Rpt. 4.

REPORT ON MACHINERY. No. 826.

MON. JUN. 23. 1913

Port of NAGASAKI. Received at London Office 19

No. in Reg. Book. Survey held at NAGASAKI. Date, first Survey 8th Febr. 1912 Last Survey 7th June 1913 (Number of Visits 182)

on the Twin geared turbine s.s. "Anyo Maru" Tons Gross 9534 Net 5911

Master T. Ota Built at Nagasaki By whom built Mitsu Bishi Dockyard & Engine Works When built 1913

Engines made at Nagasaki By whom made Mitsu Bishi Dockyard & Engine Works when made 1913

Boilers made at Nagasaki By whom made Mitsu Bishi Dockyard & Engine Works when made 1913

Registered Horse Power Owners Toyo Kisen Kaisha Port belonging to Yokohama

Nom. Horse Power as per Section 28 1157.5 not for Reg. BK. Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes.

ENGINES, &c.—Description of Engines Parson's Geared Turbines, Two Screws No. of ~~Cylinders~~ Turbines 4 No. of Cranks ✓

Dia. of ~~Cylinders~~ Turbines See next page Length of Stroke ✓ Revs. per minute H.P.T. 2057 L.P.T. 1800 Shaft 100 Dia. of Screw shaft as per rule 14.983 as fitted 15.75 Material of screw shaft Forged 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'-6 1/8"

Dia. of Tunnel shaft as per rule 13.3 as fitted 13.5 Dia. of ~~Crank~~ Rotor shaft journals H.P. as per rule 6 1/2" as fitted 6 1/2" L.P. as per rule 6 1/2" as fitted 6 1/2" Dia. of Crank pin ✓ Size of Crank webs ✓ Dia. of thrust shaft under collars 14.25 Dia. of screw 16'-0" Pitch of Screw 17'-0" No. of Blades 4 State whether moveable Yes Total surface 75.85 sq. ft. each

No. of Feed pumps 3 Sets Simplex Diameter of ditto 12 1/2" × 9" Stroke 24" Can one be overhauled while the other is at work Yes.

No. of Bilge pumps 2 Sets Duplex Diameter of ditto 6 1/2" × 6 1/2" Stroke 6" Can one be overhauled while the other is at work Yes.

No. of Donkey Engines 5 Sets Duplex Sizes of Pumps 1- 12 1/2" × 8" × 10", 1- 9" × 12" × 10" 1- 8" × 10" × 8", 2- 6 1/2" × 6 1/2" × 6" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 3 @ 3 1/2" In Boiler Rooms 2 @ 3 1/2" In Holds, &c. 2 @ 3 1/2" in each hold, 4 @ 3 1/2" in Bunkers 1 @ 3 1/2" in Tunnel

No. of Bilge Injections 2 sizes 7" Connected to condenser, or to circulating pump Circulating 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 All values except blow off 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.

What pipes are carried through the bunkers Bilge & Ballast pipes. How are they protected Strong wood casing covered with sheet steel.

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 25th Janr. 1913 of Stern Tube 10th Janr. 1913 Screw shaft and Propeller 22nd April 1913

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

BOILERS, &c.—(Letter for record S) Manufacturers of Steel David Colville & Sons, Lanarkshire Steel Co., Rivet, Bolt & Nut Co., Leeds Forge Co., Charles McNeil, Stewarts & Lloyds

Total Heating Surface of Boilers 12065 sq. ft. Is Forced Draft fitted Yes. No. and Description of Boilers 5 Single ended Scotch

Working Pressure 200 lbs. Tested by hydraulic pressure to 400 lbs. Date of test 30th Aug. 1912 No. of Certificate 524

Can each boiler be worked separately Yes. Area of fire grate in each boiler 57.75 sq. ft. No. and Description of Safety Valves to each boiler Two Spring loaded Area of each valve 9.62 □" 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 Uptake & Boiler & Bunker 19" 15" Mean dia. of boilers 14'-6" Length 11'-6" Material of shell plates Steel

Thickness 1 3/8" Range of tensile strength 28 & 32 tons Are the shell plates welded or flanged No. Descrip. of riveting: cir. seams Double riveted lap. long. seams Treble riveted two straps Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10" & 5" Lap of plates or width of butt straps 22"

Per centages of strength of longitudinal joint rivets 95.6 plate 85.0 Working pressure of shell by rules 215 lbs. Size of manhole in shell 16" × 12"

Size of compensating ring 36 1/2" × 32 1/2" × 1 3/8" No. and Description of Furnaces in each boiler 3 Morisons Material Steel Outside diameter 46 1/4"

Length of plain part top ✓ bottom ✓ Thickness of plates crown 24" bottom 32 Description of longitudinal joint Welded No. of strengthening rings None.

Working pressure of furnace by the rules 231 lbs. Combustion chamber plates: Material Steel Thickness: Sides 11/16" Back 11/16" Top 11/16" Bottom 15/16"

Pitch of stays to ditto: Sides 7 1/2" × 10" Back 8 1/2" × 8 7/8" Top 9" × 8 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 209 lbs.

Material of stays Steel Diameter at smallest part 1.6" Area supported by each stay 75.5 sq. ft. Working pressure by rules 246 lbs. End plates in steam space:

Material Steel Thickness 1 7/32" Pitch of stays 17 1/2" × 19" How are stays secured Double nuts & Washers Working pressure by rules 211 lbs. Material of stays Steel

Diameter at smallest part 3" Area supported by each stay 325.5 sq. ins. Working pressure by rules 223 lbs. Material of Front plates at bottom Steel

Thickness 3/4" Material of Lower back plate Steel Thickness 3/4" Greatest pitch of stays 8 1/2" × 8 7/8" Working pressure of plate by rules 257 lbs.

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

Pitch across wide water spaces 13.5" Working pressures by rules 222 lbs. Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 10" × 7/8" double Length as per rule 2'-5 13/16" Distance apart 8 1/2" Number and pitch of stays in each 2 @ 9"

Working pressure by rules 352 lbs. Superheater or Steam chest; how connected to boiler ✓ 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 ✓

If not, state whether, and when, one will be sent? Yes.

Is a Report also sent on the Hull of the Ship? Yes.

1m,4,8—T.

~~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* *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:—* As per Rule, and in addition, one propeller shaft, 4 propeller blades, one complete set of main bearing brasses for one set of turbines and gear wheels, one set of pinions for gearing, one air pump rod & complete set of valves & seats, one circulating pump spindle, 135 condenser tubes, 54 boiler tubes, 5 safety valve springs, and spare parts for all auxilliary engines.

The foregoing is a correct description,

MITSU BISHI DOCKYARD & ENGINE WORKS

T. Shiota

General Manager.

Manufacturer.

Dates of Survey while building

During progress of work in shops — 1912 Feby. 8. 13. 21. Mch. 14. 28. Apl. 10. 12. 15. 18. 19. 20. 23. 24. 25. 29. May 3. 6. 7. 8. 10. 13. 14. 15. 22. 28. 29. June 1. 5. 6. 7. 11. 12. 13. 14. 17. 18. 19. 20. 21. 24. 25. 26. 27. 28. 29. July 3. 4. 5. 6. 8. 10. Aug. 2. 5. 6. 9. 20. 22. 23. 30. Sept. 5. 9. 11. 18. 19. 20. 21. 23. 24. 25. Oct. 3. 9. 15. 17. 18. 19. 21. 22. 23. 24. 25. 30. Nov. 1. 2. 4. 5. 6. 7. 8. 12. 13. 14. 16. 18. 21. 25. 26. 28. 29. Decr. 2. 3. 5. 7. 9. 10. 11. 12. 13. 14. 17. 18. 19. 20. 21. 23. 24. 26. 27. 28. 1913 Jany. 4. 6. 7. 8. 10. 21. 22. 24. 25. 30. 31.

During erection on board vessel — Feby. 1. 3. 5. 8. 13. 14. 15. 18. 21. 22. 24. 25. 27. 28. Mch. 1. 3. 6. 7. 13. 14. 17. 20. 27. 29. Apl. 9. 10. 11. 15. 16. 17. 21. 22. 23. 24. 29. 30. May 1. 10. 12. 13. 14. 15. 17. 19. 20. 21. 22. 23. 24. 28. 29. June 6. 7.

Total No. of visits 182 *Is the approved plan of main boiler forwarded herewith* Yes.

Dates of Examination of principal parts— ~~Cylinders~~ Turbine Casings 3rd Feby. 1913 ~~Slides~~ Rotors 24th Feby. 1913 ~~Covers~~ "Gear Wheels" 20th March 1913 ~~Pistons~~ donkey "Pinions" 20th March 1913 ~~Rods~~ Spindle ends 14th Feby. 1913.

Connecting rods ✓ *Crank shaft* ✓ *Thrust shaft* 25th Octr. 1912 *Tunnel shafts* 25th Octr. 1912 *Screw shaft* 28th Decr. 1912 *Propeller* 15th Apl. 1913.

Stern tube 6th Jany. 1913 *Steam pipes tested* 2nd Sept. 1912 *Engine and boiler seatings* 8th Feby. 1913 *Engines holding down bolts* 10th April 1913.

Completion of pumping arrangements 30th April, 1913 *Boilers fixed* 14th March, 1913 *Engines tried under steam* 29th May, 1913.

Main boiler safety valves adjusted 30th April, 1913 *Thickness of adjusting washers* No washers, brass jamb nuts.

Material of ~~Crank shaft~~ Spindles Forged Steel *Identification Mark on Do.* 12.2.13 LLOYD'S No. 91 D.F.R. *Material of Thrust shaft* Forged Steel *Identification Mark on Do.* 25.10.12 LLOYD'S No. 91 D.F.R.

Material of Tunnel shafts Forged Steel *Identification Marks on Do.* 25.10.12 LLOYD'S No. 91 D.F.R. *Material of Screw shafts* Forged Steel *Identification Marks on Do.* 28.12.12 LLOYD'S No. 91 D.F.R.

Material of Steam Pipes Lap welded wrought iron ✓ *Test pressure* 750 lbs. per sq. in. ✓

General Remarks *(State quality of workmanship, opinions as to class, &c.)*

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 full steam. All rotor casings have been subjected to the prescribed hydraulic tests and found sound and good.

The Machinery of this vessel is eligible, in my opinion, for the record of ✠ LMC 6.13, in the Register Book.

Mean Speed of 6 Runs on Trial when Half Loaded – 15.311 knots.

H.P.	Drums	2' 2"	Casings	1' 5 3/8" to 2' 5"	
L.P.	Do.	2' 7"	Do.	2' 10 1/2" to 3' 5"	The Astern Turbines are
Astern	Do.	1' 11 1/2"	Do.	2' 0 1/2" to 2' 5"	incorporated in the L.P. Turbines.

(The Surveyors are requested not to write on or below the space for Committee's Minute.) *Certificate (if required) to be sent to*

The amount of Entry Fee..	£ 3 : 0 : 0	When applied for,	7th June 1913
Special	Yen 29.52 £ 110 : 18 : 0 Yen 1071.93		
Donkey Boiler Fee	£ — : :	When received,	7th June 1913
Travelling Expenses (if any)	£ : :		

a.s.w.

A. S. Williamson

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

Committee's Minute TUE. JUN. 24. 1913

Assigned + LMC 6.13

MACHINERY CERTIFICATE WRITTEN.