

# REPORT ON MACHINERY.

No. 14140  
20 APR 1911

Received at London Office

Date of writing Report 12 April 1911 When handed in at Local Office 18 April 1911 Port of West Hartlepool

To. in Survey held at West Hartlepool Date, First Survey 1912 July 22<sup>nd</sup> Last Survey 15 April 1911  
Reg. Book. on the Steel Steamer *Hercules B.* (Number of Visits 127)

Master Built at West Hartlepool By whom built W. Gray & Co. Ltd Tons } Gross  
Engines made at West Hartlepool By whom made Central Marine & Work when made 1911 } Net  
Boilers made at West Hartlepool By whom made Central Marine & Work when made 1911  
Registered Horse Power Owners Port belonging to *Bergen* When built 1911

Nom. Horse Power as per Section 28 381 Is Refrigerating Machinery fitted for cargo purposes *No* Is Electric Light fitted *No*

ENGINES, &c.—Description of Engines *Triple Compound* No. of Cylinders *Three* No. of Cranks *Three*

Dia. of Cylinders *26" 42" 70"* Length of Stroke *48"* Revs. per minute *65* Dia. of Screw shaft as per rule *14.66* Material of *Steel*  
as fitted *15* screw shaft

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 *No* 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 *Yes* If two  
liners are fitted, is the shaft lapped or protected between the liners *Yes* Length of stern bush *60"*

Dia. of Tunnel shaft as per rule *12.98* Dia. of Crank shaft journals as per rule *13.63* Dia. of Crank pin *13.44* Size of Crank webs *19.84* Dia. of thrust shaft under  
collars *13.44* Dia. of screw *18.0"* Pitch of Screw *16.5"* No. of Blades *4* State whether moveable *No* Total surface *994.5*

No. of Feed pumps *Two* Diameter of ditto *3.44"* Stroke *28"* Can one be overhauled while the other is at work *Yes*  
No. of Bilge pumps *Two* Diameter of ditto *4"* Stroke *28"* Can one be overhauled while the other is at work *Yes*

No. of Donkey Engines *Two* Sizes of Pumps *10 1/2" x 10" x 5" 6"* No. and size of Suctions connected to both Bilge and Donkey pumps  
In Engine Room *Three 3 1/2" Dry Tank one 3"* In Holds, &c. *One 3 1/2" Tunnel 3"*

No. of Bilge Injections *Two* sizes *6 1/2"* Connected to condenser, or to circulating pump *Yes* Is a separate Donkey Suction fitted in Engine room & size *Yes 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 *Yes*

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 *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 *No* How are they protected *No*

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 *28/2/11* of Stern Tube *14/3/11* Screw shaft and Propeller *2/3/11*

Is the Screw Shaft Tunnel watertight *Yes* Is it fitted with a watertight door *Yes* worked from *Top Platform*

BOILERS, &c.—(Letter for record *S*) Manufacturers of Steel *J. & W. Brown & Co.*

Total Heating Surface of Boilers *6039.32* Is Forced Draft fitted *No* No. and Description of Boilers *Two Single Ended*

Working Pressure *180 lb* Tested by hydraulic pressure to *360 lb* Date of test *9/2/11* No. of Certificate *3224*

Can each boiler be worked separately *Yes* Area of fire grate in each boiler *73.54* No. and Description of Safety Valves to  
each boiler *Two Spring* Area of each valve *9.62"* Pressure to which they are adjusted *185 lb* Are they fitted with easing gear *Yes*

Smallest distance between boilers or uptakes and bunkers or woodwork *15"* Mean dia. of boilers *17.0"* Length *11.6"* Material of shell plates *Steel*

Thickness *15/16"* Range of tensile strength *29-32* Are the shell plates welded or flanged *No* Descrip. of riveting: cir. seams *Yes*  
long. seams *all lap* Diameter of rivet holes in long. seams *15/16"* Pitch of rivets *8 1/16"* Lap of plates or width of butt straps *19 1/2"*

Per centages of strength of longitudinal joint rivets *88.2* Working pressure of shell by rules *180 lb* Size of manhole in shell *16" x 12"*  
plate *24.59*

Size of compensating ring *Flanged* No. and Description of Furnaces in each boiler *4 Annular* Material *Steel* Outside diameter *46 1/8"*

Length of plain part top *10"* Thickness of plates crown *19/32* Description of longitudinal joint *Welded* No. of strengthening rings *Each*  
bottom *10"* bottom *19/32*

Working pressure of furnace by the rules *183 lb* Combustion chamber plates: Material *Steel* Thickness: Sides *10/16"* Back *10/16"* Top *10/16"* Bottom *13/16"*

Pitch of stays to ditto: Sides *9.8"* Back *9 1/2"* Top *9.8"* If stays are fitted with nuts or riveted heads *Yes* Working pressure by rules *180 lb*

Material of stays *Steel* Diameter at smallest part *1 1/2"* Area supported by each stay *9 1/4"* Working pressure by rules *193 lb* End plates in steam space:

Material *Steel* Thickness *1 1/4"* Pitch of stays *24 1/2"* How are stays secured *all nut* Working pressure by rules *181 lb* Material of stays *Steel*

Diameter at smallest part *3.316"* Area supported by each stay *24 1/2"* Working pressure by rules *193 lb* Material of Front plates at bottom *Steel*

Thickness *1 1/8"* Material of Lower back plate *Steel* Thickness *1 1/2"* Greatest pitch of stays *16"* Working pressure of plate by rules *180 lb*

Diameter of tubes *3 1/2"* Pitch of tubes *4 1/4"* Material of tube plates *Steel* Thickness: Front *1"* Back *1 1/4"* Mean pitch of stays *9 1/2"*

Pitch across wide water spaces *14 1/2"* Working pressures by rules *182 lb* Girders to Chamber tops: Material *Steel* Depth and  
thickness of girder at centre *8 1/2" x 1 1/4"* Length as per rule *29 5/8"* Distance apart *8"* Number and pitch of stays in each *4 9"*

Working pressure by rules *182 lb* Superheater or Steam chest; how connected to boiler Can the superheater be shut off and the boiler worked  
separately *No* 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



Norwegian Consul, London.

VERTICAL DONKEY BOILER—

Manufacturers of Steel As per Report attached hereto

No. *One* Description *Single Ended Live Steamers.*  
Made at *Lytham* By whom made *Central Marine & Water* When made *1911* Where fixed *Whitehead*  
Working pressure *100* tested by hydraulic pressure to *200* Date of test *9/2/11* No. of Certificate *3225* Fire grate area *298 1/2* Description of Safety  
Valves *Opening* No. of Safety Valves *Two* Area of each *7.07* Pressure to which they are adjusted *105* Date of adjustment *12/4/11.*  
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:—*The top end bolts. The bottom end bolts. The main bearing bolts. One set coupling bolts. One set dead pump valves. One set bridge pump valves. One set 10 piston springs. One Propeller shaft. One Propeller one set main and donkey check valves. Set of main and donkey safety valve springs. Bolts 1/2".*

The foregoing is a correct description,

FOR THE CENTRAL MARINE ENGINE WORKS.

(W. GRAY & CO., LTD.)

Manufacturer.

*John Williams*

Dates of Survey while building  
During progress of work in shops—*July 22, 26, 27, 28, Aug. 8, 9, 17, 22, 23, 25, 26, 29, Sept. 15, 20, 21, 22, 23, 26, 27, 28, 29, 30, Oct. 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 17, 18, 20, 21, 24*  
During erection on board vessel—*25, 26, 27, 28, 31, Nov. 1, 2, 3, 4, 7, 8, 9, 10, 11, 14, 15, 16, 17, 21, 22, 24, 26, 28, 29, 30, Dec. 1, 2, 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 19, 20, 22, 1911 Jan. 4, 5, 6, 9, 10, 12, 13, 16, 17, 18, 19, 20, 22, 24, 25, 26, 27, 30, 31, Feb. 1, 2, 3, 8, 9, 13, 15, 16, 17, 20, 24, 29, Mar. 7, 8, 10, 13, 14, 15.*  
Total No. of visits *127.* Is the approved plan of main boiler forwarded herewith *Yes*

" " " donkey " " " *Yes*  
Dates of Examination of principal parts—Cylinders *9/2/11* Slides *9/2/11* Covers *9/2/11* Pistons *9/2/11* Rods *27/1/11*  
Connecting rods *27/1/11* Crank shaft *23/1/11* Thrust shaft *23/1/11* Tunnel shafts *17/3/11* Screw shaft *24/1/11* Propeller *20/2/11*  
Stern tube *7/3/11* Steam pipes tested *22/1/11* Engine and boiler seatings *13/3/11* Engines holding down bolts *17/3/11*  
Completion of pumping arrangements *3/3/11* Boilers fixed *22/3/11* Engines tried under steam *3/3/11*  
Main boiler safety valves adjusted *3/3/11* Thickness of adjusting washers *5 27/32. P 25/32. 5 157/16. P 47/64*  
Material of Crank shaft *Steel* Identification Mark on Do. *4990* Material of Thrust shaft *Steel* Identification Mark on Do. *4990*  
Material of Tunnel shafts *Steel* Identification Marks on Do. *4990* Material of Screw shafts *Steel* Identification Marks on Do. *4990*  
Material of Steam Pipes *Steel* Test pressure *Brand 600 lb. Main 540 lb. at Glasgow*

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

*Expansion coils tested to 360 lb and Body to 50 lb.*

*The Machinery and Boilers of this Steamer have been constructed under Special Survey and placed on board in accordance with the Society's Rules. They are now in my opinion in safe working condition and the case is respectfully submitted for the Notification + LMC 4.11 in the Register Book.*

*It is submitted that this vessel is eligible for THE RECORD. + LMC 4.11.*

*JPR*

*JWD 30/4/11*

The amount of Entry Fee £ *3* : : When applied for, \_\_\_\_\_  
Special £ *39* : : *19. 4. 1911*  
Donkey Boiler Fee £ : : When received, \_\_\_\_\_  
Travelling Expenses (if any) £ : : *19. 4. 1911*

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

Committee's Minute *FRI 21 APR 1911*  
Assigned *Thurs 4 11*

