

REPORT ON MACHINERY.

No. 9209.

Received at London Office

SAT. 29 JAN. 1916

Date of writing Report

When handed in at Local Office

Jan 26. 1916 Port of Middlesbrough

No. in Survey held at
Reg. Book.

Middlesbrough

Date, First Survey Sept. 22. 1914 Last Survey Jan. 26. 1916

(Number of Visits)

109

Master

Built at

Middlesbrough

By whom built

Sir R. Dixon & Co. Ltd

Tons

Gross

Net

When built 1916

Engines made at

Hartlepool & Middlesbrough

By whom made

Richardsons, Westgarth & Co. Ltd

when made 1916

Boilers made at

Middlesbrough

By whom made

Richardsons, Westgarth & Co. Ltd

when made 1916

Shaft

Registered Horse Power 4700

Owners

Union S.S. Co. of New Zealand Ltd Port belonging to London

Nom. Horse Power as per Section 28 1030

Is Refrigerating Machinery fitted for cargo purposes Yes

Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines

Geared Turbines Twin Screw

No. of Cylinders

No. of Cranks

Dia. of Cylinders

See Rpt 15164

Length of Stroke

Screw shaft 102

Revs. per minute

Turbines 1760

Dia. of Screw shaft

as per rule 12.77 Material of Steel

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

the propeller boss yes If the liner is in more than one length are the joints burned If the liner does not fit tightly at the part

ween the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive yes If two

ers are fitted, is the shaft lapped or protected between the liners Length of stern bush 5'-6"

Dia. of Tunnel shaft as per rule 11.75 Wheel as per rule 12.31 Dia. of Crank shaft journals as per rule 14 Dia. of Crank pin Size of Crank webs Dia. of thrust shaft under

bars 14 1/2 Dia. of screw 15'-0" Pitch of Screw 14'-6" No. of Blades 4 State whether moveable yes Total surface 80 sq

of Feed pumps 2 Weirs Diameter of ditto 10" Stroke 26" Can one be overhauled while the other is at work yes

of Bilge pumps 2 Diameter of ditto 8 1/2" Stroke 9" Can one be overhauled while the other is at work yes

of Donkey Engines 4 Sizes of Pumps 12x12x12 8x6x10 8x6x8 No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room 4 @ 3 1/2" In stokehold 2 @ 3 1/2" In Holds, &c. Two 3 1/2" in each hold. One 2 1/2"

in Tunnel well

of Bilge Injections 2 sizes 10" Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine room & size yes 4 1/2"

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

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

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

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

that pipes are carried through the bunkers For d. hold suction How are they protected Wood ceiling

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

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

times of examination of completion of fitting of Sea Connections 12.4.15 of Stern Tube 27.4.15 Screw shaft and Propeller 30.9.15

the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Upper deck 19.1.16

MATERIALS, &c.—(Letter for record (S) Manufacturers of Steel John Spencer & Sons Ltd

Total Heating Surface of Boilers 14710 sq ft Is Forced Draft fitted yes No. and Description of Boilers Five S.E. cyl. built

Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 30.4.15 No. of Certificate 5491

each boiler be worked separately yes Area of fire grate in each boiler 74.2 sq ft No. and Description of Safety Valves to

boiler Two direct spring Area of each valve 14.19 Pressure to which they are adjusted 183 lbs Are they fitted with easing gear yes

smallest distance between boilers or uptakes and bunkers or woodwork 19" Mean dia. of boilers 16'-6" Length 12'-0" Material of shell plates Steel

thickness 1 1/2" Range of tensile strength 29-33 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams BR Lap

seams BR S Ribs Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10 1/4 Top of plates as width of butt straps 22 1/4"

percentages of strength of longitudinal joint rivets 86.6 Working pressure of shell by rules 211 lbs Size of manhole in shell 20 7/8 x 16 7/8"

of compensating ring M. Neils No. and Description of Furnaces in each boiler 4 Brighton Material Steel Outside diameter 3'-8 3/4"

length of plain part top Thickness of plates crown 5/8" Description of longitudinal joint Welded No. of strengthening rings

bottom Thickness of plates bottom 5/8" Thickness: Sides 3/32 Back 5/8 Top 3/32 Bottom 5/8

Working pressure of furnace by the rules 224 Combustion chamber plates: Material Steel Thickness: Sides 3/32 Back 5/8 Top 3/32 Bottom 5/8

of stays to ditto: Sides 9 1/4 x 7 1/2 Back 8 1/2 x 8 Top 10 x 7 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 195 lbs

Material of stays Steel Diameter at smallest part 1.73 Area supported by each stay 72.5 Working pressure by rules 196 End plates in steam space

Material Steel Thickness 1 1/2" Pitch of stays 20 x 17 How are stays secured Nuts Working pressure by rules 184 lbs Material of stays Steel

Diameter at smallest part 7.02 Area supported by each stay 340 Working pressure by rules 215 Material of Front plates at bottom Steel

Thickness 1 1/2" Material of Lower back plate Steel Thickness 7/8 Greatest pitch of stays 14 1/2 x 8 Working pressure of plate by rules 193

Diameter of tubes 3" Pitch of tubes 4 1/2 x 4 1/2 Material of tube plates Steel Thickness: Front 3/32 Back 3/32 Mean pitch of stays 10 5/8"

Pitch across wide water spaces 14 Working pressures by rules 183 lbs Girders to Chamber tops: Material Steel Depth and

thickness of girder at centre 9 x 1 1/4 Length as per rule 2-7 5/8 Distance apart 10 Number and pitch of stays in each 3 @ 7"

Working pressure by rules 196 Superheater on Steam chest; how connected to boiler By pipes Can the superheater be shut off and the boiler worked

separately yes Diameter See plans 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 yes

W1020-0175

Lloyd's Register
Foundation

IS A DONKEY BOILER FITTED? *No*

If so, is a report now forwarded? ☒

SPARE GEAR. State the articles supplied: *Two bolts & nuts of each size fitted for Turbines & Gearing. One set of coupling bolts & nuts. One set of feed & bilge pump valves. One feed pump steam valve chest complete. One set of main Turbine bearing bushes of each size complete. One set of pinion shaft bushes of each size complete. One valve chest complete for steam end of air pump. One air pump rod. One propeller shaft. Assorted bolts & nuts etc.*

The foregoing is a correct description,
for and on behalf of
RICHARDSON'S WESTBART & Co., Ltd.
Edm. Brown,
Manufacturer.

Dates of Survey while building
During progress of work in shops - *1914. Sep 22. Oct 3. 12. 22. 30. Nov. 4. 10. 13. 18. 23. 27. Dec. 1. 2. 10. 14. 15. 22. 23. 30. 1915. Jan 7. 12. 13. 18. 25. 26. Feb. 1. 2. 8. 16. 17. 19. 23. 24. 26. Mar 4. 5. 11. 15. 16. 17. 23. 25. 26. 29. 30. Apr. 1. 7. 8. 9. 12. 15. 20. 22. 23. 27. 28. 29. 30. May 3. 6. 11. 12. 14. 17. 20. 28. Jun 9. 15. 18. Jul 5. 12. Aug. 9. 23. 25. 30. Sep. 2. 10. 14. 15. 21. 22. 24. 27. 30. Oct. 4. 6. 9. 11. 13. 19. 22. 27. 28. Nov. 8. 17. 22. 26. Dec. 3. 10. 14. 20. 1916. Jan 5. 11. 12. 13. 18. 19. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Feb. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Mar 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Apr. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. May 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Jun 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Jul 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Aug. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Sep. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Oct. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Nov. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Dec. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31.*
During erection on board vessel - *23. 25. 30. Sep. 2. 10. 14. 15. 21. 22. 24. 27. 30. Oct. 4. 6. 9. 11. 13. 19. 22. 27. 28. Nov. 8. 17. 22. 26. Dec. 3. 10. 14. 20. 1916. Jan 5. 11. 12. 13. 18. 19. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Feb. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Mar 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Apr. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. May 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Jun 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Jul 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Aug. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Sep. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Oct. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Nov. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. Dec. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31.*
Total No. of visits *109*

Is the approved plan of main boiler forwarded herewith *yes*

Dates of Examination of principal parts - Cylinders ☒ Slides ☒ Covers ☒ Pistons ☒ Rods ☒
Connecting rods ☒ Crank shaft ☒ Thrust shaft *8. 4. 15* Tunnel shafts *2. 9. 15* Screw shaft *22. 4. 15* Propeller *26. 3. 15*
Stern tube *7. 4. 15* Steam pipes tested *24. 9. 15 to 27. 11. 15* Engine and boiler seatings *12. 4. 15* Engines holding down bolts *17. 11. 15*
Completion of pumping arrangements *12. 1. 16* Boilers fixed *13. 10. 15* Engines tried under steam *12. 1. 16*
Main boiler safety valves adjusted *11. 1. 16* Thickness of adjusting washers *ACB AV $\frac{3}{8}$ FV $\frac{3}{8}$ Super V $\frac{3}{8}$ ASB AV $\frac{3}{8}$ FV $\frac{3}{8}$ Super V $\frac{3}{8}$ APB AV $\frac{7}{8}$ FV $\frac{13}{32}$ Super V $\frac{19}{32}$*
Material of Crank shaft ☒ Identification Mark on Do. ☒ Material of Thrust shaft *Steel* Identification Mark on Do. *889N. W. JK*
Material of Tunnel shafts *Steel* Identification Marks on Do. *517, 154, 285, 221, 223, 627, 245 J.P. JK.* Material of Screw shafts *Steel* Identification Marks on Do. *155 J.P. JK.*
Material of Steam Pipes *Wrot. Iron lap welded* Test pressure *540 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. See also *Hartlepool Rpt. N: 15/164.*)
The Engines and Boilers of this vessel have been constructed under Special Survey, are of good material and workmanship and have been fitted and secured on board in accordance with the Rules. They are now in good working condition and in my opinion eligible to have the notation of +LMC 1.16 in the Register Book.

It is submitted that
this vessel is eligible for
THE RECORD + LMC 1.16. F.D.
4 Steam Turbines geared to 2 Screw Shafts.

The amount of Entry Fee ... £ *3* : : : When applied for, *17/1/1916.*
2/3 Special ... £ *47* : *3* : *4*
Donkey Boiler Fee ... £ *23* : *11* : *8*
Travelling Expenses (if any) £ : : : When received, *25. 2. 1916. 24/2/16*

J. Kerr
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute *TUE.-8.FEB. 1916*
Assigned *+ Lmb 1.16*
F.D.