

## REPORT ON MACHINERY

No. 11850.  
MON. 14 AUG. 1916

Received at London Office

Date of writing Report 12.8.1916 When handed in at Local Office 12.8.1916 Port of Aberdeen

No. in Survey held at Aberdeen Date, First Survey 13.12.15 Last Survey 28.4.1916  
Reg. Book. 63. "BEN BREAC" (Number of Vents 28) Tons { Gross 234.69  
Net 101.81

Master ✓ Built at Aberdeen By whom built Hall Russell & Co. Ltd. No. 584 When built 1916

Engines made at Aberdeen By whom made Hall Russell & Co. Ltd. No. 584 when made 1916

Boilers made at do. By whom made do. when made 1916

Registered Horse Power 48 Owners R. Irwin & Sons Ltd. Port belonging to Aberdeen

Nom. Horse Power as per Section 28 48 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted no

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

Dia. of Cylinders 12", 20", 34" Length of Stroke 24" Revs. per minute 115 Dia. of Screw shaft as per rule 6.911 Material of screw shaft as per rule 6.911

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 yes

in the propeller boss yes If the liner is in more than one length are the joints burned length 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 ✓ Length of stern bush 2' 6"

Dia. of Tunnel shaft as per rule 6.210 Dia. of Crank shaft journals as per rule 6.52 Dia. of Crank pin 6 3/4" Size of Crank webs 10" x 4 3/4" Dia. of thrust shaft under collars 6 3/4" Dia. of screw 8 1/4" Pitch of Screw 11" 6" No. of Blades 4 State whether moveable no Total surface 32.7

No. of Feed pumps 2 Diameter of ditto 2 3/8" Stroke 12" Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 2 3/8" Stroke 12" Can one be overhauled while the other is at work yes

No. of Donkey Engines 2 Sizes of Pumps 1 1/4" x 3 1/2" x 6" duplex No. and size of Suctions connected to both Bilge and Donkey pumps 2"

In Engine Room one of 2" In Holds, &c. Flushwell in Fishhold one of 2"

Also ejector drawing from all parts, and with separate suction to engine room 2" dia.

No. of Bilge Injections 1 sizes 3" Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size yes: 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 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 Lines from Flushwell & F.W. Tank How are they protected Strong wood 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

Dates of examination of completion of fitting of Sea Connections 10.4.16 of Stern Tube 10.4.16 Screw shaft and Propeller 10.4.16

Is the Screw Shaft Tunnel watertight None Is it fitted with a watertight door worked from

BOILERS, &c.—(Letter for record (7).) Manufacturers of Steel W. Beardmore & Co. Ltd. - Stewarts & Lloyd Ltd.

Total Heating Surface of Boilers 1429 Is Forced Draft fitted no No. and Description of Boilers One, single ended.

Working Pressure 180 lbs. Tested by hydraulic pressure to 360 Date of test 18.4.16 No. of Certificate 880

Can each boiler be worked separately ✓ Area of fire grate in each boiler 48.7 No. and Description of Safety Valves to each boiler 2: direct spring Area of each valve 5.94 Pressure to which they are adjusted 185 Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork about 4" Mean dia. of boilers 12' 9" Length 10' 9" Material of shell plates 5

Thickness 1 1/16" Range of tensile strength 28-32 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams d. n. lap long. seams all straps Diameter of rivet holes in long. seams 1 1/8" Pitch of rivets 8" Lap of plates or width of butt straps 16 3/8" x 1 1/16"

Per centages of strength of longitudinal joint 86.9 Working pressure of shell by rules 185 Size of manhole in shell 16" x 12"

Size of compensating ring 28" dia x 1 1/16" No. and Description of Furnaces in each boiler 3: plain Material 5 Outside diameter 40"

Length of plain part 82 1/2" Thickness of plates 1 1/16" Description of longitudinal joint weld. No. of strengthening rings 3 1/2" x 3 1/2"

Working pressure of furnace by the rules 188 Combustion chamber plates: Material 5 Thickness: Sides 5" Back 5" Top 5" Bottom 5"

Pitch of stays to ditto: Sides 9' x 8" Back 9' x 8" Top 9' x 8" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 186

Material of stays 5 Diameter at smallest part 1 9/16" Area supported by each stay 22 Working pressure by rules 200 End plates in steam space

Material 5 Thickness 1 1/8" Pitch of stays 18" x 18" How are stays secured d. n. w. Working pressure by rules 185 Material of stays 5

Diameter at smallest part 2 1/16" Area supported by each stay 32 1/4" Working pressure by rules 199 Material of Front plates at bottom 5

Thickness 1" Material of Lower back plate 5 Thickness 1 1/16" Greatest pitch of stays 14 1/4" x 9" Working pressure of plate by rules 213

Diameter of tubes 4 3/4" Pitch of tubes 4 3/4" x 4 3/4" Material of tube plates 5 Thickness: Front 1" Back 3/32" Mean pitch of stays 11 3/8"

Pitch across wide water spaces 14 1/2" Working pressures by rules B. 180.9 Girders to Chamber tops: Material 5 Depth and thickness of girder at centre 8 3/8" x 1 3/4" Length as per rule 32 1/2" Distance apart 9" Number and pitch of stays in each three: 8"

Working pressure by rules 182.5 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 ✓ 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 so, is a report now forwarded? ✓

*The foregoing is a correct description,*

for HALL, RUSSELL & CO. LTD.

James J. Hunter

Manufacturers of Main Engines & Boilers—

|                                |                                     |   |   |
|--------------------------------|-------------------------------------|---|---|
| Dates of Survey while building | During progress of work in shops -- | 1915<br>Dec 10.                               | 1916<br>Mar. 3, 14, 21, 28 - Apr 5-4 - May 2, 8, 15, 25 - June 6, 12, 13, 24, 26, 30. |
|                                | During erection on board vessel --  | July 6, 7, 10, 12, 13, 14, 17, 18, 21, 26, 28 |   |
|                                | Total No. of visits                 | 28  | Is the approved plan of main boiler forwarded herewith <u>Yes.</u>                    |

Is the approved plan of main boiler forwarded herewith *Yes.*

Dates of Examination of principal parts—Cylinders  $\frac{13}{12}$  |  $\frac{3-2-15}{5-5-6}$  Slides  $\frac{15-25}{5}$  Covers  $\frac{2-25}{5}$  Pistons  $\frac{3-15}{5}$   $\frac{24}{6}$  Rods  $\frac{8-15}{5}$   $\frac{24}{6}$   
 Connecting rods  $\frac{8-15}{5}$   $\frac{24}{6}$  Crank shaft 25.5.16 Thrust shaft  $\frac{8}{5}$   $\frac{13-24}{6}$  Tunnel shafts  $\frac{8}{5}$   $\frac{13-24}{6}$  Screw shaft  $\frac{3}{5}$   $\frac{24}{6}$   $\frac{4}{4}$  Propeller  $\frac{30}{5}$   $\frac{4}{4}$   
 Stern tube  $\frac{24-30}{6}$  Steam pipes tested 26.4.16 Engine and boiler seatings 15.2.16 Engines holding down bolts  $\frac{14-18}{4}$   
 Completion of pumping arrangements 21.4.16 Boilers fixed 21.4.16 Engines tried under steam 28.4.16  
 Main boiler safety valves adjusted 28.4.16 Thickness of adjusting washers Port  $\frac{3}{16}$ " Starboard  $\frac{1}{4}$ "  
 Material of Crank shaft I.S. Identification Mark on Do. 6147 (DUN) Material of Thrust shaft S. Identification Mark on Do. 1001 A  
 Material of Tunnel shafts S. Identification Marks on Do. 1002 A Material of Screw shafts S. Identification Marks on Do. 1009 A  
 Material of Steam Pipes Copper  $3\frac{1}{2}$ " bore No. 2. B.S.G. Test pressure 360 lbs per sq inch.  
 Is an installation fitted for burning oil fuel No. ✓ Is the flash point of the oil to be used over 150°F. ✓

Have the requirements of Section 49 of the Rules been complied with. ☒

Is this machinery duplicate of a previous case yes. If so, state name of vessel Ben Shrackie. Kpt.

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

These Engines, and the Boiler, have been constructed under Special Survey and in accordance with the Secretary's letter, the Rules, and approved plan. The materials & workmanship are good. When completed & properly fitted on board, they were tried under steam at moorings with satisfactory results, and are now in good working order, and in our opinion entitled to the record *+ L.M.C. 4.16.* in the Register Book.

It is submitted that  
this vessel is eligible for  
THE RECORD + LMC 7-16

15/8/16

|                                 |    |   |    |                   |
|---------------------------------|----|---|----|-------------------|
| The amount of Entry Fee ... £   | 1  | : | :  | When applied for, |
| Special ... .. £                | 11 | : | 14 | 12.8.1916         |
| Donkey Boiler Fee ... £         |    | : | :  | When received,    |
| Travelling Expenses (if any) \$ |    | : | :  | 30.9.1916         |

Ridley Howell, www.LondonMuseum.  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

*Assigned*

+ LMC 7.16

**MILITARY CERTIFICATE  
WRITTEN.**



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