Rpt. 5a.

REPORT ON BOILERS.

No. 9502.

Received at London Office 24 DEC 1934

Date of writing Report 10th December 34. When handed in at Local Office 192 Port of Copenhagen

No. in Reg. Book. 89163 Survey held at Elsinore and Odense Date, First Survey 26th July Last Survey 21st November 1934 (Number of Visits 13.)

on the Single Screw Motor Tank Vessel EUROPE Tons Gross 8371 Net 5133.65

Master D.J.B. Built at Odense By whom built Odense Staalskibsværft (vide A. P. Møller) Yard No. 53 When built 1934

Engines made at Copenhagen By whom made A/S Burmeister & Wain's Maskin- og Skibsbygg Engine No. 2273 When made 1934

Boilers made at DONKEY Elsinore By whom made A/S Helsingør Jernskibs- og Maskinbyggeri Boiler No. 862 863 When made 1934

Nominal Horse Power (for Fe 293) Owners The Texas Co (Norway) Port belonging to Oslo.

MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel PLATES: The Steel Company of Scotland, Blochairn Glasgow. FURNACES & TUBES: Vitkovice Mines Steel & Iron works Corporation of Moravska Ostrava, MAIN STAYS & SCREWSTAYS Frodingham Iron & Steel Co Ltd Scunthorpe. RIVETS: Hanze Brs, Copenhagen (Letter for Record S.)

Total Heating Surface of Boilers 2 × 2200 = 4400 ft² Is forced draught fitted yes Coal or Oil fired oil and waste heat.

No. and Description of Boilers 2 off multitubular, combined waste heat and oil fired **Working Pressure** 180 lbs per □"

Tested by hydraulic pressure to 320 lbs/□" Date of test 17.9.1934 No. of Certificate 555-556 Can each boiler be worked separately yes.

Area of Firegrate in each Boiler ✓ No. and Description of safety valves to each boiler 2 off directly spring loaded.

Area of each set of valves per boiler { per Rule 14.6 □" / as fitted 19.7 □" } Pressure to which they are adjusted 180 lbs/□" Are they fitted with easing gear yes

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler No main boilers fitted.

Smallest distance between boilers ~~or uptakes~~ and bunkers ~~or woodwork~~ 8' Is oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating Boilers placed on a platform Is the bottom of the boiler insulated yes

Largest internal dia. of boilers 13'-0" Length 11'-5" **Shell plates:** Material Siemens M. Steel Tensile strength 28.5-31.2 Tons/□"

Thickness 1 1/8" Are the shell plates welded or flanged No Description of riveting: circ. seams { end lap joint / inter. double riveting }

long. seams double butt strap double riveting Diameter of rivet holes in { circ. seams 1 1/8" + 1/32" / long. seams 1 1/8" } Pitch of rivets { 3 7/16" + 1/32" / 7 1/16" + 1/32" }

Percentage of strength of circ. end seams { plate 66.7% / rivets 44.2% } Percentage of strength of circ. intermediate seam { plate ✓ / rivets ✓ }

Percentage of strength of longitudinal joint { plate 84.14% / rivets 95.5% / combined 87.4% } Working pressure of shell by Rules 186.7 lbs per sq inch.

Thickness of butt straps { outer 1" / inner 1" } **No. and Description of Furnaces in each Boiler** 2 off Morison's corrugated section

Material Siemens Martin Steel Tensile strength 42.5-42.7 kg/mm² Smallest outside diameter 3'-1"

Length of plain part { top ✓ / bottom ✓ } Thickness of plates { crown 1/2" / bottom } Description of longitudinal joint ✓

Dimensions of stiffening rings on furnace or c.c. bottom ✓ Working pressure of furnace by Rules 194.6 lbs per □"

End plates in steam space: Material Siemens M. Steel Tensile strength 27.5-28.4 Tons/□" Thickness 1 1/8" Pitch of stays 20" × 15"

How are stays secured Screwed into both plates, nuts in & outside Working pressure by Rules 188.1 lbs per □"

Tube plates: Material { front Siemens M. Steel / back Siemens M. Steel } Tensile strength { 27.0-27.4 Tons/□" / 27.6-28.0 Tons/□" } Thickness { 1" / 7/8" }

Mean pitch of stay tubes in nests 7 1/2" × 15" Pitch across wide water spaces 14" Working pressure { front 222.2 lbs/□" / back 219 lbs/□" }

Girders to combustion chamber tops: Material Siemens M. Steel Tensile strength 30.0 Tons/□" Depth and thickness of girder

at centre 8 1/4" - 2 × 3/4" = 1 1/2" Length as per Rule 30 15/16" Distance apart 9 1/2" No. and pitch of stays

in each 3 off 7 1/4" Working pressure by Rules 229.9 lbs/□" **Combustion chamber plates:** Material Siemens M. Steel

Tensile strength 26.9-27.3 Tons/□" Thickness: Sides 3/4" Back 11/16" Top 3/4" Bottom 3/4"

Pitch of stays to ditto: Sides WING: 8 7/8" × 7 1/4" CENTER: 9 1/8" × 7 3/4" Back 7 3/8" × 7 1/2" Top 7 1/4" × 9 1/2" Are stays fitted with nuts or riveted over { Riveted in & outside; outer row: riveted outside, nuts in. Corner stays: nuts in & outside }

Working pressure by Rules SIDE: 184.5 BACK: 199.2 TOP: 185.2 lbs/□" **Front plate at bottom:** Material Siemens M. Steel Tensile strength 27.0-27.4 Tons/□"

Thickness 1" **Lower back plate:** Material Siemens M. Steel Tensile strength 27.3-28.2 Tons/□" Thickness 15/16" + 13/16" doubling

Pitch of stays at wide water space d = 18" Are stays fitted with nuts or riveted over Screwed in both plates, nuts in & outside.

Working Pressure 272 lbs/□" **Main stays:** Material Siemens M. Steel Tensile strength 28-32 Tons/□"

Diameter { At body of stay, or Over threads } TOP 2 7/8" / 3"-2 7/8" BOTTOM 2 3/4" / 3"-2 3/4" No. of threads per inch 6 Area supported by each stay TOP 300 □" BOTTOM 216 □"

Working pressure by Rules TOP: 204 lbs/□" BOTT 256 lbs/□" **Screw stays:** Material Siemens M. Steel Tensile strength 26-30 Tons/□"

Diameter { ~~At turned off part~~, or Over threads } END 7 3/8" SIDE 1 1/2" OUTER ROW 1 3/4" CORNER 1 7/8" No. of threads per inch 9. Area supported by each stay SIDE 70.70 BACK 560"

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Working pressure by Rules SIDE 178 lbs/10" BACK 181.2 lbs Are the stays drilled at the outer ends No. Margin stays: Diameter { At turned off part. / Over threads CORNER } 1 3/4" / 1 7/8" ✓

No. of threads per inch 9 ✓ Area supported by each stay 79.30" Working pressure by Rules 229 lbs/10"

Tubes: Material Steel External diameter { Plain 2½" ✓ / Stay 2½" ✓ } Thickness { S.W.G. No 8 ✓ / 5/16" and 3/8" ✓ } No. of threads per inch 9. ✓

Pitch of tubes 3¾". Working pressure by Rules 300 lbs/10" **Manhole compensation:** Size of opening in shell plate 12" × 16" (15½ × 19½) Section of compensating ring Flanged 6½ × 1⅛ No. of rivets and diameter of rivet holes 36 off - 1 5/32" ✓

Outer row rivet pitch at ends 6 7/16" ✓ Depth of flange if manhole flanged 3½" ✓ **Steam Dome:** Material ✓

Tensile strength ✓ Thickness of shell ✓ Description of longitudinal joint ✓

Diameter of riret holes ✓ Pitch of rivets ✓ Percentage of strength of joint { Plate ✓ / Rivets ✓ }

Internal diameter ✓ Working pressure by Rules ✓ Thickness of crown No. and diameter of stays ✓ Inner radius of crown ✓ Working pressure by Rules ✓

How connected to shell ✓ Size of doubling plate under dome ✓ Diameter of rivet holes and pitch of rivets in outer row in dome connection to shell ✓.

Type of Superheater ✓ Manufacturers of { Tubes ✓ / Steel castings ✓ }

Number of elements ✓ Material of tubes ✓ Internal diameter and thickness of tubes ✓

Material of headers ✓ Tensile strength ✓ Thickness ✓ Can the superheater be shut off and the boiler be worked separately ✓ Is a safety valve fitted to every part of the superheater which can be shut off from the boiler ✓

Area of each safety valve ✓ Are the safety valves fitted with easing gear ✓ Working pressure as per Rules ✓ Pressure to which the safety valves are adjusted ✓ Hydraulic test pressure: tubes ✓, castings ✓ and after assembly in place ✓ Are drain cocks or valves fitted to free the superheater from water where necessary ✓.

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

AKTIESELSKABET HELSINGØRS JERNSKIBS- OG MASKINBYGGERI

The foregoing is a correct description,

Manufacturer.

Dates of Survey { During progress of work in shops - - } 1934. 26/7 - 23/8 - 24/8 - 27/8 - 1/9 - 7/9 - 13/9 - 17/9

{ During erection on board vessel - - - } 1934. 15/10 - 1/11 - 12/11 - 16/11 - 21/11

Are the approved plans of boiler ~~and superheater~~ forwarded herewith yes. (If not state date of approval.)

Total No. of visits 13.

GENERAL REMARKS (*State quality of workmanship, opinions as to class, &c.*) These combined waste heat and oil fired donkey boilers have been built under Special Survey in accordance with the requirements of the Rules, the approved plan and the Secretary's letter E dated 12th June 1934.

The material has been tested as required by the Rules as per certificates produced, and the workmanship is good.

The boilers have been installed on board to our satisfaction and on completion of the work the boilers as well as all their appliances including 2 vertical Eureka feed pumps 190 7/8 × 140 7/8 × 380 7/8, simplex. were tried under working conditions and found to work satisfactorily.

Recommend the vessel to have notation of 2 D.B - 180.2.B.

Survey Fee ... ... £ 608.16 | When applied for, 7/11 1934

Travelling Expenses (if any) £ 52.5.0. | When received, 20/11. 1934.

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 1 JAN 1935

Assigned See other S.E. Cpn. 9502