

# REPORT ON MACHINERY.

Date of writing Report *25/9/20* When handed in at Local Office *25/9/20* Port of *MIDDLESBRO* Received at London Office *WED. SEP. 29 1920*

No. in Survey held at *Stockton-on-Tees* Date, First Survey *23<sup>rd</sup> March/20* Last Survey *22<sup>nd</sup> Sept. 1920*

Req. Book. *on the Steel screw steamer DIADEM* (Number of Vents *19*) (S.S.N. *317*)

Master *Sunderland* Built at *Sunderland* By whom built *Sunderland S.P. Co. Ltd.* When built *1920*

Engines made at *Stockton* By whom made *Jessie Blair & Co. Ltd. (No. 1881)* when made *1920*

Boilers made at *Stockton* By whom made *Jessie Blair & Co. Ltd.* when made *1920*

Registered Horse Power \_\_\_\_\_ Owners \_\_\_\_\_ Port belonging to \_\_\_\_\_

Nom. Horse Power as per Section 28 *450* Is Refrigerating Machinery fitted for cargo purposes *no* Is Electric Light fitted *yes*

**ENGINES, &c.**—Description of Engines *Tri-compound* No. of Cylinders *3* No. of Cranks *3*

Dia. of Cylinders *26-48-71* Length of Stroke *48* Revs. per minute *64* Dia. of Screw shaft *14.7* Material of screw shaft *By Steel*

Is the screw shaft fitted with a continuous liner the whole length of the stern tube *yes* 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 *in one* 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 *tight fit* If two liners are fitted, is the shaft lapped or protected between the liners \_\_\_\_\_ Length of stern bush *5'-4"*

Dia. of Tunnel shaft *13.05* Dia. of Crank shaft journals *13.7* Dia. of Crank pin *14.7* Size of Crank webs *18.5 x 9.5* Dia. of thrust shaft under collars *14.75* Dia. of screw *18'-0"* Pitch of Screw *17'-6"* No. of Blades *4* State whether moveable *no* Total surface *100 sq ft*

No. of Feed pumps *2* Diameter of ditto *3.5* Stroke *34* Can one be overhauled while the other is at work *yes*

No. of Bilge pumps *2* Diameter of ditto *5* Stroke *34* Can one be overhauled while the other is at work *yes*

No. of Donkey Engines *2* Sizes of Pumps *10 x 10 : 7.5 x 8* In Hold, &c. *2 @ 3.5 in each hold*

In Engine Room *2 @ 3.5* Tunnel well on @ *3.5*

No. of Bilge Injections *1* sizes *6.75* Connected to *condensed* circulating pump *yes* Is a separate Donkey Suction fitted in Engine room & size *yes - 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 *no*

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 *suctions to forward holds* How are they protected *wood casing*

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 *14-7-20* of Stern Tube *14-7-20* Screw shaft and Propeller *6-9-20*

Is the Screw Shaft Tunnel watertight *see hull Rpt.* Is it fitted with a watertight door *yes* worked from *upper deck*

**BOILERS, &c.**—(Letter for record *(1)*) Manufacturers of Steel *Jessie Blair & Co. Ltd.*

Total Heating Surface of Boilers *7917* Is Forced Draft fitted *no* No. and Description of Boilers *3 single ended*

Working Pressure *180* Tested by hydraulic pressure to *360* Date of test *23.8.20* No. of Certificate *6151*

Can each boiler be worked separately *yes* Area of fire grate in each boiler *62 sq ft* No. and Description of Safety Valves to each boiler *2 direct spring* Area of each valve *7.07 sq in* Pressure to which they are adjusted *185 lbs* Are they fitted with easing gear *yes*

Smallest distance between boilers or uptakes and bunkers on *woodwork* *4'-0"* Max dia. of boilers *16'-0"* Length *11'-6"* Material of shell plates *steel*

Thickness *1.2* Range of tensile strength *28-32* Are the shell plates welded or flanged *no* Descrip. of riveting: cir. seams *2 R. lap* long. seams *2 B-3 Riv* Diameter of rivet holes in long. seams *1.2* Pitch of rivets *9.5* Lap of plates or width of butt straps *19.5 x 1.2*

Per centages of strength of longitudinal joint *86.1* Working pressure of shell by rules *183* Size of manhole in shell *16" x 12"*

Size of compensating ring *7.5 x 1.2* No. and Description of Furnaces in each boiler *3 Dighton* Material *steel* Outside diameter *47.41"*

Length of plain part *top 3.7* Thickness of plates *bottom 3.7* Description of longitudinal joint *Weld* No. of strengthening rings *✓*

Working pressure of furnace by the rules *192* Combustion chamber plates: Material *steel* Thickness: Sides *1/2"* Back *1/2"* Top *1/2"* Bottom *13/16"*

Pitch of stays to ditto: Sides *9.25 x 8.25* Back *9.25 x 9* Top *9 x 8.5* If stays are fitted with nuts or riveted heads *nuts* Working pressure by rules *185*

Material of stays *IRON* Diameter at smallest part *1.99* Area supported by each stay *87.18* Working pressure by rules *206* End plates in steam space \_\_\_\_\_

Material *steel* Thickness *1.4* Pitch of stays *19.1 x 18* How are stays secured *nuts - 9 x 1* Working pressure by rules *193* Material of stays *steel*

Diameter at smallest part *7.24* Area supported by each stay *38.9* Working pressure by rules *198* Material of Front plates at bottom *steel*

Thickness *1"* Material of Lower back plate *steel* Thickness *1"* Greatest pitch of stays *14" x 9"* Working pressure of plate by rules *250*

Diameter of tubes *3.5* Pitch of tubes *4.25 x 4.25* Material of tube plates *steel* Thickness: Front *1.2* Back *1.2* Mean pitch of stays *11.2*

Pitch across wide water spaces *14.5* Working pressures by rules *192* Girders to Chamber tops: Material *steel* Depth and thickness of girder at centre *8.5 x 1.75* Length as per rule *33.75* Distance apart *9"* Number and pitch of stays in each *7 @ 8.5*

Working pressure by rules *191* Superheater or Steam chest; how connected to boiler *none* 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 \_\_\_\_\_

IS A DONKEY BOILER FITTED? no

If so, is a report now forwarded?

SPARE GEAR. State the articles supplied: 2 each of connecting rod top end, bottom end and main bearing bolts and nuts; one set of coupling bolts; one set of feed and bilge pump valves assorted bolts and nuts; iron of various sizes, one propeller + one tail end shaft

The foregoing is a correct description,  
FOR BLAIR & Co., LIMITED.

Geo. Nettleship  
MANAGING DIRECTOR

Manufacturer.

Dates of Survey while building: During progress of work in shops -- 1920. Mar 23.29.31. April 8.19.26.29.30. May 7.12.19.21.28.31. June 2.10.14.16.18.  
During erection on board vessel --- 24.28. July 5.9.13.20.23.27.28.30. Aug 3.6.9.11.13.23.25.27.30.31. Sep 2.3.6.10.14.15.17.20.22.  
Total No. of visits 49 Is the approved plan of main boiler forwarded herewith yes  
at Eld. July 14. 6) " " " donkey " " " none

Dates of Examination of principal parts—Cylinders 20.7.20 Slides 23.7.20 Covers 23.7.20 Pistons 3.8.20 Rods 30.7.20  
Connecting rods 31.8.20 Crank shaft 30.7.20 Thrust shaft 23.7.20 Tunnel shafts 28.7.20 Screw shaft 27.8.20 Propeller 25.8.20  
Stern tube 28.7.20 Steam pipes tested 15.9.20 Engine and boiler seatings 14.7.20 Engines holding down bolts 14.9.20  
Completion of pumping arrangements 20.9.20 Boilers fixed 14.9.20 Engines tried under steam 20.9.20  
Main boiler safety valves adjusted 20.9.20 Thickness of adjusting washers P Bls 5-3/8" : Cent Bls 5-9/32" : S Bls 5-11/32"  
Material of Crank shaft By Steel Identification Mark on Do. 7269 Material of Thrust shaft By Steel Identification Mark on Do. 4965-N  
Material of Tunnel shafts By Steel Identification Marks on Do. 4965-N Material of Screw shafts By Steel Identification Marks on Do. 7269.  
Material of Steam Pipes Top welded steel Test pressure 600 lbs

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 sound and good. The boilers and steam pipes were tested by hydraulic pressure and the engines and boilers examined under and all found satisfactory.  
The machinery is now in a good and safe working condition and renders the vessel eligible in my opinion to have the notation of  $\frac{1}{2}$  L.M.C.-9.20 in the Register Book.

Note: - This vessel is fitted with Electric Light and "winlers"

It is submitted that  
this vessel is eligible for  
THE RECORD + L.M.C. 9.20

Bell 2/10/20

The amount of Entry Fee ... £ 3-0-0 When applied for, ...  
Special ... £ 42-10-0 11/10/20  
Donkey Boiler Fee ... £ 1- When received, ...  
Travelling Expenses (if any) £ 1- 14/10/20

Wm Morrison & W. Rutter per LCD  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute FRI. OCT. 15 1920

Assigned + L.M.C. 9.20

CERTIFICATE WRITTEN



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Middlesbrough

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