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28-9-58. Received London Port of HONG KONG No. 14447.
Hong Kong. No. of visits In shops First date 5-3-57. Last date 19-9-58.
On vessel 14.

BEST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

64627 Name "IAN CROUCH" Gross tons 495.
R.M. Crouch Esq. Managers - Port of Registry Port Adelaide.
Hong Kong. By Cheoy Lee Shipyard Yard No. 669 Year Month 1958
Openshaw U.K. By Crossley Bros. Ltd. Eng. No. 147107 When 1956
By - Blr. Nos. - When -
By - When 1958.
Installed at Hong Kong. By Cheoy Lee Shipyard.
If restricted service of ship, if limited for classification Australian Coastal Service and to Tasmania.

If vegetable or similar cargo oil notation, if required -
Classed for navigation in ice? No. Is ship intended to carry petroleum in bulk? No.
Eng machinery fitted? No. If so, is it for cargo purposes? - Type of refrigerant -
Refrigerating machinery compartment isolated from the propelling machinery space? - Is the refrigerated cargo installation intended to be classed? -

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 answer is "Yes" or "None", say so! Ticks and other signs of doubtful meaning are not to be used. Where the answer is "Yes" or "None", say so! Ticks and other signs of doubtful meaning are not to be used.

Engines One No. of propellers One Brief description of propulsion system Direct drive to propeller.

RECIPROCATING ENGINES. Licence Name and Type No. H.R.N. 5. Heavy Oil.
No. of cylinders 5 Dia. of cylinders 10 1/2" stroke(s) 13 1/2" 2 or 4 stroke cycle 2 Single or double acting Single.

Approved BHP per engine 400 at 400 RPM of engine and 400 RPM of propeller.
MIP 92 p.s.i. (For DA engines give MIP top & bottom) Maximum cylinder pressure 950 p.s.i. Machinery numeral 80.

Are pistons arranged in Vee or other special formation? No. If so, number of crankshafts per engine -
CRANK ENGINES. Is the engine of opposed piston type? No. If so, how are upper pistons connected to crankshaft? -

Are exhaust ports 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 driven One Double Acting Scavenge Pump.

Are exhaust gas driven scavenge blowers per engine Nil. Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action? -
Is an emergency pump or blower fitted, state how driven - No. of scavenge air coolers Nil. Scavenge air pressure at full load p.s.i. -

Are scavenge manifold explosion relief valves fitted? Yes.
CRANK ENGINES. Is the engine supercharged? No. 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? -
CRANK STROKE ENGINES - GENERAL. No. of valves per cylinder: Fuel One. Inlet - Exhaust - Starting One. Safety One.

Are cylinder covers Cast Iron. Material of piston crowns Cast Iron. Is the engine equipped to operate on heavy fuel oil? No.
Are pistons Lub. Oil. Fuel valves - Overall diameter of piston rod for double acting engines -

Are pistons fitted with a sleeve? - Is welded construction employed for: Bedplate? No. Frames? No. Entablature? No. Is the crankcase separated from the cylinder covers? No.

Is the engine of crosshead or trunk piston type? Trunk Total internal volume of crankcase 54 cub.ft. No. and total area of explosion relief ports? 41.07sq.in.

Are flame guards or traps fitted to relief devices? Yes. Is the crankcase readily accessible? Yes. If not, must the engine be removed for access, etc? - Is the engine secured directly to the tank top or to a built-up seating? Seating. How is the engine started? Compressed 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.

CRANKSHAFT AND FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 16-2-57. State barred speed range(s), if imposed -
Is a governor fitted? Yes. Is a torsional vibration damper or detuner fitted to the shafting? No.

Are main bearings fitted? - Type - No. of main bearings 6 Are main bearings of ball or roller type? -
Distance between inner edges of bearings in way of crank(s) 14-11/16" Distance between centre lines of side cranks or eccentrics of opposed piston engines -

Are crankpins Built, semi-built, solid. (State which) Solid.
Diameter of crankpins 7 1/4" Breadth of webs at mid-throw 9 1/4" Axial thickness of webs 3-23/32"

Are journals O.H. Steel. Minimum 40 T.P.I.
Are dowel pins fitted? - Crankshaft material Journals Approved 35.6 36.4
Webs Tensile strength

Are flywheel thickness around eyeholes - Are balance weights fitted? Yes. Total weight - Radius of gyration -
Weight 1656 lbs. Minimum approved tensile strength -

Are flywheel shafts separate, integral with crankshaft, integral with thrustshaft. (State which) Flywheel bolted to crankshaft.

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Handwritten signature and date: 24/10/58



MAIN GAS TURBINES. Name and Type No.

No. of sets of turbines _____ Open or closed cycle _____ BHP per set _____ at _____ RPM of output _____

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 _____

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 do _____

minute at full power _____ Gas delivery pressure _____ Gas delivery temperature _____ Have the turbines and attached equipment been _____

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 _____

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 _____

journals _____ Are the wheels of welded construction? _____ Is gearcase of welded construction? _____ Has the wheel/gearcase been heat treated? _____

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

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 $5\frac{3}{4}$ " Material O.H. Steel. Minimum approved tensile strength 28

Shaft separate or integral with crank or wheel shaft? Separate. Diameter of intermediate shaft $6\frac{3}{4}$ " Material O.H. Steel

Minimum approved tensile strength 28 t.p.s.i. Diameter of screwshaft cone at large end $7\frac{1}{2}$ " 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 _____

bearings $17/32$ Thickness between bearings $17/32$ Material of screwshaft O.H. Steel. Minimum approved tensile _____

Is an approved oil gland fitted? No. If so, state type _____ Length of bearing next to and supporting propeller $31-0$

Material of bearing White Metal. In multiple screw vessels is the liner between stern tube and A bracket continuous? _____ If not, is the exposed length _____

PROPELLER. Diameter of propeller 63 " Pitch 41.34 " Built up or solid Solid Total developed surface _____

No. of blades 3 Blade thickness at top of root fillet 1.87 " Blade material Bronze Moment of inertia of dry propeller _____

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 Bronze. Moment of inertia 169 _____

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine One. 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 two stage capacity _____

driven by auxiliary engine. Installed port side engine room. *Hand 16423*

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Two main each 15 cub. ft _____

How are receivers first charged? Hand starting aux. engine. Maximum working pressure of starting air system 350 p.s.i. Are _____

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 Nil. 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. One engine room port fo _____

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) Four - One bilge 3,360 G.P.H. One cooling wa _____

One lub. oil lift 3,528 G.P.H. One Lub. oil engine 2,232 G.P.H.

INDEPENDENT PUMPS

essential pumps, state position and en. Give capacity of bilge pumps.

	SUCTION										DELIVERY			
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	Feed Tanks	Boiler	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling
Service (port fwd.) 30M ³ /hr. Washer Pump (port side).	X	X				X			X			X		
						X			X					

IONS. No. and size in each hold, deep-tank or pump room - Two $2\frac{1}{2}$ " dia.

connected to main bilge line in main engine room One $2\frac{1}{2}$ " dia. In tunnel -

Size and position of direct bilge suction in machinery spaces $2\frac{1}{2}$ " E.R. aft.

Size and position of emergency bilge suction in machinery spaces 3 " dia. E.R. forward.

ballast system fitted with means for separating oily water on the overboard discharge side? No. Do the piping arrangements comply with the Rules including _____

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

STEAM & OIL ENGINE AUXILIARIES

Location of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
Room (Port), Oil Eng.	Oil Eng.	Deutz.	Log No 23347013 B	2 KW 110V. D.C. Gen. Air Compr. & G.S. Pump.
Midships) Oil Eng.	Oil Eng.	Deutz.	Hub 2105490191 not built used	2 KW 110V. D.C. Gen. & Hyd. pump.

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

Is an electric generator driven by Main Engine? Yes. *2kw*

RELATION. No. of donkey boilers burning oil fuel _____ W.P. _____ Type _____

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 _____

do they operate only as economisers in conjunction with oil fired boilers? _____ Port and No. of report on donkey _____

Is steam essential for operation of the ship at sea? No. Are any steam pipes over 3 ins. bore? _____ If so, what is their _____

For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? _____ No. of oil burning pressure _____

No. of steam condensers _____ No. of Evaporators _____

(State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) Hand hydraulic.

Arrangements for fire extinguishing arrangements been complied with? Yes. Brief description of arrangements E.R. one hydrant with hose & jet/spray nozzle. Two - 2 gall. extinguishers (foam & soda-acid). 1 qt. C.T.C. boxes. Six - 2 gall. foam extinguishers available but not housed in E.R.

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 _____

main engines 17-9-58. 4 hours. Does this machinery installation contain any features of a novel or experimental nature? (Give particulars) _____

tion 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 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 built and installed under survey by Society's Surveyors in accordance with the approved plans and Secretary's letters. materials have been satisfactorily tested as required and the workmanship is good. At the completion of installation the machinery was examined under working conditions, found satisfactory, and in my opinion, is eligible to be classed as contemplated +LMC NE

Plans forwarded herewith

Diagrammatic Pumping Arrangement. Re-Arrangement of Pumping Connections
Details of Stern Tube and Shafting. Detail of M.S. Thrust Shaft.

Documents forwarded herewith

Interim Certificate.
Report (6) on Engine Forgings & Castings.

James A. Anderson
Engineer Surveyor to Lloyd's Register
James A. Anderson

PARTICULARS OF IDENTIFICATION MARKS ((Including Port of origin) of important Forgings and Castings. (Copies of certificates should be forwarded with report.)

RODS P. 75, P. 74, P. 89, P. 77, P. 75, L.V.H. 4-9-56. (Birmingham).

CRANKSHAFT OR ROTOR SHAFT 3438 - 55 R.F. 27 L.V.H. 1-6-56. (Sheffield).

FLYWHEEL SHAFT -

THRUST SHAFT 5150 - 54 E.B.T. 11 L.V.H. 21-9-56. (Manchester).

GEARING -

INTERMEDIATE SHAFTS Lloyd's H.Kg. No. 632 J.A.A. Nov. 21-57.

SCREW AND TUBE SHAFTS Lloyd's H.Kg. No. 627 J.A.A. Apr. 10-57.

PROPELLERS Lloyd's Rot. No. 7354 A.v.H. 18-2-57. Spare Lloyd's Rot. No. 7000

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 4-5-56. Straight shafting 11-6-57. Gearing - Clutch -
Separate oil fuel tanks - Pumping arrangements 20-5-58. Oil fuel arrangements 13-
Cargo oil pumping arrangements - Air receivers - Donkey boilers -
Dates of examination of principal parts:-
Fitting of stern tube 27-3-57. Fitting of propeller 27-9-57. Completion of sea connections 5-3-57. Alignment of crankshaft in main bearings -
Engine checks & bolts 13-11-57. Alignment of gearing - Alignment of straight shafting 13-11-57. Testing of pumping arrangements -
Oil fuel lines 17-9-58. Donkey boiler supports - Steering machinery 17-9-58. Windlass 17-9-
Date of Committee - Special Survey Fee \$640.00
Decision See Rpt. 1.

Expenses \$21.00



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Date when A/c rendered 22nd Sep
Lloyd's Register
Foundation