

Rpt. 4b

Date of writing report 18.3.57 Received London 27 MAR 1957 Port Glasgow No. 86638  
Survey held at Glasgow No. of visits In shops On vessel 74 First date 31.5.55 Last date 27.2.57

# FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. 91096 Name H.M. Tug. "DEXTEROUS" Gross tons 450.  
Owners The Admiralty Managers - Port of Registry - Year Month  
Hull built at Scotstoun, Glasgow By Mess James Co. Ltd. Yard No. 2089. When 57 2.  
Main Engines made at Colchester By Mess Davy Paxman Co. Ltd. Eng. No. 400040/647. When 57 2.  
Gearing made at - By - Blr. Nos. - When -  
Donkey boilers made at - By - When 57 2.  
Machinery installed at Glasgow By Mess James Co. Ltd.  
Particulars of restricted service of ship, if limited for classification Towing and Salvage Services.  
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 2 No. of propellers 2 Brief description of propulsion system 4 Oil Engines driving 4 generators supplying power to 2 main propulsion motors, which drive side paddles through a chain reduction drive.  
MAIN RECIPROCATING ENGINES. Licence Name and Type No. Paxman Type 12 YHAXM  
No. of cylinders per engine 12 Dia. of cylinders 7" stroke(s) 7 3/4" 2 or 4 stroke cycle 3 or Single or double acting Single  
Maximum approved BHP per engine 491 495 at 1000 RPM of engine and 26.5 RPM of propeller.  
Corresponding MIP 136 lbs/sq. (For DA engines give MIP top & bottom) Maximum cylinder pressure 1150 lbs/sq. Machinery numeral 396 MN.  
Are the cylinders arranged in Vee or other special formation? Vee formation. If so, number of crankshafts per engine One.

~~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 scavenging pumps or blowers per engine and how driven -  
No. of exhaust gas driven scavenging 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 scavenging air coolers - Scavenging air pressure at full power -  
Are scavenging 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 - Pistons - Fuel valves - Overall diameter of piston rod for double acting engines -  
Is the rod fitted with a sleeve? - Is welded construction employed? - 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? Built-up seating How is the engine started? Compressed Air Motor.  
Can the engine be directly reversed? No. If not, how is reversing obtained? Reversible Propulsion Motors.~~

~~CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the generating machinery system 26.5.55. 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 web at end-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) -~~

**MAIN GAS TURBINES.** Name and Type No. \_\_\_\_\_ at \_\_\_\_\_ RPM of output shaft \_\_\_\_\_

No. of sets of turbines \_\_\_\_\_ Open or closed cycle \_\_\_\_\_ BHP per set \_\_\_\_\_

How is drive transmitted to propeller shaft? \_\_\_\_\_

**ARRANGEMENT OF TURBINES.** HP drives \_\_\_\_\_ at \_\_\_\_\_ RPM HP gas inlet temperature \_\_\_\_\_ pressure \_\_\_\_\_  
 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? \_\_\_\_\_ No. of double strokes per minute at full power \_\_\_\_\_ Diameter of working pistons \_\_\_\_\_ Diameter of compressor pistons \_\_\_\_\_ Have the turbines and attached equipment been tested working in the shop? \_\_\_\_\_ Gas delivery pressure \_\_\_\_\_ Gas delivery temperature \_\_\_\_\_ How long at full power? \_\_\_\_\_

**ELECTRIC PROPULSION** (Reciprocating engines or gas turbines. Electrical particulars to be reported on Form 44.)

No. of generators two KW per generator 339 at 1000 RPM AC or DC? DC Position 2 in Motor Room & 2 in Generator Room

No. of propulsion motors two SHP per motor 800 at 212 RPM Position midships motor room (1 port and 1 starboard)

How is power obtained for excitation of generators? DC motor driven exciter set Motors? D.C. motor driven exciter set

**CHAIN 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? no - chain If single, position of gear thrust bearing \_\_\_\_\_ Is gearing of epicyclic type? \_\_\_\_\_

PCD of pinions: First reduction 13.5" Second reduction \_\_\_\_\_ PCD of wheels: First reduction \_\_\_\_\_ Main 9'-0"

Material of pinions EN 8D Tensile strength \_\_\_\_\_ Material of wheel rims Cast Steel Tensile strength \_\_\_\_\_

Are gear teeth surface hardened? yes How are teeth finished? Machine Cut Diameter of pinion journals with 2" central hole Wheel shaft journals 12 1/2" Are the wheels of welded construction? no Is chain case of welded construction? yes Has the chain case been heat treated on completion of welding? no Where is the PADDER thrust bearing located? On paddle block collars Are pinion wheels bearings of ball or roller type? Roller

**CLUTCHES, FLEXIBLE COUPLINGS, ETC.** If a clutch or other flexible connection is fitted between engine and gearing or between engine and line shafting give brief description and, for clutches, state how operated. Standard coupling between each motor & its pinion shaft and 1 flexible coupling between each paddle shaft and wheel shaft - also a dog clutch between each wheel shaft.

Can the main engine be used for purposes other than propulsion when de-clutched? no If so, what? \_\_\_\_\_

**PADDER STRAIGHT SHAFTING.** Diameter of padder shaft 12 1/2" with 6" dia central hole. Material Drpt Steel Minimum approved tensile strength 31,000 lb

Shaft separate or integral with crank or wheel shaft? no Diameter of intermediate shaft 12 1/2" with 6" dia central hole. Material Drpt Steel

Minimum approved tensile strength 31,000 lb 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? no If so, state type \_\_\_\_\_ Length of bearing next to and supporting padder 2'-4"

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 of shafting between liners readily visible in dry dock? \_\_\_\_\_

**PADDLES.** Diameter of padder 17'-0" over flots. PCD. 13'-10" Built up built up Total developed surface 12'-6" x 3'-4" each flot

No. of flots 9 flot thickness 3 3/4" flot material Canadian Rock Elm Moment of inertia of dry propeller \_\_\_\_\_

Is propeller of reversible pitch type? \_\_\_\_\_ If so, is it of approved design? \_\_\_\_\_

State method of control \_\_\_\_\_ Material of spare padder Canadian Rock Elm Moment of inertia \_\_\_\_\_

**AIR COMPRESSORS & RECEIVERS.** No. of main engine driven compressors per engine none Can they be de-clutched? \_\_\_\_\_

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) Two, each of 16 ft<sup>3</sup>/min capacity, one driven by electric motor, the other by "Enfield" Diesel Engine both situated at forward end of generator room on port side. Spanish Certificate N<sup>o</sup> D 44072.

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Two at 112 ft<sup>3</sup> capacity each. Two under deck midships of motor room on starboard side and two at aft end of generator room on starboard side. See Nottingham Certificate N<sup>o</sup> C 23190/1 A C 23663.

How are receivers first charged? by either independent compressor. Auxiliary generators are electrically started from batteries. Maximum working pressure of starting air system 350 lb/sq in 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 \_\_\_\_\_ No. of main engine lubricating oil coolers see Spanish Report N<sup>o</sup> 133770.

**OIL FUEL TANKS.** No. and position of oil fuel settling or service tanks not forming part of hull structure one (double tanks) at forward end of generator room.

**MAIN ENGINE DRIVEN PUMPS** (No. and Purpose) see Spanish Report N<sup>o</sup> 133770.

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	From Deck P.S.	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling	Overboard
Port Side Bilge Pumps - 7 Motor Room. Electrically driven - 30 Tons/hr capacity. Port side Port end.	X	X	X			X								X			X
Aft Side Bilge Pumps - 7 Generator Room. Electrically driven - 30 Tons/hr capacity. Port side Port end.	X	X	X			X								X			X
Salvage Pump - 7 Generator Room. Electrically driven - 150 Tons/hr capacity. Fresh lubrication to chain drive oil.	X	X	X			X		X						X			X
2. Pumps - midships in motor room. Electrically driven.										X							X
2. Pumps - midships in motor room. Electrically driven.										X							X
2. Fresh Oil Transfer Pumps - Port end of Generator Room - 1 hand & 1 electrically driven.							X						X				

**BILGE SUCTIONS.** No. and size in each hold, deep tank or pump room. 1 @ 2 1/2" from Forward Stern, 1 @ 2" from Steering Gear Compartment, 1 @ 2" from Heaver Room.

No. and size connected to main bilge line in \_\_\_\_\_ room. 1 @ 2 1/2" from port end; 2 @ 2 1/2" (1 p + 1 s) at aft end; 2 @ 2 1/2" from Dry Tank in tunnel.

Size and position of direct bilge suction in machinery spaces. 1 @ 1 1/2" in motor room, 1 @ 1 1/2" in generator room connected to Salvage Pump & 1 @ 1 1/2" in each of motor & generator rooms connected by lines to respective Bilge Pumps.

Size and position of emergency bilge suction in machinery spaces. 1 @ 1 1/2" in generator room for aft side bilge pump.

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 \_\_\_\_\_? 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 App - Motor Room.	2 1/2" sp. - 60 ft. E.L.C. N <sup>o</sup> FOL M.K.T. (2737)	Fisher Ltd.	Manchester	1000 - Lawrence North Generator (23842)
Starboard App - Motor Room.	" " (2739)	"	Certificate N <sup>o</sup> 17308	1000 - " " (23842)
of Generator Room - port.	" " (2740)	"	Manchester	1000 - " " (23842)
of Generator Room - aft.	" " (2741)	"	Certificate N <sup>o</sup> 17360	1000 - " " (23842)

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 one main @ 339 Kw and two @ 60 Kw aux. generators

Is an electric generator driven by Main Engine? yes (Diesel-Electric Paddle Drive)

**STEAM INSTALLATION.** No. of donkey boilers burning oil fuel \_\_\_\_\_ W.P. \_\_\_\_\_

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? not applicable

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 \_\_\_\_\_

**STEERING GEAR.** (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) Two main electro-hydraulic type with two electric motor driving two "Hull" H.P. type hydraulic pumps (2 "Vandy" 75 HP electric motors).

Have the Rule Requirements for fire extinguishing arrangements been complied with? yes Brief description of arrangements Arrangements in accordance with Admiralty Specification and approved drawing. State of Approval. 27.8.55.

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 13.2.57 & 27.2.57 for 40 hours respectively 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) \_\_\_\_\_

Builder At. Holland

0045 2/2



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 machinery has been efficiently installed on board in accordance with the Secretary's letter, approved plans and the Admiralty Specifications. The materials and workmanship have been found good. The machinery has been satisfactorily tested under full working conditions at sea, and is eligible in my opinion to be classed in the Register with the notation +LME 2,57. Oil Engines.

A. Campbell  
 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

Port Chain Wheel No M1540 Start Chain Wheel M1494. Pinion wheels. Start 11620604 49744/1 1744. 40071/2.  
 Start 17, 7915 8738 / 961 T AB; Stand. 17, 7915 8738 / 964 T AB.  
 Start 17, 7915 8738 / 963 T AK; Stand. 17, 7915 8738 / 963 B AB.  
 Start 17, 7915 8738 TP / 965 T; Stand. 17, 7915 8738 TP / 967 B.  
 FLEXIBLE COUPLINGS: - Port 348506 Stand. 348506.  
 DOG CLUTCHES. 17, 7915 8738 / 961 TP

Is the installation a duplicate of a previous case? Yes. If so, state name of vessel "Director"  
 Date of approval of plans for crankshaft PROBLE Chain Drive 17.1.56. Gearing 3.9.56. Clutch 17.1.56.  
 Separate oil fuel tanks 6.9.55. Pumping arrangements 15.5.56. Oil fuel arrangements 19.3.56.  
 Cargo oil pumping arrangements — Air receivers — Donkey boilers —  
 Dates of examination of principal parts:—  
 Fitting of stern tube — Fitting of padding 16.8.56. Completion of sea connections 29.6.56. Alignment of crankshaft in main bearings —  
 Engine chocks & bolts 30.8.56. Alignment of gearing 17.9.56. Alignment of PROBLE shafting 29.11.56. Testing of pumping arrangements 5.2.57.  
 Oil fuel lines 24.12.56. Donkey boiler supports — Steering machinery 11.2.57. Windlass 11.2.57.

Date of Committee GLASGOW 26 MAR 1957 Special Survey Fee £3-14-0  
 Decision +LME 2.57 Oil Eng.  
 Expenses —

Date when A/c rendered 26 MAR 1957

