No. of visits

In shops 22

First date

25.9.58

Last date

8.12.58

## FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name Gross tons

Owners Managers Port of Registry

Hull built at Gävle By Aktiebolaget Gävle Varf Yard No. 101 When

Main Engines made at By Augsburg-Nürnberg Eng. No. 405 256/257 When 58 12

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

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

Is 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 2 No. of propellers 2 Brief description of propulsion system 2 engines, direct coupled to 2 screw shafts

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

No. 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

Maximum approved BHP per engine 2100 at 275 RPM of engine and 275 RPM of propeller.

Corresponding MIP 10.76 (For D/A engines give MIP top & bottom) Maximum cylinder pressure 62 kg/cm<sup>2</sup> Machinery numeral 420

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

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

No. of supercharge air coolers per engine none Supercharge air pressure 0.40 kg/cm<sup>2</sup> Can engine operate without supercharger? yes

TWO &amp; FOUR STROKE ENGINES-GENERAL. No. of valves per cylinder: Fuel 1 Inlet 1 Exhaust 1 Starting 1 Safety 1

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

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

Is the rod fitted with a sleeve? Is welded construction employed for: Bedplate? yes Frames? no Entablature? Is the crankcase separated from the

underside of pistons? no Is the engine of crosshead or trunk piston type? trunk p. Total internal volume of crankcase 120 m<sup>3</sup> No. and total area of explosion reliefdevices 10 of 2450 cm<sup>2</sup> Are flame guards or traps fitted to relief devices? valves 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? How is the engine started? compressed air

Can the engine be directly reversed? no If not, how is reversing obtained? reversible propeller

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

CRANK &amp; FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 15.8.57 State barred speed range(s), if imposed

for working propeller 80-100 rpm For spare propeller Is a governor fitted? yes Is a torsional vibration damper or detuner fitted to the shafting? yes

Where positioned? fwd. end of crankshaft Type Huelsenfeder No. of main bearings 12 Are main bearings of ball or roller

type? 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

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

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

If shrunk, radial thickness around eyeholes Are dowel pins fitted? Crankshaft material Journals SM-steel Minimum 50 kg/mm<sup>2</sup>

Diameter of flywheel 1500 mm Weight 2350 kg Are balance weights fitted? no Total weight Radius of gyration

Diameter of flywheel shaft none Material Minimum approved tensile strength

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

<b>MAIN GAS TURBINES.</b> 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? _____			
<b>ARRANGEMENT OF TURBINES.</b> 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? _____	Are the turbines operated in conjunction with free piston gas generators? _____
How is reversing effected? _____			
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? _____			
<b>ELECTRIC PROPULSION</b> (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? _____			
<b>REDUCTION GEARING</b> (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? _____			
<b>CLUTCHES, FLEXIBLE COUPLINGS, ETC.</b> 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? _____			
<b>STRAIGHT SHAFTING.</b> 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 liner _____			
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 between liners readily visible in dry dock? _____			
<b>PROPELLER.</b> 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 _____			
<b>AIR COMPRESSORS &amp; RECEIVERS.</b> 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 devices in accordance with the Rules? _____			
Has the starting of the main engines been tested and found satisfactory? _____			
<b>COOLERS.</b> No. of main engine fresh water coolers _____ No. of main engine lubricating oil coolers _____			
<b>OIL FUEL TANKS.</b> No. and position of oil fuel settling or service tanks not forming part of hull structure _____			

HOW SHARP: 100-140, 150-160, 170-180, 190-200, 210-220, 230-240, 250-260, 270-280, 290-300, 310-320, 330-340, 350-360, 370-380, 390-400, 410-420, 430-440, 450-460, 470-480, 490-500, 510-520, 530-540, 550-560, 570-580, 590-600, 610-620, 630-640, 650-660, 670-680, 690-700, 710-720, 730-740, 750-760, 770-780, 790-800, 810-820, 830-840, 850-860, 870-880, 890-900, 910-920, 930-940, 950-960, 970-980, 990-1000, 1010-1020, 1030-1040, 1050-1060, 1070-1080, 1090-1100, 1110-1120, 1130-1140, 1150-1160, 1170-1180, 1190-1200, 1210-1220, 1230-1240, 1250-1260, 1270-1280, 1290-1300, 1310-1320, 1330-1340, 1350-1360, 1370-1380, 1390-1400, 1410-1420, 1430-1440, 1450-1460, 1470-1480, 1490-1500, 1510-1520, 1530-1540, 1550-1560, 1570-1580, 1590-1600, 1610-1620, 1630-1640, 1650-1660, 1670-1680, 1690-1700, 1710-1720, 1730-1740, 1750-1760, 1770-1780, 1790-1800, 1810-1820, 1830-1840, 1850-1860, 1870-1880, 1890-1900, 1910-1920, 1930-1940, 1950-1960, 1970-1980, 1990-2000, 2010-2020, 2030-2040, 2050-2060, 2070-2080, 2090-2100, 2110-2120, 2130-2140, 2150-2160, 2170-2180, 2190-2200, 2210-2220, 2230-2240, 2250-2260, 2270-2280, 2290-2300, 2310-2320, 2330-2340, 2350-2360, 2370-2380, 2390-2400, 2410-2420, 2430-2440, 2450-2460, 2470-2480, 2490-2500, 2510-2520, 2530-2540, 2550-2560, 2570-2580, 2590-2600, 2610-2620, 2630-2640, 2650-2660, 2670-2680, 2690-2700, 2710-2720, 2730-2740, 2750-2760, 2770-2780, 2790-2800, 2810-2820, 2830-2840, 2850-2860, 2870-2880, 2890-2900, 2910-2920, 2930-2940, 2950-2960, 2970-2980, 2990-3000, 3010-3020, 3030-3040, 3050-3060, 3070-3080, 3090-3100, 3110-3120, 3130-3140, 3150-3160, 3170-3180, 3190-3200, 3210-3220, 3230-3240, 3250-3260, 3270-3280, 3290-3300, 3310-3320, 3330-3340, 3350-3360, 3370-3380, 3390-3400, 3410-3420, 3430-3440, 3450-3460, 3470-3480, 3490-3500, 3510-3520, 3530-3540, 3550-3560, 3570-3580, 3590-3600, 3610-3620, 3630-3640, 3650-3660, 3670-3680, 3690-3700, 3710-3720, 3730-3740, 3750-3760, 3770-3780, 3790-3800, 3810-3820, 3830-3840, 3850-3860, 3870-3880, 3890-3900, 3910-3920, 3930-3940, 3950-3960, 3970-3980, 3990-4000, 4010-4020, 4030-4040, 4050-4060, 4070-4080, 4090-4100, 4110-4120, 4130-4140, 4150-4160, 4170-4180, 4190-4200, 4210-4220, 4230-4240, 4250-4260, 4270-4280, 4290-4300, 4310-4320, 4330-4340, 4350-4360, 4370-4380, 4390-4400, 4410-4420, 4430-4440, 4450-4460, 4470-4480, 4490-4500, 4510-4520, 4530-4540, 4550-4560, 4570-4580, 4590-4600, 4610-4620, 4630-4640, 4650-4660, 4670-4680, 4690-4700, 4710-4720, 4730-4740, 4750-4760, 4770-4780, 4790-4800, 4810-4820, 4830-4840, 4850-4860, 4870-4880, 4890-4900, 4910-4920, 4930-4940, 4950-4960, 4970-4980, 4990-5000, 5010-5020, 5030-5040, 5050-5060, 5070-5080, 5090-5100, 5110-5120, 5130-5140, 5150-5160, 5170-5180, 5190-5200, 5210-5220, 5230-5240, 5250-5260, 5270-5280, 5290-5300, 5310-5320, 5330-5340, 5350-5360, 5370-5380, 5390-5400, 5410-5420, 5430-5440, 5450-5460, 5470-5480, 5490-5500, 5510-5520, 5530-5540, 5550-5560, 5570-5580, 5590-5600, 5610-5620, 5630-5640, 5650-5660, 5670-5680, 5690-5700, 5710-5720, 5730-5740, 5750-5760, 5770-5780, 5790-5800, 5810-5820, 5830-5840, 5850-5860, 5870-5880, 5890-5900, 5910-5920, 5930-5940, 5950-5960, 5970-5980, 5990-6000, 6010-6020, 6030-6040, 6050-6060, 6070-6080, 6090-6100, 6110-6120, 6130-6140, 6150-6160, 6170-6180, 6190-6200, 6210-6220, 6230-6240, 6250-6260, 6270-6280, 6290-6300, 6310-6320, 6330-6340, 6350-6360, 6370-6380, 6390-6400, 6410-6420, 6430-6440, 6450-6460, 6470-6480, 6490-6500, 6510-6520, 6530-6540, 6550-6560, 6570-6580, 6590-6600, 6610-6620, 6630-6640, 6650-6660, 6670-6680, 6690-6700, 6710-6720, 6730-6740, 6750-6760, 6770-6780, 6790-6800, 6810-6820, 6830-6840, 6850-6860, 6870-6880, 6890-6900, 6910-6920, 6930-6940, 6950-6960, 6970-6980, 6990-7000, 7010-7020, 7030-7040, 7050-7060, 7070-7080, 7090-7100, 7110-7120, 7130-7140, 7150-7160, 7170-7180, 7190-7200, 7210-7220, 7230-7240, 7250-7260, 7270-7280, 7290-7300, 7310-7320, 7330-7340, 7350-7360, 7370-7380, 7390-7400, 7410-7420, 7430-7440, 7450-7460, 7470-7480, 7490-7500, 7510-7520, 7530-7540, 7550-7560, 7570-7580, 7590-7600, 7610-7620, 7630-7640, 7650-7660, 7670-7680, 7690-7700, 7710-77

## DELIVERY

1

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

Is an electric generator driven by Main Engine?

Type

W.P.

Can the exhaust heated boilers deliver steam directly to

Port and No. of report on donkey

Are any steam pipes over 3 ins. bore?..... If so, what is their

No. of oil burning pressure

No. of Evaporators

EX. 1. By Darius and other particulars)

... have been complied with?

10

Has all the ma

...

Installation is correct and the particulars are as approved for torsional vibration characteristics (*strike out words not applicable*).

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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 conformity with the Society's Rules and Regulations, the approved plans and the Secretary's letters. The materials and workmanship are good. The engines have been examined during construction and under working conditions on the Makers' test bed and are eligible in our opinion to have the record  $\neq$  LMC (with date) when satisfactorily installed on board and examined under working conditions.

*[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 Connecting Rods:- LLOYD'S AUG BA 25 GH 28.8.58  
LLOYD'S AUG BA 26 GH 29.8.58  
CRANKSHAFT OR PISTONWIPER 405 256 : LLOYD'S HAM 768 RFK 5.9.58  
MAIN SHAFT 405 257 : LLOYD'S HAM 1724 RFK 3.10.58  
THRUST SHAFT  
GEARING  
INTERMEDIATE SHAFTS  
SCREW AND TUBE SHAFTS  
PROPELLERS  
OTHER IMPORTANT ITEMS Bed plate :- 405 256 LLOYD'S HAM 2620 RFK 4.9.58  
405 257 LLOYD'S HAM 2623 RFK 8.9.58  
Blowers 405 256 LLOYD'S TEST AUG 11226 GH  
405 257 LLOYD'S TEST AUG 11227 GH

Is the installation a duplicate of a previous case? If so, state name of vessel  
Date of approval of plans for crankshaft 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:- Alignment of crankshaft in main bearings 7.10.58 (25)  
Fitting of stern tube Fitting of propeller Completion of sea connections 17.10.58 (25)  
Engine clocks & 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 11.10.1956 Special Survey Fee Construction: JM 39.10.  
Decision See Rpt. 1. Test Bed Trials: JM 200.

Expenses

Date when A/c rendered



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