

## REPORT ON MACHINERY.

No. 1065.

Port of NAGASAKI.

Received at London Office TUE 20 JUN. 1916

No. in Survey held at NAGASAKI.

Date, first Survey 19<sup>th</sup> June 1915 Last Survey 4<sup>th</sup> May 1916

Reg. Book.

on the

s.s. "Akita Maru"

(Number of Voids 115)

Gross 3792

Net 2347

When built 1916

Master U. Tanaka Built at Nagasaki By whom built Mitsubishi S. S. Works.

Engines made at Nagasaki By whom made Mitsubishi Dockyard &amp; Engine Works when made 1916

Boilers made at Nagasaki By whom made Do. when made 1916

Registered Horse Power Owners Nippon Yusen Kaisha Port belonging to Tokio

Nom. Horse Power as per Section 28 342 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes.

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 23" 38" 64" Length of Stroke 48" Revs. per minute 86 Dia. of Screw shaft as per rule 14.5" Material of screw shaft as fitted 15" steel

Is the screw shaft fitted with a continuous liner the whole length of the stern tube No liner fitted Is the after end of the liner made water tight in the propeller boss 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' 13"

Dia. of Tunnel shaft as per rule 12.49" Dia. of Crank shaft journals as per rule 13.116" Dia. of Crank pin 14" Size of Crank webs 8 3/4" x 19 5/8" Dia. of thrust shaft under collars 13 1/2" Dia. of screw 16' 6" Pitch of Screw 17' 3" No. of Blades 4 State whether moveable Yes Total surface 84' 4 sq. ft.

No. of Feed pumps 2 Diameter of ditto 4 1/2" Stroke 22" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 24" Can one be overhauled while the other is at work Yes

No. of Donkey Engines 3 Sizes of Pumps 7 x 12 x 10 7 x 5 x 7 No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room 3 e 3 1/2" In Holds, &c. No. 1 Hold 2 e 3 1/2" No. 2 Hold 2 e 3 1/2" No. 3 Hold 2 e 3 1/2" No. 4 Hold 2 e 3 1/2" Tunnel 1 e 2 1/2"

No. of Bilge Injections 1 sizes 8" Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine room & size Yes 5"

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 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 Bilge pipes How are they protected With steel plates

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 18<sup>th</sup> March 1916 of Stern Tube 16<sup>th</sup> March 1916 Screw shaft and Propeller 18<sup>th</sup> March 1916

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

OILERS, &amp;c.—(Letter for record S) Manufacturers of Steel Stewart &amp; Lloyd's Ltd.

Total Heating Surface of Boilers 4394 sq. ft. Is Forced Draft fitted Yes No. and Description of Boilers 2 Single ended, Scotch

Working Pressure 200 lbs. Tested by hydraulic pressure to 400 lbs. Date of test 17<sup>th</sup> Feb. 1916 No. of Certificate 65

Can each boiler be worked separately Yes Area of fire grate in each boiler 54.31 sq. ft. No. and Description of Safety Valves to each boiler 2 Spring loaded Area of each valve 9.62 sq. in. Pressure to which they are adjusted 205 lbs. Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 16 1/2" Mean dia. of boilers 14' 0" Length 11' 6" Material of shell plates Steel

Thickness 1 5/16" Range of tensile strength 28532 lbs. Are the shell plates welded or flanged No. Descrip. of riveting: cir. seams Double Lap.

mg. seams 2 straps Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 9 1/2" x 2 1/2" Lap of plates or width of butt straps 20 1/2"

Per centages of strength of longitudinal joint rivets 88.6 plate 85.5 Working pressure of shell by rules 212 lbs. Size of manhole in shell 16" x 12"

Size of compensating ring 37" x 33" No. and Description of Furnaces in each boiler Suspension type Material Steel Outside diameter 3' 9 1/2"

Length of plain part top Thickness of plates crown 9 1/16" Description of longitudinal joint Welded No. of strengthening rings

Working pressure of furnace by the rules 217 lbs. Combustion chamber plates: Material Steel Thickness: Sides 3/4" Back 3/4" Top 3/4" Bottom 1 5/16"

Pitch of stays to ditto: Sides 11" x 8" Back 9 1/2" x 9" Top 9 1/2" x 7" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 233 lbs.

Material of stays Steel Diameter at smallest part 1' 7 3/8" Area supported by each stay 91 sq. in. Working pressure by rules 212 lbs. End plates in steam space:

Material Steel Thickness 1 9/32" Pitch of stays 20" x 18" How are stays secured Double nuts Working pressure by rules 214 lbs. Material of stays Steel

Diameter at smallest part 3 3/8" Area supported by each stay 360 sq. in. Working pressure by rules 221 lbs. Material of Front plates at bottom Steel

Thickness 3 1/2" Material of Lower back plate Steel Thickness 3 1/2" Greatest pitch of stays 1' 1 3/4" Working pressure of plate by rules 221 lbs.

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

Pitch across wide water spaces 1' 1 3/4" Working pressures by rules 216 lbs. Girders to Chamber tops: Material Steel Depth and

thickness of girder at centre 10 1/2" x 7 1/2" Length as per rule 31.9" Distance apart 9 3/4" Number and pitch of stays in each 3 e 7"

Working pressure by rules 214 lbs. Superheater or Steam chest; how connected to boiler By pipe Can the superheater be shut off and the boiler worked

separately Yes Diameter Length Thickness of shell plates Material Steel 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 3.14 sq. in. Are they fitted with easing gear No.



VERTICAL DONKEY BOILER— Manufacturers of Steel

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  
 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:— As per Rule and in addition 1 crank shaft, 1 Propeller shaft, 2 Propeller blades, 1 Valve spindle, 2 Eccentric rods, 1 pair of Connecting rod brasses, 1 pair Crosshead brasses, 13 Junk ringbolts, 45 Condenser tubes, 12 Boiler tubes, 1 set valves & seats for check valves, 1 set Air pump valves, 1 set valves for Air pumps, 1 Air pump rod, 1 Centrifugal pump spindle.

The foregoing is a correct description,  
 MITSUBISHI DOCKYARD & ENGINE WORKS  
 General Manager. Manufacturer.

Dates of Survey while building  
 During progress of work in shops— 28. Sept. 1. 2. 10. 11. 14. 16. 17. 18. 20. 21. 22. 25. 29. 30. Oct. 1. 4. 5. 6. 11. 12. 16. 19. 20. 21. 29. Nov. 1. 3. 4. 8. 20. 22. 24. 27. 30.  
 During erection on board vessel— 16. 18. 20. 23. 25. 28. 29. 31. April 1. 4. 6. 8. 11. 12. 13. 15. 17. 18. 19. 20. 22. 29. May 4.  
 Total No. of visits 115

Is the approved plan of main boiler forwarded herewith Yes ✓  
 " " " donkey " " " ✓

Dates of Examination of principal parts—Cylinders 11<sup>th</sup> Mar. 1916 Slides 18<sup>th</sup> Mar. 1916 Covers 19<sup>th</sup> Mar. 1916 Pistons 19<sup>th</sup> Mar. 1916 Rods 19<sup>th</sup> Mar. 1916  
 Connecting rods 18<sup>th</sup> Mar. 1916 Crank shaft 16<sup>th</sup> Oct. 1915 Thrust shaft 30<sup>th</sup> Sept. 1915 Tunnel shafts 19<sup>th</sup> Oct. 1915 Screw shaft 5<sup>th</sup> Feb. 1916 Propeller 11<sup>th</sup> Mar. 1916  
 Stern tube 14<sup>th</sup> Mar. 1916 Steam pipes tested 19<sup>th</sup> April 1916 Engine and boiler seatings 16<sup>th</sup> Mar. 1916 Engines holding down bolts 25<sup>th</sup> Mar. 1916  
 Completion of pumping arrangements 12<sup>th</sup> April 1916 Boilers fixed 29<sup>th</sup> March 1916 Engines tried under steam 29<sup>th</sup> April 1916  
 Main boiler safety valves adjusted 24<sup>th</sup> April 1916 Thickness of adjusting washers Jam nut  
 Material of Crank shaft Steel Identification Mark on Do. No. 120 A.S.W. Material of Thrust shaft Steel Identification Mark on Do. No. 120 A.S.W.  
 Material of Tunnel shafts Steel Identification Marks on Do. No. 120 A.S.W. Material of Screw shafts Steel Identification Marks on Do. No. 120 A.S.W.  
 Material of Steam Pipes Solid drawn steel ✓ Test pressure 600 lbs. per sq. in. ✓

General Remarks (State quality of workmanship, opinions as to class, &c. Boilers fitted with Eassey Superheaters, and a safety valve fitted to each one. The headers, superheater pipes, and all steam pipes subjected to the temperature of the superheated steam have been made of steel, and all stop valves, junction pieces &c. subjected to the temperature of the superheated steam have been made of cast steel. All the steel castings have been tested as required by the Rules. The headers and superheater pipes were tested by hydraulic pressure to 1000 lbs. per sq. in., and the steam pipes, stop valves, junction pieces &c. to 600 lbs. per sq. in. and found satisfactory.

These Engines and Boilers have been constructed under Special Survey, in accordance with the Rules, and of good materials and workmanship. They have been securely fitted on board, and have been satisfactorily tried under steam. The Machinery of this vessel is eligible, in my opinion, for the record LMC 5.16 in the Register Book.

Mean speed of 6 Runs on Trial when 1/3<sup>rd</sup> Loaded = 13.969 knots.

It is submitted that this vessel is eligible for THE RECORD + LMC 5.16. F.L.

The amount of Entry Fee.. £ 3 : 0 :  
 Special .. £ 55 : 13 : 0  
 Donkey Boiler Fee .. £ : :  
 Travelling Expenses (if any) £ : :  
 When applied for, 19<sup>th</sup> May 1916  
 When received, 20<sup>th</sup> May 1916

a.s. Williamson  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute

TUE. JUN. 27. 1916

Assigned

+ L. Mc 5.16 J.D