

REPORT ON MACHINERY

Glo. No. 24593
Lith. No. 11734

Port of

Glasgow

Received at London Office

THUR. NOV. 8 1906

No. in Survey held at
Reg. Book.

Glasgow

Date, first Survey

21st March

Last Survey

8th Oct 1906

(Number of Tons)

23rd Dec 1906.

Gross 1974.43

Net 1154.91

on the

S. S. "AWAJI MARU."

Master W Cockburn

Built at Grangemouth

By whom built

Grangemouth S.B.

When built 1906.

Engines made at

Glasgow

By whom made

Dunsmuir & Jackson Ltd

When made

1906.

Boilers made at

Glasgow

By whom made

do

do

when made

1906.

Registered Horse Power

Owners

Nippon Yusen Kaisha

Port belonging to

Yokio

Nom. Horse Power as per Section 28

214

Is Refrigerating Machinery fitted for cargo purposes

No

Is Electric Light fitted

Yes

ENGINES, &c.—Description of Engines

Triple Expansion—Screw

No. of Cylinders

3

No. of Cranks

3

Dia. of Cylinders

19, 31, 52

Length of Stroke

39

Revs. per minute

90

Dia. of Screw shaft

as per rule 10.85

Material of

iron

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

✓

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

3.9"

Dia. of Tunnel shaft

as per rule 9.87

Dia. of Crank shaft journals

as per rule 10.35

Dia. of Crank pin

10.5"

Size of Crank webs

6.4"

Dia. of thrust shaft under

collars

10.5"

Dia. of screw

13.1"

Pitch of Screw

14.9"

No. of Blades

4

State whether moveable

yes

Total surface

62 sq. ft.

No. of Feed pumps

2

Diameter of ditto

3"

Stroke

18"

Can one be overhauled while the other is at work

yes

No. of Bilge pumps

2

Diameter of ditto

3"

Stroke

18"

Can one be overhauled while the other is at work

yes

No. of Donkey Engines

3

Sizes of Pumps

{ 9" x 10" x 10" - 4" x 2.4" x 5" }

No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room

Four 2.3/4 dia.

In Holds, &c.

Two in each No. 1 & 2 - 2.3/4 dia

After hold one 3.1/2 dia.

Tunnel well one 2.3/4 dia.

No. of Bilge Injections

1

size

5

Connected to condenser, or to circulating pump

pump

Is a separate Donkey Suction fitted in Engine room & size

yes

3"

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

None

How are they protected

✓

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

2/8/06

of Stern Tube

2/8/06

Screw shaft and Propeller

2/8/06

Is the Screw Shaft Tunnel watertight

yes

Is it fitted with a watertight door

yes

worked from Engine room top platform

BOILERS, &c.—(Letter for record (S.) Manufacturers of Steel

Total Heating Surface of Boilers

3770

Is Forced Draft fitted

no

No. and Description of Boilers

Two single ended

Working Pressure

180 lbs

Tested by hydraulic pressure to

360 lbs

Date of test

17/9/06

No. of Certificate

8334.

Can each boiler be worked separately

yes

Area of fire grate in each boiler

57.75

No. and Description of Safety Valves to

each boiler

2 Safety valves

Area of each valve

7.07

Pressure to which they are adjusted

180 lbs

Are they fitted with easing gear

yes

Smallest distance between boilers or uptakes and bunkers or woodwork

2'-0"

Mean dia. of boilers

14" 0"

Length

10'-8"

Material of shell plates

steel

Thickness

1.9"

Range of tensile strength

28 to 32

Are the shell plates welded or flanged

no

Descrip. of riveting: cir. seams

double

long. seams

treble

Diameter of rivet holes in long. seams

1.5"

Pitch of rivets

8.7"

Lap of plates or width of butt straps

19.4"

Per centages of strength of longitudinal joint

rivets 88.4

plate 85.2

Working pressure of shell by rules

220 lbs

Size of manhole in shell

16" x 12"

Size of compensating ring

McNeil's

No. and Description of Furnaces in each boiler

3 Morrison

Material

steel

Outside diameter

3.10"

Length of plain part

top

bottom

Thickness of plates

crown

bottom

Description of longitudinal joint

welded

No. of strengthening rings

✓

Working pressure of furnace by the rules

191 lbs

Combustion chamber plates: Material

steel

Thickness: Sides

5/8"

Back

2.3/2"

Top

5/8"

Bottom

7/8"

Pitch of stays to ditto: Sides

8 x 8.5"

Back

8.5 x 8.5"

Top

9.5 x 7.5"

If stays are fitted with nuts or riveted heads

nuts

Working pressure by rules

194 lbs

Material of stays

steel

Diameter at smallest part

1.76"

Area supported by each stay

76.7"

Working pressure by rules

184

End plates in steam space:

Material

steel

Thickness

1.8"

Pitch of stay

19.5 x 19

How are stays secured

nuts

Working pressure by rules

192 lbs

Material of stays

steel

Area at smallest part

7.5

Area supported by each stay

370

Working pressure by rules

202

Material of Front plates at bottom

steel

Thickness

7/8"

Material of Lower back plate

steel

Diameter of tubes

3.4"

Pitch of tubes

4.8 x 4.8"

Material of tube plates

steel

Thickness: Front

1"

Back

1.3/16"

Mean pitch of stays

abt 11"

Pitch across wide water spaces

14.1/4"

Working pressures by rules

189 lbs

Girders to Chamber tops: Material

iron

Depth and

thickness of girder at centre

9.5 x 7-1"

Length as per rule

2.9.3/4"

Distance apart

9.4"

Number and pitch of stays in each

3-7.3/4"

Working pressure by rules

200 lbs

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

VERTICAL DONKEY BOILER—

Manufacturers of Steel

No. _____ Description *See report attached.*

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:— *2 top end bolts & nuts 2 bottom end bolts & nuts, 2 main bearing bolts, 1 set coupling bolts, 1 set of feed & bilge pump valves, assorted bolts & nuts, iron of various sizes, 1/2 crank shaft, 1 spare eccentric strap, 1 circulating pump rod, 1 air pump rod, 1 set valve spindles.*

The foregoing is a correct description,

For DUNSMuir & JACKSON, Limited.

W. Fletcher

Manufacturer.

Dates of Survey while building { During progress of work in shops - 1906. March 21. 27. April 13. 21. 27. May 24. 31. June 19. 26. July 27. Aug 2. Sept 19. }
 { During erection on board vessel - July 2. 11. 25. Aug 8. 10. 11. 16. 30 Sep 10. 17. Oct 8. }
 Total No. of visits *gls. 20 Lth. 6. = 26.* Is the approved plan of main boiler forwarded herewith *yes*

Dates of Examination of principal parts—Cylinders *Various* Slides *do* Covers *do* Pistons *do* Rods *do*

Connecting rods *do* Crank shaft *16/6/06* Thrust shaft *21/3/06* Tunnel shafts *21+27/3/06* Screw shaft *11/4/06* Propeller *11/4/06*

Stern tube *11/4/06* Steam pipes tested *10/9 + 8/10/06* Engine and boiler seatings *27/7/06* Engines holding down bolts *19/9/06*

Completion of pumping arrangements *19/2/06* Boilers fixed *12/10/06* Engines tried under steam *23/10/06*

Main boiler safety valves adjusted *12/10/06* Thickness of adjusting washers *all 1/2"*

Material of Crank shaft *steel* Identification Mark on Do. *J.W.D.* Material of Thrust shaft *steel* Identification Mark on Do. *J.W.D.*

Material of Tunnel shafts *steel* Identification Marks on Do. *J.W.D.* Material of Screw shafts *steel* Identification Marks on Do. *J.W.D.*

Material of Steam Pipes *copper* Test pressure *400lbs.*

General Remarks (State quality of workmanship, opinions as to class, &c. *The Engines & boilers have been constructed under Special Survey, the materials & workmanship are of good quality. The machinery will be fitted on the vessel at Grangemouth.*

The machinery has been fitted on board the vessel in a satisfactory manner, and when tried under steam was found to work well, and in our opinion is eligible to be classed with record of + LMC 10.06

It is submitted that this vessel is eligible for THE RECORD

H.L.M.C. 10.06. ELEC. LIGHT.

all fees charged from Glasgow Office 8.11.06. a/c for Expenses only rendered from Lth 7/11/06.

The amount of Entry Fee. £ *2* : : : When applied for, _____

Special £ *30.14* : : : : : _____

Donkey Boiler Fee £ *1* : : : : : _____

Travelling Expenses (if any) £ *1-0* : : : : : _____

W. Dinmock & J. Graham
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

FRI. NOV 9 1906

Committee's Minute

Assigned *Deferred for completion.*

For Lth.

+ L.M.C. 10.06
 ELEC. LIGHT
 Lloyd's Register
 MACHINERY CERTIFICATE
 WRITTEN.