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REPORT ON OIL ENGINE MACHINERY.

No 101731
28 DEC 1943

Received at London Office

Date of writing Report 6-12-1943 When handed in at Local Office 6-12-1943 Port of NEWCASTLE-ON-TYNE
No. in Survey held at Reg. Book. NEWCASTLE-ON-TYNE Date, First Survey 12-6-42 Last Survey 30-11-1943
Number of Visits 79

Single
on the ~~Double~~ Triple Screw vessel "EMPIRE MAC CABE"
Quadruple

Tons { Gross 9249
Net 4993

Built at Newcastle (Walker) By whom built Swan, Hunter & Wigham Yard No. 1726 When built 1943-
Engines made at ditto By whom made ditto Richardson & Co Engine No. 1724 When made "
Donkey Boilers made at ditto By whom made ditto Boiler No. 1726 When made "
Brake Horse Power 3100. Owners Ministry of War Transport Port belonging to Newcastle.
Nom. Horse Power as per Rule 687 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes
Trade for which vessel is intended Open sea, 23 5/8 91 5/10

OIL ENGINES, &c. Type of Engines opposed piston, Airless injection 2 or 4 stroke cycle 2 Single or double acting Single

Maximum pressure in cylinders 568 lb Diameter of cylinders 600 in Length of stroke 2320 in No. of cylinders 4 No. of cranks 4 3 throw

Mean Indicated Pressure 85 lb Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 1200 in Is there a bearing between each crank each 3 throw

Revolutions per minute 105 Flywheel dia. 72 in G.D. = 24 tons Weight 940 in Means of ignition Heat 9 Kind of fuel used Heavy oil fuel

Crank Shaft, { Solid forged as per Rule 425 in Crank pin dia. 450 in Crank Webs Mid. length breadth 650 Thickness parallel to axis 255 in
Semi built as fitted 450 Centre of pin as per Rule 438 in Mid. length thickness 255 Thickness around eyehole 200 in
All built as fitted 450

Flywheel Shaft, diameter as per Rule 425 Intermediate Shafts, diameter as per Rule 13 7/8 Thrust Shaft, diameter at collars as per Rule 425
as fitted 450 as fitted 16 7/8 as fitted 450

Tube Shaft, diameter as per Rule Nil Screw Shaft, diameter as per Rule 14 6/8 Is the { tube screw } shaft fitted with a continuous liner { Yes
as fitted Nil as fitted 16 7/8

Bronze Liners, thickness in way of bushes as per Rule 24 3/32 Thickness between bushes as per Rule 18 3/32 Is the after end of the liner made watertight in the
as fitted 27 3/32 as fitted 25 3/32

propeller boss Yes If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner 2 one length

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 a type fit.

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 the tube

shaft No If so, state type Length of Bearing in Stern Bush next to and supporting propeller 5' 8 1/2"

Propeller, dia. 16' 3" Pitch 12' 3" No. of blades 4 Material In Bronze whether Movable No Total Developed Surface 90 sq. feet

Method of reversing Engines Compressed air Is a governor or other arrangement fitted to prevent racing of the engine when decelerated Yes Means of lubrication

Forced Thickness of cylinder liners 25 in Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers water cooled or lagged with

non-conducting material lagged 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. 2 In Distilled Water In Jacket Is the sea suction provided with an efficient strainer which can be cleared within the vessel In S.W. System

Bilge Pumps worked from the Main Engines, No. Nil Diameter Stroke Can one be overhauled while the other is at work

Pumps connected to the Main Bilge Line { No. and Size Three: - 1 Ballast P. 10" x 11" x 10" duplex, 1 Bilge & 1 Sanitary, each 7" x 7 1/2" x 8" duplex
How driven 190 ton/hr each 80 ton/hr
Indirect Steam Driven

Is the cooling water led to the bilges No 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 One 10" x 11" x 10" duplex Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size Two: - one by the Eng. (3 ton/hr)
one 100 ton/hr max 608 in

Are two independent means arranged for circulating water through the Oil Cooler Yes Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge

Pumps, No. and size: - In Machinery Spaces 3 of 3 1/2 dia., 2 of 2 1/2 dia. to OF Gutterways. In Pump Room 2 of 4"

In Holds, &c. Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size one 6" to Ballast Pump, one 5" to Bilge Pump.

Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes Are the Bilge Suctions 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 Yes

Are all Sea Connections fitted direct on the skin of the ship Yes Are they fitted with Valves or Cocks both

Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates Yes Are the Overboard Discharges above or below the deep water line below

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Yes Are the Blow Off Cocks fitted with a spigot and brass covering plate Yes

What pipes pass through the bunkers Nil How are they protected

What pipes pass through the deep tanks Nil 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 Yes

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 Yes Is the Shaft Tunnel watertight Nil (machinery off) 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. Nil (Airless Engin) No. of stages Diameters Stroke Driven by

Auxiliary Air Compressors, No. 2 No. of stages 3 Diameters Stroke Driven by Steam Eng.

Small Auxiliary Air Compressors, No. Nil No. of stages Diameters Stroke Driven by

What provision is made for first Charging the Air Receivers by steam driven compressor

Scavenging Air Pumps, No. One Dble acting Diameter 14 60 in Stroke 608 in Driven by Lever from M. Eng.

Auxiliary Engines crank shafts, diameter as per Rule Nil No. Position

Have the Auxiliary Engines been constructed under special survey Is a report sent herewith

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AIR RECEIVERS:—Have they been made under survey *Yes* State No. of Report or Certificate *✓*
Is each receiver, which can be isolated, fitted with a safety valve as per Rule *Yes*
Can the internal surfaces of the receivers be examined and cleaned *Yes* Is a drain fitted at the lowest part of each receiver *Yes*
Injection Air Receivers, No. *Two* Cubic capacity of each *✓* Internal diameter *✓* thickness *✓*
Seamless, lap welded or riveted longitudinal joint *✓* Material *✓* Range of tensile strength *✓* Working pressure *by Rules*
Starting Air Receivers, No. *Two* Total cubic capacity *280 cub ft.* Internal diameter *4 1/2"* thickness *1 3/32"*
Seamless, lap welded or riveted longitudinal joint *TR. Dble butt straps* Material *Stl.* Range of tensile strength *29533 tons* Working pressure *by Rules 602 lb Actual 600 lb*

ARE DONKEY BOILERS FITTED? *Yes* If so, is a report now forwarded? *Yes*
Is the donkey boiler intended to be used for domestic purposes only *No - also for Steam Auxiliary etc.*
PLANS. Are approved plans forwarded herewith for Shafting *Or 94 ft. 18-4-41* Receivers *28-5-42* Separate Fuel Tanks *✓*
Donkey Boilers *28-5-42* General Pumping Arrangements *12-5-43* Pumping Arrangements in Machinery Space *22-12-42*
Oil Fuel Burning Arrangements *18-2-41* *at 700 lbs* *12/5/43*
3-6-43. SPARE GEAR.

Has the spare gear required by the Rules been supplied *Yes*
State the principal additional spare gear supplied *1 main Bearing (Spherical), 1 non-ret Air Starting Valve, 1 Cyl. relief valve, 1 Fuel pump body complete with shut & delivery valves, 2 shafts for Pistons (upper & lower), 5 main piston rings, 4 scraper rings for Piston skirt, 6 rubber hoses for upper piston water service, 1 air feed Meehl lubricator for 1st cylinder, 2 complete sets of springs & joints, 12 Rdr tubes, 1 SV. Spring, 1 lid for check Valve, 1 dog. gauge glasses & packing rings, 2 sets of Compression rings for any Comp., half set valve & springs for any Comp., 2 turner caps, 12 nips, 12 diaphragms for off turning masts etc etc*
The foregoing is a correct description,

SWAN, HUNTER, & WILKINSON, LTD. Manufacturer.
G. J. Ducey
Dates of Survey while building
During progress of work in shops - *1942*
During erection on board vessel - *1943*
Total No. of visits *79*

Dates of Examination of principal parts—Cylinders *20-8-42* Covers *✓* Pistons *28-8-42* Rods as Pistons *26-8-42* Connecting rods *3-9-42*
Crank shaft *14-8-42* Flywheel shaft *as on sh* Thrust shaft *as on sh* Intermediate shafts *7-4-43* Tube shaft *✓*
Screw shaft *7-4-43* Propeller *on ship 27-4-43* Stern tube *20-4-43* Engine seatings *20-4-43* Engines holding down bolts *3-6-43*
Completion of fitting sea connections *27-4-43* Completion of pumping arrangements *28-10-43* Engines tried under working conditions *on ship 30-11-43*
Crank shaft, Material *7 Stl* Identification Mark *110084* Flywheel shaft, Material *7 Stl* Identification Mark *as on sh*
Thrust shaft, Material *7 Stl* Identification Mark *as on sh* Intermediate shafts, Material *7 Stl* Identification Marks *11565 HAI*
Tube shaft, Material *✓* Identification Mark *✓* Screw shaft, Material *7 Stl* Identification Mark *11565 HAI*
Identification Marks on Air Receivers *Two Starting Air Receivers, marked:-*
LLOYD'S TEST 800 LBS. WP 600 LBS 23-12-42 AWAM

Is the flash point of the oil to be used over 150° F. *Yes*
Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with *Yes*
Is the vessel (not being an oil tanker) fitted for carrying oil as cargo *Yes* 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 *not desired*
Is this machinery duplicate of a previous case *Yes* If so, state name of vessel *British Respect. SHWR. Ynd 1724*
new Rpt 101,186

General Remarks (State quality of workmanship, opinions as to class, etc.)
The machinery of this vessel has been constructed under special survey in accordance with the approved plans and the Society's Rules, and the materials and workmanship are good. The main engine was tested in the works under full load, and afterwards, the E. Welded construction Bedplate, columns and entablature were examined and found in good condition. The machinery has been efficiently installed on board the vessel, tested under working conditions with satisfactory results and is eligible, in my opinion, for record + LMC. 12.43., and the notations 2 DB. 150th. wp, CL. oil eng. machy aft.

The amount of Entry Fee .. £ *6* : *0* : *0* When applied for, *not yet*
Special .. £ *109* : *7* : *0*
E.W. Construction M. Eng. *12* : *12* : *0*
Donkey Boilers Fee .. £ *23* : *10* : *0* When received, *19*
2 Starting Air Recs .. £ *4* : *4* : *0*
Travelling Expenses (if any) .. £ *4* : *4* : *0*
Committee's Minute *FRI. 7 JAN 1944*
Assigned *+ LMC 11.43 Oil Eng. CL. 2 DB. 150 lb*
A. Watt
Engine Surveyor to Lloyd's Register of Shipping.

