Rpt. 5a.

REPORT ON BOILERS.

No. 29791.

Received at London Office WED. 1 MAR 1911

Date of writing Report ____ 19__ When handed in at Local Office 28/2/ 1911. Port of Glasgow.

No. in Reg. Book. Survey held at Dumbarton Date, First Survey 28th Febry 11 Last Survey 17th Febry 1911 (Number of Visits 39.) Tons Gross 4298.48 Net 1925.59

on the Steel S/s Angora

Master John M. Robertson Built at Dumbarton By whom built Wm Denny Bros When built 1911

Engines made at Dumbarton By whom made Denny & Co when made 1911

Boilers made at do By whom made do when made 1911

Registered Horse Power Owners British India Steam Nav Co Port belonging to Glasgow.

MULTITUBULAR BOILERS—MAIN, ~~AUXILIARY OR DONKEY~~.—Manufacturers of Steel W Beardmore & Co. Lanarkshire Steel Co

Letter for record R ✓ **Total Heating Surface of Boilers** ~~in other sheet~~ ✓ Is forced draft fitted yes **No. and Description of Boilers** 4 single ended ✓ **Working Pressure** 150 lbs ✓ Tested by hydraulic pressure to 300 lbs ✓ Date of test 24·8·10

No. of Certificate 10556 Can each boiler be worked separately yes ✓ **Area of fire grate in each boiler** 64 ft ✓ No. and Description of safety valves to each boiler 2 spring loaded ✓ Area of each valve 9·62" ✓ Pressure to which they are adjusted 150 lbs. ✓

Are they fitted with easing gear yes ✓ In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler ✓

Smallest distance between boilers ~~or uptakes~~ and bunkers ~~or woodwork~~ 15" ✓ Mean dia. of boilers 15'·0" ✓ Length 11'-6" ✓

Material of shell plates steel ✓ Thickness $1\frac{5}{32}$ ✓ Range of tensile strength 28/32 tons ✓ Are the shell plates welded or flanged no ✓

Descrip. of riveting: cir. seams DR lap ✓ long. seams DBS-TR ✓ Diameter of rivet holes in long. seams $1\frac{3}{16}$ ✓ Pitch of rivets 8" ✓

~~Lap of plates or~~ width of butt straps $17\frac{5}{8} \times 1$" ✓ Per centages of strength of longitudinal joint rivets 89·2 plate 85·1 ✓ Working pressure of shell by rules 171 ✓ Size of manhole in shell 17 x 13 ✓ Size of compensating ring 36 x 36 x $1\frac{5}{32}$ ✓ **No. and Description of Furnaces in each boiler** 3 Morison ✓ Material steel ✓ Outside diameter $49\frac{1}{4}$ ✓ Length of plain part top ✓ bottom ✓ Thickness of plates crown bottom $\frac{1}{2}$" ✓

Description of longitudinal joint welded ✓ No. of strengthening rings ✓ Working pressure of furnace by the rules 153 ✓ Combustion chamber plates: Material steel ✓ Thickness: Sides $\frac{9}{16}$ ✓ Back $\frac{9}{16}$ ✓ Top $\frac{9}{16}$ ✓ Bottom $\frac{13}{16}$ ✓ Pitch of stays to ditto: Sides $8\frac{1}{2} \times 8\frac{1}{2}$ ✓ Back $8\frac{1}{2} \times 8\frac{1}{2}$ ✓

Top $7\frac{1}{2} \times 7$ ✓ If stays are fitted with nuts or riveted heads nuts ✓ Working pressure by rules 151 ✓ Material of stays Iron ✓ $21\frac{1}{2}$ tons area ~~Diameter~~ at smallest part 1·41" ✓ Area supported by each stay 72 ✓ Working pressure by rules 156 ✓ End plates in steam space: Material steel ✓ Thickness $\frac{7}{8}$" ✓

Pitch of stays 16 x $14\frac{7}{8}$ ✓ How are stays secured DN+W ✓ Working pressure by rules 152 ✓ Material of stays steel ✓ area ~~Diameter~~ at smallest part 3·98" ✓ Area supported by each stay 238" ✓ Working pressure by rules 173 ✓ Material of Front plates at bottom steel ✓ Thickness $\frac{13}{16}$ ✓ Material of Lower back plate steel ✓ Thickness $\frac{11}{16}$ ✓ Greatest pitch of stays $14\frac{1}{4}$ ✓ Working pressure of plate by rules 187 ✓ Diameter of tubes $2\frac{1}{2}$ ✓

Pitch of tubes $3\frac{3}{4} \times 3\frac{3}{4}$ ✓ Material of tube plates steel ✓ Thickness: Front $\frac{27}{32}$ ✓ Back $\frac{3}{4}$ ✓ Mean pitch of stays $8\frac{3}{4}$ ✓ Pitch across wide water spaces $13\frac{1}{2}$" ✓ Working pressures by rules 150 ✓ Girders to Chamber tops: Material steel ✓ Depth and thickness of girder at centre 2 plates 7 x $\frac{3}{4}$ ✓ Length as per rule $28\frac{1}{2}$ ✓ Distance apart 7" ✓ Number and pitch of Stays in each 3 of 7" ✓

Working pressure by rules 153 ✓ 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 ✓

The foregoing is a correct description,

Denny Bros Manufacturers

Dates of Survey while building: During progress of work in shops - -; During erection on board vessel - - - See accompanying Machinery report.

Is the approved plan of boiler forwarded herewith

Total No. of visits

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)

See report on Engines and DE boilers.

Survey Fee ... ... £ See Machy report.

Travelling Expenses (if any) £ See Machy report.

When applied for. 19

When received. 19

Harry Clarke

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

Committee's Minute Glasgow 28 FEB. 1911

Assigned See minute on Machinery Report.