

Rpt. 4b

Date of writing report 21.10.58.

Received London

28 OCT 1958

Port MANCHESTER.

No. 18617

Survey held at MANCHESTER.

No. of visits

In shops Eight.

21.5.58.

20.8.58.

On vessel

First date

Last date

## FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name 660 DWT Cargo Vessel.

Gross tons

Owners

Managers

Port of Registry

Year Month

Hull built at Gdansk.

By Stocznia Gdansk.

Yard No. B51/151011.

When

Main Engines made at Openshaw.

By Crossley Brothers Ltd.

Contract 12030.

When

Gearing made at

By

Eng. No. 148441.

When 1958.

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?

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 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 to Propeller.

MAIN RECIPROCATING ENGINES.

Licence Name and Type No.

HRN8/32 Heavy Oil.

No. of cylinders per engine 8.

Dia. of cylinders

10 1/2".

stroke(s)

13 1/2".

2 or 4 stroke cycle

2.

Single or double acting

Single.

Maximum approved BHP per engine

680

at

340.

RPM of engine and

340.

RPM of propeller.

Corresponding MIP 100 psi.

(For DA engines give MIP top &amp; bottom)

Maximum cylinder pressure

950 psi.

Machinery numeral

136.

Are the cylinders arranged in Vee or other special formation?

Vertical.

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?

Is the exhaust discharged through ports in the cylinders or through valve(s) in the cylinder covers?

Ports.

No. and type of mechanically driven scavenge pumps or blowers per

engine and how driven One D.A. 3 Tier Scavenge Pump Driven From Crankshaft.

No. of exhaust gas driven scavenge blowers per engine

None.

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

power 3 psi.

No. of scavenge air coolers

None.

Scavenge air pressure at full

Are scavenge manifold explosion relief valves fitted? Yes.

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

Exhaust

Starting One.

Safety One.

Material of cylinder covers

Cast Iron.

Material of piston crowns

Cast Iron.

Is the engine equipped to operate on heavy fuel oil?

No.

Cooling medium for :—Cylinders

Water.

Pistons

Lub.Oil.

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?

Trunk.

Total internal volume of crankcase

78 cu.ft.

No. and total area of explosion relief

devices 4 - 55 in.<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?

How is the engine started? Comp. 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

5.11.58

State barred speed range(s), if imposed

for working propeller 120-145 RPM

for spare propeller

Is a governor fitted?

Is a torsional vibration damper or detuner fitted to the shafting?

Where positioned?

Type

No. of main bearings

9.

Are main bearings of ball or roller

type? Plain.

Distance between inner edges of bearings in way of crank(s)

14 7/8".

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

7 1/2".

Diameter of crankpins

Centre

7 1/2".

Breadth of webs at mid-throw

9 1/4".

Axial thickness of webs

3.23/32".

If shrunk, radial thickness around eyeholes

Are dowel pins fitted?

Crankshaft material

O.H.Steel.

Minimum

Approved 35 tpsi.Min.

Tensile strength

Diameter of flywheel

37 1/2".

Weight

950 lbs.

Are balance weights fitted?

Yes.

Total weight

174 lbs.

33 lbs.

Radius of gyration

6.25".

Diameter of flywheel shaft

Material

Minimum approved tensile strength

Flywheel Bolted to Crankshaft.

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? .....

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? .....

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.....

STRAIGHT SHAFTING. Diameter of thrustshaft..... Minimum approved tensile strength..... Material.....

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 at 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?.....

**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.....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).....

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?

COOLERS. No. of main engine fresh water coolers..... 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.....

MAIN ENGINE DRIVEN PUMPS (No. and Purpose)		
	Sea Water Pump	3876 GPH.
	Bilge " "	3876 GPH.
	Engine Lub. Oil Pump	2530 GPH.
	Lift " "	3917 GPH.

Name below essential pumps, state position and how driven. Give capacity of bilge pumps.

[illegible]

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

No. and size connected to main bilge line in main engine room.....

In aux. engine room.....	Size and position of direct blow against.....
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Size and position of emergency bilge suction in machinery spaces.....

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

## STEAM & OIL ENGINE AUXILIARIES

[illegible]

Is electric current used for essential services at sea?..... If so, state the minimum No. and capacity of engines.....

at sea.....

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

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

the steam range or do they operate only as economisers in conjunction with oil fired boilers?

boilers.....	Is steam essential for operation of the ship at sea?.....	Are any steam pipes over 3 ins. bore?.....	If so, what is the size of the largest?.....
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material?..... For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the B. I. C.

units.....	No. of steam condensers.....	No. of Evaporators.....	No. of oil burning pressure.....
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STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars).....

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes..... Brief description of arrangements .....

Has the 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

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

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).

approved for torsional vibration

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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.

This engine has been constructed under Special Survey of tested materials and in accordance with the Rules, approved plans and Secretary's letters. The material is sound and, as far as can be seen, free from defects. The workmanship is good.

The engine, coupled to a dynamometer, was tested at the Engine Builders' Works under the following conditions of loading - 6 hours 100% engine rating, 1 hour 10% overload, governing, manoeuvring,  $\frac{1}{2}$  hour astern.

Attach hereto Shaft Cert. F.4884.

Con. Rod Certs. ~~Exxxxxxx~~C.35421.

Thrust Shaft Cert. F.4827.

*L. J. Hauser*

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 Y.87, Y.91, Y.84, Z.32(2), Z.20, Z.17, Z.30 L.V.H. 24.7.58.

CRANKSHAFT OR ROTORSHAFT 3055 LVH 21.5.58.

FLYWHEEL SHAFT

THRUSTSHAFT 5883 LVH 15.4.58.

GEARING

INTERMEDIATE SHAFTS

SCREW AND TUBE SHAFTS

PROPELLERS

OTHER IMPORTANT ITEMS

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

WRE.1051/35-36.

Donkey boilers

Dates of examination of principal parts:-

Fitting of stern tube

Fitting of propeller

Completion of sea connections

Alignment of crankshaft in main bearings 17.6.58.

Engine checks & 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 15 JAN 1960

Special Survey Fee £57.10.0d.

Decision

*See Rpt. 1*

Expenses £1.15.0d.

Date when A/c rendered 22.10.58



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