

Rpt. 4b.

REPORT ON OIL ENGINE MACHINERY.

No. 1045.

Date of writing Report 8-9-1955 When handed in at Local Office 10-10-1955 Port of LEEDS.
No. in Survey held at Keighley. Date, First Survey 27-8-54. Last Survey 2-8-1955.
Reg. Book. Number of Visits 25.
Single on the Twin Triple Quadruple Screw vessel. "Norrad Star"
Built at Pembroke Dock. By whom built R.S. Hayes (Pembroke Dock) Ltd. Yard No. 505 When built -
Engines made at Keighley. By whom made H. Widdop & Co. Ltd. Engine No. 5432 When made 1955
Donkey Boilers made at - By whom made - Boiler No. - When made -
Brake Horse Power 484. Owners Norrad Trawlers (Ingram) Port belonging to -
M.N. Power as per Rule 97 - Is Refrigerating Machinery fitted for cargo purposes - Is Electric Light fitted -
Trade for which vessel is intended -

OIL ENGINES, &c. — Type of Engines GMB4 Heavy Oil 2 or 4 stroke cycle 2 Single or double acting Single
Maximum pressure in cylinders 800 lbs/sq" Diameter of cylinders 12.5" Length of stroke 18.5" No. of cylinders 4 No. of cranks 4
Mean Indicated Pressure 85 lbs/sq" Ahead Firing Order in Cylinders 1, 4, 2, 3. Span of bearings, adjacent to the crank, measured from inner edge to inner edge 16.625 Is there a bearing between each crank Yes Revolutions per minute 330
Flywheel dia 36" Weight 2144 lbs. Moment of inertia of flywheel (lbs. in² or Kg. cm.²) - Means of ignition Compression Kind of fuel used Gas Oil
Crank Shaft, Solid forged dia. of journals as per Rule approved as fitted 7.2" Crank pin dia 7.2" Crank webs Mid. length breadth - Mid. length thickness - Thickness parallel to axis - Thickness around eye-hole -
Flywheel Shaft, diameter as per Rule - Intermediate Shafts, diameter as per Rule - Thrust Shaft, diameter at collars as fitted 6.2" as per Rule approved
Tube Shaft, diameter as per Rule - Screw Shaft, diameter as per Rule - Is the tube screw shaft fitted with a continuous liner -
Bronze Liners, thickness in way of bushes as per Rule - Thickness between bushes as per Rule - Is the after end of the liner made watertight in the propeller boss - If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner -
If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive - If two liners are fitted, is the shaft lapped or protected between the liners - Is an approved Oil Gland or other appliance fitted at the after end of tube shaft - If so, state type - Length of bearing in Stern Bush next to and supporting propeller -
Propeller, dia - Pitch - No. of blades - Material - whether moveable - Total developed surface - sq. feet
Moment of inertia of propeller (lbs. in² or Kg. cm.²) - Kind of damper, if fitted -
Method of reversing Engines Direct Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication forced Thickness of cylinder liners see margin Are the cylinders fitted with safety valves Yes
Are the exhaust pipes and steam pipes cooled with non-conducting material Yes If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine -
Cooling Water Pumps, No. One Is the sea suction provided with an efficient strainer which can be cleared within the vessel -
Bilge Pumps worked from the Main Engines, No. One Diameter 5.2" Stroke 4.2" Can one be overhauled while the other is at work -
Pumps connected to the Main Bilge Line No. and size - How driven -
Is the cooling water led to the bilges - If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements -
Ballast Pumps, No. and size - Integral Power Driven Lubricating Oil Pumps, including space pump, No. and size 1 Suction 4.2" x 4.2" 1 Delivery 4" x 4.2"
Are two independent means arranged for circulating water through the Oil Cooler - Suctions, connected to both main bilge pumps and auxiliary bilge pumps, No. and size:—In machinery spaces - In pump room -
In holds, &c. -
Independent Power Pump Direct Suctions to the engine room bilges, No. and size -
Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes - Are the bilge suction in the machinery spaces led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges -
Are all Sea Connections fitted direct on the skin of the Ship - Are they fitted with valves or cocks - Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates - Are the overboard discharges above or below the deep water line -
Are they each fitted with a discharge valve always accessible on the plating of the vessel - Are the blow off cocks fitted with a spigot and brass covering plate -
What pipes pass through the bunkers - How are they protected -
What pipes pass through the deep tanks - Have they been tested as per Rule -
Are all pipes, cocks, valves and pumps in connection with the machinery and all boiler mountings accessible at all times -
Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another - Is the shaft tunnel watertight - Is it fitted with a watertight door - worked from -
If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork -
Main Air Compressors, No. One on engine No. of stages 2 diameters 3" High Press: 7" Low Press stroke 4.2" driven by M.E.
Auxiliary Air Compressors, No. - No. of stages - diameters - stroke - driven by -
Small Auxiliary Air Compressors, No. - No. of stages - diameters - stroke - driven by -
What provision is made for first charging the air receivers -
Scavenging Air Pumps, No. One - 2 cylinder diameter 27.5" - 5.2" stroke 6.5" driven by M.E.
Auxiliary Engines crank shafts, diameter as per Rule - No. - Position -
Have the auxiliary engines been constructed under special survey - Is a report sent herewith -

013571 - 013578 - 0067

Receivers not yet allocated.

AIR RECEIVERS:—Have they been made under survey..... State No. of report or certificate.....
Is each receiver, which can be isolated, fitted with a safety valve as per Rule.....
Can the internal surfaces of the receivers be examined and cleaned..... Is a drain fitted at the lowest part of each receiver.....
Injection Air Receivers, No..... Cubic capacity of each..... Internal diameter..... thickness.....
Seamless, welded or riveted longitudinal joint..... Material..... Range of tensile strength..... Working pressure.....
Starting Air Receivers, No..... Total cubic capacity..... Internal diameter..... thickness.....
Seamless, welded or riveted longitudinal joint..... Material..... Range of tensile strength..... Working pressure.....

IS A DONKEY BOILER FITTED..... If so, is a report now forwarded.....
Is the donkey boiler intended to be used for domestic purposes only.....

PLANS. Are approved plans forwarded herewith for shafting..... 10-2-55..... Receivers..... 10-2-55..... Separate fuel tanks.....
Donkey boilers..... General pumping arrangements..... Pumping arrangements in machinery space.....
Oil fuel burning arrangements.....
Have Torsional Vibration characteristics been approved..... (No. (see Secty's letter 12-2-55) Date of approval..... - 6.2.56 for 300RPM

SPARE GEAR.

Has the spare gear required by the Rules been supplied..... Yes

State the principal additional spare gear supplied.....

The foregoing is a correct description,

J. Whitaker for H. Widdowson & Co. Manufacturer.

Dates of Survey while building..... During progress of work in shops - - 27-8-54, 1-10-54, 19-10-54, 25-10-54, 4-11-54, 17-11-54, 2-12-54, 6-12-54, 14-12-54, 7-1-55, 3-3-55, 17-3-55, 24-3-55, 31-3-55, 14-4-55, 22-4-55, 28-4-55, 12-5-55, 19-5-55, 3-6-55, 6-6-55, 8-6-55, 2-8-55.
During erection on board vessel - -
Total No. of visits..... 23

Dates of examination of principal parts—Cylinders..... 24-3-55..... Covers..... 31-3-55..... Pistons..... 14-4-55..... Rods..... Connecting rods..... 22-4-55

Crank shaft..... 27-8-54..... Flywheel shaft..... Thrust shaft..... 8-1-55..... Intermediate shafts..... Tube shaft.....

Screw shaft..... Propeller..... Stern tube..... Engine seatings..... Engine holding down bolts.....

Completion of fitting sea connections..... Completion of pumping arrangements..... Engines tried under working conditions.....

Crank shaft, material..... S.M. Steel..... Identification mark..... T.D.S. 28-8-53..... Flywheel shaft, material..... Identification mark.....

Thrust shaft, material..... S.M. Steel..... Identification mark..... LLOYD'S 3394..... Intermediate shafts, material..... Identification marks.....

Tube shaft, material..... Identification mark..... Screw shaft, material..... Identification mark.....

Identification marks on air receivers.....

Welded receivers, state Makers' Name.....

Is the flash point of the oil to be used over 150°F.....

Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with.....

Description of fire extinguishing apparatus fitted.....

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo..... If so, have the requirements of the Rules been complied with.....

If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with.....

Is this machinery duplicate of a previous case..... If so, state name of vessel.....

General Remarks (State quality of workmanship, opinions as to class, &c..... This engine has been built under Special Survey of tested materials and in accordance with approved plans and Secretaries letters and the requirements of the Rules.

Materials and workmanship are good, so far as could be seen, and the engine was found satisfactory when run on trial in the shops under full load conditions, coupled to a brake. The engine was stamped on the crankcase at the forward end:-

LLOYD'S TEST.
Engine No. 5432.
GMB4.
3-6-55. H.E.B.

In our opinion, the engine is eligible for the notation + L.M.C. on satisfactory installation, subject to the torsional vibration characteristics being submitted for approval.

Construction
The amount of Entry Fee ... £ 34 : 0 : 0
Special ... £ : : : When applied for 8-9- 19 55
Donkey Boiler Fee... £ : : : When received 19
Travelling Expenses (if any) £ 5 : 15 : 0

(Committee's Minute FRIDAY 8 FEB 1957

Assigned L. Rpt. 1.

Thos. P. Lihbeam & for H.E. Brown.
Engineer Surveyor to Lloyd's Register of Shipping.