

REPORT ON MACHINERY.

No. 6093

Port of *Falmouth*

Received at London Office 17 MAR 1922

No. in Survey held at *Falmouth*Date, first Survey *26th January* Last Survey *16th March 1922*

Reg. Book.

30182 on the *Steel Twin Screw Steamer "Norfolk" ex "Sauerland"*(Number of Visits *15*)Tons { Gross *10973*Net *6901*When built *1918*

Master

Built at *Vegesack*By whom built *Bremer Vulkan*when made *1918*Engines made at *Vegesack*By whom made *Bremer Vulkan*when made *1918*Boilers made at *Vegesack*By whom made *Bremer Vulkan*

Registered Horse Power

Owners *Federal Steam Co Ltd*Port belonging to *London*Nom. Horse Power as per Section 28 *1115*Is Refrigerating Machinery fitted for cargo purposes *no*Is Electric Light fitted *yes*ENGINES, &c.—Description of Engines *Triple Expansion (twin)* No. of Cylinders *6* No. of Cranks *6*Dia. of Cylinders *28 3/8 - 46 7/8 - 75 5/8* Length of Stroke *51 1/4* Revs. per minute *16.62* as per rule *15 3/16* as fitted *15 3/16* Material of *steel*Is the screw shaft fitted with a continuous liner the whole length of the stern tube *no* *Bel Gland see pag. 8/4* Is the after end of the liner made water tight in the propeller boss *no* If the liner is in more than one length are the joints burned *✓* 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 *✓* Length of stern bush *5'-1"*Dia. of Tunnel shaft *14.58* as per rule *14.375* as fitted *14.375* Dia. of Crank shaft journals *15.3* as per rule *15.375* as fitted *15.375* Dia. of Crank pin *15 1/4* Size of Crank webs *24x10* Dia. of thrust shaft under collars *15.375* Dia. of screw *18-6* Pitch of Screw *19-2* No. of Blades *4* State whether moveable *yes* Total surface *✓*No. of Feed pumps *2* Type *✓* Diameter of ditto *11 3/8* Stroke *26 1/16* Can one be overhauled while the other is at work *yes* No. of Bilge pumps *2* Diameter of ditto *5 3/8* Stroke *25* Can one be overhauled while the other is at work *yes*No. of Donkey Engines *Three* Sizes of Pumps *Two 6 1/16 x 12 In 13 3/8 x 13 3/8* No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room *Two 3 1/2, Two 4, Two 3 1/2 + Two 2 1/2 in B.H. Two 3 1/2 in T.R. In Holds, &c. Two 3 1/2 and one 2 1/2 in each hold*No. of Bilge Injections *2* sizes *8"* Connected to condenser, or to circulating pump *pump* Is a separate Donkey Suction fitted in Engine room & size *yes one 4"*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 *none*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 *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 are carried through the bunkers *forward sections* How are they protected *carried under timber boards*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*Dates of examination of completion of fitting of Sea Connections *24th Feb 1922* of Stern Tube *24th Feb 1922* Screw shaft and Propeller *24th Feb 1922*Is the Screw Shaft Tunnel watertight *yes* Are they fitted with a watertight doors *yes* worked from *E.R. top platform*BOILERS, &c.—(Letter for record *✓*) Manufacturers of SteelTotal Heating Surface of Boilers *15525* Is Forced Draft fitted *yes* No. and Description of Boilers *5 Single Ended*Working Pressure *199 lbs* Tested by hydraulic pressure to *✓* Date of test *✓* No. of Certificate *✓*Can each boiler be worked separately *yes* Area of fire grate in each boiler *67.5 sq ft* No. and Description of Safety Valves to each boiler *Three spring loaded* Area of each valve *9.6 sq in* Pressure to which they are adjusted *204 lbs per sq in* Are they fitted with easing gear *yes*Smallest distance between boilers *compartments* and bunkers *compartments* *18"* Mean dia. of boilers *16-2* Length *12-3* Material of shell plates *steel*Thickness *1 1/2"* Range of tensile strength *28.6-33.6* Are the shell plates welded or flanged *no* Descrip. of riveting: cir. seams *double*long. seams *TRABS* Diameter of rivet holes in long. seams *1 1/2"* Pitch of rivets *18 3/8"* *Top of plates* width of butt straps *2.5 1/2"*Per centages of strength of longitudinal joint *105* Working pressure of shell by rules *209 lbs* Size of manhole in shell *20 1/2 x 17 1/4"*Size of compensating ring *15" x 1 1/2"* No. and Description of Furnaces in each boiler *3 corrugated* Material *steel* Outside diameter *48 3/8"*Length of plain part *top* Thickness of plates *bottom* *1 1/16"* Description of longitudinal joint *welded* No. of strengthening rings *✓*Working pressure of furnace by the rules *207* Combustion chamber plates: Material *steel* Thickness: Sides *1 1/16"* Back *1 1/16"* Top *1 1/16"* Bottom *29/32"*Pitch of stays to ditto: Sides *7 5/8 x 7 3/4"* Back *7 1/8 x 7 1/4"* Top *7 1/8 x 7 1/4"* If stays are fitted with nuts or riveted heads *nuts* Working pressure by rules *260 lbs*Material of stays *steel* Diameter at smallest part *2.07* Area supported by each stay *81 sq in* Working pressure by rules *230 lbs* End plates in steam space: Material *steel* Thickness *1 3/32"* Pitch of stays *16 5/8 x 14 1/2"* How are stays secured *bolts* Working pressure by rules *227 lbs* Material of stays *steel*Diameter at smallest part *3"* Area supported by each stay *235 sq in* Working pressure by rules *256 lbs* Material of Front plates at bottom *steel*Thickness *1"* Material of Lower back plate *steel* Thickness *1"* Greatest pitch of stays *15 1/2 x 16 3/8"* Working pressure of plate by rules *227 lbs*Diameter of tubes *3 1/4"* Pitch of tubes *4 1/2"* Material of tube plates *steel* Thickness: Front *1 3/32"* Back *29/32"* Mean pitch of stays *9"*Pitch across wide water spaces *14 1/16"* Working pressures by rules *appx 199 lbs* Girders to Chamber tops: Material *steel* Depth and thickness of girder at centre *9 1/16 x 1 1/2"* Length as per rule *33 1/2"* Distance apart *7 7/8"* Number and pitch of stays in each *Three 7 7/8"*Working pressure by rules *182 lbs* Superheater or Steam chest; how connected to boiler *girders specially examined and no sign of straining found* Can the superheater be shut off and the boiler worked separately *✓* Diameter *✓* Length *✓* Thickness of shell plates *✓* Material *✓* Description of longitudinal joint *✓* Diam. of rivet holes *✓* Pitch of rivets *✓* Working pressure of shell by rules *✓* Diameter of flue *✓* Material of flue plates *✓* Thickness *✓*If stiffened with rings *✓* Distance between rings *✓* Working pressure by rules *✓* End plates: Thickness *✓* How stayed *✓*Working pressure of end plates *✓* Area of safety valves to superheater *✓* Are they fitted with easing gear *✓*

Lloyd's Register Foundation 4202-0331

No.	Description				
Made at	By whom made		When made	Where fixed	
Working pressure	tested by hydraulic pressure to	Date of test	No. of Certificate	Fire grate area	Description of Safety
Valves	No. of Safety Valves	Area of each	Pressure to which they are adjusted	Date of adjustment	
If fitted with easing gear	If steam from main boilers can enter the donkey boiler		Dia. of donkey boiler	Length	
Material of shell plates	Thickness	Range of tensile strength	Descrip. of riveting	long seams	
Dia. of rivet holes	Whether punched or drilled	Pitch of rivets	Lap of plating	Per centage of strength of joint	Rivets Plates
Working pressure of shell by rules	Thickness of shell crown plates	Radius of do.	No. of stays to do.	Dia. of stays	
Diameter of furnace Top	Bottom	Length of furnace	Thickness of furnace plates	Description of joint	
Working pressure of furnace by rules	Thickness of furnace crown plates	Stayed by			
Diameter of uptake	Thickness of uptake plates	Thickness of water tubes	Dates of survey		

SPARE GEAR. State the articles supplied:—4 top end bolts and nuts, 2 bottom end bolts and nuts, 2 main bearing bolts and nuts, 2 sets coupling bolts and nuts, 1 set of feed and bilge pump valves, 1 set H.P. I.P. & P. piston rings with 50 springs for 1 P. piston. A quantity of assorted nuts, bolts & iron of various sizes. 40 condenser tubes and 140 ferrules, 22 main boiler plain tubes and 17 stay tubes, 1 safety valve spring, 1 set feed check valves and seats, 1 set auxiliary feed pump valves and seats, 1 set ballast pump valves and seats and a complete set of spare piston rings for F.R. workman.

Dates of Survey while building	{	During progress of	}
		work in shops- -	
		During erection on	
		board vessel - -	
		Total No. of visits	

Is the approved plan of main boiler forwarded herewith yes
 " " " donkey " " " none

Dates of Examination of principal parts—Cylinders 26/1/22 Slides 26/1/22 Covers 26/1/22 Pistons 26/1/22 Rods 26/1/22

Connecting rods 26/1/22 Crank shaft 46/1/22 Thrust shaft 3/1/22 Tunnel shafts 4/1/22 Screw shafts 1/3/22 Propellers 15/3/22

Stern tubes, 1/3/22 Steam pipes tested 16/2/22 Engine and boiler seatings — Engines holding down bolts —

Completion of pumping arrangements 6/2/22 Boilers fixed ✓ Engines tried under steam 16/3/22

Main boiler safety valves adjusted 15/3/22 Thickness of adjusting washers AV 1 1/2" PV 3/4" SV 1/2" AV 2 1/2" PV 1 1/8" SV 1 1/4" AV 3 1/2" PV 1 1/2" SV 1 1/2" AV 4 1/2" PV 1 3/4" SV 1 3/4" AV 5 1/2" PV 2" SV 2" AV 6 1/2" PV 2 1/4" SV 2 1/4" AV 7 1/2" PV 2 1/2" SV 2 1/2" AV 8 1/2" PV 2 3/4" SV 2 3/4" AV 9 1/2" PV 3" SV 3" AV 10 1/2" PV 3 1/4" SV 3 1/4" AV 11 1/2" PV 3 1/2" SV 3 1/2" AV 12 1/2" PV 3 3/4" SV 3 3/4" AV 13 1/2" PV 4" SV 4" AV 14 1/2" PV 4 1/4" SV 4 1/4" AV 15 1/2" PV 4 1/2" SV 4 1/2" AV 16 1/2" PV 4 3/4" SV 4 3/4" AV 17 1/2" PV 5" SV 5" AV 18 1/2" PV 5 1/4" SV 5 1/4" AV 19 1/2" PV 5 1/2" SV 5 1/2" AV 20 1/2" PV 5 3/4" SV 5 3/4" AV 21 1/2" PV 6" SV 6" AV 22 1/2" PV 6 1/4" SV 6 1/4" AV 23 1/2" PV 6 1/2" SV 6 1/2" AV 24 1/2" PV 6 3/4" SV 6 3/4" AV 25 1/2" PV 7" SV 7" AV 26 1/2" PV 7 1/4" SV 7 1/4" AV 27 1/2" PV 7 1/2" SV 7 1/2" AV 28 1/2" PV 7 3/4" SV 7 3/4" AV 29 1/2" PV 8" SV 8" AV 30 1/2" PV 8 1/4" SV 8 1/4" AV 31 1/2" PV 8 1/2" SV 8 1/2" AV 32 1/2" PV 8 3/4" SV 8 3/4" AV 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Material of Crank shaft Steel Identification Mark on Do. — Material of Thrust shaft Steel Identification Mark on Do. —

Material of Tunnel shafts Steel Identification Marks on Do. ☒ Material of Screw shafts Steel Identification Marks on Do. ☒

Material of Steam Pipes *Steel* Test pressure *Six hundred pounds per square inch*

General Remarks (State quality of workmanship, opinions as to class, &c. *This vessel has been placed in dry dock*

the cylinders, pistons, slide valves and their chests; the air, circulating feed and budge pumps; condensers (tested) pipe connections; Crank, Thrust, intermediate and propeller shafts; propellers; stern bushes; sea valves and cocks and their connections to the shell plating; Steam steering engine; Windlass; all engine room auxiliaries. The main boilers, their safety valves and other mountings examined throughout and found or put in good order. Safety valves adjusted as above. Engines tried under steam and found to work well. (Wear down of T.S. in W.M. Port on Star 025)

Wear & tear repairs. Crank shafts lifted and lower halves of all main bearings re-metalled. Cross seams of back plates of all boilers electrically welded at corners, front cross seams welded as required. Bright new propeller blades fitted (Stone's Manganese Bronze) Several other minor repairs effected. This machinery is now so far as seen in good condition and eligible in my opinion to be classed with Record of L.M.C. 3, 22 for a working pressure of 197 lbs per sq in (See station E. 24/6/21. 8/3/22) with notation of tail shafts seen 3/22

the amount of Entry Fee ..	£	:	:	When applied for,
Special	£	50	0	7/4/19
Donkey Boiler Fee	£	:	:	When received,
Travelling Expenses (if any) £	:	:	:	24/6/19

Committee's Minute

Assigned

A. T. Graham
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

MACHINERY CERT.
WRITTEN.

Lloyd's Register
Foundation