

Rpt. 4b

Date of writing report Received London Port Liverpool No. 153834
Survey held at Birkenhead No. of visits In shops First date 14.5.59. Last date 11.1.60.
On vessel 32

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name "PEA COCK" Gross tons 159
Owners Northwest Tug's Ltd. Managers -- Port of Registry Liverpool Year Month
Hull built at Birkenhead By Cammell Laird & Co. (S & E) Ltd. Yard No. 1298 When 1959
Main Engines made at Lincoln By Ruston & Hornsby & Co. Eng. No. 44429 When 1959
Gearing made at Slough By Modern Wheel Driving Ltd. Blr. Nos. -- When --
Donkey boilers made at -- By -- When 1960
Machinery installed at Birkenhead By Cammell Laird & Co. (S & E) Ltd.
Particulars of restricted service of ship, if limited for classification + Al "Tug" for service in the Mersey Estuary

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 4 stroke Diesel Thro Reduction Gear Box

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Ruston & Hornsby A.C.T.M.6. No. 44429

No. of cylinders per engine Dia. of cylinders stroke(s) 2 or 4 stroke cycle Single or double acting
Maximum approved BHP per engine 1100? See Lincoln Report at RPM of engine and RPM of propeller.

Corresponding MIP (For DA engines give MIP top & bottom) Maximum cylinder pressure Machinery numeral
Are the cylinders arranged in Vee or other special formation? 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 Inlet Exhaust Starting Safety
Material of cylinder covers Material of piston crowns Is the engine equipped to operate on heavy fuel oil?

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? Frames? Entablature? Is the crankcase separated from the underside of pistons?
Is the engine of crosshead or trunk piston type? Total internal volume of crankcase No. and total area of explosion relief devices
Are flame guards or traps fitted to relief devices? Is the crankcase readily accessible? 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?

Can the engine be directly reversed? 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 28/5/59 State barred speed range(s), if imposed
for working propeller 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 Are main bearings of ball or roller type?
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)

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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 See London Report 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? No If so, what? --

STRAIGHT SHAFTING. Diameter of thrustshaft. In gear box Material Minimum approved tensile strength

Shaft separate or integral with crank or wheel shaft? Gear box output shaft Diameter of intermediate shaft 7 1/2" Material S.M.O.H.

Minimum approved tensile strength 28 T Diameter of screwshaft cone at large end 9 1/4" 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.M.O.H. Minimum approved tensile strength 28 T

Is an approved oil gland fitted? Yes If so, state type "Newark" Type No. 1 Length of bearing next to and supporting propeller 3' 2"

Material of bearing Gun metal white metal lined 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 9' 6" Pitch 5.78 feet Built up or solid Solid Total developed surface 44 sq. ft.

No. of blades 4 Blade thickness at top of root fillet 7" Blade material C.I. Moment of inertia of dry propeller 14,385 lbs. ins. sec²

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 - Moment of inertia -

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine One Can they be declutched? Yes

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) One 14 cu. ft./min driven by Starbd. diesel generator engine - Southampton D. 13998

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Two 23.4 cu. ft. Starbd. side E.R. tops, Nottingham C 30749 & C 30801

How are receivers first charged? Independent Compressor Maximum working pressure of starting air system 300 lbs/psi 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 -

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) One lub. oil scavenge, One lub. oil pressure, One fresh & One salt water

Engine circulating, One stand by FW/SW

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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	O'BD
2 Fire & G.S. Pumps, One Port & Starbd. Diesel Generator Driven 30 tons/hr.	X				Port X X						X		X			X
F.O. Transfer For'd Bulkhead	X	X			Starboard X								X			X
Electric Drive				X								X				
Hydraulic pump for Windlass & Steering Gear Starbd. side					Closed Circuit											
Electric Drive																
St.By Gearing Lub Oil Pump																
Starbd. side Electric Drive							X							X		

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room One 2" For'd Hold

No. and size connected to main bilge line in main engine room One 2 1/2" Port side E.R. Aft In tunnel ---

In aux. engine room --- Size and position of direct bilge suction in machinery spaces One 2 1/2" Starbd. side E.R. Aft

Size and position of emergency bilge suction in machinery spaces One 4" Port side M.E.

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 including special requirements for ships carrying petroleum in bulk, cargo oil or classed for navigation in ice? (strike out words not applicable). 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	Y.C.Z. 4 cyl.	Ruston & Hornsby	Nottingham C30882 <u>3 cyl</u>	25 Kw Generator and 3" Centrifugal Fire and G.S. Pump
Starboard	Y.C.Z. 2 cyl.	"	" C30883 <u>2 cyl</u>	10 Kw Generator 3" Centrifugal Fire and G.S. Pump 2 Stage air compressor

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 --- Is an electric generator driven by Main Engine? No

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. ---

Type --- Position --- 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) 8.5 H.P., 35.5 Amp. Electric Motor Driving V.S.G. Master Hydraulic Pump in E.R., V.S.G. Hydraulic steering gear aft.

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes Brief description of arrangements One 1 1/2" Hose connection. 30' Hose with Jet & Spray nozzles on floor p.side E.R., One 10 Gall., 2-2 Gall., Froth & One C.T.C. Extinguishers, 10 cu.ft. sand bin funnel damper fitted

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 11.1.60. 4 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).

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 of this vessel has been constructed under Special Survey in accordance with approved plans, the Society's rules and Secretary's letters. The materials and workmanship are good. It has been properly installed in the vessel, tested under working conditions with satisfactory results and in our opinion is eligible to be classed with the Record of + L.M.C. 1,60., T.S.O.G. 1,60.

Note :- The machinery was found to be free from gear hammer and rough running during sea trials.

D. Macneil - M. Macneil

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

M.W.D. 12320 J.H.G. London.

INTERMEDIATE SHAFTS

21523 S.H.F. H.H. 20.4.59. Liv. D.M.C. 4.12.59.

SCREW AND TUBE SHAFTS

21525 S.H.F. H.H. 1.4.59. Liv. D.M.C. 11.11.59.

PROPELLERS

Cast Iron

OTHER IMPORTANT ITEMS Port Genr. 441664 Not. G.S. Pump 23307-1 Sou., Starbd. Gen. 441619 Not. G.S. Pump 23308-1 Sou., Air Comp. 23309-1 Sou., M.E. Jkt. Cooler 3354 Mnch. L.O. Cooler 3350 Mnch. Gearing L.O. Pump, 23260-3 Sou., F.O. Transfer Pump, J40818/1 Mch.

Hydraulic Pump - Type 6HFi and Steering Gear No. 1308 Leeds

Is the installation a duplicate of a previous case? No

If so, state name of vessel

Date of approval of plans for crankshaft. See Nott. Report

Straight shafting 15.5.59.

Gearing

Clutch

Separate oil fuel tanks. None

Pumping arrangements 18.6.59.

Oil fuel arrangements 19.8.59.

Cargo oil pumping arrangements

R. & H. Stock

Air receivers App. Dwg. No. 47.B. 343

Donkey boilers

Dates of examination of principal parts:-

Fitting of stern tube 13.11.59.

Fitting of propeller 11.11.59.

Completion of sea connections 18.11.59.

Alignment of crankshaft in main bearings 7.1.60.

Engine checks & bolts 7.1.60.

Alignment of gearing 23.12.59.

Alignment of straight shafting 23.12.59.

Testing of pumping arrangements 11.1.60.

Oil fuel lines

Donkey boiler supports

Steering machinery 11.1.60.

Windlass 11.1.60.

Date of Committee

LIVERPOOL 22 MAR 1960

Special Survey Fee

£53-15/-

Decision

+ L.M.C. 1.60

T.S. (G.) 1.60

Expenses

Date when A/c rendered

22/2/60



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