

# REPORT ON BOILERS.

No. 12784

Received at London Office

NOV - 8 1940

Date of writing Report 6<sup>th</sup> Nov 1940 When handed in at Local Office 6<sup>th</sup> Nov 1940 Port of BELFAST  
Visits included in 7.2 wcky.

No. in Survey held at BELFAST Date, First Survey \_\_\_\_\_ Last Survey 24<sup>th</sup> Oct 1940

Reg. Book \_\_\_\_\_ on the SINGLE SCREW MOTOR VESSEL "ARAYBANK" (Number of Visits \_\_\_\_\_) Gross 7258 Tons Net \_\_\_\_\_

Built at BELFAST By whom built HARLAND & WOLFF LD. Yard No. 1034 When built 1940-10

Engines made at BELFAST By whom made HARLAND & WOLFF LD. Engine No. 1034 When made 1940

Boilers made at BELFAST By whom made HARLAND & WOLFF LD. Boiler No. 1034 When made 1940

Owners ANDREW WEIR & CO. LD. Port belonging to BELFAST

## VERTICAL DONKEY BOILER.

Made at BELFAST By whom made HARLAND & WOLFF Boiler No. 1034 When made 1940 Where fixed E.R. PLATFORM

Manufacturers of Steel COLVILLES, LD.

Total Heating Surface of Boiler 1150 Sq. Ft. Is forced draught fitted No Coal or Oil fired OIL & EXH. GAS

No. and Description of Boilers 1-CLARKSON THIMBLE TUBE TYPE Working pressure 120 LB./sq"

Tested by hydraulic pressure to 230 LB./sq" Date of test 25.6.40 No. of Certificate 1089

Area of Firegrate in each Boiler ✓ No. and Description of safety valves to each boiler 2 x 3" DIA. ORDINARY SPRING LOADED TYPE.

Area of each set of valves per boiler { per rule 10.65 sq" as fitted 14.1 sq" Pressure to which they are adjusted 120 LB./sq" Are they fitted with easing gear YES

State whether steam from main boilers can enter the donkey boiler ✓ Smallest distance between boiler or uptake and bunkers

or woodwork AMPLE Is oil fuel carried in the double bottom under boiler No Smallest distance between base of boiler and tank top plating

✓ Is the base of the boiler insulated YES Largest internal dia. of boiler 7'-1" Height 16'-9"

Shell plates: Material S.M. STEEL Tensile strength 28-32 T/sq" Thickness 1" (TUBE) & 5/8"

Are the shell plates welded or flanged { DOUBLE BUTT STRAPS ON 1" PLATE Description of riveting: circ. seams { end D.R. inter. ✓ long. seams D.R.

Dia. of rivet holes in { circ. seams 1 1/4" long. seams 1 1/8" Pitch of rivets 3.55" Percentage of strength of circ. seams { plate 64.8 rivets 57 of Longitudinal joint { plate 74.5 rivets 69 combined ✓

Working pressure of shell by rules 248 LB/sq" (AT SEAM) Thickness of butt straps { outer 1 1/16" inner 1 1/16"

Shell Crown: Whether complete hemisphere, dished partial spherical, or flat SPHERICAL Material S.M. STEEL

Tensile strength 26-30 T/sq" Thickness 7/8" Radius 6'-0" Working pressure by rules 124 LB/sq"

Description of Furnace: Plain, spherical, or dished crown SPHERICAL Material S.M. STEEL Tensile strength 26-30 T/sq"

Thickness 1 1/32" External diameter { top ✓ bottom ✓ Length as per rule ✓ Working pressure by rules ✓

Pitch of support stays circumferentially ✓ and vertically ✓ Are stays fitted with nuts or riveted over ✓

Diameter of stays over thread ✓ Radius of spherical or dished furnace crown 6'-1 1/32" Working pressure by rule 120 LB/sq"

Thickness of Ogee Ring NONE Diameter as per rule { D ✓ a ✓ Working pressure by rule ✓

Combustion Chamber: Material S.M. STEEL Tensile strength 28-32 T/sq" Thickness of top plate 13/16"

Radius if dished 42 13/16" Working pressure by rule 160 LB/sq" Thickness of back plate ✓ Diameter if circular 53.5" EXT.

W.P. as per rule OF C.C. SHELL = 123 LB/sq" Pitch of stays ✓ Are stays fitted with nuts or riveted over ✓

Diameter of stays over thread ✓ Working pressure of back plate by rules ✓

Tube Plates: Material { front ✓ back ✓ Tensile strength { ✓ Thickness { ✓ Mean pitch of stay tubes in nests ✓

If comprising shell, Dia. as per rule { front ✓ back ✓ Pitch in outer vertical rows { 5 3/4" THIMBLE ✓ 2 1/2" Dia. of tube holes FRONT { stay ✓ plain 4" BACK { stay ✓ plain ✓

Is each alternate tube in outer vertical rows a stay tube PERCENT STRENGTH IN WAY OF THIMBLE TUBES { 48 Working pressure by rules { front 147 LB/sq" back ✓

Girders to combustion chamber tops: Material ✓ Tensile strength ✓

Depth and thickness of girder at centre ✓ Length as per rule ✓

Distance apart ✓ No. and pitch of stays in each ✓ Working pressure by rule ✓



006512-006522-0062

**Crown stays:** Material  Tensile strength  Diameter  { at body of stay...  
 or  
 over threads...  
 No. of threads per inch  Area supported by each stay  Working pressure by rules

**Screw stays:** Material  Tensile strength  Diameter  { at turned off part...  
 or  
 over threads...  
 No. of threads per inch

Area supported by each stay  Working pressure by rules  Are the stays drilled at the outer ends

**Tubes:** Material STEEL THIMBLE TUBES External diameter { plain 4"  
 { 2 1/2" Thickness { 9 B.W.G.  
9 B.W.G.  
 No. of threads per inch  Pitch of tubes { 4" - 7.461" x 4 3/8" x 2  
 { 2 1/2" - 6 3/4" x 2 7/8" x 2 Working pressure by rules { 138 LB/10"  
162 LB/10"

**Manhole Compensation:** Size of opening in shell plate 16" x 12" Section of compensating ring 6" x 1 1/4" No. of rivets and diameter  
 of rivet holes 40 - 1 1/8" Outer row rivet pitch at ends 3.53" Depth of flange if manhole flanged 3 7/8"

**Uptake:** External diameter 27.44" Thickness of uptake plate 5/8"

**Cross Tubes:** No.  External diameters {  Thickness of plates

Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with YES

The foregoing is a correct description,  
 For HARLAND AND WOLFF, LIMITED,  
*A. Marshall* Manufacturer.  
 Secretary

Dates of Survey { During progress of work in shops - -  
 while building { During erection on board vessel - -  
 Is the approved plan of boiler forwarded herewith 17/11/39  
 (If not state date of approval.)  
 Total No. of visits

Is this Boiler a duplicate of a previous case. No If so, state Vessel's name and Report No.

**GENERAL REMARKS** (State quality of workmanship, opinions as to class, &c.)  
 This boiler was constructed under Special Survey and in accordance with the approved plan. The materials and workmanship are good. It has been tested by hydraulic pressure in accordance with the Rules. It was subsequently fitted on board the vessel in an efficient manner, the safety valves were adjusted under steam and a satisfactory accumulation test carried out. The boiler is adapted for simultaneous firing by oil fuel and exhaust gas and on trial was found to function properly under these conditions.  
 In our opinion the boiler is eligible to receive the notation of D.B. 120 lb/10"

Survey Fee ... .. £ See Machinery Rpt. : When applied for, ..... 19  
 Travelling Expenses (if any) : : When received, ..... 19

*R. Lee James & J. McAfee*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute  
 Assigned  
 TUE. 26 NOV 1940  
 See Bel. J.C. 127824

