

REPORT ON WATER TUBE BOILERS.

No. 50997

Received at London Office 12 NOV 1930

Date of writing Report 191 When handed in at Local Office 8. 11. 1930 Port of Glasgow.

No. in Survey held at Renfrew Date, First Survey 2nd June 30. Last Survey 7th Nov 1930

Reg. Bk. 28831. on the Boilers No. 6/1266 S/S EMPIRE STATE Number of Visits 23 Tons { Gross 24,424. Net 12,876.

Master Built at Newcastle-on-Tyne By whom built Vickers-Armstrongs Ltd. When built 1931

Engines made at {Turbinos - Built by Fraser & Chalmers Ltd. Alternators - Motors - Winton Bros. whom made General Electric Co.} When made 1931

Boilers made at Renfrew By whom made Messrs Babcock & Wilcox Ltd. When made 1930

Registered Horse Power Owners Furness Withy & Co. Ltd. Port belonging to London

WATER TUBE BOILERS—MAIN, AUXILIARY, OR DONKEY.—Manufacturers of Steel S. Colville & Sons.

(Letter for Record S) Date of Approval of plan 30-5-30, 4-6-30, 3-7-30, 22-7-30 Number and Description or Type of Boilers 8. Babcock, Wilcox Type. Working Pressure 400 lbs. Tested by Hydraulic Pressure to 650 lbs. Date of Test 3/1/31, 12/1/31, 29/1/31

No. of Certificates 434, 435, 436, 437 Can each boiler be worked separately. Yes Total Heating Surface of Boilers 34,784.0 sq. ft.

Is forced draught fitted Yes Area of fire grate (coal) in each Boiler Oil burning Total grate area of boilers in vessel including Main and Auxiliary No. and type of burners (oil) in each boiler 5 x 7000 TYPE No. and description of safety valves on each boiler 1. Pair C.S. 3 3/4" H.L. Cockburn Type Area of each valve 16.59 sq. in. Pressure to which they are adjusted 400 lbs./sq. in.

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. Height of Boiler 19'-9" Width and Length 21'-4 1/2" x 18'-6"

Steam Drums:—Number in each boiler One Inside diameter 3'-6" Material of plates Steel Thickness 1 1/2" Range of Tensile Strength 28-32 tons Are drum shell plates welded or flanged Solid forged Description of riveting:—

Cir. seams long. seams Diameter of rivet holes in long. seams Pitch of Rivets Lap of plate or width of butt straps Thickness of straps Percentage strength of long. joint:—Plate Rivet

Diameter of tube holes in drum 4 3/4" Pitch of tube holes 7 1/4" Percentage strength of shell in way of tubes 44.17

If Drum has a flat side state method of staying Depth and thickness of girders at centre (if fitted) Distance apart Number and pitch of stays in each Working pressure by rules

Steam Drum Heads or Ends:—Material Solid Thickness 3" Radius or how stayed Flat

Size of Manhole or Handhole 15" x 11" **MUD Water Drums:**—Number in each boiler One Inside Diameter 6" x 6" Material of plates Steel Thickness 3/4" Range of tensile strength 24-28 tons Are drum shell plates welded or flanged Solid drawn Description of riveting:—Cir. seams long. seams Diameter of Rivet Holes in long. seams Pitch of rivets Lap of plates or width of butt straps Thickness of straps

Percentage strength of long. joint:—Plate Rivet Diameter of tube holes in drum 4 3/4" Pitch of tube holes 7 1/4" Percentage strength of drum shell in way of tubes 44.17

MUD Water Drum Heads or Ends:—Material Steel Thickness 3/4" Radius or how stayed Flat Size of manhole or handhole Headers or Sections:—Number 32 Pans per Boiler

Material Thickness 1/2" Tested by Hydraulic Pressure to 650 lbs. Material of Stays Tubes:—Diameter 4" x 1 1/2" Area at smallest part Area supported by each stay Working Pressure by Rules 540 lbs.

Thickness 4" { 1 L.S.C. 1 1/2" { 7 L.S.C. Number 4" - 98 ft. { 1 1/2" - 880 ft. / **Steam Dome or Collector:**—Description of Joint to Shell

Percentage strength of Joint Diameter Thickness of shell plates Material Description of longitudinal joint Diameter of Rivet Holes Pitch of Rivets Working Pressure of shell by Rules

Crown or End Plates:—Material Thickness How stayed

SUPERHEATER. Type Babcock, Wilcox Date of Approval of Plan 4-6-30 Tested by Hydraulic Pressure to 650 lbs.

Date of Test 27/2/31, 11/3/31, 18/3/31, 24/3/31 Is a safety valve fitted to each section of the superheater which can be shut off from the Boiler Integral part

Diameter of Safety Valve 2 1/2" Single Spring Pressure to which each is adjusted 400 lbs./sq. in. Is easing gear fitted Yes

Is a drain cock or valve fitted at lowest point of superheater Yes Number, diameter, and thickness of tubes 150 ft. 1 1/2" 8 L.S.C.

Spare Gear. Tubes clients Gaskets or joints:—Manhole 64 for Bl. Handhole 100 3/4" Handhole plates 30 3/4"

The foregoing is a correct description,
Babcock & Wilcox, Ltd.
Robert Polson Manufacturer.

Dates of Survey { During progress of work in shops - 1930 June 2, 12, 18, 20 July 1, 2, 7, 10, 14 Aug. Is the approved plan of boiler forwarded herewith Yes

while { During erection on board vessel - 14, 18, 25 Sep 8, 12, 22 Oct 2, 6, 13, 20, 21, 24 Nov 6, 7 Total No. of visits 23 (Revised 74)

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) These Headers, mud drums and superheater boxes have been built under survey in accordance with the Rules and approved plans. The materials and workmanship are good. They have been forwarded to Messrs Vickers Armstrongs for erecting on board their No. 665.

These boilers & superheater have been built and tested in accordance with the Rules.

Survey Fee £ 76-11-6: When applied for, 191

Travelling Expenses (if any) £ : : When received, 6-1-1931

These boilers have been satisfactorily fitted in the vessel - see separate Rpt. to J. Forster

G. E. Murdoch Esq. Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 11 NOV 1930

Assigned TRANSMIT TO LONDON

TUE 10 NOV 1931

See Nov. 87699

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Remittance of money received for purchase of paper for 10-11-19
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