

Date of writing report 10/8/56. Received London Ipswich No. 133835.  
Survey held at Oulton Broad. In shops 15 12.8.55  
No. of visits 33 On vessel 33 First date 12.8.55 Last date 10/8/56.

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. 40903 Name Motor Trawler "MUKSUN" Gross tons 684.  
Owners V/O Sudoimport Managers - Port of Registry Lurmanst.  
Hull built at Oulton Broad By Brooke Marine Ltd Yard No. 243 Year Month 1956 7  
Main Engines made at Openshaw By Hirslees Bickerton & Day Eng. No. 46054 When 1955.  
Gearing made at - By - 20607 1955.  
Donkey boilers made at Grantham By Grantham Boiler & Grant Co Blr. Nos. 30503 When 1955.  
Machinery installed at Oulton Broad By Brooke Marine Limited When 1956.

Particulars of restricted service of ship, if limited for classification None.  
Particulars of vegetable or similar cargo oil notation, if required None.  
Is ship to be classed for navigation in ice? Yes. Is ship intended to carry petroleum in bulk? No.  
Is refrigerating machinery fitted? Yes. If so, is it for cargo purposes? Yes. Type of refrigerant Dichlorodifluoromethane.  
Is the refrigerating machinery compartment isolated from the propelling machinery space? Yes. Is the refrigerated cargo installation intended to be classed? No.

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 Direct Reversing Pressure Charged Oil Engine  
MAIN RECIPROCATING ENGINES. Licence Name and Type No. Hirslees K50M 80  
No. of cylinders per engine 8 Dia. of cylinders 15" stroke 18" 2 or 4 stroke cycle 4 Single or double acting Single  
Maximum approved BHP per engine 1100 at 260 RPM of engine and 260 RPM of propeller.  
Corresponding MIP 155 psi (For DA engines give MIP top & bottom) Maximum cylinder pressure 1000 psi Machinery numeral 1100/5 220  
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 -  
Are scavenge manifold explosion relief valves fitted? -

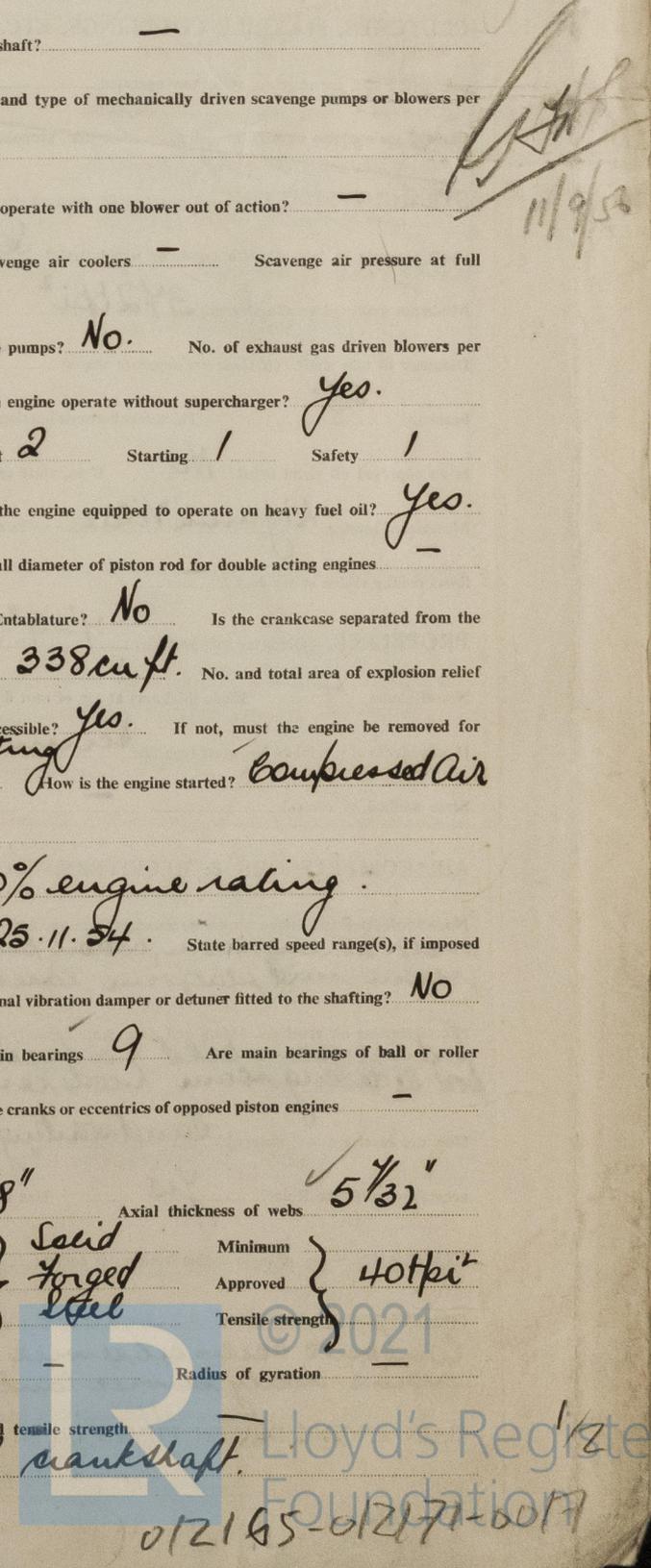
FOUR STROKE ENGINES. Is the engine supercharged? Yes. Are the undersides of the pistons arranged as supercharge pumps? No. No. of exhaust gas driven blowers per engine 1 No. of supercharge air coolers per engine 1 Supercharge air pressure 12 psi Can engine operate without supercharger? Yes.

TWO & FOUR STROKE ENGINES—GENERAL. No. of valves per cylinder: Fuel 1 Inlet 2 Exhaust 2 Starting 1 Safety 1  
Material of cylinder covers Cast Iron. Material of piston crowns Cast Iron. Is the engine equipped to operate on heavy fuel oil? Yes.  
Cooling medium for: Cylinders Fresh Water Pistons 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 Piston Total internal volume of crankcase 338 cu ft. No. and total area of explosion relief devices 8-232 sq in Are flame guards or traps fitted to relief devices? No Is the crankcase readily accessible? Yes. If not, must the engine be removed for overhaul of bearings, etc? No Is the engine secured directly to the tank top or to a built-up seating? E.W. Built up 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 at 100% engine rating.  
CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 25.11.54. State barred speed range(s), if imposed for working propeller None For spare propeller No Spare. Is a governor fitted? Yes Is a torsional vibration damper or detuner fitted to the shafting? No

Where positioned? - Type - No. of main bearings 9 Are main bearings of ball or roller type? - Distance between inner edges of bearings in way of crank(s) 14.5" Distance between centre lines of side cranks or eccentrics of opposed piston engines -  
Crankshaft type: Built, semi-built, solid. (State which) Solid forged Diameter of journals 1 1/2" Diameter of crankpins 10 1/2" Centre 18" Axial thickness of webs 5 3/32"  
If shrunk, radial thickness around eyeholes - Are dowel pins fitted? - Crankshaft material Journals Solid Forged Steel Minimum Approved Tensile strength 40 ksi

Diameter of flywheel 4'-6" Weight 4250 lbs. Are balance weights fitted? No 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) Integral with crankshaft.



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 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? If so, what?

STRAIGHT SHAFTING. Diameter of thrustshaft  $9/4"$  Material Forged Steel Minimum approved tensile strength -

Shaft separate or integral with crank or wheel shaft? Separate Diameter of intermediate shaft  $9/4"$  Material Forged Steel

Minimum approved tensile strength  $34.2 \text{ tpi}^2$  Diameter of screwshaft cone at large end  $11/4"$  Is screwshaft fitted with a continuous liner? yes.

Diameter of tube shaft. (If these are separate shafts) - Is tube shaft fitted with a continuous liner in way of stern tube - Thickness of screwshaft liner at bearings  $5/8"$  Thickness between bearings  $5/8"$  Material of screwshaft Forged Steel Minimum approved tensile strength  $30.8 \text{ tpi}^2$

Is an approved oil gland fitted? No If so, state type - Length of bearing next to and supporting propeller  $4'-2"$

Material of bearing Lignum Vitae 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  $4'-9"$  Pitch  $4.79/5.86'$  Built up or solid Solid Total developed surface  $30 \text{ sq ft.}$

No. of blades 4 Blade thickness at top of root fillet  $3.70"$  Blade material Bronze Moment of inertia of dry propeller -

If propeller is of special design, state type Scimitar Is propeller of reversible pitch type? No If so, is it of approved design? -

State method of control - Material of spare propeller None Moment of inertia -

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine None. Can they be declutched? -

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) 1-28 cu ft free air/min driven by elec motor S.S. eng room, bottom platform, 1-28 cu ft free air/min driven by aux diesel engine, 5th eng room mid platform level.

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) 3 main eng, 23 cu ft each mounted vert for eng room bld heads certs C 23646, 23620 & 23638. 2 aux eng, 23 cu ft each mounted hor port side eng room heads certs C 23688 & 23726.

How are receivers first charged? Hand starting mech air comp Maximum working pressure of starting air system 300 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 1 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 Cochran boiler service tank S.S. b'd Composite boiler oil service tank aft ER top platform, light oil storage, main and aux engine daily service tanks, aft port side engine room.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) 1. FW circulating capacity 700 gals at 260 rpm 1. SW 4 4 4 4 4 + 2 gear driven lub. oil

Service for which each pump is connected to be marked thus X

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	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
Bilge pumps (2) each 34 gal Stand by bilge pump.	X	X													
Fire Pump.					X	X					X	X	X		
Boiler Oil Transfer Pump.				X								X			
Diesel Oil Transfer Pump.				X								X			
Lub Oil Pump.								X						X	X
Cochran Boiler Pump(2)						X	X		X						
Composite boiler pump(2)						X	X		X						
Distiller pump.						X	X						X		

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room - 3" dia fwd in haul store, 1-3" dia in N1 fishheld, 1-3" dia in N2 fishheld, 1-3" dia in cofferdam in bil. meal plant space

No. and size connected to main bilge line in main engine room - 2-3" dia aft in eng room, 1-3" dia fwd in eng room in tunnel No tunnel

In aux. engine room - Size and position of direct bilge suction in machinery space 2-3" dia aft in eng room

Size and position of emergency bilge suction in machinery spaces 1-3" dia fwd in eng room

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

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 Side forward.	4SC SA Diesel Oil Eng	Ward Leonard	Ward Leonard Day tank Rpt N	53KW DC Gen. & 146KW DC haul wind generator.
Port Side aft.	4SC SA " 4 "	Jett McHaren	Leeds Cert C 24148	50KW D.C Generator
Starboard "	4SC SA " 4 "	Jett McHaren	Leeds Cert C 24149	18KW D.C Generator & 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. 1-50KW Generator

Is an electric generator driven by Main Engine? No

STEAM INSTALLATION. No. of donkey boilers burning oil fuel 2 W.P. 100 psi Type 1-Cochran vert smoke tube boiler

Position Cochran boiler bottom eng room platform S.S. b'd. Blairson, top aft end eng room.

Is a superheater fitted? No Are these boilers also heated by exhaust gas? Blairson boiler only No. of donkey boilers heated by exhaust gas only? None W.P. -

Type - Position - Can the exhaust heated boilers deliver steam directly to the steam range or do they operate only as economisers? Steam delivered to steam range

Port and No. of report on donkey boiler Cochran - Cert Rpt 84181 Blairson - Not Cert 22491

Is steam essential for operation of the ship at sea? No Are any steam pipes over 3 ins. bore? No If so, what is their material? - For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? Yes. No. of oil burning pressure units None Distilling 1 No. of Evaporators 1

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) Electric motor N° 164943 Hyd pump N° PTF 2382. Donkin 2 ram elec hyd gear.

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

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 28/7/56 5 hours run @ full power. 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 the ship's 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 ship has been installed under Special Survey in accordance with the approved plans, Secretary's letters & the Rule requirements of the Society.

The machinery received from the builders has been satisfactorily installed and basin and sea trials witnessed under full power conditions.

The materials & workmanship throughout are good.

In my opinion this installation is eligible for record of LMC 9.56 & TS(EL) 9.56 main - oil engine - QDB<sup>s</sup> - 100/bs

G. J. Galbat.

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

INTERMEDIATE SHAFTS

SCREW AND TUBE SHAFTS

PROPELLERS

OTHER IMPORTANT ITEMS

LLOYDS 2640 SLD A.G. 12.10.55  
 LLOYDS 2358 SLD A.G. 12.10.55  
 LLOYDS R3H 3909 BKD A.J 21.7.55

Is the installation a duplicate of a previous case?

YES.

If so, state name of vessel

MY<sup>s</sup> PIONEER, PUSKONGA Ips report NDS 132740 & 133372.

Date of approval of plans for crankshaft

Straight shafting

Gearing

Clutch

Separate oil fuel tanks

11.2.55

Pumping arrangements

22.3.55

Oil fuel arrangements

29.10.54

Cargo oil pumping arrangements

Air receivers

Donkey boilers

Dates of examination of principal parts:—

Fitting of stern tube 15.10.55

Fitting of propeller 15.10.55

Completion of sea connections 19.10.55

Alignment of crank shaft in main bearings 13.3.56.

Engine chocks & bolts 13.3.56.

Alignment of gearing

Alignment of straight shafting 13.3.56

Testing of pumping arrangements 28.7.55

Oil fuel lines

Donkey boiler supports 3.1.56, 6.4.56

Steering machinery 28.7.56.

Windlass 28.7.56.

Date of Committee

FRIDAY 28 SEP 1956

Decision

+ LMC 8.56.

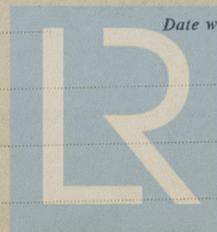
Special Survey Fee

Inst of Machinery £ 43.0.0

Expenses

£ 8.12.0

Date when A/c rendered



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