

Rpt. 4b

29 DEC 1956

Date of writing report **28-12-56.** Received London **MILFORD HAVEN** No. **8137.**
 Survey held at **Pembroke Dock.** No. of visits **12.** In shops **19-7-56.** Last date **10-12-56.**
 On vessel

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. **90925.** Name **Motor Trawler "NORRARD STAR"** Gross tons **167.02**
 Owners **Norrard Trawlers Ltd.** Manager **F.W. Ingram.** Port of Registry **Milford Haven.** Year Month
 Hull built at **Pembroke Dock.** By **R.S. Hayes (Pembroke Dock) Ltd.,** Yard No. **505.** When **1956 10.**
 Main Engines made at **Keighley.** By **W. Widdop & Co. Ltd.** Eng. No. **5432** When **1955.**
 Gearing made at **-** By **-**
 Donkey boilers made at **-** By **-** Blr. Nos. **-** When **-**
 Machinery installed at **Pembroke Dock.** By **R.S. Hayes (Pembroke Dock) Ltd.** When **1956.**

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? **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 **Direct Reversing Diesel Oil Engine.**

MAIN RECIPROCATING ENGINES. Licence Name and Type No. **Widdop GMB4.**

No. of cylinders per engine **4.** Dia. of cylinders **12.5"** stroke(s) **18.5"** 2 or 4 stroke cycle **2.** Single or double acting **Single.**

Maximum approved BHP per engine **440.** at **320.** ³⁰⁰ RPM of engine and **320.** RPM of propeller.

Corresponding MIP **85 lbs/sq".** (For DA engines give MIP top & bottom) Maximum cylinder pressure **800 lbs/sq".** Machinery numeral **88**

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? **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 In Line** and type of mechanically driven scavenge pumps or blowers per engine and how driven **Two Double Acting in V Formation Multi-Strand Chains.**

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 **1. lb.** 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 & FOUR STROKE ENGINES—GENERAL. No. of valves per cylinder: Fuel **1.** Inlet **-** Exhaust **-** Starting **1.** Safety **1.**

Material of cylinder covers **Cast Steel.** Material of piston crowns **Cast Iron.** Is the engine equipped to operate on heavy fuel oil? **No.**

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 Type.** Total internal volume of crankcase **95 cub. ft.** No. and total area of explosion relief

devices **3. 20.469 inch.** 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 **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? **-** How long at full power? **-**

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system **8-12-55** State barred speed range(s), if imposed

for working propeller **320 RPM.** For spare propeller **-** Is a governor fitted? **Yes.** Is a torsional vibration damper or detuner fitted to the shafting? **No.**

Where positioned? **-** Type **-** No. of main bearings **5.** Are main bearings of ball or roller

type? **No.** Distance between inner edges of bearings in way of crank(s) **16 5/8"** 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 3/4"** Diameter of crankpins **7 3/4"** Breadth of webs at mid-throw **10 1/4"** Axial thickness of webs **4 1/2"**

If shrunk, radial thickness around eyeholes **-** Are dowel pins fitted? **-** Crankshaft material **Journals** Approved **-**

Webbs **-** Tensile strength **-**

Diameter of flywheel **36 3/4"** Weight **2144 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.**

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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?

Can the main-engine be used for purposes other than propulsion when declutched? Yes..... If so, what? Driving generator or winch from extension shaft forward.

PROPELLER. Diameter of propeller 5'8". Pitch 47". Built up or solid Solid. Total developed surface 11 sq.ft.
No. of blades 4. Blade thickness at top of root fillet -----. Blade material Cast Iron. Moment of inertia of dry propeller 560 lbs.inches
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 -

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate).....

Side Amidships, Leeds, Certificate Nos. 024986 & 024990.

COOLERS. No. of main engine fresh water coolers...One..... No. of main engine lubricating oil coolers...One.

One Daily Service Tank At Top Of Engine Room Against After Bulkhead.

[illegible]

In aux. engine room.....

Size and position of direct bilge suctions in machinery spaces.....

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 ~~and any~~
~~special requirements for ships carrying petroleum in bulk, as set out in the Code for Tankers in force?~~ (strike out words not applicable).

Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
Port Side. Amidships.	20 BHP.			Serial No. 10461/01.
	Diesel Engine.	Petter McLaren.		12KWDG. Generator, Gilkes
	No. 2B7982.			No. 14057 Type 26.
				G. S. Pump, Hamworthy A/O
				No. 116395.

STEAM INSTALLATION. No. of donkey boilers burning oil fuel None. 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? ☐

Type _____ Position _____ 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 engines, pumps, or other machinery used in the operation of the ship.....

material? ☐ Are any steam pipes over 3 ins. bore? ☐ If so, what is their

units..... No. of steam condensers..... No. of Evaporators..... No. of oil burning pressure

Rod And Chain Steering Gear, Hand Operation.

Have the Rule Requirements for fire extinguishing arrangements been complied with? ☒ Yes.

..... Brief description of arrangements: Fire Foam 2 Gallon Extinguishers

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.**

power sea trials of main engines. 21-11-56. 9 hrs. Does this machinery installation meet the requirements of the contract? Yes. Date and duration of full-

No. _____

The foregoing description of the main engine and installation is correct and the particulars are as approved for tonnage allocation. FOR AND ON BEHALF OF

FOR AND ON BEHALF OF
R. S. HAYES (Pembroke Dock) LTD.
R. S. Hayes
MANAGER

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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.

The machinery of this vessel has been built under Special Survey in accordance with the approved plans, the Secretary's letters and the requirements of the Rules. The Main Engine received from Keighley has been installed on board and subsequently satisfactory basin and sea trials witnessed.

The materials and workmanship throughout is good.

The machinery installation is in our opinion eligible for a record of **LMC 11,56.** and the notation TS(OG) Oil Engine.

A notice plate has been attached to the main engine stating that Governor adjusted not to exceed 320 R.P.M. when racing.

J.H. Hemming & J.R. Dill

Engineer Surveyors 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.) Copies of Certi

RODS -
CRANKSHAFT OR ROTORSHAFT -
FLYWHEEL SHAFT -
THRUSTSHAFT Lloyd's No. **3394** 7-12-53. No cert. to hand.
GEARING -
INTERMEDIATE SHAFTS Lloyd's No. **3811** SLD.. 30-1-56.
SCREW ~~AND TUBE~~ SHAFTS Lloyd's No. **3733** SLD. 11-1-56.
PROPELLERS ~~3733 SLD. 11-1-56.~~
OTHER IMPORTANT ITEMS Extension Shaft Lloyd's No. 4147 30-12-55.

Is the installation a duplicate of a previous case? No. If so, state name of vessel -
Date of approval of plans for crankshaft - Straight shafting 8-12-55. Gearing - Clutch -
Separate oil fuel tanks 13-1-56. Pumping arrangements 22-3-56. Oil fuel arrangements -
Cargo oil pumping arrangements - Air receivers - Donkey boilers -
Dates of examination of principal parts:-
Fitting of stern tube 4-7-56. Fitting of propeller 31-8-56. Completion of sea connections 29-6-56. Alignment of crankshaft in main bearings 1-11-56.
Engine checks & bolts 25-9-56. Alignment of gearing - Alignment of straight shafting 1-11-56. Testing of pumping arrangements 21-11-56
Oil fuel lines 21-11-56. Donkey boiler supports - Steering Gear. 14-11-56. Windlass -
Date of Committee FRIDAY - 8 FEB 1957 Special Survey Fee £24. 0. 0.
Decision + LMC 12.56

Expenses £3. 5. 0.
SWS. " £6. 0. 0.

Date when A/c rendered 28-12-56.



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