Rpt. 4.

REPORT ON MACHINERY.

No. 74483.

Date of writing Report .... 10 .... When handed in at Local Office July 9th 1921 Port of NEWCASTLE-ON-TYNE

Received at London Office TUE. JUL. 12 1921

No. in Reg. Book. Survey held at Jarrow & Amble Date, First Survey 9th Nov. 1920 Last Survey July 6th 1921. (Number of Visits 59)

on the Vehicle & Passenger Twin Screw Ferry "~~Jarrow~~" now "A.B.GOWAN." Tons { Gross / Net }

Master .... Built at Amble By whom built Amble S B Co Ld When built 1921

Engines made at Jarrow on Tyne By whom made Palmers Shipbuilding & Iron Co Ld (No 5954) when made 1921.

Boilers made at — do — By whom made — do — (No 5954) when made 1921

Registered Horse Power .... Owners Jarrow Corporation Port belonging to Newcastle on Tyne

Nom. Horse Power as per Section 28 69 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes.

ENGINES, &c.—Description of Engines Twin Screw Triple Expansion No. of Cylinders 3 each set No. of Cranks 3 each set

Dia. of Cylinders (2) 9" (2) 14¼" & (2) 24" Length of Stroke 18" Revs. per minute 100 Dia. of Screw shaft as per rule 5.5" as fitted 5½" Material of screw shaft Steel

Is the screw shaft fitted with a continuous liner the whole length of the stern tube Yes { Jointed between Bush & Brackets Is the after end of the liner made water tight in the propeller boss Yes If the liner is in more than one length are the joints burned No 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 3 liners are fitted, is the shaft lapped or protected between the liners Rubber ring lapped with copper wire Length of stern bush 26¼"

Dia. of Tunnel shaft as per rule 4.6" as fitted 4¾" Dia. of Crank shaft journals as per rule 4.83" as fitted 5" Dia. of Crank pin 5" Size of Crank webs 10¼" x 3½" Dia. of thrust shaft under collars 5" Dia. of screw 6'-6" Pitch of Screw 9'-0" No. of Blades 4 State whether moveable No Total surface 17 ☐' each.

No. of Feed pumps one pair, Weirs Diameter of ditto 4½" - 6½" Stroke 10" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 2¾" Stroke 7½" Can one be overhauled while the other is at work Yes.

No. of Donkey Engines One Sizes of Pumps 4" x 4" x 6" Simplex No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room Four, 2" diameter In Holds, &c. One 2" forward & one 2" aft.

No. of Bilge Injections 1 sizes 4" Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine room & size Yes. 2"

Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes Are the sluices on Engine room bulkheads always accessible ✓

Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Both

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

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 are carried through the bunkers None How are they protected ✓

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes

Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges Yes

Is the Screw Shaft Tunnel watertight None Is it fitted with a watertight door ✓ worked from ✓

BOILERS, &c.—(Letter for record S) Manufacturers of Steel J. Spencer & Sons Ld

Total Heating Surface of Boilers 1288 ☐' Is Forced Draft fitted No No. and Description of Boilers Two, single Ended

Working Pressure 180 lbs per ☐" Tested by hydraulic pressure to 320 lbs per ☐" Date of test 1/3/21 No. of Certificate 9537

Can each boiler be worked separately Yes Area of fire grate in each boiler 19 ☐' No. and Description of Safety Valves to each boiler Two, direct spring Area of each valve 3.14 ☐" Pressure to which they are adjusted 185 lbs per ☐" Are they fitted with easing gear Yes.

Smallest distance between boilers or uptakes and bunkers or woodwork 20" Inside ~~Mean~~ dia. of boilers 8'-1 9/16" Length 10'-0" Material of shell plates Steel

Thickness 23/32" Range of tensile strength 28/32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams 2 R Lap long. seams Double Straps 5 rivets Diameter of rivet holes in long. seams 23/32" Pitch of rivets 5" ~~Lap of plates or~~ width of butt straps 10 19/32"

Per centages of strength of longitudinal joint rivets 87.0 plate 85.6 Working pressure of shell by rules 184 lbs Size of manhole in shell 16" x 12"

Size of compensating ring flanged 39½ x 33 x 28/32 No. and Description of Furnaces in each boiler 2. Fox's Material Steel Outside diameter 29½"

Length of plain part top ✓ bottom ✓ Thickness of plates crown ½" bottom Description of longitudinal joint Welded No. of strengthening rings ✓

Working pressure of furnace by the rules 257 Combustion chamber plates: Material Steel Thickness: Sides 11/16" Back 11/16" Top 11/16" Bottom 11/16"

Pitch of stays to ditto: Sides one 10 13/32" x 8" Back 11" x 7½" Top 9¼" x 8" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 189

Material of stays Steel Area at smallest part 1.73 / 2.71 ☐" Area supported by each stay 84 / 121 ☐" Working pressure by rules 185 End plates in steam space: Material Steel Thickness 7/8" Pitch of stays 16½" x 12½" How are stays secured Double nuts & washers Working pressure by rules 183 Material of stays Steel

Area at smallest part 3.67 ☐" Area supported by each stay 206 ☐" Working pressure by rules 189 Material of Front plates at bottom Steel

Thickness 7/8" Material of Lower back plate Steel Thickness 7/8" Greatest pitch of stays 14½" x 11" Working pressure of plate by rules 189

Diameter of tubes 3" Pitch of tubes 4¼" x 4⅛" Material of tube plate Steel Thickness: Front 7/8" Back ¾" Mean pitch of stays 9⅜"

Pitch across wide water spaces 14" Working pressures by rules 198 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 6½" x 1" Length as per rule 20 3/16" Distance apart 9¼" Number and pitch of stays in each Two, 8"

Working pressure by rules 203 lbs Steam dome: description of joint to shell None % of strength of joint ✓

Diameter ✓ Thickness of shell plates ✓ Material ✓ Description of longitudinal joint ✓ Diam. of rivet holes ✓

Pitch of rivets ✓ Working pressure of shell by rules ✓ Crown plates ✓ Thickness ✓ How stayed ✓

SUPERHEATER. Type None Date of Approval of Plan ✓ Tested by Hydraulic Pressure to ✓

Date of Test ✓ Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler ✓

Diameter of Safety Valve ✓ Pressure to which each is adjusted ✓ Is Easing Gear fitted ✓

IS A DONKEY BOILER FITTED? No If so, is a report now forwarded? ✓

SPARE GEAR. State the articles supplied: Two top & two bottom end bolts & nuts, 2 main bearing bolts & nuts, one set of coupling bolts & nuts, one set of bilge pump valves, one set of fuel pump valves & seats, assorted bolts & nuts, a few bars of iron, 1 pair bottom end brasses, one set of H.P. I.P. & L.P. piston rings one impeller and shaft for circulating pump, 6 boiler tubes, 50 condenser tubes, 1 safety valve spring, etc.

The foregoing is a correct description,
Palmers Shipbuilding & Iron Co., Ltd.
General Manager, Engine Works. Manufacturer.

Dates of Survey while building
During progress of work in shops: 1920 Nov 9.12.16.22.24.29. Dec. 14.15.17.22.23.24.28. Jan. 4.7.8.11.14.17.21.24.28. Mar. 1.3.7.8.14.15.16.23.23.24.29.31. April 14.7.12.13.15.18.21.25.26.28.
During erection on board vessel: May 3.25.31. Jun. 2.3.7.8.9.14.16.17.29. Jul. 1.6.
Total No. of visits 59

Is the approved plan of main boiler forwarded herewith Yes
" " " donkey " " " None

Dates of Examination of principal parts—Cylinders 22/12, 28/12/20. 11/1, 7/2, 24/3/21 Slides 7/1. 11/1/21 Covers 14/1/21 Pistons 14/1/21 Rods 16/11. 14/12, 22/12/20
Connecting rods 16/10, 14/12 22/12. 28/12/20 Crank shaft 28/12/20 7/1. 7/2/21 Thrust shaft 4/2/21 Tunnel shafts 4/2. 21/2 14/2/21 Screw shaft 12/1, 26/1, 4/2 14/2/21 Propeller 21/2/21
Stern tube 26/1, 4/2 21/2 14/2/21 Steam pipes tested 16/6/21 Engine and boiler seatings 8/6/21 Engines holding down bolts 17/6/21
Completion of pumping arrangements 1/7/21 Boilers fixed 1/7/21 Engines tried under steam 6-7-21.
Completion of fitting sea connections 7/6/21 Stern tube 7/6/21 Screw shaft and propeller 7/6/21
Main boiler safety valves adjusted 6-7-21. Thickness of adjusting washers FORD 7/16" PORT AFT 27/64" FORD 13/32 STARB AFT 3/8"
Material of Crank shafts Steel Identification Mark on Do. 16/6/21 GM 5670 Material of Thrust shafts Steel Identification Mark on Do. 16/6/21 GM 5670
Material of Tunnel shafts do Identification Marks on Do. do Material of Screw shafts do Identification Marks on Do. do
Material of Steam Pipes Copper Test pressure 360 lbs per □"
Is an installation fitted for burning oil fuel No Is the flash point of the oil to be used over 150°F. ✓
Have the requirements of Section 49 of the Rules been complied with ✓
Is this machinery duplicate of a previous case No If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, &c.) The machinery of this vessel has been built under special survey, the materials and workmanship are of good quality, it has been securely fitted on board and satisfactorily tested under full steam pressure.

In our opinion the machinery of this vessel is now eligible for record ∴ + L M C 7.21 (in red) in register book.

Boiler plan, forging report, and indorsis for boiler steel and furnaces now forwarded.

It is submitted that this vessel is eligible for THE RECORD. + LMC 7.21

Rell 21/7/21

Certificate (if required) to be sent to

The Surveyors are requested not to write on or below the space for Committee's Minute.

The amount of Entry Fee	...	£	2	0
Special	... ...	£	17	5
Donkey Boiler Fee	...	£		✓
Travelling Expenses (if any)		£	19	4

When applied for, 11/7/1921.
When received, 24/8/1921 GEW

George Murdoch & R. Robinson.
Engineer Surveyors to Lloyd's Register of Shipping.

Committee's Minute FRI. 22JUL. 1921

Assigned + LMC 7.21

MACHINERY DEPT
WRITTEN