

# REPORT ON MACHINERY.

Port of Belfast

Belfast No. 21710  
 Date 15/5/1897  
 MON 10 MAY 1897

No. in Survey held at Belfast Date, first Survey 6<sup>th</sup> May 1896 Last Survey Feb 22<sup>nd</sup> 1897  
 Reg. Book. 28452  
 on the Steel Twin Screw Steamer "Kamakura Maru" Tons { Gross 1172 Net 1274  
 Master W. R. M. Clark Built at Belfast By whom built W. R. M. Clark & Co. Ltd. When built 1894  
 Engines made at Glasgow By whom made Barelay, Curle & Co. Ltd. when made 1894  
 Boilers made at Belfast By whom made W. R. M. Clark & Co. Ltd. when made 1894  
 Registered Horse Power 554 Owners Nippon Yusen Kaisha Port belonging to Sokai  
 Horse Power as per Section 28 554

ES, &c.— Description of Engines (Twin Screw Triple Expansion) No. of Cylinders (Six)  
 Diameter of Cylinders (20" 33 1/2" 56") Length of Stroke (48") Revolutions per minute 90 Diameter of Screw shaft as per rule 11 1/2"  
 Diameter of Tunnel shaft as fitted 12" Diameter of Crank shaft journals (12 1/2") Diameter of Crank pin 12 1/2" Size of Crank webs 8 1/2" x 24" x 22 1/2" etc.  
 Diameter of screws 15" 0" Pitch of screws 14" 6" No. of blades 4 State whether moveable Yes Total surface 71 sq ft  
 No. of Feed pumps Two Diameter of ditto 5" Stroke 24" Can one be overhauled while the other is at work Yes  
 No. of Bilge pumps Two Diameter of ditto 5" Stroke 24" Can one be overhauled while the other is at work Yes  
 No. of Donkey Engines Four Sizes of Pumps See other side No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room No 1 hold, two 3 1/2" diam. No 2 hold, two 3 1/2" diam. No 3 hold, two 3 1/2" diam. No 4 hold, two 3 1/2" diam. No 5 hold, two 3 1/2" diam. No 6 hold, two 3 1/2" diam. No 7 hold, two 3 1/2" diam.  
 No. of bilge injections 2 sizes 4" Connected to condenser, or to circulating pump Yes Is a separate donkey suction fitted in Engine room & size See 3 1/2"  
 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 None  
 Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Larger valves; smaller cocks  
 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  
 Are pipes carried through the bunkers Forward bilge suction How are they protected Strong wooden 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  
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock Before launch Is the screw shaft tunnel watertight Yes  
 Is it fitted with a watertight door Yes worked from Deck level

WILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 9241 sq ft  
 No. and Description of Boilers Two double & two single ended Working Pressure 200 lbs Tested by hydraulic pressure to 400 lbs  
 Date of test 4.12.96 & 6.11.96 Can each boiler be worked separately Yes Area of fire grate in each boiler 104.5 sq ft No. and Description of safety valves to each boiler Two, Cockburn's Area of each valve 9.62 sq ft Pressure to which they are adjusted 200 lbs Are they fitted with easing gear Yes Smallest distance between boilers or uptakes and bunkers or woodwork Several feet Mean diameter of boilers 13' 6"  
 Length of shell plates 14' 0" 16' 0" Material of shell plates Steel Thickness 1 1/8" Description of riveting: circum. seams Middle, toe, long. seams Double strap  
 Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10" x 5" Lap of plates or width of butt straps 21 1/4"  
 Percentages of strength of longitudinal joint 91.6 Working pressure of shell by rules 220 lbs Size of manhole in shell 16" x 12"  
 Size of compensating ring 2' 8" x 2' 4" x 1 1/2" No. and Description of Furnaces in each boiler See description Material Steel Outside diameter 14 1/4"  
 Length of plain part 5' 8" Thickness of plates 5/8" Description of longitudinal joint Welded No. of strengthening rings 1  
 Working pressure of furnace by the rules 237 Combustion chamber plates: Material Steel Thickness: Sides 3/8" Back 3/8" Top 3/8" Bottom 3/4"  
 Pitch of stays to ditto: Sides 7 1/8" Back 7 1/8" Top 7 1/8" If stays are fitted with nuts or riveted heads None Working pressure by rules 266 lbs  
 Material of stays Steel Diameter at smallest part 1 3/8" Area supported by each stay 50.7 Working pressure by rules 233 1/2 End plates in steam space: Material Steel Thickness 1 1/8" Pitch of stays 15" max How are stays secured As per rule Working pressure by rules 237 1/2 Material of stays Steel  
 Diameter at smallest part 2 1/2" Area supported by each stay 194 max Working pressure by rules 223 Material of Front plates at bottom Steel  
 Thickness 1" Material of Lower back plate Steel Thickness 3/32" Greatest pitch of stays As above Working pressure of plate by rules 200 lbs  
 Diameter of tubes 3 1/4" Pitch of tubes 11 1/2" x 11 1/4" Material of tube plates Steel Thickness: Front 29/32" Back 13/16" Mean pitch of stays 8 7/8"  
 Pitch across wide water spaces 14 1/4" Working pressures by rules 200 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9" 1/4" x 5.2" Length as per rule 3' 4" 1/2" Distance apart 7 1/8" Number and pitch of Stays in each Four at 7 1/8" 18"  
 Working pressure by rules 200 lbs Superheater or Steam chest; how connected to boiler Can the superheater be shut off and the boiler worked separately  
 Diameter 14" Length 14" Thickness of shell plates 5/8" Material Steel Description of longitudinal joint Welded Diam. of rivet 1 1/2"  
 Pitch of rivets 10" Working pressure of shell by rules 220 lbs Diameter of flue 14" Material of flue plates Steel Thickness 5/8"  
 Stiffened with rings Yes Distance between rings 14" Working pressure by rules 220 lbs End plates: Thickness 1" How stayed As per rule  
 Working pressure of end plates 200 lbs Area of safety valves to superheater See other side Are they fitted with easing gear Yes



Port of Glasgow Continuation of Report No. 15/64 dated July on the

Port of Glasgow Continuation of Report No. 15164 dated July on the  
S. S. Twin Steamer "Kamakura Maru"

In consequence of some vibration of the Engines when running at full power Trials with vessel light. Cast iron bracket pieces have been fitted between the Columns near the top, both at back & front with the view of stiffening the Engines at that part.

James Morrison

The foregoing is a correct description, so far as finished in Belfast.  
 and **WORKMAN, CLARK & CO., LIMITED** Manufacturer.  
 W. A. Bell. *Manufacturers of Engines*  
 William F. Borrowman

Dates of Survey while building	During progress of work in shops -	May 6 <sup>th</sup> 28 <sup>th</sup> June 9. 17 July 2. 7. 23 Aug 11. 13. 14. 24. Section
	During erection on board vessel -	October 6. Nov. 6. 10. 17. 23. 30. Dec 1. 4. 9. 14. Jan 13. 18. 19. 25. Feb 11. 2
	Total No. of visits	28 <sup>th</sup> 1896 Glasgow 1896, Sept 21. 24. 29. Oct 9. 10. 12. 14. 22. 30. 31. Nov 23. 26. Dec 3. 5. 11. 19. 24. 26. 28. 1897 Jan 12. 15. 16. 18. 21. 25. 27. 30. Feb 1. 3. 11. 14. 22. 23. 26. March 1. 23. 30. 31. 1897 Apr 6. 14. 21. 28. 1897 May 5. 12. 19. 26. 1897 June 2. 9. 16. 23. 30. 1897 July 7. 14. 21. 28. 1897 Aug 4. 11. 18. 25. 1897 Sept 1. 8. 15. 22. 29. 1897 Oct 6. 13. 20. 27. 1897 Nov 3. 10. 17. 24. 1897 Dec 1. 8. 15. 22. 29. 1898 Jan 5. 12. 19. 26. 1898 Feb 2. 9. 16. 23. 1898 Mar 6. 13. 20. 27. 1898 Apr 3. 10. 17. 24. 1898 May 1. 8. 15. 22. 1898 Jun 5. 12. 19. 26. 1898 Jul 3. 10. 17. 24. 1898 Aug 7. 14. 21. 28. 1898 Sep 4. 11. 18. 25. 1898 Oct 2. 9. 16. 23. 1898 Nov 6. 13. 20. 27. 1898 Dec 4. 11. 18. 25. 1899 Jan 1. 8. 15. 22. 1899 Feb 5. 12. 19. 26. 1899 Mar 2. 9. 16. 23. 1899 Apr 6. 13. 20. 27. 1899 May 4. 11. 18. 25. 1899 Jun 1. 8. 15. 22. 1899 Jul 6. 13. 20. 27. 1899 Aug 3. 10. 17. 24. 1899 Sep 7. 14. 21. 28. 1899 Oct 5. 12. 19. 26. 1899 Nov 2. 9. 16. 23. 1899 Dec 6. 13. 20. 27. 1900 Jan 3. 10. 17. 24. 1900 Feb 7. 14. 21. 28. 1900 Mar 4. 11. 18. 25. 1900 Apr 1. 8. 15. 22. 1900 May 6. 13. 20. 27. 1900 Jun 3. 10. 17. 24. 1900 Jul 7. 14. 21. 28. 1900 Aug 4. 11. 18. 25. 1900 Sep 1. 8. 15. 22. 1900 Oct 6. 13. 20. 27. 1900 Nov 3. 10. 17. 24. 1900 Dec 7. 14. 21. 28. 1901 Jan 4. 11. 18. 25. 1901 Feb 1. 8. 15. 22. 1901 Mar 5. 12. 19. 26. 1901 Apr 2. 9. 16. 23. 1901 May 6. 13. 20. 27. 1901 Jun 3. 10. 17. 24. 1901 Jul 7. 14. 21. 28. 1901 Aug 4. 11. 18. 25. 1901 Sep 1. 8. 15. 22. 1901 Oct 6. 13. 20. 27. 1901 Nov 3. 10. 17. 24. 1901 Dec 7. 14. 21. 28. 1902 Jan 4. 11. 18. 25. 1902 Feb 1. 8. 15. 22. 1902 Mar 5. 12. 19. 26. 1902 Apr 2. 9. 16. 23. 1902 May 6. 13. 20. 27. 1902 Jun 3. 10. 17. 24. 1902 Jul 7. 14. 21. 28. 1902 Aug 4. 11. 18. 25. 1902 Sep 1. 8. 15. 22. 1902 Oct 6. 13. 20. 27. 1902 Nov 3. 10. 17. 24. 1902 Dec 7. 14. 21. 28. 1903 Jan 4. 11. 18. 25. 1903 Feb 1. 8. 15. 22. 1903 Mar 5. 12. 19. 26. 1903 Apr 2. 9. 16. 23. 1903 May 6. 13. 20. 27. 1903 Jun 3. 10. 17. 24. 1903 Jul 7. 14. 21. 28. 1903 Aug 4. 11. 18. 25. 1903 Sep 1. 8. 15. 22. 1903 Oct 6. 13. 20. 27. 1903 Nov 3. 10. 17. 24. 1903 Dec 7. 14. 21. 28. 1904 Jan 4. 11. 18. 25. 1904 Feb 1. 8. 15. 22. 1904 Mar 5. 12. 19. 26. 1904 Apr 2. 9. 16. 23. 1904 May 6. 13. 20. 27. 1904 Jun 3. 10. 17. 24. 1904 Jul 7. 14. 21. 28. 1904 Aug 4. 11. 18. 25. 1904 Sep 1. 8. 15. 22. 1904 Oct 6. 13. 20. 27. 1904 Nov 3. 10. 17. 24. 1904 Dec 7. 14. 21. 28. 1905 Jan 4. 11. 18. 25. 1905 Feb 1. 8. 15. 22. 1905 Mar 5. 12. 19. 26. 1905 Apr 2. 9. 16. 23. 1905 May 6. 13. 20. 27. 1905 Jun 3. 10. 17. 24. 1905 Jul 7. 14. 21. 28. 1905 Aug 4. 11. 18. 25. 1905 Sep 1. 8. 15. 22. 1905 Oct 6. 13. 20. 27. 1905 Nov 3. 10. 17. 24. 1905 Dec 7. 14. 21. 28. 1906 Jan 4. 11. 18. 25. 1906 Feb 1. 8. 15. 22. 1906 Mar 5. 12. 19. 26. 1906 Apr 2. 9. 16. 23. 1906 May 6. 13. 20. 27. 1906 Jun 3. 10. 17. 24. 1906 Jul 7. 14. 21. 28. 1906 Aug 4. 11. 18. 25. 1906 Sep 1. 8. 15. 22. 1906 Oct 6. 13. 20. 27. 1906 Nov 3. 10. 17. 24. 1906 Dec 7. 14. 21. 28. 1907 Jan 4. 11. 18. 25. 1907 Feb 1. 8. 15. 22. 1907 Mar 5. 12. 19. 26. 1907 Apr 2. 9. 16. 23. 1907 May 6. 13. 20. 27. 1907 Jun 3. 10. 17. 24. 1907 Jul 7. 14. 21. 28. 1907 Aug 4. 11. 18. 25. 1907 Sep 1. 8. 15. 22. 1907 Oct 6. 13. 20. 27. 1907 Nov 3. 10. 17. 24. 1907 Dec 7. 14. 21. 28. 1908 Jan 4. 11. 18. 25. 1908 Feb 1. 8. 15. 22. 1908 Mar 5. 12. 19. 26. 1908 Apr 2. 9. 16. 23. 1908 May 6. 13. 20. 27. 1908 Jun 3. 10. 17. 24. 1908 Jul 7. 14. 21. 28. 1908 Aug 4. 11. 18. 25. 1908 Sep 1. 8. 15. 22. 1908 Oct 6. 13. 20. 27. 1908 Nov 3. 10. 17. 24. 1908 Dec 7. 14. 21. 28. 1909 Jan 4. 11. 18. 25. 1909 Feb 1. 8. 15. 22. 1909 Mar 5. 12. 19. 26. 1909 Apr 2. 9. 16. 23. 1909 May 6. 13. 20. 27. 1909 Jun 3. 10. 17. 24. 1909 Jul 7. 14. 21. 28. 1909 Aug 4. 11. 18. 25. 1909 Sep 1. 8. 15. 22. 1909 Oct 6. 13. 20. 27. 1909 Nov 3. 10. 17. 24. 1909 Dec 7. 14. 21. 28. 1910 Jan 4. 11. 18. 25. 1910 Feb 1. 8. 15. 22. 1910 Mar 5. 12. 19. 26. 1910 Apr 2. 9. 16. 23. 1910 May 6. 13. 20. 27. 1910 Jun 3. 10. 17. 24. 1910 Jul 7. 14. 21. 28. 1910 Aug 4. 11. 18. 25. 1910 Sep 1. 8. 15. 22. 1910 Oct 6. 13. 20. 27. 1910 Nov 3. 10. 17. 24. 1910 Dec 7. 14. 21. 28. 1911 Jan 4. 11. 18. 25. 1911 Feb 1. 8. 15. 22. 1911 Mar 5. 12. 19. 26. 1911 Apr 2. 9. 16. 23. 1911 May 6. 13. 20. 27. 1911 Jun 3. 10. 17. 24. 1911 Jul 7. 14. 21. 28. 1911 Aug 4. 11. 18. 25. 1911 Sep 1. 8. 15. 22. 1911 Oct 6. 13. 20. 27. 1911 Nov 3. 10. 17. 24. 1911 Dec 7. 14. 21. 28. 1912 Jan 4. 11. 18. 25.

The following are the auxiliary pumps fitted in the engine room:-

Carruthers duplex ballast pump 9" cy x 12" pump x 10" stroke

Carruthers duplex Engine Run doubley  $5\frac{1}{4} \times 3\frac{1}{2} \times 5$

Cassatt's duplex Engine Rm double 7" x 5" x 6"

'Weiss' duplex feed pumps 12" x 9" x 21"

A 30 ton 'Weiss' evaporator & a 'Weiss' feed heater are fitted.

Two 10" "Bon accord" Drysdale Centrifugal circulating pumps are fitted

The vessel left here on the 22<sup>nd</sup> Feb. for Glasgow to have her engine there fitted on board by Messrs Barclay, Curle & Co. Ltd.

The approved photoprints of the boiler & a tracing & photoprint of pumping arrangements accompany this report. (4 plans)

The Electric Lighting installation is being fitted by Messrs W. C. Masters of Glasgow.

The vessel will in my opinion be eligible for the notification + *IMC* <sup>cert</sup> date when the engines & their connections have been satisfactorily fitted on board. The Engines of this vessel have been made by Barclay Currie.

Certificate (if required) to be sent to Col. Ltd. the Workmanship & Materials are of good quality  
They have been satisfactorily completed and found to be  
the units of Clyde tender will power, in my  
opinion fit for propulsion as indicated

The amount of Entry Fee. . . £ 3: 0: When applied for, 1914  
 Special . . . . £ 47: 14: 1914  
 Donkey Boiler Fee . . . . £ 17: 6: 20  
 Travelling Expenses (if any) £ 17: 6: 20

MACHINERY CERTIFICATE  
 WRITTEN: 17: 6: 20  
James William A. W. Jones  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping  
It is submitted that

*Committee's Minute* FRI. 14 MAY 1897

Assigned + Lm 6.5-97

It is submitted that  
this vessel is eligible for  
THE RECORD. + L. H. B 5.97 Elic. Lp

95  
11/5/97